Monthly Progress Report

(Month Ending August 2002)

GLAST Large Area Telescope (LAT)

LAT-MR-00994-01

October 11, 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 August, 2002.

2.0 Recent Progress and Status

Several key organizational changes occurred this period. Lowell Klaisner joined the project in the role of LAT Chief Engineer. This is a new position, responsible for overall engineering and design integration of the LAT during the final design, fabrication and commissioning phases, including responsibility for ensuring flight hardware and software design continuity across subsystems of the LAT and across the LAT-spacecraft interfaces.

Martin Nordby has assumed the role of Chief Mechanical Engineer, as part of the new LAT Instrument Design Engineering group (led by Lowell Klaisner). Marc Campell has replaced Martin Nordby as Mechanical Systems Subsystem Manager.

Dick Horn has agreed to take over the role of LAT Systems Engineer, allowing Tim Thurston to devote more time to pursue technical issues. Dick is currently the System Engineering representative at SLAC for the GLAST Mission Office.

Tracker: Chips for all four ASIC designs were received, and preliminary tests were successful. The engineering model ladders have been assembled and tested in Italy. The Tracker Multi-Chip Module assembly contractor began engineering model production. Loads at the bottom tray flexure bolt attach points were calculated; redesign analysis has commenced.

Calorimeter: In France, tooling for the crystal detector elements (CDEs) was received and the first test bonds performed. Problems with leakage of bonding material occurred which will require some modifications of the tooling (in progress). Forty-two crystals were shipped from Kalmar (Sweden) to NRL. Light yield was measured on the first four CDEs fabricated in the US; specifications were exceeded by 60%. Production tooling for the engineering model CDE fabrication has been initiated. Fabrication and assembly of the engineering model (EM) structure and baseplate has been completed. Dimension modification on all EM crystals has begun; the first 16 have been delivered to CEA/Saclay. The pre-engineering model analog front-end electronics (AFEE) board layout has been completed and submitted for fabrication. Preliminary testing of version 7 of the Calorimeter front-end ASICs (which will be used for the engineering model AFEE) indicates expected performance.

ACD: The electronics packaging design has been completed. The ASIC test boards have been fabricated. New clear fibers have been received and tested; while these are somewhat better than the previous ones, research into alternate fibers continues. Thermal

testing was conducted on two qualification phototubes, both of which operated successfully up to 50° C. Preparations have started for a Tile Detector Test, a partial engineering model of the ACD that includes a shell, mounting flexures, scintillator tiles, waveshifting fibers, optical connectors, clear fibers, and phototubes. This unit will undergo environmental vibration and thermal vacuum testing to qualify many parts of the ACD design. Plans for the ACD CDR are also underway.

Electronics: Verification of the Tower Electronics Model ASICs is in progress; it is expected that they will be ready for submission by the end of September. Dedicated run ASICs (ASICs of front-end systems) were received and are being tested. The Calorimeter front-end ASIC with in-flight programmable overload recovery circuit has been designed and will be fabricated in September. The schematic for the first engineering model TEM power supply board has been designed.

Mechanical Systems: Contact pressure testing of candidate heat pipe joints were conducted. Results will be used in determining the bolt patterns for thermal joints. Work commenced on the reduced thermal and structural analytical models. Friction testing of aluminum coupons is nearly completed. The Thermal Engineer role and one designer role have been filled.

Integration & Test: The test executive trade study report was completed. There will be a committee convened by System Engineering to review the results of the trade study and determine the direction to go. The Calorimeter "outermost features" model was completed. The test stands for the first engineering model were used productively for the first time. A working prototype of the engineering model database was completed.

3.0 Schedule Status

The status of significant milestones identified in the Project Management Plan (LAT-MD-00054-06, currently in review) for the LAT project is summarized in Attachments 1 and 2.

There are no Level 1-3 milestones scheduled during this reporting period. However, there are significant variances in several of the future Level 3 milestones.

Attention was diverted to support the front-end ASIC work, resulting in delays in the following Level 3 milestones: 1M1001420, 1M7941310, 1M7941330, 1M1001410, 1M1001510, 1M1001511, 1M1001512, 1M1001513, 1M1001514, 1M1001340 and 1M1001390. A workaround plan has been developed, and the schedule is expected to be restored by the next reporting period.

The flight software system specification milestone (1M1001360) shows a 32-day delay; however, the draft document is complete and awaiting LAT Instrument Project Office review.

The Science Analysis Software Subsystem Manager and the I&T Calibration Department Head have agreed that the Tracker dead/noisy strips (1M1001120) and the Calorimeter calibration prototype coding (1M1001110) will be completed by the end of October.

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 schedule variance in 4.1.5 Calorimeter is due to several items: the CDE bonding study development process taking longer than planned, a late start on the PEM assembly, a change in procedure for the AFEE engineering model board layout, and delays in the Calorimeter Module ground support equipment. The CDE bonding study manufacturing process has been shortened to recover time lost in the development process; a delay in crystal delivery is still a concern. The other variances are not currently considered critical.

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. Outstanding commitments at the end of FY01 had not been included in the plan. The project scheduling manpower and the historical outstanding commitments will be addressed via change request.

The favorable cost variance in 4.1.8 Mechanical Systems is largely due to subcontractor invoicing delays. These will be accrued in September. The unfavorable schedule variance is centered in two areas: drawings of the Grid Box were postponed until later in the engineering model development, and testing delays associated with the Grid Box

occurred. A designer was engaged in August to address the Grid Box drawings; planned manpower is being sought to address the other delays. The new subsystem manager estimates that the Grid Engineering Model program is 2-3 months behind schedule, and is investigating a recovery plan.

The unfavorable schedule variance in 4.1.9 Integration & Test is largely due to resource-leveling issues which will be corrected via change request next period (re-align tasks to match available resources, with no anticipated milestone changes). The mechanical ground support equipment task loading is being adjusted to reflect the updated completion dates in the six-month schedule extension. The cost variance has been favorably reduced this period, but continues to be a concern; this will be further reduced via the above-mentioned change requests correcting resource leveling.

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.

A change in the 4.1.B IOC subsystem management has resulted in a temporary favorable cost variance. This will be addressed once a permanent replacement subsystem manager has been appointed.

The favorable cost variance in 4.1.C Education & Public Outreach is attributed to invoice delays.

6.0 Change Control and Contingency Analysis

No change requests were approved by the LAT Configuration Control Board during August. The fabrication phase cost baseline is $100.0M. Funding applicable to that baseline is $121.2M; resulting contingency is $21.2M.

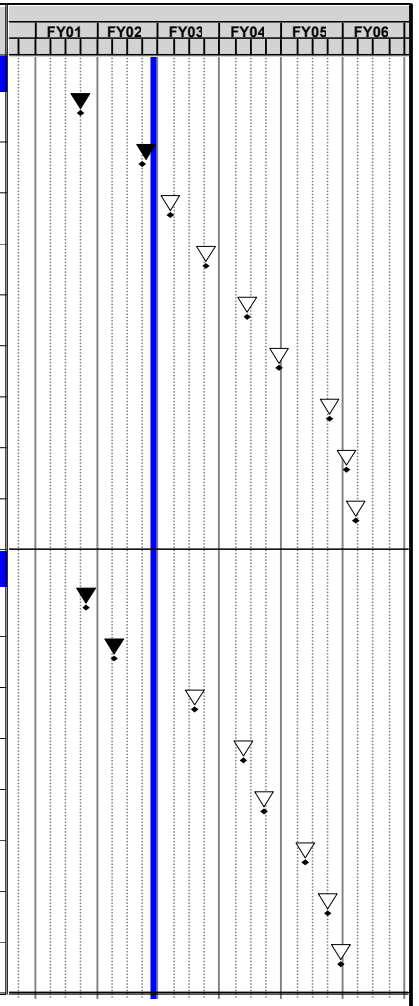
7.0 Staffing

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.

A small coding error was discovered in the LAT PMCS. The correction resulted in a redistribution between the “DOE-NASA funded” and “contributed” manpower reported in Attachment 10, including months prior to this reporting period. There is no change to the “Grand Totals” lines on the report.

Attachment 1
Milestones, Levels 1-2

Activity Description	Target Finish Date	Variance	Scheduled Finish Date
DOE Headquarters (Level 1			
CD-0 Approval	06/25/01A	0	06/25/01A
CD-1 Approval	07/01/02*	-15	07/23/02A
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 10/03/02 09:22

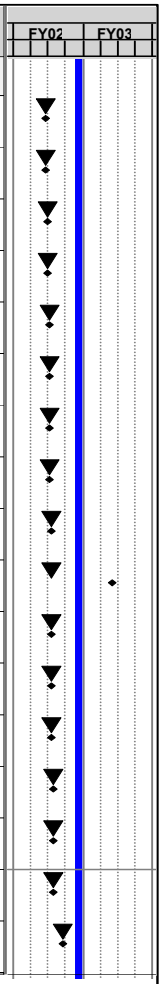
GLAST LAT PROJECT
Project Milestones (Level 1-2)

0924
LT - MS (L1-2)

Sheet 1

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

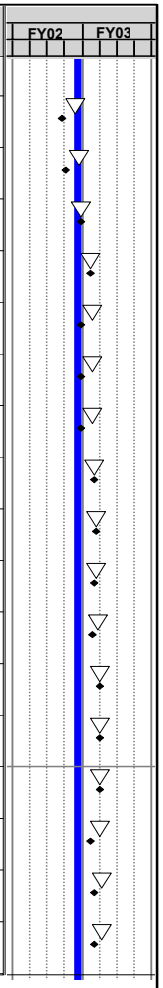
Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date	AV	ND
Instrument Project Office (Level 3						
1M1000970	MGSE Requirements for ACD (from I&T to ACD)	03/22/02A	0	03/22/02A	9	6
1M1001010	SLAC Facilities Specification (from I&T to ACD)	03/22/02A	0	03/22/02A	9	6
1M7941200	Online System Spec from I&T to IOC	03/29/02A	0	03/29/02A	9	B
1M1001160	TEM Data Taking Desc-ELX to I&T/Online	04/01/02A	0	04/01/02A	7	9
1M7941300	(1) Prototype Electronics Module (Elec to ACD)	04/08/02A	0	04/08/02A	7	6
1M1001200	AEM reg descrip-ELX to I&T/Online	04/12/02A	0	04/12/02A	7	9
1M7941362	EGSE Workstation / Software #1 (I&T to TKR)	04/12/02A	0	04/12/02A	9	4
1M7941363	EGSE Workstation / Software #1 (I&T to ELX)	04/12/02A	0	04/12/02A	9	7
1M7941361	EGSE Workstation / Software #1 (I&T to CAL)	04/15/02A	0	04/15/02A	9	5
1M7941380	EGSE Workstation / Software #3 (I&T to ACD)	03/03/03*	216	04/15/02A	9	6
1M7941360	EGSE Workstation / Software #1 (I&T to ACD)	04/16/02A	0	04/16/02A	9	6
1M7941370	EGSE Workstation / Software #2 (I&T to ACD)	04/16/02A	0	04/16/02A	9	6
1M7941140	EGSE EM1 H/W Release-Elec to I&T	04/22/02A	0	04/22/02A	7	9
1M1001300	Def of Data format from ELX/FSW to I&T/Online	05/01/02A	0	05/01/02A	7	9
1M1001320	GEM register description-ELX to I&T/Online	05/02/02A	0	05/02/02A	7	9
1M1001330	GEM data taking desc-ELX to I&T/Online	05/02/02A	0	05/02/02A	7	9
1M57000030	1st Major Release of Sim/Recon (SAS to I & T)	06/12/02	0	06/12/02A	D	9



Run Date 10/10/02 10:24	**GLAST LAT PROJECT**	0924 Sheet 1 of 3
	Project Milestones (Level 3)	LT - MS (L3)
© Primavera Systems, Inc.	**1 Year View (+/- 6mo)**	

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						
1M1001120	Tracker Dead/Noisy Strips (SAS to I & T)	06/21/02*	-49	08/30/02*	D	9
1M1001110	Calorimeter Calibration Prototype Coding SAS-I&T	07/08/02	-48	09/13/02	D	9
1M1000550	(9) MCM's from Tracker to Elec	09/20/02	0	09/20/02	4	7
1M7941350	High Voltage Power Supply (Bd & Prts)-ACD toElec	11/15/02*	0	11/15/02*	6	7
1M1001420	AEM H/W driver final ver-ELX to I&T/Online	09/20/02	-46	11/27/02	7	9
1M7941310	ACD Electronics Module - EM1 (Elec to ACD)	09/20/02	-46	11/27/02	7	6
1M7941330	Test/Screening Board w/ASIC for EM1 -ACD to Elec	09/20/02	-46	11/27/02	6	7
1M1001380	Delivery of EM (2X2) Grid to I&T/MSGE	12/02/02*	0	12/02/02*	8	9
1M1001430	Delv of TKR EM to SLAC I&T/MGSE	12/09/02*	0	12/09/02*	4	9
1M1001280	As-Built dwgs for EM TKR-TKR to I&T	12/05/02	-6	12/13/02	4	9
1M1001410	TEM H/W driver, final ver-ELX to I&T/Online	11/19/02	-20	12/19/02	7	9
1M1001210	AEM H/W driver, init ver-ELX to I&T/Online	01/02/03*	0	01/02/03*	7	9
1M1001310	AEM data taking desc-ELX to I&T/Online	01/02/03*	0	01/02/03*	7	9
1M1000980	Doc defining Backsplash Test Model (ACD to I&T)	01/03/03*	0	01/03/03*	6	9
1M1001340	GEM H/W driver, init ver-ELX to I&T/Online	11/12/02	-29	01/03/03	7	9
1M1001510	EM1 EGSE WS-S/W R2 I&T to ACD	12/05/02	-20	01/13/03	9	6
1M1001511	EM1 EGSE WS-S/W R2 I&T to CAL	12/05/02	-20	01/13/03	9	5



Run Date 10/10/02 10:24

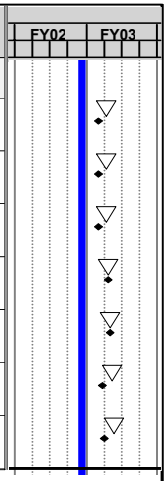
GLAST LAT PROJECT
Project Milestones (Level 3)
1 Year View (+/- 6mo)

0924
LT - MS (L3)

Sheet 2 of 3

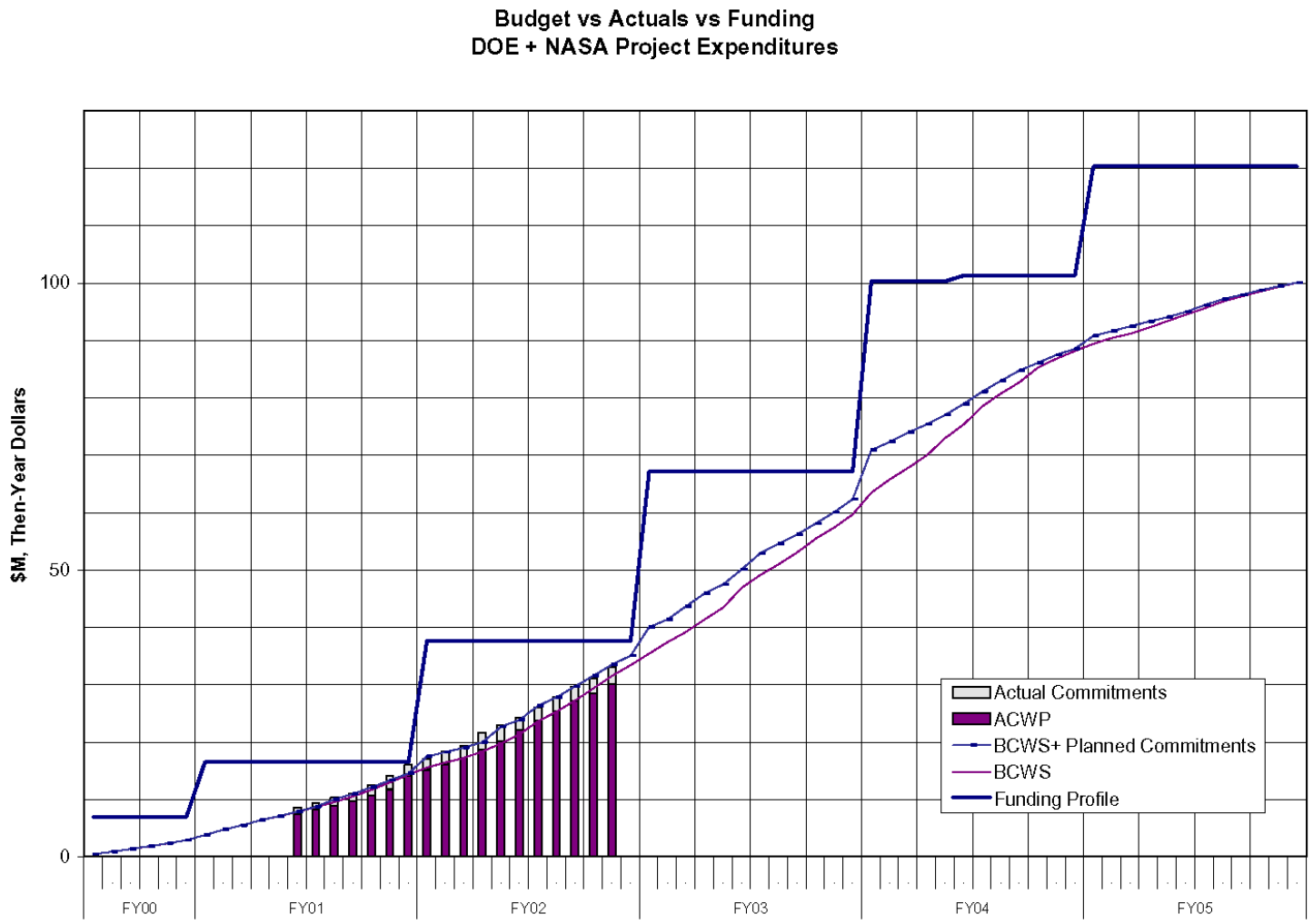
Attachment 2, Continued (Page 3 of 3)
Level 3 Milestones (One-Year View)

Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date	AV	ND
Instrument Project Office (Level 3						
1M1001512	EM1 EGSE WS-S/W R2 I&T to ELX	12/05/02	-20	01/13/03	9	7
1M1001513	EM1 EGSE WS-S/W R2 I&T to IOC	12/05/02	-20	01/13/03	9	B
1M1001514	EM1 EGSE WS-S/W R2 I&T to TKR	12/05/02	-20	01/13/03	9	4
1M1001130	Tracker Tower & Tray Alignment (SAS to I&T)	01/22/03*	0	01/22/03*	D	9
1M57000020	CAL AFFE Engr Model-CAL to Elec	02/03/03*	0	02/03/03*	5	7
1M1001360	FSW system spec-ELX/FSW to I&T/Online	12/20/02	-32	02/14/03	7	9
1M1001390	GEM h/w driver, final ver-ELX to I&T/Online	01/07/03	-29	02/19/03	7	9



Run Date 10/10/02 10:24	**GLAST LAT PROJECT**	0924 Sheet 3 of 3
© Primavera Systems, Inc.	**Project Milestones (Level 3)**	LT - MS (L3)
	1 Year View (+/- 6mo)	

Attachment 3



Attachment 4
LAT Costs, through August 2002, by WBS

Monthly Contractor Financial Management Report									Report for Month Ending: 8/31/02	
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 Estimated Final Cost	Billing	Unfilled Orders Outstanding
	During Month		Cum. to Date		Detail		Balance of	Project	Budget	
	Actual	Planned	Actual	Planned	SEP02	OCT02	Budget	Estimate	Value	
4.1.1 INSTRUMENT MANAGEMENT	230	242	4,910	4,940	220	210	6,262	11,602	11,602	
4.1.2 SYSTEM ENGINEERING	207	118	2,037	2,010	110	110	2,390	4,647	4,647	
4.1.4 TRACKER	91	157	4,868	4,911	172	109	4,728	9,877	9,877	
4.1.5 CALORIMETER	209	354	5,080	5,441	331	436	11,502	17,348	17,348	
4.1.6 ANTICOINCIDENCE DETECTOR	306	354	3,911	3,447	268	313	5,788	10,280	10,280	
4.1.7 ELECTRONICS	224	139	3,249	3,195	151	168	12,170	15,738	15,738	
4.1.8 MECHANICAL SYSTEMS	53	444	1,720	2,792	380	324	9,425	11,850	11,850	
4.1.9 INTEGRATION & TEST	116	196	815	857	102	126	5,611	6,654	6,654	
4.1.A PERFORMANCE AND SAFETY ASSURANCE	35	62	561	843	57	61	1,501	2,180	2,180	
4.1.B LAT INSTRUMENT OPERATIONS CENTER	0	18	262	358	10	33	2,246	2,552	2,552	
4.1.C EDUCATION AND PUBLIC OUTREACH	29	29	488	602	26	39	2,045	2,598	2,598	
4.1.D SCIENCE ANALYSIS SOFTWARE	23	51	735	751	42	63	2,488	3,328	3,328	
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	1,522	2,164	29,961	31,468	1,869	1,992	66,152	99,973	99,973	

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

Monthly Contractor Financial Management Report									Report for Month Ending: 8/31/02	
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 Estimated Final Cost	Billing	Unfilled Orders Outstanding
	During Month		Cum. to Date		Detail		Balance of Budget	Project Estimate	Budget Value	
	Actual	Planned	Actual	Planned	SEP02	OCT02				
DG *** GSFC	347	297	4,701	4,327	390	301	7,850	13,242	13,242	
DH *** HEPL	68	145	2,692	2,723	118	101	4,682	7,593	7,593	
DL *** SLAC	576	1,116	13,195	13,640	1,079	1,003	34,953	50,229	50,229	
DN *** NRL	333	477	6,265	6,745	450	423	16,491	23,629	23,629	
DS *** SSU	32	85	459	573	29	26	2,034	2,548	2,548	
DT *** Texas A&M	0	0	0	16	0	0	16	16	16	
DU *** UCSC	42	50	1,127	1,280	48	65	1,477	2,716	2,716	
Total	1,397	2,171	28,439	29,303	2,114	1,919	67,502	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	SEP02	OCT02				
RL LABOR	732	1,181	18,304	19,168	1,059	1,156	34,091	54,610	54,610	
FTE (DOE/NASA)	*84.2*	*109.1*	*1,530.7*	*1,702.2*	*107.0*	*98.0*	*3,094.3*	*4,830.1*	*4,830.1*	
HOURS (DOE/NASA)	*14,821*	*19,208*	*262,831*	*282,627*	*17,167*	*18,112*	*499,439*	*797,556*	*797,556*	
RT TRAVEL	24	56	539	891	51	69	2,567	3,227	3,227	
RM MATERIAL & SERVICES	623	783	10,004	10,507	682	685	27,033	38,404	38,404	
RX MPS & LAB TAX	143	145	1,113	902	77	83	2,460	3,733	3,733	
Total (not incl FTE/Hours)	1,522	2,164	29,961	31,468	1,869	1,993	66,151	99,973	99,973	

Attachment 6
LAT Performance, through August 2002, by WBS

Cost Performance Report - Work Breakdown Structure													
Contractor: Location:					Contract Type/No:			Project Name/No: GLAST LAT Project		Report Period: 7/31/02 8/31/02			
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	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	242	242	230	0	12	4,940	4,940	4,910	0	30	11,602	11,602	0
4.1.2 SYSTEM ENGINEERING	118	95	207	-23	-112	2,010	1,952	2,037	-58	-85	4,647	4,647	0
4.1.4 TRACKER	157	171	91	13	79	4,911	4,802	4,868	-109	-66	9,877	9,877	0
4.1.5 CALORIMETER	354	351	209	-3	142	5,441	5,105	5,080	-336	26	17,348	17,348	0
4.1.6 ANTICOINCIDENCE DETECTOR	354	399	306	45	93	3,447	3,292	3,911	-155	-619	10,280	10,280	0
4.1.7 ELECTRONICS	139	114	224	-26	-110	3,195	3,134	3,249	-61	-114	15,738	15,738	0
4.1.8 MECHANICAL SYSTEMS	444	290	53	-154	237	2,792	2,429	1,720	-363	708	11,850	11,850	0
4.1.9 INTEGRATION & TEST	196	189	116	-7	73	857	732	815	-124	-82	6,654	6,654	0
4.1.A PERFORMANCE AND SAFETY ASSURA	62	62	35	0	27	843	843	561	0	282	2,180	2,180	0
4.1.B LAT INSTRUMENT OPERATIONS CENTI	18	15	0	-3	15	358	338	262	-20	75	2,552	2,552	0
4.1.C EDUCATION AND PUBLIC OUTREACH	29	19	29	-10	-10	602	567	488	-34	80	2,598	2,598	0
4.1.D SCIENCE ANALYSIS SOFTWARE	51	34	23	-17	11	751	700	735	-52	-36	3,328	3,328	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	2,164	1,980	1,522	-184	458	31,468	30,155	29,961	-1,313	194	99,973	99,973	0
Contingency											21,267		
Total	2,164	1,980	1,522	-184	458	31,468	30,155	29,961	-1,313	194	121,240		

Attachment 7
LAT Performance, through August 2002, by Organization

Cost Performance Report - Organization													
Contractor: Location:					Contract Type/No:			Project Name/No: GLAST LAT Project		Report Period: 7/31/02	8/31/02		
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	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	390	435	358	44	77	4,717	4,561	5,059	-156	-498	13,242	13,242	0
DH *** HEPL	118	100	3	-18	97	2,841	2,764	2,695	-77	68	7,593	7,593	0
DL *** SLAC	1,130	914	809	-216	105	14,769	14,101	14,004	-668	97	50,229	50,229	0
DN *** NRL	450	428	284	-21	145	7,195	6,813	6,549	-382	264	23,629	23,629	0
DS *** SSU	29	19	29	-10	-10	602	567	488	-34	80	2,548	2,548	0
DT *** Texas A&M	0	0	0	0	0	16	16	0	0	16	16	16	0
DU *** UCSC	48	85	40	37	45	1,328	1,333	1,166	5	167	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	2,164	1,980	1,522	-184	458	31,468	30,155	29,961	-1,313	194	99,973	99,973	0
Contingency											21,267		
Total	2,164	1,980	1,522	-184	458	31,468	30,155	29,961	-1,313	194	121,240		

Attachment 8
LAT Performance Analysis, August 2002

	WBS	BAC	BCWS	BCWP	ACWP	SV $	CV $	% BCWS	% BCWP	% ACWP	SV Trend	CV Trend	SPI	CPI	Cpi_Fcst	CpiSpi_Fcst
2	4.1	99,974	31,468	30,155	29,961	-1,313	194	31.48	30.16	29.97	↔	↑	0.958	1.006	99,330	102,350
3	4.1.1	11,602	4,940	4,940	4,910	0	30	42.58	42.58	42.32	↔	↑	1.000	1.006	11,531	11,531
4	4.1.2	4,647	2,010	1,952	2,037	-58	-85	43.25	42.00	43.83	↓	↓	0.971	0.958	4,849	4,933
5	4.1.4	9,877	4,911	4,802	4,868	-109	-66	49.72	48.62	49.29	↑	↑	0.978	0.986	10,012	10,129
6	4.1.5	17,348	5,441	5,105	5,080	-336	26	31.36	29.43	29.28	↔	↑	0.938	1.005	17,261	18,062
7	4.1.6	10,280	3,447	3,292	3,911	-155	-619	33.53	32.02	38.05	↑	↑	0.955	0.842	12,214	12,604
8	4.1.7	15,738	3,195	3,134	3,249	-61	-115	20.30	19.92	20.64	↓	↓	0.981	0.965	16,313	16,567
9	4.1.8	11,850	2,792	2,429	1,720	-363	708	23.56	20.50	14.52	↓	↑	0.870	1.412	8,394	9,392
10	4.1.9	6,654	857	732	815	-124	-82	12.88	11.01	12.24	↑	↑	0.855	0.899	7,402	8,520
11	4.1.A	2,180	843	843	561	0	282	38.68	38.68	25.75	↔	↔	1.000	1.502	1,452	1,452
12	4.1.B	2,552	358	338	262	-20	75	14.04	13.24	10.29	↓	↑	0.943	1.287	1,983	2,087
13	4.1.C	2,598	602	567	488	-34	80	23.16	21.83	18.77	↓	↓	0.943	1.163	2,234	2,339
14	4.1.D	3,328	751	700	735	-52	-36	22.58	21.02	22.10	↓	↑	0.931	0.951	3,498	3,703
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	31,468	30,155	29,961	-1,313	194	31.48	30.16	29.97	↔	↑	0.958	1.006	99,330	102,350

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)

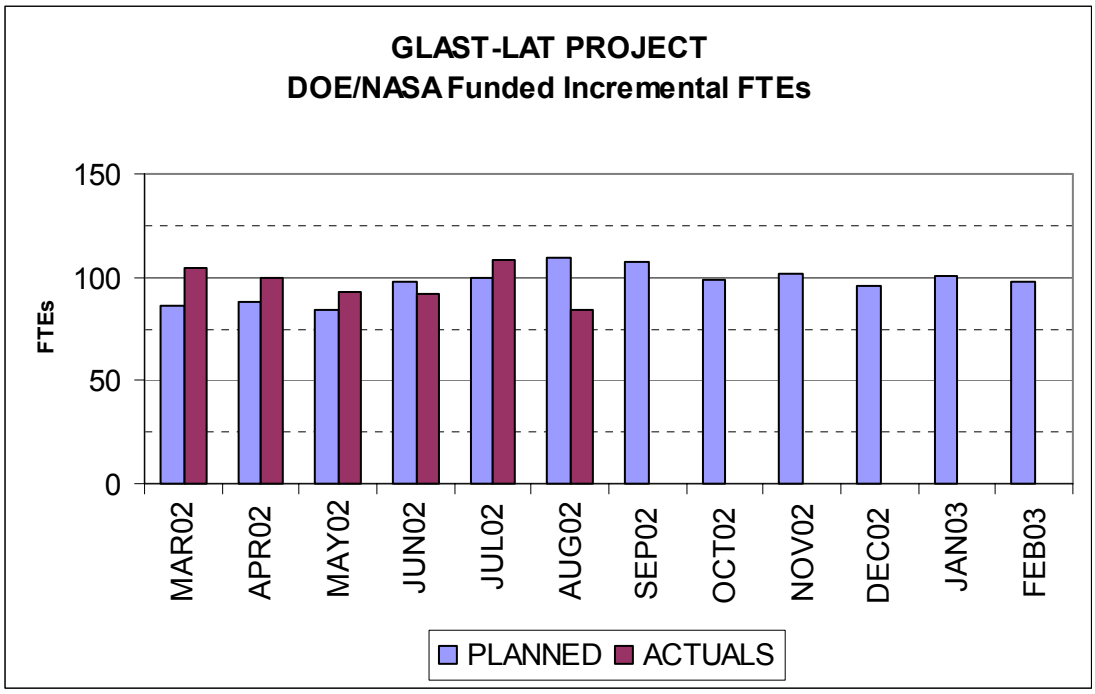
SV $: Schedule Variance = BCWP - BCWS
CV $: Cost Variance = BCWP - ACWP
SPI: Schedule Performance Index = BCWP/BCWS
CPI: Cost Performance Index = BCWP/ACWP

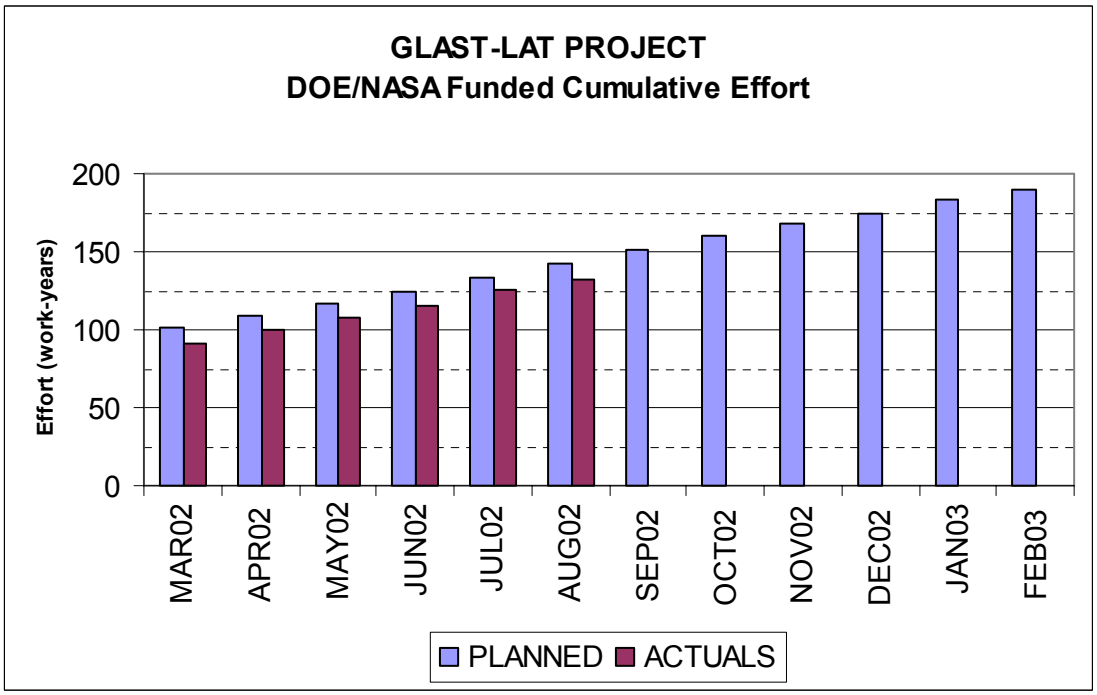
% BCWS: Percent Scheduled = BCWS/BAC
% BCWP: Percent Complete = BCWP/BAC
% ACWP: Percent Spent = ACWP/BAC

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 August 2002, by Organization

Program: LAT3	Description: GLAST LAT Project	Approval: Program Manager
Run Date: 10/2/02	Status Date: 8/31/02	Functional Manager
		Cost Account Manager

OBS		PRIOR	MAR02	APR02	MAY02	JUN02	JUL02	AUG02	**Cum-to-Date**	SEP02	OCT02	NOV02	DEC02	JAN03	FEB03
DG *** GSFC															
FTE	PLANNED	213.1	22.6	23.1	24.6	24.2	24.9	25.1	**357.6**	25.4	26.4	26.1	22.3	23.5	22.4
	ACTUALS	96.7	53.3	29.1	25.9	13.7	42.5	27.6	**288.7**	0.0	0.0	0.0	0.0	0.0	0.0
DH *** HEPL															
FTE	PLANNED	156.5	6.7	6.3	7.7	7.8	8.5	7.3	**200.8**	6.9	7.2	8.0	8.1	7.3	7.2
	ACTUALS	143.5	7.2	5.3	6.0	8.9	5.5	0.0	**176.4**	0.0	0.0	0.0	0.0	0.0	0.0
DL *** SLAC															
FTE	PLANNED	460.6	47.0	43.3	43.0	54.7	51.1	60.0	**759.8**	55.0	46.5	49.8	50.2	53.9	53.5
	ACTUALS	399.7	33.5	48.9	37.8	39.4	37.6	85.9	**682.8**	0.0	0.0	0.0	0.0	0.0	0.0
DN *** NRL															
FTE	PLANNED	248.0	21.3	21.7	15.2	20.7	21.6	23.7	**372.2**	25.8	22.1	22.5	20.4	22.9	23.5
	ACTUALS	246.9	9.5	31.5	23.5	30.1	21.1	17.0	**379.5**	0.0	0.0	0.0	0.0	0.0	0.0
DS *** SSU															
FTE	PLANNED	31.3	1.4	1.5	1.5	1.5	4.2	1.5	**43.1**	1.5	1.7	1.7	1.6	1.6	1.6
	ACTUALS	31.5	1.6	1.5	2.4	4.0	2.8	3.1	**47.0**	0.0	0.0	0.0	0.0	0.0	0.0
DU *** UCSC															
FTE	PLANNED	121.8	4.8	4.8	6.0	4.8	4.8	4.8	**151.9**	4.8	5.1	5.1	4.7	4.8	5.4
	ACTUALS	144.0	5.8	4.6	4.9	5.9	6.3	6.2	**177.8**	0.0	0.0	0.0	0.0	0.0	0.0
DW *** UW															
FTE	PLANNED	24.0	0.9	0.9	0.9	1.1	1.0	0.9	**29.7**	0.9	0.9	0.9	0.9	0.9	0.9
	ACTUALS								**0.0**						
FF *** France															
FTE	PLANNED	406.1	35.6	35.9	35.8	35.9	37.1	37.3	**623.7**	36.0	35.5	35.1	26.7	30.0	31.3
	ACTUALS								**0.0**						
FI *** Italy															
FTE	PLANNED	131.3	14.3	13.7	14.2	14.6	15.1	14.0	**217.3**	12.9	16.5	16.9	18.4	16.9	16.6
	ACTUALS	93.7	10.9	10.9	11.9	9.8	10.9	10.9	**158.7**	0.0	0.0	0.0	0.0	0.0	0.0
FJ *** Japan															
FTE	PLANNED	47.7	2.8	2.8	2.8	2.8	2.8	2.8	**64.3**	2.8	2.8	2.8	2.8	2.8	2.8
	ACTUALS	37.0	1.8	1.8	1.8	1.8	1.8	1.8	**47.5**	0.0	0.0	0.0	0.0	0.0	0.0
FK *** Sweden															
FTE	PLANNED	9.0	4.6	4.6	4.6	4.6	4.6	4.6	**36.6**	4.6	4.6	4.6	3.4	4.9	5.1
	ACTUALS								**0.0**						
Grand Totals:															
	PLANNED	1849.4	162.0	158.7	156.1	172.6	175.7	182.2	**2856.7**	176.5	169.1	173.5	159.6	169.5	170.3
	ACTUALS	1193.0	123.6	133.4	114.1	113.5	128.4	152.4	**1958.4**	0.0	0.0	0.0	0.0	0.0	0.0

4.1 GLAST LAT															
Contributed	PLANNED	712.5	75.6	70.4	71.9	74.6	76.5	73.0	**1154.5**	68.0	70.7	71.4	63.6	68.5	72.9
	ACTUALS	243.2	19.4	33.9	21.4	21.4	20.2	68.2	**427.7**	0.0	0.0	0.0	0.0	0.0	0.0
Funded	PLANNED	1136.9	86.4	88.3	84.3	98.0	99.3	109.1	**1702.2**	108.6	98.4	102.1	96.1	101.0	97.3
	ACTUALS	949.8	104.2	99.5	92.7	92.1	108.2	84.2	**1530.7**	0.0	0.0	0.0	0.0	0.0	0.0
Grand Totals:	PLANNED	1849.4	162.0	158.7	156.1	172.6	175.7	182.2	**2856.7**	176.5	169.1	173.5	159.6	169.5	170.3
	ACTUALS	1193.0	123.6	133.4	114.1	113.5	128.4	152.4	**1958.4**	0.0	0.0	0.0	0.0	0.0	0.0