

GLAST Large Area Telescope:

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

July-26 Monthly Review

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TEM/TPS Status

- **Status**
 - Qual unit used for FM CAL testing was sent back to SLAC (to be discussed what do with it)
 - 10 units delivered to I&T
 - A & B & 8 more units
 - 5 units ready to be reviewed (i.e. finished/passed all testing)
 - 2 units await TV and then EMI
 - 2 units delivered to SLAC, ready for vib/test/TV
 - 2 units to be delivered from assembler
- **To be decided in about 2 weeks**
 - Which two TEM/TPS units to de-mate and use for TWR A & B TPS replacement.



PDU Status and Schedule

- **1st unit (flight)**
 - **Received Final PDU assembly on 7-22**
 - **Passed Safe-to-mate and first batch of performance testing**
 - **Plan to vibrate this Thursday**
 - **Then re-test, thermal-vacuum, EMI**
 - **Estimated delivery to I&T Sept 5**
- **2nd unit (spare) lags by 6 weeks**



GASU Status and Schedule

- **First Unit**
 - Received pre-conformal coat box 7-11
 - Passed safe-to-mate, performance testing in progress
 - One issue discovered with writing/reading 2 on-board registers in GLTC at 19 MHz. (Worked at 14/20/22)
 - Cause: Clock waveform due to reflection
 - Have solution, requires cutting two traces and adding two wires.
 - Plan to start thermal testing end of week, ship box back to assembler for conformal coating by Aug 5.
 - Estimated Delivery of final box at SLAC: Sept 15
 - Estimated delivery to I&T: September 27
- **Schedule for 2nd unit**
 - Estimated delivery to I&T: 6 weeks after delivery of first unit



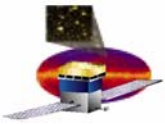
SIU/EPU (1)

- **SLAC Qual testing of boards assembled at Aeroflex**
 - Sample Backplane, SIB, CPS boards with PCI connectors assembled at AF and x-rayed at GSFC
 - Monitor connectivity of about 150 pins per board
 - Thermal Cycle -20C to +100C (limits from EGSE hardware)
 - 5 cycles on each boards (backplane, SIB, CPS) plugged individually into tester,
 - Continuously execute test while changing temperature
 - 20 cycles while boards are plugged into backplane
 - 5 cycles on each boards (backplane, SIB, CPS) plugged individually into tester,
 - Continuously execute test while changing temperature
 - Vibrate to qualification levels while boards are plugged into backplane (in SIU crate)
 - 5 cycles on each boards (backplane, SIB, CPS) plugged individually into tester,
 - Continuously execute test while changing temperature
 - Result: no failure
 - To do: correlate pins tested to results of X-rays from GSFC
- **Assembly of flight backplanes at SAI**
 - SAI assembled 7 backplanes (3 to follow)
 - Should receive today or tomorrow
 - Plan to
 - Test the boards (open/short)
 - Thermal-cycle
 - Retest the board
 - X-ray the boards at FineFocus
 - Decide whether they are ok to use (concern is solder bridges)
 - If so, continue assembly (coating/harness assembly) at Aeroflex



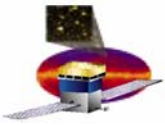
SIU/EPU (2)

- **Assembly of flight SIB/LCB/CPS**
 - SAI is assembling test boards for LCB and CPS (2nd round)
 - All SMT components presently loaded on real flight boards were assembled on these test-boards to mimic later flight assembly case
 - Should receive this week
 - Plan to
 - X-ray the boards at FineFocus
 - Decide whether they are ok to use
 - To be decided
 - Send all flight boards to SAI for connector assembly only
 - Or, assemble connectors are AF
 - Rest of assembly at AF as planned.
- **EEPROM for SIB:**
 - Had enough approved parts for 5 boards (fly 5), but assembler made mistake in loading EEPROM's on one side of all 7 boards, so only have 4 boards fully loaded. Company admits that instructions were clear but one of their assemblers made a mistake (i.e. knew what to do, but did not adhere to it)
 - CSI of new EEPROM batch is scheduled for next week.
 - Delivery to SLAC is Sept 15
- **Schedule**
 - Oct 14 for first crate, but not flight
 - Nov 16 first flight crate to I&T, Dec 14 for 5th
 - Assumes Aug 4 start date for connector assembly on flight boards



Harness & Heater Control Box & Interconnect Box

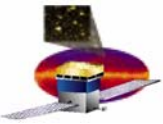
- **Harness in assembly, almost complete**
- **HCB**
 - **Assembly contract placed**
 - **Part kit sent to assembler**
 - **Kit in audit**
 - **Engineering masters expected this week**
- **HIB (Interconnect box)**
 - **Parts kitted at SLAC**
 - **To be assembled at SLAC**



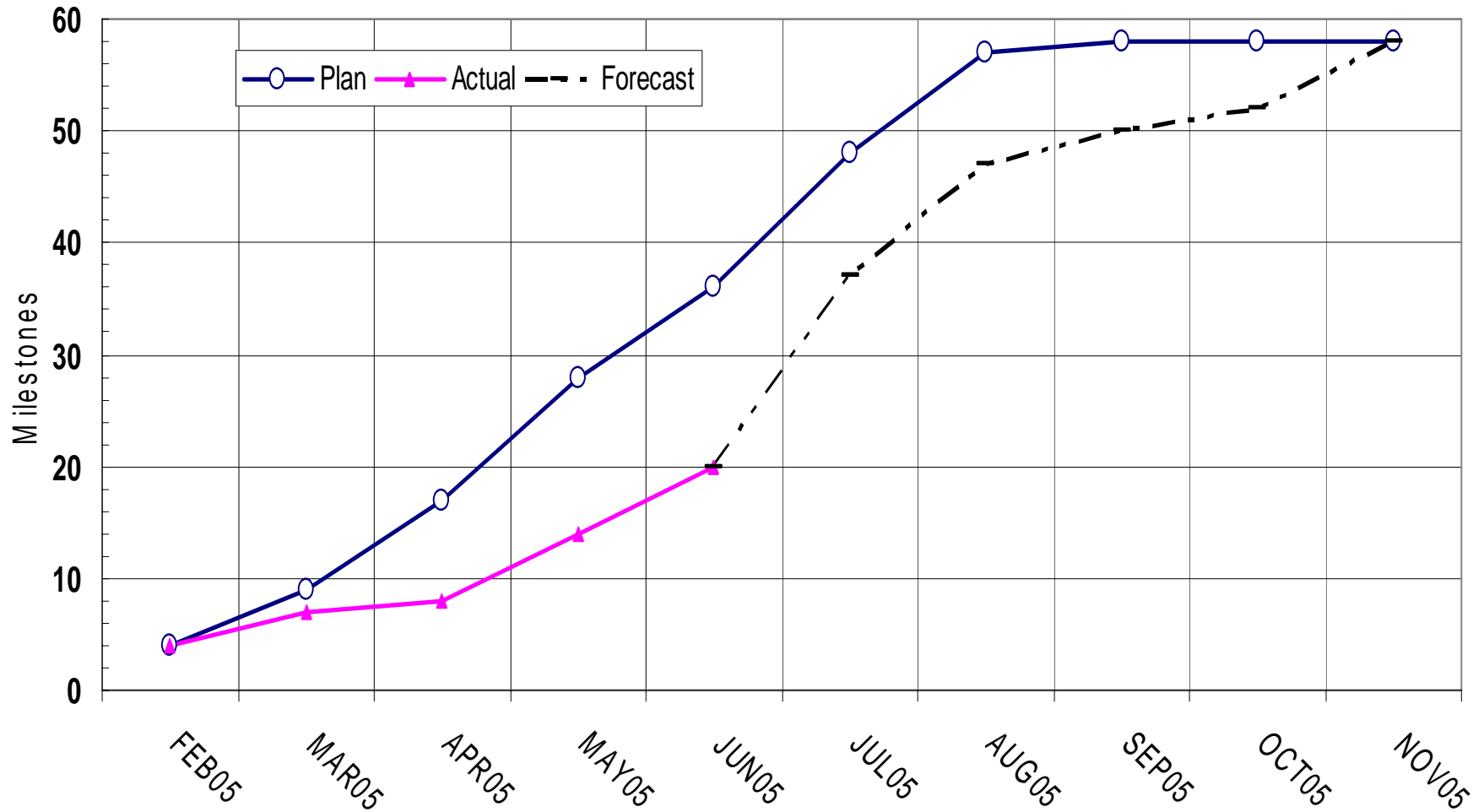
Thermo-testing support/ VSC

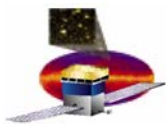
- EGSE for thermal-test shipped to Lockheed
- VSC's available for FSW/I&T
 - Remaining features of VSC being implemented, not needed at this time





Level 3 Milestone Count





Level 3 Milestone List

Activity Description	Baseline Finish	-2m Var	-1m Var	Bsln Var	Early Finish	Timeline																			
						2005					2006														
						F	M	A	M	J	J	A	S	O	N	D	J	A	F	M	A	M	J		
4.1.7 Electronics																									
Elx Ground Support Equipment																									
Final EGSE incl S/C Sim, FSW-Elec	04/01/05	-41	-60	-102	08/25/05																				
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*	-2	-2	-2	03/09/05A	▼																			
Flight TEM PS Assy B: Elec to I&T	03/07/05*	-2	-2	-2	03/09/05A	▼																			
TEM/PS 1																									
Flight TEM Assy 1: Elec to I&T	04/22/05	-17	-19	-19	05/19/05A		▼	▼																	
Flight TEM PS Assy 1: Elec to I&T	04/22/05	-17	-19	-19	05/19/05A		▼	▼																	
TEM/PS 2																									
Flight TEM Assy 2: Elec to I&T	04/29/05	-12	-14	-14	05/19/05A		▼	▼																	
Flight TEM PS Assy 2: Elec to I&T	04/29/05	-12	-14	-14	05/19/05A		▼	▼																	
TEM/PS 3																									
Flight TEM Assy 3: Elec to I&T	05/06/05	-12	-18	-18	06/02/05A		▼	▼																	
Flight TEM PS Assy 3: Elec to I&T	05/06/05	-12	-18	-18	06/02/05A		▼	▼																	
TEM/PS 4																									
Flight TEM Assy 4: Elec to I&T	05/13/05	-7	-15	-15	06/06/05A		▼	▼																	
Flight TEM PS Assy 4: Elec to I&T	05/13/05	-7	-15	-15	06/06/05A		▼	▼																	
Run Date		07/20/05 13:25		GLAST LAT PROJECT Level 3 Milestones Baseline Variance (Organized by Subsystem)				LT-DZ: Baseline Variance					Report #10												
Data Date		07/01/05						FL-D4: AV: Level 3 Milestones					Sheet 6												
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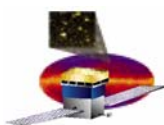
Level 3 Milestone List

Activity Description	Baseline Finish	-2m Var	-1m Var	Bsln Var	Early Finish	2005												2006				
						F	M	A	M	J	J	A	S	E	O	N	D	E	J	A	F	M
TEM/PS 5																						
Flight TEM Assy 5: Elec to I&T	05/20/05	-7	-10	-10	06/06/05A																	
Flight TEM PS Assy 5: Elec to I&T	05/20/05	-7	-10	-10	06/06/05A																	
TEM/PS 6																						
Flight TEM Assy 6: Elec to I&T	05/27/05	-2	-10	-38	07/22/05																	
Flight TEM PS Assy 6: Elec to I&T	05/27/05	-2	-10	-38	07/22/05																	
TEM/PS 7																						
Flight TEM Assy 7: Elec to I&T	06/06/05	-2	-9	-33	07/22/05																	
Flight TEM PS Assy 7: Elec to I&T	06/06/05	-2	-9	-33	07/22/05																	
TEM/PS 8																						
Flight TEM Assy 8: Elec to I&T	06/13/05	3	-4	-28	07/22/05																	
Flight TEM PS Assy 8: Elec to I&T	06/13/05	3	-4	-28	07/22/05																	
TEM/PS 9																						
Flight TEM Assy 9: Elec to I&T	06/20/05	3	-4	-23	07/22/05																	
Flight TEM PS Assy 9: Elec to I&T	06/20/05	3	-4	-23	07/22/05																	
TEM/PS 10																						
Flight TEM Assy 10: Elec to I&T	06/27/05	8	1	-18	07/22/05																	
Flight TEM PS Assy 10: Elec to I&T	06/27/05	8	1	-18	07/22/05																	
TEM/PS 11																						
Flight TEM Assy 11: Elec to I&T	07/05/05	8	1	-13	07/22/05																	
Flight TEM PS Assy 11: Elec to I&T	07/05/05	8	1	-13	07/22/05																	

Run Date 07/20/05 13:25
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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												2006						
						F	E	M	A	M	J	J	A	S	O	N	D	E	J	A	F	M	A	M
TEM/PS 12																								
Flight TEM Assy 12: Elec to I&T	07/12/05	13	6	-8	07/22/05																			
Flight TEM PS Assy 12: Elec to I&T	07/12/05	13	6	-8	07/22/05																			
TEM/PS 13																								
Flight TEM Assy 13: Elec to I&T	07/19/05	13	6	-3	07/22/05																			
Flight TEM PS Assy 13: Elec to I&T	07/19/05	13	6	-3	07/22/05																			
TEM/PS 14																								
Flight TEM Assy 14: Elec to I&T	07/26/05	18	11	-8	08/05/05																			
Flight TEM PS Assy 14: Elec to I&T	07/26/05	18	11	-8	08/05/05																			
TEM/PS 15																								
Flight TEM Assy 15: Elec to I&T	08/02/05	18	11	-3	08/05/05																			
Flight TEM PS Assy 15: Elec to I&T	08/02/05	18	11	-3	08/05/05																			
TEM/PS 16																								
Flight TEM Assy 16: Elec to I&T	08/09/05	23	16	-3	08/12/05																			
Flight TEM PS Assy 16: Elec to I&T	08/09/05	23	16	-3	08/12/05																			
Elex Global Items																								
Flight PDU Box-Elec to I&T	07/01/05	-36	-64	-65	10/04/05																			
Flight Harness-Elec to I&T	07/05/05	0	-8	-40	08/30/05																			
Flight GASU Box-Elec to I&T	07/19/05	-36	-42	-49	09/27/05																			
LCB Flight Units - Elec to Elec	07/20/05	-18	-44	-57	10/10/05																			
Flight Event Processor Units-Elec to	08/19/05	-11	-43	-62	11/16/05																			

Run Date 07/20/05 13:25
 Data Date 07/01/05
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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
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 Sheet 8



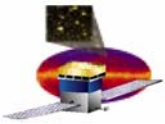
Level 3 Milestone List

Activity Description	Baseline Finish	-2m Var	-1m Var	Bsln Var	Early Finish	2005												2006							
						F	M	A	A	M	J	J	A	S	E	O	N	D	E	J	A	F	M	A	M
Elex Global Items																									
1st Flight EPU/SIU-Elec to I&T	08/19/05	-11	-38	-62	11/16/05																				
2nd Flight EPU/SIU-Elec to I&T	08/24/05	-11	-40	-64	11/23/05																				
3rd Flight EPU/SIU-Elec to I&T	08/26/05	-10	-41	-62	11/23/05																				
4th Flight EPU/SIU-Elec to I&T	08/30/05	-11	-44	-63	11/30/05																				
5th Flight EPU/SIU-Elec to I&T	09/02/05	-9	-46	-60	11/30/05																				
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	-25	-25	-25	04/15/05A		▼																		
Demo: Housekeeping	03/18/05	-37	-37	-37	05/10/05A			▼																	
Demo: Event Filtering	03/23/05	9	9	9	03/10/05A				▼																
Demo: Watchdog	04/15/05	-15	-15	-15	05/06/05A					▼															
Demo: Mode Control	04/22/05	-29	-44	-87	08/25/05																				
Demo: Charge Injection Calibration	04/29/05	-29	-44	-63	07/29/05																				
Demo: Event Integrity and Delivery	05/06/05	-29	-24	-75	08/23/05																				
Demo: Diagnostics	05/06/05	-29	-47	-86	09/08/05																				
Demo: GRB Detection and Response	05/20/05	-48	-48	-84	09/20/05																				
Run Date						07/20/05 13:25						GLAST LAT PROJECT						LT-DZ: Baseline Variance				Report #10			
Data Date						07/01/05						Level 3 Milestones						FL-D4: AV: Level 3 Milestones				Sheet 9			
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Cost Report

Reporting Category	Cost Incurred				Estimated Cost			4/3/2000	Estimated Final Cost		Unfilled Orders Outstanding
	During Month		Cum. to Date		Detail		Balance Contract	Contractor Estimate	Contract Value		
	Actual	Planned	Actual	Planned	JUL05	AUG05					
4.1.7 ELECTRONICS											
4.1.7 ELECTRONICS	0	0	353	354	0	0	1	354	354	0	
4.1.7.1 ELECTRONICS MANAGEMENT	41	49	1,960	1,927	44	51	14	2,069	2,069	0	
4.1.7.2 RELIABILITY & QUALITY ASSURANCE	0	0	223	220	0	0	-3	220	220	0	
4.1.7.3 ELECTRONICS SYSTEM DESIGN	0	0	733	733	0	0	0	733	733	0	
4.1.7.4 DATAFLOW ELECTRONICS (TEMs + PROCES	223	183	10,265	10,446	170	95	267	10,797	10,797	176	
4.1.7.5 SPACECRAFT INTERFACE UNIT	21	178	1,691	2,112	66	78	420	2,256	2,256	248	
4.1.7.6 POWER CONDITIONING	39	82	2,094	2,371	4	0	277	2,375	2,375	226	
4.1.7.7 ENCLOSURES	15	0	694	643	0	0	-51	643	643	2	
4.1.7.8 CABLE HARNESS	46	49	379	642	7	0	263	649	649	210	
4.1.7.9 FLIGHT SOFTWARE	289	178	5,794	5,591	98	79	-136	5,835	5,835	8	
4.1.7.A EGSE & OPERATIONS	0	0	2,491	2,573	0	0	81	2,573	2,573	17	
4.1.7.C INSTRUMENT INTEGRATION & TEST	102	49	245	251	44	51	52	392	392	45	
CAPW[3]Totals:	776	767	26,924	27,861	434	353	1,184	28,894	28,894	931	



FTE Report (DOE/NASA-funded only)

