

Monthly Progress Report

(Month Ending June 2002)

GLAST Large Area Telescope (LAT)

LAT-MR-00889-01

August 16, 2002

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 June, 2002.

2.0 Recent Progress and Status

Tracker: The prototype tower underwent vibration testing at Ames, where a weakness was discovered in the bottom tray. An Anomaly Review Team was appointed by the Instrument Project Manager. Lots 5 & 6 of silicon strip detectors were ordered and received in Italy. The probe stations for both Tracker Application Specific Integrated Circuits (ASICs) have been set up and are functional at UC Santa Cruz. The first engineering model tray was assembled in Italy. Engineering model silicon strip detector ladder assembly began in Italy.

Calorimeter: The first crystals of flight dimensions from our Swedish colleagues were delivered to NRL. They also delivered and installed the optical test bench for testing of CsI crystals in France. Irradiation testing on the photodiode was completed. Our French colleagues have reported cracking and delamination problems of the photodiodes after temperature cycling. Temperature cycling of photodiodes at NRL show similar problems, with no degradation in optical or electrical performance detected. At least one electrical failure occurred in France testing. The problem is being investigated with the vendor and parts experts. The photodiode-to-CsI bonding process was finalized. Over 90 samples have been bonded and successfully tested. Review of the mechanical structure fabrication, environmental testing, and structural and thermal analyses was completed for the second vibration model. Fabrication of the engineering model structure was initiated (machining of the aluminum baseplate and cutting of the carbon prepreg material).

ACD: The ACD Readout Controller (a digital ASIC) test board has been developed. Preparations have been made for the phototube procurement. Trade studies were performed for the Base Electronics Assembly packaging. Tile Detector Assembly testing continued with the full optical path, to investigate the larger than expected light loss. It was discovered that the attenuation length for the clear fibers (which transmit the light from the Tile Detector Assemblies to the photomultiplier tubes) was less than the manufacturer's spec. New clear fibers have been ordered.

Electronics: A prototype of the Power Conditioning Card was fabricated and assembled; testing has commenced. Tower command and configuration for the first engineering model has been completed. A prototype FIFO test ASIC was received and tested. It is fully functioning.

Mechanical Systems: The LAT thermal analysis is complete. The LAT structural model is complete. Good progress was made on the deliverables for the Delta PDR. The list of action items and recommendations for the review were worked. (Delta PDR was

subsequently passed.) Work continues on the heat pipe engineering model test, bolted-joint thermal-vacuum tests, and the Calorimeter-Grid bolted joint coupon tests. The engineering model Grid Heat Pipe was received from Lockheed Martin. The Radiator Level IV specification is released. Drafting of the Interface Definition Drawings for all subsystems is underway with half of them in review.

3.0 Schedule Status

The status of significant (Levels 1 and 2) milestones identified in the Project Management Plan (LAT-MD-00054-06, currently in review) for the LAT project is summarized in Attachment 1. Level 3 milestone status is included as Attachment 2. Variances to milestones are explained below:

- Level 1: No variance.
- Level 2: No variance.
- Level 3:
 - 1M1001120 Tracker Dead/Noisy Strips (SAS to I&T): Completed, but awaiting final signature. No schedule impact.
 - 2S201100 Anticoincidence Detector CDR
 - 2S201110 Electronics & DAQ CDR
 - 2S201120 Flight Software CDR

These last three items were not adjusted when the LAT CDR was moved to April 2003. These will be corrected with CCB action.

4.0 Financial Status

Attachment 3 depicts the costs and commitments 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.

The unfavorable cost variance in 4.1.4 Tracker is due to several factors. More fabrication and material costs were incurred than planned to preserve the engineering model schedule. Errors found in the second ASIC submission required redesign and resubmission. The prototype tower scope expanded (full mechanical mockup rather than mini-tower), requiring additional materials & testing. It is expected that these variances will be resolved within the Tracker plan in this fiscal year. The unfavorable schedule variance is largely due to a procurement activity which was scheduled to complete June 30, actually completing one day later; it will be reflected in the July reporting cycle.

The unfavorable schedule variance in 4.1.5 Calorimeter is largely due to status reporting error. This will be corrected in the next reporting cycle.

The unfavorable cost variance in 4.1.6 ACD is due increased manpower requirements in project scheduling, analog ASIC support, and electronics packaging redesign; Goddard MPS and lab tax costs arrived earlier than planned.

The favorable cost variance in 4.1.8 Mechanical Systems is largely due to subcontractor invoicing delays.

The unfavorable cost variance in 4.1.9 Integration & Test stems partially from credit not being given to work actually performed during this period (will be corrected next reporting period), and partially from more manpower being applied than planned.

The favorable cost variance in 4.1.A Performance & Safety Assurance is due to the delay in the hire of a part-time parts engineer at NRL (now on board), specific mission-assurance-related activities being covered by other LAT subsystems, and less travel taken than planned.

6.0 Change Control and Contingency Analysis

No change requests were processed this month. The fabrication phase cost baseline remains at \$100.0M. Funding applicable to that baseline is \$121.2M; resulting contingency is \$21.2M.

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.

An error in the Swedish manpower data reported last month has been corrected. Manpower data for GSFC was under-reported this month due to an internal reporting problem with civil servant labor at GSFC (will be corrected next period).

Attachment 1 Milestones, Levels 1-2

Activity Description	Target Finish Date	Variance	Finish Date	FY01	FY02	FY03	FY04	FY05	FY06
DOE Headquarters (Level 1)									
CD-0 Approval	06/25/01A	0	06/25/01A	▼					
CD-1 Approval	07/01/02*	-15	07/23/02*		▼				
CD-2 Approval	12/13/02*	0	12/13/02*			▼			
CD-3 Approval	07/15/03*	0	07/15/03*				▼		
TEM Power Supply Eng. Model 2 Complete	03/15/04*	0	03/15/04*					▼	
Flight GRID Complete	09/15/04*	0	09/15/04*						▼
LAT Integrated on Thermal-Vacuum Mount	07/15/05*	0	07/15/05*						▼
LAT Shipment for Observatory Integration	10/17/05*	0	10/17/05*						▼
CD-4 Approval	12/15/05*	0	12/15/05*						▼
DOE/NASA Project Managers (Level 1)									
Launch Balloon Flight	08/01/01A	0	08/01/01A	▼					
Instrument Preliminary Design Review	01/08/02A	0	01/08/02A		▼				
I-CDR (Critical Design Review)	04/30/03*	0	04/30/03*			▼			
TKR, CAL FM A, B Available for Calibration Unit	02/17/04*	0	02/17/04*				▼		
Start LAT Integration	06/15/04*	0	06/15/04*					▼	
Pre Environmental Testing Review	02/15/05*	0	02/15/05*						▼
PSR-(Instrument Pre-Ship Review)	07/07/05*	0	07/07/05*						▼
LAT Ready for Integration (RFI) to Spacecraft	09/22/05*	0	09/22/05*						▼
Run Date	08/08/02 14:52	GLAST LAT PROJECT Project Milestones (Level 1-2)		0729 z1 - MS (L1-2)/FL - MS (L1-2)					Sheet 1
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**Attachment 2 (Page 1 of 3)
Level 3 Milestones (One-Year View)**

Activity Description	Target Finish Date	Variance	Finish Date	ND	AV	FY02				FY03					
						Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3		
Instrument Project Office (Level 3)															
Prelim Mech Dwgs for EM TKR - TKR to I&T	01/09/02A	0	01/09/02A	9	4			▼							
TEM H/W driver, init ver-ELX to I&T/Online	02/22/02A	0	02/22/02A	9	7			▼							
MGSE Requirements for ACD (from I&T to ACD)	03/22/02A	0	03/22/02A	6	9			▼							
SLAC Facilities Specification (from I&T to ACD)	03/22/02A	0	03/22/02A	6	9			▼							
Online System Spec from I&T to IOC	03/29/02A	0	03/29/02A	B	9			▼							
TEM Data Taking Desc-ELX to I&T/Online	04/01/02A	0	04/01/02A	9	7			▼							
(1) Prototype Electronics Module (Elec to ACD)	04/08/02A	0	04/08/02A	6	7			▼							
AEM reg descrip-ELX to I&T/Online	04/12/02A	0	04/12/02A	9	7			▼							
EGSE Workstation / Software #1 (I&T to TKR)	04/12/02A	0	04/12/02A	4	9			▼							
EGSE Workstation / Software #1 (I&T to ELX)	04/12/02A	0	04/12/02A	7	9			▼							
EGSE Workstation / Software #1 (I&T to CAL)	04/15/02A	0	04/15/02A	5	9			▼							
EGSE Workstation / Software #1 (I&T to ACD)	04/16/02A	0	04/16/02A	6	9			▼							
EGSE Workstation / Software #2 (I&T to ACD)	04/16/02A	0	04/16/02A	6	9			▼							
EGSE EM1 H/W Release-Elec to I&T	04/22/02A	0	04/22/02A	9	7			▼							
Def of Data format from ELX/FSW to I&T/Online	05/01/02A	0	05/01/02A	9	7			▼							
GEM register description-ELX to I&T/Online	05/02/02A	0	05/02/02A	9	7			▼							
GEM data taking desc-ELX to I&T/Online	05/02/02A	0	05/02/02A	9	7			▼							
Run Date	08/08/02 14:53	GLAST LAT PROJECT			0729	Sheet 1 of 3									
Data Date	07/01/02	Project Milestones (Level 3)			LT - MS (L3)										
		1 Year View (+/- 6mo)			FL - MS (L3)										
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**Attachment 2, Continued (Page 2 of 3)
Level 3 Milestones (One-Year View)**

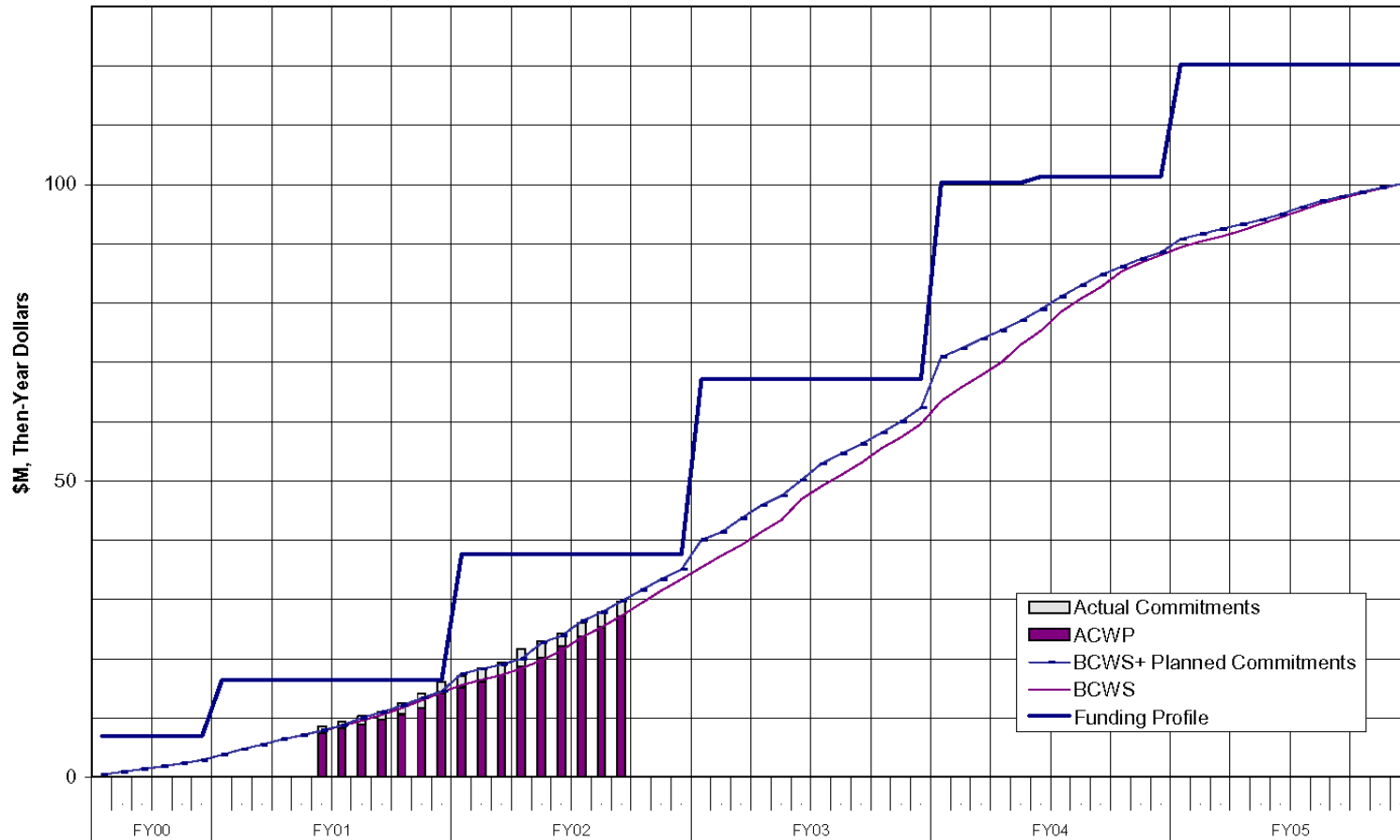
Activity Description	Target Finish Date	Variance	Finish Date	ND	AV	FY02					FY03				
						Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3		
Instrument Project Office (Level 3)															
1st Major Release of Sim/Recon (SAS to I & T)	06/12/02	0	06/12/02A	9	D										
Tracker Dead/Noisy Strips (SAS to I & T)	06/21/02*	-5	06/28/02*	9	D										
Anticoincidence Detector CDR	06/26/02*	-2	06/28/02*	2	6										
Electronics & DAQ CDR	06/20/02*	-6	06/28/02*	2	7										
Flight Software CDR	06/12/02*	-12	06/28/02*	2	7										
Calorimeter Calibration Prototype Coding SAS-I&T	07/08/02	0	07/08/02	9	D										
Science Analysis Software CDR	09/04/02*	0	09/04/02*	2	D										
(9) MCM's from Tracker to Elec	09/20/02	0	09/20/02	7	4										
AEM H/W driver final ver-ELX to I&T/Online	09/20/02	0	09/20/02	9	7										
ACD Electronics Module - EM1 (Elec to ACD)	09/20/02	0	09/20/02	6	7										
Test/Screening Board w/ASIC for EM1 -ACD to Elec	09/20/02	0	09/20/02	7	6										
GEM H/W driver, init ver-ELX to I&T/Online	11/12/02	0	11/12/02	9	7										
High Voltage Power Supply (Bd & Prts)-ACD toElec	11/15/02*	0	11/15/02*	7	6										
TEM H/W driver, final ver-ELX to I&T/Online	11/19/02	0	11/19/02	9	7										
Delivery of EM (2X2) Grid to I&T/MSGE	12/02/02*	0	12/02/02*	9	8										
As-Built dwgs for EM TKR-TKR to I&T	12/05/02	0	12/05/02	9	4										
EM1 EGSE WS-S/W R2 I&T to ACD	12/05/02	0	12/05/02	6	9										
Run Date	08/08/02 14:53	GLAST LAT PROJECT Project Milestones (Level 3) 1 Year View (+/- 6mo)			0729	Sheet 2 of 3									
Data Date	07/01/02				LT - MS (L3) FL - MS (L3)										
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Attachment 2, Continued (Page 3 of 3)
Level 3 Milestones (One-Year View)

Activity Description	Target Finish Date	Variance	Finish Date	ND	AV	FY02				FY03									
						Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3						
Instrument Project Office (Level 3)																			
EM1 EGSE WS-S/W R2 I&T to CAL	12/05/02	0	12/05/02	5	9														
EM1 EGSE WS-S/W R2 I&T to ELX	12/05/02	0	12/05/02	7	9														
EM1 EGSE WS-S/W R2 I&T to IOC	12/05/02	0	12/05/02	B	9														
EM1 EGSE WS-S/W R2 I&T to TKR	12/05/02	0	12/05/02	4	9														
Delv of TKR EM to SLAC I&T/MGSE	12/09/02*	0	12/09/02*	9	4														
FSW system spec-ELX/FSW to I&T/Online	12/20/02	0	12/20/02	9	7														
IPS description-ELX to I&T/Online	12/23/02	0	12/23/02	9	7														
Run Date						08/08/02 14:53			GLAST LAT PROJECT			0729			Sheet 3 of 3				
Data Date						07/01/02			Project Milestones (Level 3)			LT - MS (L3)							
© Primavera Systems, Inc.						1 Year View (+/- 6mo)			FL - MS (L3)										

Attachment 3

Budget vs Actuals vs Funding
DOE + NASA Project Expenditures



**Attachment 4
LAT Costs, through June 2002, by WBS**

Monthly Contractor Financial Management Report 30-Jun-02								Report for Month Ending: 6/30/02		
To: Liz Citrin, 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			4/3/00	Billing	
	During Month		Cum. to Date		Detail		Balance of Budget	Estimated Final Cost		Unfilled Orders Outstanding
	Actual	Planned	Actual	Planned	JUL02	AUG02		Project Estimate	Budget Value	
4.1.1 INSTRUMENT MANAGEMENT	225	295	4,423	4,456	242	242	6,696	11,602	11,602	
4.1.2 SYSTEM ENGINEERING	119	115	1,800	1,772	119	118	2,610	4,647	4,647	
4.1.4 TRACKER	97	172	4,658	4,507	246	107	4,865	9,877	9,877	
4.1.5 CALORIMETER	378	346	4,589	4,719	368	354	12,037	17,348	17,348	
4.1.6 ANTICOINCIDENCE DETECTOR	252	210	3,300	2,833	261	354	6,366	10,280	10,280	
4.1.7 ELECTRONICS	193	100	2,898	2,940	116	139	12,585	15,738	15,738	
4.1.8 MECHANICAL SYSTEMS	171	405	1,577	1,943	404	444	9,425	11,850	11,850	
4.1.9 INTEGRATION & TEST	121	112	611	492	168	196	5,679	6,654	6,654	
4.1.A PERFORMANCE AND SAFETY ASSURANCE	37	56	506	719	62	62	1,550	2,180	2,180	
4.1.B LAT INSTRUMENT OPERATIONS CENTER	10	27	261	303	38	18	2,235	2,552	2,552	
4.1.C EDUCATION AND PUBLIC OUTREACH	48	26	426	487	85	29	2,057	2,598	2,598	
4.1.D SCIENCE ANALYSIS SOFTWARE	44	41	668	640	61	51	2,548	3,328	3,328	
4.1.E SUBORBITAL FLIGHT TEST	119	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	1,815	1,907	27,041	27,132	2,170	2,114	68,648	99,973	99,973	

Attachment 5
LAT Costs, through June 2002, by Organization and Cost Code

Monthly Contractor Financial Management Report 30-Jun-02								Report for Month Ending: 6/30/02	
To: Liz Citrin, 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			4/3/00	Billing
	During Month		Cum. to Date		Detail		Balance of Budget	Estimated Final Cost	Unfilled Orders Outstanding
	Actual	Planned	Actual	Planned	JUL02	AUG02			
DG *** GSFC	372	242	4,355	4,030	297	390	8,201	13,242	13,242
DH *** HEPL	109	99	2,625	2,578	145	118	4,705	7,593	7,593
DL *** SLAC	779	1,061	12,619	12,523	1,116	1,079	35,416	50,229	50,229
DN *** NRL	465	432	5,932	6,268	477	450	16,769	23,629	23,629
DS *** SSU	48	26	426	487	85	29	2,007	2,548	2,548
DT *** Texas A&M	0	0	0	16	0	0	16	16	16
DU *** UCSC	42	47	1,085	1,230	50	48	1,534	2,716	2,716
Total	1,815	1,907	27,041	27,133	2,170	2,114	68,648	99,973	99,973

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	JUL02	AUG02				
RL LABOR	1,945	966	16,643	16,889	1,097	1,181	35,689	54,610	54,610	
<i>FTE (DOE/NASA)</i>	98.2	98.0	1,472.4	1,493.9	99.0	109.0	3,149.7	4,830.1	4,830.1	
<i>HOURS (DOE/NASA)</i>	15,709	15,677	251,033	245,958	17,469	19,208	509,846	797,556	797,556	
RT TRAVEL	22	49	492	767	68	56	2,611	3,227	3,227	
RM MATERIAL & SERVICES	-248	815	9,061	8,805	920	732	27,691	38,404	38,404	
RX MPS & LAB TAX	97	77	845	672	85	145	2,658	3,733	3,733	
Total (not incl FTE/Hours)	1,815	1,907	27,041	27,132	2,170	2,114	68,648	99,973	99,973	

**Attachment 6
LAT Performance, through June 2002, by WBS**

Cost Performance Report - Work Breakdown Structure													
Contractor: Location:					Contract Type/No:			Project Name/No: GLAST LAT Project		Report Period: 6/1/02 6/30/02			
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	295	295	225	0	70	4,456	4,456	4,423	0	34	11,602	11,602	0
4.1.2 SYSTEM ENGINEERING	115	86	119	-29	-34	1,772	1,761	1,800	-11	-38	4,647	4,647	0
4.1.4 TRACKER	172	70	97	-102	-27	4,507	4,382	4,658	-125	-276	9,877	9,877	0
4.1.5 CALORIMETER	346	32	378	-314	-346	4,719	4,383	4,589	-336	-207	17,348	17,348	0
4.1.6 ANTICOINCIDENCE DETECTOR	210	157	252	-53	-94	2,833	2,699	3,300	-134	-601	10,280	10,280	0
4.1.7 ELECTRONICS	100	82	193	-18	-110	2,940	2,941	2,898	1	43	15,738	15,738	0
4.1.8 MECHANICAL SYSTEMS	405	264	171	-142	92	1,943	1,815	1,577	-129	238	11,850	11,850	0
4.1.9 INTEGRATION & TEST	112	56	121	-56	-65	492	434	611	-59	-177	6,654	6,654	0
4.1.A PERFORMANCE AND SAFETY ASSURA	56	56	37	0	19	719	719	506	0	213	2,180	2,180	0
4.1.B LAT INSTRUMENT OPERATIONS CENT	27	19	10	-8	9	303	283	261	-20	22	2,552	2,552	0
4.1.C EDUCATION AND PUBLIC OUTREACH	26	22	48	-5	-27	487	469	426	-19	42	2,598	2,598	0
4.1.D SCIENCE ANALYSIS SOFTWARE	41	54	44	13	10	640	638	668	-2	-30	3,328	3,328	0
4.1.E SUBORBITAL FLIGHT TEST	0	0	119	0	-119	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	1,907	1,194	1,815	-714	-622	27,132	26,299	27,041	-833	-742	99,973	99,973	0
Management Resrv.											0	0	0
Total	1,907	1,194	1,815	-714	-622	27,132	26,299	27,041	-833	-742	99,973	99,973	0

**Attachment 7
LAT Performance, through June 2002, by Organization**

Cost Performance Report - Organization													
Contractor: Location:						Contract Type/No:			Project Name/No: GLAST LAT Project		Report Period: 6/1/02 6/30/02		
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	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	242	190	372	-53	-182	4,030	3,896	4,355	-134	-459	13,242	13,242	0
DH *** HEPL	99	98	109	-1	-11	2,578	2,558	2,625	-20	-67	7,593	7,593	0
DL *** SLAC	1,061	746	779	-315	-34	12,523	12,232	12,619	-291	-387	50,229	50,229	0
DN *** NRL	432	101	465	-331	-364	6,268	5,926	5,932	-343	-7	23,629	23,629	0
DS *** SSU	26	22	48	-5	-27	487	469	426	-19	42	2,548	2,548	0
DT *** Texas A&M	0	0	0	0	0	16	16	0	0	16	16	16	0
DU *** UCSC	47	38	42	-9	-3	1,230	1,204	1,085	-26	119	2,716	2,716	0
Gen. and Admin.	0	0	0	0	0	0	0	0	0	0	0	0	0
Undist. Budget											0	0	0
Sub Total	1,907	1,194	1,815	-714	-622	27,133	26,299	27,041	-833	-742	99,973	99,973	0
Management Resrv.											0	0	0
Total	1,907	1,194	1,815	-714	-622	27,133	26,299	27,041	-833	-742	99,973	99,973	0

Attachment 8 LAT Performance Analysis, June 2002

	WBS	BAC	BCWS	BCWP	ACWP	SV \$	CV \$	% BCWS	% BCWP	% ACWP	SV Trend	CV Trend	SPI	CPI	Cpi_Fcst	CpiSpi_Fcst
1	4	99,974	27,133	26,300	27,041	-833	-742	27.14	26.31	27.05	↓	↓	0.969	0.973	102,794	105,193
2	4.1	99,974	27,133	26,300	27,041	-833	-742	27.14	26.31	27.05	↓	↓	0.969	0.973	102,794	105,193
3	4.1.1	11,602	4,456	4,456	4,423	0	34	38.41	38.41	38.12	↔	↑	1.000	1.008	11,515	11,515
4	4.1.2	4,647	1,772	1,761	1,800	-11	-38	38.13	37.91	38.73	↓	↓	0.994	0.979	4,748	4,766
5	4.1.4	9,877	4,507	4,382	4,658	-125	-276	45.64	44.37	47.17	↓	↔	0.972	0.941	10,499	10,666
6	4.1.5	17,348	4,719	4,383	4,589	-336	-206	27.20	25.26	26.46	↓	↓	0.929	0.955	18,165	19,205
7	4.1.6	10,280	2,833	2,699	3,300	-134	-601	27.55	26.25	32.10	↓	↓	0.953	0.818	12,569	13,029
8	4.1.7	15,738	2,940	2,941	2,898	1	43	18.68	18.68	18.41	↓	↓	1.000	1.015	15,510	15,507
9	4.1.8	11,850	1,943	1,815	1,577	-129	238	16.40	15.31	13.31	↓	↑	0.934	1.151	10,297	10,916
10	4.1.9	6,654	492	434	611	-59	-177	7.40	6.52	9.18	↓	↓	0.881	0.710	9,371	10,556
11	4.1.A	2,180	719	719	506	0	213	32.97	32.97	23.22	↔	↔	1.000	1.420	1,535	1,535
12	4.1.B	2,552	303	283	261	-20	22	11.87	11.08	10.22	↓	↑	0.934	1.084	2,353	2,502
13	4.1.C	2,598	487	469	426	-19	42	18.76	18.04	16.41	↓	↓	0.961	1.099	2,364	2,442
14	4.1.D	3,328	640	638	668	-2	-30	19.23	19.17	20.06	↑	↑	0.997	0.956	3,482	3,491
15	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
16	[PMB]	99,974	27,133	26,300	27,041	-833	-742	27.14	26.31	27.05	↓	↓	0.969	0.973	102,794	105,193

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

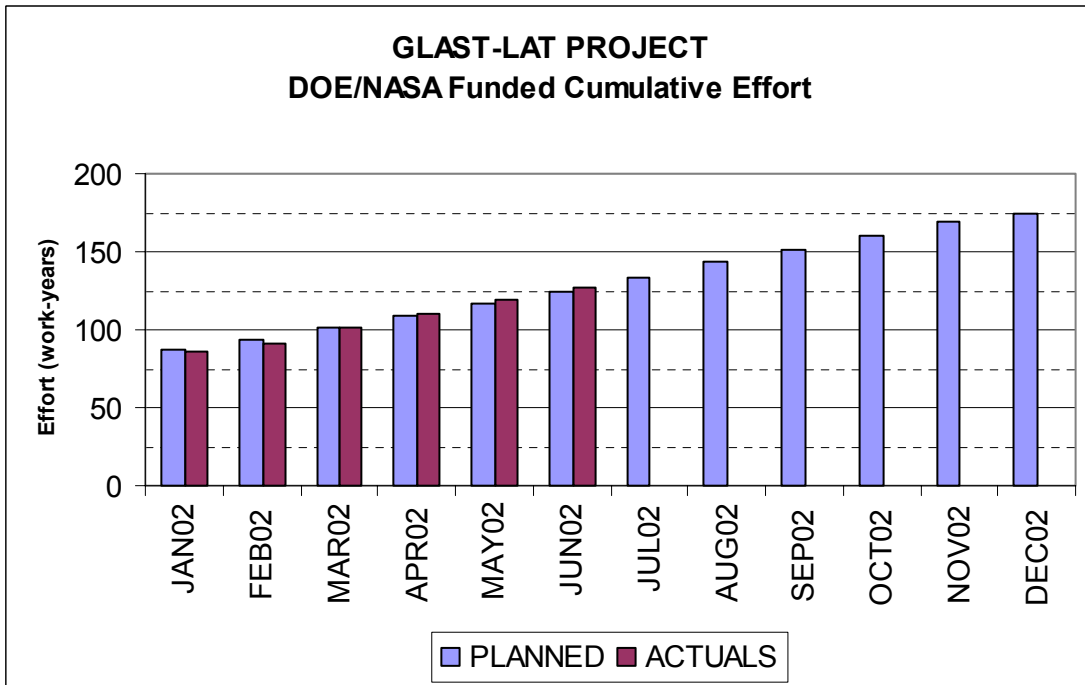
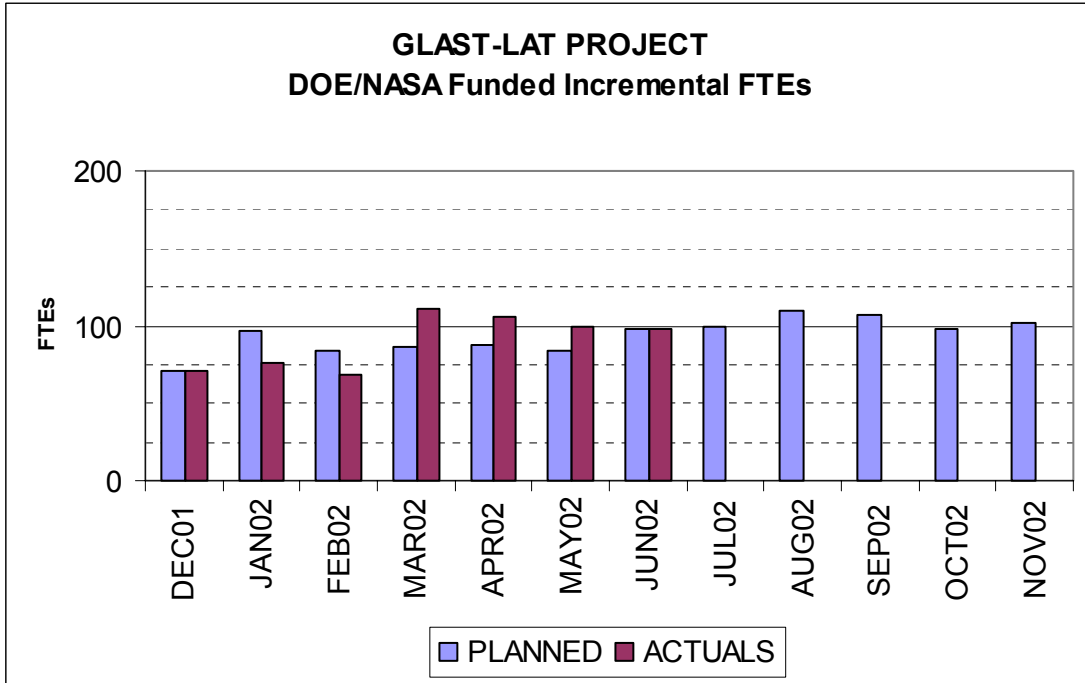
% ACWP: Percent Spent = ACWP/BAC

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

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

■	Worse than -15%	■	Between -5% and 10%
■	Between -15% and -5%	■	Better than 10%
Change Threshold: 10%			

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



Attachment 10
LAT Manpower Data, through June 2002, by Organization

Program: LAT3		Description: GLAST LAT Project		Approval: Program Manager												
Run Date: 7/11/02		Status Date: 6/30/02		Functional Manager			Cost Account Manager									
			PRIOR	JAN02	FEB02	MAR02	APR02	MAY02	JUN02	Cum-to- Date	JUL02	AUG02	SEP02	OCT02	NOV02	DEC02
OBS																
DG *** GSFC																
FTE	PLANNED	170.3	18.1	24.6	22.6	23.1	24.6	24.2	307.6	24.9	25.1	25.4	26.4	26.1	22.3	
	ACTUALS	73.3	14.8	8.6	53.3	29.1	25.9	13.7	218.6	0.0	0.0	0.0	0.0	0.0	0.0	
DH *** HEPL																
FTE	PLANNED	143.0	6.6	6.9	6.7	6.3	7.7	7.8	184.9	8.5	7.3	6.9	7.2	8.0	8.1	
	ACTUALS	127.8	8.3	7.4	7.2	5.3	6.0	8.9	170.9	0.0	0.0	0.0	0.0	0.0	0.0	
DL *** SLAC																
FTE	PLANNED	383.9	34.7	42.1	47.0	43.3	43.0	54.7	648.6	51.1	60.0	55.0	46.5	49.8	50.2	
	ACTUALS	337.6	33.3	28.8	33.5	48.9	37.8	39.4	559.4	0.0	0.0	0.0	0.0	0.0	0.0	
DN *** NRL																
FTE	PLANNED	193.9	39.8	14.3	21.3	21.7	15.2	20.7	326.9	21.6	23.7	24.5	22.1	22.5	20.4	
	ACTUALS	219.5	11.0	16.4	9.5	31.5	23.5	30.1	341.4	0.0	0.0	0.0	0.0	0.0	0.0	
DS *** SSU																
FTE	PLANNED	28.5	1.4	1.4	1.4	1.5	1.5	1.5	37.3	4.2	1.5	1.5	1.7	1.7	1.6	
	ACTUALS	29.2	1.4	0.9	1.6	1.5	2.4	4.0	41.0	0.0	0.0	0.0	0.0	0.0	0.0	
DU *** UCSC																
FTE	PLANNED	112.5	4.5	4.8	4.8	4.8	6.0	4.8	142.2	4.8	4.8	4.8	5.1	5.1	4.7	
	ACTUALS	130.6	7.1	6.4	5.8	4.6	4.9	5.9	165.3	0.0	0.0	0.0	0.0	0.0	0.0	
DW *** UW																
FTE	PLANNED	22.2	0.9	0.9	0.9	0.9	0.9	1.1	27.8	1.0	0.9	0.9	0.9	0.9	0.9	
	ACTUALS								0.0							
FF *** France																
FTE	PLANNED	339.2	32.6	34.3	35.6	35.9	35.8	35.9	549.2	37.1	37.3	36.0	35.5	35.1	26.7	
	ACTUALS								0.0							
FI *** Italy																
FTE	PLANNED	106.4	12.1	12.9	14.3	13.7	14.2	14.6	188.2	15.1	14.0	12.9	16.5	16.9	18.4	
	ACTUALS	72.6	10.3	10.9	10.9	10.9	11.9	9.8	137.0	0.0	0.0	0.0	0.0	0.0	0.0	
FJ *** Japan																
FTE	PLANNED	42.2	2.7	2.8	2.8	2.8	2.8	2.8	58.7	2.8	2.8	2.8	2.8	2.8	2.8	
	ACTUALS	33.5	1.8	1.8	1.8	1.8	1.8	1.8	44.0	0.0	0.0	0.0	0.0	0.0	0.0	
FK *** Sweden																
FTE	PLANNED	0.0	4.4	4.6	4.6	4.6	4.6	4.6	27.4	4.6	4.6	4.6	4.6	4.6	3.4	
	ACTUALS								0.0							
Grand Totals:																
	PLANNED	1542.1	157.6	149.7	162.0	158.7	156.1	172.6	2498.8	175.7	182.2	175.3	169.1	173.5	159.6	
	ACTUALS	1023.9	87.9	81.2	123.6	133.4	114.1	113.5	1677.6	0.0	0.0	0.0	0.0	0.0	0.0	
4.1 GLAST LAT																
Contributed																
	PLANNED	585.6	61.5	65.4	75.6	70.4	71.8	74.6	1004.9	76.5	73.0	68.0	70.7	71.4	63.6	
	ACTUALS	110.5	11.9	12.6	12.6	27.5	14.9	15.3	205.2	0.0	0.0	0.0	0.0	0.0	0.0	
Funded																
	PLANNED	956.5	96.2	84.3	86.4	88.3	84.3	98.0	1493.9	99.3	109.1	107.3	98.4	102.1	96.1	
	ACTUALS	913.4	76.1	68.6	111.0	106.0	99.2	98.2	1472.4	0.0	0.0	0.0	0.0	0.0	0.0	
Grand Totals:																
	PLANNED	1542.1	157.6	149.7	162.0	158.7	156.1	172.6	2498.8	175.7	182.2	175.3	169.1	173.5	159.6	
	ACTUALS	1023.9	87.9	81.2	123.6	133.4	114.1	113.5	1677.6	0.0	0.0	0.0	0.0	0.0	0.0	