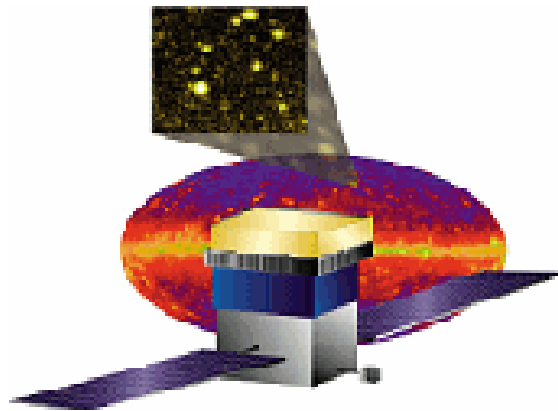


Monthly Progress Report

(Month Ending February 2005)

GLAST Large Area Telescope (LAT)



LAT-MR-06049-01

April 6, 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 February, 2005.

2.0 Recent Progress and Status

The LAT project replan through FY05 was approved by the LAT Configuration Control Board, and implemented in the project baseline this period. The cost/schedule data presented is against the updated plan. (Note that the current month's planned costs and manpower have been adjusted so that the cumulative-to-date cost and manpower plans correspond to the approved changes.)

4.1.4 Tracker

The first two flight towers have been accepted by I&T; the first has been integrated into the single-bay grid. The third tower is undergoing vibration testing. The fourth tower is being assembled; trays for the fifth tower are being assembled.

The pitch adapter trace cracking problem has been solved and multichip module (MCM) production is back underway. A new bonding fixture was designed to increase yield and ease the flex bonding bottleneck, and it is under test. Extra shifts will be implemented to increase production rate.

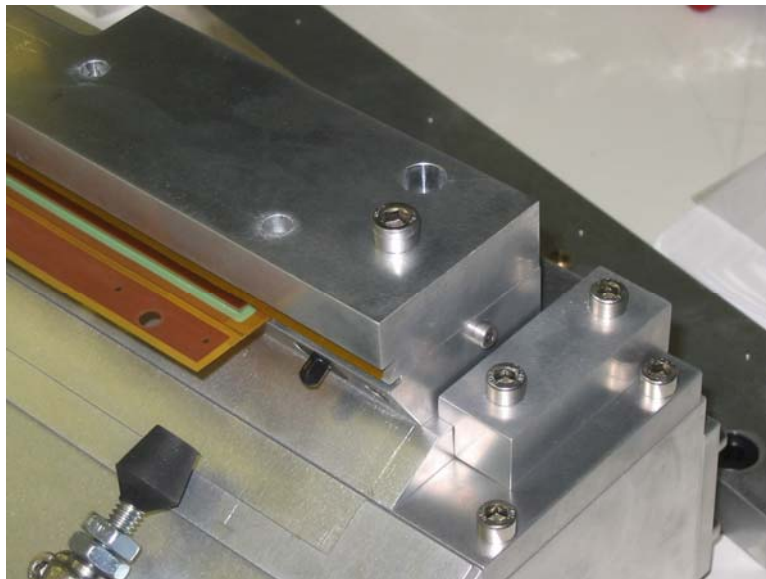


Figure 1: Part of the new pitch adapter bonding fixture.

The MCM encapsulation delamination issue is still being evaluated. A mechanical cover alternative is being developed, in case the first production MCMs fail electrical testing of wire bonds after thermal cycling.

Heavy trays were fabricated for the third flight tower using ladders without encapsulation. No evidence of the inter-ladder strip breakage was discovered.

Technical, workmanship, and schedule performance issues have continued to be a problem at the flight cable vendor. A materials review board (MRB) meeting was conducted to address failed coupon testing. A second MRB is scheduled to address broken connector pins.

4.1.5 Calorimeter

The first seven Calorimeter modules have been shipped to SLAC. Modules 8 through 13 have been assembled and environmentally tested, except for thermal vacuum testing which will occur on completion of NRL thermal vacuum facility refurbishment. Installation of analog front-end electronics (AFEE) is complete and tower electronics module power supply installation is in progress for module 14. Soldering of AFEE in the fifteenth module is underway. The crystal detector element assembly is complete, and tooling is being disassembled. All flight AFEE boards have been assembled and completed burn-in; the last eight are in conformal coating.



Figure 2: Calorimeter flight modules at NRL.

4.1.6 Anticoincidence Detector

Mechanical and electrical assembly of the flight photomultiplier tubes (PMTs) was completed. The final twelve PMTs began the coating process. Vibration and thermal vacuum testing was completed on the first two flight electronics chassis; integration of the first one into the full ACD has commenced. Five of the eight electronics chassis were assembled.



Figure 3: First electronics chassis installed on the ACD.

4.1.7 Electronics, Data Acquisition, and Flight Software

The first two Tower Electronics Modules (TEMs) and Tower Power Supplies (TPSs) were delivered to I&T. Four sets are ready for pre-conformal coat testing. A new vacuum feedthrough has been ordered, so that thermal vacuum testing can be performed on pairs of modules. Assembly of both the power distribution unit (PDU) and GASU has commenced. The GASU tester is being designed and debugged; an analog mux card was designed for thermal vacuum testing. The spacecraft interface unit (SIU) enclosures are fabricated. All SIU components have been received, except the RAD750 CPU, which is being reworked. The assembly of PCI connectors on a plug-in board and backplane is being tested. The system design for the four virtual spacecraft simulators is complete and all non-custom hardware has been ordered.

Four demonstrations of flight software were conducted: multiple boot images in SUROM, attitude processing, time hack processing, and thermal control system. A web-based control system is being developed for the front-end simulator, and a training session was conducted for the test team. Flight Software test executive changes were analyzed to support the use of the virtual spacecraft simulator. The file and memory management CPU monitoring package was completed. Minor adjustments were made in the command and telemetry formats to compensate for bugs in AstroRT. The event delivery framework was written, tested, and is now in production. The event delivery filter code was extended for additional offline uses (e.g. GLEAM and the test bed).

4.1.8 Mechanical Systems

Bakeout of the grid-heat pipe adhesive (to meet outgassing requirements) was completed. The top flange thermistors and thermocouples were bonded onto the grid. The +Y radiator is nearly complete. Counterbore repair qualification is complete for the -Y radiator. The cross-LAT (X-LAT) plate assembly fit check was conducted. The heat pipes are being bonded. Templates for the heaters and sensors have been completed.



Figure 4: X-LAT plate fit check on bonding fixture.

4.1.9 Integration & Test (I&T)

The first two Tracker modules, and sixth and seventh Calorimeter modules, were received and deemed "ready for integration." The first tower was integrated into the single-bay test stand. Thermocouples were installed on the flight grid, and post-cure procedures were completed. The 4x4 lift fixture for LAT handling was proof-tested. Version 4.7.3 of the LAT Test Executive was released. Baseline Science, Verification, Analysis, and Calibration code, for use during LAT integration, was completed.



Figure 5: Inserting a flight Calorimeter into the 1x1 grid to complete the first flight tower for electronic testing.

3.0 Schedule Status

The critical path for the project is driven by Tracker MCM production. There are five weeks of float to the shipment of the LAT.

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. Attachment 2 shows the status of the remaining Level 3 milestones.

The following milestones were completed during this reporting period:

Milestone Number	Description	Date Completed
1M1000200	Flight Tracker Tower A RFI	2/4/05
1M79170	Demo: Spacecraft Interfaces	2/14/05
1M79200	Demo: Thermal Control	2/16/05
1M79001010	Flight TEM Assy A	2/17/05
1M79002010	Flight TEM PS Assy A	2/17/05
1MRTS010	Calorimeter Module 4 Ready to Ship	2/22/05
1MRTS020	Calorimeter Module 5 Ready to Ship	2/22/05
1M1000201	Flight Tracker Tower B RFI	2/24/05

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

4.1.4 Tracker

Delivery of the third Tracker tower (1M1000220) was delayed by failure of one ladder during thermal-vacuum testing. The tray was removed and environmental testing will be done in parallel with the fifth tower, resulting in minor schedule impact to the overall schedule.

4.1.6 Anticoincidence Detector

The ACD test scripts (1M1001000) milestone has been delayed due to the need for additional testing, and as more is learned about the performance of the ACD electronics. This milestone is not expected to be completed until the ACD is fully assembled and tested.

4.1.7 Electronics

The scope of the intertask communications has been underestimated, resulting in a delay in the delivery of the final EGSE (1M7941440). This is not expected to have an impact on the LAT schedule.

4.1.8 Mechanical Systems

In December 2004, SLAC directed Lockheed Martin to postpone work on test-related activities and focus on the completion of flight hardware. The test-related activities have restarted, however this resulted in delay to the completion of the X-LAT plate (1M941710).

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. The hours worked/FTE lines include only DOE/NASA-funded labor.

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.

4.1.C Education & Public Outreach

The favorable cost variance is due to delayed subcontractor invoice payments, and 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 contingency, is below.

Change Request No.	Description	Submitted By	Current Status	Contingency Impact ¹
LAT-XR-05695-01	Changes to the LAT Integration Sequence	Nordby	Approved	N/A
LAT-XR-05804-01	Changes to the LAT I&T Facility Plan	Borden	Approved	N/A
LAT-XR-05857-01	Changes to LAT Systems CAL-TEM-PS Module Assembly	Nordby	Approved	N/A
LAT-XR-05950-01	LAT Rebaseline through FY05	Klaisner	Approved	(\$1,479K)
LAT-XR-05994-01	Continued Engineering Augmentation of Tracker Team in Italy	R. Johnson	Approved	\$337K

The fabrication and commissioning phase distinction has been eliminated. The cost baseline through FY05 is \$152,044K Funding applicable to that baseline is \$155,985K; the resulting contingency is \$3,941K.

7.0 Staffing

Attachments 9-10 demonstrate the staffing plan funded by DOE/NASA, and reports of actual manpower received.

The monthly planned FTEs reflect adjustments made so that the cumulative-to-date manpower plan corresponds to the approved changes in that month.

Neither Goddard nor Stanford-HEPL manpower was reported in the month of August, 2004. The September, 2004, incremental FTE report includes a correction, so that the cumulative-to-date actual manpower is correct.

Goddard civil servant manpower was not reported for the months of October or November, 2004. The February, 2005, incremental FTE report includes a correction, so that the cumulative-to-date actual manpower is correct.

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																				
					FY01	FY02	FY03	FY04	FY05	FY06														
DOE/NASA Joint Oversight Group (Level 1)																								
1M1P000000	DOE Critical Decision (CD) 0 Approval	06/25/01A	0	06/25/01A	▼																			
1M1P000010	CD-1 Approval	07/23/02A	0	07/23/02A		▼																		
1M1P000020	CD-2 Approval	11/08/02A	0	11/08/02A			▼																	
1M1P000030	CD-3 Approval	09/03/03A	0	09/03/03A				▼																
1M1P000060	Flight GRID Complete	11/08/04A	0	11/08/04A					▼															
1M1P000040	CD-4 Approval	03/15/06*	0	03/15/06*						▼														
DOE/NASA Federal Project Managers (Level 2)																								
1M1BF00000	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	0	03/23/05					▼															
1M1000700	Pre Environmental Testing Review	12/20/05	0	12/20/05						▼														
1M1000120	PSR-(Instrument Pre-Ship Review)	04/18/06	0	04/18/06						▼														
Run Date					03/31/05 08:01					GLAST LAT PROJECT Project Milestones (Level 1 and 2)					0328 LT_MS1-2					Sheet 1 of 1				
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**Attachment 2
Future Level 3 Milestones
Page 1 of 4**

Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date	FY04		FY05		FY06	
					Q3	Q4	Q1	Q2	Q3	Q4
Instrument Project Office (Level 3)										
4.1.1 Instrument Management										
1M1001920	Pre-Environmental Test Review	12/20/05	0	12/20/05						▼
4.1.4 Tracker										
1M1000220	Flight Tracker Tower 1 RFI	03/22/05	-6	03/30/05				▼		
1M1000221	Flight Tracker Tower 2 RFI	04/20/05	8	04/08/05				▼		
1M1000250	Flight Tracker Tower 3 RFI	05/03/05	0	05/03/05				▼		
1M1000251	Flight Tracker Tower 4 RFI	05/16/05	0	05/16/05				▼		
1M1000260	Flight Tracker Tower 5 RFI	06/03/05	0	06/03/05				▼		
1M1000261	Flight Tracker Tower 6 RFI	06/16/05	0	06/16/05				▼		
1M1000270	Flight Tracker Tower 7 RFI	06/27/05	-1	06/28/05				▼		
1M1000271	Flight Tracker Tower 8 RFI	07/06/05	-1	07/07/05				▼		
1M1000280	Flight Tracker Tower 9 RFI	07/15/05	-1	07/18/05				▼		
1M1000281	Flight Tracker Tower 10 RFI	07/26/05	-1	07/27/05				▼		
1M1000290	Flight Tracker Tower 11 RFI	08/04/05	-1	08/05/05				▼		
1M1000291	Flight Tracker Tower 12 RFI	08/15/05	-1	08/16/05				▼		
1M1000300	Flight Tracker Tower 13 RFI	08/24/05	-1	08/25/05				▼		
1M1000301	Flight Tracker Tower 14 RFI	09/02/05	0	09/02/05				▼		
1M1000310	Flight Tracker Tower 15 RFI	09/13/05	-1	09/14/05				▼		
1M1000311	Flight Tracker Tower 16 RFI	09/22/05	-1	09/23/05				▼		
4.1.5 Calorimeter										
1MRTS030	Flight Calorimeter Module 6 Ready to Ship	04/18/05	0	04/18/05				▼		
1MRTS040	Flight Calorimeter Module 7 Ready to Ship	04/21/05	0	04/21/05				▼		
1MRTS050	Flight Calorimeter Module 8 Ready to Ship	04/25/05	0	04/25/05				▼		
1MRTS060	Flight Calorimeter Module 9 Ready to Ship	05/02/05	0	05/02/05				▼		
1MRTS070	Flight Calorimeter Module 10 Ready to Ship	05/10/05	0	05/10/05				▼		
1MRTS090	Flight Calorimeter Module 11 Ready to Ship	05/13/05	0	05/13/05				▼		
1MRTS080	Flight Calorimeter Module 12 Ready to Ship	05/18/05	0	05/18/05				▼		
1MRTS100	Flight Calorimeter Module 13 Ready to Ship	05/23/05	0	05/23/05				▼		
1MRTS110	Flight Calorimeter Module 14 Ready to Ship	05/25/05	0	05/25/05				▼		
1MRTS120	Flight Calorimeter Module 15 Ready to Ship Spare	05/31/05	0	05/31/05				▼		
1MRTS130	Flight Calorimeter Module 16 Ready to Ship Spare	06/08/05	0	06/08/05				▼		
Run Date	03/31/05 08:17	GLAST LAT PROJECT Project Milestones (Level 3) Planned Milestones			0328 LTX2 - MS3 (planned) FLX1- MS (L3)	Sheet 1 of 4				
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Attachment 2
Future Level 3 Milestones
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Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date	FY04		FY05		FY06	
					Q3	Q4	Q1	Q2	Q3	Q4
4.1.6 ACD										
1M1001000	ACD Test Scripts (from ACD to I&T)	03/15/05*	-11	03/30/05				▼		
1M1000410	ACD Flight Unit at SLAC, Tested/Inspected & RFI	06/09/05	0	06/09/05				▼		
4.1.7 Electronics										
1M79001020	Flight TEM Assy B: Elec to I&T	03/07/05*	0	03/07/05				▼		
1M79002020	Flight TEM PS Assy B: Elec to I&T	03/07/05*	0	03/07/05				▼		
1M79180	Demo: Inter-task Communications	03/11/05	0	03/11/05				▼		
1M79230	Demo: Housekeeping	03/18/05	0	03/18/05				▼		
1M79250	Demo: Event Filtering	03/23/05	0	03/23/05				▼		
1M7941440	Final EGSE incl S/C Sim, FSW-Elec to I&T	04/01/05	-15	04/22/05				▼		
1M79210	Demo: Watchdog	04/15/05	0	04/15/05				▼		
1M79001030	Flight TEM Assy 1: Elec to I&T	04/22/05	0	04/22/05				▼		
1M79002030	Flight TEM PS Assy 1: Elec to I&T	04/22/05	0	04/22/05				▼		
1M79270	Demo: Mode Control	04/22/05	0	04/22/05				▼		
1M79001040	Flight TEM Assy 2: Elec to I&T	04/29/05	0	04/29/05				▼		
1M79002040	Flight TEM PS Assy 2: Elec to I&T	04/29/05	0	04/29/05				▼		
1M79220	Demo: Charge Injection Calibration	04/29/05	0	04/29/05				▼		
1M79001050	Flight TEM Assy 3: Elec to I&T	05/06/05	0	05/06/05				▼		
1M79002050	Flight TEM PS Assy 3: Elec to I&T	05/06/05	0	05/06/05				▼		
1M79240	Demo: Event Integrity and Delivery	05/06/05	0	05/06/05				▼		
1M79280	Demo: Diagnostics	05/06/05	0	05/06/05				▼		
1M79001060	Flight TEM Assy 4: Elec to I&T	05/13/05	0	05/13/05				▼		
1M79002060	Flight TEM PS Assy 4: Elec to I&T	05/13/05	0	05/13/05				▼		
1M79001070	Flight TEM Assy 5: Elec to I&T	05/20/05	0	05/20/05				▼		
1M79002070	Flight TEM PS Assy 5: Elec to I&T	05/20/05	0	05/20/05				▼		
1M79260	Demo: GRB Detection and Response	05/20/05	0	05/20/05				▼		
1M79001080	Flight TEM Assy 6: Elec to I&T	05/27/05	0	05/27/05				▼		
1M79002080	Flight TEM PS Assy 6: Elec to I&T	05/27/05	0	05/27/05				▼		
1M79001090	Flight TEM Assy 7: Elec to I&T	06/06/05	0	06/06/05				▼		
1M79002090	Flight TEM PS Assy 7: Elec to I&T	06/06/05	0	06/06/05				▼		
1M79001100	Flight TEM Assy 8: Elec to I&T	06/13/05	0	06/13/05				▼		
1M79002100	Flight TEM PS Assy 8: Elec to I&T	06/13/05	0	06/13/05				▼		
Run Date	03/31/05 08:17		GLAST LAT PROJECT Project Milestones (Level 3) Planned Milestones		0328 LTX2 - MS3 (planned) FLX1- MS (L3)		Sheet 2 of 4			
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**Attachment 2
Future Level 3 Milestones
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Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date	FY04		FY05			FY06	
					Q3	Q4	Q1	Q2	Q3	Q4	Q1
1M79001110	Flight TEM Assy 9: Elec to I&T	06/20/05	0	06/20/05							
1M79002110	Flight TEM PS Assy 9: Elec to I&T	06/20/05	0	06/20/05							
1M79001120	Flight TEM Assy 10: Elec to I&T	06/27/05	0	06/27/05							
1M79002120	Flight TEM PS Assy 10: Elec to I&T	06/27/05	0	06/27/05							
1M7942000	Flight PDU Box-Elec to I&T	07/01/05	0	07/01/05							
1M79001130	Flight TEM Assy 11: Elec to I&T	07/05/05	0	07/05/05							
1M79002130	Flight TEM PS Assy 11: Elec to I&T	07/05/05	0	07/05/05							
1M7941110	Flight Harness-Elec to I&T	07/05/05	0	07/05/05							
1M79001140	Flight TEM Assy 12: Elec to I&T	07/12/05	0	07/12/05							
1M79002140	Flight TEM PS Assy 12: Elec to I&T	07/12/05	0	07/12/05							
1M79001150	Flight TEM Assy 13: Elec to I&T	07/19/05	0	07/19/05							
1M79002150	Flight TEM PS Assy 13: Elec to I&T	07/19/05	0	07/19/05							
1M7941070	Flight GASU Box-Elec to I&T	07/19/05	3	07/14/05							
1M7R050	LCB Flight Units - Elec to Elec	07/20/05	0	07/20/05							
1M79001160	Flight TEM Assy 14: Elec to I&T	07/26/05	0	07/26/05							
1M79002160	Flight TEM PS Assy 14: Elec to I&T	07/26/05	0	07/26/05							
1M79001170	Flight TEM Assy 15: Elec to I&T	08/02/05	0	08/02/05							
1M79002170	Flight TEM PS Assy 15: Elec to I&T	08/02/05	0	08/02/05							
1M79001180	Flight TEM Assy 16: Elec to I&T	08/09/05	0	08/09/05							
1M79002180	Flight TEM PS Assy 16: Elec to I&T	08/09/05	0	08/09/05							
1M7941090	Flight Event Processor Units-Elec to I&T	08/19/05	0	08/19/05							
1M7R040	1st Flight EPU/SIU-Elec to I&T	08/19/05	0	08/19/05							
1M7R010	2nd Flight EPU/SIU-Elec to I&T	08/24/05	0	08/24/05							
1M7R020	3rd Flight EPU/SIU-Elec to I&T	08/26/05	0	08/26/05							
1M7R030	4th Flight EPU/SIU-Elec to I&T	08/30/05	0	08/30/05							
1M7941080	5th Flight EPU/SIU-Elec to I&T	09/02/05	0	09/02/05							
4.1.8 Mechanical											
1M1000240	Flight Grid RFI-Mech to I&T	03/23/05	0	03/23/05							
1M941710	X-LAT Thermal Plate RFI from Mech to I&T	04/20/05	-29	06/01/05							
1M941720	Radiators ready for I&T (from Mech to I&T)	07/22/05	0	07/22/05							
4.1.9 I&T											
1M99010	Start 2 Tower Comprehensive Performance Test	04/20/05	6	04/12/05							

Run Date 03/31/05 08:17

**GLAST LAT PROJECT
Project Milestones (Level 3)
Planned Milestones**

0328
LTX2 - MS3 (planned)
FLX1- MS (L3)

Sheet 3 of 4

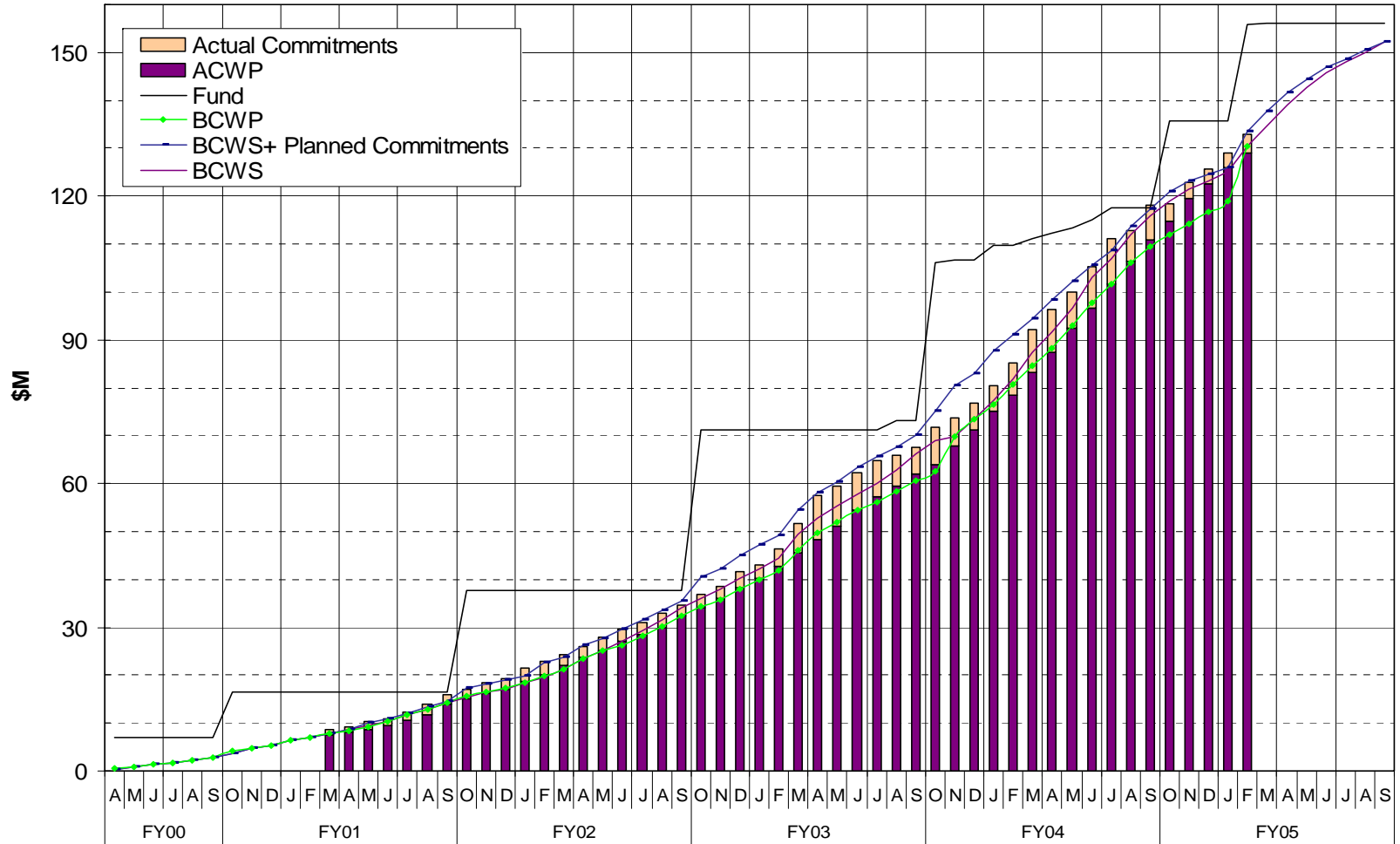
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**Attachment 2
Future Level 3 Milestones
Page 4 of 4**

Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date	Timeline									
					FY04 Q3	FY04 Q4	FY05 Q1	FY05 Q2	FY05 Q3	FY05 Q4	FY06 Q1	FY06 Q2		
1M99020	Start 4 Tower Comprehensive Performance Test	05/12/05	6	05/04/05										
1M99030	Start 8 Tower Comprehensive Performance Test	06/20/05	0	06/20/05										
1M1001740	Online FU S/W Final Release-I&T to IOC	07/14/05	0	07/14/05										
1M99040	Start 16 Tower Comprehensive Performance Test	09/07/05	0	09/07/05										
1M1000130	LAT Ready to Ship to NRL for Env Test	12/20/05	0	12/20/05										
1M19010	Ship LAT to NRL for Env Test	01/03/06	0	01/03/06										
1M19020	LAT EMI/EMC Test	02/01/06	0	02/01/06										
1M19030	LAT Sine Vibe	02/14/06	0	02/14/06										
1M19040	LAT Acoustic Test	02/24/06	0	02/24/06										
1M19050	LAT TVAC	04/14/06	0	04/14/06										
1M19060	LAT Weight & CG	04/17/06	0	04/17/06										
1M19070	Ship LAT to Spectrum Astro	04/21/06	0	04/21/06										
4.1.B ISOC														
1M7941270	Ground System Interface Test start	06/15/05*	0	06/15/05*										
1M1000112	Mission Operations Review	01/17/06*	0	01/17/06*										
Run Date					03/31/05 08:17		GLAST LAT PROJECT Project Milestones (Level 3) Planned Milestones			0328 LTX2 - MS3 (planned) FLX1- MS (L3)		Sheet 4 of 4		
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Attachment 3

Budget vs Actuals vs Performance DOE + NASA Project Expenditures 4.1 LAT



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

Monthly Contractor Financial Management Report								Report for Month Ending: 2/28/2005		
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 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 Budget	Estimated Final Cost		Unfilled Orders Outstanding
	Actual	Planned	Actual	Planned	MAR05	APR05		Project Estimate	Budget Value	
4.1.1 INSTRUMENT MANAGEMENT	272	230	15,320	15,445	358	327	1,640	17,645	17,645	
4.1.2 SYSTEM ENGINEERING	363	246	6,465	6,491	213	180	789	7,647	7,647	
4.1.4 TRACKER	377	981	17,559	17,503	853	787	2,116	21,316	21,316	
4.1.5 CALORIMETER	383	-624	20,185	20,554	507	495	1,407	22,594	22,594	
4.1.6 ANTICOINCIDENCE DETECTOR	196	805	16,080	16,260	274	165	722	17,241	17,241	
4.1.7 ELECTRONICS	623	2,390	23,829	24,016	981	961	3,123	28,894	28,894	
4.1.8 MECHANICAL SYSTEMS	366	1,100	14,193	14,314	198	547	1,059	15,998	15,998	
4.1.9 INTEGRATION & TEST	358	232	6,520	6,630	427	474	2,030	9,451	9,451	
4.1.A PERFORMANCE AND SAFETY ASSURANCE	73	142	2,929	2,992	203	179	535	3,846	3,846	
4.1.B LAT INSTRUMENT OPERATIONS CENTER	1	-7	302	302	5	5	22	334	334	
4.1.C EDUCATION AND PUBLIC OUTREACH	91	18	1,895	2,175	55	98	636	2,684	2,684	
4.1.D SCIENCE ANALYSIS SOFTWARE	40	-71	2,405	2,527	85	77	502	3,069	3,069	
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	3,144	5,443	129,007	130,534	4,159	4,296	14,582	152,044	152,044	

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

Monthly Contractor Financial Management Report								Report for Month Ending: 2/28/2005		
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	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 Budget	Estimated Final Cost		Unfilled Orders Outstanding
	Actual	Planned	Actual	Planned	MAR05	APR05		Project Estimate	Budget Value	
DG *** GSFC	213	687	17,478	17,883	315	202	1,133	19,128	19,128	
DH *** HEPL	236	-170	6,793	6,859	347	257	1,277	8,674	8,674	
DL *** SLAC	2,102	5,810	75,912	76,361	2,773	2,961	9,240	90,886	90,886	
DN *** NRL	498	-724	24,364	24,675	626	740	2,094	27,825	27,825	
DO *** Financial Plan Transfer/Sub Ou	0	5	59	59	0	0	0	59	59	
DS *** SSU	91	37	1,881	2,151	54	97	622	2,654	2,654	
DT *** Texas A&M	0	0	15	15	0	0	0	15	15	
DU *** UCSC	2	-204	2,312	2,314	34	31	146	2,523	2,523	
DW *** UW	2	4	192	215	10	9	69	279	279	
Total	3,144	5,443	129,007	130,534	4,159	4,296	14,582	152,044	152,044	

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 Budget	Project Estimate	Budget Value	
	Actual	Planned	Actual	Planned	MAR05	APR05				
RL LABOR	1,497	2,739	62,348	62,952	1,598	1,418	6,434	71,798	71,798	
<i>FTE (DOE/NASA)</i>	155.9	152.1	5,758.7	5,241.5	112.0	104.0	-83.7	5,891.0	5,891.0	
<i>HOURS (DOE/NASA)</i>	23,701	23,111	949,805	865,023	20,557	17,534	-10,683.4	977,213	977,213	
RT TRAVEL	36	-168	1,548	1,998	79	76	833	2,536	2,536	
RM MATERIAL & SERVICES	1,610	2,977	62,733	63,111	2,478	2,743	7,148	75,103	75,103	
RX MPS & LAB TAX	0	-106	2,379	2,473	4	59	166	2,607	2,607	
Total (not incl FTE/Hours)	3,144	5,443	129,007	130,534	4,159	4,296	14,582	152,044	152,044	

Attachment 6
LAT Performance, through February 2005, by WBS

Cost Performance Report - Work Breakdown Structure																
Contractor: Location:				Contract Type/No:				Project Name/No: GLAST LAT Project		Report Period: 1/31/2005 2/28/2005						
Quantity 1	Negotiated Cost 0		Est. Cost Authorized Unpriced Work 0		Tgt. Profit/ Fee % 0		Tgt. Price 0		Est Price 0		Share Ratio		Contract Ceiling 0		Estimated Contract Ceiling 0	
CAPW[3] Item	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						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)			
4.1.1 INSTRUMENT MANAGEMENT	230	230	272	0	-42	15,445	15,445	15,320	0	125	17,645	17,645	0			
4.1.2 SYSTEM ENGINEERING	246	246	363	0	-117	6,491	6,491	6,465	0	26	7,647	7,647	0			
4.1.4 TRACKER	981	2,005	377	1,025	1,629	17,503	17,482	17,559	-21	-77	21,316	21,316	0			
4.1.5 CALORIMETER	-624	339	383	963	-44	20,554	20,480	20,185	-74	296	22,594	22,594	0			
4.1.6 ANTICOINCIDENCE DETECTOR	805	1,207	196	402	1,011	16,260	16,247	16,080	-13	167	17,241	17,241	0			
4.1.7 ELECTRONICS	2,390	4,532	623	2,142	3,909	24,016	23,923	23,829	-93	94	28,894	28,894	0			
4.1.8 MECHANICAL SYSTEMS	1,100	1,824	366	723	1,458	14,314	14,308	14,193	-6	114	15,998	15,998	0			
4.1.9 INTEGRATION & TEST	232	778	358	546	420	6,630	6,636	6,520	6	116	9,451	9,451	0			
4.1.A PERFORMANCE AND SAFETY AS	142	142	73	0	69	2,992	2,992	2,929	0	62	3,846	3,846	0			
4.1.B LAT INSTRUMENT OPERATIONS C	-7	-7	1	0	-8	302	302	302	0	0	334	334	0			
4.1.C EDUCATION AND PUBLIC OUTRE	18	15	91	-3	-76	2,175	2,175	1,895	0	280	2,684	2,684	0			
4.1.D SCIENCE ANALYSIS SOFTWARE	-71	-71	40	0	-111	2,527	2,527	2,405	0	122	3,069	3,069	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	5,443	11,241	3,144	5,798	8,098	130,534	130,333	129,007	-201	1,326	152,044	152,044	0			
Contingency											3,941	3,941	0			
Total	5,443	11,241	3,144	5,798	8,098	130,534	130,333	129,007	-201	1,326	155,985	155,985	0			

**Attachment 7
LAT Performance, through February 2005, by Organization**

Cost Performance Report - Work Breakdown Structure													
Contractor: Location:					Contract Type/No:			Project Name/No: GLAST LAT Project		Report Period: 1/31/2005 2/28/2005			
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 Performed	Variance		Budgeted Cost		Actual Cost Work Performed	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	687	1,089	213	402	876	17,883	17,871	17,478	-13	393	19,128	19,128	0
DH *** HEPL	-170	-164	236	6	-399	6,859	6,859	6,793	0	66	8,674	8,674	0
DL *** SLAC	5,810	10,038	2,102	4,229	7,936	76,361	76,254	75,912	-107	342	90,886	90,886	0
DN *** NRL	-724	431	498	1,155	-68	24,675	24,601	24,364	-74	236	27,825	27,825	0
DO *** Financial Plan	5	5	0	0	5	59	59	59	0	0	59	59	0
DS *** SSU	37	34	91	-3	-57	2,151	2,151	1,881	0	271	2,654	2,654	0
DT *** Texas A&M	0	0	0	0	0	15	15	15	0	0	15	15	0
DU *** UCSC	-204	-195	2	9	-197	2,314	2,307	2,312	-7	-5	2,523	2,523	0
DW *** UW	4	4	2	0	2	215	215	192	0	23	279	279	0
Gen. and Admin.	0	0	0	0	0	0	0	0	0	0	0	0	0
Undist. Budget											0	0	0
Sub Total	5,443	11,241	3,144	5,798	8,098	130,534	130,333	129,007	-201	1,326	152,044	152,044	0
Contingency											3,941	3,941	0
Total	5,443	11,241	3,144	5,798	8,098	130,534	130,333	129,007	-201	1,326	155,985	155,985	0

Attachment 8 LAT Performance Analysis, February 2005

	WBS	Description	BAC	BCWS	BCWP	ACWP	SV \$	CV \$	%BCWS	%BCWP	%ACWP	SPI	CPI	SPI	CPI	Cpi_Fcst	CpiSpi_Fcst
1	4.1	LAT	152,044	130,534	130,333	129,007	-201	1,326	85.85	85.72	84.85	↑	↑	0.998	1.010	150,497	150,530
2	4.1.1	Instr Mgmt	17,645	15,445	15,445	15,320	0	125	87.53	87.53	86.82	↔	↓	1.000	1.008	17,502	17,502
3	4.1.2	System Engr	7,647	6,491	6,491	6,465	0	26	84.88	84.88	84.54	↔	↓	1.000	1.004	7,617	7,617
4	4.1.4	Tracker	21,316	17,503	17,482	17,559	-21	-77	82.11	82.01	82.38	↑	↑	0.999	0.996	21,410	21,414
5	4.1.5	Calorimeter	22,594	20,554	20,480	20,185	-74	296	90.97	90.64	89.33	↑	↓	0.996	1.015	22,268	22,276
6	4.1.6	ACD	17,241	16,260	16,247	16,080	-13	167	94.31	94.24	93.27	↑	↑	0.999	1.010	17,063	17,064
7	4.1.7	Electronics	28,894	24,016	23,923	23,829	-93	94	83.12	82.80	82.47	↑	↑	0.996	1.004	28,781	28,800
8	4.1.8	Mechanical	15,998	14,314	14,308	14,193	-6	114	89.48	89.44	88.72	↑	↑	1.000	1.008	15,870	15,870
9	4.1.9	I&T	9,451	6,630	6,636	6,520	6	116	70.15	70.21	68.99	↑	↑	1.001	1.018	9,286	9,284
10	4.1.A	PSA	3,846	2,992	2,992	2,929	0	62	77.79	77.79	76.16	↔	↑	1.000	1.021	3,766	3,766
11	4.1.B	ISOC	334	302	302	302	0	0	90.39	90.39	90.37	↔	↓	1.000	1.000	334	334
12	4.1.C	EPO	2,684	2,175	2,175	1,895	0	280	81.05	81.05	70.60	↓	↓	1.000	1.148	2,338	2,338
13	4.1.D	SAS	3,069	2,527	2,527	2,405	0	122	82.33	82.33	78.36	↔	↓	1.000	1.051	2,922	2,922
14	4.1.E	Balloon Flight	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

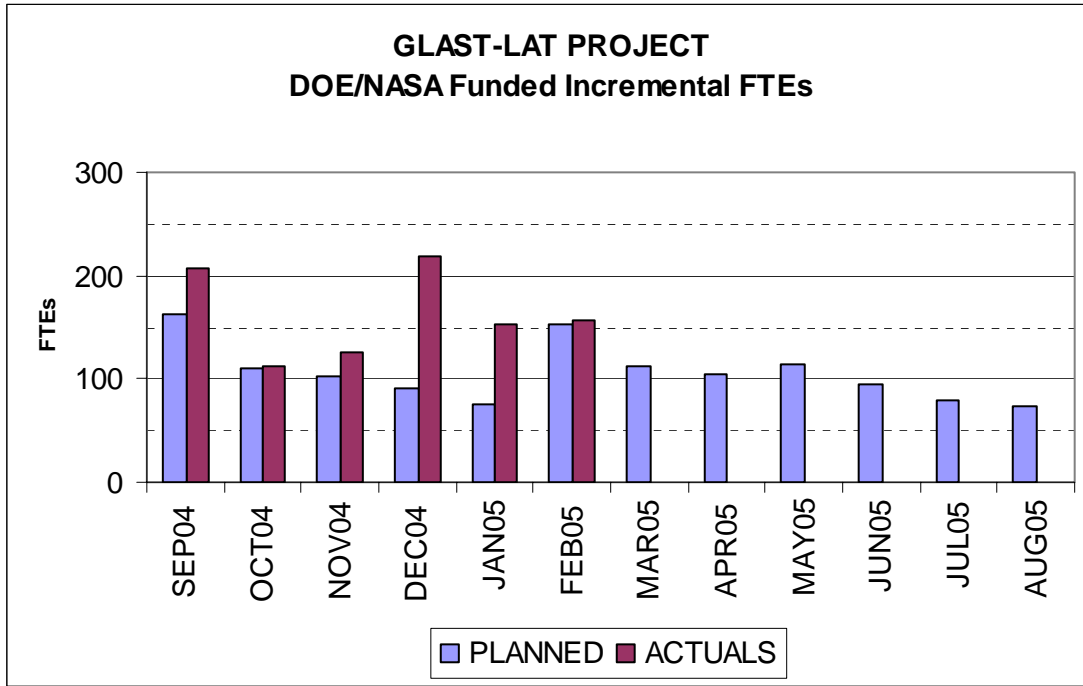
% BCWS: Percent Scheduled = BCWS/BAC
 % BCWP: Percent Complete = BCWP/BAC
 % ACWP: Percent Spent = ACWP/BAC

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

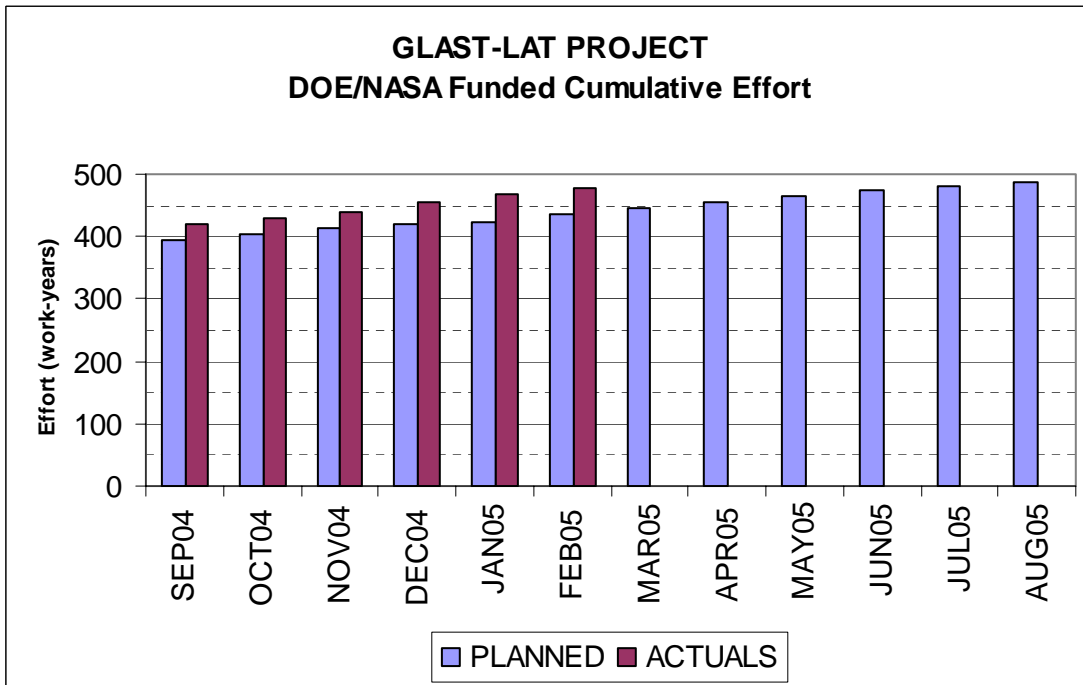
	Worse than .85		Between .95 and 1.10
	Between .85 and .95		Better than 1.10

SPI and CPI Change Thresholds

**Attachment 9
LAT Manpower (DOE/NASA-Funded)**



Note: Neither Goddard nor Stanford-HEPL manpower was reported in the month of August, 2004, and Goddard civil servant manpower was not reported in the months of October and November, 2004. . The September and February, 2005, incremental FTE reports include corrections, so that the cumulative-to-date actual manpower is correct.



Attachment 10
LAT Manpower Data (DOE/NASA funded), by Organization

Program: LAT3		Description: GLAST LAT Project		Approval: Program Manager Functional Manager Cost Account Manager											
Run Date: 3/29/2005		Status Date: 2/28/2005													
		PRIOR	SEP04	OCT04	NOV04	DEC04	JAN05	FEB05	Cum-to- Date	MAR05	APR05	MAY05	JUN05	JUL05	AUG05
OBS															
DG *** GSFC															
FTE	PLANNED	1035.4	55.3	13.3	17.8	13.0	7.7	1.3	1143.8	19.6	11.7	23.4	17.0	9.6	8.7
	ACTUALS	1162.7	69.7	0.0	16.4	100.6	53.1	38.9	1441.4	0.0	0.0	0.0	0.0	0.0	0.0
DH *** HEPL															
FTE	PLANNED	256.4	2.0	3.4	3.4	3.2	3.3	4.4	276.1	5.1	5.1	4.9	5.0	5.9	6.0
	ACTUALS	268.0	5.9	2.4	4.8	1.6	2.4	2.0	287.1	0.0	0.0	0.0	0.0	0.0	0.0
DL *** SLAC															
FTE	PLANNED	1829.5	65.4	58.7	54.8	51.7	50.5	164.6	2275.2	58.9	57.5	60.6	49.7	45.1	39.5
	ACTUALS	1809.5	79.9	68.2	71.0	63.7	72.3	73.5	2238.1	0.0	0.0	0.0	0.0	0.0	0.0
DN *** NRL															
FTE	PLANNED	1093.8	31.9	29.4	21.0	17.6	15.9	0.5	1210.1	23.2	24.7	20.0	16.5	14.1	14.3
	ACTUALS	1088.0	41.1	36.1	29.4	47.5	20.8	30.5	1293.4	0.0	0.0	0.0	0.0	0.0	0.0
DS *** SSU															
FTE	PLANNED	105.8	3.2	2.0	2.0	1.9	1.9	2.2	119.0	1.4	1.9	2.2	2.3	2.2	2.3
	ACTUALS	125.1	4.9	3.2	3.9	4.1	4.0	10.1	155.3	0.0	0.0	0.0	0.0	0.0	0.0
DU *** UCSC															
FTE	PLANNED	222.2	3.7	3.7	3.7	3.7	-4.5	-22.4	210.1	3.4	3.3	3.3	3.4	3.2	2.9
	ACTUALS	313.0	4.7	2.4	0.0	0.2	0.0	0.0	320.3	0.0	0.0	0.0	0.0	0.0	0.0
DW *** UW															
FTE	PLANNED	4.8	0.2	0.2	0.2	0.2	0.2	1.5	7.3	0.2	0.2	0.2	0.2	0.2	0.2
	ACTUALS	18.2	1.1	1.0	0.1	1.2	1.0	1.0	23.6	0.0	0.0	0.0	0.0	0.0	0.0
Grand Totals:															
	PLANNED	4547.9	161.6	110.6	102.9	91.3	75.0	152.1	5241.4	111.7	104.4	114.7	94.0	80.3	73.9
	ACTUALS	4784.4	207.2	113.2	125.6	218.8	153.7	155.9	5758.8	0.0	0.0	0.0	0.0	0.0	0.0