

**Cost/Schedule Reports for  
4.1 LAT  
Presentation  
May 2005 Month End**



## Calorimeter Finished !!

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- Last of the 18 Calorimeter modules has been accepted by I&T
- Plan to close the 4.1.5 Calorimeter accounts at the end of July
  - Final report at the August monthly
- Outstanding balances will be transferred to other WBS elements
  - Any redistribution of funds will be handled with subsequent CCB actions
- Neil Johnson will continue to be responsible for the LAT funds at NRL



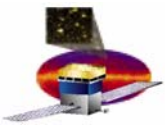
# Phase E Budget

(\$K)	MO&DA						Total MO&DA
	PY07	PY08	PY09	PY10	PY11	To Complete	
<b><u>Mission Opers. (8.1)</u></b>							
<u>LAT Instr. Ops. (8.1.1)</u>							
Management 8.1.1.1	143	437	446	465	483	3,669	5,643
Stanford Univ. 8.1.1.2	307	885	808	736	666	3,788	7,190
NRL 8.1.1.3	322	954	902	873	870	5,288	9,209
GSFC 8.1.1.4	271	791	742	722	725	4,466	7,716
Total	1,042	3,066	2,898	2,796	2,744	17,211	29,758
<b><u>Data Analysis (8.2)</u></b>							
<u>LAT Sci. Anal. (8.2.2)</u>							
Management 8.2.2.1	125	397	415	422	431	3,142	4,933
Stanford Univ. 8.2.2.2	320	1,002	1,006	1,009	1,024	6,232	10,593
NRL 8.2.2.3	321	989	969	923	880	5,196	9,278
GSFC 8.2.2.4	270	819	797	763	734	4,389	7,772
Total	1,036	3,207	3,187	3,117	3,069	18,960	32,576
<u>E/PO (8.2.8)</u>							
SSU E/PO 8.2.8.1	206	636	655	675	657	4,086	6,915
<b>TOTAL LAT</b>	<b>2,284</b>	<b>6,909</b>	<b>6,740</b>	<b>6,588</b>	<b>6,470</b>	<b>40,257</b>	<b>69,249</b>

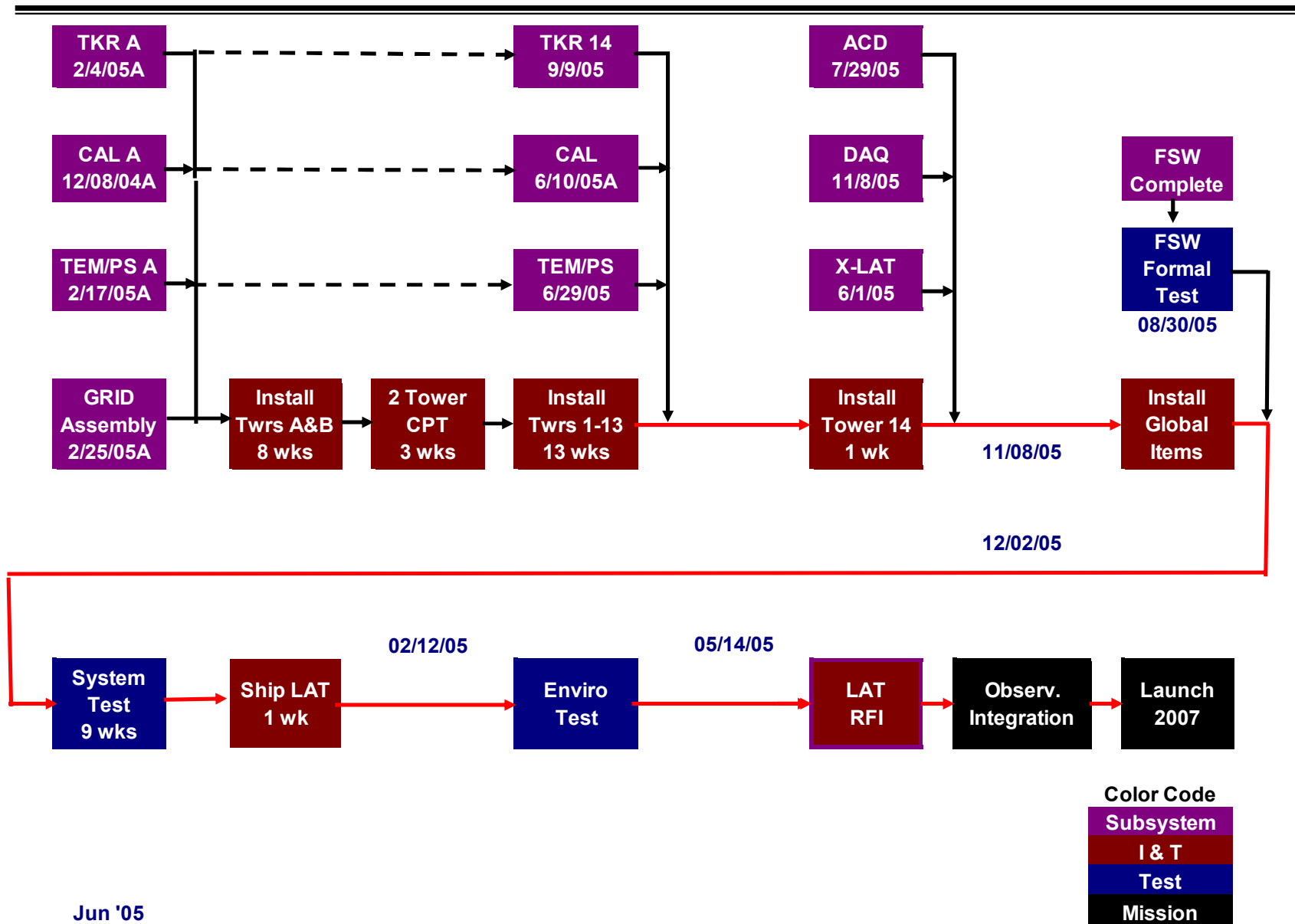


# Module Schedule

Status as of 6/28/05	Forecast Dates and Float (working days) to "Ship LAT"									
	Mech/ACD		TKR		CAL		ELEC		I&T	
Grid	11/08/04A	-								
1st Module			02/04/05A	-	12/08/04A	-	02/17/05A	-	04/07/05A	-
2nd Module			02/24/05A	-	01/14/05A	-	03/09/05A	-	04/13/05A	-
3rd Module			05/10/05A	-	01/14/05A	-	05/19/05A	-	05/27/05A	-
4th Module			05/10/05A	-	01/14/05A	-	05/19/05A	-	05/31/05A	-
5th Module			05/10/05A	-	01/14/05A	-	06/02/05A	-	06/27/05A	-
6th Module			06/08/05A	-	02/22/05A	-	06/06/05A	-	06/27/05A	-
7th Module			06/08/05A	-	02/22/05A	-	06/06/05A	-	07/15/05	60
8th Module			07/06/05	61	04/25/05A	-	07/06/05	61	07/15/05	60
9th Module			07/08/05	64	04/25/05A	-	07/12/05	62	08/16/05	44
10th Module			07/29/05	50	04/25/05A	-	07/12/05	63	08/22/05	44
11th Module			08/02/05	57	05/25/05A	-	07/19/05	67	09/15/05	33
12th Module			08/16/05	48	05/25/05A	-	07/19/05	68	09/15/05	33
13th Module			08/18/05	51	05/25/05A	-	07/26/05	68	09/28/05	30
14th Module			08/25/05	47	05/25/05A	-	07/26/05	69	09/28/05	30
15th Module			09/07/05	44	06/10/05A	-	08/02/05	69	10/12/05	30
16th Module			09/09/05	44	06/10/05A	-	08/02/05	71	10/12/05	31
ACD	07/29/05	91								
X-LAT	07/01/05	114								
Radiators	08/09/05	152								
Harness							08/31/05	58		
PDU							10/03/05	35		
GASU							09/16/05	45		
1st EPU/SIU							10/20/05	24		
Last EPU/SIU							11/08/05	10		
FSW Cand Test Start							06/14/05A	-		
FSW FQT							08/30/05	39		
Inst Global Items									12/02/05	10
System Test									02/06/06	10
LAT Arrives at NRL									02/12/06	10
Sine Vibe									03/10/06	10
EMI/EMC Test									03/31/06	10
Acoustic Test									04/11/06	10
TVAC									05/10/06	10
Weight & CG									05/12/06	10
Preship Review									05/13/06	10
Ship LAT									05/14/06	10

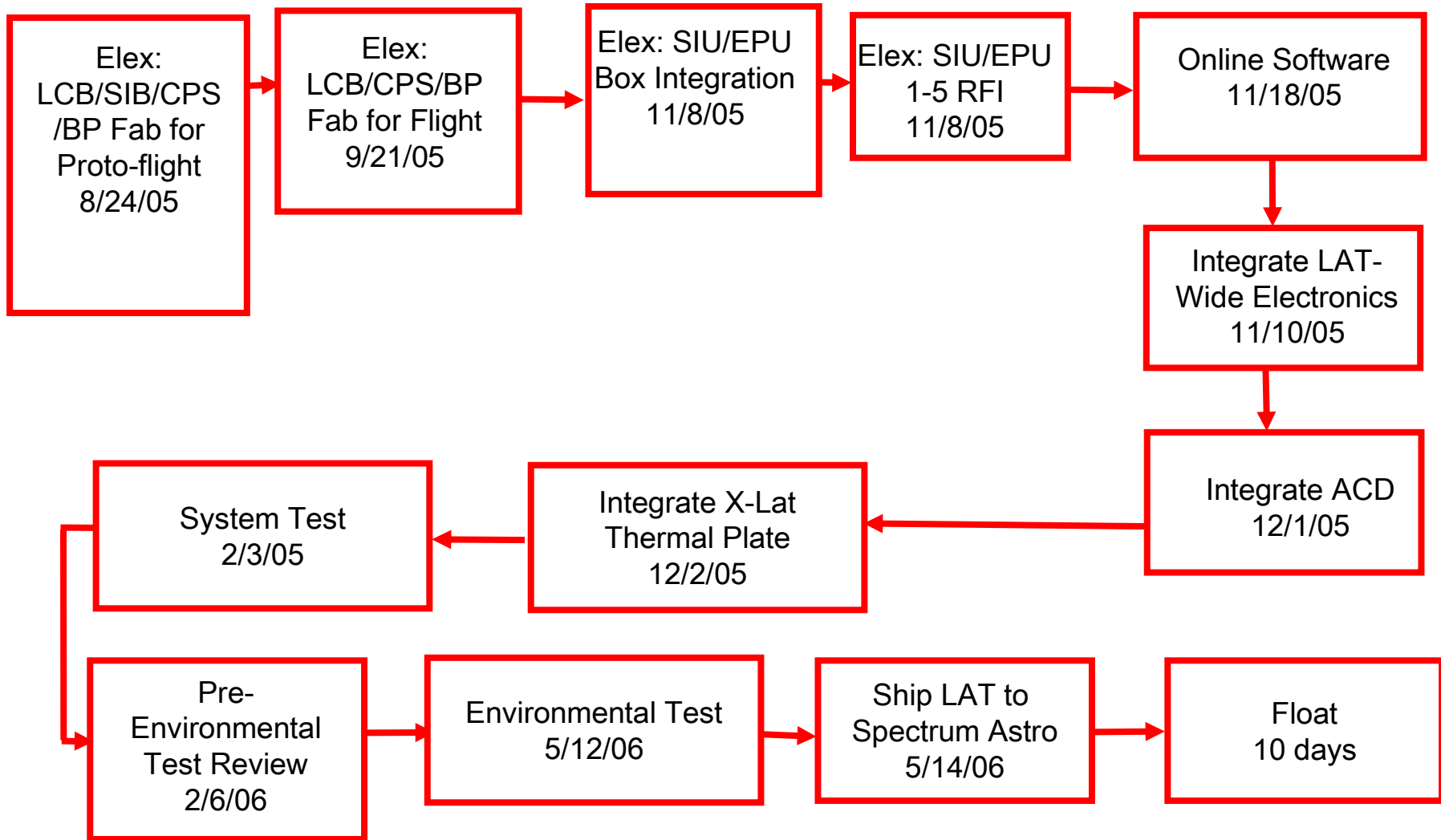


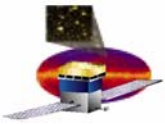
# LAT Schedule





# Current Critical Path to Ship LAT to Spectrum Astro

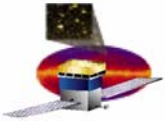




## Current Critical Path to Ship LAT to Spectrum Astro

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- **1<sup>st</sup> critical path: Electronics SIU/EPU Components for Proto-flight**  
10 days float to Ship LAT to Spectrum Astro
- **2<sup>nd</sup> critical path: Electronics PDU Assembly for Flight**  
27 days behind 1<sup>st</sup> critical path
- **3<sup>rd</sup> critical path: Electronics FSW FQT**  
1 day behind 2<sup>nd</sup> critical path
  
- **1st critical path to 8 Tower CPT: Tracker Tower 6 Cables**

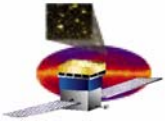


# Tracker Cables

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- **Emilio hand carried 9 cables to Pisa**
  - **Module 6 has all of the cables except C7**
  - **Module 7 has C0 to C4 and a C6 (with rejected coupon)**
- **2 – C7 cables and a C5 (with rejected coupon) hand carried to Pisa on Sunday**
- **Module 6 & 7 will have a full complement of cables on Monday**
  - **Two module 7 cables with rejected coupons**





# Prospects for cables

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- **Parlex**
  - Bruce Foshay of BMG consulting is at the facility
  - Phil Goodwin is at the facility today
  - They are putting together the numbers of cables failing for each reason to get a handle on the effect of relaxing tolerances
  - In particular, they are getting the number of cable panels that are in quarantine and the cause of rejection
  - Working on specifications on a case by case basis
    - Reduce the annular ring requirement from .002” to .001”
    - Loosen tolerance on over and under etch of traces from to
    - Accept cracks in connectors
      - Engineering evaluation that risk is low and cables are redundant
    - Need support from the mission office
- **Pioneer**
  - Recent slip in schedule from all cables August 1 to some cables by mid August and rest by the end of August
  - Project Manager has call into Pioneer management
  - Robert Johnson (and Project Manager if needed) visit to Pioneer next week



## Pioneer Schedule

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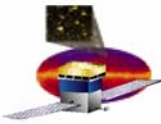
- LAT-DS-02377-05
- LAT-DS-02378-03 **First Article** 8/19/05
- LAT-DS-02379-02 **1st Release** 8/19/05
- LAT-DS-02380-02 **2nd Release** 8/25/05
- LAT-DS-02381-02 **3rd Release** 8/31/05
- LAT-DS-02382-02 **4th Release** 9/7/05
- LAT-DS-02383-02
- LAT-DS-02384-03



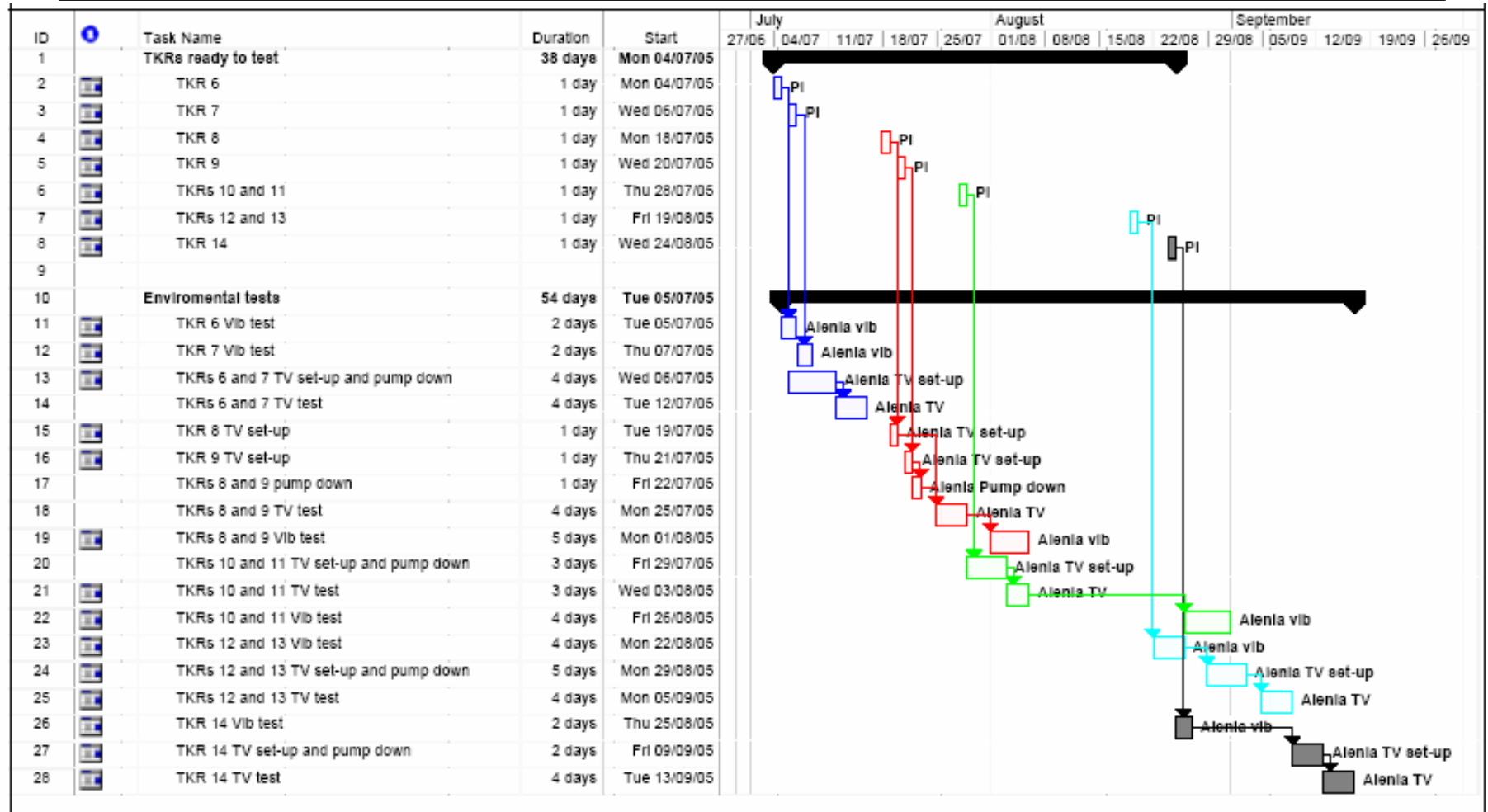
# Tracker Testing

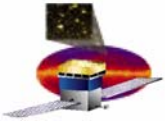
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- **Modules 6&7 will go through environmental testing with complete sets of cables**
- **After that, it is likely that modules will be ready for environmental testing but missing some cables**
  - **The mission office has recommended that we test and then add missing cables when they become available**
    - **A full functional test and a limited alignment check will be done after adding the cables**
  - **This maintains a regular schedule at Alenia and the inventory of modules awaiting cables will be kept at Pisa**
- **Concerns regarding this plan**
  - **The configuration will be broken post test without retest**
    - **This plan needs to be vetted with code 300**
  - **The sidewall fasteners will not be staked during vib with a risk of fasteners backing out and damaging hardware**
    - **This could be mitigated by doing a sine sweep to characterize the module but not full level vibration**
  - **Functional testing of the module before, during and after vib will be limited to the available cables**
  - **Some connectors will not be mated during vib and could become contaminated**
    - **If this is deemed to be a problem the open connectors could be covered with tape**
  - **Some MCMs may not be powered during thermal-vac testing**
    - **The gradients in the tracker are small and the main thermal induced stresses are due to the average temperature**



# Tracker environmental testing schedule





## Cable delivery impact on LAT schedule

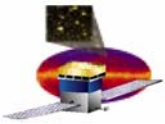
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- Modules through environmental test by mid September
- Feasible that all cables will be available by then
- Including installing cables, functional test, and acceptance test the 16<sup>th</sup> module should be RFI before mid October
  - This leaves the tracker about 4 weeks off the critical path to the June 1 LAT delivery milestone
- Mitigation
  - Review the integration sequence in a month to assure that the towers under the key DAQ boxes are installed earlier

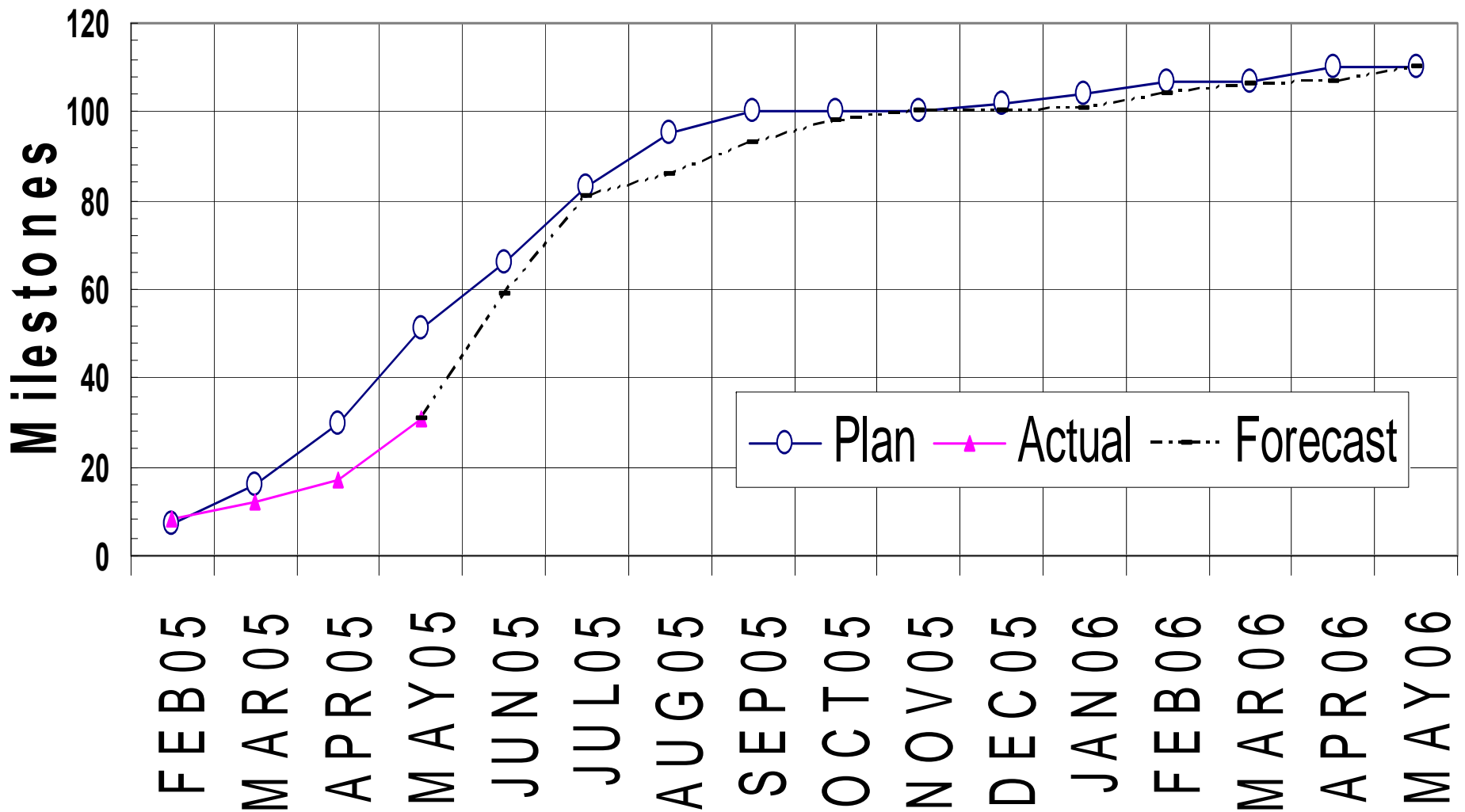


# Level 1-2 Milestone List

Activity ID	Activity Description	Baseline Finish	-2m Var	-1m Var	Bsln Var	Early Finish	Fiscal Year						
							FY02	FY03	FY04	FY05	FY06		
<b>DOE/NASA Joint Oversight Group (Level 1)</b>													
1M1P000000	DOE Critical Decision (CD) 0 Approval	06/25/01A	0	0	0	06/25/01A	▼						
1M1P000010	CD-1 Approval	07/23/02A	0	0	0	07/23/02A		▼					
1M1P000020	CD-2 Approval	11/08/02A	0	0	0	11/08/02A			▼				
1M1P000030	CD-3 Approval	09/03/03A	0	0	0	09/03/03A				▼			
1M1P000060	Flight GRID Complete	11/08/04A	0	0	0	11/08/04A					▼		
1M1P000040	CD-4 Approval	03/15/06*	0	0	0	03/15/06*						▼	
<b>DOE/NASA Federal Project Managers (Level 2)</b>													
1M1BF00000	Launch Balloon Flight	08/01/01A	0	0	0	08/01/01A	▼						
1M1000100	Instrument Preliminary Design Review	01/08/02A	0	0	0	01/08/02A		▼					
1M1000110	I-CDR (Critical Design Review)	05/16/03A	0	0	0	05/16/03A			▼				
1M1000740	Start LAT Integration	03/23/05	-5	-5	-5	03/30/05A					▼		
1M1000700	Pre Environmental Testing Review	12/20/05	-9	-9	-27	02/06/06						▼	
1M1000120	PSR-(Instrument Pre-Ship Review)	04/18/06	-10	-10	-18	05/12/06						▼	
Run Date: 06/16/05 10:06							<b>GLAST LAT PROJECT</b>		LT-T1: Level 1 && 2 Milestones			Sheet 1	
Data Date: 06/01/05							<b>Level 1&amp;&amp;2 Milestones</b>		FL-T1: Level 1 && 2 Milestones				
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# Level 3 Milestone Count

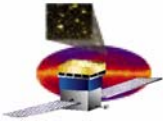




# Level 3 Milestones Completed in May 2005

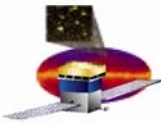
AV	Activity ID	ND	Activity Description	Baseline Finish	Bsln Var	Early Finish	FY05		
							APR	MAY	JUN
<b>Instrument Project Office (Level 3)</b>									
<b>4.1.4 Tracker</b>									
4	1M1000220	9	Flight Tracker Tower 1 RFI	03/22/05	-35	05/10/05A		▼	
4	1M1000221	9	Flight Tracker Tower 2 RFI	04/20/05	-14	05/10/05A	◆	▼	
4	1M1000250	9	Flight Tracker Tower 3 RFI	05/03/05	-5	05/10/05A		◆▼	
<b>4.1.5 Calorimeter</b>									
5	1MRTS060	5	Flight Calorimeter Module 9 Ready to Ship	05/02/05	-17	05/25/05A	◆	▼	
5	1MRTS070	5	Flight Calorimeter Module 10 Ready to Ship	05/10/05	-11	05/25/05A		◆▼	
5	1MRTS080	5	Flight Calorimeter Module 12 Ready to Ship	05/18/05	-5	05/25/05A		◆▼	
5	1MRTS090	5	Flight Calorimeter Module 11 Ready to Ship	05/13/05	-8	05/25/05A		◆▼	
<b>4.1.7 Electronics</b>									
7	1M79210		Demo: Watchdog	04/15/05	-15	05/06/05A	◆	▼	
7	1M79230		Demo: Housekeeping	03/18/05	-37	05/10/05A		▼	
7	1M79001030	9	Flight TEM Assy 1: Elec to I&T	04/22/05	-19	05/19/05A	◆	▼	
7	1M79001040	9	Flight TEM Assy 2: Elec to I&T	04/29/05	-14	05/19/05A		◆▼	
7	1M79002030	9	Flight TEM PS Assy 1: Elec to I&T	04/22/05	-19	05/19/05A	◆	▼	
7	1M79002040	9	Flight TEM PS Assy 2: Elec to I&T	04/29/05	-14	05/19/05A		◆▼	
Run Date	06/20/05 13:58		<b>GLAST LAT PROJECT Completed Level 3 Milestones in Reporting Month Sort by Subsystem</b>				LT-TB: Completed Level 3 by Subsystem		Sheet 1
Data Date	06/01/05						FL-TB: Level 3 Milestones compl. last month		
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# Level 3 Milestones Completed in May 2005

AV	Activity ID	ND	Activity Description	Baseline Finish	Bsln Var	Early Finish	FY05				
							APR	MAY	JUN		
<b>4.1.9 I&amp;T</b>											
9	1M99020	9	Start 4 Tower Comprehensive Performance Test	05/12/05	-12	05/31/05A		♦	▼		
Run Date							06/20/05 13:58	GLAST LAT PROJECT		LT-TB: Completed Level 3 by Subsystem	Sheet 2
Data Date							06/01/05	Completed Level 3 Milestones in Reporting Month Sort by Subsystem		FL-TB: Level 3 Milestones compl. last month	
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# Level 3 Milestones Completed in June 2005

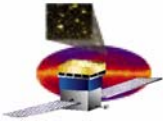
AV	Activity ID	ND	Activity Description	Baseline Finish	Bsln Var	Early Finish	FY05		
							MAY	JUN	JUL
<b>Instrument Project Office (Level 3)</b>									
<b>4.1.4 Tracker</b>									
4	1M1000251	9	Flight Tracker Tower 4 RFI	05/16/05	-16	06/08/05	◆	▽	
4	1M1000260	9	Flight Tracker Tower 5 RFI	06/03/05	-3	06/08/05		◆	▽
<b>4.1.5 Calorimeter</b>									
5	1MRTS100	5	Flight Calorimeter Module 13 Ready to Ship	05/23/05	-13	06/10/05	◆	▽	
5	1MRTS110	5	Flight Calorimeter Module 14 Ready to Ship	05/25/05	-11	06/10/05	◆	▽	
5	1MRTS120	5	Flight Calorimeter Module 15 Ready to Ship Spare	05/31/05	-8	06/10/05	◆	▽	
5	1MRTS130	5	Flight Calorimeter Module 16 Ready to Ship Spare	06/08/05	-2	06/10/05		◆	▽
<b>4.1.7 Electronics</b>									
7	1M79001050	9	Flight TEM Assy 3: Elec to I&T	05/06/05	-18	06/02/05	◆	▽	
7	1M79002050	9	Flight TEM PS Assy 3: Elec to I&T	05/06/05	-18	06/02/05	◆	▽	
7	1M79001060	9	Flight TEM Assy 4: Elec to I&T	05/13/05	-15	06/06/05	◆	▽	
7	1M79002060	9	Flight TEM PS Assy 4: Elec to I&T	05/13/05	-15	06/06/05	◆	▽	
7	1M79001070	9	Flight TEM Assy 5: Elec to I&T	05/20/05	-10	06/06/05	◆	▽	
7	1M79002070	9	Flight TEM PS Assy 5: Elec to I&T	05/20/05	-10	06/06/05	◆	▽	
<b>4.1.B ISOC</b>									
B	1M7941270	B	Ground System Interface Test start	06/15/05*	-9	06/28/05*		◆	▽

Run Date 06/28/05 10:57  
 Data Date 06/01/05  
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**GLAST LAT PROJECT**  
**Level 3 Milestones Completed in June**  
**Sort by Subsystem**

LT-T9: L3 MS Completed Curr Mo (tb)  
 FL-T2: L3 Milestones Completed Current Month

Sheet 1

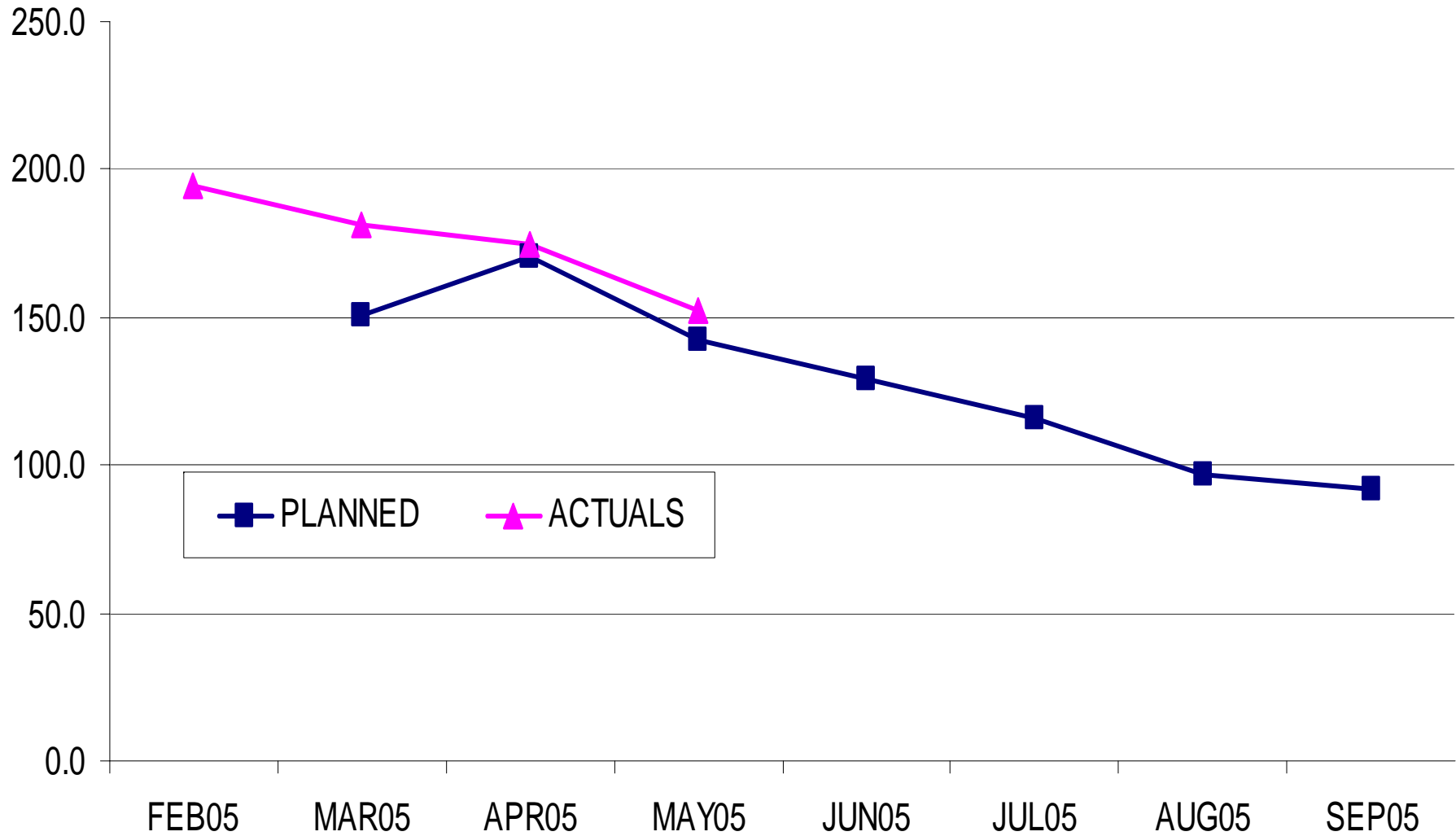


# CPR Level 3

Cost Performance Report - Work Breakdown Structure													
Contractor: Location:						Contract Type/No:		Project Name/No: LAT		Report Period: 4/30/2005      5/31/2005			
CAPW[3]  Item  (1)	Current Period					Cumulative to Date					At Completion		
	Budgeted Cost		Actual Cost Work Performed (4)	Variance		Budgeted Cost		Actual Cost Work Performed (9)	Variance		Budgeted (12)	Latest Revised Estimate (13)	Variance (14)
	Work Scheduled (2)	Work Performed (3)		Schedule (5)	Cost (6)	Work Scheduled (7)	Work Performed (8)		Schedule (10)	Cost (11)			
4.1.1 INSTRUMENT MANAGEMENT	327	327	326	0	1	16,456	16,456	16,159	0	298	17,645	17,645	0
4.1.2 SYSTEM ENGINEERING	166	166	269	0	-103	7,051	7,051	7,078	0	-27	7,647	7,647	0
4.1.4 TRACKER	983	763	665	-220	98	20,158	19,676	19,397	-483	279	21,702	21,702	0
4.1.5 CALORIMETER	275	252	221	-23	31	21,832	21,796	21,200	-35	596	22,594	22,594	0
4.1.6 ANTICOINCIDENCE DETECTOR	363	267	217	-96	50	17,546	17,324	17,135	-222	189	17,968	17,968	0
4.1.7 ELECTRONICS	1,137	1,163	597	27	566	27,094	26,401	26,148	-693	253	28,894	28,894	0
4.1.8 MECHANICAL SYSTEMS	75	515	592	439	-77	15,253	15,250	15,243	-3	7	16,866	16,866	0
4.1.9 INTEGRATION & TEST	82	372	293	290	79	7,613	7,585	7,507	-28	79	9,451	9,451	0
4.1.A PERFORMANCE AND SAFETY ASSURANCE	103	103	182	0	-79	3,477	3,477	3,502	0	-25	3,846	3,846	0
4.1.B LAT INSTRUMENT SCIENCE OPERATIONS GEN	5	5	13	0	-9	317	317	319	0	-2	334	334	0
4.1.C EDUCATION AND PUBLIC OUTREACH	68	68	18	0	50	2,397	2,397	2,083	0	<b>313</b>	2,684	2,684	0
4.1.D SCIENCE ANALYSIS SOFTWARE	75	75	9	0	66	2,765	2,765	2,541	0	224	3,069	3,069	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	3,659	4,075	3,402	417	673	143,283	141,819	139,635	-1,464	2,184	154,025	154,025	0
Contingency											1,784	1,784	0
Total	3,659	4,075	3,402	417	673	143,283	141,819	139,635	-1,464	2,184	155,809	155,809	0



# FTE Report (DOE/NASA-funded only)





# Performance Analysis

	WBS	Description	BAC	BCWS	BCWP	ACWP	SV \$	CV \$	%BCWS	%BCWF	%ACWF	SPI	CPI	SPI	CPI	Cpi_Fcst	CpiSpi_Fcst
1	4.1	LAT	154,025	143,283	141,819	139,635	-1,464	2,184	93.03	92.08	90.66	↑	↑	0.990	1.016	151,653	151,777
2	4.1.1	Instr Mgmt	17,645	16,456	16,456	16,159	0	298	93.27	93.27	91.58	↔	↔	1.000	1.018	17,325	17,325
3	4.1.2	System Engr	7,647	7,051	7,051	7,078	0	-27	92.20	92.20	92.55	↔	↓	1.000	0.996	7,676	7,676
4	4.1.4	Tracker	21,702	20,158	19,676	19,396	-483	279	92.89	90.66	89.38	↓	↑	0.976	1.014	21,394	21,443
5	4.1.5	Calorimeter	22,594	21,832	21,796	21,200	-35	596	96.62	96.47	93.83	↓	↔	0.998	1.028	21,976	21,977
6	4.1.6	ACD	17,968	17,546	17,324	17,135	-222	189	97.65	96.42	95.36	↓	↑	0.987	1.011	17,772	17,780
7	4.1.7	Electronics	28,894	27,094	26,401	26,148	-693	253	93.77	91.37	90.50	↔	↑	0.974	1.010	28,617	28,682
8	4.1.8	Mechanical	16,866	15,253	15,250	15,243	-3	7	90.44	90.42	90.38	↑	↓	1.000	1.000	16,858	16,858
9	4.1.9	I&T	9,451	7,613	7,585	7,507	-28	79	80.55	80.26	79.42	↑	↑	0.996	1.010	9,353	9,360
10	4.1.A	PSA	3,846	3,477	3,477	3,502	0	-25	90.39	90.39	91.05	↔	↓	1.000	0.993	3,874	3,874
11	4.1.B	ISOC	334	317	317	319	0	-2	94.88	94.88	95.57	↔	↓	1.000	0.993	337	337
12	4.1.C	EPO	2,684	2,397	2,397	2,083	0	313	89.30	89.30	77.62	↔	↑	1.000	1.150	2,333	2,333
13	4.1.D	SAS	3,069	2,765	2,765	2,541	0	224	90.08	90.08	82.79	↔	↑	1.000	1.088	2,821	2,821
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

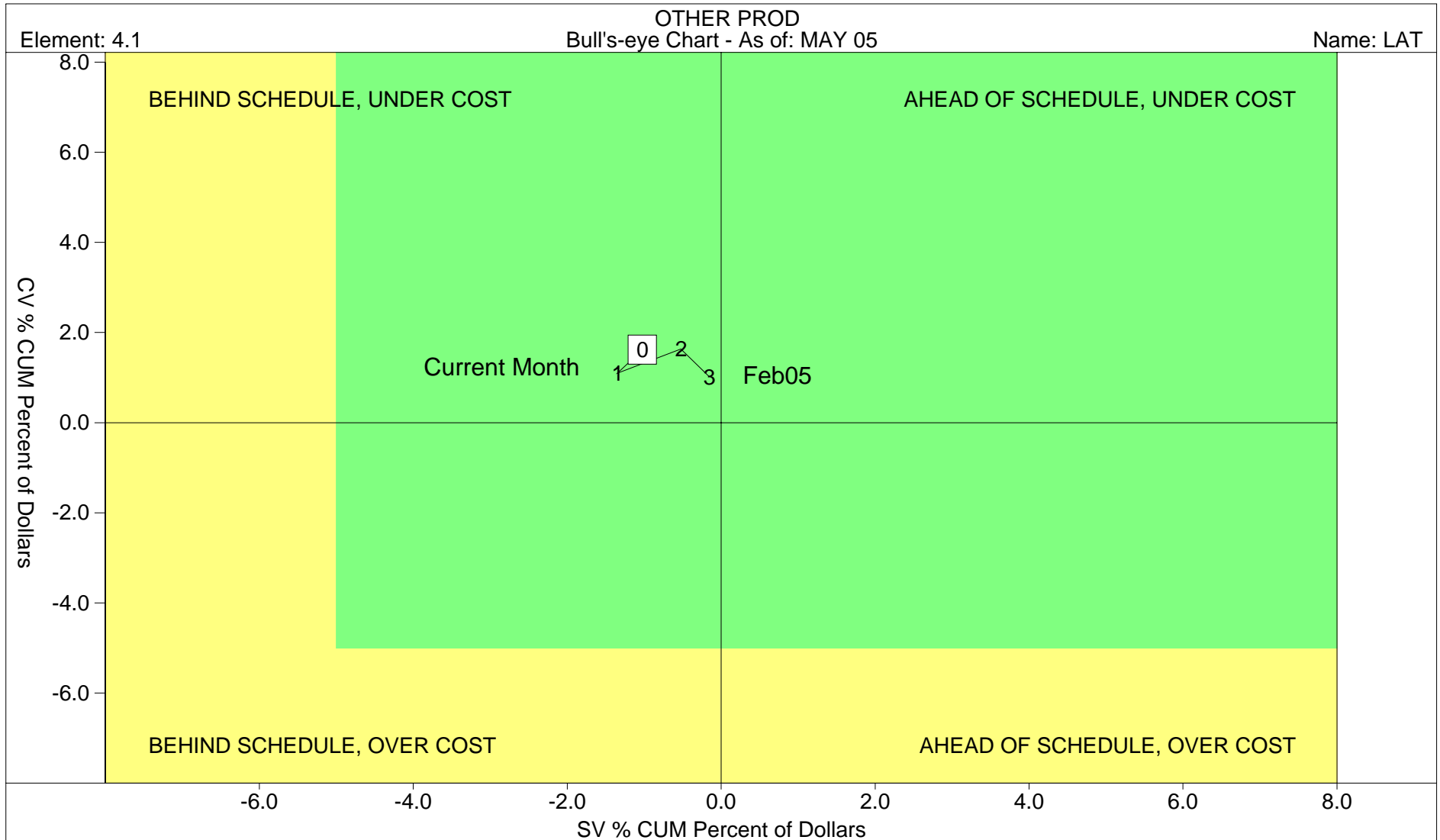
Cpi\_Fcst: CPI (to date) EAC Forecast = BAC / CPI  
 CpiSpi\_Fcst: Combination CPI and SPI EAC Forecast = ACWP + (BAC - BCWP) / (CPI \* SPI)

<span style="color: red;">■</span>	Worse than .85	<span style="color: green;">■</span>	Between .95 and 1.10
<span style="color: yellow;">■</span>	Between .85 and .95	<span style="color: blue;">■</span>	Better than 1.10

SPI and CPI Change Thresholds

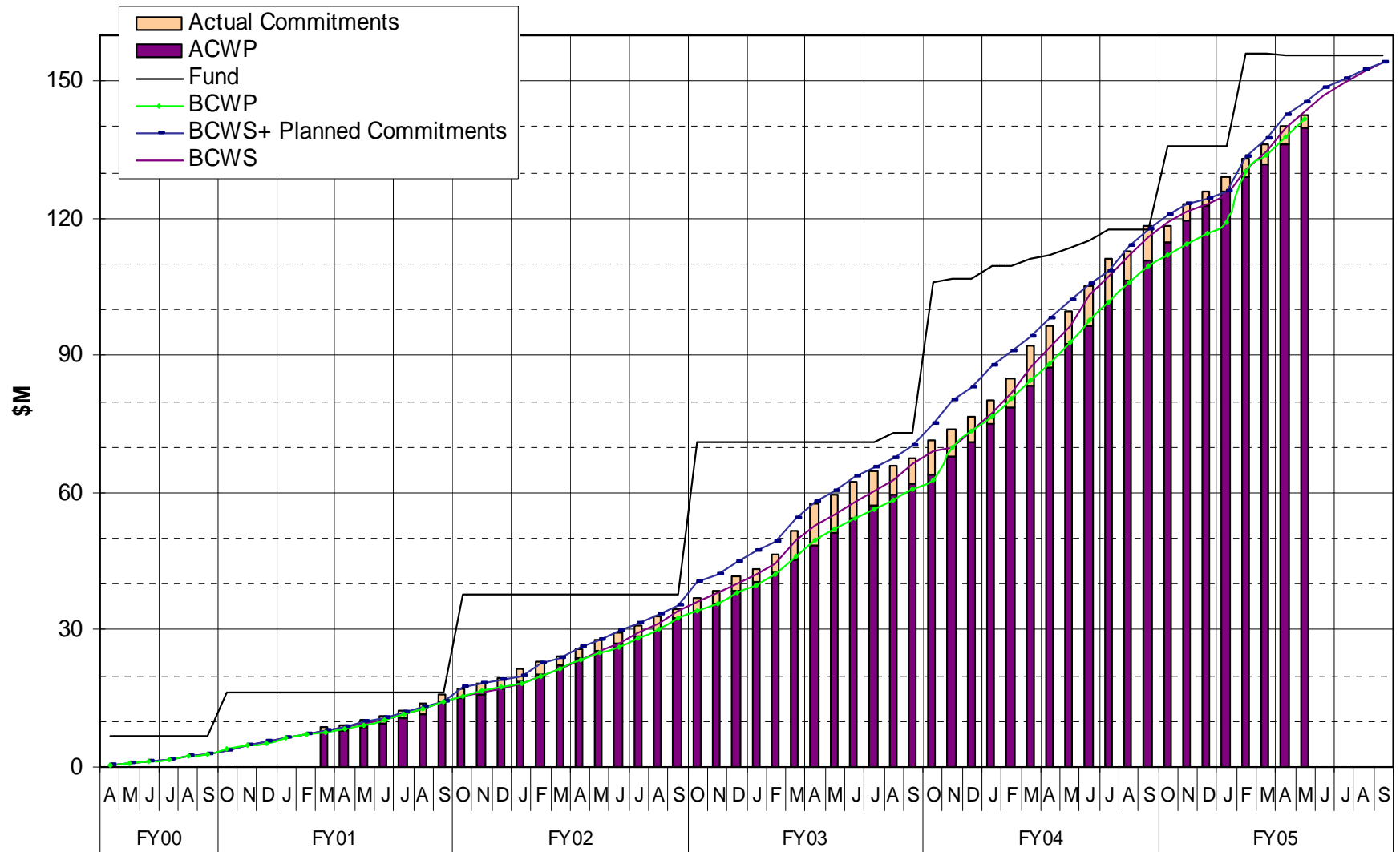


# Variance Analysis





# Budget, Cost, Funding, Performance





# Cost Report

Monthly Contractor Financial Management Report 31-May-05								NASA form 533M Approved OMB # 2700-		Report for Month Ending: 5/31/2005	
Reporting Category	Cost Incurred				Estimated Cost			Estimated Final Cost		Unfilled Orders Outstanding	
	During Month		Cum. to Date		Detail		Balance of Contract	Contractor Estimate	Contract Value		
	Actual	Planned	Actual	Planned	JUN05	JUL05					
4.1.1 INSTRUMENT MANAGEMENT	326	327	16,159	16,456	342	291	852	17,645	17,645	151	
4.1.2 SYSTEM ENGINEERING	269	166	7,078	7,051	163	150	256	7,647	7,647	10	
4.1.4 TRACKER	665	983	19,397	20,158	768	352	1,185	21,702	21,702	794	
4.1.5 CALORIMETER	221	275	21,200	21,832	226	166	1,003	22,594	22,594	18	
4.1.6 ANTICOINCIDENCE DETECTOR	217	363	17,135	17,546	216	56	561	17,968	17,968	110	
4.1.7 ELECTRONICS	597	1,137	26,148	27,094	767	434	1,546	28,894	28,894	1,029	
4.1.8 MECHANICAL SYSTEMS	592	75	15,243	15,253	485	412	726	16,866	16,866	383	
4.1.9 INTEGRATION & TEST	293	82	7,507	7,613	416	555	974	9,451	9,451	22	
4.1.A PERFORMANCE AND SAFETY ASSURANCE	182	103	3,502	3,477	111	81	152	3,846	3,846	1	
4.1.B LAT INSTRUMENT SCIENCE OPERATIONS CENTER	13	5	319	317	5	5	5	334	334	0	
4.1.C EDUCATION AND PUBLIC OUTREACH	18	68	2,083	2,397	73	67	460	2,684	2,684	203	
4.1.D SCIENCE ANALYSIS SOFTWARE	9	75	2,541	2,765	80	71	377	3,069	3,069	170	
4.1.E SUBORBITAL FLIGHT TEST	0	0	1,325	1,325	0	0	0	1,325	1,325	0	
Gen. and Admin.	0	0	0	0	0	0	0	0	0	0	
<b>Total</b>	<b>3,402</b>	<b>3,659</b>	<b>139,635</b>	<b>143,283</b>	<b>3,653</b>	<b>2,640</b>	<b>8,098</b>	<b>154,025</b>	<b>154,025</b>	<b>2,891</b>	





# Lien List

Subsystem	Lien Item	Cost	May-05 Cost Variance
4.1.1 Instr. Mgmt Total		0	298
4.1.2 Sys Eng	Manufacturing engineering support	50	
4.1.2 Sys Eng Total		50	-27
4.1.4 Tracker	ASIC grinding & dicing	33	
	Cable productivity improvements	120	
	Tracker schedule delay (TBR)	145	
	MCMs	150	
	Bias circuits	18	
	Nanoconnectors for flex cables	25	
4.1.4 Tracker Total		491	279
4.1.5 Calorimeter Total		0	596
4.1.6 ACD	MMS/TB bakeout	35	
	Incorporate thermal loads imparted by MMS/TB	9	
	MMS schedule recovery	35	
	Additional S&MA support	15	
	Alignment H/W for optical fiber to PMT connection	8	
	3 add'l vibe tests to analyze freq shift	29	
	Additional facilities costs	30	
	Tracker simulator	6	
	31+ days schedule delay cost (TBR)	195	
4.1.6 ACD Total		362	189
4.1.7 Elex	SIB/UTMC receiver chips	35	
	Flight software schedule delay	373	
	DAQ schedule delay (TBR)	330	
	Thermal vacuum labor	120	
	Environmental test cabling	40	
	Aeroflex change order	40	
4.1.7 Elex Total		938	253
4.1.8 Mech Sys Total		0	7
4.1.9 I&T Total		0	79
4.1.A PSA	Extend QA support	40	
4.1.A PSA Total		40	-25
4.1.B ISOC Total		0	-2
4.1.C E/PO Total		0	313
4.1.D Sci. Analysis. S/W Total		0	224
Grand Total		1,880	2,184

Available contingency as of end-May 2005:	1,784
Contingency if changes are approved:	-96



# Summary

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- Calorimeter complete
- ACD complete
  - Entering environmental test
- Mechanical hardware complete
  - Entering environmental test
- Tracker assembly going well except for cables
  - MCMs near complete
- DAQ is in early manufacturing
  - TEM/TEMPS are ahead of I&T
- I&T going smoothly
  - Reacting well to changing environment
- Funding for FY05 is tight
- June 1, 2006 delivery is under threat of DAQ box delivery and TKR cable delivery