

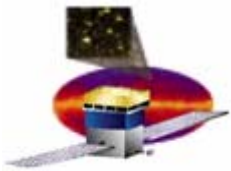
# **Monthly Mission Review**

## **Project Status Overview**

**November 30, 2006**

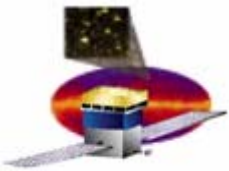
**Ken Fouts  
SLAC**

**[kfouts@slac.stanford.edu](mailto:kfouts@slac.stanford.edu)**



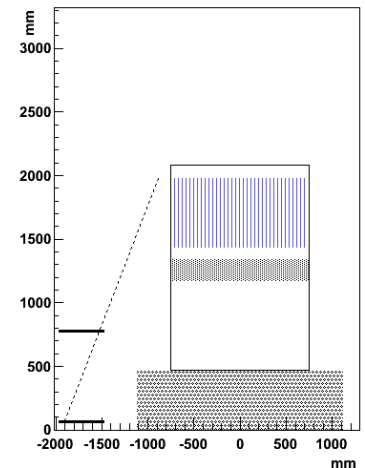
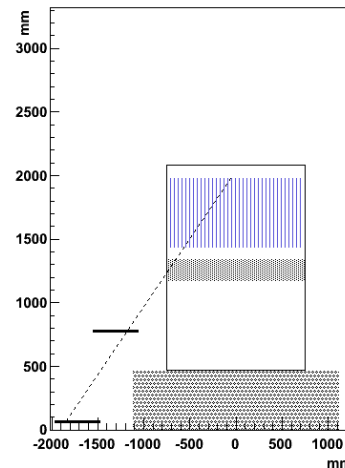
# **LAT Project Status**

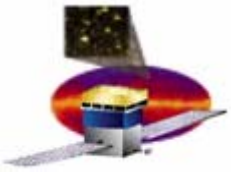
- 10/30 Install FSW B0-6-15 on LAT, begin regression CPT**
- 11/07 Reboot occurred – EPU1, watchdog**
- 11/11 Reboot occurred – EPU1, watchdog.**
- 11/12 Reboot occurred – EPU1, watchdog.**
- 11/15 Began build of B0-7-0**
- 11/16 Reboot occurred – EPU2, watchdog.**
- 11/16 Reboot Resolution Team Kick-off Meeting held.**
- 11/16 Absolute Timing Test with muon telescope**
- 11/18 Reboot occurred – EPU2, watchdog**
- 11/19 2 Reboots occurred – EPU1 & EPU2, both watchdog**
- 11/20 Completed EEPROM file system cleanup on LAT. Verified reload of B0-6-15.**
- 11/22 Installed new LICOS version for MOOT**
- 11/29 Installed B0-7-0 on LAT**



# Absolute Timing Test

- Preliminary test executed Nov 16 – 18:
  - David Smith, Eric Grove, Denis Dumora, Patty Sandora
  - Muon telescope + Bordeaux GPS Timing system
  - LAT VSC simulating Observatory timing system (using free running oscillator – GPS not operating)
- Coincidence rate limited by test geometry
  - 900 coincidence events in one 30 minute run
  - Measured timing jitter 700 ns sigma
  - Measured time drift of 2.083 us/sec – consistent with capability of free running VSC oscillator
  - 24 msec offset – attributable to the way time is set in VSC without a GPS lock.
  - Report and lessons learned in review.
    - Modest improvements in geometry to improve coincidence rate
- No problems identified, will be ready to run in observatory configuration

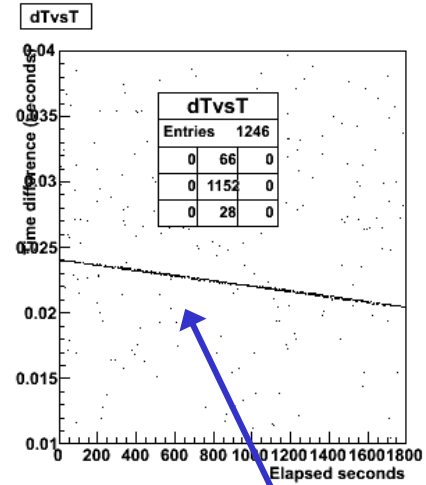
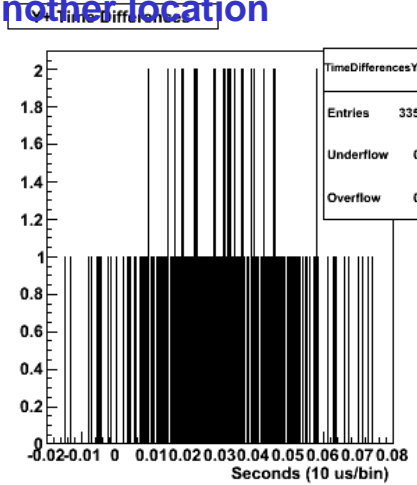
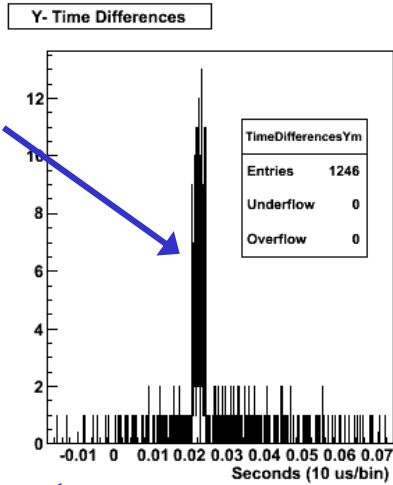




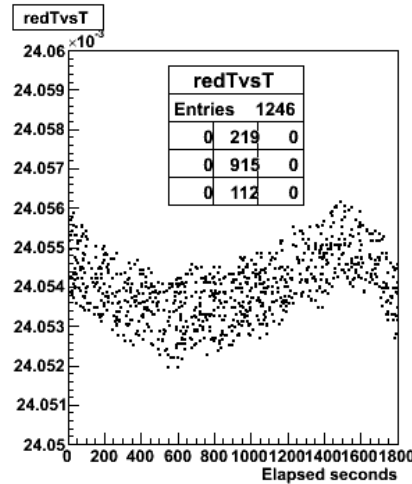
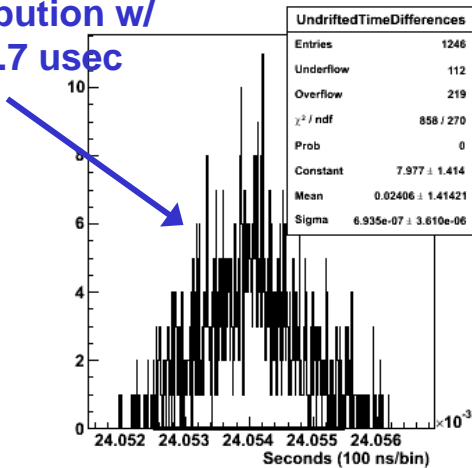
# Absolute Timing Test Results

Check for systematics at another location

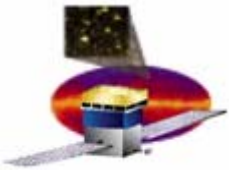
Correlated Peak w/ w4 msec offset



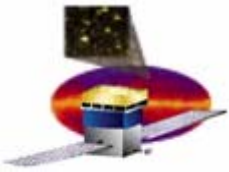
Remove drift, get error distribution w/ sigma of 0.7 usec



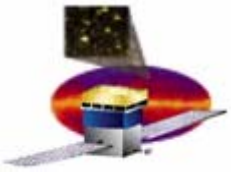
~2 us/sec drift caused by VSC oscillator



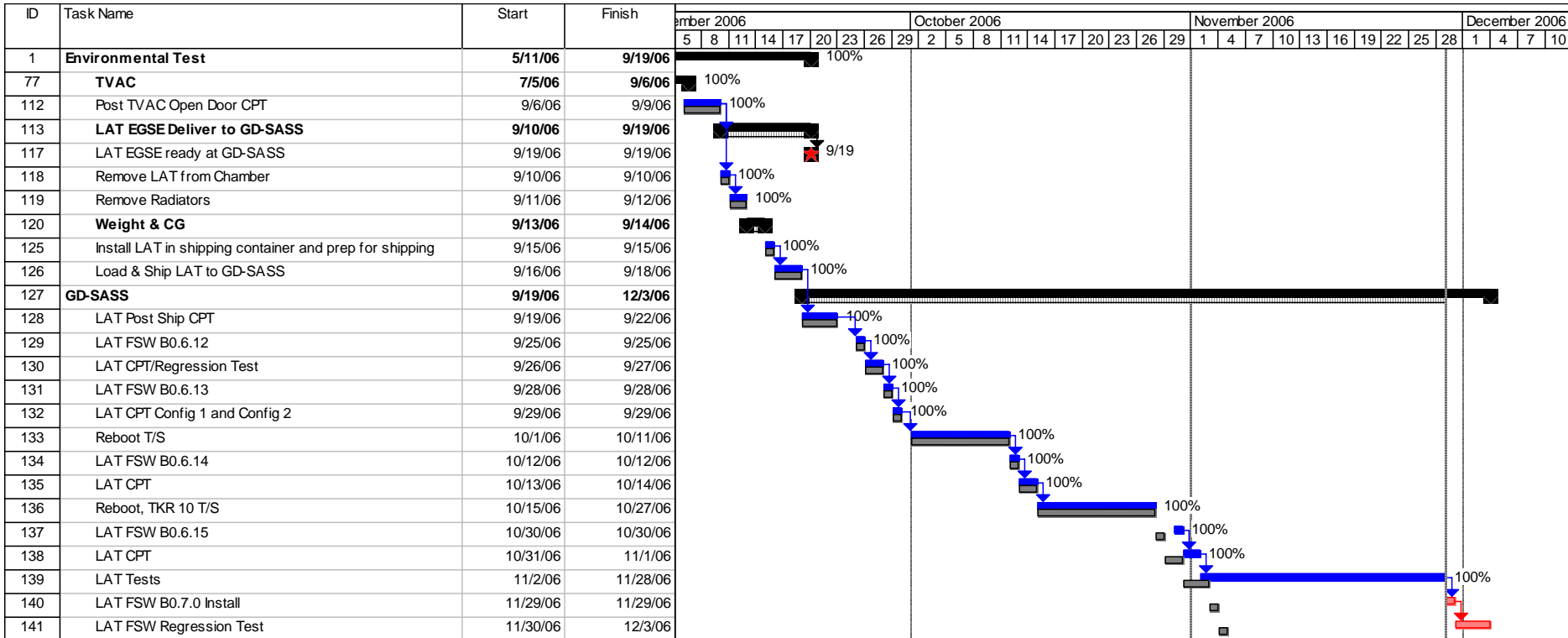
- ❑ **LICOS updated to 2.4.0 on MCR 11/21**
  - **MOOT support**
  - **S/C telemetry support**
  - **Various JIRAed bug fixes**
- ❑ **Prepared AstroRT proxies for “bent pipe” operation**
  - **Commanding and telemetry handling via AstroRT, SCIT rack and S/C**
- ❑ **Scripts updated**
  - **intMOOSEApp created**
  - **intSeApp rewritten**
    - Exploits commonality with intMOOSEApp
- ❑ **Online analysis system updated**
  - **Lessens operator load**
  - **Script improvements**
- ❑ **Configuration generation/maintenance**
- ❑ **Provided FSW spontaneous reboot support**
  - **Memory dump analysis**
  - **Stack dump analysis**
  - **Scripted operator “must-do” commands upon reboot event**

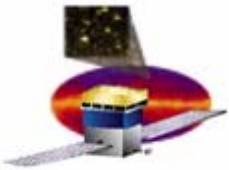


- ❑ **Deployment of new/updated scripts**
  - L-Obs-00x – LAT Power on (12/1)
  - L-Obs-03x – In-Rush Current test (11/14)
  - L-Obs-10x – Load Shed (12/1)
  - L-Obs-13x – GRB handling
- ❑ **Configuration file updates for advent of LAT-related S/C telemetry**
  - Displays
  - Alarms
- ❑ **Configuration management development**
  - MOOT support tools
  - Replace current fragile and error-prone system
  - Strategize maintenance of current method until MOOT makes it moot
- ❑ **Online analysis script issues**



# LAT Detailed Plan (1 of 1)

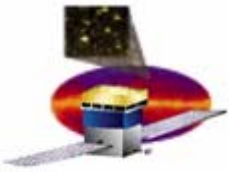




# LAT Staffing Plan

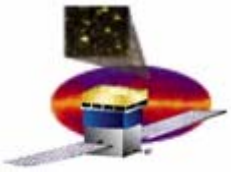
		FSW 0-7-0 Regression ? or LAT/S/C Integration ?	FSW 0-7-0 Regression ? December	FSW 0-7-0 Regression ? or LAT/S/C Integration ?	FSW 0-7-0 Regression ? or LAT/S/C Integration ?	FSW 0-7-0 Regression ? or LAT/S/C Integration ?	FSW 0-7-0 Regression ? or LAT/S/C Integration ?	FSW 0-7-0 Regression ? or LAT/S/C Integration ?	FSW 0-7-0 Regression ? or LAT/S/C Integration ?	FSW 0-7-0 Regression ? or LAT/S/C Integration ?	FSW 0-7-0 Regression ? or LAT/S/C Integration ?	FSW 0-7-0 Regression ? or LAT/S/C Integration ?	FSW 0-7-0 Regression ? or LAT/S/C Integration ?	FSW 0-7-0 Regression ? or LAT/S/C Integration ?	LAT/S/C Integration	LAT/S/C Integration	LAT/S/C Integration	LAT/S/C Integration	LAT/S/C Integration	LAT/S/C Integration	LAT/S/C Integration	LAT/S/C Integration
Updated: 11/22/06 PM		30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Name	Cell Phone	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W
Delatorre, Ismael	480-229-5109	GD Day	GD Day		GD Grave	GD Grave	GD Grave	GD Grave	GD Grave		GD Grave	GD Grave	GD Grave	GD Grave	GD Grave					GD Grave	GD Grave	GD Grave
Grist, Brian	408-910-3913	GD Day	GD/Trav Day			SLAC	SLAC	SLAC	SLAC	SLAC			Trav/GD Day	GD Day	GD Day	GD Day	GD/Trav Day			SLAC	SLAC	SLAC
Grove, Eric	202-297-4467	NRL	NRL			NRL	NRL	NRL	NRL	NRL			NRL	NRL	NRL	NRL	NRL			NRL	NRL	NRL
Hart, Philip	650-248-8909	SLAC	SLAC			SLAC	SLAC	SLAC	SLAC	SLAC			SLAC	SLAC	SLAC	SLAC	SLAC			SLAC	SLAC	SLAC
Hoang, Phuc	408-914-1514	SLAC	Travel	GD Swing	GD Swing	GD Swing	GD Swing	GD Swing	GD Swing	GD Swing	Travel		SLAC	SLAC	SLAC	SLAC	Travel	GD Day	GD Day	GD Day	GD Day	GD Day
Kiehl, Dave	408-981-7589	SLAC	SLAC			SLAC	SLAC	SLAC	SLAC	SLAC			SLAC	SLAC	SLAC	SLAC	SLAC			SLAC	SLAC	SLAC
Lee, Jimmy	301-237-8871	NRL	NRL			NRL	NRL	NRL	NRL	NRL			NRL	NRL	NRL	NRL	NRL			NRL	NRL	NRL
Ludvik, Jeffrey	650-814-5497	GD Swing	GD Swing	Travel		SLAC	SLAC	SLAC	SLAC	SLAC			Travel	GD Day	GD Day	GD Day	GD Day	GD Day	GD Day	Travel	SLAC	SLAC
Nieland, Tom	408-616-9857	GD Grave	GD Grave	GD Grave	GD Grave	GD Grave	GD off	GD off	GD Grave	GD Grave	GD Grave	GD Grave	GD Grave	Travel	SLAC	SLAC	SLAC			SLAC	SLAC	SLAC
Roberts, Drew	619-206-5760	GD Day	GD Day	GD Day	GD Off	GD Off	GD Day	GD Day	GD Day	GD Day	GD Day	GD Day	GD Day	GD Day	GD Day	GD Day	SanD	SanD		GD Day	GD Day	GD Day
Sandora, Patty	443-994-2698	NRL	NRL			Travel	GD Day	GD Day	GD Day	GD Day	GD Day	GD Day	Travel	NRL	NRL	NRL	NRL	Vaca	Vaca	Vaca	Vaca	Vaca
Thayer, Jana	650-228-3532	GD ???	GD ???	GD ???	GD ???	GD ???	SLAC	SLAC	SLAC	SLAC			SLAC	SLAC	SLAC	SLAC	SLAC			SLAC	SLAC	SLAC
Tuvi, Selim	415-271-3151	SLAC	SLAC			GD ???	GD ???	GD ???	GD ???	GD ???	GD ???	GD ???	GD ???	GD ???	GD ???	GD ???	GD ???			SLAC	SLAC	SLAC
Young, Patrick	408-307-5416	Vaca	Vaca	Vaca	Vaca	Vaca	Vaca	Vaca	Travel	GD Swing	GD Swing	GD Swing	GD Swing	GD off	GD Grave	GD Grave	GD Grave	GD Grave	GD Grave	SLAC	SLAC	SLAC





## FSW Status

- Regression Testing of B0-7-0 underway
- B0-7-1JIRA Prioritization
- ❑ TKR 10, layer 0 issue
  - Working to close this NCR
- ❑ LAT Electrical Staffing
  - Current plan is to maintain staffing for 7/24 until integration with spacecraft.
  - Hired one electrical test operator in AZ to replace Albert Nguyen.
- ❑ LAT Integration with the S/C
  - Loss in efficiency for debugging – available test time.
- ❑ LAT Post Integration Plan
  - Continue to run LAT tests on a non-interference basis
  - Support Observatory integration and test activities as required



GLAST LAT I&T

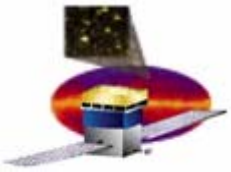
GLAST Monthly  
Mission Review  
November 30, 2006



Gamma-ray Large  
Area Space  
Telescope

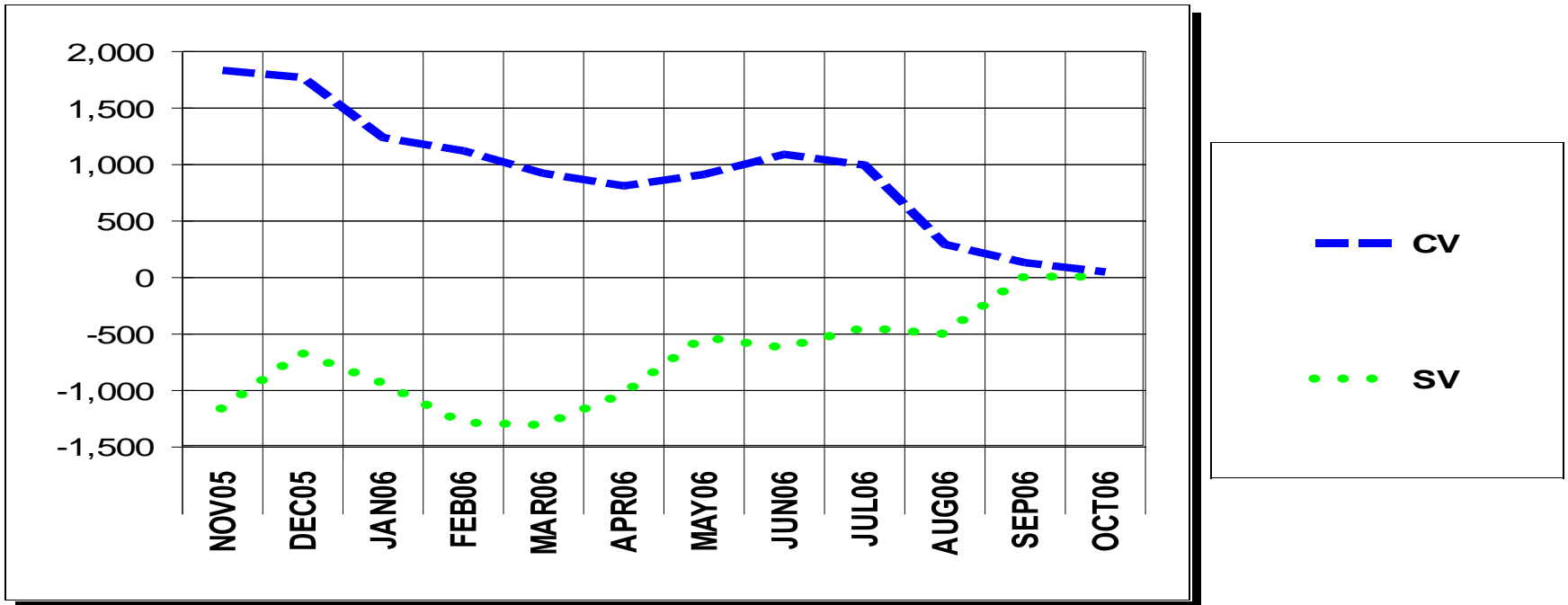


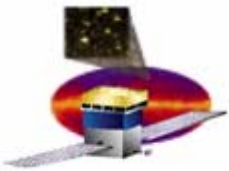
# Cost/Schedule Reports for 4.1 LAT Presentation October 2006 Month End



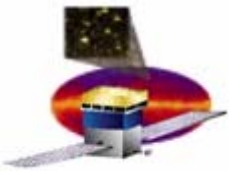
# Cost & Schedule Variance

## 4.1 GLAST LAT PROJECT



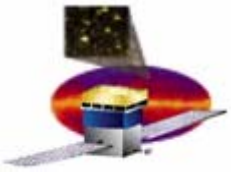


Cost Performance Report - Work Breakdown Structure														
Contractor: Location:					Contract Type/No:			Project Name/No: LAT		Report Period: 9/30/2006 10/31/2006				
Quantity		Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling		
1		0		0		0 0.00		0	0	0	0	0		
CAPW[3]		Current Period					Cumulative to Date					At Completion		
Item		Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance		Budgeted	Latest Revised Estimate	Variance
		Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost			
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
4.1.1 INSTRUMENT MANAGEMENT		250	250	221	0	29	22,552	22,552	21,644	0	908	25,533	25,533	0
4.1.2 SYSTEM ENGINEERING		121	121	73	0	48	10,772	10,772	10,709	0	63	12,165	12,165	0
4.1.4 TRACKER		0	0	0	0	0	21,486	21,486	21,491	0	-5	21,486	21,486	0
4.1.5 CALORIMETER		0	0	0	0	0	21,554	21,554	21,553	0	2	21,554	21,554	0
4.1.6 ANTICOINCIDENCE DETECTOR		0	0	0	0	0	18,164	18,164	18,165	0	0	18,164	18,164	0
4.1.7 ELECTRONICS		77	77	91	0	-14	31,577	31,577	31,843	0	-265	32,455	32,455	0
4.1.8 MECHANICAL SYSTEMS		0	0	0	0	0	17,463	17,463	17,466	0	-3	17,463	17,463	0
4.1.9 INTEGRATION & TEST		266	266	324	0	-58	14,307	14,307	15,678	0	-1,371	16,130	16,130	0
4.1.A PERFORMANCE AND SAFETY ASSURANCE		48	48	155	0	-107	5,542	5,542	5,373	0	169	6,028	6,028	0
4.1.B LAT INSTRUMENT SCIENCE OPERATIONS CENTER		0	0	0	0	0	317	317	317	0	0	317	317	0
4.1.C EDUCATION AND PUBLIC OUTREACH		54	54	84	0	-31	3,373	3,373	3,097	0	276	3,988	3,988	0
4.1.D SCIENCE ANALYSIS SOFTWARE		94	94	44	0	50	4,019	4,019	3,742	0	277	5,114	5,114	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		911	911	993	0	-82	172,450	172,450	172,401	0	50	181,722	181,722	0
Contingency												6,333	6,333	0
Total		911	911	993	0	-82	172,450	172,450	172,401	0	50	188,055	188,055	0



# Cost by Organization

Cost Performance Report - Work Breakdown Structure														
Contractor: Location:				Contract Type/No:				Project Name/No: LAT		Report Period: 9/30/2006 10/31/2006				
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		0.00		0	0	0	0	0			
OBS[1] BE[2]	Current Period						Cumulative to Date				At Completion			
Item (1)	Budgeted Cost		Actual Cost Work Performed (4)	Variance		Budgeted Cost		Actual Cost Work Performed (9)	Variance		Budgeted (12)	Latest Revised Estimate (13)	Variance (14)	
	Scheduled (2)	Performed (3)		Schedule (5)	Cost (6)	Scheduled (7)	Performed (8)		Schedule (10)	Cost (11)				
DG *** GSFC														
RL LABOR	44	44	0	0	0	44	10,149	10,149	9,553	0	595	10,657	10,657	0
RT TRAVEL	3	3	0	0	0	3	279	279	119	0	160	314	314	0
RM MATERIAL & SERVICES	0	0	0	0	0	0	7,745	7,745	8,138	0	-394	7,750	7,750	0
RX MPS & LAB TAX	10	10	0	0	0	10	2,614	2,614	2,435	0	179	2,768	2,768	0
OBS[1]Totals:	58	58	0	0	0	58	20,786	20,786	20,245	0	541	21,489	21,489	0
DH *** HEPL														
RL LABOR	100	100	80	0	20	20	5,353	5,353	4,967	0	386	6,576	6,576	0
RT TRAVEL	5	5	17	0	-12	-12	287	287	323	0	-36	349	349	0
RM MATERIAL & SERVICES	39	39	23	0	17	17	4,738	4,738	4,725	0	13	5,105	5,105	0
OBS[1]Totals:	145	145	120	0	25	25	10,379	10,379	10,015	0	364	12,029	12,029	0
DL *** SLAC														
RL LABOR	336	336	226	0	110	110	38,512	38,512	39,003	0	-490	41,099	41,099	0
RT TRAVEL	28	28	68	0	-40	-40	1,293	1,293	1,250	0	43	1,595	1,595	0
RM MATERIAL & SERVICES	133	133	218	0	-86	-86	63,002	63,002	62,533	0	469	64,617	64,617	0
OBS[1]Totals:	496	496	511	0	-15	-15	102,808	102,808	102,786	0	22	107,311	107,311	0
DN *** NRL														
RL LABOR	116	116	205	0	-89	-89	24,584	24,584	25,806	0	-1,223	25,878	25,878	0
RT TRAVEL	4	4	23	0	-19	-19	863	863	724	0	140	920	920	0
RM MATERIAL & SERVICES	0	0	19	0	-19	-19	6,514	6,514	6,749	0	-235	6,514	6,514	0
OBS[1]Totals:	121	121	247	0	-127	-127	31,961	31,961	33,279	0	-1,318	33,311	33,311	0
DO *** Financial Plan Transfer/Sub Out														
RM MATERIAL & SERVICES	0	0	0	0	0	0	59	59	59	0	0	59	59	0
OBS[1]Totals:	0	0	0	0	0	0	59	59	59	0	0	59	59	0
DS *** SSU														
RL LABOR	37	37	40	0	-3	-3	1,715	1,715	1,852	0	-138	2,139	2,139	0
RT TRAVEL	3	3	4	0	0	0	148	148	110	0	38	189	189	0
RM MATERIAL & SERVICES	12	12	40	0	-27	-27	1,469	1,469	1,099	0	369	1,609	1,609	0
OBS[1]Totals:	53	53	83	0	-31	-31	3,332	3,332	3,062	0	270	3,937	3,937	0
DU *** UCSC														
RL LABOR	23	23	28	0	-5	-5	2,156	2,156	2,115	0	40	2,418	2,418	0
RT TRAVEL	1	1	0	0	1	1	146	146	127	0	19	158	158	0
RM MATERIAL & SERVICES	5	5	0	0	5	5	398	398	358	0	39	457	457	0
OBS[1]Totals:	29	29	28	0	1	1	2,699	2,699	2,601	0	99	3,034	3,034	0
DT *** Texas A&M														
RL LABOR	0	0	0	0	0	0	15	15	15	0	0	15	15	0
OBS[1]Totals:	0	0	0	0	0	0	15	15	15	0	0	15	15	0
DW *** UW														
RL LABOR	7	7	0	0	7	7	307	307	270	0	37	398	398	0
RT TRAVEL	1	1	2	0	-1	-1	46	46	47	0	-2	54	54	0
RM MATERIAL & SERVICES	2	2	0	0	2	2	58	58	21	0	37	85	85	0
OBS[1]Totals:	11	11	2	0	8	8	411	411	338	0	73	538	538	0
Gen. and Admin.	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Undist. Budget														
Sub Total	911	911	993	0	-82	-82	172,451	172,451	172,401	0	50	181,722	181,722	0
Contingency														
Total	911	911	993	0	-82	-82	172,451	172,451	172,401	0	50	188,055	188,055	0



# FTE Report (DOE/NASA-funded only)

FTEs

