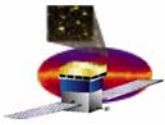


GLAST Large Area Telescope:

Tracker, W.B.S 4.1.4

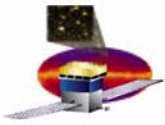
June Status Meeting

Robert Johnson
rjohnson@scipp.ucsc.edu



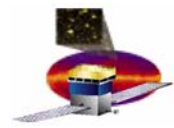
Tracker Tower RFI Status

- Towers A, B, 1, 2, 3, 5 are integrated into the Grid
- Tower 4 is still in the SLAC cleanroom on the Tracker test fixture.
 - Formal handoff to I&T occurred, but some EMI tape still needs to be applied (in progress).
 - One MCM on this tower did not have the specified clock duty cycle margin on one side (one GTRC chip).
 - However, it did have the required frequency margin when tested with an actual GASU.
 - An NCR was opened at the LAT level to keep an eye on this one during further testing.
 - Integration of this tower has been delayed because
 - Its partner is still in Italy (I&T likes to work with pairs).
 - Priority has been on testing the 6 integrated towers.



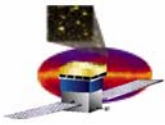
Tower 6, 7 Status

- Tower 6 has been sitting in Pisa for a month awaiting the last 3 cables (they should be available this week—the C5 and C6 cables should arrive in Pisa today).
- Tower 7 was assembled with only 2 cables and is also on the shelf. 3 more have been shipped to Pisa since then, but we still lack the C5, C6, and C7 cables. The C5 and C7 may be available in a few days (if they pass QC). The C6 is another week or two out (we do have 5 functional C6 cables from panels with bad or missing coupons).



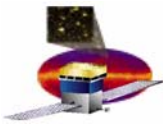
Tower 8 Status

- All Tower-8 trays are in Pisa, and assembly is starting today.
- However, only 4 cables are available in Pisa.



Tray Panel Production

- Plyform is delivering a steady supply of tray panels at the needed rate. *Tray panels for more than 11 towers are in hand.*
- All carbon-carbon material is in Italy, but there is still some activity on other parts and materials needed for this production:
 - GSFC is steadily supplying the final etched and primed tiles at the rate of a tower per week, so this is going off the critical list.
 - The last delivery of black paint, primer, and thinner requested by INFN is in progress.
 - The paint and thinner going to Pisa (hazmat shipping problems).
 - The primer was back ordered and is not yet at SLAC.
 - Parlex S.J. is producing the final 75 bias circuits, to replace the circuits found to have a problem with delamination at the trimmed border.
 - SLAC is working on procuring a longer M4 screw needed on a bottom tray with a recessed insert.
 - (Note that the final parts are needed for the 2 spare towers, not the first 16.)



Tray and Sidewall Status

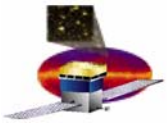
- All flight sidewalls have been delivered.
- Plyform is close to completing the tray-panel order for the 12th tower, and quite a few trays have been delivered for the following towers.

	Tower 0	Tower A	Tower B	Tower 1	Tower 2	Tower 3	Tower 4	Tower 5	Tower 6	Tower 7	Tower 8	Tower 9	Tower 10	Tower 11	Tower 12	Tower 13	Tower 14	Tower 15	Tower 16
Top	001	002	004	006	010	008	003	005	007	009									001
Mid	048	079	065	027	094	034	016	026	095	010								M063	Mid 041
Mid	047	050	078	037	020	033	019	107	042	146								M081	Mid 055
Mid	004	062	035	057	089	054	028	036	102	168								M122	Mid 059
Mid	017	080	071	092	018	003	029	119	005	166								012	Mid 061
Mid	012	082	032	067	096	109	105	120	009	145								011	Mid 091
Mid	011	064	043	030	097	098	072	115	103	144								008	Mid 112
Mid	008	066	025	083	040	087	118	110	045	114								006	Mid 022
Mid	006	076	051	058	021	070	117	111	073	121								M148	Mid 075
Mid	046	002	044	101	113	086	108	099	093	106								M159	Mid 116
Mid	007	077	031	060	038	084	100	052	123	161									Mid 069
Mid	010	053	023	024	088	104	056	001	074	143									Mid 165
Heavy	009	012	036	041	001	002	016	019	025	028									
Heavy	008	006	037	023	032	029	003	031	022	043								008	
Heavy	035	020	018	015	033	013	017	040	004	030								035	
Heavy	011	010	005	026	042	021	027	038	024	034								011	H014
Light	023	016	017	006	002	007	024	003	001	018									L000
Light	015	013	004	011	005	014	023	008	009	010								L012	L019
Bottom	002	003	006	005	007	008	011	002	010	004									

Sidewalls	S/N 001	S/N 002	S/N 003	S/N 004	S/N 005	S/N 006	S/N 007	S/N 008	S/N 009	S/N 010	S/N 011	S/N 012	S/N 013	S/N 014	S/N 015	S/N 016	S/N 017
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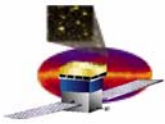
Key

Delivered		On Hold Payloads	M063	Debondin	Mid 041 (Bare Panel)	Misc def Bare Panel	Mid 022
@Plyform			M081		Mid 055 (Bare Panel)		Mid 075
NFH tower 0			M122		Mid 059 (Bare Panel)		Mid 116
Disassembled			M148		Mid 061 (Bare Panel)		Heavy 014
			M159				Light 000
							Mid 165
							Misc def Payload
							Mid 069
							Light 012
							Light 019



Ladder Production

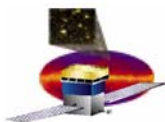
- Production is nearly complete at both G&A and MIPOT.
- 2207 ladders have been assembled and tested, enough for 15+ towers.
- 475 more ladders were built and are under test. This is enough, then, to complete all 18 towers.



MCM Production

Less than 79 MCMs left to go (about 2 more weeks after this week)

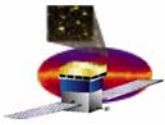
<i>Status as of June 29, 2005</i>	Short	Tall
On assembled Towers A through 7	288	36
On Tower 8 trays	32	4
Other MCMs shipped to Pisa and NOT on hold	85	13
At SLAC ready to ship to Pisa	44	7
At SLAC ready for burn-in	63	1
In transit to SLAC	6	0
Total flight MCMs (need 512 and 64):	518	61
<i>Remaining MCMs needed for flight towers:</i>	<i>0</i>	<i>3</i>
Nonflight and NCR MCMs	185	13
Total MCMs made to date in the "flight" build	703	74



Tracker Flex-Circuit Cable Status

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	14	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	1/13/00
Tower 6	C0-22	C1-11	C2-011	C3-011	C4-016	C5-16	6/28/05	7/1/05
Tower 7	C0-24	C1-16	C2-15	C3-12	C4-17	7/8/05	C6-08	7/1/05
Tower 8	C0-26	C1-18	C2-16	7/22/05	C4-18	C5-11	C6-09	7/8/05
Tower 9	7/15/05	C1-17	C2-17	7/22/05	C4-19		C6-12	C7-04
Tower 10	7/15/05	C1-14	C2-14		C4-20			C7-08
Tower 11	7/22/05	C1-10	7/22/05		C4-21			C7-09
Tower 12	7/22/05	C1-1	7/22/05		C4-13			
Tower 13	C0-17				7/8/05			
Tower 14					7/9/05			
Shipped to Pisa	In SLAC MRB		Scheduled		Projected for week ending			At SLAC

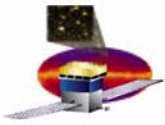
Tower 6 must start vibration testing next Tuesday, so we are making an all-out effort to get the C7 cable to Pisa by Sunday evening.



Nonconforming Cables in Hand

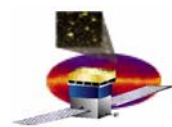
- C0-17 NC152 Failed barrel separation Ref: EC50123
- C1-01 NC152 Failed barrel separation Ref: EC50115
- C1-10 NC392 Omnectics connectors cracked
- C1-14 NC392 Omnectics connectors cracked
- C1-17 NC518 Omnectics connectors cracked
- C4-15 NC435 Failed lifted lands Ref: EC50310
- C5-11 NC152 Failed for internal angular ring EC50240, NC392 Omnectics connectors cracked.
- C6: 5 cables, 4 with barrel separation, 1 with missing coupon
- C7: 3 cables with barrel separation

- *The C5 and C6 cables are needed immediately for Tower 7!*



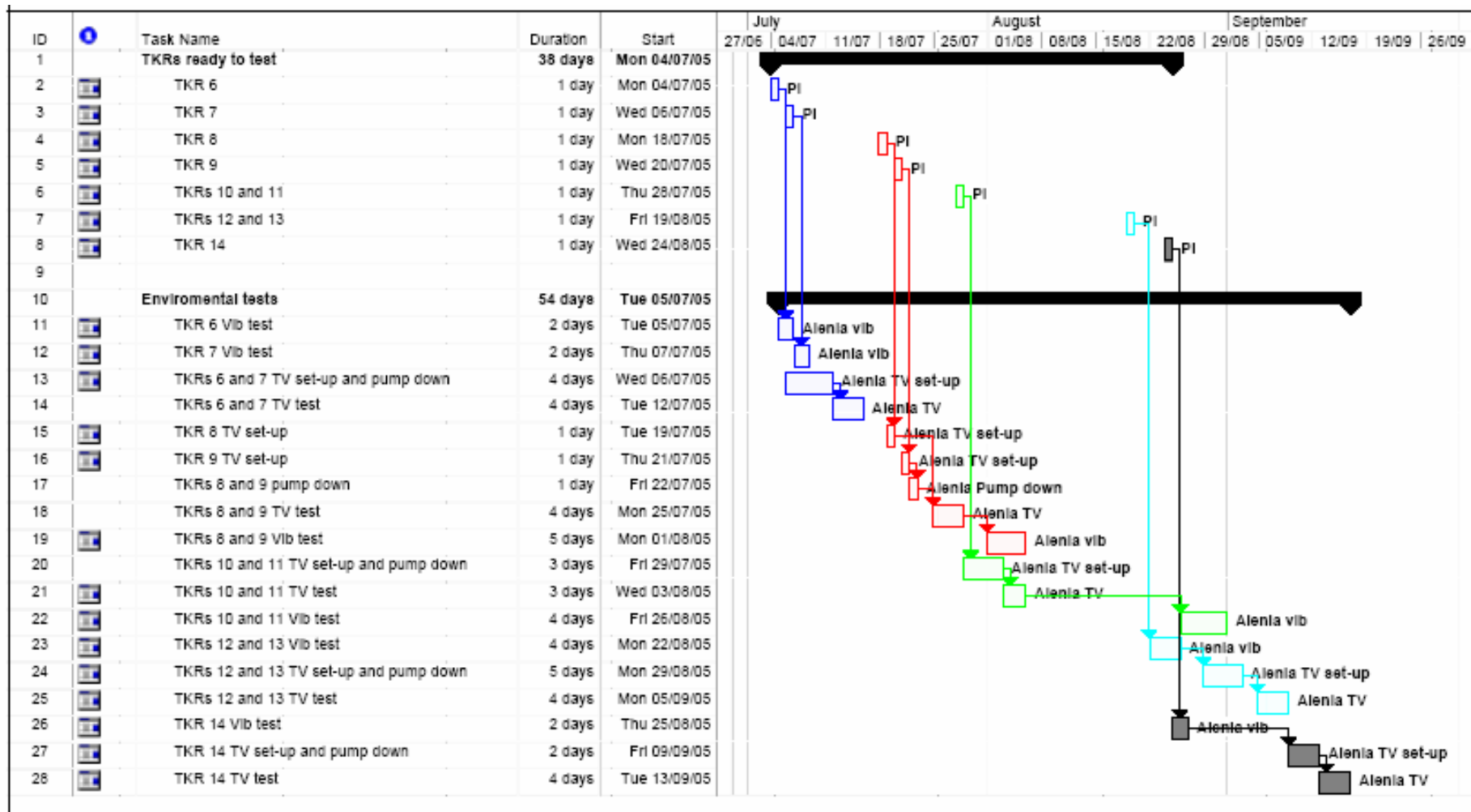
Pioneer Cable Production

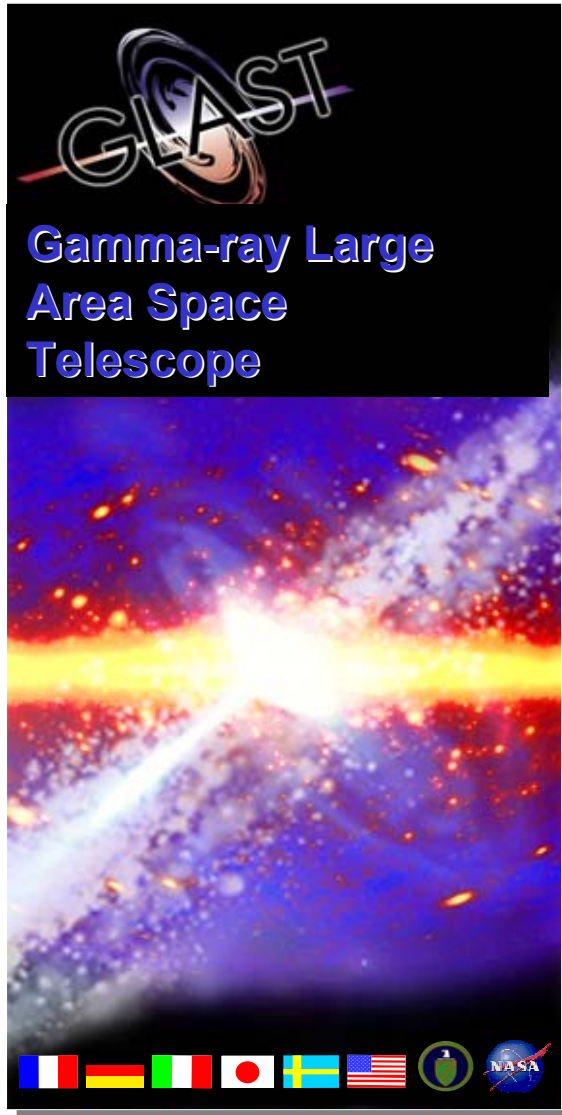
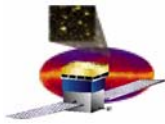
- Pioneer discovered that they must alter their process to adapt the drilling program and subsequent outer-layer etch-and-plate to each individual cables, after making x-ray measurements of the inner-layer pads.
 - This is more-or-less what Parlex is already doing, so Pioneer is seeing similar difficulties with material movement over these large scales.
 - Nevertheless, Pioneer expresses high confidence in yield.
 - Pioneer is working with a large batch process and appears to be very careful of achieving success with the whole batch at each step.
- These necessary retooling and process changes have delayed the Pioneer delivery dates by about 3 weeks.
 - All (12 towers) unassembled circuits done by July 18 to 29.
 - Qualification assemblies August 12.
 - Assembled cables August 19 through September 7.
- Pioneer calls these dates “worst case,” and they will work to improve on them.



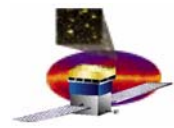
Tracker Environmental Testing Schedule

Negotiating this with Alenia already was difficult. So it is not easy to change!



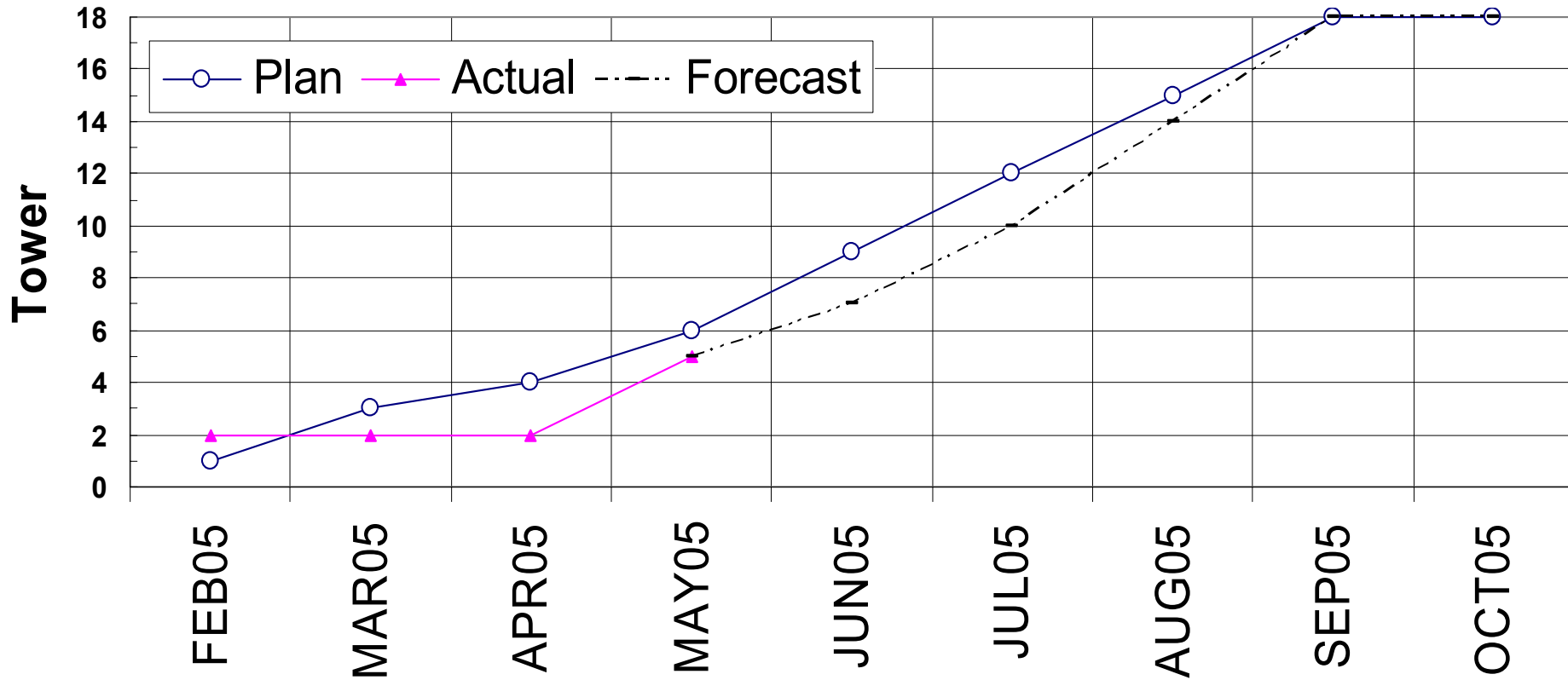


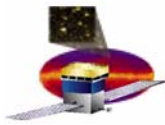
Cost/Schedule Reports for 4.1.4 Tracker Presentation May 2005 Month End



Level 3 Milestone Count

4.1.4 Tracker





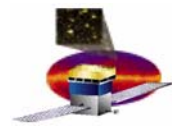
Level 3 Milestone List

Activity Description	Baseline Finish	-2m Var	-1m Var	Bsln Var	Early Finish	2005												2006					
						F	E	M	A	M	J	J	A	S	O	N	D	D	J	A	F	M	A
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	-27	-27	-35	05/10/05A		▼																
Flight Tracker Tower 2 RFI	04/20/05	-2	-2	-14	05/10/05A			▼															
Flight Tracker Tower 3 RFI	05/03/05	3	3	-5	05/10/05A				▼														
Flight Tracker Tower 4 RFI	05/16/05	0	0	-16	06/08/05					▼													
Flight Tracker Tower 5 RFI	06/03/05	0	0	-3	06/08/05						▼												
Flight Tracker Tower 6 RFI	06/16/05	-4	-4	-13	07/06/05							▼											
Flight Tracker Tower 7 RFI	06/27/05	-5	-5	-8	07/08/05								▼										
Flight Tracker Tower 8 RFI	07/06/05	-5	-5	-17	07/29/05									▼									
Flight Tracker Tower 9 RFI	07/15/05	-5	-5	-12	08/02/05										▼								
Flight Tracker Tower 10 RFI	07/26/05	-5	-5	-15	08/16/05											▼							
Flight Tracker Tower 11 RFI	08/04/05	-5	-5	-10	08/18/05												▼						
Flight Tracker Tower 12 RFI	08/15/05	-5	-5	-8	08/25/05													▼					
Flight Tracker Tower 13 RFI	08/24/05	-5	-5	-9	09/07/05														▼				
Flight Tracker Tower 14 RFI	09/02/05	-4	-4	-4	09/09/05															▼			
Flight Tracker Tower 15 RFI	09/13/05	-5	-5	-4	09/19/05																▼		

Run Date 06/16/05 09:56
 Data Date 06/01/05
 © Primavera Systems, Inc.

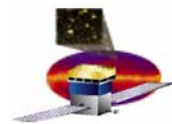
GLAST LAT PROJECT
Level 3 Milestones
Baseline Variance (Organized by Subsystem)

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	JUN05	JUL05				
4.1.4 TRACKER										
4.1.4.1 TRACKER MANAGEMENT	72	86	3,712	3,720	61	48	77	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	253	514	12,493	12,897	348	17	441	13,298	13,298	425
4.1.4.4 TOWER STRUCTURE & ASSEMBLY	296	355	2,998	3,260	331	266	544	4,139	4,139	364
4.1.4.5 TRACKER TEST & CALIBRATION	44	17	136	200	17	16	99	268	268	0
4.1.4.7 INSTRUMENT INTEGRATION & TEST (SLAC)	0	11	54	81	12	6	27	99	99	5
CAPW[3]Totals:	665	983	19,397	20,158	768	352	1,185	21,702	21,702	794



FTE Report (DOE/NASA-funded only)

4.1.4 Tracker FTEs

