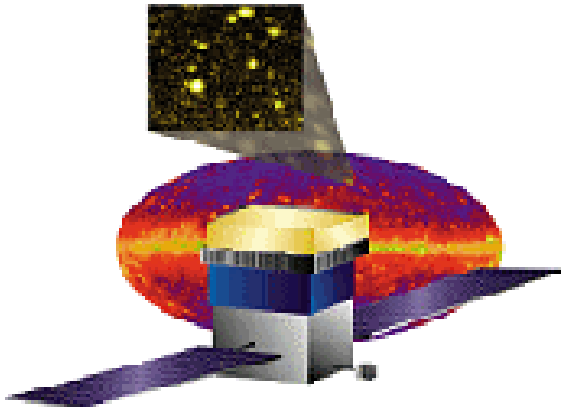
Monthly Progress Report

(Month Ending March 2003)

GLAST Large Area Telescope (LAT)



LAT-MR-02010-01

May 7, 2003

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 March, 2003.

2.0 Recent Progress and Status

Subsystem peer reviews were conducted for Tracker, Calorimeter, Anticoincidence Detector, Electronics, and Mechanical Systems. All these subsystems were declared to be ready for Critical Design Review (CDR).

4.1.4 Tracker

The Engineering Model (EM) trays were completed in Italy and shipped to SLAC for assembly. Carbon-carbon material testing and sidewall insert tests were completed. The tower model and analysis was completed, with positive margins. Flight ASICs were tested; all design improvements were found to be successful. The wafer probing system is ready to start testing flight wafers. Polyswitches and connectors were ordered, as well as the sidewall material for the EM tower.

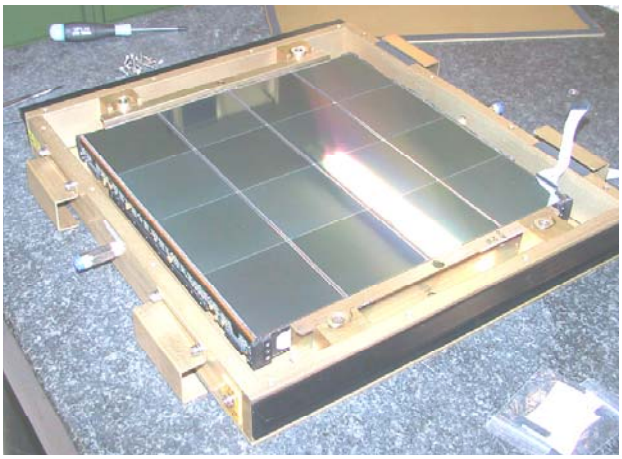


Figure 1: Tracker Engineering Model Trays

4.1.5 Calorimeter

Three thousand dual pin diodes have been ordered, and flight production has commenced. Forty-eight flight production prototype CsI crystals have been received and examined in Kalmar. A slight correction is required on the chamfers. Production of the flight CsI has begun, and the first boules have been radiation tested. A full-scale composite structure was fabricated and shown to be within specifications; preparations for flight manufacturing are underway. The EM AFEE-Y board functional tests have been completed. All flight EEE parts have been ordered. The EM module has been assembled; functional and cosmic muon testing has begun.

Figure 2: Calorimeter Engineering Model Assembly

4.1.6 Anticoincidence Detector

The tile shell assembly mechanical design has been completed. The first group of 30 phototubes have been acceptance-tested. Thirty more phototubes have been received, bringing the total flight units received to 180. The report for the CERN backsplash test has been completed; this test proved that the ACD design will meet requirements. The verification plan and test matrix have been updated. Lab space is being prepared for upcoming flight work. Most of the requests for action from the ACD peer review in January have been closed.

Figure 3:
ACD Phototube and
Resistor Network

4.1.7 Electronics

Proposals have been requested for the BAE RAD750 CPU board, and the purchase order will be placed in early April. The software drivers for the LAT communication board were created. The GASU enclosure was designed and is being fabricated.

4.1.8 Mechanical Systems

The Calorimeter/Grid coupon testing was completed.

4.1.9 Integration & Test

The EM-Calorimeter rotation stand is complete. The Van de Graaff rate was found to be a factor of 100 higher than projected. Significant progress was made in the production of drawings for mechanical ground support equipment. The EM equipment is working with the electrical ground support equipment, using Tracker tray-level assembly scripts.

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.

Engineering Model (1x4) Grid (1M1001380)
Baseline/Target Finish: 12/02/02 Projected Finish: 06/11/03 Variance: -127 days
Lack of sufficent manpower has resulted in the delay of this milestone. While the staffing levels have been increased, the completion of this milestone will still be delayed. The procurement has been made for the 1x4 EM grid, machining has begun, and receipt is expected in early May. This has been delayed further since last period's report, due to manufacturer machine failure. After inspection and testing, the grid will be delivered to Integration & Test in June. In the meantime, an existing 1x1 grid bay mockup will be used to develop test procedures and electrical ground support equipment (EGSE).

Tracker Engineering Model (1M1001430)
Baseline/Target Finish: 12/09/02 Projected Finish: 08/11/03 Variance: -164 days
The delivery of the full Tracker EM has been delayed by the redesign of the bottom tray. In the meantime, the upgraded EM minitower will be delivered to I&T in early July, and will be used with the aforementioned 1x1 grid bay mockup to develop test procedures and EGSE. The delay of the full tower can be accommodated in the I&T schedule with no further impact.

GEM H/W Driver, Final Version, Elex to I&T/Online (1M1001390)
Baseline/Target Finish: 01/07/03 Projected Finish: 04/16/03 Variance: -69 days
Resources have been diverted from the completion of this milestone to other tasks with higher priority. This milestone is now expected to be completed in June. This delay can be accomodated in the Integration & Test schedule with no further impact.

High Voltage Power Supply Board & Parts, ACD to Electronics (1M7941350)
Baseline/Target Finish: 02/03/03 Projected Finish: 04/03/03 Variance: -42 days
Resources have been diverted from the completion of this milestone to other ACD tasks with higher priority. The power supply board and parts are now complete, but their actual delivery to Electronics has been further delayed by additional testing to ensure robustness. Delivery is expected to be made in May; this delay can be accomodated in the Electronics schedule with no further impact.

(36) MCMs for EM2 from Tracker to Electronics (1M1000910)
Baseline/Target Finish: 07/18/03 Projected Finish: 07/29/03 Variance: -7 days
Procurement delays have resulted in the delay of this milestone. This delay can be accommodated in the Electronics schedule with no further impact.

4.0 Financial Status

Attachment 3 depicts the costs and commitments through the end of the current reporting period. Commitments for level-of-effort subcontracts have been phased in response to the continuing resolution situation. This is being managed so that there is no cost impact, and the level of effort is not affected.

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.

4.1.5 Calorimeter
Delays in the AFEE development and flight part procurements (to ensure design maturity) and delays in the ground support equipment are not currently critical, and are expected to recover by the end of the fiscal year. The engineering model assembly and test started late due to component availability; however, the work is on schedule for the revised baseline delivery to I&T.

4.1.6 Anticoincidence Detector
The flight shell and tile detector assembly procurements were not received on schedule. This is not considered critical path, and the schedule is expected to recover by the end of the fiscal year. Manpower was diverted from the MGSE design work to support the tile shell assembly design. A recovery plan has been developed which preserves the MGSE

delivery date, does not impact significant milestones, and removes the unfavorable schedule variance by the end of the fiscal year.

The unfavorable cost variance is due to higher labor costs than planned for the tile shell assembly and base electronics assembly (BEA) work, as well as for BEA parts costs. Contract labor support is being reduced in favor of NASA/Goddard civil servant labor, where appropriate. (Note: in April the LAT Configuration Control Board approved the increased BEA parts cost).

4.1.8 Mechanical Systems

The unfavorable schedule variance is due to filling key engineering and design positions slower than planned. These positions have been filled, and the schedule variance has improved this period. The baseline schedule is expected to be restored by the end of the fiscal year.

4.1.A Performance & Safety Assurance

The favorable cost variance 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.

4.1.B Instrument Operations Center

The schedule variance results from a delay in hiring additional planned resources. The LAT management is working with SLAC management to address the long-term management and staffing of the subsystem.

A change in the subsystem management has resulted in a temporary favorable cost variance. The budget will be adjusted once longer-term plans have been made for management of this subsystem.

4.1.C Education & Public Outreach

The positive cost variance is due to invoicing delays, and are expected to be resolved.

4.1.D Science Analysis Software

Hiring delays at Stanford/HEPL and GSFC have resulted in a favorable cost variance. These hires have now been completed.

6.0 Change Control and Contingency Analysis

Eleven change requests were submitted to and approved by the LAT Configuration Control Board during March. A summary, including the impacts on the LAT fabrication phase cost and the impact on the LAT mass budget (as applicable), is below.

Change Request No.	Description	Submitted By	CCB Meeting	Current Status
LAT-XR-01011-01	ACD ASIC Development Suport	T. Johnson	3/7/03	Approved $549K
LAT-XR-01394-01	Instrument Design Engineering	L. Klaisner	3/7/03	Approved $1,822K
LAT-XR-01395-01	Systems Engineering Manpower	D. Horn	3/7/03	Approved $1,823K
LAT-XR-01457-01	Tracker Bottom Tray Redesign	T. Borden	3/7/03	Approved $629K
LAT-XR-01485-01	Instrument Design Eng. (EEE Parts Control)	L. Klaisner	3/7/03	Approved $0K
LAT-XR-01585-01	Instrument Design Eng./Mech Sys Transfer	L. Klaisner	3/7/03	Approved $0K
LAT-XR-01621-01	Mech Sys Mass Allocation	M. Campell	3/7/03	Approved 22 kg
LAT-XR-01642-01	Calorimeter Mass Allocation	M. Nordby	3/7/03	Approved -40 kg
LAT-XR-01750-01	ACD EGSE Software Support	D. Thompson	3/7/03	Approved $237K
LAT-XR-01752-02	HEPL/SLAC Labor Escalation Reduction	T. Boysen	3/7/03	Approved $-477K
LAT-XR-01753-01	NRL Flight Software Support	G. Haller	3/7/03	Approved $300K

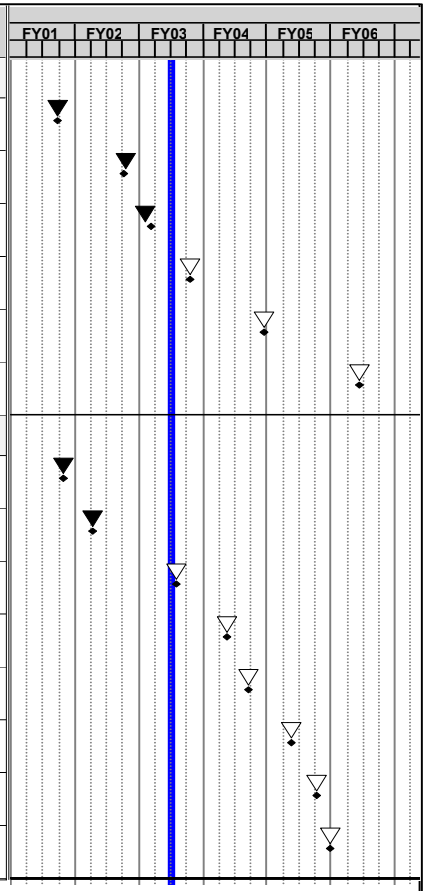
The fabrication phase cost baseline is now $107.5M. Funding applicable to that baseline is $121.7M; the resulting contingency is $14.3M.

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.

Attachment 1
Milestones, Levels 1-2

Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date
DOE/NASA Joint Oversight Group (Level				
1M1P000000	DOE Critical Decision (CD) 0 Approval	06/25/01A	0	06/25/01A
1M1P000010	CD-1 Approval	07/01/02*	-15	07/23/02A
1M1P000020	CD-2 Approval	12/13/02*	23	11/08/02A
1M1P000030	CD-3 Approval	07/15/03*	0	07/15/03*
1M1P000060	Flight GRID Complete	09/15/04*	0	09/15/04*
1M1P000040	CD-4 Approval	03/15/06*	0	03/15/06*
DOE/NASA Federal Project Managers (Level				
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)	04/30/03*	0	04/30/03*
1M1000730	TKR, CAL FM A, B Available for Calibration Unit	02/17/04*	0	02/17/04*
1M1000740	Start LAT Integration	06/15/04*	0	06/15/04*
1M1000700	Pre Environmental Testing Review	02/15/05*	0	02/15/05*
1M1000120	PSR-(Instrument Pre-Ship Review)	07/07/05*	0	07/07/05*
1M1000140	LAT Ready for Integration (RFI) to Spacecraft	09/22/05*	0	09/22/05*



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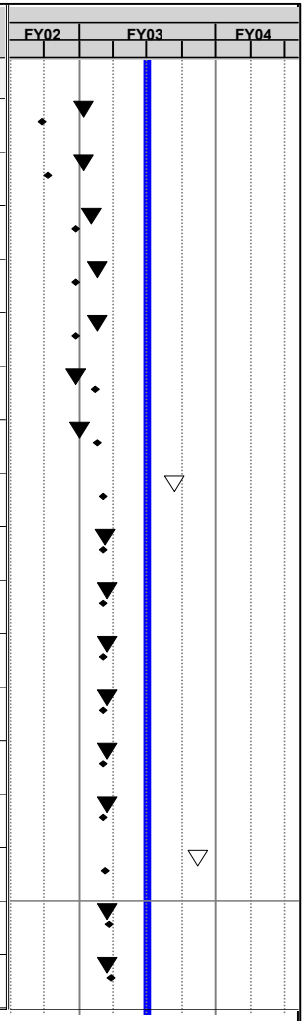
GLAST LAT PROJECT
Project Milestones (Level 1 and 2)

0421
LT_MS1-2

Sheet 1 of 1

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

Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date	AV	ND
Instrument Project Office (Level 3						
1M1001120	Tracker Dead/Noisy Strips (SAS to I & T)	06/21/02*	-79	10/14/02A	D	9
1M1001110	Calorimeter Calibration Prototype Coding SAS-I&T	07/08/02	-69	10/14/02A	D	9
1M1000550	(9) MCM's from Tracker to Elec	09/20/02	-29	10/31/02A	4	7
1M1001420	AEM H/W driver final ver-ELX to I&T/Online	09/20/02	-40	11/15/02A	7	9
1M7941310	ACD Electronics Module - EM1 (Elec to ACD)	09/20/02	-40	11/15/02A	7	6
1M1001340	GEM H/W driver, init ver-ELX to I&T/Online	11/12/02	37	09/20/02A	7	9
1M1001410	TEM H/W driver, final ver-ELX to I&T/Online	11/19/02	36	09/30/02A	7	9
1M1001380	Delivery of EM (1X4) Grid to I&T/MSGE	12/02/02*	-127	06/11/03*	8	9
1M1001280	As-Built dwgs for EM TKR-TKR to I&T	12/05/02	-1	12/06/02A	4	9
1M1001510	EM1 EGSE WS-S/W R2 I&T to ACD	12/05/02	-6	12/13/02A	9	6
1M1001511	EM1 EGSE WS-S/W R2 I&T to CAL	12/05/02	-6	12/13/02A	9	5
1M1001512	EM1 EGSE WS-S/W R2 I&T to ELX	12/05/02	-6	12/13/02A	9	7
1M1001513	EM1 EGSE WS-S/W R2 I&T to IOC	12/05/02	-6	12/13/02A	9	B
1M1001514	EM1 EGSE WS-S/W R2 I&T to TKR	12/05/02	-6	12/13/02A	9	4
1M1001430	Delv of TKR EM to SLAC I&T/MGSE	12/09/02*	-164	08/11/03*	4	9
1M1001360	FSW system spec-ELX/FSW to I&T/Online	12/20/02	4	12/16/02A	7	9
1M1001460	IPS description-ELX to I&T/Online	12/23/02	5	12/16/02A	7	9



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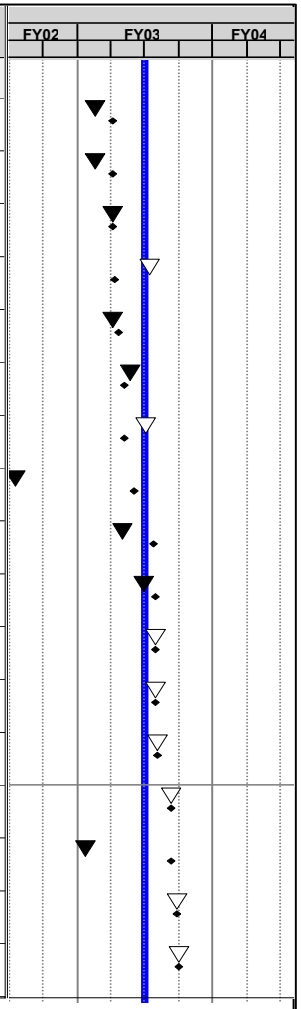
Attachment 2, Continued (Page 2 of 3)
Level 3 Milestones (One-Year View)

Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date	AV	ND
Instrument Project Office (Level 3						
1M1001210	AEM H/W driver, init ver-ELX to I&T/Online	01/02/03*	25	11/15/02A	7	9
1M1001310	AEM data taking desc-ELX to I&T/Online	01/02/03*	25	11/15/02A	7	9
1M1000980	Doc defining Backsplash Test Model (ACD to I&T)	01/03/03*	0	01/03/03A	6	9
1M1001390	GEM h/w driver, final ver-ELX to I&T/Online	01/07/03	-69	04/16/03	7	9
1M1001130	Tracker Tower & Tray Alignment (SAS to I&T)	01/22/03*	11	01/06/03A	D	9
1M57000020	CAL AFFE Engr Model-CAL to Elec	02/03/03*	-11	02/19/03A	5	7
1M7941350	High Voltage Power Supply (Bd & Prts)-ACD toElec	02/03/03*	-42	04/03/03*	6	7
1M7941380	EGSE Workstation / Software #3 (I&T to ACD)	03/03/03*	216	04/15/02A	9	6
1M7941320	(2) ACD Electronics Modules - EM2 (Elec to ACD)	04/24/03	59	01/30/03A	7	6
1M1001490	SIS description-ELX to I&T	04/30/03*	23	03/28/03A	7	9
1M1001500	Online EM2 release #1 to FSW	04/30/03	0	04/30/03	9	7
1M19500500	CU IPS - ELX to I&T/Online	04/30/03*	0	04/30/03*	7	9
1M7941340	(11) FREE Bds & ASICS, (1) Fully Tested Bd - EM2	05/07/03*	0	05/07/03*	6	7
1M7941150	EGSE EM2 Release-Elec to I&T	06/12/03*	0	06/12/03*	7	9
1M1001570	CU Monte Carlo sim from SAS to I&T/SVAC	06/13/03*	156	10/22/02A	D	9
1M1001550	Online EM2 release #2 to ELX	06/26/03	0	06/26/03	9	7
1M59000000	EM from CAL to I&T	06/30/03	-1	07/01/03	5	9



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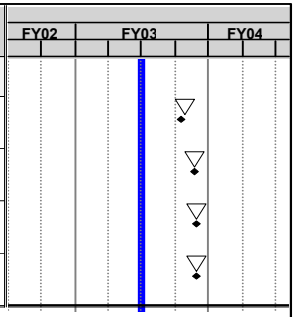
GLAST LAT PROJECT
Project Milestones (Level 3)
1 Year View (+/- 6mo)

0421
LT - MS (L3)

Sheet 2 of 3

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

Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date	AV	ND
Instrument Project Office (Level 3						
1M1000910	(36) MCM's for EM2 from Tracker to Elec	07/18/03	-7	07/29/03	4	7
1M75000000	(6) EM2 TEM-from Elec to CAL	08/25/03	0	08/25/03	7	5
1M1001520	EM CAL Returned to NRL (arrives on dock)	08/29/03*	2	08/27/03	9	5
1M19500400	CU S/C Simulator - ELX to I&T Online	08/29/03*	0	08/29/03*	7	9



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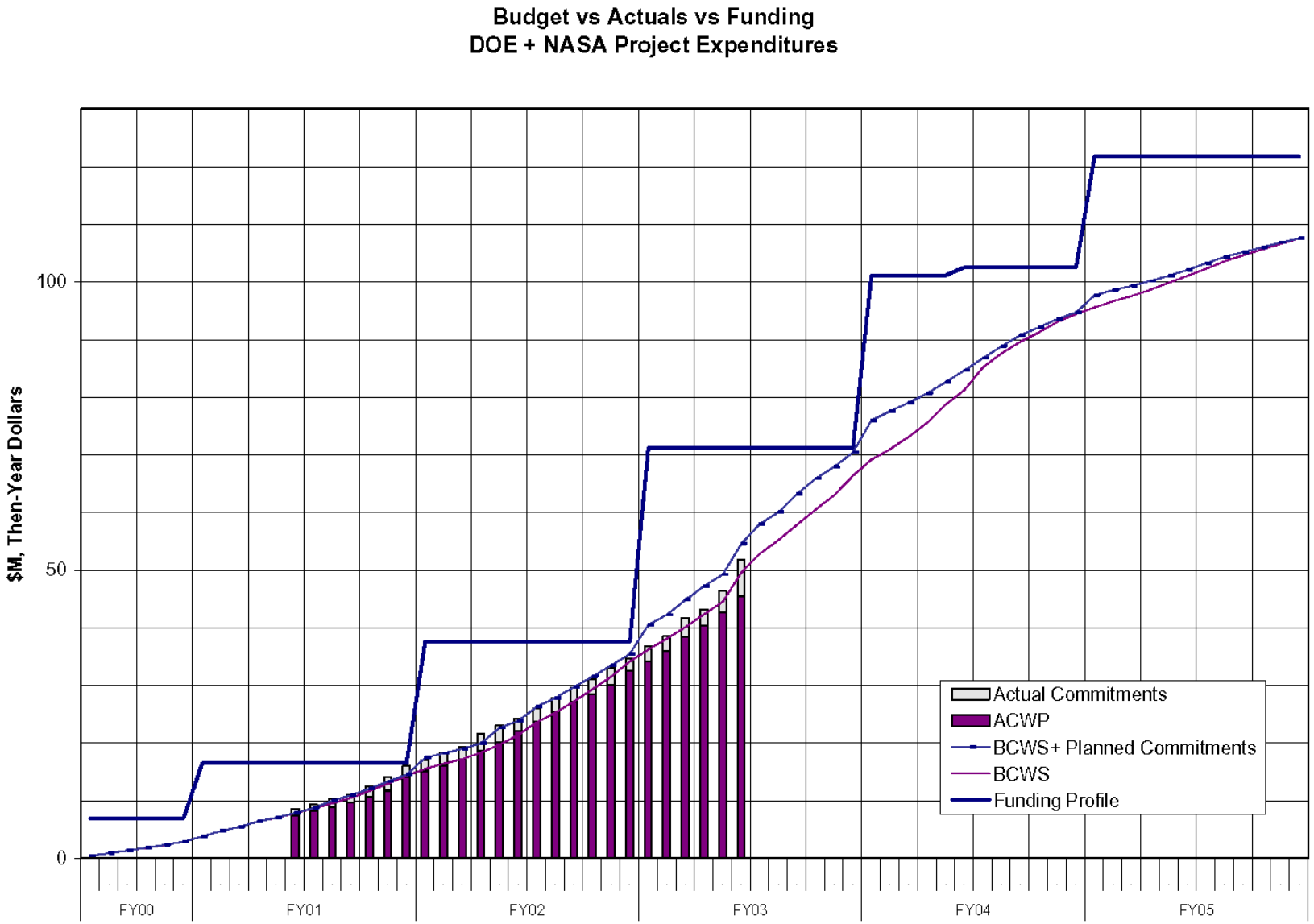
Attachment 3



Attachment 4
LAT Costs, through March 2003, by WBS

Monthly Contractor Financial Management Report								Report for Month Ending: 3/31/03		
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			4/3/00 Estimated Final Cost	Billing	Unfilled Orders Outstanding
	During Month		Cum. to Date		Detail		Balance of Budget	Project Estimate	Budget Value	
	Actual	Planned	Actual	Planned	APR03	MAY03				
4.1.1 INSTRUMENT MANAGEMENT	721	1,012	7,285	7,160	364	347	7,360	15,357	15,357	
4.1.2 SYSTEM ENGINEERING	149	466	3,029	3,049	205	175	3,044	6,453	6,453	
4.1.4 TRACKER	540	1,593	6,630	7,400	1,123	260	2,903	10,915	10,915	
4.1.5 CALORIMETER	427	336	7,372	8,631	309	278	9,871	17,830	17,830	
4.1.6 ANTICOINCIDENCE DETECTOR	293	1,133	6,790	7,048	257	374	4,136	11,557	11,557	
4.1.7 ELECTRONICS	345	318	4,828	4,898	384	351	11,109	16,672	16,672	
4.1.8 MECHANICAL SYSTEMS	192	40	3,735	4,643	315	277	6,046	10,373	10,373	
4.1.9 INTEGRATION & TEST	153	78	1,612	1,639	152	132	4,692	6,588	6,588	
4.1.A PERFORMANCE AND SAFETY ASSURANCE	-78	-90	729	1,061	30	29	819	1,607	1,607	
4.1.B LAT INSTRUMENT OPERATIONS CENTER	0	32	262	542	32	33	2,185	2,512	2,512	
4.1.C EDUCATION AND PUBLIC OUTREACH	16	32	746	842	38	32	1,868	2,684	2,684	
4.1.D SCIENCE ANALYSIS SOFTWARE	62	88	1,093	1,257	90	84	2,328	3,595	3,595	
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	2,820	5,038	45,435	49,491	3,301	2,372	56,355	107,462	107,462	

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

Monthly Contractor Financial Management Report									Report for Month Ending: 3/31/03	
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			4/3/00 Estimated Final Cost	Billing	Unfilled Orders Outstanding
	During Month		Cum. to Date		Detail		Balance of Budget	Project Estimate	Budget Value	
	Actual	Planned	Actual	Planned	APR03	MAY03				
DG *** GSFC	281	873	7,812	8,304	286	402	5,606	14,106	14,106	
DH *** HEPL	97	231	3,188	3,639	193	165	5,387	8,934	8,934	
DL *** SLAC	1,883	3,433	22,913	23,850	2,238	1,269	28,044	54,464	54,464	
DN *** NRL	504	478	9,237	11,183	484	453	14,179	24,353	24,353	
DO *** Financial Plan Transfer/Sub Out	0	0	32	32	0	0	0	32	32	
DS *** SSU	16	32	746	840	37	31	1,795	2,609	2,609	
DT *** Texas A&M	0	0	15	16	0	0	0	16	16	
DU *** UCSC	33	-17	1,470	1,603	54	43	1,100	2,666	2,666	
DW *** UW	5	8	21	24	9	8	245	283	283	
Total	2,820	5,038	45,435	49,491	3,301	2,372	56,355	107,462	107,462	

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	APR03	MAY03				
RL LABOR	1,403	1,634	26,740	27,603	1,256	1,185	29,201	58,382	58,382	
FTE (DOE/NASA)	*119.2*	*125.4*	*2,304.0*	*2,436.5*	*106.0*	*101.0*	*2,523.3*	*5,034.3*	*5,034.3*	
HOURS (DOE/NASA)	*20,028*	*21,072*	*384,766*	*399,493*	*18,637*	*16,950*	*411,166*	*831,518*	*831,518*	
RT TRAVEL	38	79	714	1,294	69	73	2,511	3,367	3,367	
RM MATERIAL & SERVICES	1,355	3,212	16,226	18,683	1,962	998	22,736	41,922	41,922	
RX MPS & LAB TAX	24	113	1,755	1,911	15	116	1,906	3,791	3,791	
Total (not incl FTE/Hours)	2,820	2,172	45,435	49,491	3,301	2,372	56,355	107,462	107,462	

Attachment 6
LAT Performance, through March 2003, by WBS

Cost Performance Report - Work Breakdown Structure													
Contractor: Location:					Contract Type/No:			Project Name/No: GLAST LAT Project		Report Period: 2/28/03	3/31/03		
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		
CAPW[3]	Current Period					Cumulative to Date					At Completion		
	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance			Latest	
Item	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Budgeted	Revised Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
4.1.1 INSTRUMENT MANAGEMENT	1,012	1,012	721	0	291	7,160	7,160	7,285	0	-125	15,357	15,357	0
4.1.2 SYSTEM ENGINEERING	466	472	149	6	322	3,049	3,049	3,029	0	20	6,453	6,453	0
4.1.4 TRACKER	1,593	996	540	-597	456	7,400	6,716	6,630	-684	87	10,915	10,915	0
4.1.5 CALORIMETER	336	306	427	-30	-120	8,631	7,613	7,372	-1,018	242	17,830	17,830	0
4.1.6 ANTICOINCIDENCE DETECTOR	1,133	757	293	-377	464	7,048	6,070	6,790	-978	-720	11,557	11,557	0
4.1.7 ELECTRONICS	318	348	345	30	3	4,898	4,834	4,828	-64	6	16,672	16,672	0
4.1.8 MECHANICAL SYSTEMS	40	160	192	120	-31	4,643	4,099	3,735	-544	364	10,373	10,373	0
4.1.9 INTEGRATION & TEST	78	97	153	19	-56	1,639	1,624	1,612	-15	12	6,588	6,588	0
4.1.A PERFORMANCE AND SAFETY ASSURA	-90	-90	-78	0	-13	1,061	1,061	729	0	332	1,607	1,607	0
4.1.B LAT INSTRUMENT OPERATIONS CENTI	32	45	0	13	45	542	486	262	-56	224	2,512	2,512	0
4.1.C EDUCATION AND PUBLIC OUTREACH	32	36	16	4	19	842	845	746	4	99	2,684	2,684	0
4.1.D SCIENCE ANALYSIS SOFTWARE	88	85	62	-2	24	1,257	1,246	1,093	-12	153	3,595	3,595	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	5,038	4,224	2,820	-814	1,404	49,491	46,125	45,435	-3,366	689	107,462	107,462	0
Contingency											14,251	14,251	
Total	5,038	4,224	2,820	-814	1,404	49,491	46,125	45,435	-3,366	689	121,713	121,713	

Attachment 7
LAT Performance, through March 2003, by Organization

Cost Performance Report - Organization														
Contractor: Location:					Contract Type/No:			Project Name/No: GLAST LAT Project		Report Period: 2/28/03 3/31/03				
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	Current Period					Cumulative to Date					At Completion			
	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance			Latest		
Item	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Budgeted	Revised Estimate	Variance	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
DG *** GSFC	873	540	281	-333	259	8,304	7,370	7,812	-934	-442	14,106	14,106	0	
DH *** HEPL	231	234	97	3	137	3,639	3,553	3,188	-86	365	8,934	8,934	0	
DL *** SLAC	3,433	2,884	1,883	-549	1,001	23,850	22,449	22,913	-1,402	-465	54,464	54,464	0	
DN *** NRL	478	475	504	-2	-29	11,183	10,176	9,237	-1,006	939	24,353	24,353	0	
DO *** Financial Plan	0	0	0	0	0	32	32	32	0	0	32	32		
DS *** SSU	32	36	16	4	19	840	843	746	3	97	2,609	2,609	0	
DT *** Texas A&M	0	0	0	0	0	16	16	15	0	0	16	16	0	
DU *** UCSC	-17	46	33	63	13	1,603	1,661	1,470	58	192	2,666	2,666	0	
DW *** UW	8	8	5	0	3	24	24	21	0	3	283	283		
Gen. and Admin.	0	0	0	0	0	0	0	0	0	0	0	0	0	
Undist. Budget											0	0	0	
Sub Total	5,038	4,224	2,820	-814	1,404	49,491	46,125	45,435	-3,366	689	107,463	107,463	0	
Contingency											14,250	14,250		
Total	5,038	4,224	2,820	-814	1,404	49,491	46,125	45,435	-3,366	689	121,713	121,713		

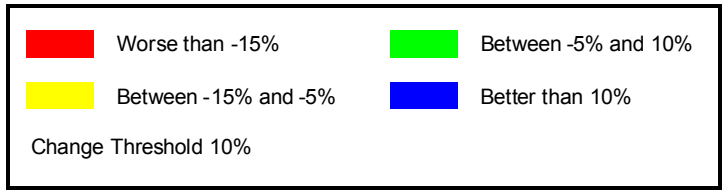
Attachment 8
LAT Performance Analysis, March 2003

	WBS	BAC	BCWS	BCWP	ACWP	SV $	CV $	% BCWS	% BCWP	% ACWP	SV Trend	CV Trend	SPI	CPI	Cpi_Fcst	CpiSpi_Fcst
1	4.1	107,463	49,491	46,125	45,435	-3,366	689	46.05	42.92	42.28	↓	↑	0.932	1.015	105,856	110,266
2	4.1.1	15,357	7,160	7,160	7,285	0	-125	46.63	46.63	47.44	↔	↑	1.000	0.983	15,625	15,625
3	4.1.2	6,453	3,049	3,049	3,029	0	20	47.25	47.25	46.94	↑	↑	1.000	1.007	6,410	6,410
4	4.1.4	10,915	7,400	6,716	6,630	-684	87	67.79	61.53	60.74	↓	↑	0.908	1.013	10,775	11,197
5	4.1.5	17,830	8,631	7,613	7,372	-1,018	242	48.41	42.70	41.34	↔	↓	0.882	1.033	17,263	18,586
6	4.1.6	11,557	7,048	6,070	6,790	-978	-720	60.98	52.52	58.75	↓	↑	0.861	0.894	12,928	13,917
7	4.1.7	16,672	4,898	4,834	4,828	-64	6	29.38	28.99	28.96	↑	↑	0.987	1.001	16,651	16,808
8	4.1.8	10,373	4,643	4,099	3,735	-544	364	44.76	39.52	36.01	↑	↓	0.883	1.097	9,451	10,210
9	4.1.9	6,588	1,639	1,624	1,612	-15	12	24.89	24.66	24.47	↑	↓	0.991	1.008	6,538	6,584
10	4.1.A	1,607	1,061	1,061	729	0	332	66.01	66.01	45.37	↔	↔	1.000	1.455	1,105	1,105
11	4.1.B	2,512	542	486	262	-56	224	21.58	19.36	10.45	↑	↑	0.897	1.853	1,356	1,481
12	4.1.C	2,684	842	845	746	4	99	31.36	31.50	27.80	↑	↑	1.004	1.133	2,369	2,362
13	4.1.D	3,595	1,257	1,246	1,093	-12	153	34.97	34.65	30.40	↓	↑	0.991	1.140	3,154	3,174
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

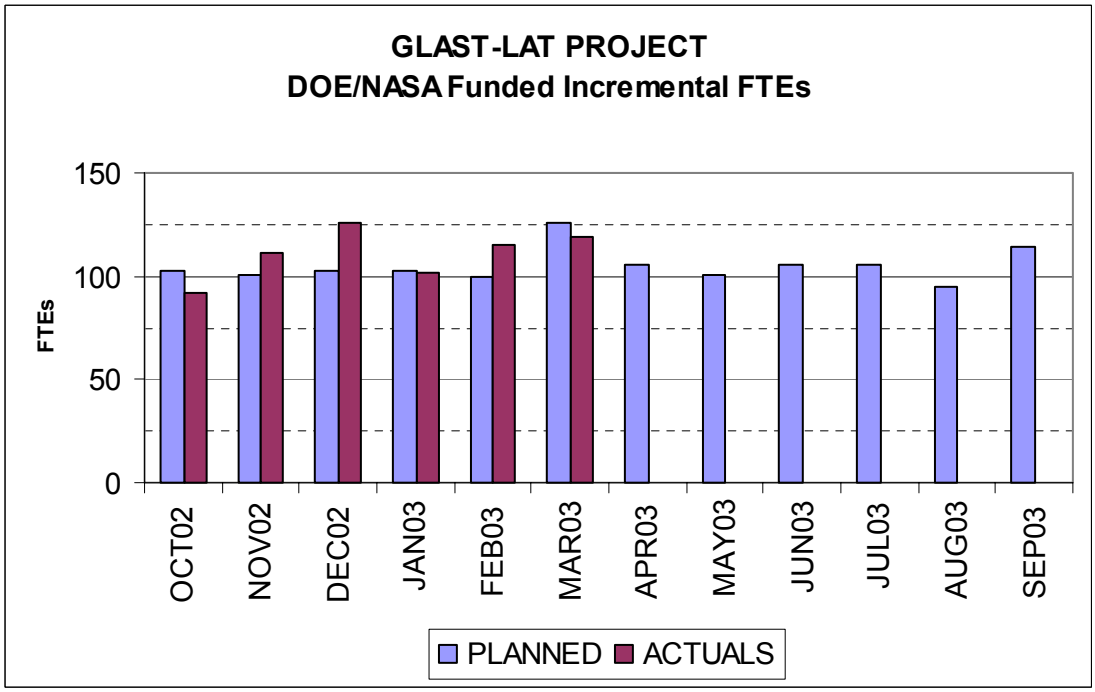
LEGEND

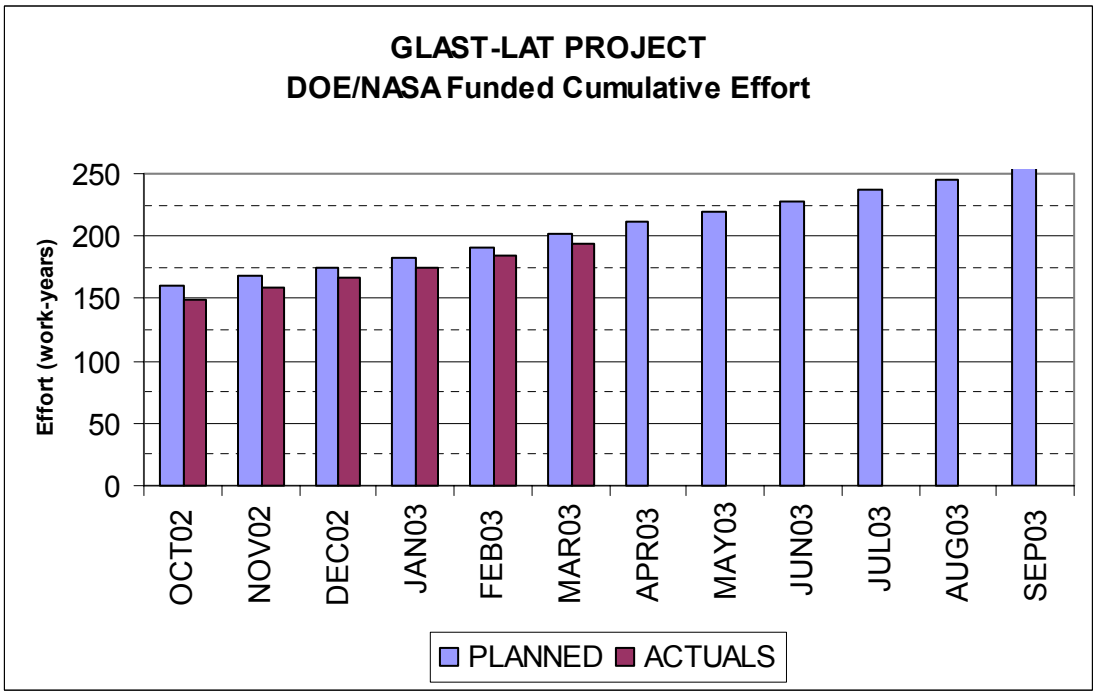
BAC: Budget At Complete SV $: Schedule Variance = BCWP - BCWS % BCWS: Percent Scheduled = BCWS/BAC
BCWS: Budgeted Cost of Work Scheduled (to date) CV $: Cost Variance = BCWP - ACWP % BCWP: Percent Complete = BCWP/BAC
BCWP: Budgeted Cost of Work Performed (to date) SPI: Schedule Performance Index = BCWP/BCWS % ACWP: Percent Spent = ACWP/BAC
ACWP: Actual Cost of Work Performed (to date) CPI: Cost Performance Index = BCWP/ACWP

SV Trend: Schedule Variance Trend = SV$ / BCWS
CV Trend: Cost Variance Trend = CV$ / BCWP
Cpi_Fcst: CPI (to date) EAC Forecast = BAC / CPI
CpiSpi_Fcst: Combination CPI and SPI EAC Forecast = ACWP + (BAC - BCWP) / (CPI *SPI)



Attachment 9
LAT Manpower (DOE/NASA-Funded)





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

Program:	Description:	Approval:
LAT3	GLAST LAT Project	Program Manager
Run Date:	Status Date:	Functional Manager
5/1/03	3/31/03	Cost Account Manager

CAPW[3]		PRIOR	OCT02	NOV02	DEC02	JAN03	FEB03	MAR03	**Cum-to Date**	APR03	MAY03	JUN03	JUL03	AUG03	SEP03
4.1.1 INSTRUMENT MANAGEMENT															
FTE	PLANNED	206.8	11.1	11.1	11.1	11.1	4.8	47.5	**303.3**	18.1	18.0	16.7	16.8	16.8	16.8
	ACTUALS	198.5	15.0	10.7	12.5	11.8	13.9	36.7	**299.0**	0.0	0.0	0.0	0.0	0.0	0.0
4.1.2 SYSTEM ENGINEERING															
FTE	PLANNED	37.0	2.1	2.1	2.0	1.8	1.9	-6.1	**40.8**	1.6	1.6	1.6	1.6	1.6	1.6
	ACTUALS	26.0	1.7	1.1	1.2	1.2	1.4	2.0	**34.7**	0.0	0.0	0.0	0.0	0.0	0.0
4.1.4 TRACKER															
FTE	PLANNED	509.3	21.6	25.8	27.3	26.1	26.6	15.3	**652.0**	28.3	28.1	19.9	17.6	18.5	20.5
	ACTUALS	479.9	16.9	24.5	25.3	21.4	22.9	18.9	**609.8**	0.0	0.0	0.0	0.0	0.0	0.0
4.1.5 CALORIMETER															
FTE	PLANNED	970.7	63.4	57.4	44.2	48.5	49.2	45.0	**1278.4**	43.3	44.0	51.8	52.4	48.7	56.0
	ACTUALS	299.5	20.4	22.9	24.9	16.0	16.5	18.1	**418.3**	0.0	0.0	0.0	0.0	0.0	0.0
4.1.6 ANTICOINCIDENCE DETECTOR															
FTE	PLANNED	306.5	23.2	22.9	19.0	19.5	18.3	53.2	**462.6**	24.9	20.6	20.3	15.5	16.4	20.1
	ACTUALS	275.9	25.8	31.5	39.1	30.3	27.2	29.4	**459.1**	0.0	0.0	0.0	0.0	0.0	0.0
4.1.7 ELECTRONICS															
FTE	PLANNED	254.6	7.1	7.7	13.3	19.1	21.1	16.1	**339.1**	18.6	18.5	17.9	17.9	13.7	21.6
	ACTUALS	264.0	8.1	8.6	10.8	13.6	18.6	22.2	**345.8**	0.0	0.0	0.0	0.0	0.0	0.0
4.1.8 MECHANICAL SYSTEMS															
FTE	PLANNED	130.5	10.9	13.8	7.5	8.4	7.8	-4.9	**174.0**	8.1	6.5	4.0	4.6	5.3	6.9
	ACTUALS	93.0	7.4	8.5	9.2	9.5	10.6	-7.3	**131.0**	0.0	0.0	0.0	0.0	0.0	0.0
4.1.9 INSTRUMENT INTEGRATION AND TESTING															
FTE	PLANNED	91.4	8.9	6.8	13.2	10.2	7.5	8.3	**146.3**	9.8	9.5	12.8	11.6	16.9	12.2
	ACTUALS	82.0	8.4	9.7	8.3	8.2	11.4	10.3	**138.3**	0.0	0.0	0.0	0.0	0.0	0.0
4.1.A PERFORMANCE AND SAFETY ASSURANCE															
FTE	PLANNED	52.0	2.6	2.6	2.6	2.6	2.6	-7.0	**57.9**	0.9	0.9	0.9	0.9	0.9	0.9
	ACTUALS	41.6	2.2	1.8	2.1	2.0	2.1	-4.0	**47.8**	0.0	0.0	0.0	0.0	0.0	0.0
4.1.B LAT INSTRUMENT OPERATIONS CENTER															
FTE	PLANNED	22.8	2.2	2.2	2.2	2.2	2.2	2.3	**36.0**	2.3	2.4	2.4	2.2	2.2	1.9
	ACTUALS	22.7	0.0	0.0	1.7	-1.8	0.0	0.0	**22.7**	0.0	0.0	0.0	0.0	0.0	0.0
4.1.C EDUCATION AND PUBLIC OUTREACH															
FTE	PLANNED	44.6	1.7	1.7	1.6	2.0	2.0	2.0	**55.4**	2.0	2.0	2.0	6.4	2.0	2.0
	ACTUALS	47.4	0.0	5.5	3.0	1.7	2.3	4.5	**64.4**	0.0	0.0	0.0	0.0	0.0	0.0
4.1.D SCIENCE ANALYSIS SOFTWARE															
FTE	PLANNED	318.2	18.5	18.2	23.1	20.2	25.0	24.7	**447.9**	24.7	24.7	24.5	24.1	23.0	23.6
	ACTUALS	186.2	9.6	10.2	10.5	11.5	11.6	12.1	**251.7**	0.0	0.0	0.0	0.0	0.0	0.0
4.1.E SUBORBITAL FLIGHT TEST															
FTE	PLANNED	111.9	0.0	0.0	0.0	0.0	0.0	0.0	**111.9**	0.0	0.0	0.0	0.0	0.0	0.0
	ACTUALS	75.3	0.0	0.0	0.0	0.0	0.0	0.0	**75.3**	0.0	0.0	0.0	0.0	0.0	0.0
Grand Totals:															
	PLANNED	3056.1	173.3	172.2	167.1	171.9	168.8	196.4	**4105.8**	182.3	176.8	174.6	171.5	166.0	184.1
	ACTUALS	2091.9	115.3	134.9	148.6	125.6	138.6	142.8	**2897.7**	0.0	0.0	0.0	0.0	0.0	0.0