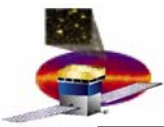


GLAST Large Area Telescope: I & T Input to Monthly Technical/Cost/Schedule Review 06/30/04

**Elliott Bloom
SU-SLAC
Subsystem Manager**

**Brian Grist
SU-SLAC
Subsystem Engineer**

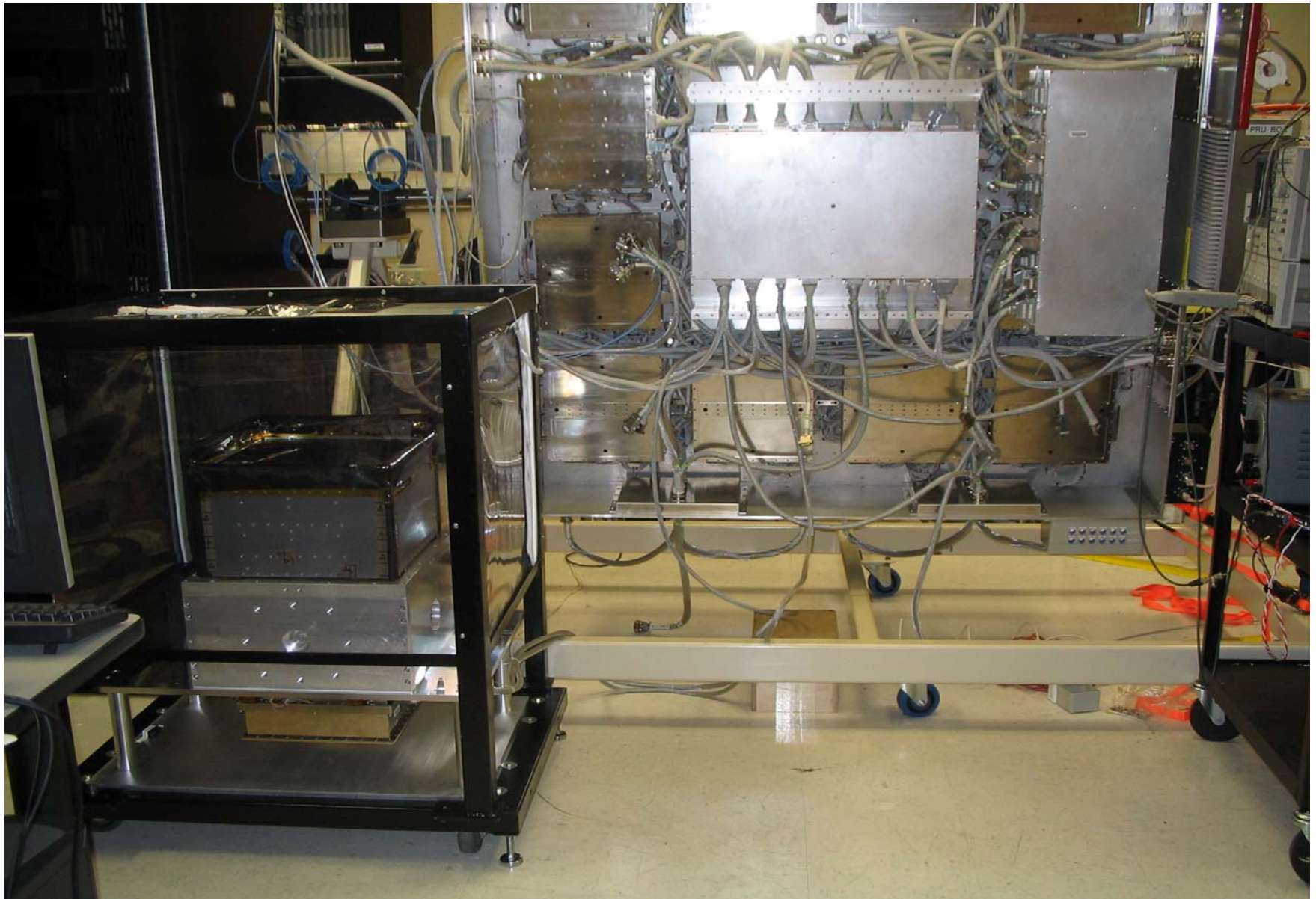
**elliott@slac.stanford.edu, bgrist@slac.stanford.edu
650-926-2469 650-926-2998**



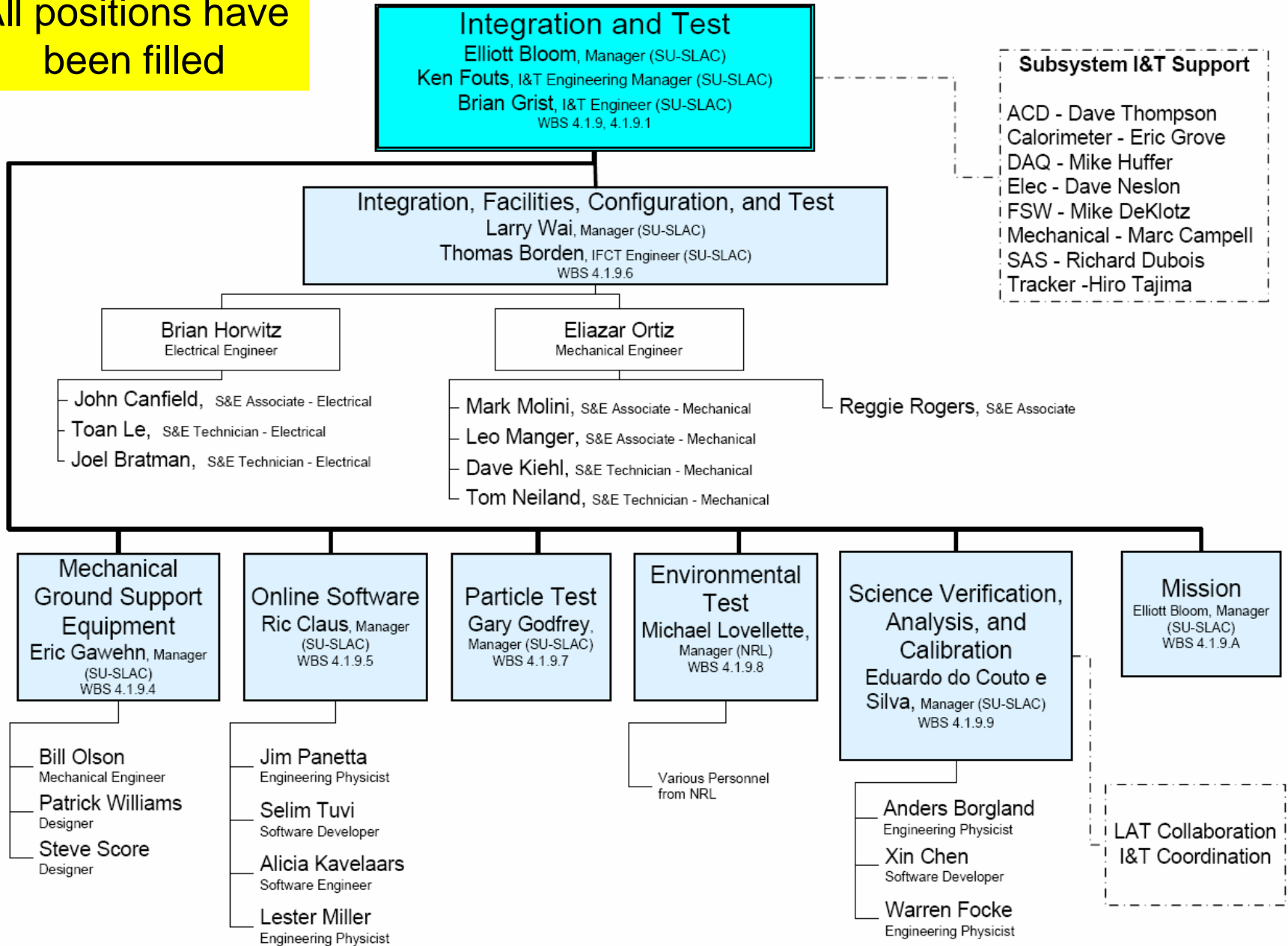
Last Month's Accomplishments

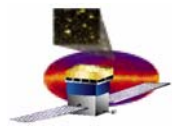
- **EM-2 mini-tower assembly, testing and delivery (one time) to Electronics for spacecraft Power Regulation Unit (PRU) testing at SLAC in early July.**
 - Took Van de Graaff and cosmic ray data with EM-2 mini-tower.
 - Electronic logbook GUIs delivered to IFCT and used in EM-2.
- **Held three Integration Readiness Peer Reviews:**
 - Integration, Facilities, Configuration, and Test (IFCT)
 - Mechanical Ground Support Equipment (MGSE)
 - Particle Test.
- **Completed online ACD veto counter support. Still need FSW contribution to deliver to ACD.**
- **90% of MGSE drawings needed for two tower integration are completed, 50% released and 40% in signoff.**
- **Held SVAC LAT Collaboration workshop at SLAC.**
- **Supported Italian LAT collaboration meeting in Bari, Italy.**

Minitower Connected to Testbed

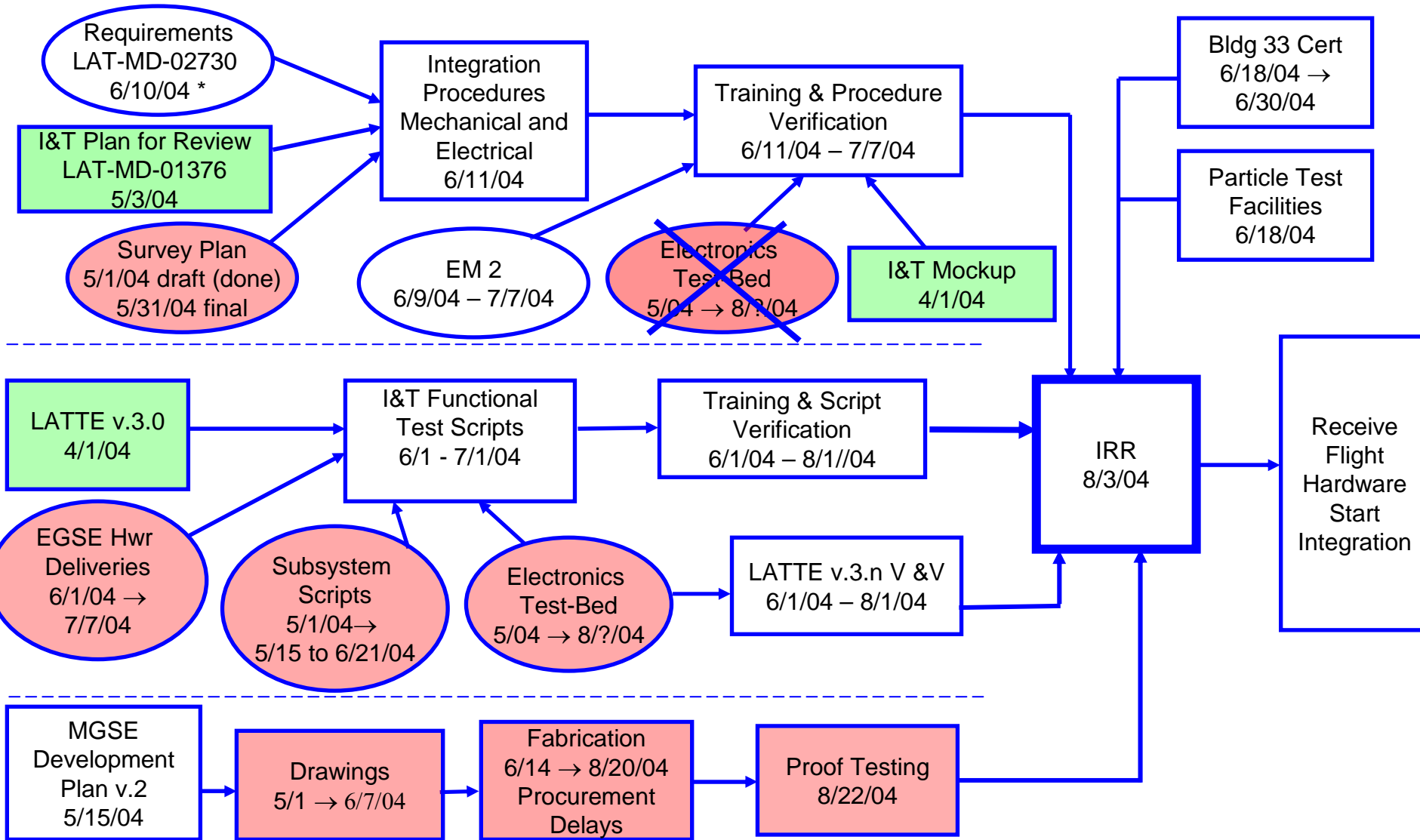


All positions have been filled

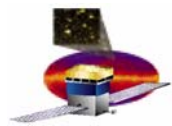




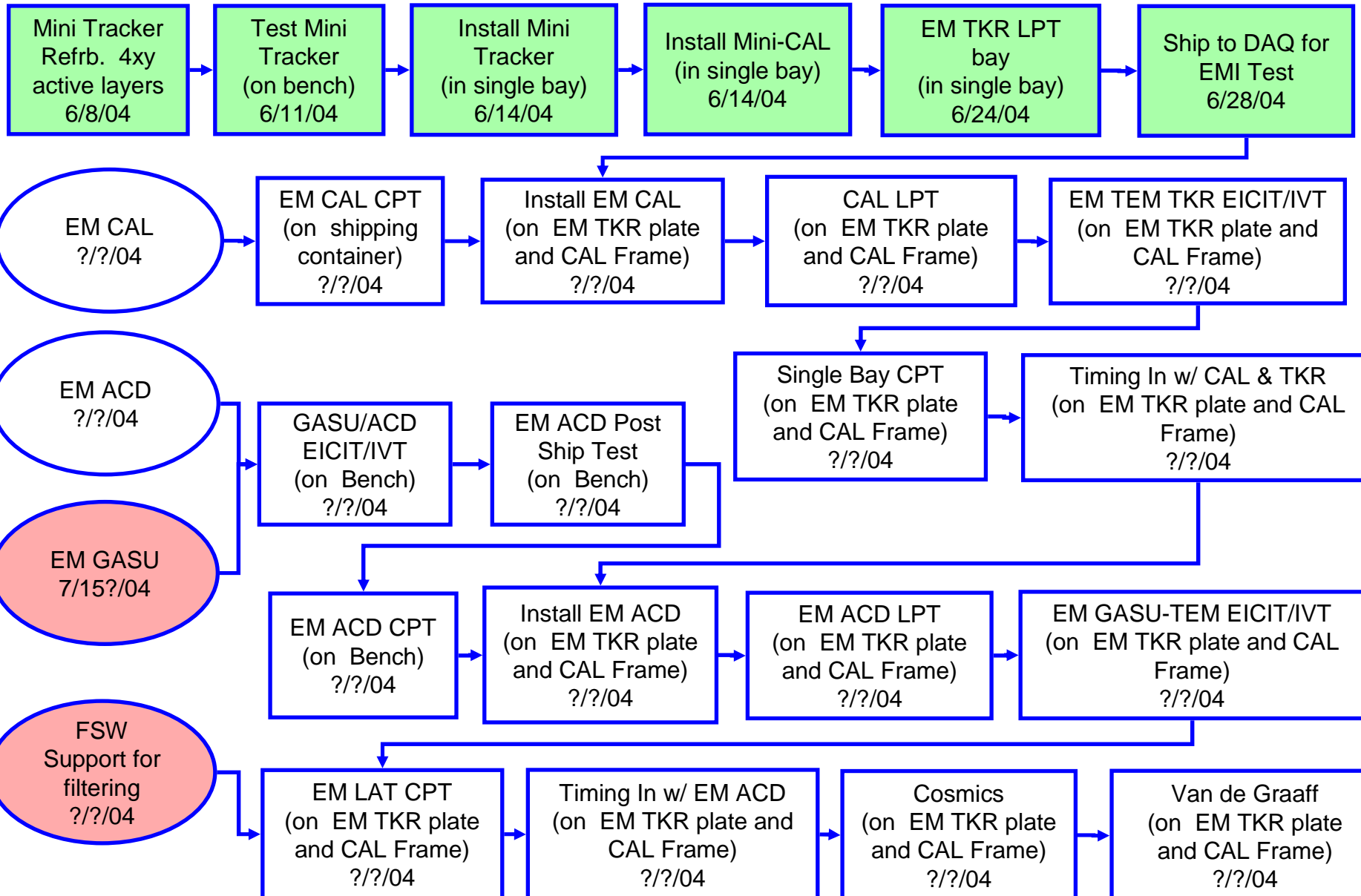
I&T Overview to Start of Integration (1 and 2 tower) / Key-Milestones for Next 3 Months

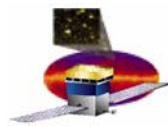


* Final though two tower CPT, releases to support integration procedure development

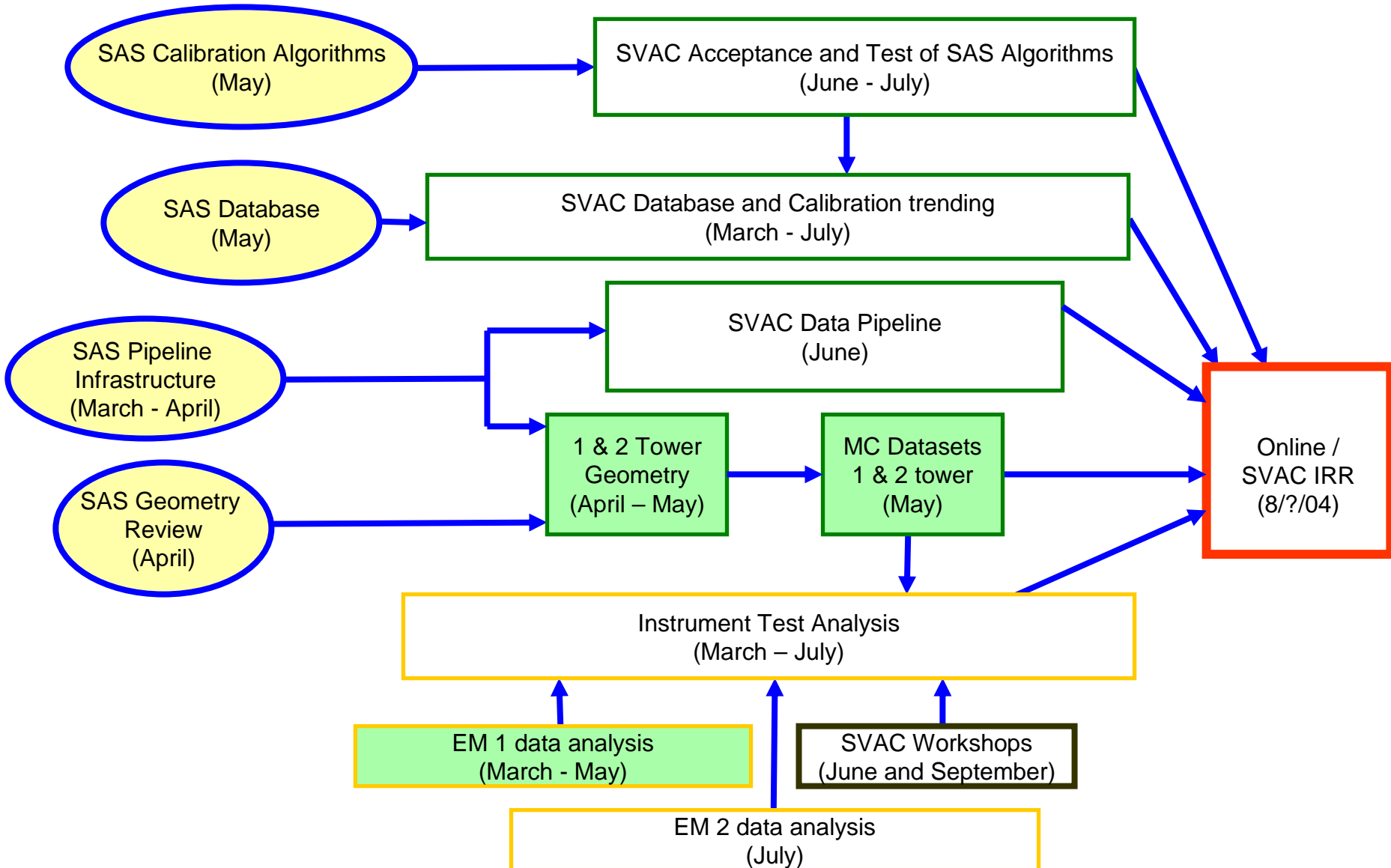


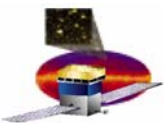
EM-2





Science Verification, Analysis, and Calibration (SVAC) - Roadmap



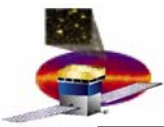


Priority Ordering for Online

1. Hardware Monitoring, Trending, and Power up.
 - Requires Ric to design – July 1 design done, and fair amount of implementation.
 - Requires FSW to provide interface – June 15 (not complete)
 - Full implementation (I&T online + ISOC) – July 15 (may be later)
2. Subsystem – I&T scripts ready to use by I&T on Flight Hardware and under configuration control.
 - Receive subsystem scripts
 - CAL – June 15
 - ELX – July 1
 - TKR – June 15
 - ACD – June 15
 - NO official delivery of scripts yet!
 - Modify subsystem scripts to I&T specification. (Delivery + 2 weeks) – Lester is gearing up for process with CAL pre-release scripts
 - Place scripts under configuration control (1 hour)
3. LATTE security against unauthorized software changes (August 1)
4. Method for full configuration tracking of all components
 - Provided method as part of the configuration files
5. V&V online system and Scripts (June 1- August 1)
6. Event “prescaling” in Event Server (done)
7. Transfer of LDF.fits, Run Configuration files, Run and Test Report files to persistent storage.
 - Transfer manually (done)
 - Transfer via OPUS (July 1 ?)
8. Electronic Logbook (July 1) – released, in review with IFCT

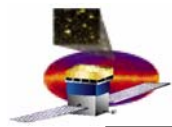
Drawing Release Plan & Status required to achieve production milestones

- **Total MGSE Drawing Sheet Count ~ 282***
 - **141 Drawing Sheets Released**
 - **94 drawing Sheets in Release Cycle by June 23**
 - **43 of these in “Pre-Release” Review**
 - **18 Drawing Sheets completed last year ready for release**
 - **For CAL Alignment Tool and Sight Gauges**
 - **253 Drawing Sheets virtually Released**
 - **(141 + 94 + 18 = 253)**
 - **29 Need to be worked, but far along in most cases**
 - **1x4 Grid Update Drawing Sheet Count TBD**



Summary of issues & concerns

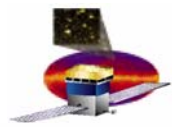
- **EM GASU ASAP**
- **Need another EM GASU from Gunther by the time of 2nd tower integration into grid.**
- **ACD EM just after delivery of GASU (need GASU to test ACD).**
- **CAL EM for about a month, week after the delivery of the GASU.**
- **FSW enabling simple filtering for high rate test of EM soon after delivery of GASU – not currently in plan.**
- **Need of get approval of management documents from project:**
 - **LAT-MD-01376, I&T Test Plan. This has been out for signoff since May 3rd. No feedback yet.**



Open Design/Engineering model/manufacturing issues and closure plan for them

- **Three peer reviews were held for I&T departments to prepare to the Integration Readiness Review:**
 - **Integration, Facilities, Configuration, and Test (IFCT)**
 - **26 RFAs collected**
 - **Mechanical Ground Support Equipment (MGSE)**
 - **13 RFAs collected**
 - **Particle Test.**
 - **9 RFAs collected**
- **Two more peer reviews will be held next month:**
 - **Online**
 - **Science, Verification, Analysis, and Calibration (SVAC)**
- **The presentations and RFA's can be viewed on the I&T website at:**

http://www-glast.slac.stanford.edu/IntegrationTest/ReadinessReviews/IRR_Peer_Reviews/IRR_Peer_Reviews.htm



Status of Subsystem's Documentation (1 of 4)

Integration and Test Document Status for Integration Readiness Review

Status as of: 6/30/2004 8:55

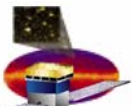
Document #	Document Title	Author	Document Number Assigned	Outline Complete	Draft Started	Draft Complete	Internal Review Complete	Draft in LATDocs	Submitted for signoff (or expected date)	DCN written	Document sent for signoff	Signed by Author	Signed by Elliott	Signed by QA	Document released	Released in LATDocs	Expected Completion Date	Comment
Integration and Test Subsystem Management Documents																		
LAT-MD-01376	LAT Integration & Test Plan	Bloom / Grist	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓				09-Jul-04	in signoff, waiting for Clinton, Marsh, Horn
Integration, Facilities, Configuration, and Test (IFCT) Documents																		
LAT-MD-01386-02	LAT Facilities Plan	Wai	✓						20-Jul-04								03-Aug-04	
LAT-PS-01586	Survey Procedures	Borden	✓	✓	✓	✓	✓		11-Aug-04								25-Aug-04	
LAT-PS-03058	Tracker Integration Procedures	Borden	✓	✓	✓	✓	✓		27-Jul-04								10-Aug-04	
LAT-PS-03263	Fastener Torquing Procedure	Borden	✓	✓	✓	✓	✓		20-Jul-04								03-Aug-04	
LAT-PS-03277	LAT test floor configuration procedure	Borden	✓	✓	✓	✓	✓		23-Jul-04								06-Aug-04	
LAT-PS-03291	Flight Hardware Bag and Purge Procedure	Borden	✓	✓	✓	✓	✓		20-Jul-04								03-Aug-04	
LAT-PS-03027	Calorimeter Integration Procedures	Ortiz	✓	✓	✓	✓			26-Jul-04								09-Aug-04	
LAT-PS-03062	Tem/TemPS Shimming Procedure	Ortiz	✓	✓					27-Jul-04								10-Aug-04	
LAT-PS-03057	Critical Operations Procedure	Ortiz	✓	✓					20-Jul-04								03-Aug-04	
LAT-PS-03060	Room 104 Access Procedure	Ortiz	✓	✓	✓	✓			20-Jul-04								03-Aug-04	
LAT-PS-03259	Menning Plate procedures	Ortiz	✓	✓	✓				01-Oct-04								15-Oct-04	

Status of Subsystem's Documentation (2 of 4)

Integration and Test Document Status for Integration Readiness Review

Status as of: 6/30/2004 8:55

Document #	Document Title	Author	Documentation Status													Comment					
			Document Number Assigned	Outline Complete	Draft Started	Draft Complete	Internal Review Complete	Draft in LATDocs	Submitted for signoff (or expected date)	DCN written	Document sent for signoff	Signed by Author	Signed by Elliott	Signed by QA	Document released		Released in LATDocs	Expected Completion Date			
	PAP Configuration Procedure	Borden								26-Aug-04										09-Sep-04	
	Load Mass simulators into GRID MGSE	Ortiz								26-Aug-04										09-Sep-04	
LAT-TD-03828	TPS Safe to mate procedure	Horwitz	✓	✓	✓	✓				20-Jul-04										03-Aug-04	
LAT-TD-03831	TEM Safe to mate procedure	Horwitz	✓	✓	✓	✓				20-Jul-04										03-Aug-04	
	GASU Safe to mate procedure	Horwitz								20-Jul-04										03-Aug-04	
	PDU Safe to mate procedure	Horwitz								20-Jul-04										03-Aug-04	
	TPS EICIT procedure	Horwitz		✓	✓	✓				20-Jul-04										03-Aug-04	
LAT-TD-03875	TEM EICIT procedure	Horwitz	✓	✓	✓	✓				20-Jul-04										03-Aug-04	
	GASU EICIT procedure	Horwitz								20-Jul-04										03-Aug-04	
	PDU EICIT procedure	Horwitz								20-Jul-04										03-Aug-04	
	TPS IVT procedure	Horwitz		✓	✓					20-Jul-04										03-Aug-04	
	TEM IVT procedure	Horwitz		✓	✓					20-Jul-04										03-Aug-04	
	GASU IVT procedure	Horwitz								20-Jul-04										03-Aug-04	
	PDU IVT procedure	Horwitz								20-Jul-04										03-Aug-04	

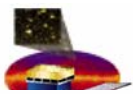


Status of Subsystem's Documentation (3 of 4)

Integration and Test Document Status for Integration Readiness Review

Status as of: 6/30/2004 8:55

Document #	Document Title	Author														Expected Completion Date	Comment									
			Document Number Assigned	Outline Complete	Draft Started	Draft Complete	Internal Review Complete	Draft in LATDocs	Submitted for signoff (or expected date)	DCN written	Document sent for signoff	Signed by Author	Signed by Elliott	Signed by QA	Document released			Released in LATDocs								
	EGSE Setup and Validation Procedures	Horwitz									20-Jul-04													03-Aug-04		
LAT-PS-03290	Tracker module test procedure	Horwitz / (Tajima)	✓								20-Jul-04													03-Aug-04		
LAT-PS-03287	Cal Module test procedure	Horwitz / (Grove)	✓								20-Jul-04													03-Aug-04		
LAT-PS-03276	Two bay CPT per procedure	Wai / Horwitz	✓								13-Sep-04													27-Sep-04		
	Multi bay LPT	Wai / Horwitz									31-Jul-04													13-Aug-04		
Mechanical Ground Support Equipment (MGSE) Documents, except drawings																										
LAT-MD-01462	MGSE Development Plan	Gawehn	✓								02-Jul-04															
LAT-MD-01598	LAT Weight and CG Test Plan	Gawehn	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Released		
	GPR onto rotation Stand MGSE	Gawehn									29-Jul-04													31-Aug-04		
	Grid integration into GPR MGSE	Gawehn									26-Aug-04													9-Sep-04		
	4x4 Stand Operations Manual	Gawehn									29-Jul-04													31-Aug-04		
	1x4 Lift Fixture Installation and Removal	Gawehn									20-Jul-04													3-Aug-04		
	4x4 Lift Fixture Installation and Removal	Gawehn									29-Jul-04													31-Aug-04		
	4x4 Stand Proof Test	Gawehn									29-Jul-04													31-Aug-04		

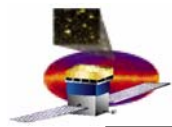


Status of Subsystem's Documentation (4 of 4)

Integration and Test Document Status for Integration Readiness Review

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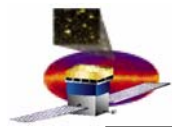
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Online Documents																				
LAT-MD-01533	EGSE Plan	Claus / Horwitz	✓						??/??/04										??/??/04	
	Others ????																			
Science Verification Analysis and Calibration (SVAC) Documents																				
LAT-MD-00446	SVAC Plan	do Couto E Silva	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Released	
LAT-MD-01587	SVAC Test Plan	do Couto E Silva	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Released	
	Others ????																			
Particle Test Documents																				
LAT-TD-00440-04	LAT Particle Test Plan	Godfrey	✓						9-Jul-04									23-Jul-04	Version 3 released, must update	
LAT-TD-01396	Calibration of the Van de Graaff Photon Flux	Godfrey	✓	✓	✓	✓			9-Jul-04									23-Jul-04		
LAT-TD-01805-02	Van de Graaff Accelerator Safety/Operations Handbook	Godfrey	✓	✓	✓	✓			9-Jul-04									23-Jul-04		
LAT-PS-04133	Procedure to Take Simultaneous BGO and LAT Data	Godfrey	✓	✓	✓				9-Jul-04									23-Jul-04		
LAT-PS-04134	Procedure for Setting the LAT Timing Registers	Godfrey	✓	✓	✓	✓			9-Jul-04									23-Jul-04		
LAT-PS-04135	Procedure for Measuring the LAT Trigger Jitter using the Muon Telescope	Godfrey	✓	✓	✓	✓			9-Jul-04									23-Jul-04		
LAT-TD-04136	Van de Graaff and Cosmic Data Runs for LAT Integration	Godfrey	✓	✓					9-Jul-04									23-Jul-04		



Cost and Schedule Status

	WBS	BAC	BCWS	BCWP	ACWP	SV \$	CV \$	% BCWS	% BCWP	% ACWP	SPI Trend	CPI Trend	SPI	CPI	Cpi_Fcst	CpiSpi_Fcst
65	4.1.9	7,373	4,057	3,874	3,876	-183	-2	55.02	52.53	52.56	↔	↑	0.955	0.999	7,377	7,543

- **Cumulative Schedule Variance (end of May)**
 - **Work Scheduled: 4057 k\$; Work Performed: 3874 k\$**
 - **Schedule Variance: -183k\$ (-4.5%)**
 - -120k\$ in MGSE (1x4 lift fixture, LAT Grid Perimeter Ring and Attach Brackets, proof support stand, LAT lifting fixture, ground heat exchanger, shipping container for vib, other misc. MGSE). Change request on the CCB list for today to adjust schedule and funding.
 - -62k\$ in IFCT department (test procedure development, grid preparations, install test stands, test installed stands, survey and alignments)
- **Cumulative Cost Variance (end of May)**
 - **Work Performed: 3874 k\$; Actual Cost: 3876 k\$**
 - **Cost Variance: -2k\$ (~0%)**



4.1.9 Change Requests and Lien List

- Need to approve and implement change request LAT-XR-03452 to reschedule and re-plan MGSE. This CR is on the CCB list for today
- Implement change requests for the items on the I&T lien list.

		Year		
Subsystem	Item	FY04	FY05	Grand Total
4.1.9 I&T	Additional IFCT Design Support	43	19	62
	Breakout Boxes & Test Cables	45	0	45
	Connector Mate Tool for TEM	40	0	40
	Continued I&T Manpower Increase (amount TBD)	0	408	408
	Engineering Manager	89	209	298
	Integration Start Delay (amount TBD)	0	117	117
	Mechanical Integration Tools & Training	23	0	23
	NRL Environmental Test Support	75	425	500
	Online Software, SVAC, ISOC, FSW changes	-258	-221	-479
4.1.9 I&T Total		57	957	1,014