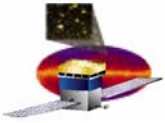


GLAST Large Area Telescope:

Electronics, Data Acquisition & Flight Software W.B.S 4.1.7

May Monthly Review

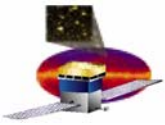
Gunther Haller
haller@slac.stanford.edu
(650) 926-4257



TEM/TPS Status & Schedule

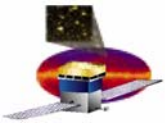
- **Status**
 - Qual unit used for FM CAL testing was sent back to SLAC (to be discussed what do with it)
 - A & B at I&T on tower A and B
 - #1 & #2 delivered to I&T
 - #3: unit with bad Tem connector (is currently in TV)
 - #4: currently in TV, coming out Wednesday
 - #5: was delivered to SLAC last week, needs vib/TV/EMI
 - #6: expected to be delivered at SLAC today, needs vibTV/EMI
 - Next 2 sets expected in 2 weeks (cause is TPS pipe-line)
 - Rest of module: 2/week thereafter

- Did find fix for low-level oscillations, exchange of one resistor, but not clear whether it is worth at this time to incorporate mods.



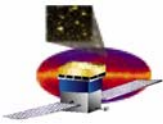
PDU Status and Schedule

- **Schedule for 2 units**
 - **Proto-flight, pre-coat, arrived at SLAC 5/10**
 - **Was schedule to go back 5/24, but is delayed a few days**
 - **Power-outage (mainly software access and un-stable power)**
 - **Box needed some machining to prevent a short of a node to ground**
 - **Testing at room-temperature ok, still needs testing over T before shipping it back to assembler for conformal coating**
 - **Deliver proto-flight to I&T 8/1 in present assembler schedule**
 - **2nd unit lags by 6 weeks**



GASU Status and Schedule

- **Status**
 - **Surface-mount assembly complete**
 - **Is in flying-probe testing**
- **Schedule for 2 units (from assembler)**
 - **6/21: proto-flight unit assembled, pre-coat, ready for test at SLAC**
 - **6/28: ship to SLAC for environmental testing**
 - **9/3: deliver proto-flight unit to I&T**
 - **2nd unit lags first by 6 weeks**



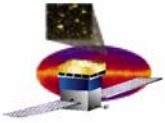
SIU/EPU Status and Schedule

- **Status**

- Backplane solder testing sample of new flight board (with reduced copper) was analyzed at GSFC
 - Minor issues which are being addressed
- Solder Sample of SIB was delivered to GSFC last Friday, is being analyzed
- SIB/LCB/CPS/CBP board parts kits shipped
 - Discovered that one part (UTMC LVDS receiver) was ordered short
 - No impact to schedule since we are able to buy parts (assuming Po is placed in the next 2 days)
 - Cost impact since those were not budgeted and have also higher screening level
- Sib parts audited at assembler, engineering masters received, scheduled to go to surface mount assembly this week
- Issue with SIB Austin EEPROM of the lot we are assembly this week
 - No helium-tracer gas was put into re-sealed parts (not clear yet how many of our parts are affected)
 - Chlorine traces detected in capacitor die attach (might only be for extended bake-out parts, under investigation)
 - New lot to get additional parts beyond parts being loaded above)for different lot which was rejected) passed source-inspection, expected 3rd week of June
- Part kits of other parts are at assembler audit stage
- All blank PC boards are a t assembler with exception of CPS (was received and is in coupon testing)

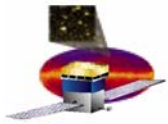
- **Schedule**

- Boards for integration of first 5 crates should be at SLAC Aug 28 according to assembler schedule
- 1 week per crate for vib/TV/EMI thereafter

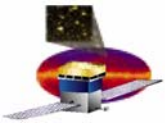


Harness & heater Contol Box

- **Harness in assembly**
- **Received several types of cable assemblies, more coming in**
- **Heater Control box PCB's received (are in coupon testing)**
- **Assembly contract requisition is in purchasing**

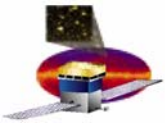


EGSE



Thermo-testing support

- **Status**
 - Power protection unit for regulated and unregulated feeds in assembly (done by end of this week)
 - PDU/GASU/SIU ready to be mounted in rack
 - AC power distribution unit to be delivered to SLAC this week
 - Flight software changed code to provide hooks for LATTE4
 - Still needs to be more debugged
 - LATTE4/FSW code in progress (lost 3 days last week)



VSC

SBC



GPS receiver

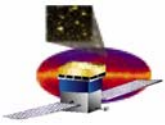
systran board
(removed)

Science
Interface

1553 interface
(removed)

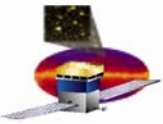
to GASU

- First VSC done
 - In use by FSW and I&T (Ric)
- Other 3 stations being put together (next 3 weeks)

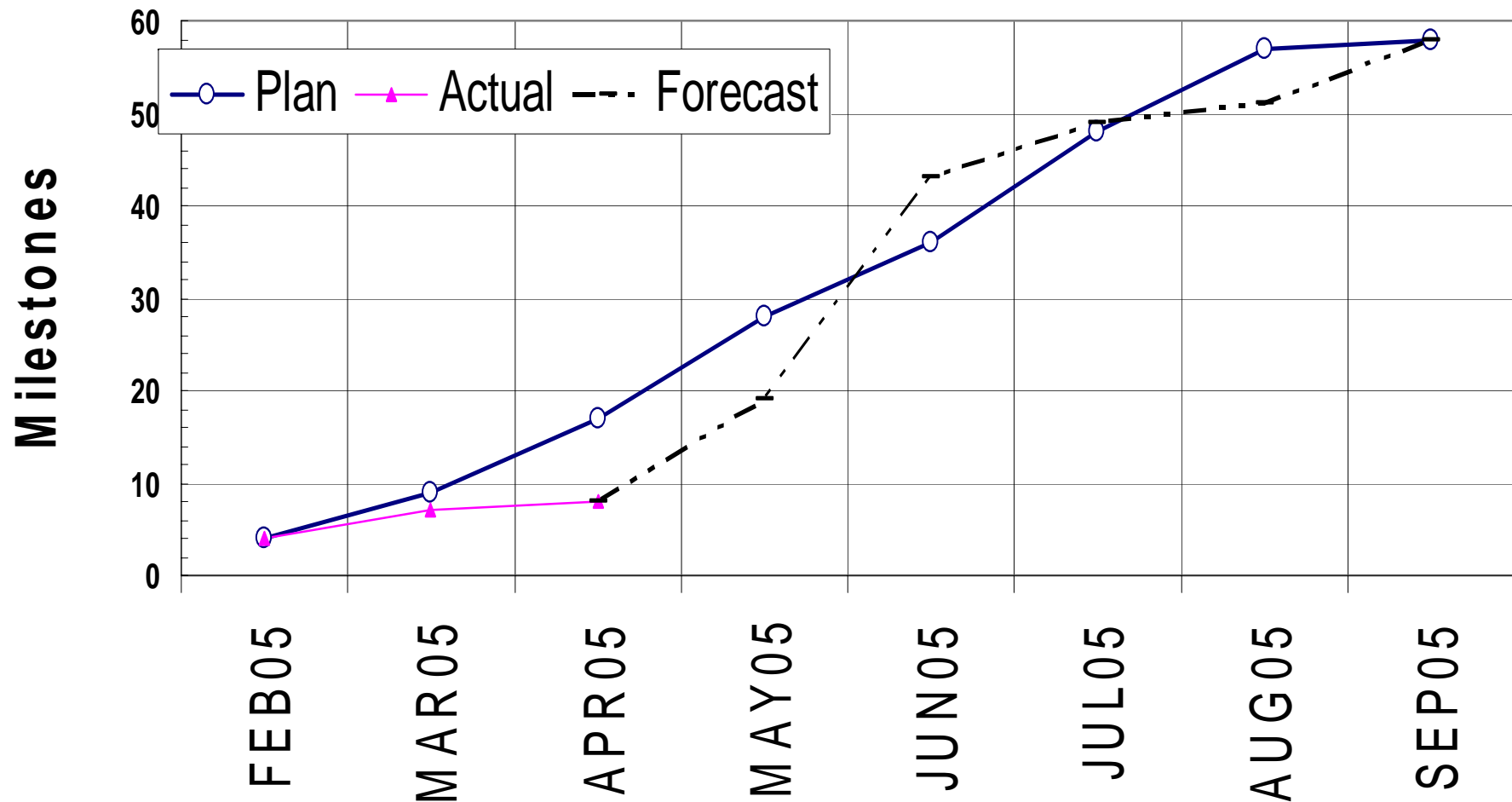


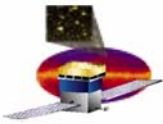
Tech Issues

- Larger TPS ripple issue resolved, potentially have small ripple at certain loads/voltage settings (could also be removed with resistor change, to be decided)
- AUSTIN EEPROM DPA problems
 - New lot delivery date 6/16 (just passed CSI) these parts are needed to replace a rejected lot
 - New issue (GIDEP alert) on lot in hand, is being addressed
- Qualification of cCPI press-fit connector assembly using solder process
 - Looks promising
- Need to work on closing open FPGA review items



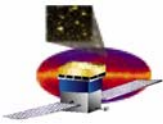
Level 3 Milestone Count





Level 3 Milestone List

Activity Description	Baseline Finish	-2m Var	-1m Var	Bsln Var	Early Finish	2005												
						FE	MA	AP	MA	JU	JUL	AU	SE	OD	NO	DE	JAN	
4.1.7 Electronics																		
Elx Ground Support Equipment																		
Final EGSE incl S/C Sim, FSW-Elec	04/01/05	-15	-20	-41	05/31/05													
TEM/PS A																		
Flight TEM Assy A: Elec to I&T	02/17/05	0	0	0	02/17/05A	▼												
Flight TEM PS Assy A: Elec to I&T	02/17/05	0	0	0	02/17/05A	▼												
TEM/PS B																		
Flight TEM Assy B: Elec to I&T	03/07/05*	0	-2	-2	03/09/05A	▼												
Flight TEM PS Assy B: Elec to I&T	03/07/05*	0	-2	-2	03/09/05A	▼												
TEM/PS 1																		
Flight TEM Assy 1: Elec to I&T	04/22/05	0	0	-17	05/17/05													
Flight TEM PS Assy 1: Elec to I&T	04/22/05	0	0	-17	05/17/05													
TEM/PS 2																		
Flight TEM Assy 2: Elec to I&T	04/29/05	0	0	-12	05/17/05													
Flight TEM PS Assy 2: Elec to I&T	04/29/05	0	0	-12	05/17/05													
TEM/PS 3																		
Flight TEM Assy 3: Elec to I&T	05/06/05	0	0	-12	05/24/05													
Flight TEM PS Assy 3: Elec to I&T	05/06/05	0	0	-12	05/24/05													
TEM/PS 4																		
Flight TEM Assy 4: Elec to I&T	05/13/05	0	0	-7	05/24/05													
Flight TEM PS Assy 4: Elec to I&T	05/13/05	0	0	-7	05/24/05													
Run Date	05/23/05 10:45	GLAST LAT PROJECT				LT-DZ: Baseline Variance	Report #10											
Data Date	05/01/05	Level 3 Milestones				FL-D4: AV: Level 3 Milestones	Sheet 6											
© Primavera Systems, Inc.		Baseline Variance (Organized by Subsystem)																



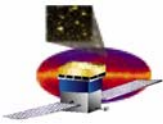
Level 3 Milestone List

Activity Description	Baseline Finish	-2m Var	-1m Var	Bsln Var	Early Finish	2005											
						FE	MA	AP	MA	JU	JUL	AU	SE	OD	NO	DE	JAN
TEM/PS 5																	
Flight TEM Assy 5: Elec to I&T	05/20/05	0	0	-7	06/01/05				▼								
Flight TEM PS Assy 5: Elec to I&T	05/20/05	0	0	-7	06/01/05				▼								
TEM/PS 6																	
Flight TEM Assy 6: Elec to I&T	05/27/05	0	0	-2	06/01/05				▼								
Flight TEM PS Assy 6: Elec to I&T	05/27/05	0	0	-2	06/01/05				▼								
TEM/PS 7																	
Flight TEM Assy 7: Elec to I&T	06/06/05	0	0	-2	06/08/05				▼								
Flight TEM PS Assy 7: Elec to I&T	06/06/05	0	0	-2	06/08/05				▼								
TEM/PS 8																	
Flight TEM Assy 8: Elec to I&T	06/13/05	0	0	3	06/08/05				▼								
Flight TEM PS Assy 8: Elec to I&T	06/13/05	0	0	3	06/08/05				▼								
TEM/PS 9																	
Flight TEM Assy 9: Elec to I&T	06/20/05	0	0	3	06/15/05				▼								
Flight TEM PS Assy 9: Elec to I&T	06/20/05	0	0	3	06/15/05				▼								
TEM/PS 10																	
Flight TEM Assy 10: Elec to I&T	06/27/05	0	0	8	06/15/05				▼								
Flight TEM PS Assy 10: Elec to I&T	06/27/05	0	0	8	06/15/05				▼								
TEM/PS 11																	
Flight TEM Assy 11: Elec to I&T	07/05/05	0	0	8	06/22/05				▼								
Flight TEM PS Assy 11: Elec to I&T	07/05/05	0	0	8	06/22/05				▼								

Run Date 05/23/05 10:45
 Data Date 05/01/05
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GLAST LAT PROJECT
Level 3 Milestones
Baseline Variance (Organized by Subsystem)

LT-DZ: Baseline Variance
 FL-D4: AV: Level 3 Milestones
 Report #10
 Sheet 7



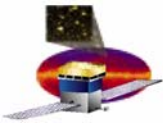
Level 3 Milestone List

Activity Description	Baseline Finish	-2m Var	-1m Var	Bsln Var	Early Finish	2005												
						FE	MA	AP	MA	JU	JUL	AU	SE	OD	NO	DE	JAN	
TEM/PS 12																		
Flight TEM Assy 12: Elec to I&T	07/12/05	0	0	13	06/22/05					▽	▼							
Flight TEM PS Assy 12: Elec to I&T	07/12/05	0	0	13	06/22/05					▽	▼							
TEM/PS 13																		
Flight TEM Assy 13: Elec to I&T	07/19/05	0	0	13	06/29/05					▽	▼							
Flight TEM PS Assy 13: Elec to I&T	07/19/05	0	0	13	06/29/05					▽	▼							
TEM/PS 14																		
Flight TEM Assy 14: Elec to I&T	07/26/05	0	0	18	06/29/05					▽	▼							
Flight TEM PS Assy 14: Elec to I&T	07/26/05	0	0	18	06/29/05					▽	▼							
TEM/PS 15																		
Flight TEM Assy 15: Elec to I&T	08/02/05	0	0	18	07/07/05					▽	▼							
Flight TEM PS Assy 15: Elec to I&T	08/02/05	0	0	18	07/07/05					▽	▼							
TEM/PS 16																		
Flight TEM Assy 16: Elec to I&T	08/09/05	0	0	23	07/07/05					▽	▼							
Flight TEM PS Assy 16: Elec to I&T	08/09/05	0	0	23	07/07/05					▽	▼							
Elex Global Items																		
Flight PDU Box-Elec to I&T	07/01/05	0	-13	-36	08/23/05					▼		▽						
Flight Harness-Elec to I&T	07/05/05	0	0	0	07/05/05					▼								
Flight GASU Box-Elec to I&T	07/19/05	3	-19	-36	09/08/05					▼		▽						
LCB Flight Units - Elec to Elec	07/20/05	0	-16	-18	08/15/05					▼		▽						
Flight Event Processor Units-Elec to	08/19/05	0	-16	-11	09/06/05						▼	▽						

Run Date 05/23/05 10:45
 Data Date 05/01/05
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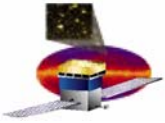
GLAST LAT PROJECT
Level 3 Milestones
Baseline Variance (Organized by Subsystem)

LT-DZ: Baseline Variance
 FL-D4: AV: Level 3 Milestones
 Report #10
 Sheet 8



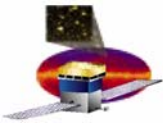
Level 3 Milestone List

Activity Description	Baseline Finish	-2m Var	-1m Var	Bsln Var	Early Finish	2005													
						FE	MA	AP	MA	JU	JUL	AU	SE	OD	NO	DE	JAN		
Elex Global Items																			
1st Flight EPU/SIU-Elec to I&T	08/19/05	0	-16	-11	09/06/05														
2nd Flight EPU/SIU-Elec to I&T	08/24/05	0	-16	-11	09/09/05														
3rd Flight EPU/SIU-Elec to I&T	08/26/05	0	-15	-10	09/12/05														
4th Flight EPU/SIU-Elec to I&T	08/30/05	0	-16	-11	09/15/05														
5th Flight EPU/SIU-Elec to I&T	09/02/05	0	-14	-9	09/16/05														
Flight Software																			
Demo: Spacecraft Interfaces	02/14/05	0	0	0	02/14/05A	▼													
Demo: Thermal Control	02/16/05	0	0	0	02/16/05A	▼													
Demo: Inter-task Communications	03/11/05	0	-25	-25	04/15/05A		▼	▼											
Demo: Housekeeping	03/18/05	0	-30	-37	05/10/05		▼		▼										
Demo: Event Filtering	03/23/05	0	9	9	03/10/05A		▼	▼											
Demo: Watchdog	04/15/05	0	-5	-15	05/06/05			▼											
Demo: Mode Control	04/22/05	0	-20	-29	06/03/05				▼										
Demo: Charge Injection Calibration	04/29/05	0	-20	-29	06/10/05					▼									
Demo: Event Integrity and Delivery	05/06/05	0	-19	-29	06/17/05						▼								
Demo: Diagnostics	05/06/05	0	-19	-29	06/17/05							▼							
Demo: GRB Detection and Response	05/20/05	0	-14	-48	07/29/05								▼						
Run Date: 05/23/05 10:45						GLAST LAT PROJECT						LT-DZ: Baseline Variance							
Data Date: 05/01/05						Level 3 Milestones						FL-D4: AV: Level 3 Milestones							
© Primavera Systems, Inc.						Baseline Variance (Organized by Subsystem)						Report #10 Sheet 9							



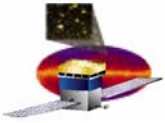
Milestone Variance Explanation

- **PDU/GASU/SIU modules later than planned, assembly vendor started late**
- **Change plans to use proto-flight unit for I&T unless assembler can speed up work**



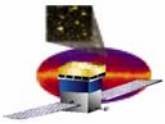
Cost Report

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	MAY05	JUN05				
4.1.7 ELECTRONICS										
4.1.7 ELECTRONICS			353	354			1	354	354	
4.1.7.1 ELECTRONICS MANAGEMENT	39	46	1,881	1,832	46	49	93	2,069	2,069	
4.1.7.2 RELIABILITY & QUALITY ASSURANCE	1		223	220			-3	220	220	
4.1.7.3 ELECTRONICS SYSTEM DESIGN			733	733				733	733	
4.1.7.4 DATAFLOW ELECTRONICS (TEMs + PROCE	347	290	9,891	9,926	338	183	385	10,797	10,797	321
4.1.7.5 SPACECRAFT INTERFACE UNIT	38	110	1,641	1,648	286	178	151	2,256	2,256	205
4.1.7.6 POWER CONDITIONING	64	179	1,987	2,163	126	82	180	2,375	2,375	162
4.1.7.7 ENCLOSURES	13		667	643			-24	643	643	6
4.1.7.8 CABLE HARNESS	38	143	310	488	106	49	185	649	649	250
4.1.7.9 FLIGHT SOFTWARE	236	144	5,275	5,224	188	178	194	5,835	5,835	
4.1.7.A EGSE & OPERATIONS		1	2,491	2,573			81	2,573	2,573	17
4.1.7.C INSTRUMENT INTEGRATION & TEST	28	46	100	156	46	49	197	392	392	
CAPW[3]Totals:	804	961	25,551	25,958	1,137	767	1,440	28,894	28,894	961

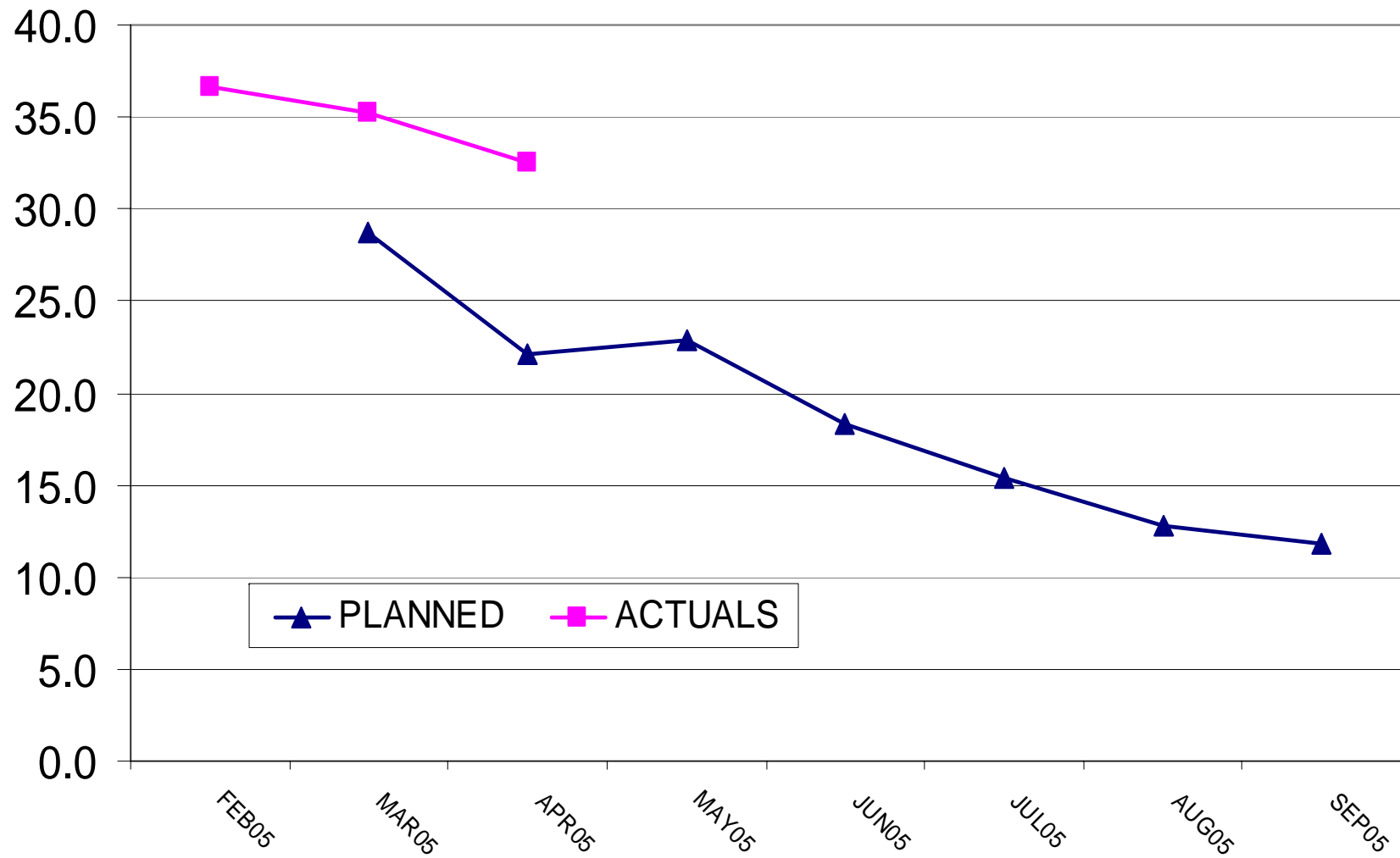


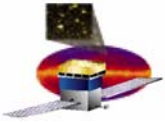
Cost Variance Explanation

- **In process of examining schedule/cost variances. Looks like schedule variance can be mitigated some, but needs more works**



FTE Report (DOE/NASA-funded only)





FTE Variance Explanation

- **Ramped down some, but not fast enough. Need more (paid) labor than planned to watch thermal-vacuum chamber**