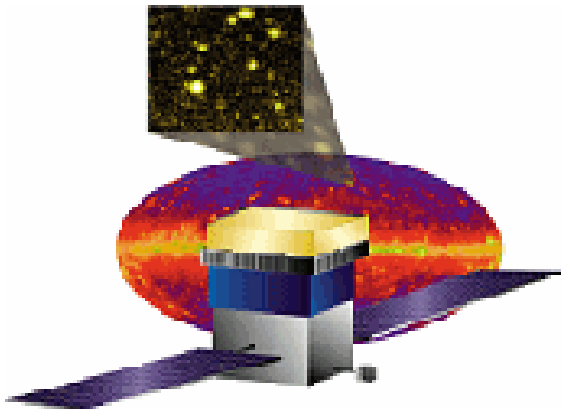
Monthly Progress Report

(Month Ending July 2004)

GLAST Large Area Telescope (LAT)



LAT-MR-04622-01

September 3, 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 July, 2004.

2.0 Recent Progress and Status

4.1.4 Tracker

The tower alignment procedure was successfully executed on the Engineering Model (EM); the eccentric cones can be accurately positioned with ease. Teledyne has shipped a total of 223 multichip modules (MCMs), enough for over five towers have passed environmental and burn-in testing. More than enough MCMs for the first flight tower have been reworked with the 75-ohm clock termination resistors. Development of the tooling and process for mounting MCMs onto trays has been completed. Two flight trays have been completely assembled and successfully tested. More than 25 pitch adapters were received and inspected; these pitch adaptors are of the new design, to be used for qualification of the new design. All bare panels for the first tower were fabricated and ESPI tested; sidewalls for the first tower were fabricated. Two sets of flight flex-circuit cables were received.

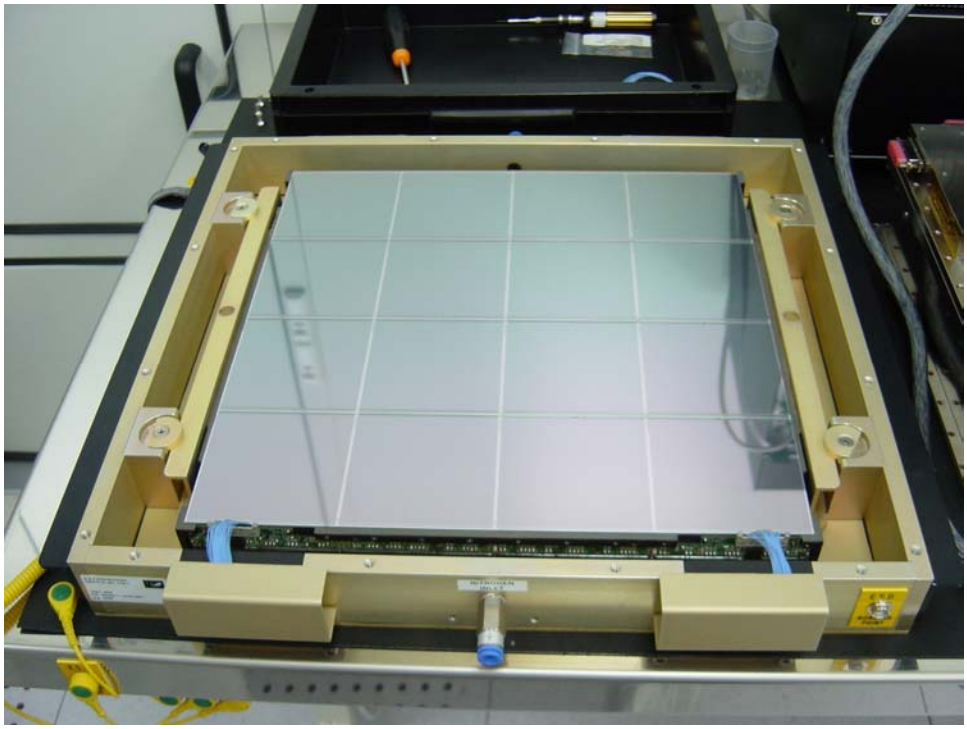


Figure 1: One of the first two flight trays after assembly and test.

4.1.5 Calorimeter

Over 1,760 fully-tested CsI crystals have been delivered to NRL. All the flight PIN photodiode assemblies have been manufactured and tested. Over 1,500 crystal detector elements (CDEs) have been bonded. Seventy-nine percent of these have been acceptance-tested, and 72% have been delivered to NRL. A material shortage will be realized in August, caused by a delay in delivery of the final 78 crystals. Fifteen flight composite structures have been manufactured; tooling wear problems have been corrected and future occurrences will be mitigated by more detailed inspection. Seven Pre-Electronics Modules (PEMs) have been assembled and tested with cosmic muons. Leakage current problems have been discovered in the Novacap capacitors; an alternate part has been selected. All flight analog front-end electronics (AFEE) boards have been manufactured. Fifty AFEE boards have been assembled, but capacitor replacement resulted in solder mask peeling. Several modifications have been made to the inspection and test of the AFEE boards. Two sets of electronics ground support equipment (EGSE) tower electronics module and power supply (TEM, TEM/PS) have been received; one has successfully completed workmanship vibration test. Electromagnetic interference (EMI) fixtures have been completed.

Figure 2: Seven completed CAL Pre-Electronics Modules are in storage awaiting installation of electronic cards. The completed PEMs have been tested using EGSE to verify the performance of the 96 CDEs in each using cosmic muon signals. Each PEM is stored under an ESD tent with dry nitrogen flow.

4.1.6 Anticoincidence Detector

All high-voltage bias supplies have been completed. Comprehensive performance testing was completed on all flight front-end electronics boards. A mounting hole location error was corrected on 11 tile detector assemblies (TDAs); TDA wrapping is underway. All

the flight ribbon detectors and clear fiber cables were assembled. The first electronics chassis was assembled. Following additional phototube breakage, analysis showed that the root cause was unexpected material properties of a potting agent. Several paths to recovering from this problem are under study.

Figure 3: ACD qualification electronics chassis.

4.1.7 Electronics, Data Acquisition, and Flight Software

Test and burn-in of Tower Electronics Module (TEM) ASICs continues; production is three-quarters complete. The test program for the GASU ASIC burn-in fixtures continues to be debugged. GASU EGSE production is stalled, awaiting connectors which are due in early August. All EGSE Power Distribution unit (PDU) boards are loaded; completion also awaits connectors due in early August. Work continues on the six remaining electronics ground support equipment (EGSE) test stands to be used by the Calorimeter for thermal vacuum testing. All twelve Calorimeter TEM and Tower Power Supply (TPS) boards were returned from conformal coating and staking. Work continues on the two remaining EGSE test stands to be used by the Tracker for thermal vacuum testing. All Tracker TEM and TPS boards (four in all) were returned from conformal coating and staking. Three more EGSE test stands for the Tracker remain to be constructed. EGSE crate (SIU/EPU) production has been completed, for a total of eight crates. A regular meeting was established with the production manager to track the TEM/TPS flight production. The lead-forming contract was placed. The VHDL for flight FPGAs has been finalized and documentation sent to the vendor. Testing and commissioning of the test bed continues.

All ISIS general commands are operational, and communication between the spacecraft and LAT is working in both directions. Hardware for the front-end simulator is complete, and the field programmable gate array firmware has been updated. A complete data path from GLEAM (GLAST Event Analysis Machine) to LATTE (LAT Test Executive) has been sent. The primary and secondary boot code functionality is complete, and loadable into the RAD750 CPU boards. The power-up sequencing code for the GASU was

written. An update of the LAT Communication Board driver is underway; modifications are being made to the control board test code and housekeeping; configuration code will need to be updated as well. Thermal control code has been written, without hardware. Detector electronics module and data acquisition board layers are being consolidated into a single LAT Event Manager package. Bit packing routines have been tested and the command line interface has been updated.

4.1.8 Mechanical Systems

Spacecraft interface drilling was completed on the flight grid; the flight grid is being inspected prior to plating. Initial machining of the second grid has been completed. Thermal joint trials for the downspout, cross-LAT and radiator heat pipes were completed. Process qualification tests for one of the three top flange heat pipe samples were conducted. The radiator installation trials were completed.

Figure 4: First grid on the coordinate measuring machine at Tapemation.

4.1.9 Integration & Test (I&T)

Training for crimping, connector mate/demate instruction, and metrology bay shimming was conducted. Proof test weights are in final machining. The first Online configuration control board met and action items established. Integration readiness peer reviews were held for Online and SVAC (Science, Verification, Analysis & Callibration). Version 3.4 of the LAT Test Executive (LATTE) was released, containing ACD software counters. The Van de Graaff accelerator column was rebuilt.

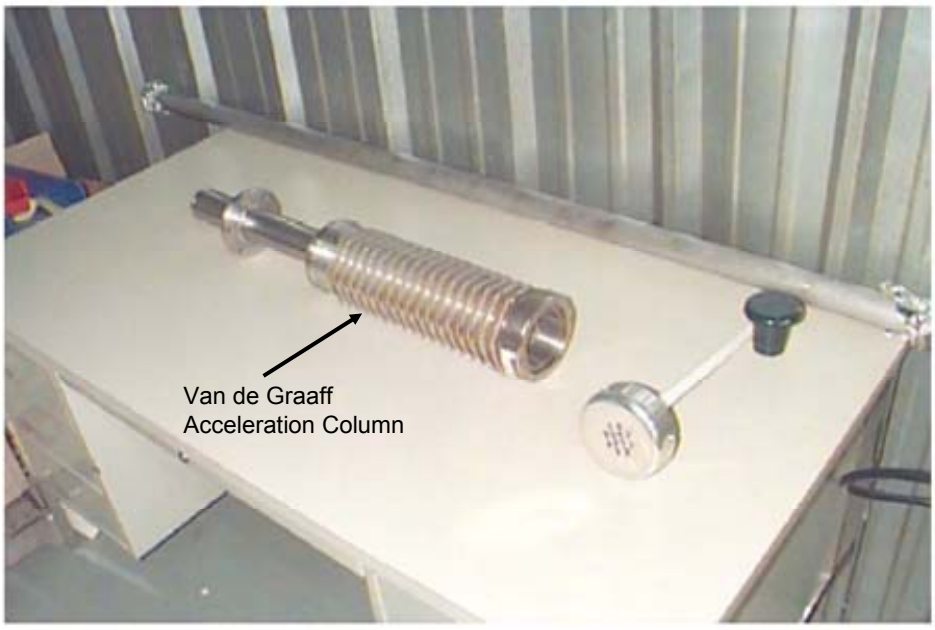


Figure 5: Overhauled Van de Graaff accelerator column.

3.0 Schedule Status

The critical path for the project is driven by the assembly of Tracker trays. There is no float to the "ready for CD-4 review" milestone (baseline has five weeks' float). Management changes were made in June to address the Tracker schedule, and a road map for system test is being prepared by System Engineering.

The status of significant milestones is summarized in Attachments 1 and 2. Attachment 1 presents the status of the Level 1 and Level 2 milestones. Attachment 2 shows the status of the 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.

The start of integration (level 2 milestone 1M1000740) has been delayed by delivery of the flight grid, as discussed below. The completion of the flight grid is also a level 1 milestone (1M1P000060). The delay in the pre-environmental test review (1M1000700) is due to the delay in Tracker tray assembly, and is the project critical path.

Following is discussion of the level 3 milestone variances, by responsible subsystem.

4.1.4 Tracker

The delivery of the full Tracker EM (milestone 1M1001430) was initially delayed by the issues discovered with the interface during the EM vibration test. A workaround plan is in place, enabling integration planning to continue by supplying other hardware and drawings in the interim. The EM tower will remain in Pisa for testing tower assembly and alignment procedures.

Variances to the following milestones are due to delays in the MCM and tray assembly processes, as well as the above-mentioned Tracker/grid interface redesign issues. (As of publication of this report, failures of the bias circuit bonding have occurred, potentially delaying delivery of the first flight tower to mid-November.)

- Tracker Modules A through 15 RFI (1M1000200, 1M1000201, 1M1000220, 1M1000221, 1M1000250, 1M1000251, 1M1000260, 1M1000261, 1M1000270, 1M1000271, 1M1000280, 1M1000281, 1M1000290, 1M1000291, 1M1000300, 1M1000301, and 1M1000310)

4.1.5 Calorimeter

Variances to the following milestones are due to delayed receipt of Calorimeter ASICs and other flight EEE parts. The schedule impact will be minimized by using parts before completion of screening and qualification. However, continuing problems with the delivery of tantalum capacitors are impacting the schedule. A sufficient number of alternate capacitors have been found to proceed with the first Calorimeter module electronic cards.

- Calorimeter Modules (1M1000210, 1M1500, 1M1000230, 1M1510, 1M1000400, 1M1520, 1M1000390, 1M1530, 1M1000380, 1M1540, 1M1000370, 1M1550, 1M1560, 1M1000360, 1M1000350, 1M1570, 1M1000340, and 1M1580)
- EM2 TEM/PS for FM9 through FM16 (return FMA through FM6) from I&T to Calorimeter (1M1001790 through 1M1001860)

4.1.6 Anticoincidence Detector

There are several factors slowing the development of the ACD Test Scripts (1M1001000). The G3 test stands have been delayed, the underlying LAT Test Executive software continues to evolve, and the translation of scientific requirements into test scripts has been more complex than planned. The online team delivered the required software to the ACD in July, and the test scripts are expected to be completed (though not in final form) by the end of September.

Several technical issues have impacted the delivery date of the ACD (1M1000410). The most notable issues have been flaws in the photomultiplier tubes that cause the glass tube to be much weaker than expected, the late delivery of ASICs, and the delay of the G3 test stands. The ACD team continues to mitigate these technical issues to minimize the overall schedule impact.

4.1.7 Electronics

Variances to the following milestones are due to delays in drawing release driving procurement placement. The drawing release process has been improved, and additional staff has been hired. Changes in functional requirements with other subsystems, and the functional interface with the spacecraft, as well as flight performance requirements not being satisfied by engineering model testing have impacted the deliveries of these milestones, as well. Additional testing of the qualification and engineering model units has been required in response.

- Flight TEM Power Supply Assemblies to I&T (1M79002010 through 1M79002180)
- Flight TEM Assemblies to I&T (1M79001010 through 1M79001180)
- Flight Cable Assemblies to I&T (1M79003010 through 1M79003180)

Variances to the following electronics ground support equipment (EGSE) milestones are due to delayed receipt and quality problems with connectors. Effort has been diverted to the installation of Tower Electronics Modules (TEMs) on the Test Bed.

- EGSE TEM/TEM PS/CTS w/ FE Electronics #2-3 to I&T (1M7941150, and 1M7941160)
- Updated EGSE Systems (#6-10) to Tracker (1M74000060 through 1M740000100).
- EGSE Development H/W/FSW 1st Delivery to I&T (1M7941180)
- EGSE TEM/TEM PS/CTS #2 for Bldg. 33 to I&T (1M7941420)
- EGSE TEM/TEM PS/CTS w/ GASU for Bldg. 33 to I&T (1M7941430)
- Final EGSE incl S/C Sim, FSW (1M7941440)

Variances to the following milestones are due to a delay in completion of the Tracker/Calorimeter tower electronics module (TEM) ASIC qualification and screening plan.

- EM2 TEM/PS/CTS for Flight Models 1-8 to Calorimeter (1M1001600, 1M1001650, 1M1001660, 1M1001680, 1M1001720, 1M1001760, 1M1001770, 1M1001780)

Fabrication of the following items has been delayed in order to conduct additional system and unit tests, and complete drawing review:

- Flight SIU (1M7941080)
- Flight PDU Box (1M7942000)
- Flight Harness (1M7941110)
- Flight GASU Box (1M7941070)
- Flight Event Processor Units (1M7941090)

A Flight Software demonstration of the Spacecraft Inter-Task Communications was held in July, in place of the scheduled Thermal Control & Deadtime demonstration (1M79020). A replan of the schedule of demonstrations is underway.

(Update: as of publication of this report, the milestones for EGSE TEM/TEM PS/CTS w/ FE Elec #2 and #3 to I&T, EGSE TEM/TEM PS/CTS #2 for Bldg. 33, EGSE Systems 6 through 8 to Tracker, EGSE TEM/PS/CTS for Flight Models 1-6 to Calorimeter, and the ISOC CDR have been completed.)

4.1.8 Mechanical Systems

The flight grid (1M1000240 and 1M1P000060) has been delayed due to the modifications made to the Tracker/grid interface, adding several weeks' to the manufacturing effort. The schedule savings from adding a second shift to the grid machining have not compensated for the complexity of the machining operations. In addition, a machine failure resulted in a loss of eleven manufacturing days. Discrepencies were found during inspection, requiring resolution. A Materials Review Board action was required before proceeding to the plating operations. The manufacturing sequence is being evaluated to preserve schedule.

The cross-LAT (X-LAT) thermal plate (1M941710) has been delayed due to issues with the electronics box to X-LAT plate interface, the ground cooling design implementation, and heat pipe bending. These have all been resolved, the source control drawing was released and the manufacturing readiness review was held. The vendor has received approval to proceed. This delay is not expected to impact the LAT schedule.

4.1.B Instrument Science Operations Center

The ISOC CDR date (1M005480) was delayed from March to August. This was a recommendation of the ISOC Peer Review held in March, and aligns the review date with the documentation availability. This has been coordinated with the GLAST project office at Goddard to minimize the impact on LAT ground system readiness.

The dates for the Mission Operations Review (1M1000112), and the Ground System Interface Test Start (1M7941270) have been adjusted to align with the project level ground data system (GDS) preparation on which these reviews are dependent. Given the current GLAST GDS schedule, there is no impact due to the date change and no need for mitigation.

4.0 Financial Status

Attachment 3 depicts the costs, commitments, and performance through the end of the current reporting period.

Attachments 4 and 5 summarize the actual costs through the current period, by WBS level 3 and institution, respectively. The hours worked/FTE lines include only DOE/NASA-funded labor.

5.0 Performance Status (Comparison to Project Baseline)

Attachment 6 is a Cost Performance Report (CPR) for the end of the current reporting period, by WBS level 3. The CPR shows the time-phased budget to date (BCWS), the earned value (BCWP), and the actual costs through the end of the month (ACWP). Attachment 7 shows the same information for each participating DOE- and/or NASA-funded institution. The schedule variance is equal to the difference between the budget-to-date and the earned value and represents a measure of the ahead (positive) or behind

(negative) schedule position. The cost variance is equal to the difference between the earned value and the actual costs.

Attachment 8 shows performance analysis (by WBS level 3), including trends in the schedule and cost variances from the previous period. Cumulative cost variances exceeding 10% of the BCWP and cumulative schedule variances exceeding 10% of BCWS (favorable and unfavorable) are discussed below.

4.1.7 Electronics

The unfavorable schedule variance is due to changes in functional requirements with other subsystems, and the functional interface with the spacecraft, as well as flight performance requirements not being satisfied by engineering model testing. Additional modification and testing of the engineering model units has been required in response. Documentation and drawings for flight fabrication took longer than originally estimated.

4.1.C Education & Public Outreach

The favorable cost variance is due to delayed subcontractor invoice payments, and is not a concern at this time.

6.0 Change Control and Contingency Analysis

There were no change requests (Level 3 and above) approved this period.

The fabrication phase cost baseline remains at $128.0M. Funding applicable to that baseline is $136.0M; the resulting contingency is $8.0M.

7.0 Staffing

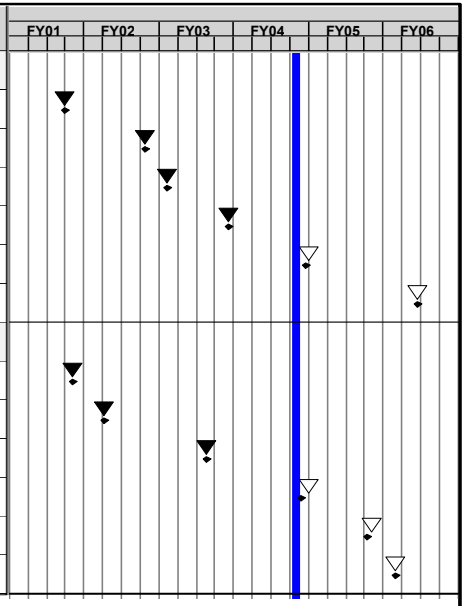
Attachments 9-10 demonstrate the staffing plan, and reports of actual manpower received. Note from Attachment 10 that not all participating organizations are providing manpower data.

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

Goddard manpower was not reported in the months of October, November, and December, 2003. The February, 2004, incremental FTE report includes a correction, so that the cumulative-to-date actual manpower is correct.

Attachment 1
Milestones, Levels 1-2

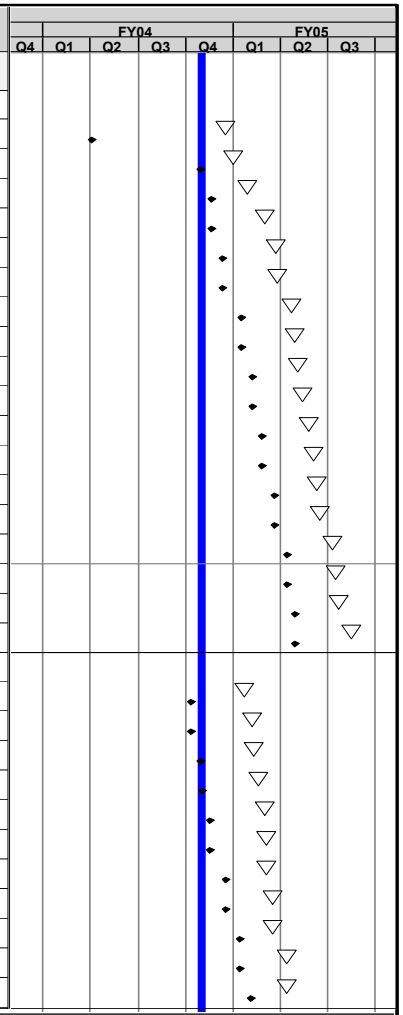
Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date
DOE/NASA Joint Oversight Group (Level 1				
1M1P000000	DOE Critical Decision (CD) 0 Approval	06/25/01A	0	06/25/01A
1M1P000010	CD-1 Approval	07/23/02A	0	07/23/02A
1M1P000020	CD-2 Approval	11/08/02A	0	11/08/02A
1M1P000030	CD-3 Approval	09/03/03A	0	09/03/03A
1M1P000060	Flight GRID Complete	09/15/04*	-13	10/04/04
1M1P000040	CD-4 Approval	03/15/06*	0	03/15/06*
DOE/NASA Federal Project Managers (Level 2				
1M1BF00000	Launch Balloon Flight	08/01/01A	0	08/01/01A
1M1000100	Instrument Preliminary Design Review	01/08/02A	0	01/08/02A
1M1000110	I-CDR (Critical Design Review)	05/16/03A	0	05/16/03A
1M1000740	Start LAT Integration	08/24/04*	-28	10/04/04
1M1000700	Pre Environmental Testing Review	07/14/05*	-17	08/08/05
1M1000120	PSR-(Instrument Pre-Ship Review)	12/01/05*	0	12/01/05*



Run Date 09/01/04 08:11	**GLAST LAT PROJECT**	0819 Sheet 1 of 1
	Project Milestones (Level 1 and 2)	LT_MS1-2

Attachment 2
Level 3 Milestones (One-Year View)
Page 1 of 6

Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date
Instrument Project Office (Level 3				
4.1.4 Tracker				
1M1001430	Delv of TKR EM to SLAC I&T/MGSE	01/02/04	-178	09/15/04
1M1000200	Tracker Modules A RFI	07/28/04	-45	09/30/04
1M1000201	Tracker Modules B RFI	08/18/04	-51	10/29/04
1M1000220	Tracker Modules 1 RFI	08/18/04	-70	11/29/04
1M1000221	Tracker Modules 2 RFI	09/08/04	-72	12/21/04
1M1000250	Flight Tracker Tower 3 RFI	09/08/04	-74	12/23/04
1M1000251	Flight Tracker Tower 4 RFI	10/14/04	-61	01/20/05
1M1000260	Flight Tracker Tower 5 RFI	10/14/04	-66	01/27/05
1M1000261	Flight Tracker Tower 6 RFI	11/05/04	-55	02/03/05
1M1000270	Flight Tracker Tower 7 RFI	11/05/04	-60	02/10/05
1M1000271	Flight Tracker Tower 8 RFI	11/24/04	-54	02/22/05
1M1000280	Flight Tracker Tower 9 RFI	11/24/04	-61	03/03/05
1M1000281	Flight Tracker Tower 10 RFI	12/17/04	-51	03/10/05
1M1000290	Flight Tracker Tower 11 RFI	12/17/04	-56	03/17/05
1M1000291	Flight Tracker Tower 12 RFI	01/11/05	-61	04/08/05
1M1000300	Flight Tracker Tower 13 RFI	01/11/05	-66	04/15/05
1M1000301	Flight Tracker Tower 14 RFI	01/25/05	-62	04/22/05
1M1000310	Flight Tracker Tower 15 RFI	01/25/05	-79	05/17/05
4.1.5 Calorimeter				
1M1000210	Calorimeter Modules A RFI	07/09/04	-73	10/21/04
1M1500	Calorimeter Modules B RFI	07/09/04	-84	11/05/04
1M1000230	Calorimeter Modules 1 RFI	07/30/04	-72	11/10/04
1M1510	Calorimeter Modules 2 RFI	08/02/04	-78	11/19/04
1M1000400	Flight Calorimeter Tower 3 RFI	08/17/04	-72	11/30/04
1M1520	Flight Calorimeter Tower 4 RFI	08/17/04	-75	12/03/04
1M1000390	Flight Calorimeter Tower 5 RFI	09/15/04	-55	12/03/04
1M1530	Flight Calorimeter Tower 6 RFI	09/15/04	-62	12/14/04
1M1000380	Flight Calorimeter Tower 7 RFI	10/11/04	-44	12/14/04
1M1540	Flight Calorimeter Tower 8 RFI	10/11/04	-57	01/10/05
1M1000370	Flight Calorimeter Tower 9 RFI	11/02/04	-41	01/10/05



Run Date 09/01/04 08:18

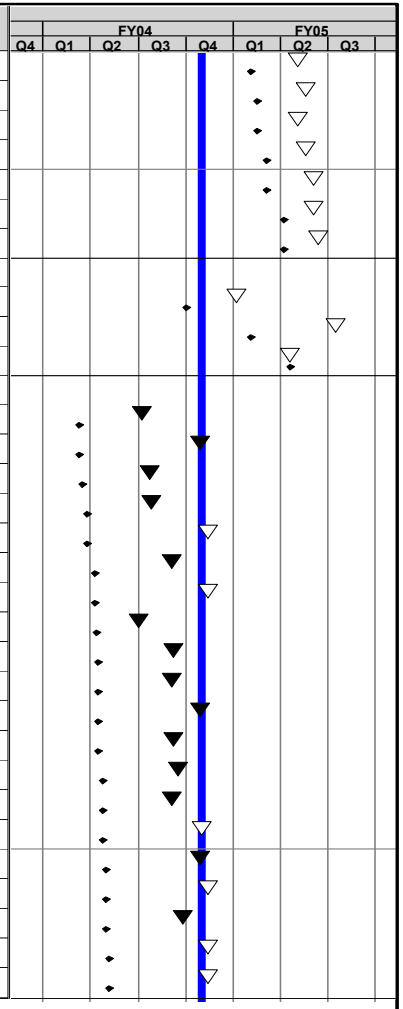
GLAST LAT PROJECT
Project Milestones (Level 3)
1 Year View (+/- 6mo)

0819
LTX1 - MS (L3)
FLX1- MS (L3)

Sheet 1 of 6

Attachment 2
Level 3 Milestones (One-Year View)
Page 2 of 6

Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date
1M1550	Flight Calorimeter Tower 10 RFI	11/02/04	-55	01/31/05
1M1560	Flight Calorimeter Tower 12 RFI	11/15/04	-60	02/18/05
1M1000360	Flight Calorimeter Tower 11 RFI	11/16/04	-45	01/31/05
1M1000350	Flight Calorimeter Tower 13 RFI	12/02/04	-49	02/18/05
1M1570	Flight Calorimeter Tower 14 RFI	12/02/04	-58	03/04/05
1M1000340	Flight Calorimeter Tower 15 RFI (Spare)	01/06/05	-39	03/04/05
1M1580	Flight Calorimeter Tower 16 RFI (Spare)	01/06/05	-45	03/14/05
4.1.6 ACD				
1M1001000	ACD Test Scripts (from ACD to I&T)	07/01/04	-68	10/07/04
1M1000410	ACD Flight Unit at SLAC, Tested/Inspected & RFI	11/03/04	-107	04/15/05
1M1000990	ACD Calibration Test Unit at SLAC, Tested & RFI	01/18/05	0	01/18/05
4.1.7 Electronics				
1M74000010	Updated EGSE System 1: Elec to TKR	12/08/03	-80	04/09/04A
1M7941130	EGSE TEM/TEM PS/CTS w/ FE Elec #1-Elec to I&T	12/08/03	-158	07/30/04A
1M76000020	G3 Test Stand (test 2 FREE Cards): Elec to ACD	12/15/03	-84	04/22/04A
1M74000020	Updated EGSE System 2: Elec to TKR	12/22/03	-82	04/27/04A
1M7941150	EGSE TEM/TEM PS/CTS w/ FE Elec #2-Elec to I&T	12/22/03	-158	08/13/04
1M74000030	Updated EGSE System 3: Elec to TKR	01/07/04	-104	06/04/04A
1M7941160	EGSE TEM/TEM PS/CTS w/ FE Elec #3-Elec to I&T	01/07/04	-153	08/13/04
1M1000920	EM2 TEM: Elec to Tracker	01/12/04	-55	03/31/04A
1M1001900	Test Stations (5) for AFEE: Elec to CAL	01/14/04	-100	06/07/04A
1M74000040	EGSE System 4: Elec to TKR	01/14/04	-99	06/04/04A
1M7941170	EGSE TEM/TEM PS/CTS/GASU FE Elec-Elec to I&T	01/14/04	-138	07/30/04A
1M1001870	5 EM2 TEM/PS for AFEE brd ass & tst: Elec to CAL	01/15/04	-99	06/07/04A
1M1001220	EM2 TEM/PS/CTS for FMA from Elec to CAL	01/22/04	-101	06/15/04A
1M74000050	EGSE System 5: Elec to TKR	01/22/04	-94	06/04/04A
1M7941180	EGSE Development Hrdw/FSW 1st Delivr-Elec to I&T	01/22/04	-134	08/02/04*
1M1001260	EM2 TEM/PS/CTS for FMB from Elec to CAL	01/29/04	-128	07/30/04A
1M74000060	EGSE System 6: Elec to TKR	01/29/04	-138	08/13/04
1M7941190	EGSE TEM/TEM PS/CTS #1 for Bldg 33-Elec to I&T	01/29/04	-104	06/25/04A
1M1001600	EM2 TEM/PS/CTS for FM1 from Elec to CAL	02/05/04	-133	08/13/04
1M7941420	EGSE TEM/TEM PS/CTS #2 for Bldg 33-Elec to I&T	02/05/04	-133	08/13/04



Run Date 09/01/04 08:18

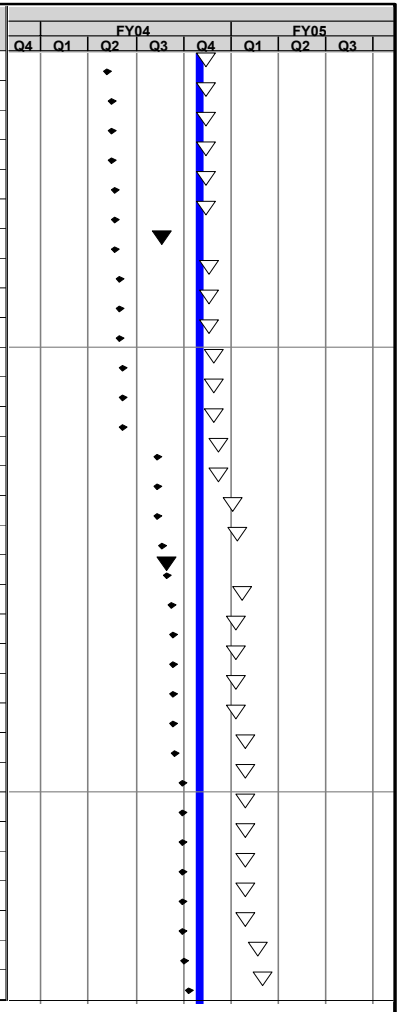
GLAST LAT PROJECT
Project Milestones (Level 3)
1 Year View (+/- 6mo)

0819
LTX1 - MS (L3)
FLX1- MS (L3)

Sheet 2 of 6

Attachment 2
Level 3 Milestones (One-Year View)
Page 3 of 6

Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date
1M7941430	EGSE TEM/TEM PS/CTS w/ GASU for B33-Elec to	02/05/04	-133	08/13/04
1M1001650	EM2 TEM/PS/CTS for FM2 from Elec to CAL	02/12/04	-128	08/13/04
1M74000070	EGSE System 7: Elec to TKR	02/12/04	-128	08/13/04
1M74000080	EGSE System 8: Elec to TKR	02/12/04	-128	08/13/04
1M74000090	EGSE System 9: Elec to TKR	02/20/04	-123	08/13/04
1M74000100	EGSE System 10: Elec to TKR	02/20/04	-123	08/13/04
1M76000030	G3 Test Stand (Flt-like I/F): Elec to ACD	02/20/04	-64	05/20/04A
1M1001660	EM2 TEM/PS/CTS for FM3 from Elec to CAL	02/27/04	-123	08/20/04
1M1001680	EM2 TEM/PS/CTS for FM4 from Elec to CAL	02/27/04	-123	08/20/04
1M1001720	EM2 TEM/PS/CTS for FM5 from Elec to CAL	02/27/04	-123	08/20/04
1M1001760	EM2 TEM/PS/CTS for FM6 from Elec to CAL	03/05/04	-123	08/27/04
1M1001770	EM2 TEM/PS/CTS for FM7 from Elec to CAL	03/05/04	-123	08/27/04
1M1001780	EM2 TEM/PS/CTS for FM8 from Elec to CAL	03/05/04	-123	08/27/04
1M79003010	Flight Cables Assy A: Elec to I&T	05/10/04	-83	09/07/04
1M79003020	Flight Cables Assy B: Elec to I&T	05/10/04	-83	09/07/04
1M79002010	Flight TEM PS Assy A: Elec to I&T	05/12/04	-100	10/04/04
1M79002020	Flight TEM PS Assy B: Elec to I&T	05/19/04	-100	10/11/04
1M79010	Demo: SI Functionality - Elec to MO	05/28/04*	0	05/28/04A
1M79001010	Flight TEM Assy A: Elec to I&T	06/07/04	-95	10/20/04
1M79003030	Flight Cables Assy 1: Elec to I&T	06/10/04	-84	10/08/04
1M79003040	Flight Cables Assy 2: Elec to I&T	06/10/04	-84	10/08/04
1M79003050	Flight Cables Assy 3: Elec to I&T	06/10/04	-84	10/08/04
1M79003060	Flight Cables Assy 4: Elec to I&T	06/10/04	-84	10/08/04
1M79001020	Flight TEM Assy B: Elec to I&T	06/14/04	-95	10/27/04
1M79003070	Flight Cables Assy 5: Elec to I&T	06/28/04	-87	10/29/04
1M79003080	Flight Cables Assy 6: Elec to I&T	06/28/04	-87	10/29/04
1M79003090	Flight Cables Assy 7: Elec to I&T	06/28/04	-87	10/29/04
1M79003100	Flight Cables Assy 8: Elec to I&T	06/28/04	-87	10/29/04
1M79003110	Flight Cables Assy 9: Elec to I&T	06/28/04	-87	10/29/04
1M79003120	Flight Cables Assy 10: Elec to I&T	06/28/04	-87	10/29/04
1M79002030	Flight TEM PS Assy 1: Elec to I&T	07/01/04	-100	11/22/04
1M79002040	Flight TEM PS Assy 2: Elec to I&T	07/09/04	-100	12/01/04



Run Date 09/01/04 08:18

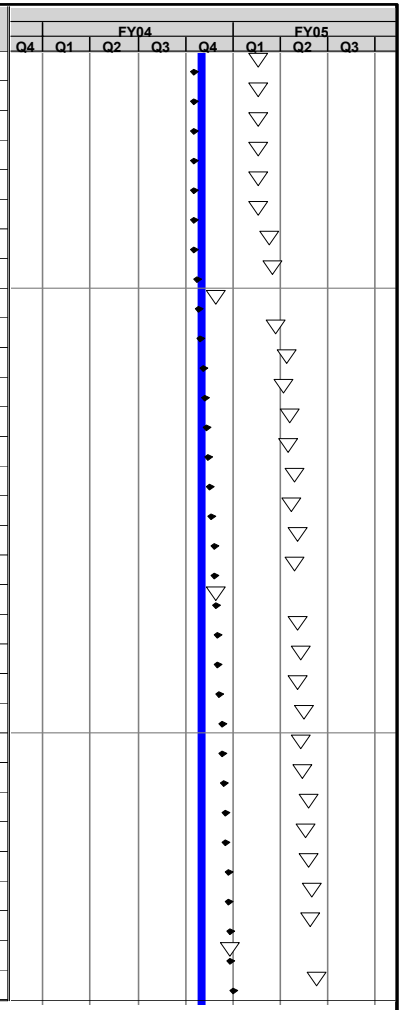
GLAST LAT PROJECT
Project Milestones (Level 3)
1 Year View (+/- 6mo)

0819
LTX1 - MS (L3)
FLX1- MS (L3)

Sheet 3 of 6

Attachment 2
Level 3 Milestones (One-Year View)
Page 4 of 6

Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date
1M79003130	Flight Cables Assy 11: Elec to I&T	07/15/04	-90	11/19/04
1M79003140	Flight Cables Assy 12: Elec to I&T	07/15/04	-90	11/19/04
1M79003150	Flight Cables Assy 13: Elec to I&T	07/15/04	-90	11/19/04
1M79003160	Flight Cables Assy 14: Elec to I&T	07/15/04	-90	11/19/04
1M79003170	Flight Cables Assy 15: Elec to I&T	07/15/04	-90	11/19/04
1M79003180	Flight Cables Assy 16: Elec to I&T	07/15/04	-90	11/19/04
1M79002050	Flight TEM PS Assy 3: Elec to I&T	07/16/04	-100	12/08/04
1M79002060	Flight TEM PS Assy 4: Elec to I&T	07/23/04	-100	12/15/04
1M79020	Demo: Thermal Control & Deadtime - Elec to MO	07/26/04*	-24	08/27/04
1M79002070	Flight TEM PS Assy 5: Elec to I&T	07/30/04	-100	12/22/04
1M79001030	Flight TEM Assy 1: Elec to I&T	08/03/04	-105	01/10/05
1M79002080	Flight TEM PS Assy 6: Elec to I&T	08/06/04	-100	01/06/05
1M79001040	Flight TEM Assy 2: Elec to I&T	08/10/04	-105	01/18/05
1M79002090	Flight TEM PS Assy 7: Elec to I&T	08/13/04	-100	01/13/05
1M79001050	Flight TEM Assy 3: Elec to I&T	08/17/04	-105	01/25/05
1M79002100	Flight TEM PS Assy 8: Elec to I&T	08/20/04	-100	01/21/05
1M79001060	Flight TEM Assy 4: Elec to I&T	08/24/04	-105	02/01/05
1M79002110	Flight TEM PS Assy 9: Elec to I&T	08/25/04	-100	01/26/05
1M79030	Demo: Multi-Tower Config & Filter - Elec to MO	08/27/04*	0	08/27/04
1M79002120	Flight TEM PS Assy 10: Elec to I&T	08/30/04	-100	01/31/05
1M79001070	Flight TEM Assy 5: Elec to I&T	08/31/04	-105	02/08/05
1M79002130	Flight TEM PS Assy 11: Elec to I&T	09/02/04	-100	02/03/05
1M79001080	Flight TEM Assy 6: Elec to I&T	09/08/04	-105	02/15/05
1M79002140	Flight TEM PS Assy 12: Elec to I&T	09/08/04	-100	02/08/05
1M79002150	Flight TEM PS Assy 13: Elec to I&T	09/13/04	-100	02/11/05
1M79001090	Flight TEM Assy 7: Elec to I&T	09/15/04	-105	02/23/05
1M79002160	Flight TEM PS Assy 14: Elec to I&T	09/16/04	-100	02/16/05
1M79002170	Flight TEM PS Assy 15: Elec to I&T	09/21/04	-100	02/22/05
1M79001100	Flight TEM Assy 8: Elec to I&T	09/22/04	-105	03/02/05
1M79002180	Flight TEM PS Assy 16: Elec to I&T	09/24/04	-100	02/25/05
1M79040	Demo: EPO Boot & Commanding - Elec to MO	09/24/04*	0	09/24/04
1M79001110	Flight TEM Assy 9: Elec to I&T	09/29/04	-105	03/09/05



Run Date 09/01/04 08:19

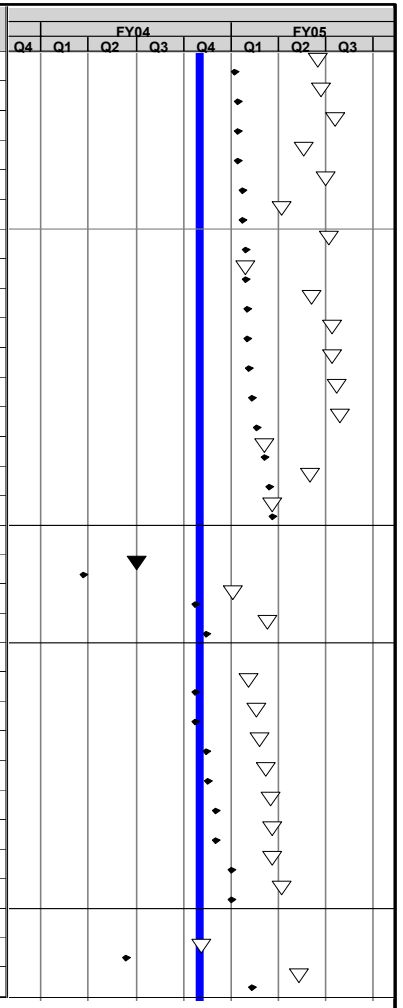
GLAST LAT PROJECT
Project Milestones (Level 3)
1 Year View (+/- 6mo)

0819
LTX1 - MS (L3)
FLX1- MS (L3)

Sheet 4 of 6

Attachment 2
Level 3 Milestones (One-Year View)
Page 5 of 6

Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date
1M79001120	Flight TEM Assy 10: Elec to I&T	10/06/04	-105	03/16/05
1M79001130	Flight TEM Assy 11: Elec to I&T	10/13/04	-105	03/23/05
1M7941080	Flight SIU-Elec to I&T	10/13/04	-123	04/18/05
1M7942000	Flight PDU Box-Elec to I&T	10/13/04	-81	02/16/05
1M79001140	Flight TEM Assy 12: Elec to I&T	10/20/04	-105	03/30/05
1M7941110	Flight Harness-Elec to I&T	10/20/04	-48	01/06/05
1M79001150	Flight TEM Assy 13: Elec to I&T	10/27/04	-105	04/06/05
1M79050	Demo: Inst. Calibration - Elec to MO	10/29/04*	0	10/29/04
1M7941070	Flight GASU Box-Elec to I&T	11/01/04*	-78	03/03/05
1M7941090	Flight Event Processor Units-Elec to I&T	11/01/04	-106	04/12/05
1M79001160	Flight TEM Assy 14: Elec to I&T	11/03/04	-105	04/13/05
1M79001170	Flight TEM Assy 15: Elec to I&T	11/10/04	-105	04/20/05
1M79001180	Flight TEM Assy 16: Elec to I&T	11/17/04	-105	04/27/05
1M79060	Demo: Full 1553 & Full Towers Cmnds - Elec to MO	12/03/04*	0	12/03/04
1M7941440	Final EGSE incl S/C Sim, FSW-Elec to I&T	12/13/04	-47	02/28/05
1M79070	Demo: FU Build - Elec to MO	12/17/04*	0	12/17/04
4.1.8 Mechanical				
1M1001380	Delivery of EM (1X4) Grid to I&T/MSGE	12/19/03	-64	03/31/04A
1M1000240	Flight Grid RFI-Mech to I&T	07/22/04	-51	10/04/04
1M941710	X-LAT Thermal Plate RFI from Mech to I&T	08/12/04	-82	12/09/04
4.1.9 I&T				
1M1001790	EM2 TEM/PS for FM9 (return FMA) from I&T to CAL	07/23/04	-73	11/04/04
1M1001800	EM2 TEM/PS for FM10 (return FMB)from I&T to CAL	07/23/04	-84	11/19/04
1M1001810	EM2 TEM/PS for FM11 (return FM1) from I&T to CAL	08/13/04	-72	11/24/04
1M1001820	EM2 TEM/PS for FM12 (return FM2) from I&T to CAL	08/16/04	-78	12/07/04
1M1001830	EM2 TEM/PS for FM13 (return FM3) from I&T to CAL	08/31/04	-72	12/14/04
1M1001840	EM2 TEM/PS for FM14 (return FM4) from I&T to CAL	08/31/04	-75	12/17/04
1M1001850	EM2 TEM/PS for FM15 (return FM5) from I&T to CAL	09/29/04	-55	12/17/04
1M1001860	EM2 TEM/PS for FM16 (return FM6) from I&T to CAL	09/29/04	-62	01/05/05
4.1.B ISOC				
1M005480	ISOC CDR	03/12/04	-101	08/04/04*
1M1000112	Mission Operations Review (L-21mo.)	11/10/04	-56	02/09/05



Run Date 09/01/04 08:19

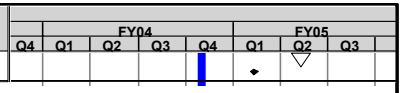
GLAST LAT PROJECT
Project Milestones (Level 3)
1 Year View (+/- 6mo)

0819
LTX1 - MS (L3)
FLX1- MS (L3)

Sheet 5 of 6

Attachment 2
Level 3 Milestones (One-Year View)
Page 6 of 6

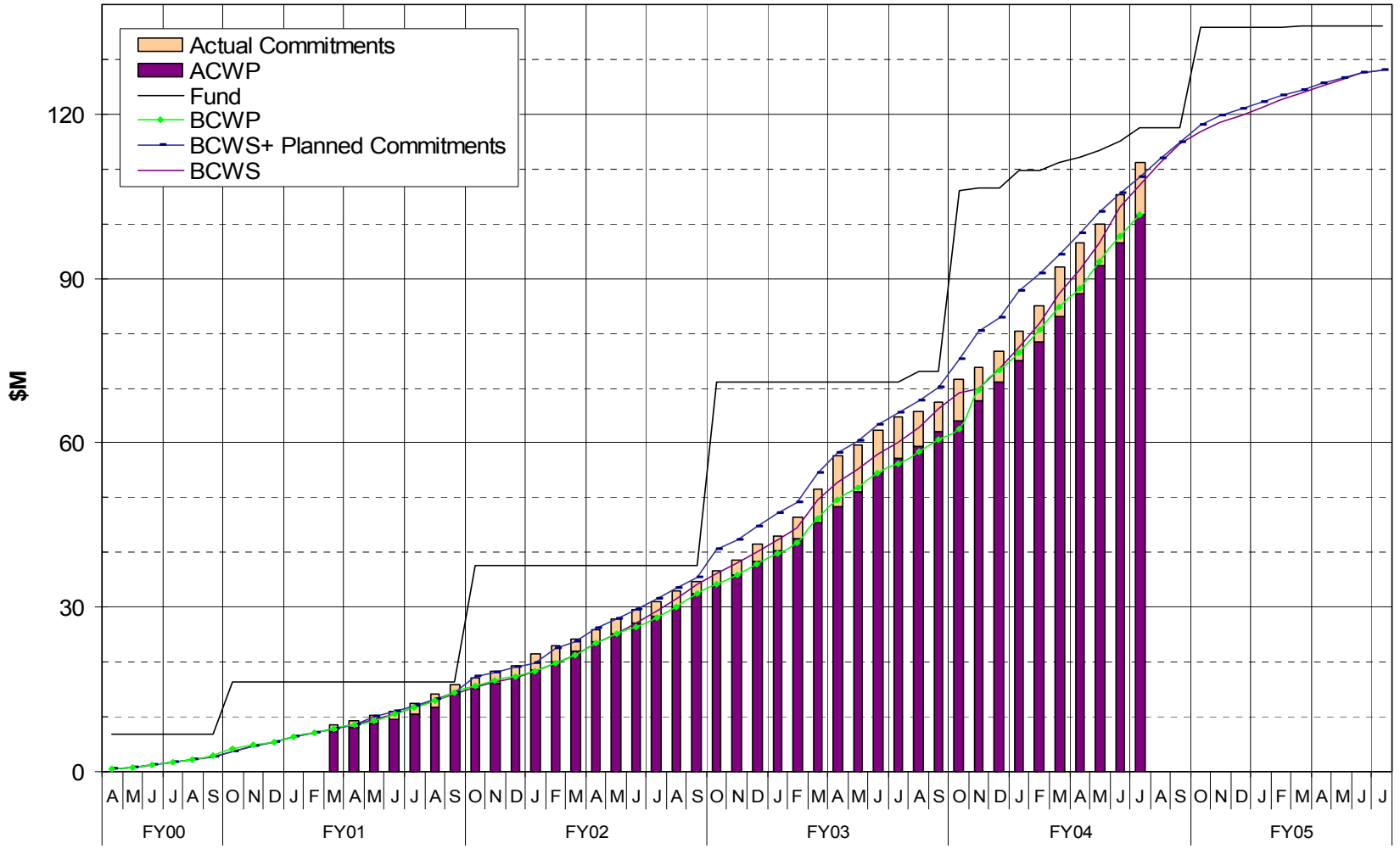
Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date
1M7941270	Ground System Interface Test start	11/10/04	-56	02/09/05



Run Date 09/01/04 08:19 © Primavera Systems, Inc.	**GLAST LAT PROJECT** **Project Milestones (Level 3)** **1 Year View (+/- 6mo)**	0819 LTX1 - MS (L3) FLX1- MS (L3) Sheet 6 of 6

Attachment 3

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



Attachment 4
LAT Costs, through July 2004, by WBS

Monthly Contractor Financial Management Report								Report for Month Ending: 7/31/2004		
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 Estimated Final Cost	Billing	Unfilled Orders Outstanding
	During Month		Cum. to Date		Detail		Balance of	Project	Budget	
	Actual	Planned	Actual	Planned	JUL04	AUG04	Budget	Estimate	Value	
4.1.1 INSTRUMENT MANAGEMENT	374	359	13,161	12,738	377	359	1,971	15,868	15,868	
4.1.2 SYSTEM ENGINEERING	-191	149	4,819	5,283	156	149	1,477	6,601	6,601	
4.1.4 TRACKER	431	364	13,328	14,137	355	345	1,338	15,367	15,367	
4.1.5 CALORIMETER	737	701	16,798	18,567	727	616	3,961	22,103	22,103	
4.1.6 ANTICOINCIDENCE DETECTOR	733	247	13,956	14,037	250	301	502	15,008	15,008	
4.1.7 ELECTRONICS	1,888	906	17,766	18,956	738	458	2,723	21,685	21,685	
4.1.8 MECHANICAL SYSTEMS	587	636	10,295	10,718	788	660	2,363	14,106	14,106	
4.1.9 INTEGRATION & TEST	187	296	4,364	4,849	321	270	2,661	7,616	7,616	
4.1.A PERFORMANCE AND SAFETY ASSURANCE	128	117	1,944	2,083	123	117	285	2,469	2,469	
4.1.B LAT INSTRUMENT OPERATIONS CENTER	-14	3	281	289	4	3	40	328	328	
4.1.C EDUCATION AND PUBLIC OUTREACH	54	71	1,498	1,839	74	71	806	2,448	2,448	
4.1.D SCIENCE ANALYSIS SOFTWARE	69	81	2,032	2,243	85	81	919	3,117	3,117	
4.1.E SUBORBITAL FLIGHT TEST	0	0	1,325	1,325	0	0	0	1,325	1,325	
Gen. and Admin.	0	0	0	0	0	0	0	0	0	
Total	4,983	3,931	101,567	107,062	3,998	3,430	19,047	128,042	128,042	

Attachment 5
LAT Costs, through July 2004, by Organization and Cost Code

Monthly Contractor Financial Management Report									Report for Month Ending: 7/31/2004	
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 Estimated Final Cost	Billing	Unfilled Orders Outstanding
	During Month		Cum. to Date		Detail		Balance of Budget	Project Estimate	Budget Value	
	Actual	Planned	Actual	Planned	AUG04	SEP04				
DG *** GSFC	725	283	15,177	15,648	288	337	1,232	17,035	17,035	
DH *** HEPL	98	222	5,261	5,855	233	222	1,452	7,168	7,168	
DL *** SLAC	3,208	2,476	56,978	59,101	2,515	2,069	10,235	71,797	71,797	
DN *** NRL	849	837	20,244	22,119	845	691	4,806	26,585	26,585	
DO *** Financial Plan Transfer/Sub Out	0	0	59	54	0	0	-5	54	54	
DS *** SSU	54	68	1,493	1,805	71	68	769	2,401	2,401	
DT *** Texas A&M	0	0	15	16	0	0	0	16	16	
DU *** UCSC	37	36	2,189	2,304	38	36	463	2,726	2,726	
DW *** UW	12	9	150	160	9	9	92	260	260	
Total	4,983	3,931	101,567	107,062	3,998	3,430	19,047	128,042	128,042	

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	AUG04	SEP04				
RL LABOR	1,735	1,864	50,494	51,844	1,833	1,675	10,519	64,520	64,520	
FTE (DOE/NASA)	*185.8*	*160.3*	*4,685.8*	*4,416.3*	*153.0*	*154.0*	*466.6*	*5,459.4*	*5,459.4*	
HOURS (DOE/NASA)	*31,218*	*26,927*	*780,275*	*732,109*	*26,908*	*25,938*	*71,311.1*	*904,432*	*904,432*	
RT TRAVEL	44	63	1,316	1,988	66	85	1,243	2,709	2,709	
RM MATERIAL & SERVICES	3,154	2,000	47,400	50,752	2,095	1,668	7,050	58,213	58,213	
RX MPS & LAB TAX	50	3	2,357	2,478	4	3	235	2,599	2,599	
Total (not incl FTE/Hours)	4,983	3,931	101,567	107,062	3,998	3,430	19,047	128,042	128,042	

Attachment 6
LAT Performance, through July 2004, by WBS

Cost Performance Report - Work Breakdown Structure													
Contractor: Location:					Contract Type/No:			Project Name/No: GLAST LAT Project		Report Period: 6/30/2004	7/31/2004		
Quantity 1	Negotiated Cost 0		Est. Cost Authorized Unpriced Work 0		Tgt. Profit/ Fee % 0	Tgt. Price 0	Est Price 0	Share Ratio	Contract Ceiling 0	Estimated Contract Ceiling 0			
CAPW[3]	Current Period					Cumulative to Date					At Completion		
	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance				
Item	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Budgeted	Latest Revised Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
4.1.1 INSTRUMENT MANAGEMENT	359	359	374	0	-15	12,738	12,738	13,161	0	-423	15,868	15,868	0
4.1.2 SYSTEM ENGINEERING	149	149	-191	0	340	5,283	5,283	4,819	0	464	6,601	6,601	0
4.1.4 TRACKER	364	388	431	24	-42	14,137	13,502	13,328	-635	174	15,367	15,367	0
4.1.5 CALORIMETER	701	515	737	-186	-223	18,567	17,027	16,798	-1,539	229	22,103	22,103	0
4.1.6 ANTICOINCIDENCE DETECTOR	247	125	733	-122	-608	14,037	13,491	13,956	-546	-465	15,008	15,008	0
4.1.7 ELECTRONICS	906	1,360	1,888	454	-528	18,956	17,133	17,766	-1,823	-633	21,685	21,685	0
4.1.8 MECHANICAL SYSTEMS	636	527	587	-110	-60	10,718	10,318	10,295	-400	23	14,106	14,106	0
4.1.9 INTEGRATION & TEST	296	264	187	-32	77	4,849	4,496	4,364	-353	132	7,616	7,616	0
4.1.A PERFORMANCE AND SAFETY ASS	117	117	128	0	-10	2,083	2,083	1,944	0	139	2,469	2,469	0
4.1.B LAT INSTRUMENT OPERATIONS (	3	3	-14	0	18	289	289	281	0	8	328	328	0
4.1.C EDUCATION AND PUBLIC OUTRE	71	73	54	2	19	1,839	1,819	1,498	-19	322	2,448	2,448	0
4.1.D SCIENCE ANALYSIS SOFTWARE	81	81	69	0	12	2,243	2,243	2,032	0	211	3,117	3,117	0
4.1.E SUBORBITAL FLIGHT TEST	0	0	0	0	0	1,325	1,325	1,325	0	0	1,325	1,325	0
Gen. and Admin.	0	0	0	0	0	0	0	0	0	0	0	0	0
Undist. Budget											0	0	0
Sub Total	3,931	3,962	4,983	31	-1,020	107,062	101,746	101,567	-5,316	179	128,042	128,042	0
Contingency											7,983	7,983	0
Total	3,931	3,962	4,983	31	-1,020	107,062	101,746	101,567	-5,316	179	136,025	136,025	0

Attachment 7
LAT Performance, through July 2004, by Organization

Cost Performance Report - Work Breakdown Structure													
Contractor: Location:					Contract Type/No:			Project Name/No: GLAST LAT Project		Report Period: 6/30/2004	7/31/2004		
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	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	283	161	725	-122	-564	15,648	15,101	15,177	-546	-76	17,035	17,035	0
DH *** HEPL	222	222	98	0	124	5,855	5,849	5,261	-6	588	7,168	7,168	0
DL *** SLAC	2,476	2,851	3,208	374	-358	59,101	55,990	56,978	-3,111	-988	71,797	71,797	0
DN *** NRL	837	613	849	-224	-235	22,119	20,496	20,244	-1,624	252	26,585	26,585	0
DO *** Financial Plan	0	0	0	0	0	54	54	59	0	-5	54	54	0
DS *** SSU	68	70	54	2	16	1,805	1,785	1,493	-19	293	2,401	2,401	0
DT *** Texas A&M	0	0	0	0	0	16	16	15	0	0	16	16	0
DU *** UCSC	36	36	37	0	0	2,304	2,294	2,189	-9	105	2,726	2,726	0
DW *** UW	9	9	12	0	-4	160	160	150	0	10	260	260	0
Gen. and Admin.	0	0	0	0	0	0	0	0	0	0	0	0	0
Undist. Budget											0	0	0
Sub Total	3,931	3,962	4,983	31	-1,020	107,062	101,746	101,567	-5,316	179	128,042	128,042	0
Contingency											7,983	7,983	0
Total	3,931	3,962	4,983	31	-1,020	107,062	101,746	101,567	-5,316	179	136,025	136,025	0

Attachment 8
LAT Performance Analysis, July 2004

	WBS	Description	BAC	BCWS	BCWP	ACWP	SV $	CV $	%BCWS	%BCWP	%ACWP	SPI	CPI	SPI	CPI	Cpi_Fcst	CpiSpi_Fcst
1	4.1	LAT	128,042	107,062	101,746	101,567	-5,316	179	83.62	79.46	79.32	↔	↓	0.950	1.002	127,816	129,187
2	4.1.1	Instr Mgmt	15,868	12,738	12,738	13,161	0	-423	80.28	80.28	82.94	↔	↔	1.000	0.968	16,395	16,395
3	4.1.2	System Engr	6,601	5,283	5,283	4,819	0	464	80.02	80.02	73.00	↔	↑	1.000	1.096	6,022	6,022
4	4.1.4	Tracker	15,367	14,137	13,502	13,328	-635	174	92.00	87.86	86.73	↔	↓	0.955	1.013	15,169	15,256
5	4.1.5	Calorimeter	22,103	18,567	17,027	16,798	-1,539	229	84.00	77.04	76.00	↔	↓	0.917	1.014	21,806	22,258
6	4.1.6	ACD	15,008	14,037	13,491	13,956	-547	-465	93.53	89.89	92.99	↓	↓	0.961	0.967	15,526	15,589
7	4.1.7	Electronics	21,685	18,956	17,133	17,766	-1,823	-633	87.41	79.01	81.93	↑	↓	0.904	0.964	22,486	22,989
8	4.1.8	Mechanical	14,106	10,718	10,318	10,295	-400	23	75.98	73.15	72.98	↓	↓	0.963	1.002	14,074	14,221
9	4.1.9	I&T	7,616	4,849	4,496	4,364	-353	132	63.66	59.03	57.30	↔	↑	0.927	1.030	7,393	7,631
10	4.1.A	PSA	2,469	2,083	2,083	1,944	0	139	84.36	84.36	78.73	↔	↓	1.000	1.071	2,305	2,305
11	4.1.B	ISOC	328	289	289	281	0	8	88.16	88.16	85.79	↔	↑	1.000	1.028	319	319
12	4.1.C	EPO	2,448	1,839	1,819	1,498	-19	322	75.10	74.31	61.17	↑	↔	0.989	1.215	2,015	2,021
13	4.1.D	SAS	3,117	2,243	2,243	2,032	0	211	71.96	71.96	65.20	↔	↔	1.000	1.104	2,824	2,824
14	4.1.E	Balloon Flight	1,325	1,325	1,325	1,325	0	0	100.00	100.00	99.98	↔	↔	1.000	1.000	1,325	1,325

LEGEND

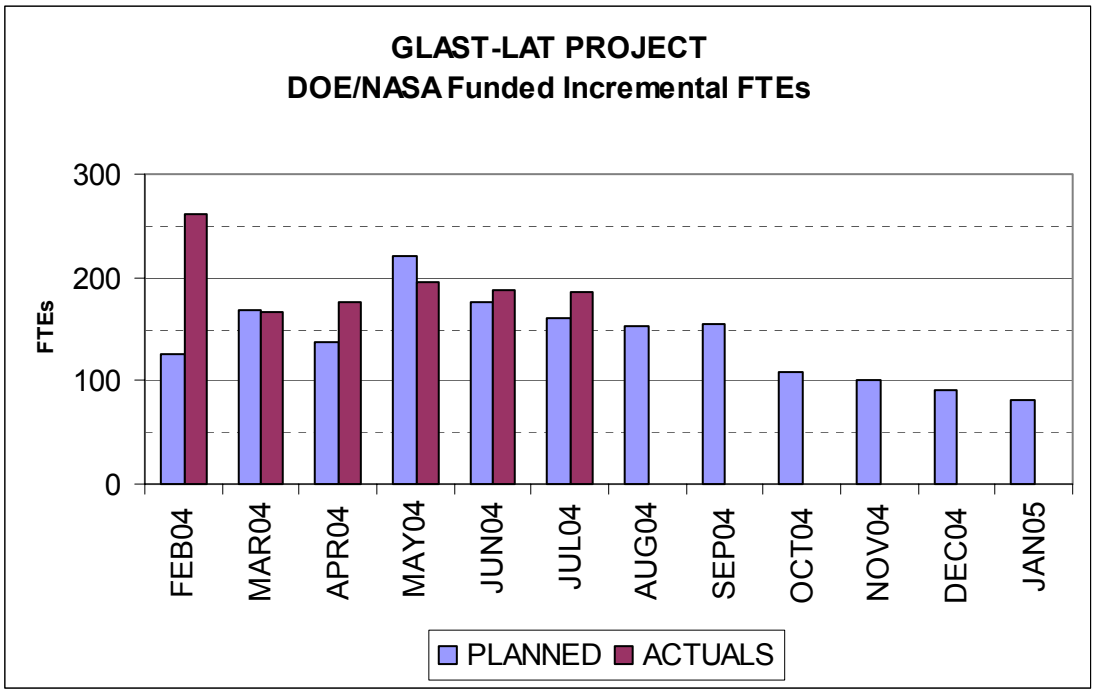
BAC: Budget At Complete
BCWS: Budgeted Cost of Work Scheduled (to date)
BCWP: Budgeted Cost of Work Performed (to date)
ACWP: Actual Cost of Work Performed (to date)

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

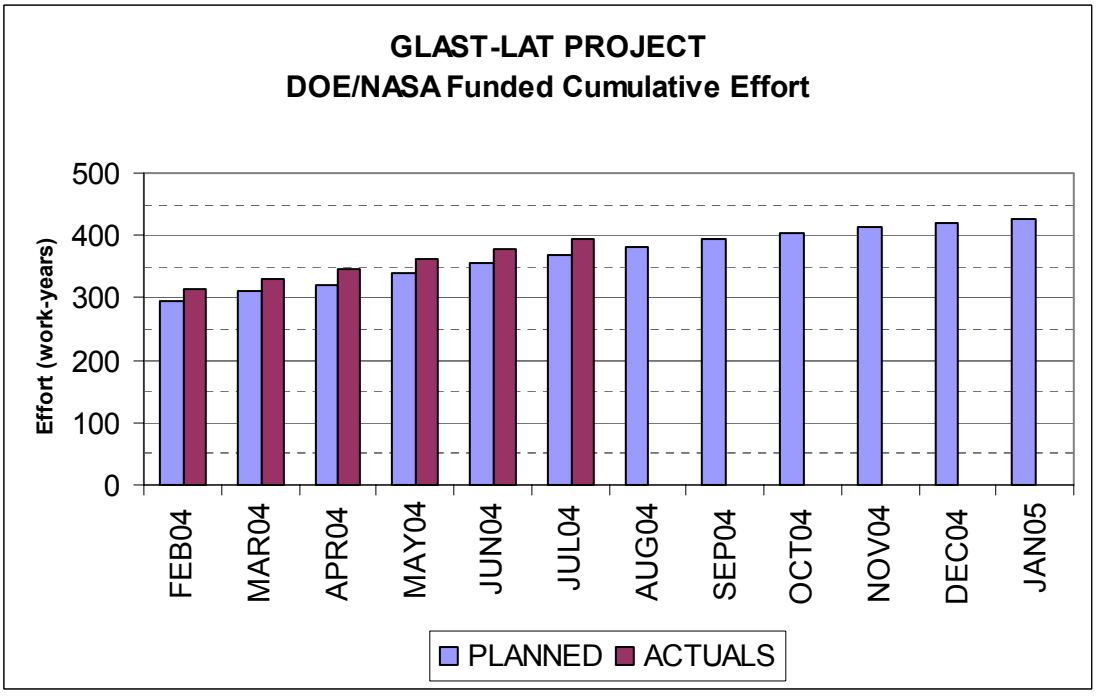
% BCWS: Percent Scheduled = BCWS/BAC
% BCWP: Percent Complete = BCWP/BAC
% ACWP: Percent Spent = ACWP/BAC

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

Attachment 9
LAT Manpower (DOE/NASA-Funded)



Note: Goddard manpower was not reported in the months of October, November, and December, 2003. The February, 2004, incremental FTE report includes a correction, so that the cumulative-to-date actual manpower is correct.



Attachment 10
LAT Manpower Data, through July 2004, by Organization

Program: LAT3	Description: GLAST LAT Project	Approval: Program Manager
Run Date: 9/1/2004	Status Date: 7/31/2004	Functional Manager
		Cost Account Manager

OBS		PRIOR	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	**Cum-to-Date**	AUG04	SEP04	OCT04	NOV04	DEC04	JAN05
DG *** GSFC															
FTE	PLANNED	745.5	29.9	61.0	58.3	28.6	38.3	31.6	**993.1**	33.1	44.3	13.3	17.8	13.0	7.7
	ACTUALS	760.5	153.4	48.7	45.4	61.1	47.3	46.2	**1162.7**	0.0	0.0	0.0	0.0	0.0	0.0
DH *** HEPL															
FTE	PLANNED	252.7	3.2	3.2	2.4	3.4	4.5	4.9	**274.3**	4.9	4.9	3.8	3.8	3.7	3.8
	ACTUALS	254.8	-2.5	4.0	2.7	3.6	3.9	1.5	**268.0**	0.0	0.0	0.0	0.0	0.0	0.0
DL *** SLAC															
FTE	PLANNED	1791.3	77.1	79.7	78.1	158.4	98.2	89.4	**2372.1**	81.7	81.6	72.5	68.8	68.9	64.4
	ACTUALS	1675.2	77.5	84.7	91.0	95.2	101.4	105.0	**2229.9**	0.0	0.0	0.0	0.0	0.0	0.0
DN *** NRL															
FTE	PLANNED	830.4	22.2	36.9	17.1	49.4	52.2	44.2	**1052.4**	41.4	31.9	29.2	20.9	17.1	14.9
	ACTUALS	832.3	34.8	35.0	35.4	42.6	39.8	36.4	**1056.2**	0.0	0.0	0.0	0.0	0.0	0.0
DS *** SSU															
FTE	PLANNED	83.7	3.2	3.2	3.2	3.2	3.2	3.2	**102.7**	3.2	3.2	2.0	2.0	1.9	1.9
	ACTUALS	98.8	3.3	3.0	6.0	3.4	2.7	3.4	**120.4**	0.0	0.0	0.0	0.0	0.0	0.0
DU *** UCSC															
FTE	PLANNED	233.0	6.9	4.7	4.4	4.4	4.4	4.4	**262.2**	4.4	4.4	4.4	4.4	4.4	4.4
	ACTUALS	285.5	5.2	3.3	6.7	1.0	5.5	5.0	**312.3**	0.0	0.0	0.0	0.0	0.0	0.0
DW *** UW															
FTE	PLANNED	38.5	0.4	0.4	0.4	0.4	0.4	0.4	**40.9**	0.4	0.4	0.4	0.4	0.4	0.4
	ACTUALS	10.6	1.7	0.9	1.0	1.1	1.0	1.1	**17.3**	0.0	0.0	0.0	0.0	0.0	0.0
FF *** France															
FTE	PLANNED	1077.5	15.2	15.2	15.2	15.2	15.2	15.2	**1168.4**	15.2	15.2	14.2	13.9	10.8	6.4
	ACTUALS								**0.0**						
FI *** Italy															
FTE	PLANNED	380.7	9.1	9.4	15.6	15.2	14.9	12.8	**457.6**	14.6	15.2	9.1	9.1	7.1	1.5
	ACTUALS	343.2	10.9	10.9	10.9	10.9	10.9	10.9	**408.3**	0.0	0.0	0.0	0.0	0.0	0.0
FJ *** Japan															
FTE	PLANNED	97.4	1.0	0.9	0.5	0.5	0.5	0.5	**101.0**	0.5	0.5	0.5	0.5	0.5	0.5
	ACTUALS	77.2	1.8	1.8	1.8	1.8	1.8	1.8	**87.7**	0.0	0.0	0.0	0.0	0.0	0.0
FK *** Sweden															
FTE	PLANNED	117.0	3.6	3.6	3.6	3.6	3.6	3.6	**138.4**	3.6	3.6	3.6	3.6	2.7	3.4
	ACTUALS								**0.0**						
Grand Totals:															
	PLANNED	5647.7	171.6	218.1	198.6	282.1	235.1	210.0	**6963.1**	202.8	205.1	152.9	145.2	130.4	109.1
	ACTUALS	4337.9	286.0	192.2	200.8	220.5	214.2	211.1	**5662.7**	0.0	0.0	0.0	0.0	0.0	0.0

4.1 GLAST LAT															
Contributed	PLANNED	2219.9	45.9	49.8	60.8	61.1	59.7	49.7	**2546.8**	49.9	50.8	45.0	44.8	40.0	28.6
	ACTUALS	825.8	24.3	26.4	24.8	24.5	25.8	25.3	**976.9**	0.0	0.0	0.0	0.0	0.0	0.0
Funded	PLANNED	3427.8	125.7	168.3	137.8	221.0	175.4	160.3	**4416.3**	152.9	154.4	107.9	100.4	90.4	80.6
	ACTUALS	3512.1	261.7	165.8	176.0	196.1	188.4	185.8	**4685.8**	0.0	0.0	0.0	0.0	0.0	0.0
Grand Totals:	PLANNED	5647.7	171.6	218.1	198.6	282.1	235.1	210.0	**6963.1**	202.8	205.1	152.9	145.2	130.4	109.1
	ACTUALS	4337.9	286.0	192.2	200.8	220.6	214.2	211.1	**5662.7**	0.0	0.0	0.0	0.0	0.0	0.0