GLAST Large Area Telescope:
I & T Input to Monthly Technical/Cost/Schedule Review 07/26/05

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Last Month's Accomplishments (1 of 3)

- Management
  - Tracking hardware shortages for LAT integration.
    - TKR Delivery
    - ELX Boxes
  - Procedure Status
    - 70 of 70 submitted for sign-off or released.
    - Preparing a Draft Environmental Test Implementation Plan
- IFCT
  - Completed 6 Tower Tests
  - Received Grid 2
  - Received the X-LAT Plate from LM
  - Implemented cable bending precautionary measures.

Last Month's Accomplishments (2 of 2)

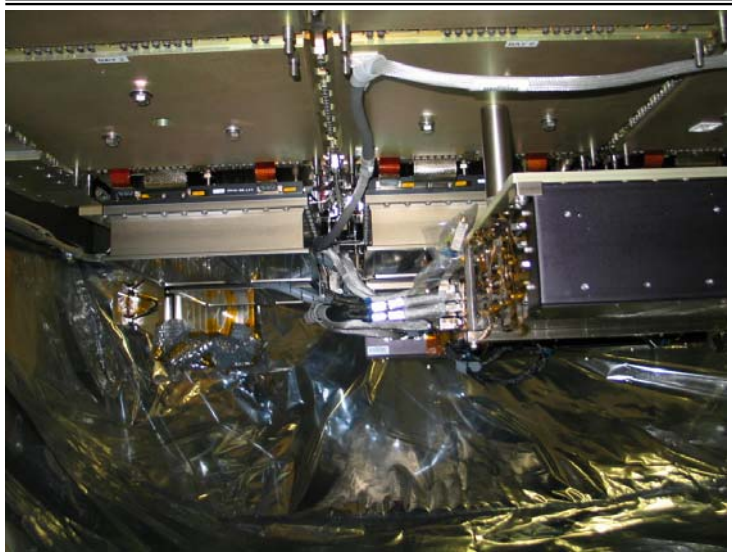
- Online
  - LATTE
    - Supported accelerated FSW implementation planning
    - Exploratory work to demonstrate interaction with the VSC and its software interface is ongoing.
    - 4.9.2 released for I&T 6 Tower Tests.
    - LATTE 5 work is underway
- SVAC
  - Workshop 4 (July 14-15) was successful
    - See the instrument Analysis Web Page for details
  - Main current activities
    - Analyzing 6 tower data
    - Ramping up ACD effort
    - Leading the process to validate of calibrations
    - Supporting ISOC and SE in test and operations planning

SVAC status

- **Workshop 4 (July 14-15) was successful**
  - **See the instrument Analysis Web Page for details**

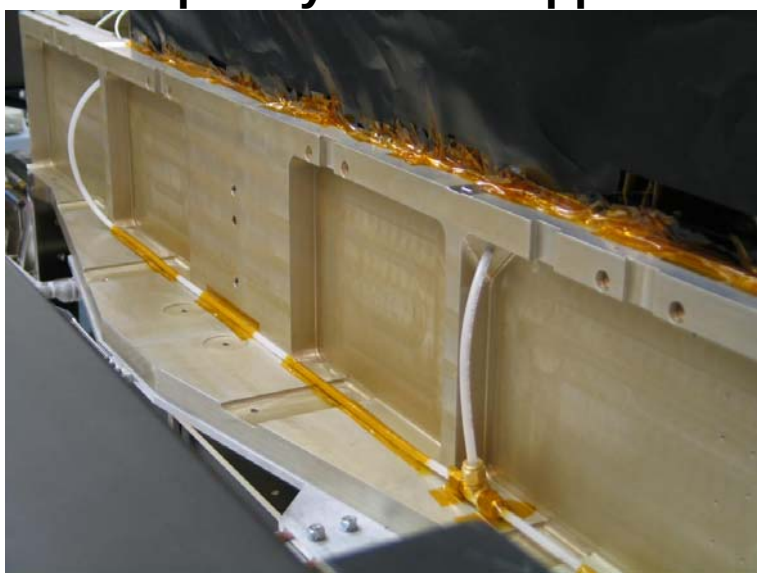
- **Main current activities**
  - **Analyzing 6 tower data**
  - **Ramping up ACD effort**
  - **Leading the process to validate of calibrations**
  - **Supporting ISOC and SE in test and operations planning**

I&T Activities

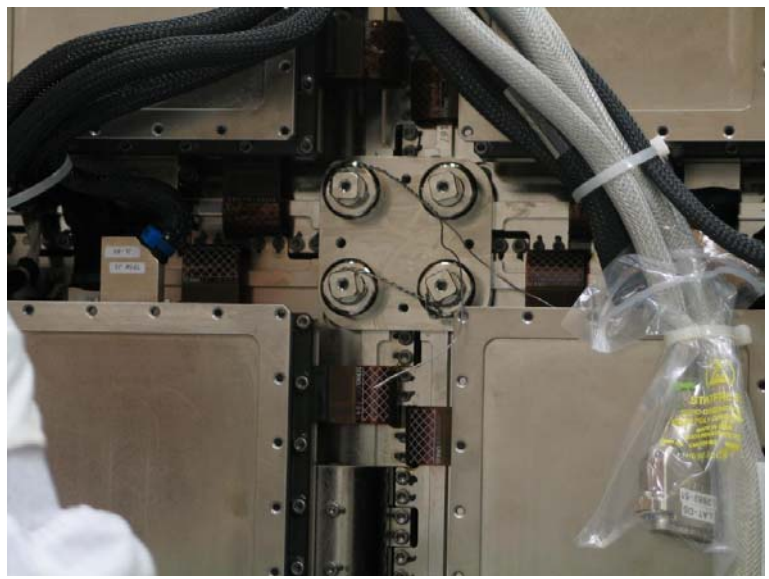


Temporary Cable Support

Cable Protection

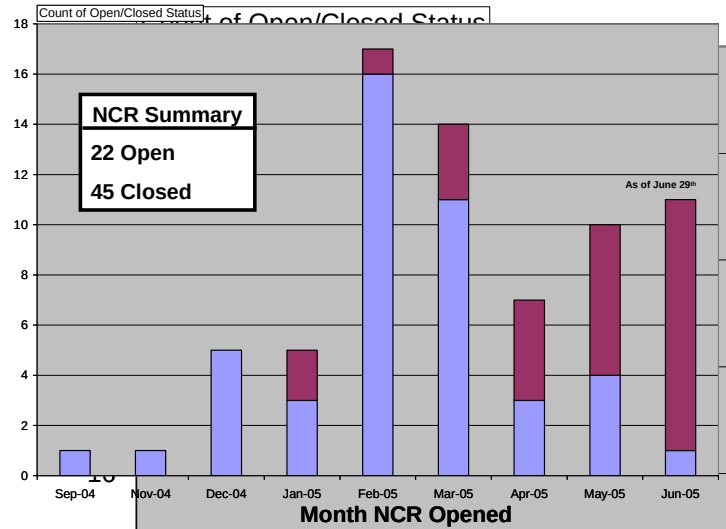


Purge Tube Installed



Shear Plate Installation

I&T NCRs by Month Open/Closed Status

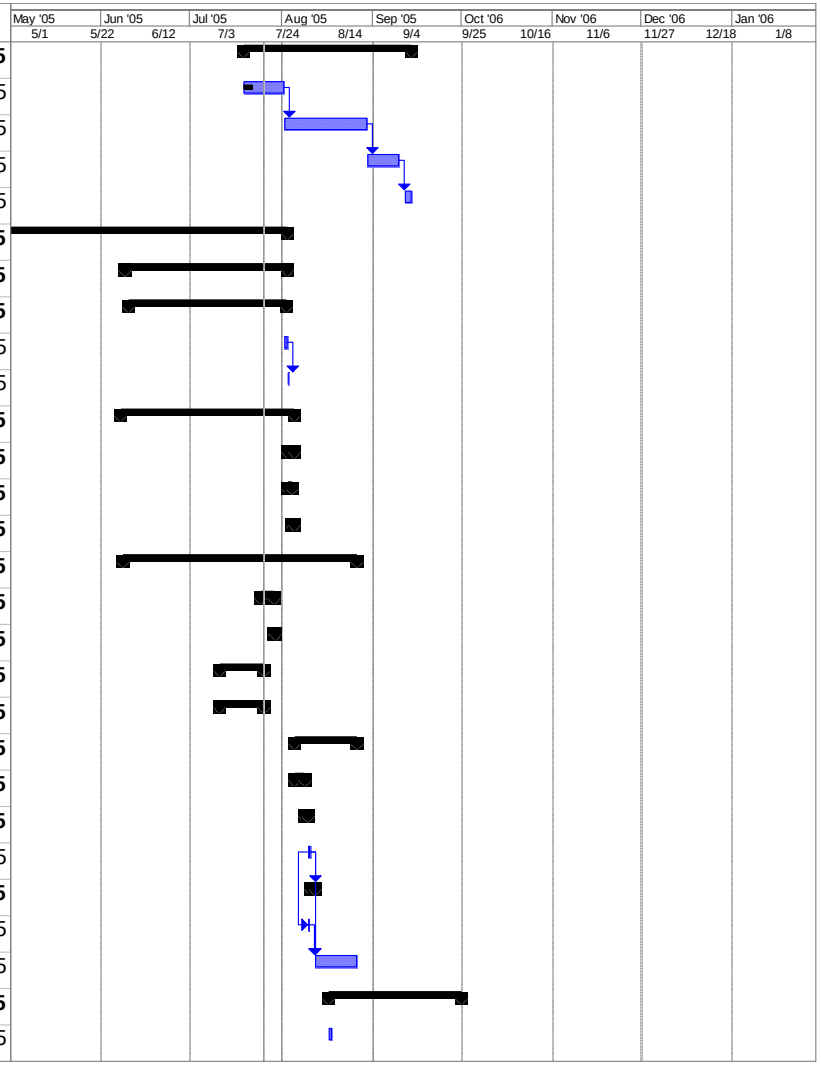


Upcoming I&T Events

- STR #14, 15 ECD 7/5 (Complete)
- SVAC data taking for 6 towers ECD 7/15 (Complete)
- STR #16 Parallelized Test Scripts ECD 7/29
- TKR Hand-off to I&T ECD 7/28
- 8 Tower Integration ECD 8/12
- 8 Tower Tests ECD 8/26
- ACD Receiving ECD 8/12
- ACD Installation with 8 towers ECD 9/5

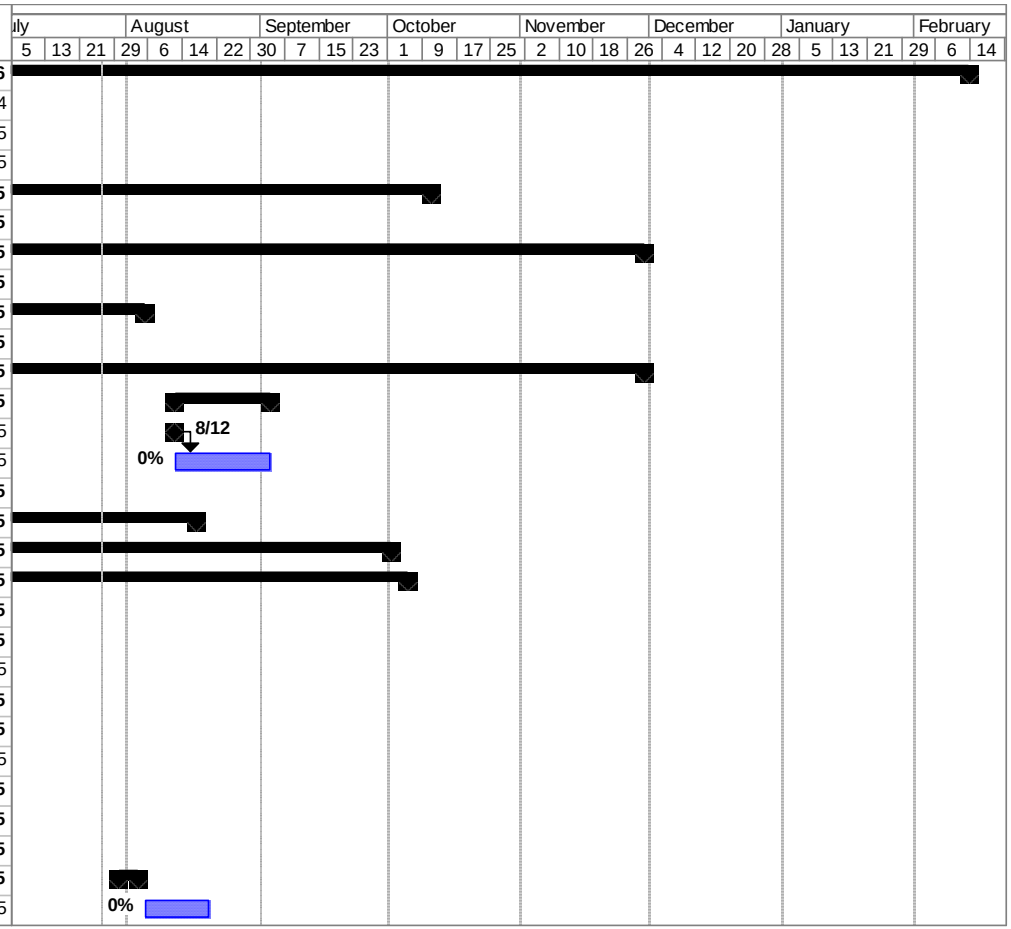
I&T Detail Schedule (1 of 1)

ID	Task Name	Start	% Complete	Finish
282	**Grid 2**	**7/19/05**	**8%**	**9/13/05**
283	Grid 2 Assembly	7/19/05	30%	8/1/05
284	Flexure Testing	8/2/05	0%	8/29/05
285	TIP (Test Interface Plate) Assembly	8/30/05	0%	9/9/05
286	Assembly of Grid 2 to TIP	9/12/05	0%	9/13/05
818	**Tower 4 - Bay 8**	**2/22/05**	**86%**	**8/3/05**
844	**Tower-4 Grid Bay 8 I&T**	**6/9/05**	**84%**	**8/3/05**
852	**6 Tower Test**	**6/9/05**	**86%**	**8/2/05**
973	Thermistor bonding/cure on bays 0/4 (NCR351)	8/2/05	0%	8/2/05
974	Install Cable Trays	8/2/05	0%	8/3/05
975	**Tower 5, Bay 13**	**6/7/05**	**65%**	**8/5/05**
999	**Tower-5 Grid Bay 13 I&T**	**8/3/05**	**0%**	**8/5/05**
1000	**TKR-4 installation into grid bay**	**8/3/05**	**0%**	**8/4/05**
1004	**FM108 installation into grid bay 13**	**8/4/05**	**0%**	**8/5/05**
1007	**Tower 6, Grid Bay 12**	**6/7/05**	**10%**	**8/26/05**
1015	**Tracker 6 post ship test & receiving test**	**7/25/05**	**0%**	**7/29/05**
1023	**TKR-6 I&T Hand-off**	**7/29/05**	**0%**	**7/29/05**
1025	**TEM/TPS 6 Flight Readiness**	**7/11/05**	**40%**	**7/26/05**
1026	**TEM/TPS-6 I&T**	**7/11/05**	**40%**	**7/26/05**
1032	**Tower-6 Grid Bay 12 I&T**	**8/5/05**	**0%**	**8/26/05**
1033	**TKR-6 installation into grid bay**	**8/5/05**	**0%**	**8/9/05**
1038	**FM110 installation into grid bay 12**	**8/9/05**	**0%**	**8/10/05**
1041	Shear Plate Installation pending NCR disposition	8/10/05	0%	8/10/05
1042	**Install Cable Trays**	**8/10/05**	**0%**	**8/12/05**
1044	Install Latte 4.9.1	8/10/05	0%	8/10/05
1045	8 Tower Test	8/12/05	0%	8/26/05
1046	**ACD Installation & Testing**	**8/17/05**	**0%**	**9/30/05**
1047	ACD receiving	8/17/05	0%	8/17/05



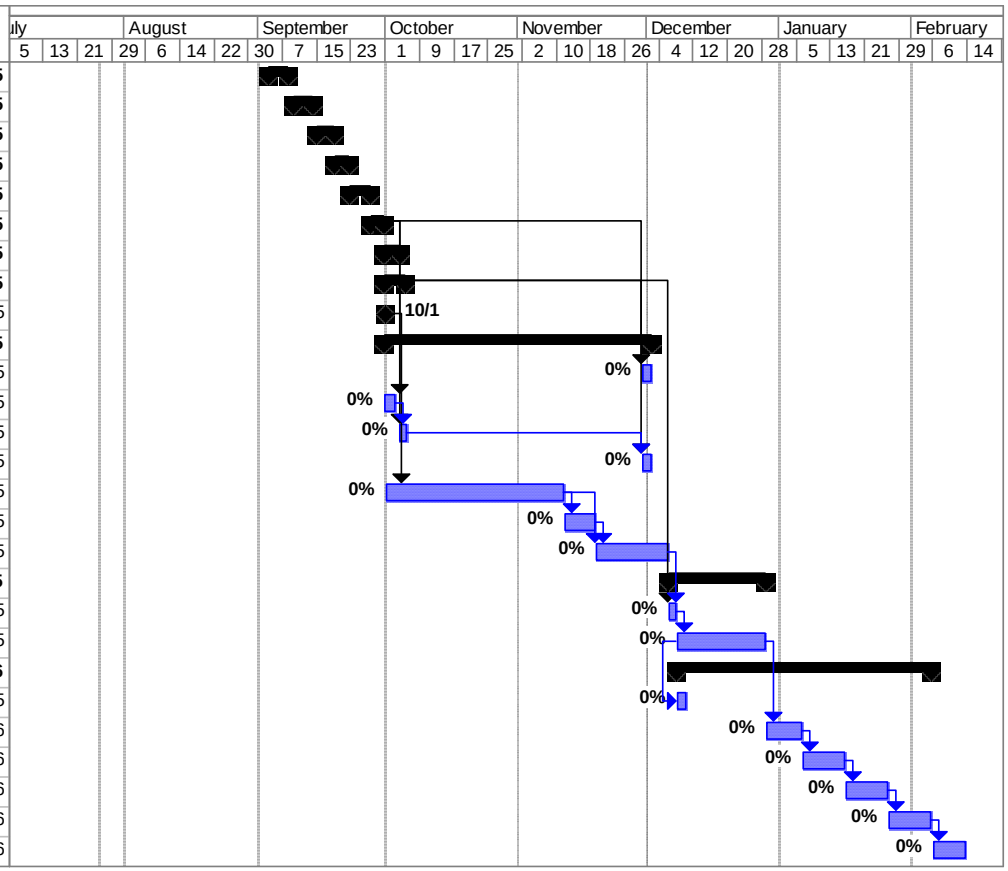
I&T 6 Month Baseline (1 of 2)

ID	Task Name	Duration	Start	Finish
1	**LAT Integration Plan**	**318.06 days**	**10/22/04**	**2/13/06**
2	Grid RFI	0 days	10/22/04	10/22/04
3	X-LAT Thermal Plate RFI	0 days	2/9/05	2/9/05
4	Radiators RFI	0 days	5/31/05	5/31/05
5	**Tracker Receiving**	**178.81 days**	**1/14/05**	**10/11/05**
85	**Calorimeter Receiving**	**138 days**	**12/1/04**	**6/29/05**
176	**Electronics Receiving**	**196.25 days**	**2/10/05**	**11/30/05**
177	**Cables**	**81.63 days**	**2/10/05**	**6/14/05**
196	**TEM Assemblies**	**111.63 days**	**2/18/05**	**8/5/05**
215	**TEM PS Assemblies**	**86.75 days**	**2/18/05**	**6/29/05**
234	**Electronic Boxes**	**171.44 days**	**3/19/05**	**11/30/05**
242	**ACD Receiving**	**15 days**	**8/12/05**	**9/3/05**
243	Receive ACD	0 days	8/12/05	8/12/05
244	ACD Receiving Tests	15 days	8/12/05	9/3/05
245	**Grid Assemby in I&T**	**76.19 days**	**11/1/04**	**2/25/05**
276	**TEM to Calorimeter**	**127.13 days**	**2/7/05**	**8/17/05**
331	**Calorimeter/Tracker/TEM/TEM-PS Test**	**149.44 days**	**2/21/05**	**10/1/05**
380	**Tower Installation**	**132.94 days**	**3/21/05**	**10/5/05**
381	**Install Bay 0 (Tower A)**	**10 days**	**3/21/05**	**4/5/05**
389	**Install Bay 4 (Tower B)**	**10 days**	**4/8/05**	**4/22/05**
397	2 Tower CPT	11 days	4/26/05	5/11/05
398	**Install Bay 5 (Tower 1)**	**2.5 days**	**5/20/05**	**5/25/05**
405	**Install Bay 1 (Tower 2)**	**2.5 days**	**5/23/05**	**5/26/05**
412	4 Tower CPT	8 days	5/26/05	6/8/05
413	**Install Bay 9 (Tower 3)**	**2.5 days**	**6/8/05**	**6/13/05**
420	**Install Bay 8 (Tower 4)**	**2.5 days**	**6/14/05**	**6/16/05**
427	**Install Bay 13 (Tower 5)**	**2.5 days**	**6/16/05**	**6/21/05**
434	**Install Bay 12 (Tower 6)**	**2.5 days**	**7/29/05**	**8/3/05**
441	8 Tower Tests	10 days	8/5/05	8/19/05

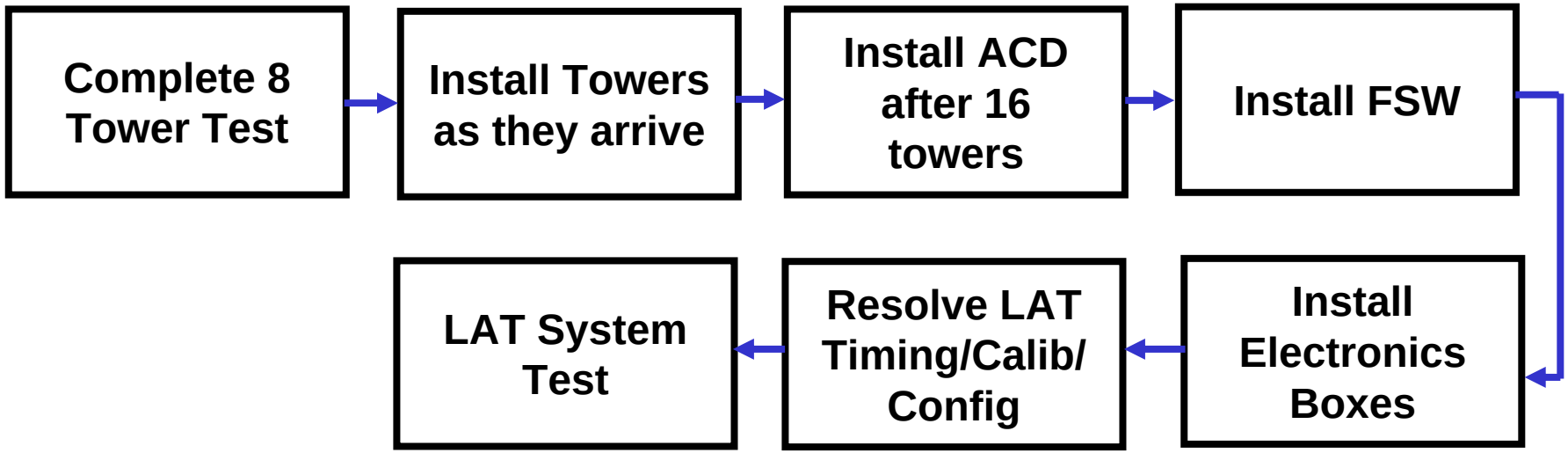


I&T 6 Month Baseline (2 of 2)

ID	Task Name	Duration	Start	Finish
442	**Install Bay 10 (Tower 7)**	**2.5 days**	**9/3/05**	**9/7/05**
449	**Install Bay 11 (Tower 8)**	**2.5 days**	**9/9/05**	**9/13/05**
456	**Install Bay 14 (Tower 9)**	**2.5 days**	**9/14/05**	**9/19/05**
463	**Install Bay 15 (Tower 10)**	**3 days**	**9/19/05**	**9/22/05**
470	**Install Bay 6 (Tower 11)**	**3 days**	**9/22/05**	**9/27/05**
477	**Install Bay 7 (Tower 12)**	**2.5 days**	**9/27/05**	**9/30/05**
484	**Install Bay 2 (Tower 13)**	**2.5 days**	**9/30/05**	**10/4/05**
491	**Install Bay 3 (Tower 14)**	**3.5 days**	**9/30/05**	**10/5/05**
497	FSW Delivery w / EM SIU	0 days	10/1/05	10/1/05
498	**Install Electronics and Cables**	**43.31 days**	**9/30/05**	**12/1/05**
499	Install SIU	1.5 days	11/30/05	12/1/05
500	Install GASU	1.5 days	9/30/05	10/3/05
501	Install PDU	1.5 days	10/4/05	10/5/05
502	Install Event Processors	1.5 days	11/30/05	12/1/05
503	FSW Install and Checkout	30 days	10/1/05	11/11/05
504	LATTE 5 Validation	5 days	11/11/05	11/18/05
505	16 Tower Tests	10 days	11/18/05	12/5/05
506	**ACD Install and Test**	**17 days**	**12/5/05**	**12/28/05**
507	Install ACD	2 days	12/5/05	12/7/05
508	Test ACD	15 days	12/7/05	12/28/05
509	**LAT Level System Test**	**39.5 days**	**12/7/05**	**2/5/06**
510	Flight Radiator Fit check	2 days	12/7/05	12/10/05
511	Flight Software Validation	5 days	12/28/05	1/6/06
512	LAT Functional Test	15 days	1/6/06	1/16/06
513	E2E Tests	15 days	1/16/06	1/26/06
514	Low Level Characterization/MC Verfication/Fin	15 days	1/26/06	2/5/06
515	Pack & Ship to NRL	5 days	2/6/06	2/13/06

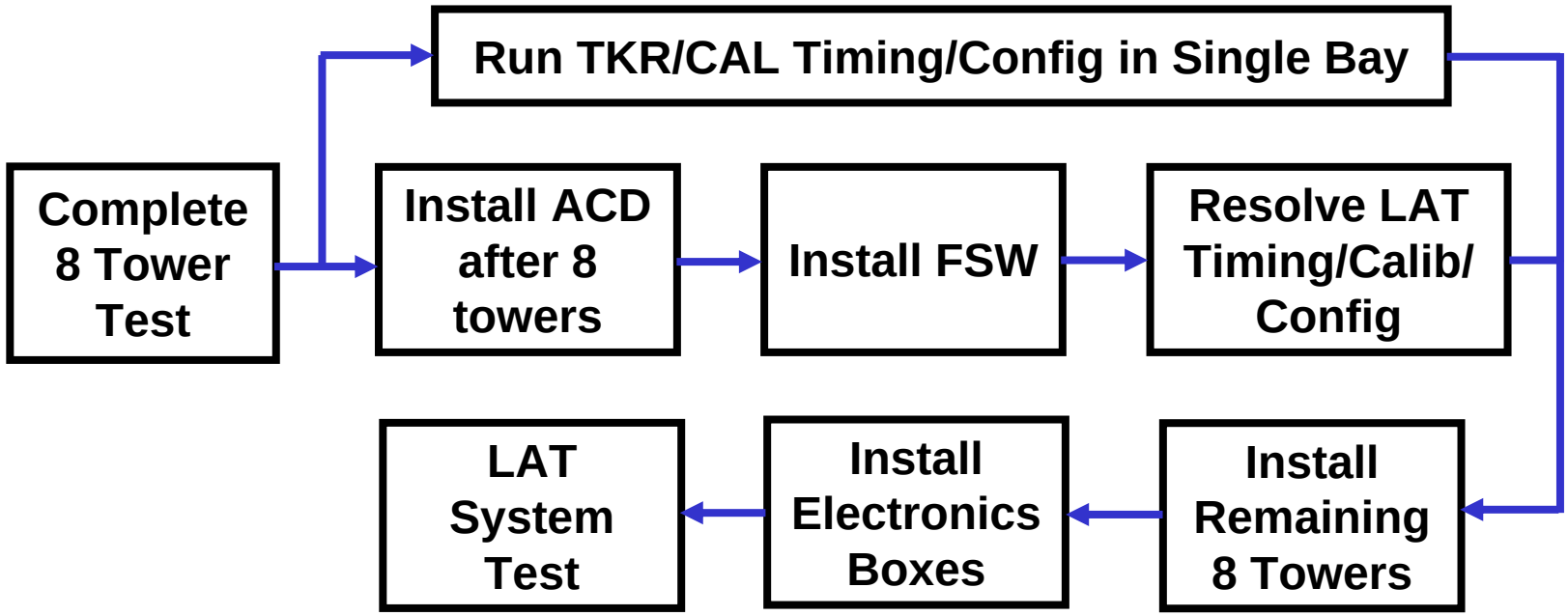


Baseline I&T Flow



Resolution of LAT System Level Timing, Calibration and Configuration Issues is dependent on future hardware deliveries.

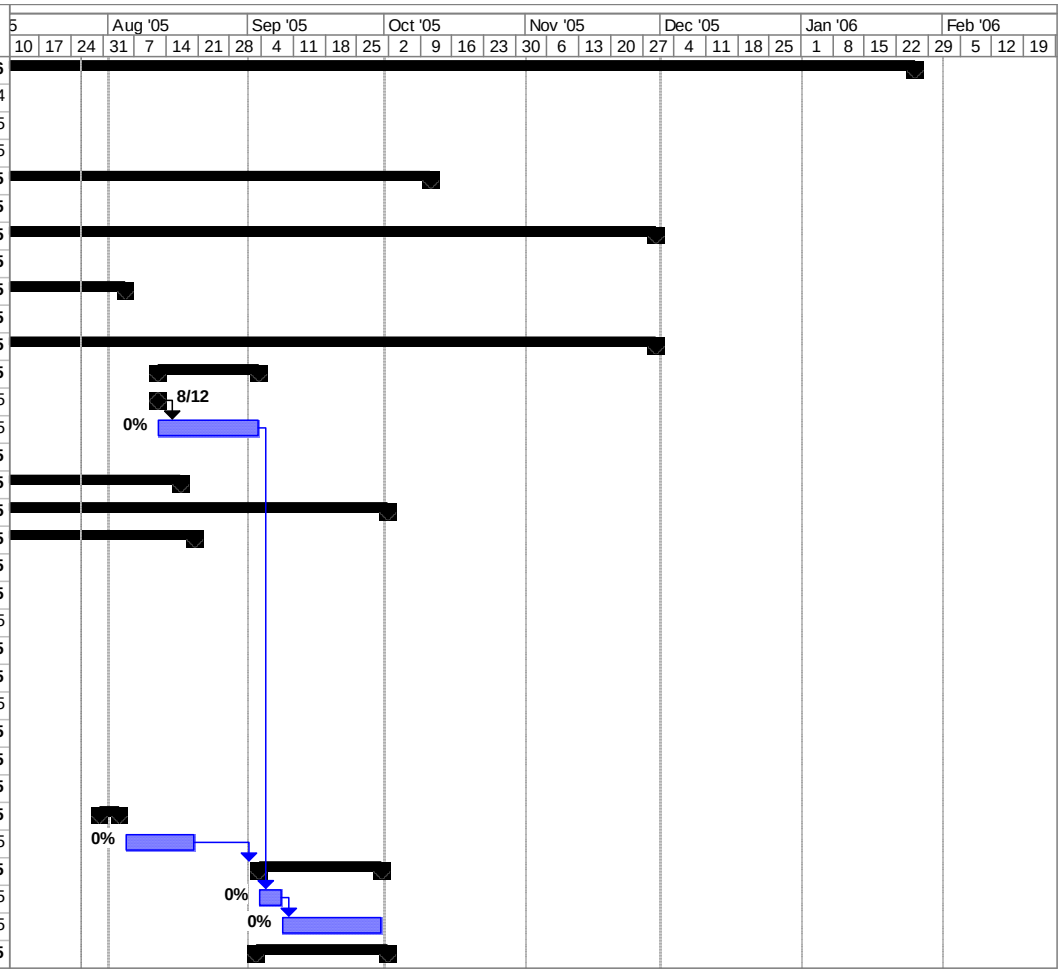
Alternate I&T Flow



Resolution of LAT System Level Timing, Calibration and Configuration Issues is decoupled future hardware deliveries for early risk mitigation.

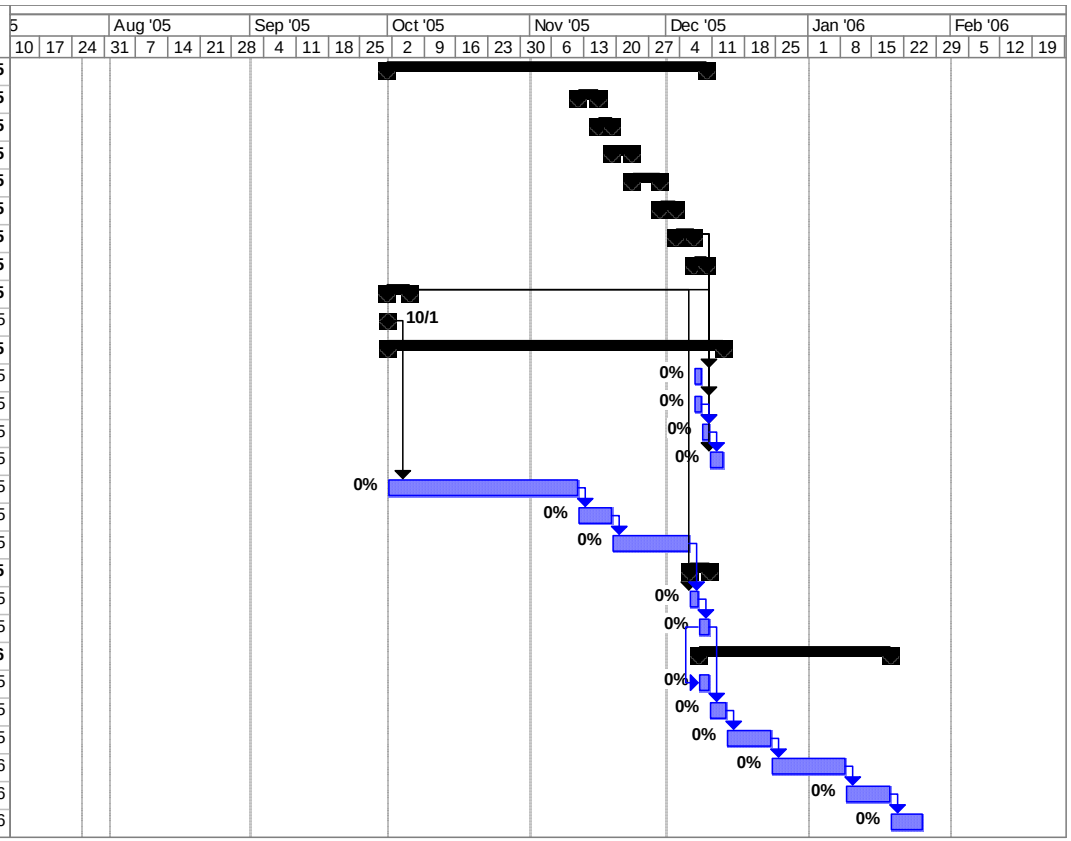
Alternate I&T Integration Plan with ACD (1 of 2)

ID	Task Name	Duration	Start	Finish
1	**LAT Accelerated Integration Plan**	**306.5 days?**	**10/22/04**	**1/25/06**
2	Grid RFI	0 days	10/22/04	10/22/04
3	X-LAT Thermal Plate RFI	0 days	2/9/05	2/9/05
4	Radiators RFI	0 days	5/31/05	5/31/05
5	**Tracker Receiving**	**178.81 days**	**1/14/05**	**10/11/05**
85	**Calorimeter Receiving**	**138 days**	**12/1/04**	**6/29/05**
176	**Electronics Receiving**	**196.25 days**	**2/10/05**	**11/30/05**
177	**Cables**	**81.63 days**	**2/10/05**	**6/14/05**
196	**TEM Assemblies**	**111.63 days**	**2/18/05**	**8/5/05**
215	**TEM PS Assemblies**	**86.75 days**	**2/18/05**	**6/29/05**
234	**Electronic Boxes**	**171.44 days**	**3/19/05**	**11/30/05**
242	**ACD Receiving**	**15 days**	**8/12/05**	**9/3/05**
243	Receive ACD	0 days	8/12/05	8/12/05
244	ACD Receiving Tests	15 days	8/12/05	9/3/05
245	**Grid Assemby in I&T**	**76.19 days**	**11/1/04**	**2/25/05**
276	**TEM to Calorimeter**	**127.13 days**	**2/7/05**	**8/17/05**
331	**Calorimeter/Tracker/TEM/TEM-PS Test**	**149.44 days**	**2/21/05**	**10/1/05**
380	**Tower Installation**	**101.63 days**	**3/21/05**	**8/19/05**
381	**Install Bay 0 (Tower A)**	**10 days**	**3/21/05**	**4/5/05**
389	**Install Bay 4 (Tower B)**	**10 days**	**4/8/05**	**4/22/05**
397	2 Tower CPT	11 days	4/26/05	5/11/05
398	**Install Bay 5 (Tower 1)**	**2.5 days**	**5/20/05**	**5/25/05**
405	**Install Bay 1 (Tower 2)**	**2.5 days**	**5/23/05**	**5/26/05**
412	4 Tower CPT	8 days	5/26/05	6/8/05
413	**Install Bay 9 (Tower 3)**	**2.5 days**	**6/8/05**	**6/13/05**
420	**Install Bay 8 (Tower 4)**	**2.5 days**	**6/14/05**	**6/16/05**
427	**Install Bay 13 (Tower 5)**	**2.5 days**	**6/16/05**	**6/21/05**
434	**Install Bay 12 (Tower 6)**	**2.5 days**	**7/29/05**	**8/3/05**
441	8 Tower Tests	10 days	8/5/05	8/19/05
442	**ACD Install and Test**	**18 days**	**9/3/05**	**9/30/05**
443	Install ACD	3 days	9/3/05	9/8/05
444	Test ACD	15 days	9/8/05	9/30/05
445	**Single Tower Tests**	**19.81 days?**	**9/2/05**	**10/1/05**



Alternate I&T Integration Plan with ACD (2 of 2)

ID	Task Name	Duration	Start	Finish
454	**Install Last 8 Towers**	**49.13 days**	**9/30/05**	**12/9/05**
455	**Install Bay 10 (Tower 7)**	**2.5 days**	**11/11/05**	**11/15/05**
462	**Install Bay 11 (Tower 8)**	**2.5 days**	**11/16/05**	**11/18/05**
469	**Install Bay 14 (Tower 9)**	**2.5 days**	**11/18/05**	**11/23/05**
476	**Install Bay 15 (Tower 10)**	**3 days**	**11/23/05**	**11/29/05**
483	**Install Bay 6 (Tower 11)**	**3 days**	**11/29/05**	**12/2/05**
490	**Install Bay 7 (Tower 12)**	**2.5 days**	**12/2/05**	**12/6/05**
497	**Install Bay 2 (Tower 13)**	**2.5 days**	**12/6/05**	**12/9/05**
504	**Install Bay 3 (Tower 14)**	**3.5 days**	**9/30/05**	**10/5/05**
510	FSW Delivery w/ EM SIU	0 days	10/1/05	10/1/05
511	**Install Electronics and Cables**	**50.5 days**	**10/1/05**	**12/13/05**
512	Install SIU	1.5 days	12/6/05	12/8/05
513	Install GASU	1.5 days	12/6/05	12/8/05
514	Install PDU	1.5 days	12/8/05	12/10/05
515	Install Event Processors	1.5 days	12/10/05	12/13/05
516	FSW Install and Checkout	30 days	10/1/05	11/11/05
517	LATTE 5 Validation	5 days	11/11/05	11/18/05
518	16 Tower Tests	10 days	11/18/05	12/5/05
519	**ACD Install and Test**	**4 days**	**12/5/05**	**12/10/05**
520	Install ACD	2 days	12/5/05	12/7/05
521	Test ACD	2 days	12/7/05	12/10/05
522	**LAT Level System Test**	**27.94 days**	**12/7/05**	**1/18/06**
523	Flight Radiator Fit check	2 days	12/7/05	12/10/05
524	Flight Software Validation	2 days	12/10/05	12/13/05
525	LAT Functional Test	15 days	12/13/05	12/23/05
526	E2E Tests	15 days	12/23/05	1/8/06
527	Low Level Characterization/MC Verfication/Fin	15 days	1/8/06	1/18/06
528	Pack & Ship to NRL	5 days	1/18/06	1/25/06



Goals for Workshop 5 (Aug 29)

- Study MC generated events with ACD + 8 towers
  - Need to get familiar with ACD variables
  - Start thinking how we will set up tests using ROIs to do analysis that we could not do so far
    - To support I&T test planning activities
- Present a list of distributions that capture geometrical dependencies since we can not spend too much time when the full LAT is assembled to learn all that
  - These will change as we add more towers
- Show trending results for calibrations (function of time and per tower)
  - Would like to have a comprehensive presentation from both TKR and CAL
- Alignment
  - Produce inter and intra-tower results using SAS reconstruction in its native framework
- Educate collaborators to connect science with housekeeping data
  - Only SVAC group does that right now

Initiated a 6 month-long write-up effort

- Start document work in short Analysis Memos (in LAT Docs)
  - Crucial for documenting our effort but…
    - also essential for sharpening the thought process
  - These are "Live" documents
    - Should take a day to write
      - » Can keep updating it
    - Should contain
      - » Goal of the data analysis
      - » State run ID's
      - » Trigger conditions
      - » Hardware configuration
      - » Analysis cuts
      - » Assumptions behind analysis cuts
- Goal: Document overall IA effort results by Dec 2005
  - Eduardo and Nico (INFN/Bari) will work on a draft

Issues & Concerns

ISSUES

- **Availability of flight assembly hardware.**
  - **Shortages identified by I&T and being worked with Subsystems.**
    - **TKR**
    - **SIU & EPU**

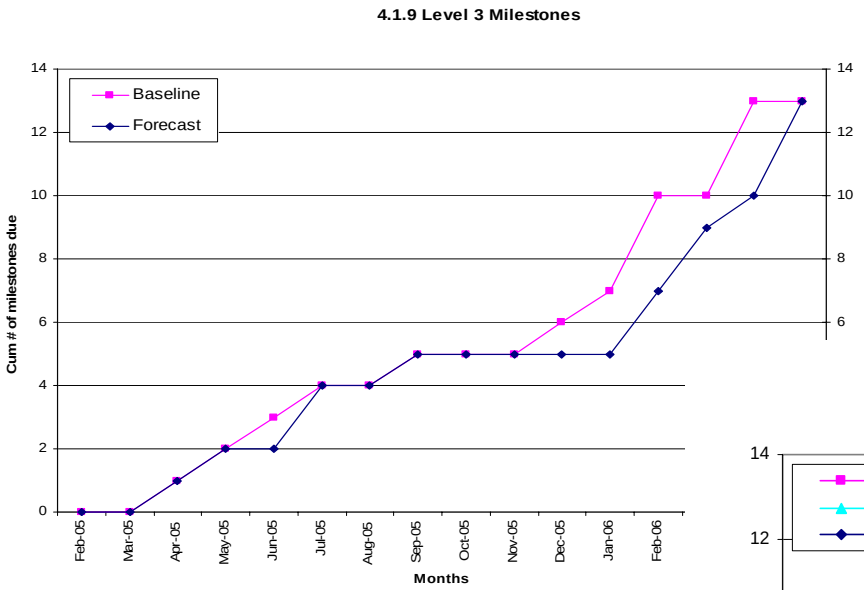
CONCERNS

- **Additional I&T manpower for Online, SVAC and IFCT.**
- **TPS rework and replacement, availability for future tower installations.**

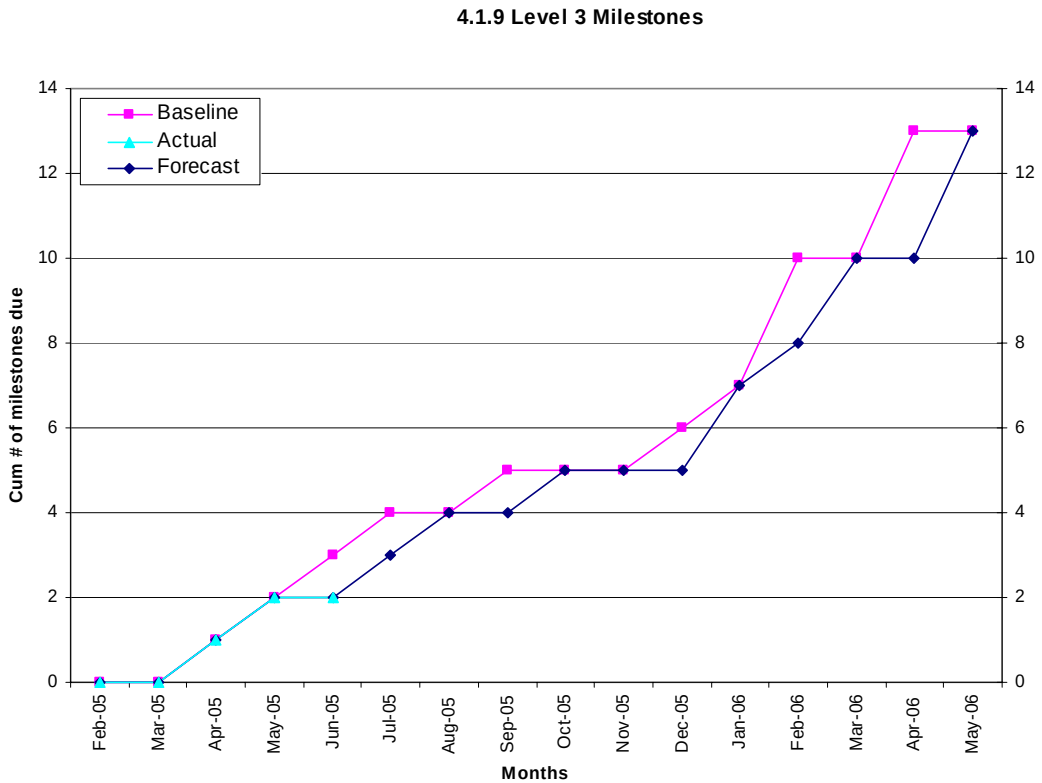
Cost/Schedule Reports for Presentation
June 2005 Month End
4.1.9 Integration & Test

Level 3 Milestone Count

May 05

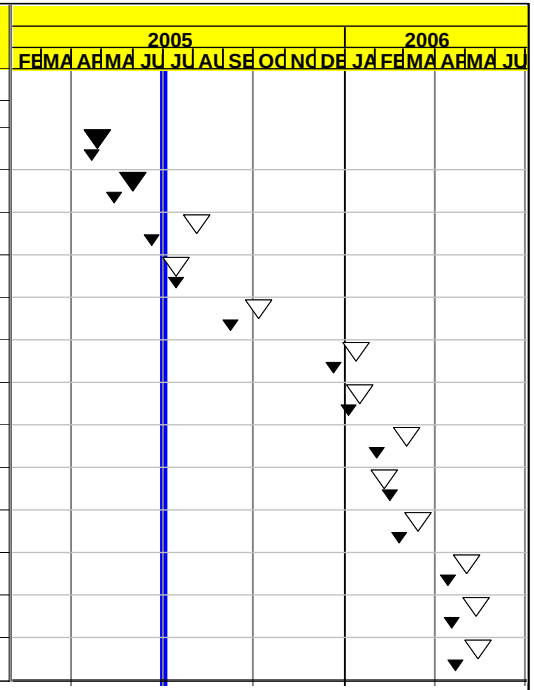


June 05



Level 3 Milestone List

Activity Description	Baseline Finish	-2m Var	-1m Var	Bsln Var	Early Finish
4.1.9 I&T					
Start 2 Tower Comprehensive	04/20/05	-3	-3	-3	04/25/05A
Start 4 Tower Comprehensive	05/12/05	-7	-12	-12	05/31/05A
Start 8 Tower Comprehensive	06/20/05	-5	-16	-31	08/03/05
Online FU S/W Final Release-I&T to	07/14/05	0	0	0	07/14/05
Start 16 Tower Comprehensive	09/07/05	-4	-8	-21	10/06/05
LAT Ready to Ship to NRL for Env	12/20/05	-4	-27	-10	01/11/06
Ship LAT to NRL for Env Test	01/03/06	-6	-40	-12	01/15/06
LAT EMI/EMC Test	02/01/06	-8	-58	-30	03/03/06
LAT Sine Vibe	02/14/06	-8	-24	5	02/09/06
LAT Acoustic Test	02/24/06	-10	-46	-18	03/14/06
LAT TVAC	04/14/06	-9	-20	-19	05/03/06
LAT Weight & CG	04/17/06	-8	-25	-25	05/12/06
Ship LAT to Spectrum Astro	04/21/06	-10	-23	-23	05/14/06



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

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

LT-DZ: Baseline Variance
FL-D4: AV: Level 3 Milestones
Report #10
Sheet 11

Milestone Variance Explanation

- **Schedule Impact**
  - **14 days of float to program milestone dates**
- **Cost Impact**
  - **None**
- **Corrective Action**
  - **Evaluate early technical risk mitigation.**
  - **Evaluate system level test definition and durations.**
  - **Use 7/24 schedule as required for system level test to minimize test duration.**

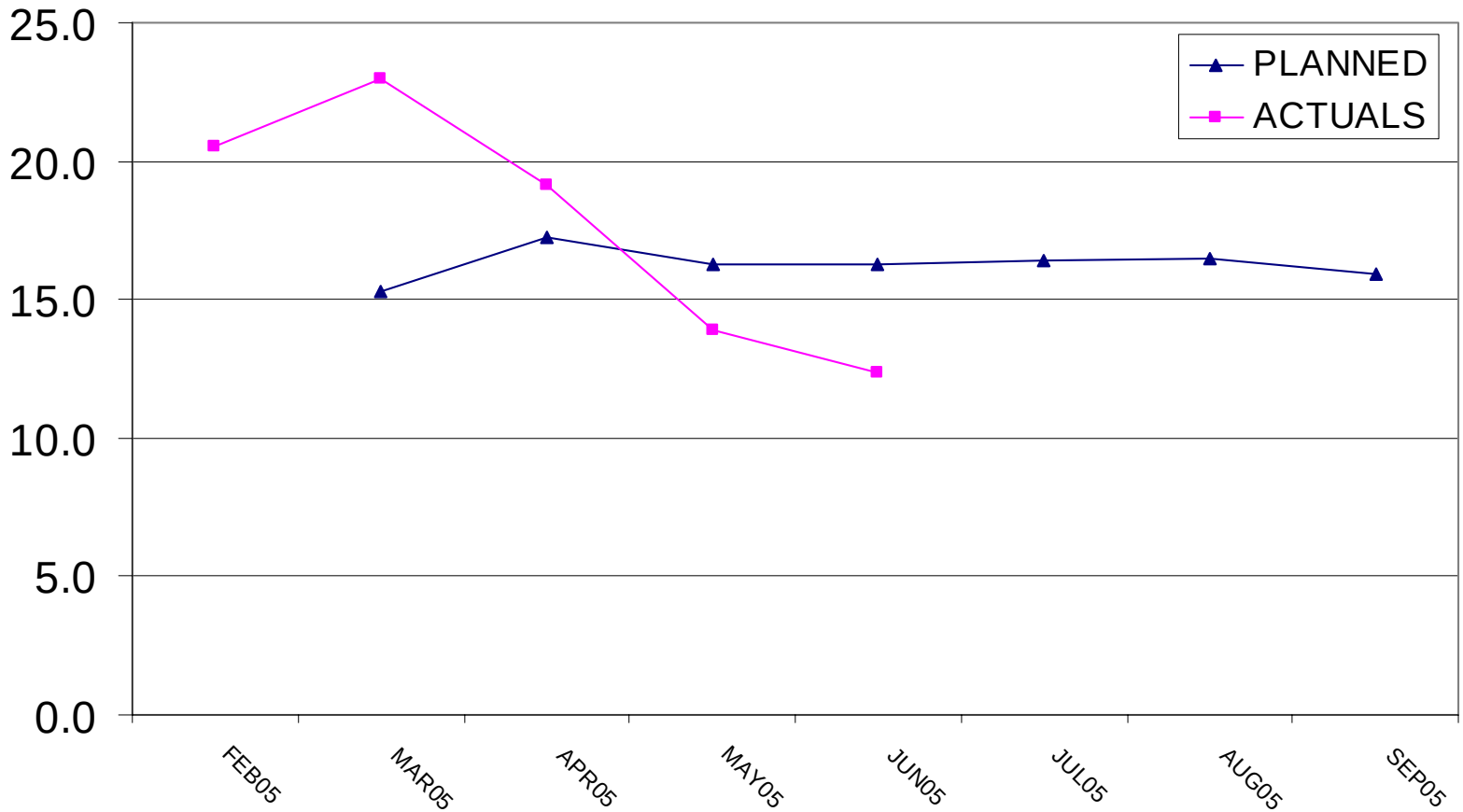
Cost Report

Monthly Contractor Financial Management Report 30-Jun-05								NASA form 533M Approved OMB # 2700-		Report for Month Ending: 6/30/2005
Reporting Category	Cost Incurred				Estimated Cost			4/3/2000 Estimated Final Cost		Unfilled Orders
	During Month		Cum. to Date		Detail		Balance of Contract	Contractor Estimate	Contract Value	Outstanding
	Actual	Planned	Actual	Planned	JUL05	AUG05				
4.1.9 INTEGRATION & TEST										
4.1.9.1 I&T MANAGEMENT	40	49	1,164	1,212	44	51	94	1,354	1,354	0
4.1.9.3 INSTR OPS COORDINATOR	0	0	31	31	0	0	0	31	31	0
4.1.9.4 MECH GROUND SUPT EQUIP	8	0	2,082	1,892	39	12	-34	2,098	2,098	0
4.1.9.5 ONLINE SOFTWARE	0	0	654	654	0	0	0	654	654	0
4.1.9.6 INTEG, FACILITIES, CONFIG & TEST	139	221	3,048	3,415	343	147	682	4,219	4,219	10
4.1.9.7 PARTICLE TEST	1	0	44	48	0	0	4	48	48	4
4.1.9.8 ENVIRONMENTAL TEST	20	146	392	478	128	82	145	747	747	0
4.1.9.9 SCIENCE VERIFICATION, ANALYSIS & CALIBRATION	0	0	300	300	0	0	0	300	300	0
CAPW[3]Totals:	208	416	7,715	8,030	555	291	891	9,451	9,451	15

Cost Variance Explanation

- **Why overrun/underrun?**
  - **Underrun due to vacations/time-off during the month of June (176 hrs)**
- **What will be done to correct?**
  - **No action required.**

FTE Report (DOE/NASA-funded only)



FTE Variance Explanation

- **Why overrun/underrun?**
  - **Underrun due to vacations/time-off during the month of June (176 hrs)**
- **What is the impact?**
  - **None**
- **What will be done to correct?**
  - **No action required.**