

GLAST Large Area Telescope:

Tracker, W.B.S 4.1.4

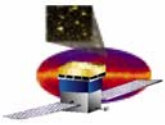
May Status Meeting

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Outline

- Tower Fabrication Status
 - 5 Tracker towers are integrated or RFI.
 - 2 more are in environmental testing.
- Tracker Production Status and Issues
 - Tray panel production
 - Ladder production
 - MCM production
 - Flight cable production
- Cost and Schedule Status



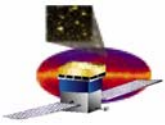
Towers 4 and 5 Status

- Tower 4 successfully completed vibration testing.
- Towers 4 and 5 are in thermal-vacuum testing.
 - The initial CPT in vacuum was good, showing no degradation and also no problems with operating both towers at once (the grounding/shielding of the EGSE was improved).
 - By now they have completed the first full cycle.
- The vibration testing of Tower 5 was delayed to follow the thermal-vacuum test due to lack of availability of the facility at Alenia.



Tower 6 Status

- As of today, all trays are assembled and tested and delivered to Pisa, ready for tower assembly.
- Unfortunately, we have only 5 of 8 cables available for assembly (in transit to Pisa, shipped last Friday).
- Assembly will proceed with just those cables, using 3 non-flight cables to complete the testing of the stacked trays.
- The non-flight cables and connector savers will then be removed, the sidewalls installed, and the metrology and remaining assembly completed.
- It will be necessary later to remove 2 sidewalls (one at a time) to install the remaining 3 cables prior to environmental testing.



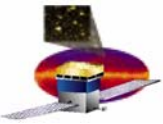
Tray Panel Production

- Tower 7 tray panels were delivered to INFN at the end of last week.
- Tower 8 tray panels are to arrive by June 4.
- After that they arrive at intervals of 6 or 7 working days per tower, until Tower 14 panels arrive July 23.
- These panels and the flex-circuit cables form the critical path in our schedule. The panels got onto the critical path only because of the delays in implementing the ASI contract.
- More heavy tungsten tiles were procured and are on their way to GSFC for etching and priming.
- *Note that Plyform has clearly stated that they will not deliver the Tower 14 tray panels before the existing invoice to G&A/ASI is paid. That invoice has already been submitted but is not legally overdue for payment until early August. They are clearly concerned that they will never be paid for work already done, let alone the remaining work.*



Ladder Production

- MIPOT (the 2nd vendor) is producing ladders now, with good test results.
- The last 100 SSDs from HPK should be on their way now from Japan to Italy.



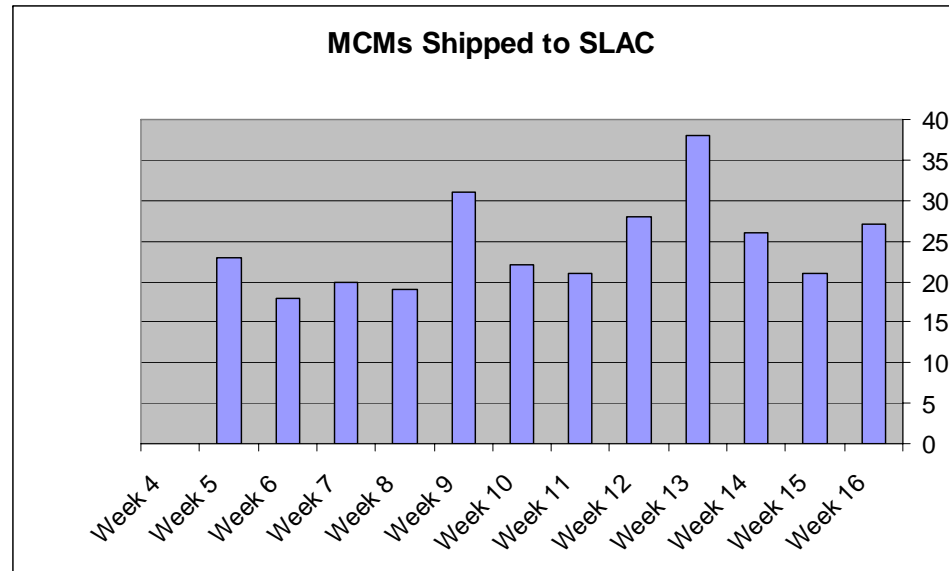
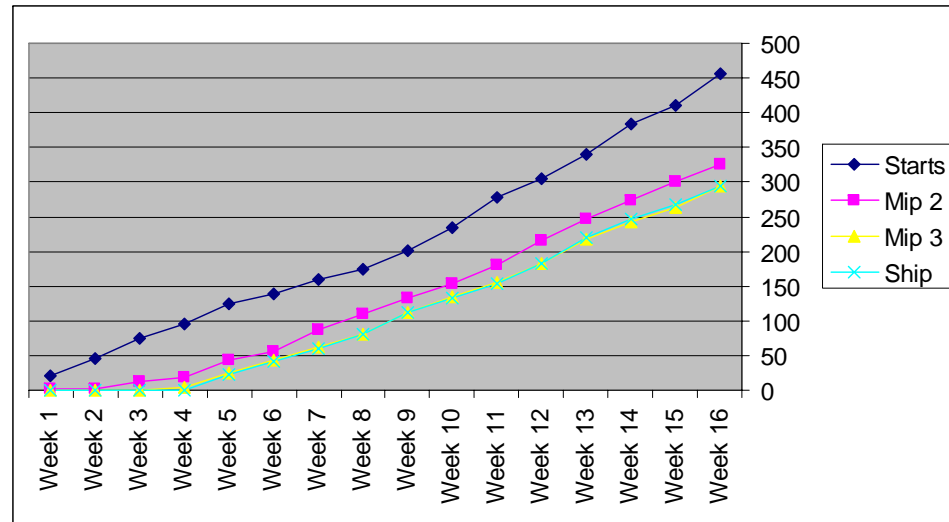
MCM Production Restart

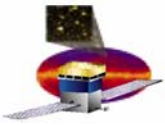
We have shipped 194 MCMs to Italy from the new production (the power outage is holding up additional shipments).

This is roughly enough for Towers 4 through 8, plus some.

Hence MCM production is about 1 tower ahead of tray assembly.

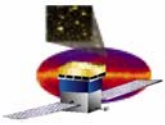
Two weeks ago Teledyne moved the production cell, but that lost only a couple of days of production and in general improved the production layout.





MCM Production Issues

- The main technical problem in the last weeks has been loss of boards at MIP-1 due to the flex-circuit trimmer cutting into the PWB, especially on tall boards.
 - The thicker bondline and squeeze-out of epoxy to trim through seems to flex the board into the cutter, due to the large cutting force required. Teledyne is adjusting the tooling and modifying it to cut less deeply.
 - This has been complicated by the fact that the responsible Teledyne toolmaker retired a few weeks ago.
- Contractual issues: Teledyne is pushing to recover more costs from this fixed-price contract.
 - Their main reasoning seems to be that the 4-month hiatus in production was SLAC's fault, but in our view 3 months of it was due to technical problems caused by Teledyne, which also led to us losing 56 flight MCMs from silicone contamination, as well as installing another 14 non-conforming MCMs into flight towers.
 - Unfortunately, management is threatening to halt production prior to completion if this isn't resolved soon enough.



Tracker Flex-Circuit Cable Status

- Latest Parlex debacle: equipment failures (autoclave) shut down all of their production for a week or so.
- Tower 6 cables
 - 5 Tower-6 cables were shipped to Italy last Friday.
 - A sixth cable (C5) was shipped to SLAC this Monday.
 - I've not been able for the past week to get any solid information on when the last 2 cables will ship.
- Tower 7 cables
 - 2 Tower-7 cables were shipped to Italy last Friday.
 - No status is available on the remaining 6 cables.



Second Source

- The MRR was held at Pioneer.
- Since then various actions have been getting taken care of, such as redlines on drawings and details in the SOW.
- The schedule for completion is unclear, with dates thrown around ranging from mid July (somewhat useful) to late August (not useful at all, unless we completely give up on Parlex and slip the schedule in a major way).
- SLAC is trying to set up a meeting with Pioneer to clarify and pull in the schedule.



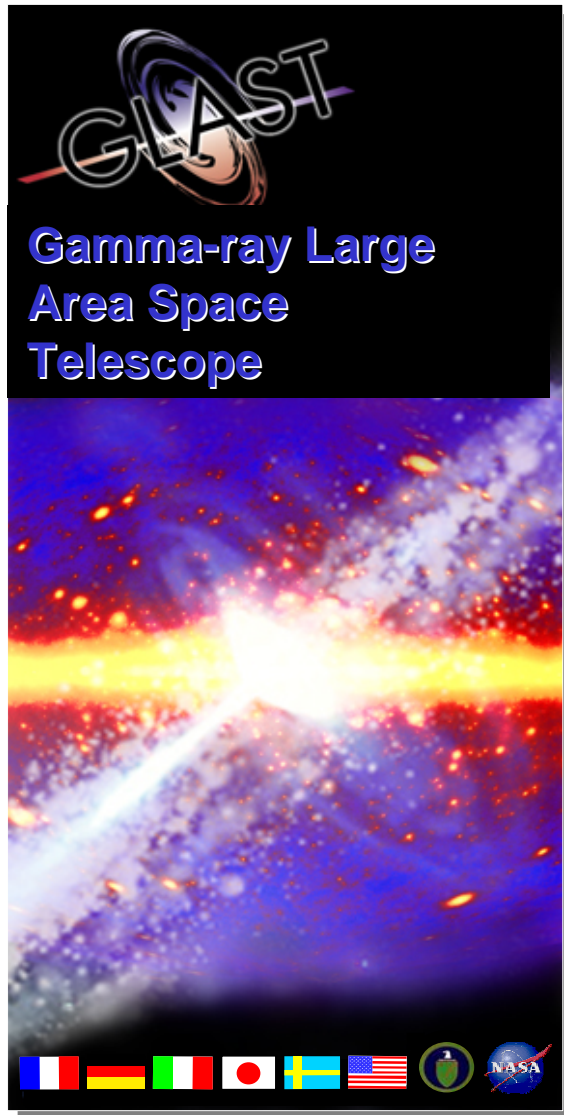
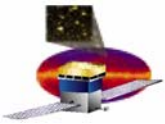
Tower RFI Schedule

Tower 4	June 9	Delayed waiting to do T/V with Tower 5
Tower 5	June 14	Delayed by broken cable and by Alenia
Tower 6	July 5	Delayed by cable availability
Tower 7	July 6	
Tower 8	July 29	Some delay from tray panel availability
Tower 9	August 2	
Tower 10	August 16	
Tower 11	August 18	
Tower 12	August 25	
Tower 13	September 7	
Tower 14	September 9	



Schedule Issues

- Late availability of tray panels for Towers 7 onward has compressed the remaining schedule.
- G&A and INFN have already demonstrated that they can assemble trays and towers at the required rate, but there is certainly no remaining slack in the schedule.
- All of the environmental testing is still in the schedule, but there is a lot of concern about whether the Alenia shakers will be available when needed. However, we do believe that Alenia facilities in general can be available throughout August.
- Parlex cable delivery is by now clearly delaying tower assembly.
 - We are implementing our contingency plan to pre-assemble towers without all of the cables, but this clearly adds extra work in the end and causes even bigger problems with the environmental testing scheduling.
- Pioneer cable delivery is already so far behind that it cannot help very much in getting the towers completed by the end of August.

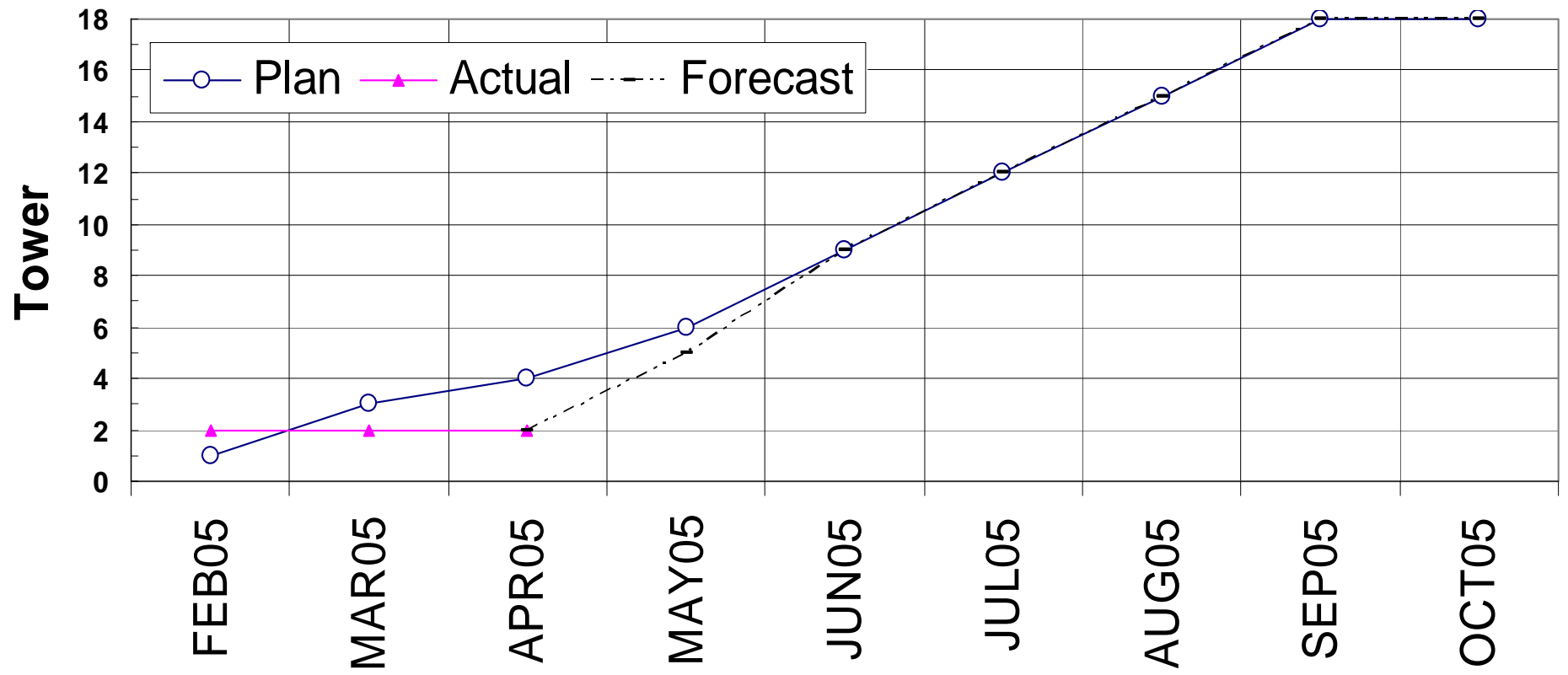


Cost/Schedule Reports for 4.1.4 Tracker Presentation April 2005 Month End



Level 3 Milestone Count

4.1.4 Tracker





Level 3 Milestone List

Activity Description	Baseline Finish	-2m Var	-1m Var	Bsln Var	Early Finish	2005																	
						FE	MA	AP	MA	JU	JU	AU	SE	OD	NO	DE	JAN						
4.1.4 Tracker																							
Flight Tracker Tower A RFI	02/04/05	0	0	0	02/04/05A	▼																	
Flight Tracker Tower B RFI	03/02/05	4	4	4	02/24/05A	▼	▼																
Flight Tracker Tower 1 RFI	03/22/05	-6	-27	-35	05/10/05		▼	▼															
Flight Tracker Tower 2 RFI	04/20/05	8	-2	-14	05/10/05			▼	▼														
Flight Tracker Tower 3 RFI	05/03/05	0	3	-5	05/10/05				▼	▼													
Flight Tracker Tower 4 RFI	05/16/05	0	0	-17	06/09/05					▼	▼												
Flight Tracker Tower 5 RFI	06/03/05	0	0	-6	06/13/05						▼	▼											
Flight Tracker Tower 6 RFI	06/16/05	0	-4	-1	06/17/05							▼	▼										
Flight Tracker Tower 7 RFI	06/27/05	-1	-5	-3	06/30/05								▼	▼									
Flight Tracker Tower 8 RFI	07/06/05	-1	-5	-3	07/11/05									▼	▼								
Flight Tracker Tower 9 RFI	07/15/05	-1	-5	-3	07/20/05										▼	▼							
Flight Tracker Tower 10 RFI	07/26/05	-1	-5	-3	07/29/05											▼	▼						
Flight Tracker Tower 11 RFI	08/04/05	-1	-5	-3	08/09/05												▼	▼					
Flight Tracker Tower 12 RFI	08/15/05	-1	-5	-5	08/22/05													▼	▼				
Flight Tracker Tower 13 RFI	08/24/05	-1	-5	-5	08/31/05														▼	▼			
Flight Tracker Tower 14 RFI	09/02/05	0	-4	-4	09/09/05															▼	▼		
Flight Tracker Tower 15 RFI	09/13/05	-1	-5	-5	09/20/05																▼	▼	

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 2



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				
4.1.4 TRACKER										
4.1.4.1 TRACKER MANAGEMENT	106	102	3,641	3,635	86	61	111	3,898	3,898	
4.1.4.2 RELIABILITY & QUALITY ASSURANCE			4				-4			
4.1.4.3 TRAY SUB-ASSEMBLY	471	452	12,239	12,384	514	348	197	13,298	13,298	554
4.1.4.4 TOWER STRUCTURE & ASSEMBLY	15	236	2,702	2,904	355	331	751	4,139	4,139	1,031
4.1.4.5 TRACKER TEST & CALIBRATION	5	17	91	183	17	17	143	268	268	
4.1.4.7 INSTRUMENT INTEGRATION & TEST (SLAC)		11	54	70	11	12	22	99	99	
CAPW[3]Totals:	597	819	18,731	19,175	983	768	1,220	21,702	21,702	1,585



FTE Report (DOE/NASA-funded only)

4.1.4 Tracker FTEs

