GLAST Large Area Telescope:

Tracker, W.B.S 4.1.4

September Status Meeting

Robert Johnson
rjohnson@scipp.ucsc.edu

Tracker Flight-Tower Status

Tower	Assembly	Vibe	T/V	Status
A,B,1-7	✓	✓	✓	Integrated into the Grid.
8	✓	✓	✓	The bad tray was replace, vibe test was repeated, and T/V finishes today.
9	✓	✓	✓	Integrated into the Grid.
10	✓	✓	✓	At SLAC. Will be RFI tomorrow.
11	✓	✓	✓	Arrived at SLAC yesterday.
12	✓	✓	✓	Arrived at SLAC yesterday.
13	✓	✓	✓	Arrived at SLAC yesterday.
14	✓	✓	✓	Has 1 bad ladder on the bottom tray.
15	✓		✓	T/V finishes today. Still needs vibration and installation of 2 flight cables.

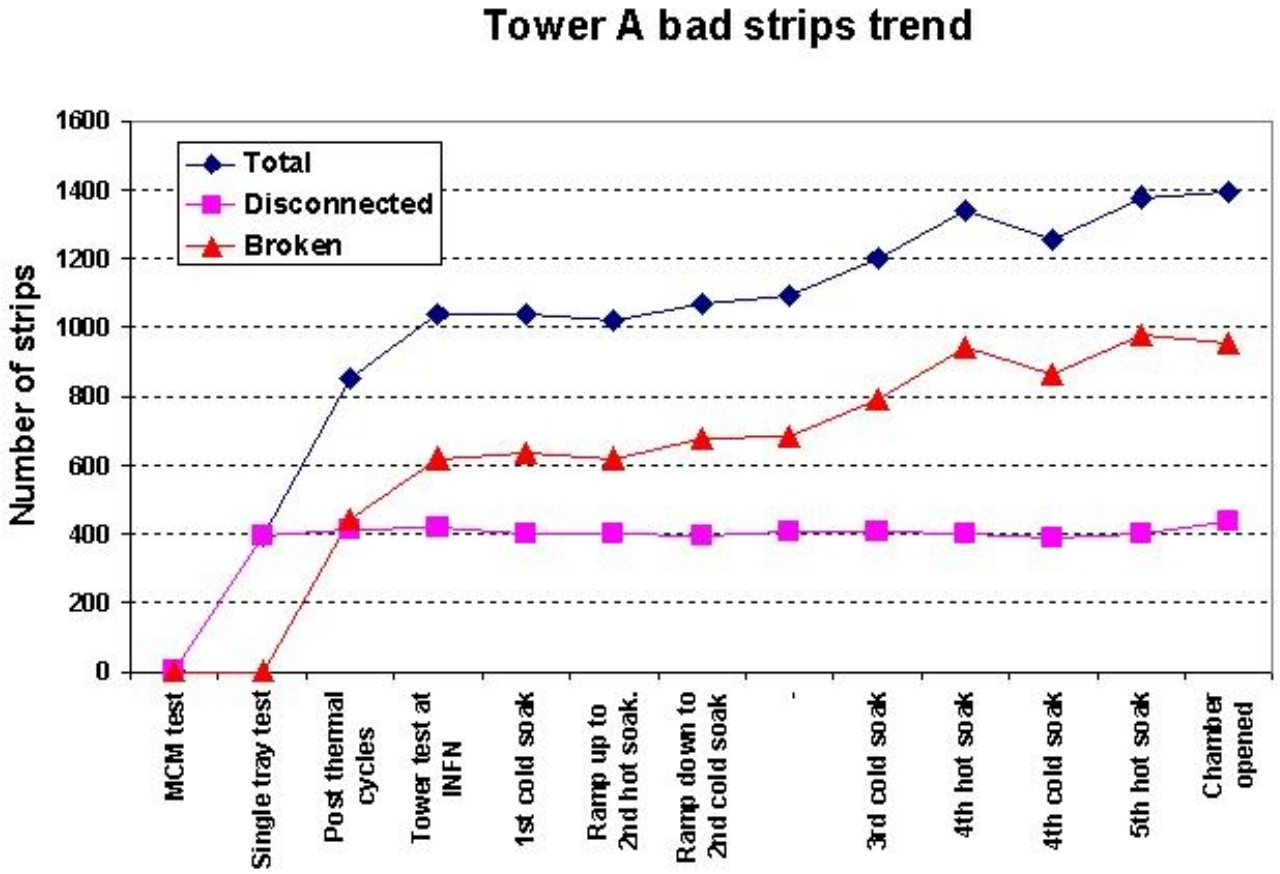
Tower 14 Situation

- In T/V testing a problem was found with the bottom tray:
  - A bubble under the bias circuit is lifting the edge of the last ladder.
    - About 20 wire bonds are broken from this.
    - The other channels in the ladder become noisy because the bias voltage is shorted.
  - This is only seen in vacuum and above about 25ºC.
  - The exact same problem was found in a tray of Tower-1 and was repaired by replacing that tray.
- A replacement bottom tray has been built and is being tested, including operating it in thermal-vacuum.
- We don't have schedule time or funds to redo the thermal-vacuum testing of Tower 14, but
  - The thermal vacuum of the new tray is being verified at the tray level.
  - Disassembly of the tower is minimal, since the bottom tray is the last one installed.
  - The bottom tray has been thoroughly static load tested, and we have an opportunity *this Friday* to do one axis of vibration.

Tower A Replacement?

Tower A shows a significant trend toward increasing breakage of ladders on heavy-tungsten trays with thermal cycles.

The Tracker group is unanimous in wanting to replace it (by Tower 14).



Tower A Replacement?

- Even with the one bad ladder on the bottom tray, Tower 14 is far superior to Tower A.
  - It has very few bad channels and exceeds the specifications on all layers except the bottom tray.
  - It has no encapsulation of wire bonds on ladders in heavy trays, and it is equipped with MCMs built after the MCM encapsulation delamination problem was solved.
    - It has not lost and will not lose any channels during thermal cycles, except for possibly more breakage of wires on the 1 bad ladder of the bottom tray.
- If its bottom tray is replaced, Tower 14 will be as good as the best of our other flight towers (i.e. nearly perfect).
  - But we will not replace the tray if that will make the tower ineligible for use as a flight tower.
  - If Tower 14 is used only for beam tests, then there would be no point in replacing the bottom tray, anyway.
- *The Tracker team definitely wants to replace Tower A and the Tower-14 bottom tray, to make the Tracker as good as possible!*

Tracker Flex-Circuit Cable Status

16 flight towers, A through 14, are fully cabled, finally!

The last 2 Tower 15 cables will be obtained from Pioneer by the end of the week and carried to Pisa over the weekend.

Qualification testing is well underway at Parlex (remaining work is contracted to an outside test lab).

Assy S/N	C0	C1	C2	C3	C4	C5	C6	C7
Tower A	16	3	4	4	8	7	11	3
Tower B	11	4	1	5	9	5	10	10
Tower 1	18	5	7	7	7	8	13	1
Tower 2	20	7	9	1	6	9	5	6
Tower 3	19	13	6	9	1	12	6	11
Tower 4	21	12	10	8	12	10	14	12
Tower 5	25	15	C2-012	C3-010	C4-014	C5-014	C6-015	13
Tower 6	C0-22	C1-11	C2-011	C3-011	C4-016	C5-16	C6-16	C7-14
Tower 7	C0-24	C1-16	C2-15	C3-12	C4-17	C5-11	P-C6	C7-15
Tower 8	C0-26	C1-18	C2-16	C3-13	C4-18	P-C5-001	C6-19	C7-16
Tower 9	P-C0-006	C1-17	C2-17	P-C3-005	C4-13	C5-19	C6-17	P-C7-005
Tower 10	P-C0-007	C1-14	C2-14	P-C3-006	C4-19	C5-17	C6-18	P-C7-006
Tower 11	C0-28	P-C1	P-C2-003	P-C3-001	C4-20	C5-18	P-C6-001	P-C7-001
Tower 12	P-C0-002	P-C1-002	P-C2-002	P-C3-003	C4-21	P-C5-003	P-C6-003	P-C7-003
Tower 13	C0-27	C1-10	C2-18	P-C3-002	C4-22	P-C5-002	P-C6-002	P-C7-002
Tower 14	P-C0-001	P-C1-003	P-C2-001	P-C3-004	C4-24	C5-21	P-C6-004	P-C7-004
Tower 15	P-C0	P-C1	9/30/05	P-C3-007	P-C4-001	9/30/05	P-C6	P-C7-007
Tower 16		P-C1-005	9/30/05	9/30/05	P-C4-002	9/30/05		
		P-C1-006	9/30/05	9/30/05	9/30/05	9/30/05		
		P-C1-007			9/30/05			

Notes:

Cable with good coupon shipped to Italy
Cable with bad coupon installed in flight tower
Scheduled ship date from Pioneer to SLAC
Parlex projected ship date to SLAC

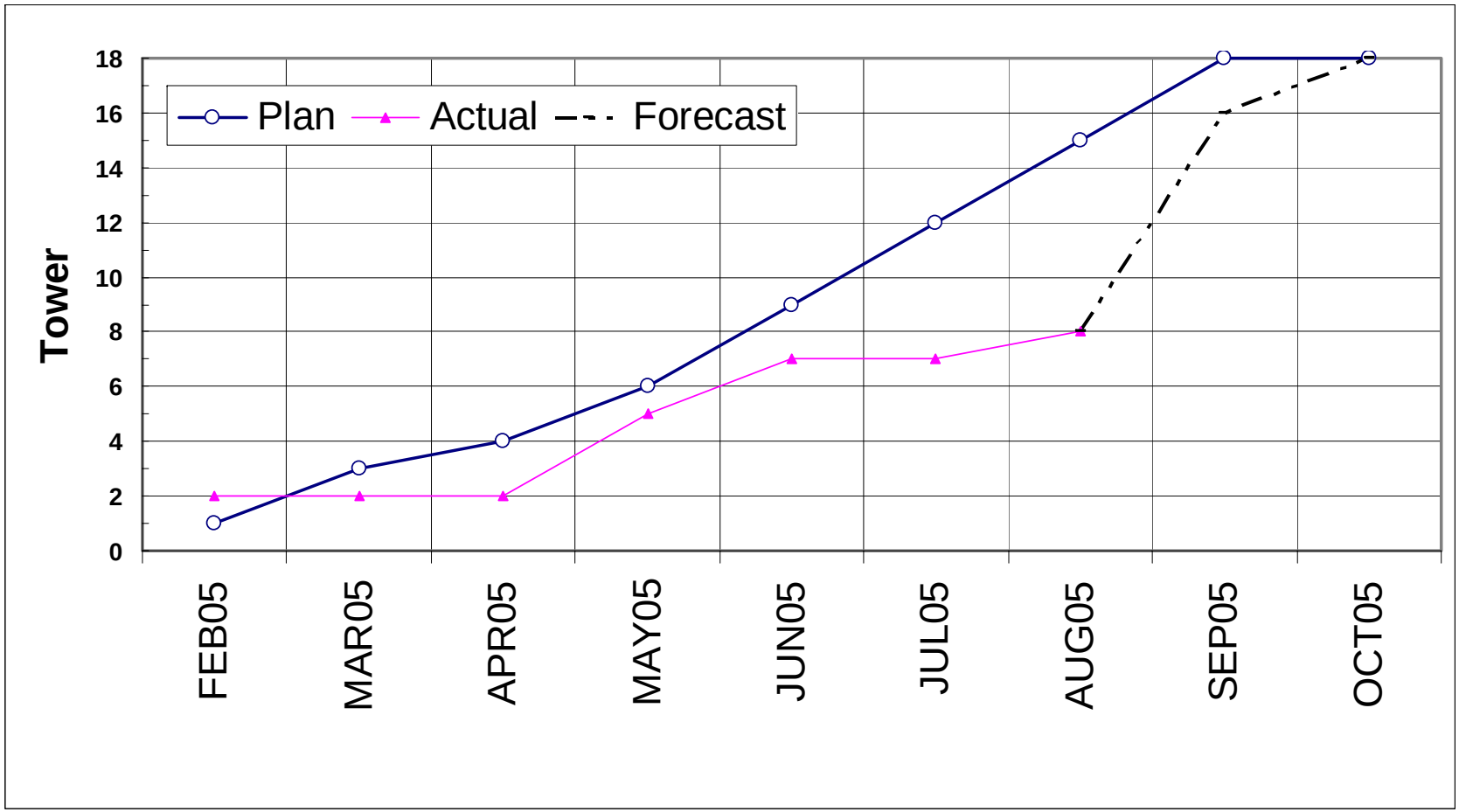
Tracker Schedule

- Except for Tower 14, we are on the schedule advertised a month ago.
- Tower 8 is shipping to SLAC this week.
- Tower 15 will ship to SLAC before the end of next week.
- The Tower 14 schedule depends on the decision whether to replace the bottom tray.
  - It can ship to SLAC immediately if it will be used as-is.
  - Or the replacement tray can be installed starting tomorrow, and the tower will then ship to SLAC next week.

- Receiving/testing of towers is being done in pairs by the Tracker group at SLAC, while I&T also installs them into the Grid in pairs.
  - This is being done more-or-less serially, as there are only 2 test stands, which remain occupied until I&T installs the towers.
  - This can probably proceed at the rate of at least 2 towers per week.

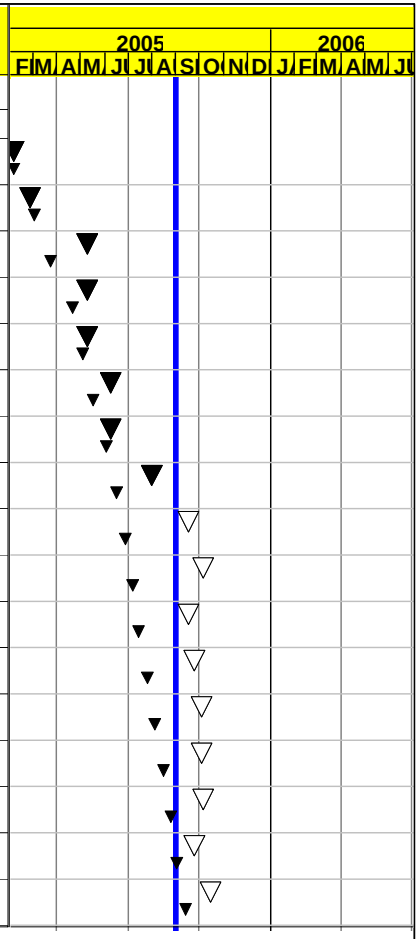
Cost/Schedule Reports for 4.1.4 Tracker Presentation August 2005 Month End

Level 3 Milestone Count



Level 3 Milestone List

Activity Description	Baseline Finish	-2m Var	-1m Var	Bsln Var	Early Finish
4.1.4 Tracke					
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	-35	-35	-35	05/10/05A
Flight Tracker Tower 2 RFI	04/20/05	-14	-14	-14	05/10/05A
Flight Tracker Tower 3 RFI	05/03/05	-5	-5	-5	05/10/05A
Flight Tracker Tower 4 RFI	05/16/05	-17	-17	-17	06/09/05A
Flight Tracker Tower 5 RFI	06/03/05	-4	-4	-4	06/09/05A
Flight Tracker Tower 6 RFI	06/16/05	-31	-31	-31	08/01/05A
Flight Tracker Tower 7 RFI	06/27/05	-48	-57	-57	09/16/05
Flight Tracker Tower 8 RFI	07/06/05	-45	-65	-65	10/06/05
Flight Tracker Tower 9 RFI	07/15/05	-40	-44	-44	09/16/05
Flight Tracker Tower 10 RFI	07/26/05	-35	-42	-42	09/23/05
Flight Tracker Tower 11 RFI	08/04/05	-28	-41	-41	10/03/05
Flight Tracker Tower 12 RFI	08/15/05	-26	-34	-34	10/03/05
Flight Tracker Tower 13 RFI	08/24/05	-19	-29	-29	10/05/05
Flight Tracker Tower 14 RFI	09/02/05	-14	-14	-14	09/23/05
Flight Tracker Tower 15 RFI	09/13/05	-21	-23	-23	10/14/05



Run Date 09/21/05 15:25
Data Date 09/01/05
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GLAST LAT PROJECT
Level 3 Milestones
Baseline Variance (Organized by Subsystem)

LT-DZ: Baseline Variance Report #10
FL-D4: AV: Level 3 Milestones Sheet 2

Cost Report

Monthly Contractor Financial Management Report 31-Aug-05								NASA form 533M Approved OMB # 2700-0(	Report for Month Ending: 8/31/2005	
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	AT COMPL	0				
4.1.4 TRACKER										
4.1.4.1 TRACKER MANAGEMENT	85	36	3,983	3,865	33	0	-118	3,898	3,898	0
4.1.4.2 RELIABILITY & QUALITY ASSURANCE	0	0	4	0	0	0	-4	0	0	0
4.1.4.3 TRAY SUB-ASSEMBLY	108	220	12,972	13,482	17	0	510	13,499	13,499	70
4.1.4.4 TOWER STRUCTURE & ASSEMBLY	379	306	3,649	4,162	121	0	514	4,284	4,284	265
4.1.4.5 TRACKER TEST & CALIBRATION	0	18	196	251	17	0	56	268	268	0
4.1.4.7 INSTRUMENT INTEGRATION & TEST (SLAC)	0	0	59	99	0	0	40	99	99	0
CAPW[3]Totals:	573	581	20,863	21,860	188	0	997	22,048	22,048	335

FTE Report (DOE/NASA-funded only)