



Gamma-ray Large Area Space Telescope



GLAST Large Area Telescope: I & T Input to Monthly Technical/Cost/Schedule Review 04/26/05

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Agenda

- Each Subsystem Manager Should Present the following:
- Technical Status:
 - Last Month's Accomplishments
 - Near-term Milestones & Status towards them for next 3 months (from F2F)
 - Drawing Release Plan & Status required to achieve production milestones
 - Summary of issues & concerns
 - Open Design /manufacturing issues and closure plan for them
 - Status of Subsystem's Documentation & qualification program
- Cost & Schedule Status:
 - Present charts showing cost, schedule, and manpower status (will be supplied by the project controls team). Explain variances appearing on each chart, assess impacts, and identify corrective actions.



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 Last Month's Accomplishments (1 of 3)

- Management
 - 63 of 69 I&T documents and procedures in review/approval cycle.
 - Tracking hardware shortages for LAT integration.
 - Current shortages:
 - Grid temp sensor cable assembly (LAT-DS-5073) ECD 4/26
 - TEM GASU Cable (LAT-DS-2106) ECD 5/16
- IFCT
 - Two-Tower Test
 - Completed Bay 0 post-integration tests
 - Completed Bay 4 post-integration tests
 - Completed installation of Two-Tower Test EGSE
 - Completed Two-Tower EGSE Procedures
 - Completed two-tower test plan

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Last Month's Accomplishments (2 of 3)

• SVAC

GLAST LAT Project

- Studying effects at the % level on tower A data
 - Debugging data processing chain
 - Learning how the instrument works
- Improvements in infrastructure
 - Smooth and expedient CCB process
 - Acquiring experience with reprocessing
- Got more collaborators on board
 - Summer students are coming
 - More participation from Italy
- MC generation for two towers with calibrations



GLAST LAT Project Last Month's Accomplishments (3 of 3)

- Online
 - LATTE 4.8.3 released
 - Includes HSK quantities for PDU
 - V&V'ed
 - Installed in Bldg 33 flight directories
 - LATTE 5
 - Required for flight-like operations
 - First design out for comment
 - Continued supported of CAL, TKR, INT and test suites.
 - Supported data taking, trigger and E2E script development.
 - Problem assessment and fixes a large part of online workload
 - NCRs, support for cleanroom operations, support of subsystems scripts.
 - CCB activity and JIRA maintenance



LATTE 5 overview (R. Claus as interpreted by E. Bloom)





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I&T Two Tower Activites



Removal of TKR A from the Single Bay Stand



TKR A into the Grid



CAL/TEM A into the Grid



TKR B into the Grid



CAL/TEM B into the Grid



Two towers in one week!



GLAST LAT Project Technical/Cost/Schedule Review 04/26/05 I&T NCRs by Month Open/Closed Status



^{4.1.9 -} Integration and Test



Procedure Status

- 69 documents total •
- 63 latest versions submitted for sign-off
- 58 are released





GLAST LAT Project Technical/Cost/Schedule Review 04/26/05 Procedure Status (1 of 6) – Management

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Manage.	LAT-MD-01376-02	LAT Integration & Test Plan	Bloom / Fouts / Grist	~	~	~	~	~	~	01-Apr-05	~	~	~	~	~			01-May-05	Remaining Signatures: Horn, Hascall, Ritz, Nordby
Manage.	LAT-TD-04542-01	ACD Subsystem to LAT I&T Deliverables MOU	Bloom / Bright	~	~	~	~		N/A	06-May-05								20-May-05	
Manage.	LAT-TD-04543-01	CAL Subsystem to LAT I&T Deliverables MOU	Bloom / Bright	<	<	~	~	~	N/A	07-Oct-04	~	~	<	<	<	~	~	17-Nov-04	
Manage.	LAT-TD-04544-01	Mechanical and TCS Subsystem to LAT I&T Deliverables MOU	Bloom / Bright	<	<	<	<	~	N/A	18-Feb-05	~	~	<	<	<	~	~	24-Feb-05	
Manage.	LAT-TD-04546-01	ELX/T&DF Subsystem to LAT I&T Deliverables MOU	Bloom / Bright	~	~	~	~	~	N/A	27-Aug-04	~	~	~	~	~	~	~	04-Oct-04	
Manage.	LAT-TD-04547-01	TKR Subsystem to LAT I&T Deliverables MOU	Bloom / Bright	~	~	~	~		N/A	Past Due								09-May-05	Dave Rich reviewing with TKR team
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Procedure Status (2 of 6) – Online

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Online	LAT-MD-04601-01	LAT I&T E-Logbook Implementation	Kavelaars / Fouts	~	~	~	~	~	~	01-Nov-04	~	~	~	~	<	~	~	13-Dec-04	
Online	LAT-PS-05664-02	LAT I&T E-Logbook Test Proc.	Kavelaars	~	~	~	~	~	~	25-Mar-05	~	~	~	~	<	~	~	30-Mar-05	
Online	LAT-PS-05762-01	LATTE R4.7.1 Test Procedure	Claus	~	~	~	~	~	~	16-Feb-05	~	~	~	~	~	~	~	22-Feb-05	
Online	LAT-PS-05833-01	LATTE R4.7.3 Test Procedure	Claus	\checkmark	~	\checkmark	~	~	~	28-Feb-05	~	~	~	~	~	~	~	28-Feb-05	
Online	LAT-PS-06137-01	LATTE R4.7.4 Test Procedure	Claus	$\mathbf{\mathbf{\mathbf{x}}}$	~	\checkmark	~	~	~	01-Apr-05	~	~	~	~	~	~	~	25-Apr-05	
Online	LAT-PS-06161-01	LATTE R4.7.5 Test Procedure	Claus	~	~	~	~	~	~	01-Apr-05	~	~	~	~	~	~	~	25-Apr-05	
Online	LAT-PS-06121-01	LATTE Base Test Procedure	Claus	$\mathbf{\mathbf{Y}}$	~	\checkmark	~	~	\$	01-Apr-05	~	~	~	~	~	~	~	25-Apr-05	
Online	LAT-PS-06122-01	LATTE R4.8.0 Test Procedure	Claus	$\mathbf{\mathbf{Y}}$	~	>	~	~	~	01-Apr-05	~	~	~	~	~	~	~	25-Apr-05	
Online	LAT-PS-06309-01	LATTE R4.8.1 Test Procedure	Claus	~	~	~	~	~	~	12-Apr-05	~	~	~	~	~	~	~	14-Apr-05	
Online	LAT-PS-06348-01	LATTE R4.8.2 Test Procedure	Claus	~	~	~	~	~		20-Apr-05	~	~	~	~	~			01-May-05	
Online	LAT-PS-06373-01	LATTE R4.8.3 Test Procedure	Claus	~	~	~	~			20-Apr-05	~	~	~	~	~			01-May-05	

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Procedure Status (3 of 6) - MGSE

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MGSE	LAT-MD-01462-02	MGSE Development Plan	Fouts / Olson	~	~	~				Past Due								09-May-05	
MGSE	LAT-PS-04227-01	Integration Stand Operations Manual	Olson	<	<	~				Past Due								09-May-05	
MGSE	LAT-PS-05137-01	Calorimeter Lift Fixture Proof Tests	Gawehn	~	~	~	~	~	~	09-Dec-04	~	~	~	~	~	~	~	13-Dec-04	
MGSE	LAT-PS-05236-01	Tracker Lift Fixture Proof Tests	Borden	~	~	~	~	~	~	22-Nov-04	~	~	~	~	~	~	~	07-Feb-05	
MGSE	LAT-PS-05748-01	GPR, GPR to Grid Bracket, Support Shaft, and Base Struc. Proof Tes - Yaxis	Gawehn	~	~	~	~	~	~	07-Feb-05	~	~	~	~	~	~	~	08-Feb-05	

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Procedure Status (4 of 6) – IFCT Electrical

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IFCT- Elec	LAT-MD-01533-01	EGSE Plan	Horwitz / Wai	~	~	~	~	~	~	17-Nov-04	~	~	~	~	~	~	~	14-Dec-04	
IFCT- Elec	LAT-PS-03276-01	LAT EGSE Setup and Validation Procedure	Horwitz	\checkmark	~	~	~	~	~	19-Apr-05	~	~	~	~	~	\checkmark	~	21-Apr-05	
IFCT- Elec	LAT-PS-03287-05	Cal Module Test Procedure	Horwitz	~	~	~	~	~	~	01-Apr-05	~	~	~	~	~	~	~	08-Apr-05	
IFCT- Elec	LAT-PS-03290-03	Tracker Module Test Procedure	Canfield	\checkmark	~	~	~	~	~	09-Apr-05	~	~	~	~	~	~	~	14-Apr-05	
IFCT- Elec	LAT-TD-03875-03	TEM EICIT Procedure	Horwitz	\checkmark	~	~	~	~	~	21-Mar-05	~	~	~	~	~	\$	~	25-Mar-05	
IFCT- Elec	LAT-TD-04097-03	TEM SVT Procedure	Horwitz	~	~	~	~	~	~	25-Mar-05	~	~	~	~	~	~	~	29-Mar-05	
IFCT- Elec	LAT-TD-04098-01	TPS SVT Procedure	Horwitz	\checkmark	~	~	~	~	~	19-Jul-04	~	~	~	~	~	\checkmark	~	29-Oct-04	
IFCT- Elec	LAT-TD-04099-03	TPS EICIT Procedure	Horwitz	~	<	~	~	~	~	19-Apr-05	~	~	~	~	~	~	~	21-Apr-05	
IFCT- Elec	LAT-TD-04260-02	GASU EICIT Procedure	Horwitz	~	~	~	~	~	~	14-Dec-04	~	~	~	~	~	~	~	17-Dec-04	
IFCT- Elec	LAT-TD-04325-01	Acceptance Test Procedure, Break out Boxes and Cables	Horwitz	\checkmark	~	~	~	~	~	12-Nov-04	~	~	~	~	~	\$	~	16-Nov-04	
IFCT- Elec	LAT-TD-04332-04	PDU EICIT Procedure	Horwitz	~	~	~	~	~	~	04-Apr-05	~	~	~	~	~	~	~	15-Apr-05	
IFCT- Elec	LAT-TD-04382-01	Flight GASU SVT Procedure	Horwitz	~	<	~				Past Due								09-May-05	
IFCT- Elec	LAT-TD-04384-03	Flight PDU SVT Procedure	Horwitz	~	<	~	~	~	<	18-Apr-05	~	~						08-May-05	Remaining Signatures: QA, Patterson, Haller
IFCT- Elec	LAT-PS-04511-02	Data Collection Procedure	Horwitz	~	<	~	~	~	~	19-Apr-05	~	~	~	~	~	~	~	25-Apr-05	
IFCT- Elec	LAT-PS-04512-01	Single Tower Test Procedure	Horwitz	\checkmark	~	~	~	~	~	19-Apr-05	~	~	~	~	~	\$	~	25-Apr-05	
IFCT- Elec	LAT-PS-05504-01	Computing Infrastructure	Canfield	~	~	~	~	~	~	28-Jan-05	~	~	~	~	~	~	~	02-Feb-05	
IFCT- Elec	LAT-PS-05527-05	I&T Test Stand Setup Procedure	Horwitz	~	~	~	~	~	~	06-Apr-05	~	~	~	~	~	~	~	06-Apr-05	
IFCT- Elec	LAT-PS-05736-02	LATTE and Components Installation	Canfield	~	~	~	~	~	~	23-Feb-05	~	~	~	~	~	~	~	23-Feb-05	
IFCT- Elec	LAT-PS-06228-01	Automated Test Equipment Safe Connection	Horwitz	~	<	~	~	~	<	31-Mar-05	~	~	<	~	~	~	~	31-Mar-05	

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Procedure Status (5 of 6) – IFCT Mechanical

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IFCT- Mech	LAT-MD-01386-02	LAT Facilities Plan	Borden	~	~	~	~	~	~	02-Feb-05	~	~	~	~	~	~	~	11-Feb-05	
IFCT- Mech	LAT-PS-03027-01	Calorimeter Integration Procedures	Ortiz	~	~	~	~	~	~	06-Aug-04	~	~	~	~	~	~	~	09-Dec-04	
IFCT- Mech	LAT-PS-03058-02	Tracker Integration Procedures	Borden	~	~	~	~	~	~	31-Mar-05	~	~	~	~	~	~	~	01-Apr-05	
IFCT- Mech	LAT-PS-03060-01	Room 104, Ingress and Egress of Large Equipment Procedure	Ortiz	~	~	~	~	~	~	27-Jul-04	~	~	~	~	~	~	~	16-Dec-04	
IFCT- Mech	LAT-PS-03062-02	Tem/TemPS Shimming Procedure	Ortiz	~	~	~	~	~	~	07-Mar-05	~	~	~	~	~	~	~	07-Mar-05	
IFCT- Mech	LAT-PS-03259-01	Shear Plate Shim Procedure	Ortiz	~	~	~	~	~	~	02-Sep-04	~	~	~	~	~	~	~	22-Nov-04	
IFCT- Mech	LAT-PS-03263-01	Fastener Installation and Torquing Procedure	Borden	~	~	~	~	~	~	13-Oct-04	~	~	~	~	~	~	~	02-Dec-04	
IFCT- Mech	LAT-PS-03281-01	LAT Test Floor Configuration Procedure	Borden	~	~	~	~	~	~	21-Jan-05	~	~	~	~	~	~	~	24-Jan-05	
IFCT- Mech	LAT-PS-03291-01	Flight Hardware Bag and Purge Procedure	Borden	~	~	~	~	~	~	28-Oct-04	~	~	~	~	~	~	~	14-Dec-04	
IFCT- Mech	LAT-PS-03481-02	GLAST LAT Integration Facility Emergency Plan	Borden	~	~	~	~	~	~	01-Oct-04	~	~	~	~	~	~	~	12-Nov-04	
IFCT- Mech	LAT-PS-04244-01	Load Mass simulators into GRID MGSE	Ortiz	~	~	~	~	~	~	16-Mar-05	~	~	~	~	~	~	~	31-Mar-05	
IFCT- Mech	LAT-PS-04436-01	AeroGo Air Bearing Reference Guide	Ortiz	~	~	~	~	~	~	02-Sep-04	~	~	~	~	~	~	~	04-Nov-04	
IFCT- Mech	LAT-PS-04459-01	Connector Mate and Demate	Manger / Horwitz	~	~	~	~	~	~	16-Dec-04	~	~	~	~	~	~	~	05-Jan-05	
IFCT- Mech	LAT-PS-04727-01	Tie Mount Bonding Procedure	Ortiz	~	~	~	V	~	~	30-Sep-04	~	~	~	~	~	~	~	17-Nov-04	
IFCT- Mech	LAT-PS-05487-01	Mobile Hydraulic Unit (MHU) Operations Procedure	Manger	~	~	~	~	~	~	17-Dec-04	~	~	~	~	~	~	~	20-Dec-04	



Procedure Status (6 of 6) – Particle & SVAC

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Particle	LAT-TD-00440-07	LAT Particle Test Plan	Godfrey	~	~	~	~			Past Due	~							09-May-05	
Particle	LAT-TD-01396-01	Calibration of the Van de Graaff Photon Flux	Godfrey	\checkmark	~	~	~	~	~	06-Aug-04	~	~	~	~	~	~	~	17-Nov-04	
Particle	LAT-TD-01805-02	Van de Graaff Accelerator Safety/Operations Handbook	Godfrey	~	~	~	~	~	~	30-Sep-04	~	~	~	~	~	~	~	14-Oct-04	
Particle	LAT-PS-04133-01	Procedure to Take Simultaneous BGO and LAT Data	Godfrey	\checkmark	~	~	~	~	~	06-Aug-04	~	~	~	~	~	~	~	17-Nov-04	
Particle	LAT-TD-04134-01	Procedure for Setting the LAT Timing Registers	Godfrey	~	~	~	~	~	~	06-Aug-04	~	<	<	~	~	~	~	18-Nov-04	
Particle	LAT-TD-04135-01	Procedure for Measuring the LAT Trigger Jitter using the Muon Telescope	Godfrey	~	~	~	~	~	~	06-Aug-04	~	~	~	~	~	~	~	18-Nov-04	
Particle	LAT-TD-04136-01	Van de Graaff and Cosmic Data Runs for LAT Integration	Godfrey	\checkmark	~	~	~	~	~	10-Feb-05	~	~	\checkmark	~	~	~	~	11-Feb-05	
Particle	LAT-TD-04419-02	Muon Telescope	Godfrey	~	~	~	~	~	~	04-Nov-04	~	~	~	~	~	~	~	18-Nov-04	
Particle	LAT-TD-04980-03	Use of an Am241 Source for High Rate Triggering	Godfrey	~	~	~	~	~	~	16-Mar-05	~	~	~	~	~	~	~	17-Mar-05	
Particle	LAT-TD-06066-01	Procedure for Use of an Am241 Source on a GLAST Tower	Godfrey	\checkmark	~	~	~	~	~	16-Mar-05	~	~	~	~	\$	~	~	30-Mar-05	
Particle	LAT-TD-06333-01	Muon Telescope for LAT	Godfrey	~	~	~	~	~	~	20-Apr-05								09-May-05	
SVAC	LAT-MD-00446-06	SVAC Plan	do Couto e Silva	~	~	~	~	~	~	24-Aug-04	~	~	~	~	~	~	~	30-Oct-04	
SVAC	LAT-MD-00575-01	SVAC Plan for LAT Integration at SLAC	do Couto e Silva	~	~	~	~	~	~	04-Nov-04	~	~	~	~	~	~	~	16-Nov-04	

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Single Tower I&T Sequence





Roadmap to Two Tower Testing





Two Tower Test Preparation

• Open EGSE Item Status

GLAST LAT Project

- PDU GASU support in the grid.
 - Complete
- Cable terminations at grid interface to EGSE
 - MGSE complete.
- EGSE locations (Test Crate and power supply).
 - Complete
- PDU Operational Constraints without SIU.
 - Complete
- Harness routings and tie downs.
 - Complete



Upcoming I&T Events

- Integration of Tower A and B into Grid & functional test (Complete)
- Two tower test (In Work)

GLAST LAT Project

- Receipt of TKR 2 from EMI Test (Complete)
- Receipt of TKR 1 and 3 (Complete)
- Receiving tests for TKR 2 ECD 4/28
- Receiving tests for TKR 1 ECD 5/2
- Receiving tests for TKR 3 ECD 5/9
- Receive TEM/TPS 1 and 2 ECD 5/9
- Tower 1 in the grid ECD 5/9
- Tower 2 in the grid ECD 5/12
- Receive TEM/TPS 3 and 4 ECD 5/16

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I&T Detail Schedule (1 of 4)

ID	Task Name	Start	% Complete	Finish	Apr '05				May	/ '05				_
225					TFM	TSW	ST	FMT	S	WS	TFM	ΤИ	S W S	5
555	Tower A	11/22/04	100%	4/7/05		\checkmark								
371	Tracker A post ship test & receiving test	1/3/05	100%	2/5/05										
412	Readiness for I&T Tracker CPT	12/10/04	100%	2/2/05										
421	I&T TKR-A Receiving Test (LAT-PS-3290)	2/4/05	100%	2/7/05										
422	Readiness for Tracker Integration	12/1/04	100%	2/10/05										
433	Readiness TEM/TPS A Integration	12/15/04	100%	3/11/05										
454	Tower-A Test Bay I&T	2/10/05	100%	4/7/05										
520	Tower B	1/10/05	88%	5/3/05						I				
521	TEM/TPS-B Safe-to-Mate	3/8/05	100%	3/8/05										
522	FM102 Post ship test and receiving test	1/10/05	100%	1/13/05										
529	Tracker B post ship test & receiving test (AIDS 751)	2/14/05	100%	2/28/05										
539	TEM/TPS-B Handover Review	3/11/05	100%	3/11/05										
540	Receive 1st EM Gasu	3/10/05	100%	3/21/05										
541	Safe-to-mate 1st EM Gasu	3/21/05	100%	3/22/05										
542	redline procedures	3/21/05	100%	3/21/05										
543	receive FM105 config file from NRL	3/22/05	100%	3/23/05										
544	Validate 1st EM Gasu	3/23/05	100%	3/25/05										
545	NCR 373 disposition work	3/24/05	100%	3/25/05										
546	TEM/TPS B Flight Readiness	3/8/05	100%	3/8/05										
547	TEM/TPS-B I&T	3/7/05	100%	3/28/05										
553	Tower-B Test Bay I&T	2/22/05	100%	4/8/05		\sim								
581	Tower-B Grid Bay I&T	3/22/05	77%	5/3/05						I				
582	TKR-B installation into grid bay	4/8/05	100%	4/11/05										
588	FM105 installation into grid bay	4/8/05	100%	4/11/05										
591	Tower-B Grid Bay Test	4/11/05	100%	4/13/05		\sim								



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GLAST LAT Project Technical/Cost/School I&T Detail Schedule (2 of 4)

ID	Task Name	Start	% Complete	Finish	Apr '05 May '05
597	Two Tower Test	3/22/05	74%	5/3/05	
598	Acceptance test EM PDU	4/6/05	100%	4/6/05	₩ <u>4/6</u>
599	Build 2 Tower Test Cables	4/6/05	100%	4/7/05	
600	Two Tower Test Power Supply Ready	4/6/05	100%	4/12/05	
601	16 port GASU with updated firmware ready	4/4/05	100%	4/4/05	₩ 4/4
602	Validate Two Tower EGSE Procedure	4/19/05	100%	4/20/05	
603	Receive EGSE bracket prints	3/22/05	100%	3/23/05	
604	Build EGSE Brackets & shelves	3/24/05	100%	4/12/05	
605	Install eLog	4/5/05	100%	4/5/05	
606	EGSE test/training in DAQ lab	4/8/05	100%	4/13/05	
607	Receive muon telelscope parts	4/12/05	100%	4/12/05	8
608	validate muon telelscope in grid	4/13/05	100%	4/13/05	
609	Update Muon telescope procedure	4/14/05	100%	4/15/05	
610	install EGSE into Grid	4/13/05	100%	4/19/05	
611	Install Latte 4.8.3	4/8/05	100%	4/19/05	
612	Add on/off switch to BPU	4/19/05	100%	4/19/05	
613	EGSE validation in rm 104	4/18/05	62%	4/22/05	■® -
614	Install facility grounding bars	4/8/05	100%	4/12/05	
615	Test EGSE in Grid	4/15/05	100%	4/18/05	1
616	Two Tower Test Pre-test review	4/12/05	100%	4/12/05	
617	Two Tower Test EGSE Ready	4/25/05	0%	4/25/05	4/25
618	Two Tower CPT	4/18/05	44%	4/25/05	are the second s
619	userAppBrowser released properly by ELX	4/18/05	100%	4/18/05	The second secon
620	userAppBrowser in INT Tag	4/18/05	100%	4/18/05	Ť
621	userApp execution on Bays 0 & 4	4/25/05	0%	4/25/05	
622	Aliveness	4/25/05	0%	4/25/05	T I
623	SVAC test run	4/25/05	0%	4/25/05	f l
624	FMA CPT	4/25/05	0%	4/25/05	f l
625	FMB CPT	4/25/05	0%	4/25/05	ř
	·				



Technical/Cost/Schedule Review 04/26/05



I&T Detail Schedule (3 of 4)

ID	Task Name	Start	% Complete	Finish	Apr'05 May'05 Ju
626	TE702, TE703, TE704 for Bays 0 & 4	4/25/05	0%	4/25/05	
627	FM104 CPT	4/25/05	0%	4/25/05	Ť
628	FM105 CPT	4/25/05	0%	4/25/05	T I
629	Two Tower Trigger tests	4/22/05	0%	5/3/05	3 3
630	NCR 422 work	4/22/05	0%	4/22/05	
631	Trigger Pre-test review	4/22/05	0%	4/22/05	
632	TREQ alignment	4/26/05	0%	4/29/05	
633	TACK optimization	5/2/05	0%	5/2/05	T T
634	trigger eff	5/2/05	0%	5/2/05	Γ Γ Γ Γ Γ Γ Γ Γ Γ Γ Γ Γ Γ Γ Γ Γ Γ Γ Γ
635	trigger eff for wide angle	5/2/05	0%	5/2/05	i i i i i i i i i i i i i i i i i i i
636	Two Tower trigger post-test review	5/2/05	0%	5/3/05	Ť
637	Two Tower Calibration	4/22/05	0%	4/27/05	1
638	CCB for CAL software release	4/22/05	0%	4/22/05	8-
639	INT tag for CAL software released	4/25/05	0%	4/25/05	The second se
640	FM104 calibDAC, MuTrig, calibGen	4/25/05	0%	4/25/05	T I
641	FM105 calibDAC, MuTrig, calibGen	4/25/05	0%	4/26/05	में ।
642	TE601/602/604 for FMA	4/26/05	0%	4/26/05	F I
643	TE601/602/604 for FMB	4/26/05	0%	4/26/05	The second se
644	2 Tower calibration post-test review	4/26/05	0%	4/26/05	
645	e2e configuration validation runs	4/26/05	0%	4/26/05	
646	e2e configuration validation review	4/26/05	0%	4/27/05	
647	CSPT (STR)	4/26/05	0%	4/27/05	Ŧ
648	E2E Data Collection	4/27/05	0%	4/27/05	▲
649	E2E basic cosmics	4/27/05	0%	4/27/05	ı ل ا
650	E2E S/C Power Margin	4/27/05	0%	4/27/05	
651	E2E External pulser	4/27/05	0%	4/27/05	
652	SVAC data collection	4/28/05	0%	4/28/05	ι i i i i i i i i i i i i i i i i i i i
653	Two Tower Post Test Review	4/29/05	0%	4/29/05	T T

Technical/Cost/Schedule Review 04/26/05



I&T Detail Schedule (4 of 4)

ID	Task Name	Start	% Complete	Finish	Apr'05 May'05 .
654	Tower 1	12/6/04	23%	5/16/05	
655	FM101 Post ship test and receiving test	12/6/04	100%	1/14/05	
663	Tracker 2 post ship test & receiving test	4/4/05	25%	4/29/05	s
676	TEM/TPS 1 Flight Readiness w/rework	5/9/05	0%	5/9/05	5/9
677	Bays 4&5 TEM-GASU Flight cables ready	5/9/05	0%	5/9/05	5/9
678	Bays 4&5 TPS-PDU flight cables ready	5/9/05	0%	5/9/05	5/9
679	Receive purge groove cables	5/9/05	0%	5/9/05	n n n n n n n n n n n n n n n n n n n
680	install purge groove cables Bay 5	5/10/05	0%	5/10/05	Ť
681	TEM/TPS-1 I&T	5/9/05	0%	5/10/05	
687	Tower-1 Grid Bay I&T	4/26/05	0%	5/16/05	
688	Finish NCR 422 disposition	4/26/05	0%	4/26/05	4/26
689	complete Tracker flex cable tool mods	4/28/05	0%	4/28/05	۵ ۱
690	validate TKR flex cable tool mods	4/29/05	0%	4/29/05	Ĩ
691	update CAL integration procedure	4/28/05	0%	4/28/05	1
692	TKR-2 installation into grid bay	5/10/05	0%	5/11/05	
697	FM102 installation into grid bay	5/11/05	0%	5/11/05	
700	Tower-1 Grid Bay Test	5/11/05	0%	5/16/05	S-8
707	Tower 2	12/6/04	3%	8/9/05	
708	FM104 Post ship test and receiving test	12/6/04	100%	1/14/05	
716	Tracker 1 post ship test & receiving test	4/28/05	0%	5/5/05	3 7 - 78
724	Sell TKR-1 to I&T	5/5/05	0%	5/6/05	D
725	I&T TKR-1 Receiving Test (LAT-PS-3290)	5/6/05	0%	5/9/05	
726	TEM/TPS 2 Flight Readiness	5/9/05	0%	5/9/05	5/9
727	TEM/TPS-2 I&T	5/9/05	0%	8/9/05	
733	Tower-2 Grid I&T	4/5/05	0%	5/20/05	
752	Tower-2 Grid Bay I&T	5/20/05	0%	6/10/05	



GLAST LAT Project Technical/Cost/Schedule Review 04/26/05 I&T 9 Month Look Ahead (1 of 3)

ID	Task Name	Duration	Start	Finish	Feb '05 Mar '05 Apr '05 May '05 Jun '05 Jul '05 Aug '05 Sep '05	
					30 6 13 20 27 6 13 20 27 3 10 17 24 1 8 15 22 29 5 12 19 26 3 10 17 24 31 7 14 21 28 4 11	18 25
1	LAT Integration Plan	429.31 days	3/19/04	1/11/06	j	_
2	Grid RFI	0 days	10/22/04	10/22/04	4	
3	X-LAT Thermal Plate RFI	0 days	6/1/05	6/1/05	5	
4	Radiators RFI	0 days	5/31/05	5/31/05	5 5/31	
5	Tracker Receiving	147.81 days	2/4/05	9/16/05	j 🗸	
86	Calorimeter Receiving	133.31 days	12/8/04	6/29/05	j	
177	Electronics Receiving	349.81 days	3/19/04	9/2/05		
178	Cables	81.63 days	2/10/05	6/14/05		
197	TEM Assemblies	107.38 days	2/18/05	8/1/05		
216	TEM PS Assemblies	107.38 days	2/18/05	8/1/05		
235	Electronic Boxes	349.81 days	3/19/04	9/2/05		
243	ACD Receiving	0 days	6/9/05	6/9/05	i 6/9	
245	Grid Assemby in I&T	76.19 days	11/1/04	2/25/05		
246	Grid Assembly	55.19 days	11/1/04	1/25/05	5	
266	Grid Box Base Assy Inspection and Fitcheck	21 days	1/25/05	2/25/05		
276	TEM to Calorimeter	116.88 days	2/7/05	8/2/05		
277	Calorimeter A	9 days	2/7/05	2/21/05		
280	Calorimeter B	6.63 days	2/25/05	3/8/05		
283	Calorimeter 1	16.44 days	3/30/05	4/22/05	j j	
286	Calorimeter 2	1.44 days	4/28/05	4/29/05		
289	Calorimeter 3	4.69 days	4/29/05	5/6/05	j	
292	Calorimeter 4	4.69 days	5/6/05	5/13/05	j	
295	Calorimeter 5	4.69 days	5/13/05	5/20/05		
298	Calorimeter 6	4.69 days	5/20/05	5/27/05	j	
301	Calorimeter 7	5.19 days	5/27/05	6/6/05	j	
304	Calorimeter 8	4.69 days	6/6/05	6/13/05	j	
307	Calorimeter 9	4.69 days	6/13/05	6/20/05	j	
310	Calorimeter 10	4.69 days	6/20/05	6/27/05	j	
313	Calorimeter 11	4.69 days	6/27/05	7/5/05		
316	Calorimeter 12	4.69 days	7/5/05	7/12/05		
319	Calorimeter 13	4.69 days	7/12/05	7/19/05		
322	Calorimeter 14	4.69 days	7/19/05	7/26/05		
325	Calorimeter 15	3.75 days	7/26/05	8/1/05		
328	Calorimeter 16	1 day	8/1/05	8/2/05		



GLAST LAT Project Technical/Cost/Schedule Review 04/26/05 I&T 9 Month Look Ahead (2 of 3)

ישו	Lask Name	Duration	Start	Finish	Feb '05 Mar '05	Ar	or '05	May '05	Jun '05	Jul '05	Aug '05	Sep '05
					30 6 13 20 27 6 1	13 20 27 3	3 10 17 24	1 8 15 22 2	29 5 12 19 20	6 3 10 17 24	31 7 14 21	28 4 11 18 25
331	Calorimeter/Tracker/TEM/TEM-PS Test	132.88 days	2/21/05	9/9/05								
332	Tower A	26 days	2/21/05	3/30/05								
335	Tower B	2 days	3/30/05	4/1/05								
338	Tower 1	1 day	4/22/05	4/25/05								
341	Tower 2	1 day	4/29/05	5/2/05			ς.	~				
344	Tower 3	1 day	5/6/05	5/9/05								
347	Tower 4	1 day	5/19/05	5/20/05				~				
350	Tower 5	1 day	6/8/05	6/9/05								
353	Tower 6	1 day	6/21/05	6/22/05					~			
356	Tower 7	1 day	7/1/05	7/5/05								
359	Tower 8	1 day	7/12/05	7/13/05								
362	Tower 9	1 day	7/21/05	7/22/05						N		
365	Tower 10	1 day	8/1/05	8/2/05								
368	Tower 11	1 day	8/10/05	8/11/05							×	
371	Tower 12	1 day	8/19/05	8/22/05								
374	Tower 13	1 day	8/30/05	8/31/05								
377	Tower 14	1 day	9/8/05	9/9/05								×
380	Tower Installation	108.88 days	4/1/05	9/15/05								
381	Install Tower A	3 days	4/5/05	4/8/05			\sim					
385	Install Tower B	3 days	4/1/05	4/6/05								
389	2 Tow er CPT	10 days	4/8/05	4/25/05		0%	6					
390	Install Tower 1	2.5 days	4/25/05	4/28/05								
397	Install Tower 2	2.5 days	5/2/05	5/5/05								
404	4 Tow er CPT	4 days	5/5/05	5/11/05			0	% 📑				
405	Install Tower 3	2.5 days	5/11/05	5/16/05								
412	Install Tower 4	2.5 days	5/20/05	5/24/05								
419	Install Tower 5	2.5 days	6/9/05	6/13/05					\sim			
426	Install Tower 6	2.5 days	6/22/05	6/24/05								
433	8 Tow er CPT	5 days	6/27/05	7/5/05					0%			
434	Install Tower 7	2.5 days	7/5/05	7/7/05								
441	Install Tower 8	2.5 days	7/13/05	7/15/05								
448	Install Tower 9	2.5 days	7/22/05	7/26/05								
455	Install Tower 10	3 days	8/2/05	8/5/05								
462	Install Tower 11	3 days	8/11/05	8/16/05								
469	Install Tower 12	2.5 days	8/22/05	8/24/05							~~~	
476	Install Tower 13	2.5 days	8/31/05	9/2/05								
483	Install Tower 14	3.5 days	9/9/05	9/15/05								



GLAST LAT Project Technical/Cost/Schedule Review 04/26/05 I&T 9 Month Look Ahead (3 of 3)

ID	Task Name	Duration	Start	Finish		T	1	1	1	1	1	I
	Task Name	Duration	Otart	1 111311	May '05	Jun '05	Jul '05	Aug '05	Sep '05	Oct '05	Nov '05	Dec '05
					1 8 15 22 2	29 5 12 19 26	6 3 10 17 24	31 7 14 21 2	8 4 11 18 25	2 9 16 23	30 6 13 20 2	7 4 11 18 25
491	Install Electronics and Cables	6 days	9/15/05	9/23/05								
496	16 Tow er CPT	5 days	9/23/05	9/30/05					0%	Ŀ.		
497	ACD	8 days	9/30/05	10/13/05						Y V		
501	LAT Level System Test	45 days	10/13/05	12/22/05								
507	Pack & Ship	3 days	12/22/05	1/4/06								0%
508	Deliver to NRL	5 days	1/4/06	1/11/06								0%



Online Goals for Next 6 Months

- Study & handle LATTE performance and scalability issues (use test bed)
 - Efficiency of LATTE for 16 tower running
 - Parallelize scripts for >= 4 tower LAT
- VSC support
- Rework LATTE 4 test scripts into LATTE 5 framework
 - Can get a leg up by starting this under LATTE 4
- LATTE 5
 - Understand and influence constraints from FSW and ISOC
 - Design
 - Document
 - Implement
 - Test (Test bed with VSC, offline ccsds packets from partial LAT)
 - V&V (Test bed with VSC)
 - Complete October 1, 2005.
- Develop LATTE 5 test scripts based on FSW's LCI package
- SIIS Work
 - Training
 - LATTE 5 interface V&V
- Receive ACD LATTE 4 scripts
 - Rework as needed for LAT I&T
- Support and develop NRL Environmental Test third party monitoring data stream (New work, unplanned)
 - Awaiting requirements (Jack Goodman)
- Plan, setup, and test mobile Online computing rack for NRL Environmental Test and SA Observatory Testing
- ISOC planning and support
 - June 15: Ground Readiness Test
 - LHK based Housekeeping stream from Bldg 33
- Documentation
- Online CCBs

Technical/Cost/Schedule Review 04/26/05



GLAST LAT Project Tower A tests Outside flight grid

- In a nutshell
 - CCB (CM managed software) is in place.
 - Analyzing single tower data to provide input for two tower tests.
- Goals
 - SAS code release with new TKR recon
 - More powerful tool with simpler numbering scheme
 - SAS code release with new CAL recon
 - Allows charge injection calibration using SAS software
 - **Pipeline infrastructure in progress**
 - Better dependency management for code updates
 - No issues with reprocessed data
 - Calibrations ✓
 - Populate SAS/DB with calibration constants and retrieve them from DB including validation of algorithms
 - **Trending in progress** _
 - Have to code to correlate Housekeeping data with science data but no time to look at data
 - MC generation 🗸 _
 - Generate MC data sets for 1 tower
 - Data Analysis in progress
 - Validate conversion from ELX to physical space
 - Develop analysis using TEM Diagnostics (focus is more on trigger)
 - Study effects from software "knobs" on data analysis
 - 4.1.9 Integration and Test



GLAST LAT Project Technical/Cost/Schedule Review 04/26/05 Two Tower tests inside flight grid (April)

- In a nutshell
 - We have a plan to get there. We foresee no show stoppers.
- Goals
 - Data Quality reports and configuration reports in progress
 - Received feedback from users but no time to implement them
 - Pipeline infrastructure in progress
 - Reduce time spent on maintenance
 - Better dependency management for code updates
 - Have a code review of SVAC scripts with SAS/ISOC when use is proven. This will help transition from I&T to ISOC operations.
 - Calibrations in progress
 - Received multiple tower calibration code from SAS
 - Helping SAS/CAL to validate and perform multiple tower calibrations.
 - Trending has not happen because of lack of time (need more manpower!)
 - Production calibrations must be stored and validated in SAS SQL data base.
 - Update web based trending database (SVAC) and focus on development of queries applicable for operations (with ISOC)
 - Trend calibrations
 - MC generation in progress
 - Generated MC data sets for 2 towers
 - Start MC/Data comparison aiming at LAT tests
 - Data Analysis in progress
 - Improve tools for data analysis based on feedback from users
 - Develop and test algorithms for E2E tests aiming at updating them for LAT tests
 - Data analysis for multiple towers
 - Data analysis complete with one month after data delivered.



SVAC activities – next 6 months

SVAC has 5 important phases according to hardware delivery

- 1. Tower A tests outside flight grid
- 2. Two-tower tests inside flight grid
- 3. Multiple tower tests with FSW
- 4. ACD tests at SLAC
- 5. LAT tests at SLAC and NRL
- There is a continuous process of engaging the LAT Collaboration to support offline data analysis through the Instrument Analysis Workshops
 - Workshop 3 March 10, 2005 with single tower data Great Start (45 registered, more showed up)
 - SAS Annual Workshop in Italy Eduardo will go there to try to ramp up the Italian effort for the instrument analysis
 - Workshop 4 Summer 2005(TBR) data from 8 (TBR) towers
 - Workshop 5 TBD LAT data analysis and MC validation



Issues & Concerns

<u>ISSUES</u>

- Availability of flight assembly hardware.
 - Shortages identified by I&T and being worked with Subsystems.
 - **TEM/TPS** Deliveries
 - Flight Cables
- <u>CONCERNS</u>



4.1.9 - Integration and Test

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

Technical/Cost/Schedule Review 04/26/05



4.1.9 Level 3 Milestone Count





Level 3 Milestone List

	AV	Activity	ND	Activity	Baseline Finish	I -1m Var	Bsin Var	Early Finish	FY05			and a		FY06									
1	nstri	iment Project	Offi	ce (Level 3)	1 111311	v ui	Vui	1 111311	FEB MA		<u>'H MA</u>		JUL	AUGS	EP OC			JAN	FEB		PH MA	JUN	JULU
Ē	4.1.9	1&T																					
lΓ																							
	9	1M99010	9	Start 2 Tower Comprehensive Performance Test	04/20/05	6	4	04/14/05	1	∇	,												
	9	1M99020	9	Start 4 Tower Comprehensive Performance Test	05/12/05	6	1	05/11/05			$ \nabla$												
	9	1M99030	9	Start 8 Tower Comprehensive Performance Test	06/20/05	0	-4	06/24/05	1				1										
	9	1M1001740	В	Online FU S/W Final Release-I&T to IOC	07/14/05	0	0	07/14/05					¥										
	9	1M99040	9	Start 16 Tower Comprehensive Performance Test	09/07/05	0	-4	09/13/05	1					∇	7								
	9	1M1000130	9	LAT Ready to Ship to NRL for Env Test	12/20/05	0	-9	01/10/06									•	\bigtriangledown					
	9	1M19010	9	Ship LAT to NRL for Env Test	01/03/06	0	-13	01/16/06		1								∇					
	9	1M19020	9	LAT EMI/EMC Test	02/01/06	1	-14	02/15/06											, ▽				
	9	1M19030	9	LAT Sine Vibe	02/14/06	1	-14	02/28/06											↓				
	9	1M19040	9	LAT Acoustic Test	02/24/06	0	-16	03/12/06		1									7	7			
	9	1M19050	9	LAT TVAC	04/14/06	0	-15	04/29/06												•	\forall		
	9	1M19060	9	LAT Weight & CG	04/17/06	1	-14	05/01/06													, 🔶		
	9	1M19070	9	Ship LAT to Spectrum Astro	04/21/06	0	-16	05/07/06		1													
Rı	in Dat	e		04/22/05 11:40		GLAST	LAT PRC	JECT					Ľ	T-DA: Bas	eline Va	riance					1	Report #	10
Da	ita Da	te		04/01/05	Decelling Mr. 1	Level	3 Milesto	ones					F	L-D4: AV:	Level 3	Milesto	nes					Shee	t 1
© Primavera Systems, Inc. Baseline Variance (Organized by Subsystem								m)															



GLAST LAT Project Milestone Variance Explanation

- Schedule Impact
 - Late start will be minimized with extended shift testing and weekend work as required.
 - Two tower test scheduled to complete 4/30
- **Cost Impact**
 - None
- **Corrective Action**
 - Non



Cost Report

Reporting Category		st Incurred/	Hours Wor	ked	Estimate	d Cost/Hou	urs to Complete	Estimate	Unfilled	
								Cost/H	lours	Orders
	During Month		Cum. t	o Date	De	tail	Balance of	Contractor	Contract	Outstanding
	Actual	Planned	Actual	Planned	APR05	MAY05	Contract	Estimate	Value	
4.1.9 INTEGRATION & TEST										-
4.1.9.1 I&T MANAGEMENT	7	56	1,017	1,069	47	47	242	1,354	1,354	C
4.1.9.3 INSTR OPS COORDINATOR	0	2	31	31	0	0	0	31	31	
4.1.9.4 MECH GROUND SUPT EQUIP	176	30	1,971	1,864	20	29	79	2,098	2,098	1
4.1.9.5 ONLINE SOFTWARE	0	0	654	654	0	0	0	654	654	
4.1.9.6 INTEG, FACILITIES, CONFIG & TEST	188	290	2,625	2,864	252	178	1,164	4,219	4,219	11
4.1.9.7 PARTICLE TEST	2	4	43	48	0	0	5	48	48	4
4.1.9.8 ENVIRONMENTAL TEST	31	34	283	216	167	74	224	747	747	
4.1.9.9 SCIENCE VERIFICATION, ANALYSIS & CALIBRATION	0	0	300	300	0	0	0	300	300	
CAPW[3]Totals:	403	415	6,923	7,045	486	327	1,715	9,451	9,451	16

Technical/Cost/Schedule Review 04/26/05



GLAST LAT Project Technical/Cost/Sch Cost Variance Explanation

- Why overrun/underrun?
 - No significant overrun/underrun
- What will be done to correct?
 - No corrective action required



FTE Report (DOE/NASA-funded only)





GLAST LAT Project Technical/Cost/Scl FTE Variance Explanation

- Why overrun/underrun?
 - Overrun due to additional SLAC in-house support required to complete MGSE and EGSE.
 - Current actual cost is within budget.
- What is the impact?
 - We are able to maintain schedule within current budget by completing work with additional in-house labor.
- What will be done to correct?
 - No action required