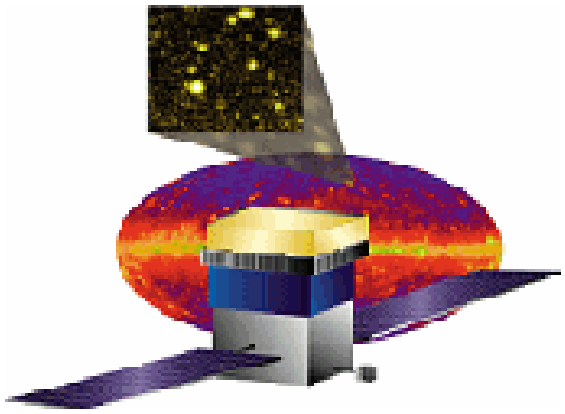
Monthly Progress Report

(Month Ending July 2005)

GLAST Large Area Telescope (LAT)



LAT-MR-07175-01

September 8, 2005

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, 2005.

2.0 Recent Progress and Status

4.1.4 Tracker

Six Tracker towers are integrated into the flight grid (first through fifth, and the seventh). The sixth tower was delayed for EMI taping (manpower) and an issue with the clock duty cycle margin for one side of one multichip module (MCM). It is now ready for integration. The eighth tower has been received at SLAC and is being tested. The ninth tower has completed environmental testing, lacking two cables. An anomaly occurred at elevated temperature; a tray will be replaced, and it will be re-tested with the twelfth tower. The tenth and eleventh towers are in environmental testing. An anomaly similar to that of the seventh tower has been experienced with the tenth tower. The twelfth and thirteenth towers are being assembled, but the delay in cable delivery will impact the testing of the thirteenth tower.

Tray panels for more than thirteen towers are in hand. All flight sidewalls have been delivered. Multichip module production has been completed.

Flight cable assembly is still slow, and towers continue to be assembled with cables missing. Initial problems with maintaining the annular ring have been solved by the second vendor. Discussions were held with the second vendor on production status, source inspection, and delivery schedules.

4.1.6 Anticoincidence Detector

The ACD completed functional and performance testing, as well as vibration and acoustic tests. Thermal vacuum testing was largely completed. Preparations are underway for the pre-ship review. Shipment to SLAC is expected in mid-August.

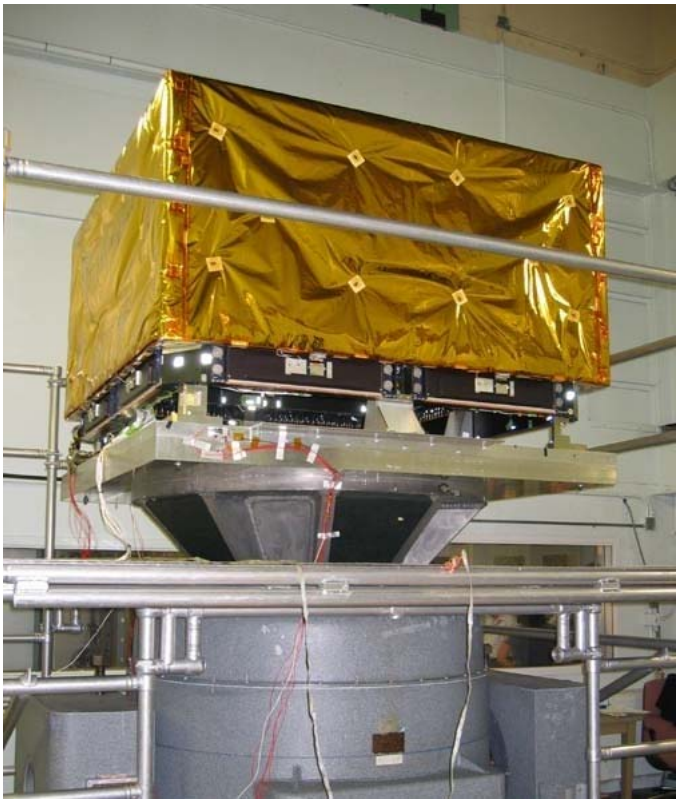


Figure 1: The ACD on the vibration table.

4.1.7 Electronics, Data Acquisition, and Flight Software

Ten tower electronics modules (TEMs) and tower power supplies (TPSs) have now been delivered to Integration & Test. Five more are ready for review. Two units are awaiting thermal vacuum and EMI testing; two more units have been received at SLAC and are ready for vibration testing.

The final power distribution unit (PDU) assembly was received, and underwent safe-to-mate, vibration, and performance testing.

The pre-conformal coat box was received for the first GASU. It underwent safe-to-mate, and performance testing. An issue was discovered concerning clock waveform due to reflection, and a solution was devised.

Boards for the spacecraft interface unit (SIU) and event processing unit (EPU) underwent qualification testing, with no failures to report. Seven of ten backplanes have been assembled. Test boards for the LAT communication board and crate power supply were assembled. A vendor mistake in loading EEPROMs on the SIBs (spacecraft interface boards) has resulted in one less flight board than expected by now.

The harness is being assembled, and nearly complete. The procurement for the heater control box assembly has been placed, and a part kit sent to the assembler. Electronics ground support equipment for the radiator thermal test was shipped to Lockheed. The remaining features of the virtual spacecraft simulator are being implemented.

A major release of the configuration control for flight software was completed. The flight software constituents were reorganized to give a clean separation of the code that will need to be exported to the offline/ISOC. The LAT instrument manager physics modes are being tested. An upgraded VXWorks package was burned into the RAD750 EEPROMs. Tower electronics module dead-time counters were added. New front-end simulation firm/software was installed to allow testing of the calibration code. Most of the filter/event handling software is completed. A discussion was held with the users on how to configure the instrument and flight software. Packages are being retrofitted to the new configuration system.

4.1.8 Mechanical Systems

The cross-LAT (X-LAT) plate thermal cycling test was successfully completed and it has been delivered to SLAC. NRL has been selected to rework an existing shipping container for transporting the LAT from SLAC to NRL. The second grid has been delivered. All hardware for the static load test has been delivered to SLAC, and the final test plan has been approved. National Test Systems (NTS) in Santa Clarita, CA will perform the test. A kick-off meeting was held at their facility. Grid box assembly is in progress. The radiator panel wiring was completed and the panels have been delivered to the acoustic test facility. A thermostat disbond on the -Y panel heatpipe reservoir cans has been discovered, and bonding evaluation tests are underway. The radiator panel thermal-vacuum test location will be changed due to facility conflicts.

4.1.9 Integration & Test (I&T)

The six-tower tests were completed. The second grid and X-LAT plate were received. The second grid is being assembled and prepared for its static load test. Precautionary measures were implemented to protect cables from excessive bending during temporary installations. Version 4.9.2 of the LAT Test Executive (LATTE) was released for the six-tower tests. Exploratory work to demonstrate online software interaction with the virtual spacecraft simulator (VSC) and its interface is in progress. The fourth (in a planned series of five) instrument analysis workshop was conducted.

Figure 2: Six towers under test.

4.1.B Instrument Science Operations Center

Preparations are underway for the third and fourth ground readiness tests. A key new test element will be the Level 0 science data transport and processing to Level 1 data. A technical interchange meeting concerning operations is being planned for September. The next point release of ISOC software is planned for late September. It is scoped to support the third and fourth ground readiness tests. Issues have been identified in LAT analog telemetry points contained in the Science Analysis Software telemetry & command database. The trending database interface has been demonstrated; the user authorization model is a pathfinder for broader application to LAT data services through SLAC. ISOC support for LAT configuration control and tracking was clarified. Biweekly meetings held with the SLAC computer services group are being expanded in scope to include offline, flight software, and integration & test issues. Hiring activities continues for a software developer, and a test engineer.

3.0 Schedule Status

The critical path for the project is the fabrication of components of the Spacecraft Interface Unit and Event Processing Unit. There is currently no schedule float to the shipment of the LAT. A workaround plan is in place to start the checkout of flight configuration in October.

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. The pre-environmental test review and pre-ship review milestones (1M1000700 and 1M1000120) have been delayed as a result of this critical path.

Attachment 2 shows the status of the remaining Level 3 milestones. The following level 3 milestones were completed during this reporting period:

Milestone Number	Description	Date Completed
1M1001740	Online FU S/W Final Release	7/14/05
1M79001080	Flight TEM Assy 6	7/22/05
1M79002080	Flight TEM PS Assy 6	7/22/05
1M79001090	Flight TEM Assy 7	7/22/05
1M79002090	Flight TEM PS Assy 7	7/22/05
1M79001100	Flight TEM Assy 8	7/22/05
1M79002100	Flight TEM PS Assy 8	7/22/05
1M1001000	ACD Test Scripts	7/22/05
1M941710	X-LAT Thermal Plate	7/22/05

Unfavorable variance projections greater than one week are discussed below, listed by responsible subsystem.

4.1.4 Tracker

The remaining Tracker towers have been delayed due to cable delivery delays. The primary cable vendor is producing a 10% yield. The second cable vendor also experienced some manufacturing problems, delaying the first deliveries from July into August. These delays are being mitigated by assembling and testing towers without cables, adding the cables when available. In August, the second vendor began delivering cables in sufficient quantities that we now expect to have all flight cables available by the time the environmental testing finishes in September.

4.1.6 Anticoincidence Detector

Issues with the test scripts and test data have been encountered during performance testing, resulting in a delay in the delivery of the ACD (1M1000410). These issues have now been largely resolved with assistance from the LAT online team. Because the ACD environmental tests are sequential activities with already-tight schedules, it will be difficult to recover any time. However, vibration, acoustics, and thermal vacuum testing of the ACD were all successfully completed in the month of July. (Note: the ACD was delivered in August.)

4.1.7 Electronics

The following milestones have been delayed at the assembly vendor. The main issue was the quality of the solder assembly of the cPCI connectors onto the cPCI boards. The LAT project continued to work with the vendor to improve the situation. The issues have been resolved.

* Flight PDU Box (1M17942000)
* Flight GASU Box (1M7941070)
* LCB Flight Units (1M7R050)
* Flight Event Processor Units (1M7941090)
* Flight EPU/SIUs (1M7R040, 1M7R010, 1M7R020, 1M7R030, 1M7941080)

As of publication of this report, 12 TEM/TPS modules have completed testing and documentation and passed review. Testing of six more modules has been completed, but the collection of documentation from the vendor was delayed due to vacation schedules.

The harness (1M7941110) has been delayed due to cable parts shortages, and is expected to be completed by the end of August.

Delays in flight software, and the addition of a Virtual Spacecraft Simulator to make LAT control/readout simpler for installation and test have led to the delay of the milestone for final electronics ground support equipment (1M7941440).

The flight software demonstrations will be replaced as measures of progress by the running of real test scripts that will be used for the flight software formal qualification testing (FQT).

4.1.8 Mechanical Systems

Radiator delivery (milestone 1M941720) has slipped due to the extra time required to install instrumentation harnesses onto the Radiators. Some of the thermostats de-bonded during these harness operations (cause is still under investigation). Environmental test facility issues were resolved. Acoustic testing of the radiators began in July.

4.1.9 Integration & Test

Variances to the "Ready to Ship" and subsequent milestones are driven by the critical path for the project, as described above.

4.0 Financial Status

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

Attachments 4 and 5 summarize the actual costs through the current period, by WBS level 3 and institution, respectively.

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.C Education & Public Outreach

The favorable cost variance is due to outstanding commitments which have not yet been costed. This is not a concern at this time.

6.0 Change Control and Contingency Analysis

A summary of change requests approved and implemented during this period (Level 3 and above), including the impacts on the LAT contingency, is below.

Change Request No.	Description	Submitted By	Current Status	Contingency Impact[1]
LAT-XR-06773-01	Flight Software Specification Updates	M. DeKlotz	Approved	N/A
LAT-XR-06887-01	Flight Software Specification Updates	M. DeKlotz	Approved	N/A
LAT-XR-06986-01	Changes to I&T Mate/De-mate Workmanship Standards	K. Fouts	Approved	N/A

The cost baseline through FY05 is $154,025K Funding applicable to that baseline is $155,809K; the resulting contingency is $1,784K.

7.0 Staffing

Attachment 9 demonstrates the staffing plan funded by DOE/NASA, and reports of actual manpower received. This report includes contracted labor which is bookkept as M&S.

Actual incremental ACD FTEs for the month exceeded plan, due to the schedule delay described in section 3.0.

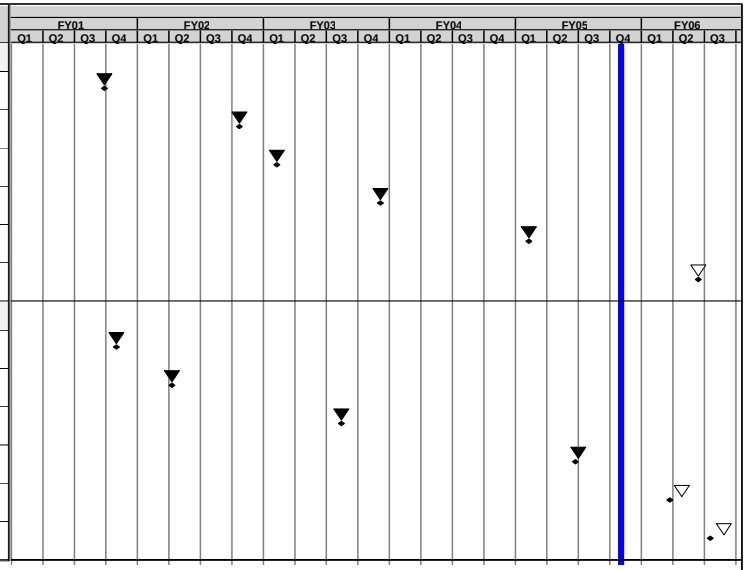
More manpower than planned was required in Electronics this period due to the delay in flight assembly for the cPCI solder quality issue; thermal vacuum shift personnel have been required for a longer term than planned.

Hardware delays have prevented the planned rampdown of Performance & Safety Assurance staff from occurring at this time.

[1] A positive number indicates a draw on contingency.

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	11/08/04A	0	11/08/04A
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	03/23/05	-5	03/30/05A
1M1000700	Pre Environmental Testing Review	12/20/05	-20	01/26/06
1M1000120	PSR-(Instrument Pre-Ship Review)	04/18/06	-28	05/26/06



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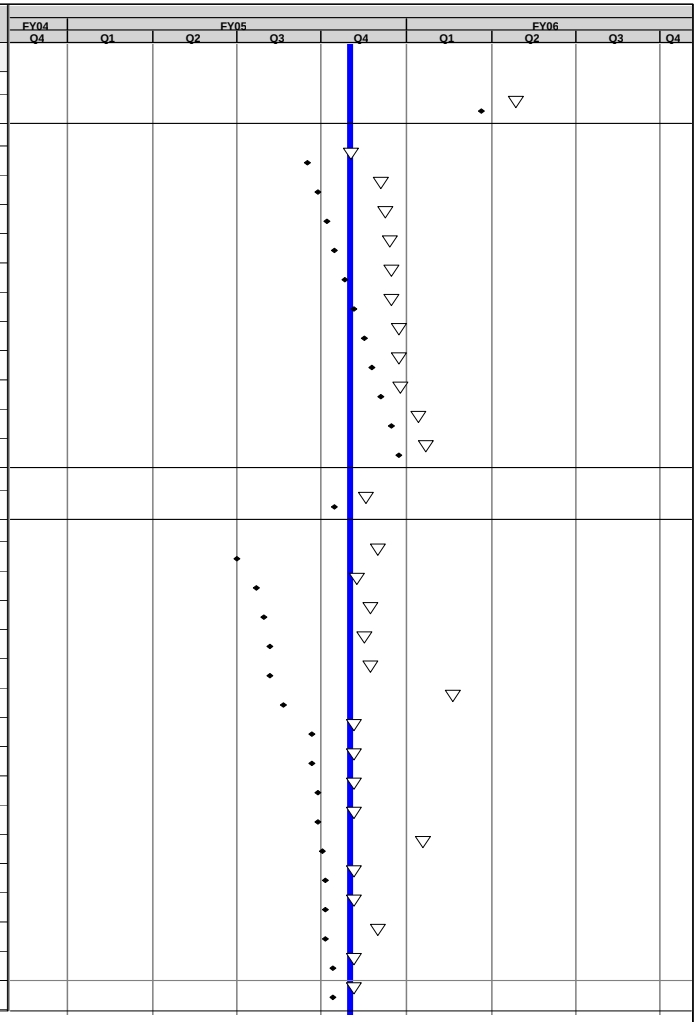
	Project Milestones (Level 1 and 2)	LT_MS1-2
© Primavera Systems, Inc.		Sheet 1 of 1

Attachment 2
Future Level 3 Milestones
Page 1 of 2

Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date
Instrument Project Office (Level 3				
4.1.1 Instrument Management				
1M1001920	Pre-Environmental Test Review	12/20/05	-20	01/26/06
4.1.4 Tracker				
1M1000261	Flight Tracker Tower 6 RFI	06/16/05	-31	08/01/05
1M1000270	Flight Tracker Tower 7 RFI	06/27/05	-48	09/02/05
1M1000271	Flight Tracker Tower 8 RFI	07/06/05	-45	09/08/05
1M1000280	Flight Tracker Tower 9 RFI	07/15/05	-40	09/12/05
1M1000281	Flight Tracker Tower 10 RFI	07/26/05	-35	09/14/05
1M1000290	Flight Tracker Tower 11 RFI	08/04/05	-28	09/14/05
1M1000291	Flight Tracker Tower 12 RFI	08/15/05	-26	09/21/05
1M1000300	Flight Tracker Tower 13 RFI	08/24/05	-19	09/21/05
1M1000301	Flight Tracker Tower 14 RFI	09/02/05	-14	09/23/05
1M1000310	Flight Tracker Tower 15 RFI	09/13/05	-21	10/12/05
1M1000311	Flight Tracker Tower 16 RFI	09/22/05	-20	10/20/05
4.1.6 ACD				
1M1000410	ACD Flight Unit at SLAC, Tested/Inspected & RFI	07/15/05	-23	08/17/05
4.1.7 Electronics				
1M7941440	Final EGSE incl S/C Sim, FSW-Elec to I&T	04/01/05	-105	08/30/05
1M79270	Demo: Mode Control	04/22/05	-74	08/08/05
1M79220	Demo: Charge Injection Calibration	04/29/05	-79	08/22/05
1M79240	Demo: Event Integrity and Delivery	05/06/05	-70	08/16/05
1M79280	Demo: Diagnostics	05/06/05	-74	08/22/05
1M79260	Demo: GRB Detection and Response	05/20/05	-127	11/18/05
1M79001110	Flight TEM Assy 9: Elec to I&T	06/20/05	-33	08/05/05
1M79002110	Flight TEM PS Assy 9: Elec to I&T	06/20/05	-33	08/05/05
1M79001120	Flight TEM Assy 10: Elec to I&T	06/27/05	-28	08/05/05
1M79002120	Flight TEM PS Assy 10: Elec to I&T	06/27/05	-28	08/05/05
1M7942000	Flight PDU Box-Elec to I&T	07/01/05	-75	10/18/05
1M79001130	Flight TEM Assy 11: Elec to I&T	07/05/05	-23	08/05/05
1M79002130	Flight TEM PS Assy 11: Elec to I&T	07/05/05	-23	08/05/05
1M7941110	Flight Harness-Elec to I&T	07/05/05	-40	08/30/05
1M79001140	Flight TEM Assy 12: Elec to I&T	07/12/05	-18	08/05/05
1M79002140	Flight TEM PS Assy 12: Elec to I&T	07/12/05	-18	08/05/05



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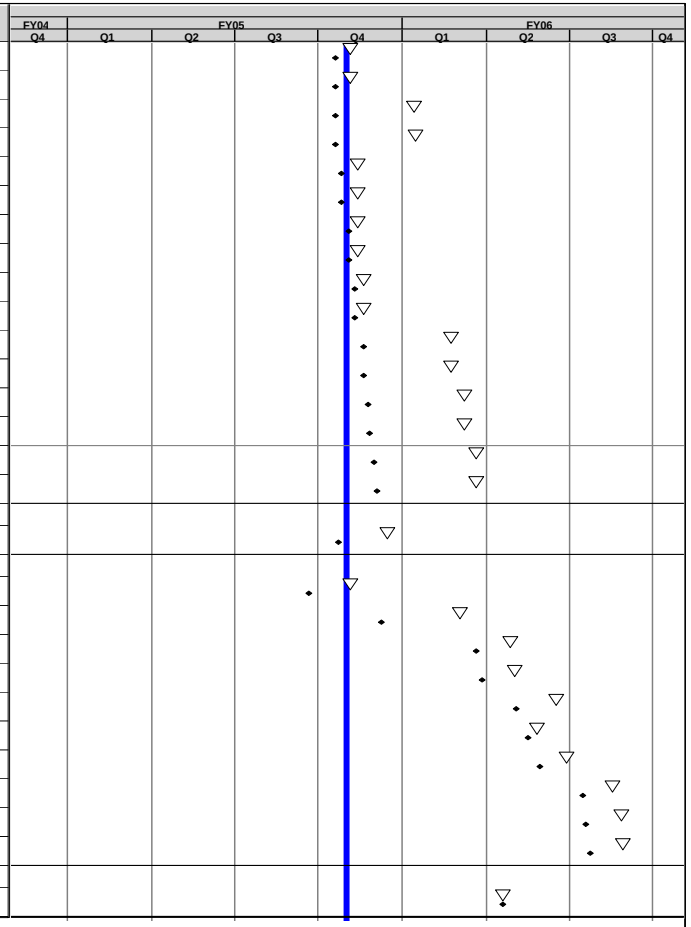
GLAST LAT PROJECT
Project Milestones (Level 3)
Planned Milestones

0815 - 1MGT
LTX2 - MS3 (planned)
FLX1- MS (L3)

Sheet 1 of 2

Attachment 2
Future Level 3 Milestones
Page 2 of 2

Activity ID	Activity Description	Target Finish Date	Variance	Scheduled Finish Date
1M79001150	Flight TEM Assy 13: Elec to I&T	07/19/05	-13	08/05/05
1M79002150	Flight TEM PS Assy 13: Elec to I&T	07/19/05	-13	08/05/05
1M7941070	Flight GASU Box-Elec to I&T	07/19/05	-60	10/12/05
1M7R050	LCB Flight Units - Elec to Elec	07/20/05	-61	10/14/05
1M79001160	Flight TEM Assy 14: Elec to I&T	07/26/05	-13	08/12/05
1M79002160	Flight TEM PS Assy 14: Elec to I&T	07/26/05	-13	08/12/05
1M79001170	Flight TEM Assy 15: Elec to I&T	08/02/05	-8	08/12/05
1M79002170	Flight TEM PS Assy 15: Elec to I&T	08/02/05	-8	08/12/05
1M79001180	Flight TEM Assy 16: Elec to I&T	08/09/05	-8	08/19/05
1M79002180	Flight TEM PS Assy 16: Elec to I&T	08/09/05	-8	08/19/05
1M7941090	Flight Event Processor Units-Elec to I&T	08/19/05	-66	11/22/05
1M7R040	1st Flight EPU/SIU-Elec to I&T	08/19/05	-66	11/22/05
1M7R010	2nd Flight EPU/SIU-Elec to I&T	08/24/05	-71	12/06/05
1M7R020	3rd Flight EPU/SIU-Elec to I&T	08/26/05	-69	12/06/05
1M7R030	4th Flight EPU/SIU-Elec to I&T	08/30/05	-77	12/20/05
1M7941080	5th Flight EPU/SIU-Elec to I&T	09/02/05	-74	12/20/05
4.1.8 Mechanical				
1M941720	Radiators ready for I&T (from Mech to I&T)	07/22/05	-36	09/13/05
4.1.9 I&T				
1M99030	Start 8 Tower Comprehensive Performance Test	06/20/05	-33	08/05/05
1M99040	Start 16 Tower Comprehensive Performance Test	09/07/05	-59	12/01/05
1M1000130	LAT Ready to Ship to NRL for Env Test	12/20/05	-20	01/26/06
1M19010	Ship LAT to NRL for Env Test	12/26/05	-35	01/30/06
1M19020	LAT EMI/EMC Test	02/01/06	-44	03/17/06
1M19030	LAT Sine Vibe	02/14/06	-10	02/24/06
1M19040	LAT Acoustic Test	02/26/06	-30	03/28/06
1M19050	LAT TVAC	04/15/06	-32	05/17/06
1M19060	LAT Weight & CG	04/17/06	-39	05/26/06
1M19070	Ship LAT to Spectrum Astro	04/23/06	-35	05/28/06
4.1.B ISOC				
1M1000112	Mission Operations Review	01/17/06*	0	01/17/06*



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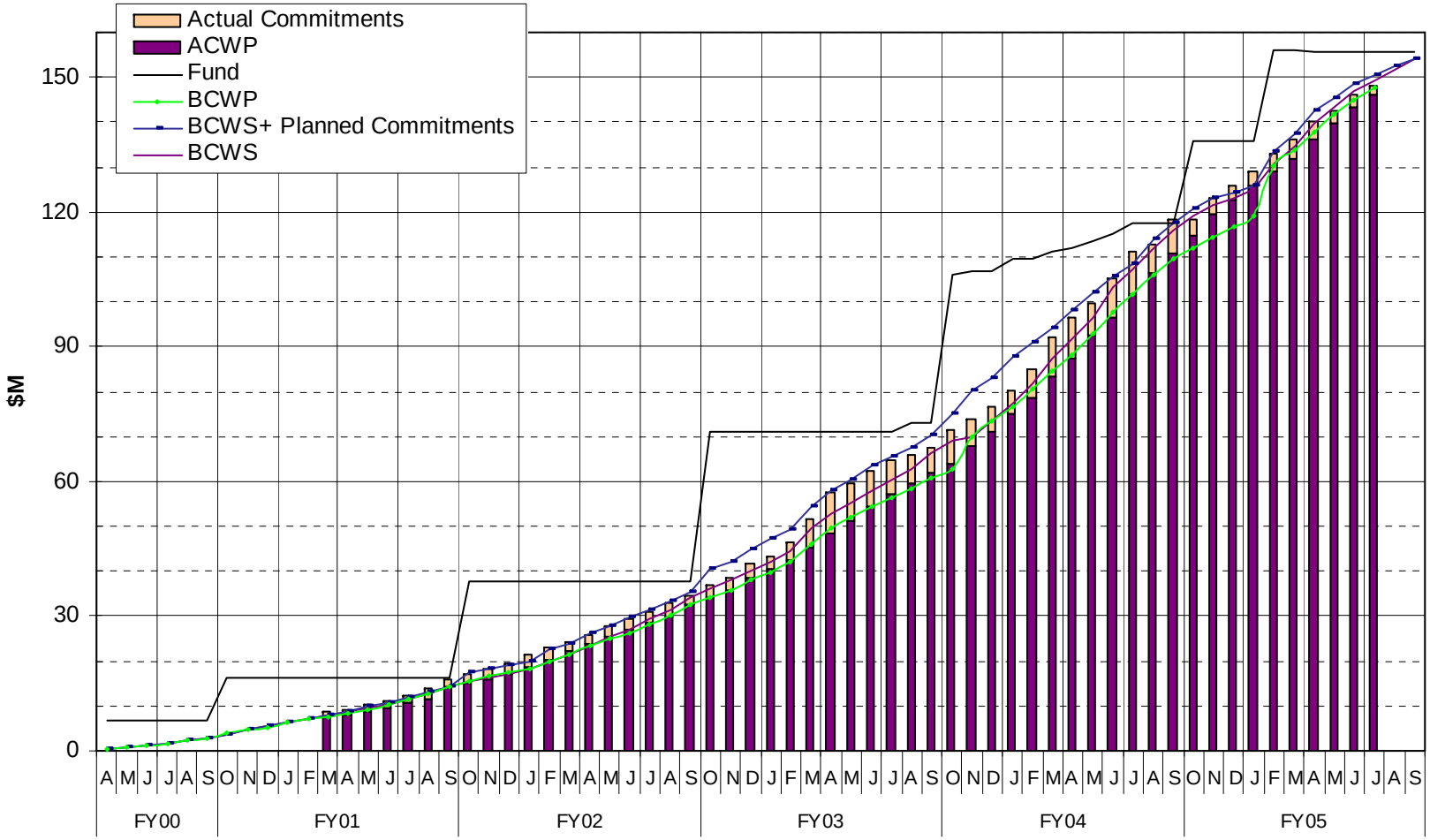
GLAST LAT PROJECT
Project Milestones (Level 3)
Planned Milestones

0815 - 1MGT
LTX2 - MS3 (planned)
FLX1- MS (L3)

Sheet 2 of 2

Attachment 3

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



Attachment 4
LAT Costs, through July 2005, by WBS

Monthly Contractor Financial Management Report								Report for Month Ending: 7/31/2005		
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	AUG05	SEP05				
4.1.1 INSTRUMENT MANAGEMENT	365	299	16,975	17,207	307	264	232	17,778	17,778	
4.1.2 SYSTEM ENGINEERING	120	150	7,375	7,364	154	130	-12	7,647	7,647	
4.1.4 TRACKER	367	352	20,290	21,279	235	188	989	21,702	21,702	
4.1.5 CALORIMETER	88	166	21,554	22,223	201	171	668	22,594	22,594	
4.1.6 ANTICOINCIDENCE DETECTOR	313	56	17,668	17,818	50	100	149	17,968	17,968	
4.1.7 ELECTRONICS	663	434	27,587	28,295	353	246	708	28,894	28,894	
4.1.8 MECHANICAL SYSTEMS	337	412	16,157	16,151	500	215	-6	16,866	16,866	
4.1.9 INTEGRATION & TEST	238	382	7,953	8,411	291	749	458	9,451	9,451	
4.1.A PERFORMANCE AND SAFETY ASSURANCE	158	81	3,803	3,668	93	85	-134	3,846	3,846	
4.1.B LAT INSTRUMENT OPERATIONS CENTER	2	5	312	327	5	2	15	334	334	
4.1.C EDUCATION AND PUBLIC OUTREACH	24	67	2,217	2,537	77	70	320	2,684	2,684	
4.1.D SCIENCE ANALYSIS SOFTWARE	90	74	2,692	2,782	80	75	90	2,936	2,936	
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	
Total	2,766	2,477	145,909	149,385	2,344	2,296	3,477	154,025	154,025	

Attachment 5
LAT Costs, through July 2005, by Organization and Cost Code

Monthly Contractor Financial Management Report									Report for Month Ending: 1/0/1900	
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	
								4/3/2000	Billing	
Reporting Category	Cost Incurred				Estimated Cost			Estimated Final Cost		Unfilled Orders Outstanding
	During Month		Cum. to Date		Detail		Balance of Budget	Project Estimate	Budget Value	
	Actual	Planned	Actual	Planned	AUG05	SEPT05				
DG *** GSFC	344	91	19,280	19,630	89	137	349	19,856	19,856	
DH *** HEPL	115	253	7,814	8,170	268	236	356	8,674	8,674	
DL *** SLAC	1,940	1,693	87,528	89,184	1,540	1,543	1,656	92,267	92,267	
DN *** NRL	306	365	26,420	27,163	360	301	743	27,825	27,825	
DO *** Financial Plan Transfer/Sub Out	0	0	59	59	0	0	0	59	59	
DS *** SSU	23	66	2,194	2,508	76	69	315	2,654	2,654	
DT *** Texas A&M	0	0	15	15	0	0	0	15	15	
DU *** UCSC	9	1	2,360	2,395	1	1	34	2,396	2,396	
DW *** UW	29	9	237	261	10	9	23	279	279	
	0	0	0	0	0	0	0	0	0	
Total	2,766	2,477	145,909	149,385	2,344	2,296	3,477	154,025	154,025	

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	AUG05	SEPT05				
RL LABOR	1,200	1,069	69,372	69,675	1,126	971	303	71,773	71,773	
RT TRAVEL	38	75	1,736	2,392	81	74	655	2,547	2,547	
RM MATERIAL & SERVICES	1,528	1,329	72,415	74,772	1,134	1,193	2,357	77,098	77,098	
RX MPS & LAB TAX	0	3	2,386	2,546	3	58	161	2,607	2,607	
Total	2,766	2,477	145,909	149,385	2,344	2,296	3,477	154,025	154,025	

Attachment 6
LAT Performance, through July 2005, by WBS

Cost Performance Report - Work Breakdown Structure													
Contractor: Location:				Contract Type/No:			Project Name/No: GLAST LAT Project		Report Period: 7/1/2005 7/31/2005				
Quantity 1	Negotiated Cost 0		Est. Cost Authorized Unpriced Work 0	Tgt. Profit/ Fee % 0	 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			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	299	299	365	0	-67	17,207	17,207	16,975	0	232	17,778	17,778	0
4.1.2 SYSTEM ENGINEERING	150	150	120	0	30	7,364	7,364	7,375	0	-12	7,647	7,647	0
4.1.4 TRACKER	352	419	367	67	53	21,279	20,670	20,290	-609	380	21,702	21,702	0
4.1.5 CALORIMETER	166	89	88	-77	1	22,223	22,121	21,554	-102	567	22,594	22,594	0
4.1.6 ANTICOINCIDENCE DETECTOR	56	216	313	160	-97	17,818	17,767	17,668	-51	98	17,968	17,968	0
4.1.7 ELECTRONICS	434	486	663	53	-177	28,295	27,375	27,587	-919	-212	28,894	28,894	0
4.1.8 MECHANICAL SYSTEMS	412	386	337	-26	49	16,151	16,094	16,157	-57	-63	16,866	16,866	0
4.1.9 INTEGRATION & TEST	382	286	238	-96	47	8,411	8,272	7,953	-140	319	9,451	9,451	0
4.1.A PERFORMANCE AND SAFETY AS	81	81	158	0	-77	3,668	3,668	3,803	0	-134	3,846	3,846	0
4.1.B LAT INSTRUMENT OPERATIONS (	5	5	2	0	3	327	327	312	0	15	334	334	0
4.1.C EDUCATION AND PUBLIC OUTRE	67	67	24	0	43	2,537	2,537	2,217	0	320	2,684	2,684	0
4.1.D SCIENCE ANALYSIS SOFTWARE	74	74	90	0	-16	2,782	2,782	2,692	0	90	2,936	2,936	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	2,477	2,557	2,766	80	-209	149,385	147,508	145,909	-1,878	1,599	154,025	154,025	0
Contingency											1,784	1,784	0
Total	2,477	2,557	2,766	80	-209	149,385	147,508	145,909	-1,878	1,599	155,809	155,809	0

Attachment 7
LAT Performance, through July 2005, by Organization

Cost Performance Report - Work Breakdown Structure													
Contractor: Location:				Contract Type/No:			Project Name/No: GLAST LAT Project		Report Period: 7/1/2005 7/31/2005				
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	91	251	344	160	-93	19,630	19,579	19,280	-51	298	19,856	19,856	0
DH *** HEPL	253	253	115	0	138	8,170	8,170	7,814	0	356	8,674	8,674	0
DL *** SLAC	1,693	1,749	1,940	57	-191	89,184	87,531	87,528	-1,653	3	92,267	92,267	0
DN *** NRL	365	229	306	-136	-78	27,163	26,990	26,420	-174	570	27,825	27,825	0
DO *** Financial Plan	0	0	0	0	0	59	59	59	0	0	59	59	0
DS *** SSU	66	66	23	0	43	2,508	2,508	2,194	0	315	2,654	2,654	0
DT *** Texas A&M	0	0	0	0	0	15	15	15	0	0	15	15	0
DU *** UCSC	1	1	9	0	-8	2,395	2,395	2,360	0	34	2,396	2,396	0
DW *** UW	9	9	29	0	-21	261	261	237	0	23	279	279	0
Gen. and Admin.	0	0	0	0	0	0	0	0	0	0	0	0	0
Undist. Budget											0	0	0
Sub Total	2,477	2,557	2,766	80	-209	149,385	147,508	145,909	-1,878	1,599	154,025	154,025	0
Contingency											1,784	1,784	0
Total	2,477	2,557	2,766	80	-209	149,385	147,508	145,909	-1,878	1,599	155,809	155,809	0

Attachment 8
LAT Performance Analysis, July 2005

	WBS	BAC	BCWS	BCWP	ACWP	SV $	CV $	% BCWS	% BCWP	% ACWP	SPI Trend	CPI Trend	SPI	CPI	CPI Fcst	CpiSpi Fcst
1	4.1	154,025	149,385	147,508	145,908	-1,878	1,599	96.99	95.77	94.73	↔	↓	0.987	1.011	152,356	152,438
2	4.1.1	17,778	17,207	17,207	16,975	0	232	96.79	96.79	95.48	↔	↓	1.000	1.014	17,538	17,538
3	4.1.2	7,647	7,364	7,364	7,375	0	-12	96.29	96.29	96.45	↔	↑	1.000	0.998	7,659	7,659
4	4.1.4	21,702	21,279	20,670	20,290	-609	380	98.05	95.24	93.49	↑	↑	0.971	1.019	21,303	21,333
5	4.1.5	22,594	22,223	22,121	21,554	-102	567	98.35	97.90	95.40	↓	↔	0.995	1.026	22,016	22,018
6	4.1.6	17,968	17,818	17,767	17,668	-51	98	99.16	98.88	98.33	↑	↓	0.997	1.006	17,869	17,869
7	4.1.7	28,894	28,295	27,375	27,587	-919	-212	97.93	94.74	95.48	↔	↓	0.968	0.992	29,117	29,169
8	4.1.8	16,866	16,151	16,094	16,157	-57	-63	95.76	95.42	95.80	↓	↑	0.996	0.996	16,932	16,935
9	4.1.9	9,451	8,411	8,272	7,953	-140	319	88.99	87.52	84.15	↓	↑	0.983	1.040	9,087	9,106
10	4.1.A	3,846	3,668	3,668	3,803	0	-134	95.38	95.38	98.87	↔	↓	1.000	0.965	3,987	3,987
11	4.1.B	334	327	327	312	0	15	97.90	97.90	93.35	↔	↑	1.000	1.049	319	319
12	4.1.C	2,684	2,537	2,537	2,217	0	320	94.52	94.52	82.62	↔	↑	1.000	1.144	2,346	2,346
13	4.1.D	2,936	2,782	2,782	2,692	0	90	94.75	94.75	91.69	↔	↓	1.000	1.033	2,842	2,842
14	4.1.E	1,325	1,325	1,325	1,325	0	0	100.00	100.00	99.98	↔	↔	1.000	1.000	1,325	1,325

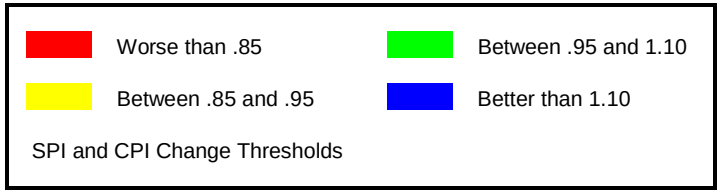
LEGEND

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)

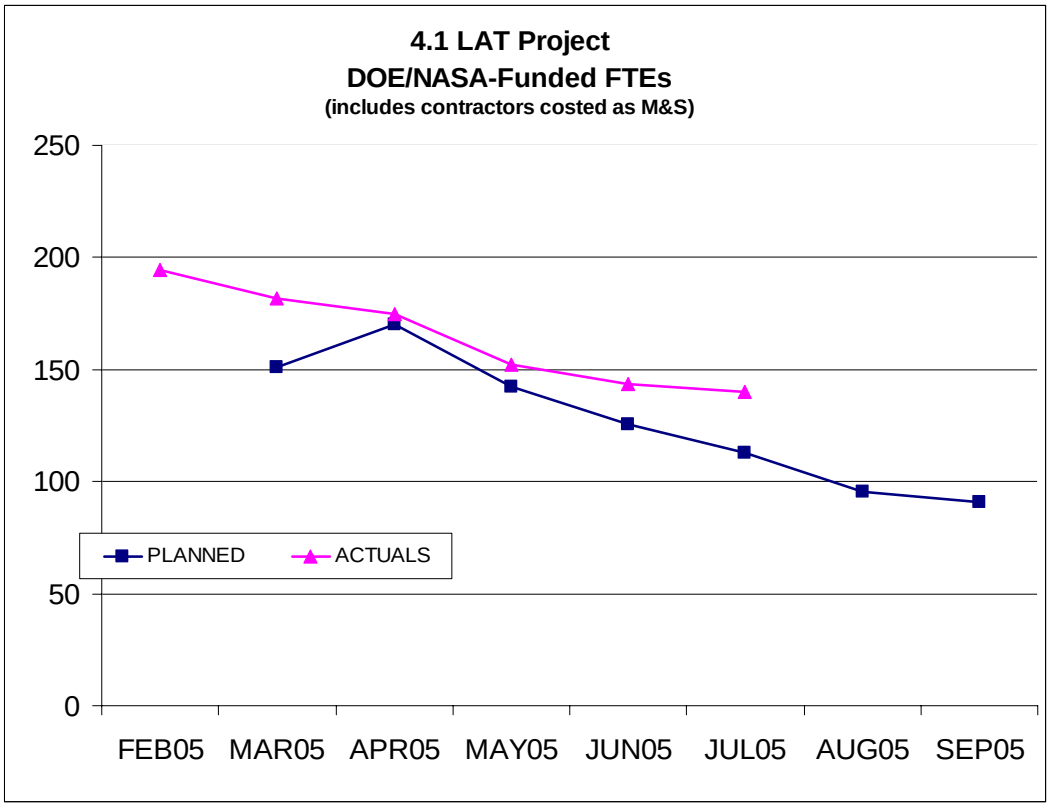
SV $: Schedule Variance = BCWP - BCWS
CV $: Cost Variance = BCWP - ACWP
SPI: Schedule Performance Index = BCWP/BCWS
CPI: Cost Performance Index = BCWP/ACWP

% 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



FTEs BY SUBSYSTEM		FEB05	MAR05	APR05	MAY05	JUN05	JUL05	AUG05	SEP05
4.1.1 INSTRUMENT MANAGEMENT	PLANNED		19.2	19.2	19.2	18.7	19.4	16.1	16.1
	ACTUALS	19.7	23.4	19.2	18.4	16.8	23.2	0.0	0.0
4.1.2 SYSTEM ENGINEERING	PLANNED		10.2	10.3	10.3	10.3	10.3	9.2	8.2
	ACTUALS	10.5	10.1	9.8	8.8	9.6	9.7	0.0	0.0
4.1.4 TRACKER	PLANNED		16.8	16.6	12.7	10.7	9.9	9.2	9.2
	ACTUALS	17.0	15.4	15.9	13.9	9.1	9.9	0.0	0.0
4.1.5 CALORIMETER	PLANNED		18.7	19.6	13.4	9.9	7.6	8.1	7.4
	ACTUALS	23.8	19.8	21.6	11.5	15.1	5.2	0.0	0.0
4.1.6 ANTICOINCIDENCE DETECTOR	PLANNED		16.4	39.0	26.4	22.1	11.6	3.2	3.6
	ACTUALS	36.2	33.1	29.8	37.1	28.2	27.3	0.0	0.0
4.1.7 ELECTRONICS	PLANNED		28.8	22.1	22.8	18.3	15.4	12.8	11.8
	ACTUALS	36.7	35.2	32.5	27.8	24.5	27.5	0.0	0.0
4.1.8 MECHANICAL SYSTEMS	PLANNED		6.0	6.4	1.7	4.1	7.2	5.9	4.3
	ACTUALS	3.7	3.2	3.9	3.6	4.2	3.4	0.0	0.0
4.1.9 INTEGRATION & TEST	PLANNED		15.3	17.2	16.2	16.3	16.4	16.5	15.9
	ACTUALS	20.5	23.0	19.1	13.9	12.4	14.5	0.0	0.0
4.1.A PERFORMANCE AND SAFETY ASSURANCE	PLANNED		12.5	12.3	9.9	5.9	4.9	4.9	4.9
	ACTUALS	12.6	12.4	12.1	11.5	11.3	11.1	0.0	0.0
4.1.B LAT INSTRUMENT SCIENCE OPERATIONS CENTER	PLANNED		0.2	0.2	0.2	0.2	0.2	0.2	0.1
	ACTUALS	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
4.1.C EDUCATION AND PUBLIC OUTREACH	PLANNED		1.5	2.0	4.3	4.1	4.5	3.9	4.3
	ACTUALS	10.1	3.3	7.1	2.3	7.9	2.9	0.0	0.0
4.1.D SCIENCE ANALYSIS SOFTWARE	PLANNED		5.3	5.3	5.1	4.9	5.3	5.2	5.2
	ACTUALS	3.8	2.6	3.7	3.1	4.4	5.1	0.0	0.0
Grand Totals:	PLANNED		150.8	170.3	142.3	125.5	112.7	95.2	91.0
	ACTUALS	194.5	181.6	174.8	152.0	143.6	139.8		