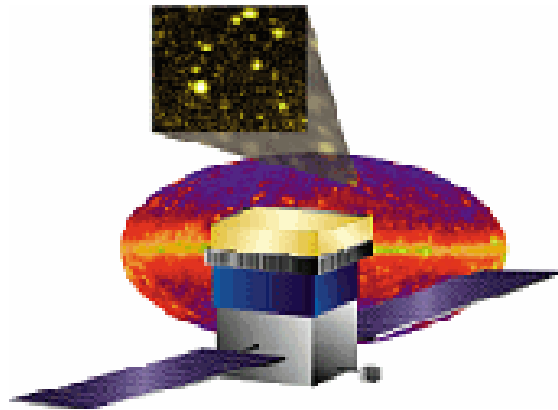


Monthly Progress Report

(Month Ending November 2003)

GLAST Large Area Telescope (LAT)



LAT-MR-02768-01

January 9, 2004

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 November, 2003.

2.0 Recent Progress and Status

The LAT project replan was approved by the LAT Configuration Control Board, and implemented in the project baseline this month. 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 readout electronics preproduction run at Teledyne began, and several boards have made it past the electrical test stage, with more at various earlier stages of production. A quality assurance survey was held at Teledyne. A review was held regarding version 6 of the readout controller chip bugs and the fixes and test plans for the next version. Version 7 of the chip is in production at MOSIS with an estimated completion date of the end of January. The engineering model sidewalls were completed at COI and Plyform, and the tower assembled using Plyform walls. Pull tests were completed on the sidewall coupons. Short K13D sidewalls were successfully tested in the static test fixture. The vibration test began but was halted during the full-amplitude random vibration in the x direction due to bolts backing out from the joint between flexures and the vibration fixture. Preparations continued for the startup of mid-tray production. A small modification of the closeout inserts and insert-bonding tool is needed to keep the inserts flush with the carbon-carbon surface. The order for the titanium pieces (bottom tray and flexures) was sent out for bid. Continued work on the bottom-tray closeouts is pending completion of the release of the drawings. The Tracker-Grid interface design document was released.

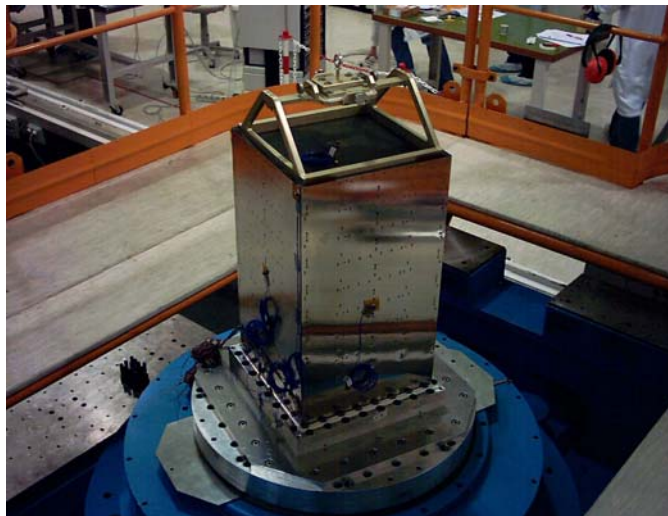


Figure 1: Tracker EM on vibration test fixture.

4.1.5 Calorimeter

The flight front-end ASICs were installed on two of the four front-end circuit cards on the Calorimeter engineering module (EM). The EM was shipped to GSI in Darmstadt, Germany for heavy ion beam tests. GSI beam test started on Nov 14 and ran 10 days. High-quality data was consistently obtained, and no significant problems were discovered in the EM. The second structural model carbon composite structure was strength tested in France; no problems were found. ASICs were received from packaging at ASAT. The first lot of flight dual PIN photodiodes was received. The pre-qualification crystal detector elements (CDEs) underwent 50 thermal cycles; no performance issues were detected. CDE manufacturing flow was tested at the required production rate (60 CDEs/week) using aluminum dummy detectors. No production problems were detected.



Figure 2: Calorimeter EM on translation and rotation test fixture at GSI in Darmstadt, Germany.

4.1.6 Anticoincidence Detector

Phototube production assembly has started, using non-flight tubes at first to verify processes and procedures. The interference between waveshifting fibers and tile flexures has been resolved, and production of flight tile detector assemblies has resumed at Fermilab. Fabrication of the composite shell panels and the Base Electronics Assembly channels continues. A new design of the front-end electronics card has been populated with flight-type ASICs and is undergoing a comprehensive test. Final setup of test stations for the screening and qualification of flight ASICs is being performed. Assembly of clear fibers cables is ongoing.

4.1.7 Electronics

Design of the power distribution test box has commenced. The GASU trigger code has been completed and is running on the GASU box; additional testing is necessary. Event builder code is being written, and the ACD electronics module code is nearly complete. The GASU power supply board has been fabricated. Layout of the spacecraft interface board was completed and it is in fabrication. The PMC card for the LAT communications board is under test by the flight software group. A flight software quick-look review was held. The global trigger driver was exercised. The command interface to integration &

test is being incorporated and modified. The screening and qualification test plan for data acquisition ASICs has been drafted. ASICs for data acquisition were returned from plastic packaging.

4.1.8 Mechanical Systems

Heat treatment and straightening of the first grid billet has been completed. Samples were tested and exceed requirements. The second grid billet underwent ultrasonic inspection (no flaws found), and was shipped to the machining vendor. Strength testing was completed on the grid spacecraft insert and the grid/Calorimeter insert engineering models. A review of the cross-LAT plate design was held and the design approach approved.

4.1.9 Integration & Test (I&T)

Stereo laser lithography chosen to help construct the I&T training mockup. A mechanical floor engineer was hired, to oversee mechanical assembly and integration of the instrument. Integration photography requirements were specified. The cable plant mockup is being updated: old cables have been removed and documented, new cables in process. Requirements for the I&T EM tower calibration have been completed.

3.0 Schedule Status

The status of significant milestones identified in the Project Management Plan (LAT-MD-00054-08) for the LAT project 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 Level 3 milestones planned to occur during the six months preceding and following the current month. Unfavorable variance projections greater than one week to the future milestones are discussed below.

Tracker Engineering Model (1M1001430)

Baseline/Target Finish: 01/02/04 Projected Finish: 03/01/04 Variance: -39 days

The delivery of the full Tracker EM has been delayed by the problems discovered with the interface during the EM vibration test (mentioned 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. The hours worked/FTE lines include only DOE/NASA-funded labor.

As noted previously in this report, the current month planned cost reflects adjustments so that the cumulative-to-date cost plan corresponds to the approved changes.

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.

Notes: Favorable cost variance reported by HEPL in Attachment 7 due to non-reporting of actual costs for October and November (Stanford University accounting system issue). The planned BCWS in the current month reflects adjustments made so that the cumulative-to-date planned BCWS corresponds to the approved changes

4.1.5 Calorimeter

The favorable cost variance is due to invoicing delays for PIN diodes, flight EEE parts, and pre-electronics module parts. PIN diode assembly and crystal detector element tooling costs are significantly less than planned, and a portion is being considered for return to contingency. Costs for travel and level-of-effort labor (e.g. management, system engineering) have also been less than planned, and may also be considered for return to contingency.

4.1.7 Electronics

The unfavorable cost variance is due to overruns in the front-end simulator and tower electronics module, which were more complex than originally planned, and electronics ground support equipment (more modules being made than originally planned, pending change action in this area). In addition, schedule status was not correctly recorded for some completed activities (will be corrected in the next reporting period).

4.1.A Performance & Safety Assurance

The favorable cost variance is due to specific mission-assurance-related activities being covered by other LAT subsystems, less travel taken than planned, and the lack of two months of actual cost reports from HEPL (accounting system issues, as stated above).

4.1.C Education & Public Outreach

The favorable cost variance is due to delayed invoice payments, and is expected to be resolved once funding is received.

6.0 Change Control and Contingency Analysis

Eleven change requests were submitted to and approved by the LAT Configuration Control Board during November. A summary, including the impacts on the LAT fabrication phase cost, is below.

Change Request No.	Description	Submitted By	CCB Meeting	Current Status
LAT-XR-02631-01	Mech Sys Mass Allocation Increase	M. Campell	11/18/03	Approved 41.6 kg
LAT-XR-02632-01	Electronics Mass Allocation Increase	G. Haller	11/18/03	Approved 20.0 kg
LAT-XR-02633-01	Integrated System Mass Allocation	M. Nordby	11/18/03	Approved
LAT-XR-02626-01	LAT Rebaseline	L. Klaisner	11/25/03	Approved \$9,056K
LAT-XR-02628-01	Flight Software Manpower	G. Haller	11/25/03	Approved \$629K*
LAT-XR-02629-01	PSA Positive Cost Variance Reduction	T. Boysen	11/25/03	Approved -\$81K
LAT-XR-02630-01	SAS Positive Cost Variance Reduction	T. Boysen	11/25/03	Approved -\$150K
LAT-XR-02637-01	Additional ACD Changes	D. Thompson	11/25/03	Approved \$345K
LAT-XR-02646-01	Additional Tracker Changes	R. Johnson	11/25/03	Approved \$707K
LAT-XR-02647-01	Additional Calorimeter Changes	N. Johnson	11/25/03	Approved \$448K
LAT-XR-02650-01	Additional Mech Sys Changes	M. Campell	11/25/03	Approved \$811K

The fabrication phase cost baseline is now \$119.5M. Funding applicable to that baseline is \$133.8M; the resulting contingency is \$14.3M.

7.0 Staffing

Attachments 9-10 demonstrate the staffing plan, and reports of actual manpower received. Note from Attachment 10 that not all participating organizations are providing manpower data.

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

* Budget increase of \$629K is directly offset by corresponding NASA funding increase.

Attachment 2
Level 3 Milestones (One-Year View)
Page 1 of 2

Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date	AV	ND	FY03			FY04				FY05	
							Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	
Instrument Project Office (Level 3)															
1M1001500	Online EM2 release #1 to FSW	06/16/03A	0	06/16/03A	9	7			▼						
1M1001550	Online EM2 release #2 to ELX	06/26/03A	0	06/26/03A	9	7			▼						
1M59000000	EM from CAL to I&T	08/07/03A	0	08/07/03A	5	9			▼						
1M1000910	(36) MCM's for EM2 from Tracker to Elec	09/15/03A	0	09/15/03A	4	7			▼						
1M1001520	EM CAL Returned to NRL (arrives on dock)	10/16/03	-1	10/17/03A	9	5			▼						
1M74000010	Updated EGSE System 1: Elec to TKR	12/08/03	0	12/08/03	7	4				▼					
1M76000010	3rd G2 Test Stand: Elec to ACD	12/08/03	0	12/08/03	7	6				▼					
1M7941130	EGSE TEM/TEM PS/CTS w/ FE Elec #1-Elec to I&T	12/08/03	0	12/08/03	7	9				▼					
1M76000020	G3 Test Stand (test 2 FREE Cards): Elec to ACD	12/15/03	0	12/15/03	7	6				▼					
1M1001380	Delivery of EM (1X4) Grid to I&T/MSGE	12/19/03	0	12/19/03	8	9				▼					
1M74000020	Updated EGSE System 2: Elec to TKR	12/22/03	0	12/22/03	7	4				▼					
1M7941150	EGSE TEM/TEM PS/CTS w/ FE Elec #2-Elec to I&T	12/22/03	0	12/22/03	7	9				▼					
1M1001430	Delv of TKR EM to SLAC I&T/MSGE	01/02/04	-39	03/01/04	4	9					▼				
1M74000030	Updated EGSE System 3: Elec to TKR	01/07/04	0	01/07/04	7	4					▼				
1M7941160	EGSE TEM/TEM PS/CTS w/ FE Elec #3-Elec to I&T	01/07/04	0	01/07/04	7	9					▼				
1M1000920	EM2 TEM: Elec to Tracker	01/12/04	0	01/12/04	7	4					▼				
1M1001900	Test Stations (5) for AFEE: Elec to CAL	01/14/04	0	01/14/04	7	5					▼				
1M74000040	EGSE System 4: Elec to TKR	01/14/04	0	01/14/04	7	4					▼				
1M7941170	EGSE TEM/TEM PS/CTS/GASU FE Elec-Elec to	01/14/04	0	01/14/04	7	9					▼				
1M1001870	5 EM2 TEM/PS for AFEE brd ass & tst: Elec to CAL	01/15/04	0	01/15/04	7	5					▼				
1M1001220	EM2 TEM/PS/CTS for FMA from Elec to CAL	01/22/04	0	01/22/04	7	5					▼				
1M74000050	EGSE System 5: Elec to TKR	01/22/04	0	01/22/04	7	4					▼				
1M7941180	EGSE Development Hrdw/FSW 1st Delivr-Elec to	01/22/04	0	01/22/04	7	9					▼				
1M1001260	EM2 TEM/PS/CTS for FMB from Elec to CAL	01/29/04	0	01/29/04	7	5					▼				
1M74000060	EGSE System 6: Elec to TKR	01/29/04	0	01/29/04	7	4					▼				

Run Date 01/07/04 22:23
 © Primavera Systems, Inc.

GLAST LAT PROJECT
Project Milestones (Level 3)
1 Year View (+/- 6mo)

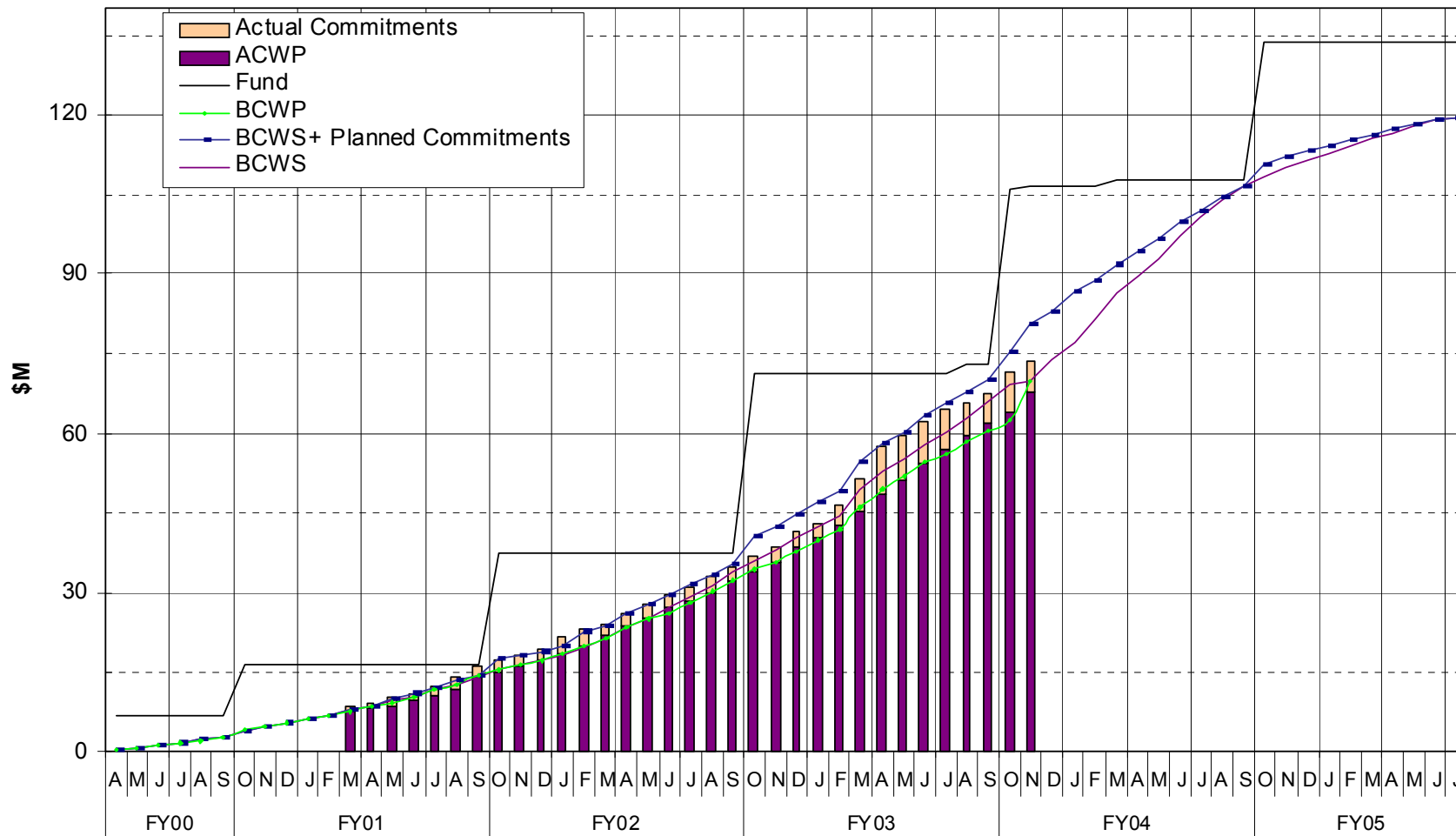
1218
 LTX1 - MS (L3)
 FLX1 - MS (L3)
 Sheet 1 of 2

Attachment 2
Level 3 Milestones (One-Year View)
Page 2 of 2

Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date	AV	ND	FY03				FY04				FY05	
							Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1		
Instrument Project Office (Level 3)																
1M7941190	EGSE TEM/TEM PS/CTS #1 for Bldg 33-Elec to I&T	01/29/04	0	01/29/04	7	9										
1M1001600	EM2 TEM/PS/CTS for FM1 from Elec to CAL	02/05/04	0	02/05/04	7	5										
1M7941420	EGSE TEM/TEM PS/CTS #2 for Bldg 33-Elec to I&T	02/05/04	0	02/05/04	7	9										
1M7941430	EGSE TEM/TEM PS/CTS w/ GASU for B33-Elec to	02/05/04	0	02/05/04	7	9										
1M1001650	EM2 TEM/PS/CTS for FM2 from Elec to CAL	02/12/04	0	02/12/04	7	5										
1M74000070	EGSE System 7: Elec to TKR	02/12/04	0	02/12/04	7	4										
1M74000080	EGSE System 8: Elec to TKR	02/12/04	0	02/12/04	7	4										
1M74000090	EGSE System 9: Elec to TKR	02/20/04	0	02/20/04	7	4										
1M74000100	EGSE System 10: Elec to TKR	02/20/04	0	02/20/04	7	4										
1M76000030	G3 Test Stand (Fit-like I/F): Elec to ACD	02/20/04	0	02/20/04	7	6										
1M1001660	EM2 TEM/PS/CTS for FM3 from Elec to CAL	02/27/04	0	02/27/04	7	5										
1M1001680	EM2 TEM/PS/CTS for FM4 from Elec to CAL	02/27/04	0	02/27/04	7	5										
1M1001720	EM2 TEM/PS/CTS for FM5 from Elec to CAL	02/27/04	0	02/27/04	7	5										
1M1001760	EM2 TEM/PS/CTS for FM6 from Elec to CAL	03/05/04	0	03/05/04	7	5										
1M1001770	EM2 TEM/PS/CTS for FM7 from Elec to CAL	03/05/04	0	03/05/04	7	5										
1M1001780	EM2 TEM/PS/CTS for FM8 from Elec to CAL	03/05/04	0	03/05/04	7	5										
1M005480	IOC CDR	03/12/04	0	03/12/04	B	B										
1M79003010	Flight Cables Assy A: Elec to I&T	05/10/04	0	05/10/04	7	9										
1M79003020	Flight Cables Assy B: Elec to I&T	05/10/04	0	05/10/04	7	9										
1M79002010	Flight TEM PS Assy A: Elec to I&T	05/12/04	0	05/12/04	7	9										
1M79002020	Flight TEM PS Assy B: Elec to I&T	05/19/04	0	05/19/04	7	9										
Run Date							01/07/04 22:23	GLAST LAT PROJECT Project Milestones (Level 3) 1 Year View (+/- 6mo)							1218 LTX1 - MS (L3) FLX1- MS (L3)	Sheet 2 of 2
© Primavera Systems, Inc.																

Attachment 3

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



**Attachment 4
LAT Costs, through November 2003, by WBS**

Monthly Contractor Financial Management Report								Report for Month Ending: 11/30/2003	
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	Estimated Final Cost	Unfilled Orders Outstanding
	Actual	Planned	Actual	Planned	DEC03	JAN04	Budget	Project Estimate	
4.1.1 INSTRUMENT MANAGEMENT	344	398	9,868	9,962	269	315	5,050	15,502	15,502
4.1.2 SYSTEM ENGINEERING	113	-26	3,855	4,239	139	164	2,430	6,588	6,588
4.1.4 TRACKER	279	596	10,069	10,157	713	221	2,592	13,595	13,595
4.1.5 CALORIMETER	654	1,201	11,168	13,037	816	685	9,980	22,648	22,648
4.1.6 ANTICOINCIDENCE DETECTOR	249	504	9,049	9,919	820	513	3,488	13,870	13,870
4.1.7 ELECTRONICS	1,238	-212	9,523	7,945	473	615	8,122	18,733	18,733
4.1.8 MECHANICAL SYSTEMS	685	-901	6,584	6,279	566	502	5,732	13,384	13,384
4.1.9 INTEGRATION & TEST	115	-259	2,552	2,680	105	123	3,604	6,384	6,384
4.1.A PERFORMANCE AND SAFETY ASSURANCE	34	-42	854	1,068	37	44	551	1,486	1,486
4.1.B LAT INSTRUMENT OPERATIONS CENTER	0	-502	263	263	3	3	56	326	326
4.1.C EDUCATION AND PUBLIC OUTREACH	44	62	1,067	1,249	55	65	1,262	2,448	2,448
4.1.D SCIENCE ANALYSIS SOFTWARE	72	-111	1,545	1,681	67	73	1,535	3,220	3,220
4.1.E SUBORBITAL FLIGHT TEST	0	0	1,325	1,321	0	0	-4	1,321	1,321
Gen. and Admin.	0	0	0	0	0	0	0	0	0
Total	3,828	707	67,721	69,801	4,064	3,323	44,396	119,504	119,504

Note: Current month planned cost reflects adjustment so that the cumulative-to-date cost plan corresponds to the approved changes.

**Attachment 5
LAT Costs, through November 2003, by Organization and Cost Code**

Monthly Contractor Financial Management Report								Report for Month Ending: 11/30/2003		
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	DEC03	JAN04		Project Estimate	Budget Value	
DG *** GSFC	255	322	10,026	11,216	867	576	4,656	16,126	16,126	
DH *** HEPL	64	-537	3,842	4,458	138	156	2,695	6,830	6,830	
DL *** SLAC	2,690	255	37,102	34,634	1,997	1,634	22,323	63,056	63,056	
DN *** NRL	734	538	13,653	16,156	970	848	12,723	28,193	28,193	
DO *** Financial Plan Transfer/Sub Ou	0	6	38	38	0	0	0	38	38	
DS *** SSU	44	59	1,062	1,238	53	62	1,199	2,376	2,376	
DT *** Texas A&M	0	0	15	16	0	0	0	16	16	
DU *** UCSC	36	56	1,899	1,952	32	39	641	2,610	2,610	
DW *** UW	6	7	85	93	7	8	160	260	260	
Total	3,828	707	67,721	69,801	4,064	3,323	44,396	119,504	119,504	

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	DEC03	JAN04				
RL LABOR	1,281	815	36,419	37,283	1,182	1,361	22,434	61,396	61,396	
<i>FTE (DOE/NASA)</i>	<i>120.1</i>	<i>-9.9</i>	<i>3,223.3</i>	<i>3,132.9</i>	<i>117.0</i>	<i>116.0</i>	<i>1,705.4</i>	<i>5,161.7</i>	<i>5,161.7</i>	
<i>HOURS (DOE/NASA)</i>	<i>17,291</i>	<i>-1,421</i>	<i>539,818</i>	<i>520,261</i>	<i>15,961</i>	<i>18,597</i>	<i>280,303.2</i>	<i>854,680</i>	<i>854,680</i>	
RT TRAVEL	16	-207	980	1,520	55	55	1,616	2,707	2,707	
RM MATERIAL & SERVICES	2,514	-9	28,331	28,512	2,743	1,780	18,868	51,722	51,722	
RX MPS & LAB TAX	17	109	1,991	2,485	84	128	1,477	3,680	3,680	
Total (not incl FTE/Hours)	3,828	707	67,721	69,801	4,064	3,323	44,396	119,504	119,504	

Attachment 6
LAT Performance, through November 2003, by WBS

Cost Performance Report - Work Breakdown Structure													
Contractor: Location:					Contract Type/No:			Project Name/No: GLAST LAT Project		Report Period: 11/1/2003 11/30/2003			
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 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)
4.1.1 INSTRUMENT MANAGEMENT	398	398	344	0	54	9,962	9,962	9,868	0	94	15,502	15,502	0
4.1.2 SYSTEM ENGINEERING	-26	-26	113	0	-139	4,239	4,239	3,855	0	384	6,588	6,588	0
4.1.4 TRACKER	596	1,377	279	782	1,098	10,157	10,133	10,069	-24	65	13,595	13,595	0
4.1.5 CALORIMETER	1,201	2,867	654	1,666	2,213	13,037	13,019	11,168	-18	1,851	22,648	22,648	0
4.1.6 ANTICOINCIDENCE DETECTOR	504	2,091	249	1,587	1,842	9,919	9,904	9,049	-15	855	13,870	13,870	0
4.1.7 ELECTRONICS	-212	579	1,238	791	-659	7,945	7,917	9,523	-28	-1,606	18,733	18,733	0
4.1.8 MECHANICAL SYSTEMS	-901	45	685	946	-640	6,279	6,242	6,584	-37	-342	13,384	13,384	0
4.1.9 INTEGRATION & TEST	-259	63	115	322	-52	2,680	2,650	2,552	-29	98	6,384	6,384	0
4.1.A PERFORMANCE AND SAFETY AS	-42	-42	34	0	-76	1,068	1,068	854	0	214	1,486	1,486	0
4.1.B LAT INSTRUMENT OPERATIONS	-502	-366	0	135	-366	263	263	263	0	0	326	326	0
4.1.C EDUCATION AND PUBLIC OUTRE	62	194	44	132	150	1,249	1,325	1,067	76	258	2,448	2,448	0
4.1.D SCIENCE ANALYSIS SOFTWARE	-111	-103	72	8	-176	1,681	1,681	1,545	0	137	3,220	3,220	0
4.1.E SUBORBITAL FLIGHT TEST	0	0	0	0	0	1,321	1,321	1,325	0	-4	1,321	1,321	0
Gen. and Admin.	0	0	0	0	0	0	0	0	0	0	0	0	0
Undist. Budget											0	0	0
Sub Total	707	7,076	3,828	6,369	3,249	69,801	69,724	67,721	-76	2,003	119,504	119,504	0
Contingency											14,345	14,345	0
Total	707	7,076	3,828	6,369	3,249	69,801	69,724	67,721	-76	2,003	133,849	133,849	0

**Attachment 7
LAT Performance, through November 2003, by Organization**

Cost Performance Report - Work Breakdown Structure													
Contractor: Location:						Contract Type/No:			Project Name/No: GLAST LAT Project		Report Period: 11/1/2003 11/30/2003		
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	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	322	1,905	255	1,583	1,651	11,216	11,197	10,026	-19	1,170	16,126	16,126	0
DH *** HEPL	-537	-332	64	205	-396	4,458	4,432	3,842	-26	591	6,830	6,830	0
DL *** SLAC	255	2,918	2,690	2,663	228	34,634	34,530	37,102	-104	-2,572	63,056	63,056	0
DN *** NRL	538	2,305	734	1,766	1,571	16,156	16,153	13,653	-3	2,500	28,193	28,193	0
DO *** Financial Plan	6	6	0	0	6	38	38	38	0	0	38	38	0
DS *** SSU	59	195	44	136	152	1,238	1,314	1,062	76	252	2,376	2,376	0
DT *** Texas A&M	0	0	0	0	0	16	16	15	0	0	16	16	0
DU *** UCSC	56	72	36	16	36	1,952	1,953	1,899	1	54	2,610	2,610	0
DW *** UW	7	7	6	0	1	93	93	85	0	8	260	260	0
Gen. and Admin. Undist. Budget	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub Total	707	7,076	3,828	6,369	3,249	69,801	69,724	67,721	-76	2,003	119,504	119,504	0
Management Resrv.											14,345	14,345	0
Total	707	7,076	3,828	6,369	3,249	69,801	69,724	67,721	-76	2,003	133,849	133,849	0

Attachment 8 LAT Performance Analysis, November 2003

	WBS	BAC	BCWS	BCWP	ACWP	SV \$	CV \$	% BCWS	% BCWP	% ACWP	SPI Trend	CPI Trend	SPI	CPI	Cpi_Fcst	CpiSpi_Fcst
1	4.1	119,504	69,801	69,724	67,721	-76	2,003	58.41	58.34	56.67	↑	↑	0.999	1.030	116,071	116,124
2	4.1.1	15,502	9,962	9,962	9,868	0	94	64.27	64.27	63.66	↔	↑	1.000	1.010	15,355	15,355
3	4.1.2	6,588	4,239	4,239	3,855	0	384	64.35	64.35	58.52	↔	↓	1.000	1.100	5,991	5,991
4	4.1.4	13,595	10,157	10,133	10,069	-24	65	74.71	74.54	74.06	↑	↑	0.998	1.006	13,508	13,516
5	4.1.5	22,648	13,037	13,019	11,168	-18	1,851	57.56	57.48	49.31	↑	↑	0.999	1.166	19,428	19,440
6	4.1.6	13,870	9,919	9,904	9,049	-15	855	71.51	71.40	65.24	↑	↑	0.998	1.094	12,673	12,679
7	4.1.7	18,733	7,945	7,917	9,523	-28	-1,606	42.41	42.26	50.83	↑	↓	0.996	0.831	22,533	22,579
8	4.1.8	13,384	6,279	6,242	6,584	-37	-342	46.92	46.64	49.20	↑	↓	0.994	0.948	14,117	14,162
9	4.1.9	6,384	2,680	2,650	2,552	-30	98	41.98	41.51	39.98	↑	↓	0.989	1.038	6,148	6,189
10	4.1.A	1,486	1,068	1,068	854	0	214	71.88	71.88	57.49	↔	↓	1.000	1.250	1,188	1,188
11	4.1.B	326	263	263	263	0	0	80.80	80.80	80.90	↑	↓	1.000	0.999	326	326
12	4.1.C	2,448	1,249	1,325	1,067	76	258	51.01	54.10	43.57	↑	↑	1.061	1.242	1,972	1,920
13	4.1.D	3,220	1,681	1,681	1,545	0	137	52.21	52.21	47.97	↑	↓	1.000	1.088	2,958	2,958
14	4.1.E	1,321	1,321	1,321	1,325	0	-4	100.00	100.00	100.29	↔	↔	1.000	0.997	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

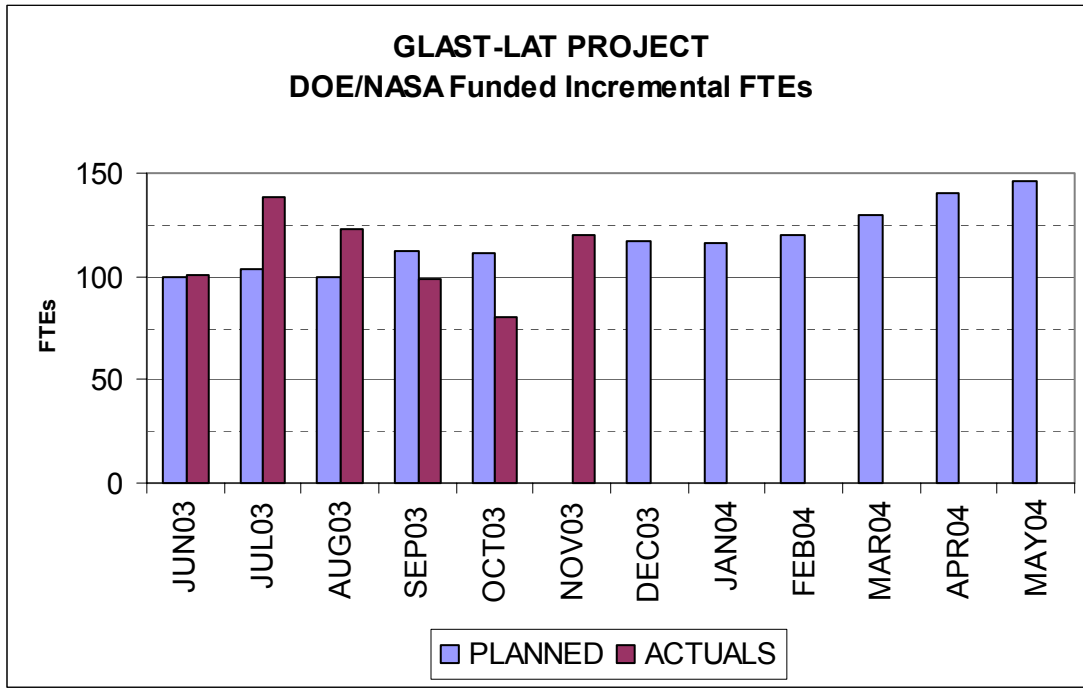
% ACWP: Percent Spent = ACWP/BAC

Cpi_Fcst: CPI (to date) EAC Forecast = BAC / CPI

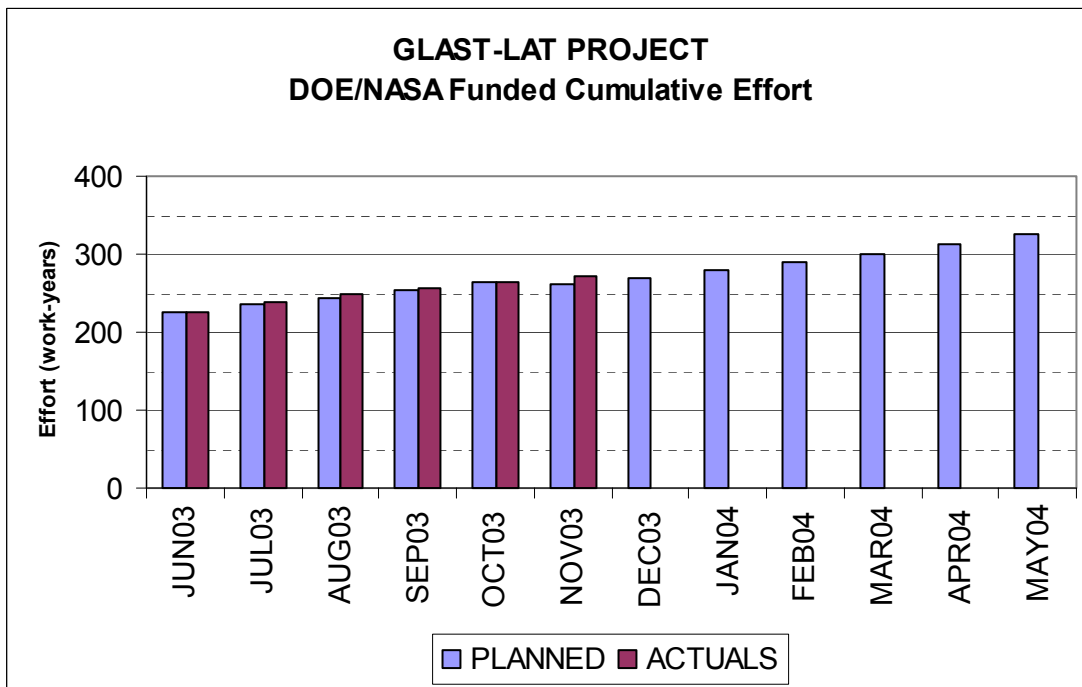
CpiSpi_Fcst: Combination CPI and SPI EAC Forecast = ACWP + (BAC - BCWP) / (CPI * SPI)

■	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: Current month planned manpower reflects adjustment so that the cumulative-to-date plan corresponds to the approved changes.



Attachment 10
LAT Manpower Data, through November 2003, by Organization

Program: LAT3		Description: GLAST LAT Project		Approval: Program Manager Functional Manager Cost Account Manager												
Run Date: 1/8/2004		Status Date: 11/30/2003														
			PRIOR	JUN03	JUL03	AUG03	SEP03	OCT03	NOV03	Cum-to- Date	DEC03	JAN04	FEB04	MAR04	APR04	MAY04
OBS																
DG *** GSFC																
FTE	PLANNED	602.0	22.4	17.6	18.6	22.0	22.2	-8.1	696.5	21.2	20.2	28.8	33.8	28.2	28.9	
	ACTUALS	567.6	11.8	52.6	39.3	23.6	0.0	0.0	694.9	0.0	0.0	0.0	0.0	0.0	0.0	
DH *** HEPL																
FTE	PLANNED	267.3	6.4	7.2	6.6	8.8	7.2	-56.1	247.4	5.3	4.9	3.4	3.8	4.3	8.3	
	ACTUALS	210.4	3.3	5.1	4.5	0.0	0.0	6.1	229.5	0.0	0.0	0.0	0.0	0.0	0.0	
DL *** SLAC																
FTE	PLANNED	1279.9	55.9	60.9	62.4	64.7	62.7	23.1	1609.6	64.2	68.1	64.9	67.9	78.7	77.8	
	ACTUALS	1199.2	55.8	50.3	52.2	55.0	64.3	66.4	1543.2	0.0	0.0	0.0	0.0	0.0	0.0	
DN *** NRL																
FTE	PLANNED	582.9	26.7	28.7	21.9	25.8	32.5	37.9	756.3	36.5	32.2	30.5	37.4	47.6	51.3	
	ACTUALS	594.3	30.3	27.3	25.7	30.1	20.7	35.4	763.8	0.0	0.0	0.0	0.0	0.0	0.0	
DS *** SSU																
FTE	PLANNED	60.1	2.9	2.9	2.9	2.9	2.3	2.7	76.5	2.4	2.4	2.4	2.4	2.4	2.4	
	ACTUALS	72.0	1.3	2.5	4.4	3.7	2.4	4.0	90.2	0.0	0.0	0.0	0.0	0.0	0.0	
DU *** UCSC																
FTE	PLANNED	189.5	4.7	4.5	4.5	4.5	4.5	10.0	222.1	4.6	4.9	6.6	4.5	4.2	4.2	
	ACTUALS	236.2	6.9	7.1	6.4	-5.2	4.3	19.4	275.0	0.0	0.0	0.0	0.0	0.0	0.0	
DW *** UW																
FTE	PLANNED	35.3	0.4	0.4	0.4	0.4	0.4	0.4	37.7	0.4	0.4	0.4	0.4	0.4	0.4	
	ACTUALS	4.3	1.7	1.1	0.0	2.0	0.0	0.6	9.6	0.0	0.0	0.0	0.0	0.0	0.0	
FF *** France																
FTE	PLANNED	912.0	31.0	31.0	31.0	31.0	31.4	-15.5	1051.8	10.9	14.8	15.2	15.2	15.2	15.2	
	ACTUALS								0.0							
FI *** Italy																
FTE	PLANNED	367.2	13.0	11.1	12.0	14.1	14.8	-69.7	362.5	9.1	9.1	10.9	15.4	14.5	13.5	
	ACTUALS	256.4	10.9	10.9	10.9	10.9	10.9	10.9	321.5	0.0	0.0	0.0	0.0	0.0	0.0	
FJ *** Japan																
FTE	PLANNED	89.2	1.1	1.0	1.0	1.0	1.0	0.9	95.2	1.2	1.0	1.0	0.9	0.5	0.5	
	ACTUALS	63.2	1.8	1.8	1.8	1.8	1.8	1.8	73.7	0.0	0.0	0.0	0.0	0.0	0.0	
FK *** Sweden																
FTE	PLANNED	79.1	5.1	5.1	5.1	5.1	5.1	5.1	109.7	3.8	3.5	3.6	3.6	3.6	3.6	
	ACTUALS								0.0							
Grand Totals:																
	PLANNED	4464.5	169.5	170.2	166.3	180.1	184.2	-69.4	5265.4	159.7	161.4	167.6	185.1	199.6	206.0	
	ACTUALS	3203.5	123.6	158.6	145.1	121.9	104.2	144.5	4001.3	0.0	0.0	0.0	0.0	0.0	0.0	
4.1 GLAST LAT																
Contributed	PLANNED	1848.1	70.2	66.2	66.8	67.7	73.0	-59.5	2132.4	42.4	45.1	47.7	55.8	59.6	59.5	
	ACTUALS	640.7	22.8	20.6	22.5	22.8	24.3	24.4	777.9	0.0	0.0	0.0	0.0	0.0	0.0	
Funded	PLANNED	2616.4	99.4	104.0	99.4	112.4	111.2	-9.9	3132.9	117.4	116.2	119.9	129.4	139.9	146.6	
	ACTUALS	2562.8	100.8	138.0	122.7	99.1	80.0	120.1	3223.4	0.0	0.0	0.0	0.0	0.0	0.0	
Grand Totals:																
	PLANNED	4464.5	169.5	170.2	166.3	180.1	184.1	-69.4	5265.3	159.7	161.4	167.6	185.1	199.6	206.0	
	ACTUALS	3203.5	123.6	158.6	145.1	121.9	104.2	144.4	4001.3	0.0	0.0	0.0	0.0	0.0	0.0	