

# GLAST Large Area Telescope:

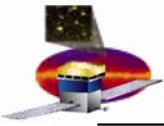
## I&T Integration Kickoff Meeting

### IFCT – Status of Procedures & Operations Planning

**March 9th, 2004**

**Larry Wai – IFCT Manager  
Tom Borden – IFCT Engineer**

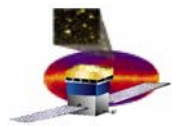
**wai@slac.stanford.edu  
tborden@slac.stanford.edu**



# Outline

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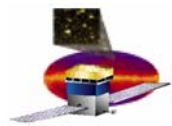
- 1. Overview of IRR prep activities**
- 2. Single bay I&T overview**
- 3. Single bay procedures**
- 4. Multi-bay I&T overview**
- 5. Multi-bay procedures**
- 6. ACD/X-LAT I&T overview**
- 7. ACD/X-LAT procedures**
- 8. Daily operations planning**
- 9. Mate/de-mate log**
- 10. Summary / concerns**



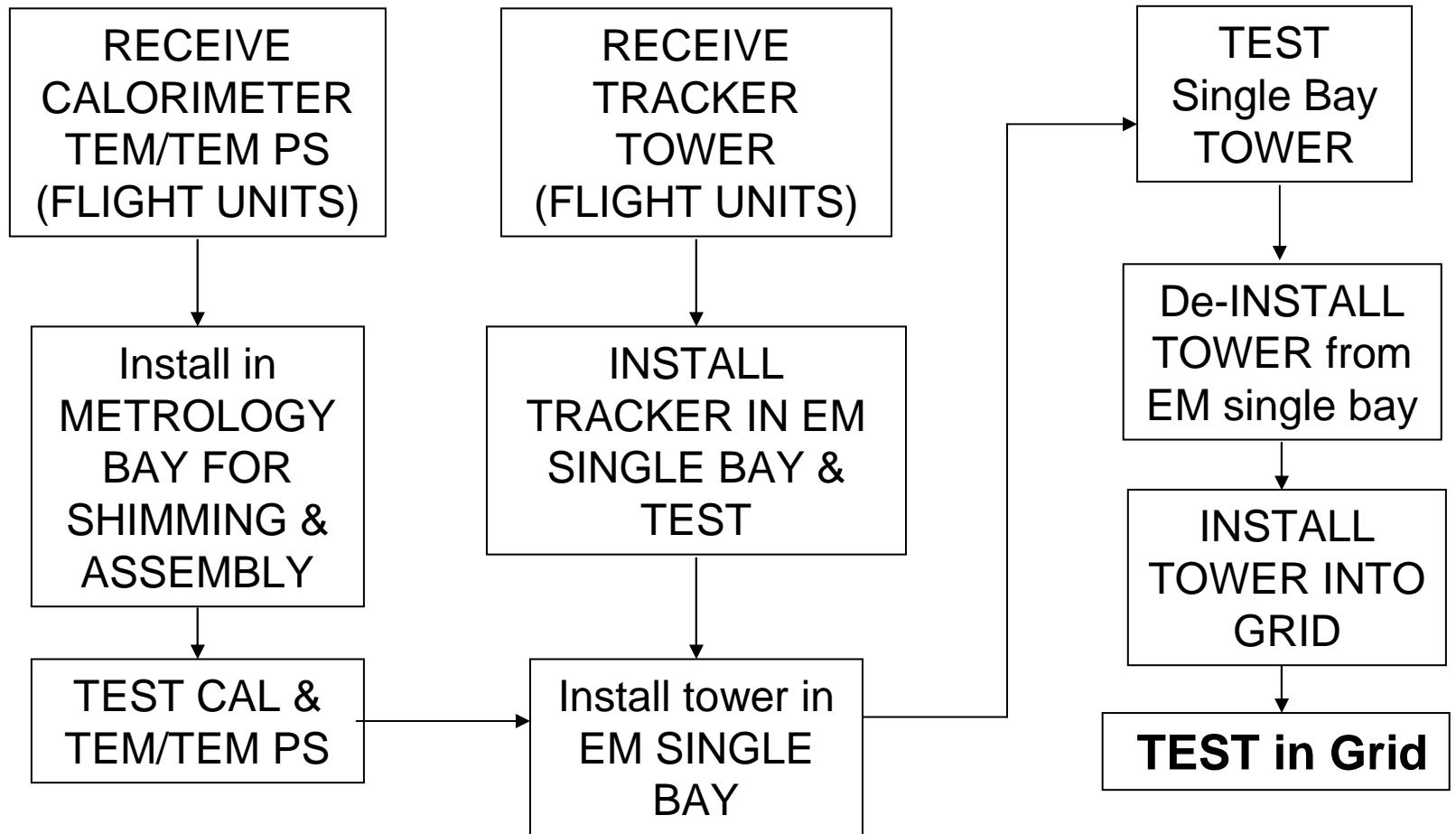
# 1. IFCT prep for IRR

Activity	March	April	May	June
Procedure writing	Orange			
Mock-ups prep	Yellow			
Mock-ups training		Orange		
Facility/VDG prep	Pink			
Facility/VDG maint.			Magenta	
EM2 prep	Green			
EM2 training			Dark Green	
Test bed prep	Cyan			
Test bed training			Blue	
Dept. Management	Dark Blue			

Tom Borden holds the detailed schedule / manpower loading

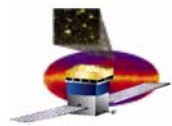


## 2. Single Bay I&T (LAT-MD-676, Sec. 11-12)

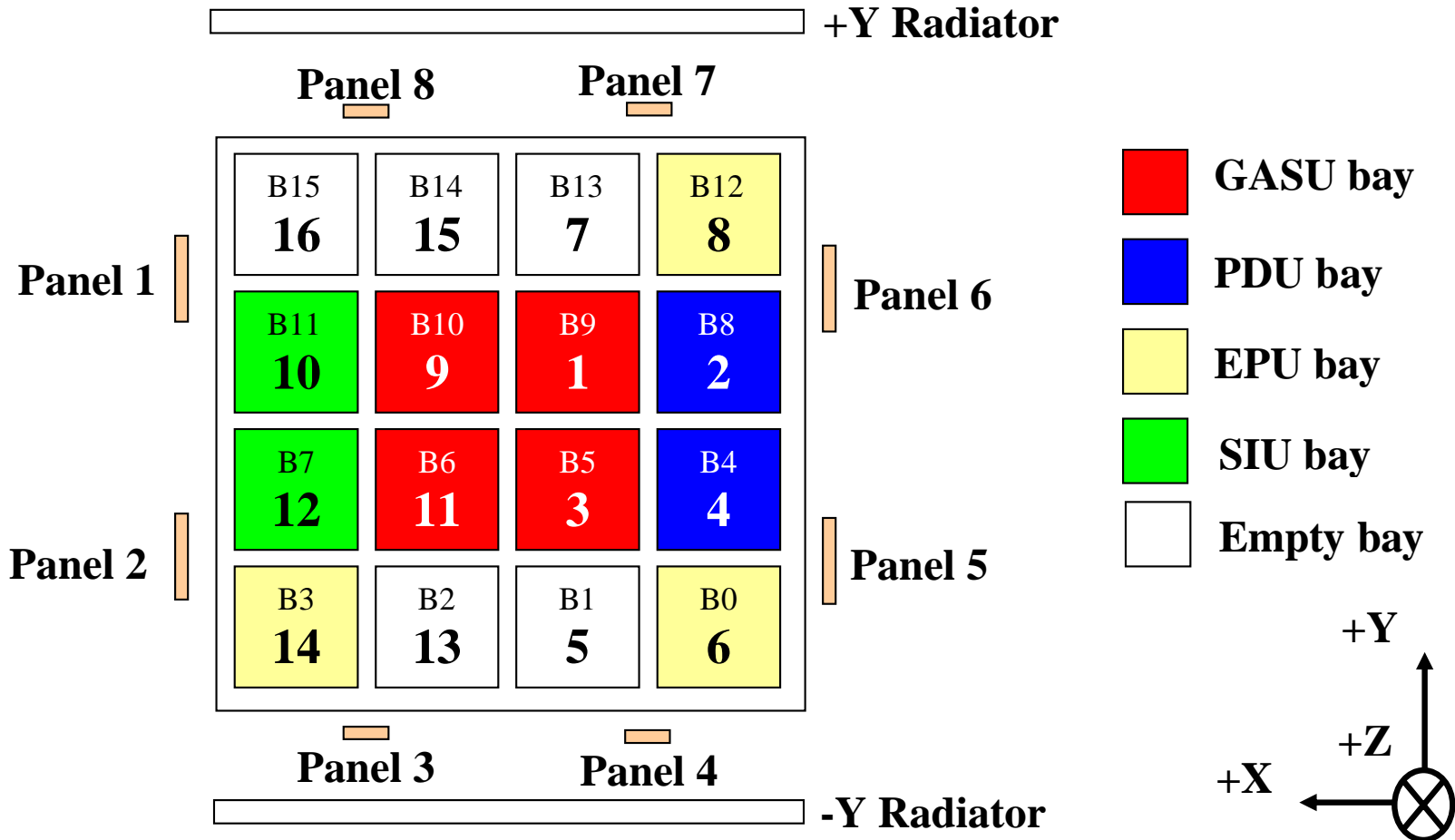


### 3. Single Bay I&T Procedures (LAT-MD-676, Sec. 11-12) - Status

Procedure Name	Inputs From	Draft Date	Sign off Date	Author
LAT-PS-03058-01 Tracker Installation Procedure	TKR	3/26/2004	4/9/2004	Borden
LAT-PS-01586 LAT Survey, Optical and Muon	MGSE/SVAC Metrology	3/26/2004	4/9/2004	Borden
LAT-PS-03027 Calorimeter Installation Procedure	CAL	3/26/2004	4/9/2004	Ortiz
LAT-PS-03291 CAL Module Fastener Installation	Mechanical, CAL	3/26/2004	4/9/2004	Ortiz
LAT-TD-03059-01 Critical Operations Procedure	Quality	3/26/2004	4/9/2004	Ortiz
LAT-TD-03060-01 Room 104/High Bay Access Procedure	Quality	3/26/2004	4/9/2004	Ortiz
LAT-PS-03277 Van de Graaff Procedures	I&T - particle test	3/26/2004	4/9/2004	Ortiz / EE
LAT-PS-03287 CAL Module LPT Procedure	I&T - EGSE, CAL	4/5/2004	4/19/2004	EE
LAT-PS-03290 TKR Module LPT Procedure	I&T - EGSE, TKR	4/5/2004	4/19/2004	EE
LAT-PS-03271 Single-Bay LPT Procedure	I&T - EGSE, TKR, CAL	4/5/2004	4/19/2004	EE
LAT-PS-03289 Safe to Mate Procedure	Electrical	5/5/2004	5/19/2004	EE
LAT-PS-03062 TEM/TPS Mounting Procedure	I&T - MGSE	6/4/2004	6/18/2004	Ortiz

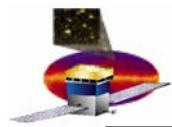


# 4. Multi-bay I&T (LAT-MD-676, Sec. 8.2-8.6)



## 5. Multi-bay I&T Procedures (LAT-MD-676, Sec. 8.2-8.6) - Status

Procedure Name	Inputs From	Draft Date	Sign off Date	Author
LAT-PS-03262 GASU Mounting Procedure	Electronics	3/26/2004	4/9/2004	Ortiz
LAT-PS-03272 Two-Bay LPT Procedure	I&T Elec.	6/4/2004	6/18/2004	EE
LAT-PS-03276 LAT CPT Procedure	I&T Elec.	6/4/2004	6/18/2004	EE
LAT-PS-03273 Multi-Bay LPT Procedure	I&T Elec.	6/4/2004	6/18/2004	EE
LAT-PS-03258 Shear Plate Removal Procedure	Mechanical	3/26/2004	4/9/2004	Ortiz/Molini
LAT-PS-03259 Shear Plate Assembly and Liquid Shim	Mechanical	3/26/2004	4/9/2004	Ortiz/Molini
LAT-PS-03261 E-Box 3rd Layer Flatness Check	Electronics Mechanical	6/4/2004	6/18/2004	Ortiz/Reggie/Gaw ehn
LAT-PS-03264 SIU/EPU/MTY Mounting Procedure	Electrical Mechanical	3/26/2004	4/9/2004	Ortiz
LAT-PS-03265 SIU Flight Software LPT Procedure	Electrical Mechanical	6/4/2004	6/18/2004	EE
LAT-PS-03266 EPU Flight Software LPT Procedure	I&T Elec.	6/4/2004	6/18/2004	EE
LAT-PS-03269 Grid Box Electrical System LPT Procedure	I&T Elec.	6/4/2004	6/18/2004	EE
LAT-PS-03268 Heater Control Box LPT Procedure	I&T Electrical	6/4/2004	6/18/2004	EE
LAT-PS-03278 Thermal Test instrumentation	Mechanical I&T	6/4/2004	6/18/2004	Borden
LAT-PS-03279 Accelerometer Installation	Mechanical I&T	6/4/2004	6/18/2004	Borden



## 6. ACD/X-LAT I&T (LAT-MD-676, Sec. 8.7-8.9)

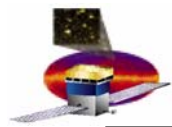
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### Test sequence:

- **Cable-by-cable FREE board tests**
- **ACD installation**
- **LAT LPT tests**
- **X-LAT plate installation**
- **Ground cooling installation**
- **Radiator fit check**

## 7. ACD/X-LAT Procedures (LAT-MD-676, Sec. 8.7-8.9) - Status

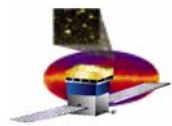
Procedure Name	Inputs From	Draft Date	Sign off Date	Author
LAT-PS-03267 GASU-ACD FREE Simulator LPT	I&T Elec.	4/5/2004	4/19/2004	EE
LAT-PS-03280 ACD Lift Bracket Mounting Procedure	ACD	6/4/2004	6/18/2004	Ortiz
LAT-PS-03281 ACD Mounting Bolt Torque Procedure	ACD	6/4/2004	6/18/2004	Ortiz
LAT-PS-03282 ACD LPT Procedure	ACD I&T	4/15/2004	4/29/2004	EE
LAT-PS-03283 ACD CPT and Timing Test Procedure	ACD I&T	5/5/2004	5/19/2004	EE
LAT-PS-03274 LAT Aliveness procedure	I&T Elec.	6/4/2004	6/18/2004	EE
LAT-PS-03275 LAT LPT Procedure	I&T Elec.	6/4/2004	6/18/2004	EE
LAT-PS-03263 Bulkhead Panel Torque Procedure	Mechanical	3/26/2004	4/9/2004	Ortiz
LAT-PS-03284 X-LAT Heat Pipe Shimming Procedure	Mechanical	6/4/2004	6/18/2004	Ortiz
LAT-PS-03285 X-LAT Plate Bolt Torqueing Procedure	Mechanical	6/4/2004	6/18/2004	Ortiz
LAT-PS-03288 Radiator integration procedure	Mechanical	6/4/2004	6/18/2004	Ortiz
LAT-PS-03286 Ground Cooling Leak Check	I&T Mechanical	6/4/2004	6/18/2004	Ortiz
LAT-PS-03270 Ground Cooling Operations	I&T	6/4/2004	6/18/2004	Ortiz
LAT-PS-03260 DSHP / Patch Panel Mounting	Mechanical	6/4/2004	6/18/2004	Ortiz/Herzberg



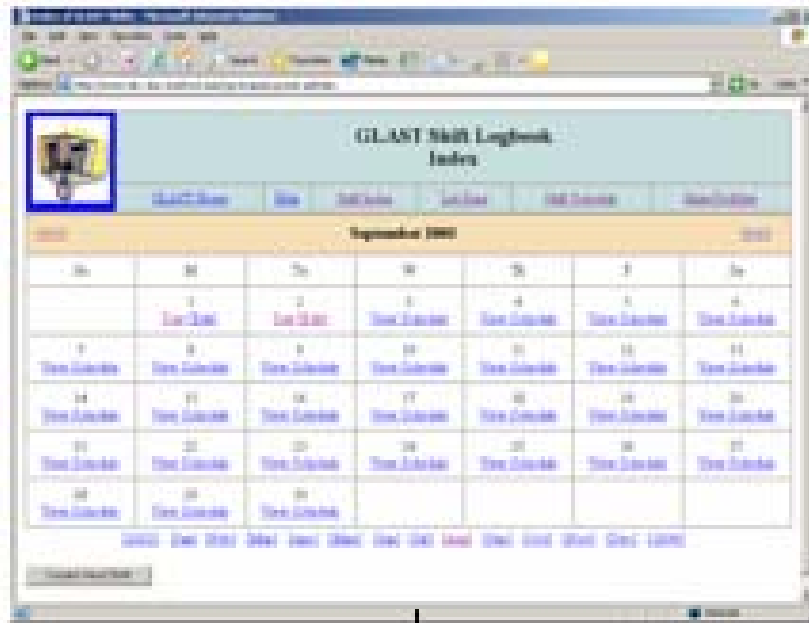
## 8. Daily Operations Planning - Status

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- **Flight qualified manpower for 2-shift loading – hiring in process**
- **Building 33 meeting area – operational, tested in EM1 series**
- **Web-based shift scheduler / logbook (X. Chen) – tested in EM1 series (up to 3-shift operations)**
- **Web-based work order system (J. Clinton) – operational, tested in EM1 series**
- **Web-based non-conformance reporting system (D. Marsh) – operational, tested in EM1 series**



# Snapshots of operations software GUIs



**GLAST** *The Gamma Ray Large Area Space Telescope*

**LAT ASSEMBLY AND INSPECTION DATA Record #33**

**LAT Assembly Information:**

<b>Equipment Title</b>	<b>Drawing No.</b>	<b>Rev</b>	<b>Serial No.</b>
TKR Mini-Tower Installation	LAT-PS-856	0	EM-020
<b>Reference Designator</b>	<b>Subsystem</b>	<b>Equipment Class</b>	<b>Prepared by</b>
	Integration and Test	Engineering Model	L. Wai

**Approvers:**

<b>Responsible Engineer</b>	<b>Manufacturing Engineer</b>	<b>Quality Engineer</b>
E. Gawehn	J. Clinton	D. Marsh
<b>Date Signed:</b>	<b>Date Signed:</b>	<b>Date Signed:</b>

**Step Instructions:**

Step#	Step Instruction	OperatorID	OperatorDate	OperatorStamp	Update Rec
10	Verify that drawings and other documentation for this procedure are the latest and under CM control. Verify that tools and materials to be used in this procedure are certified and in compliance or conformance.				

7/25/2003 1:43:51 PM

**GLAST LAT Quality Assurance**  
Performance & Safety Assurance NCR Submission Form

Main Navigation: [Commit this NCR Report](#) [Start a new NCR Report](#)

*Type the first part of your email or last name and press enter to fill in.*

**NCR Area**  
[Admin Area](#)  
[Documentation](#)  
[Help](#)

[Logout](#)

**Initiator Email**  **Initiator Name**

**Found by**  **Type of Nonconformance**

**Discrepancy Level**  **Sub-System**

**Item Description**  **Drawing # / Revision #**

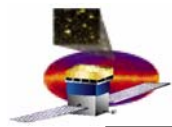
**Supplier**  **Location**

**Lot/Heat #**  **Serial #**  **Test Procedure # / Rev**

**Description of Nonconformance**

*Attach supporting nonconformance files below.*

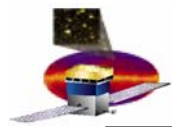
Attach Label	File Name	Max Size
Nonconformance attachment 1		
Nonconformance attachment 2		
Nonconformance attachment 3		
Nonconformance attachment 4		



## 9. Mate/De-mate Log

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- **Exercised paper-based logs (T. Shepherd) in EM1 series**
- **Web-based mate/de-mate log (X. Chen/B. Grist) – in development, not tested; plan to test during mock-up exercises**



# 10. Summary/Concerns

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## Single bay procedures (12 total)

- 9 procedures partially or fully tested in EM1 test series – expect to complete on schedule
- 3 procedures never exercised yet: Tracker installation, Optical survey, TEM/PSU shimming (see Tom Borden for detailed plans on how we will deal with this)

## Multi-bay procedures (13 total)

- Top concern: GASU/PDU test procedures; will be sending IFCT personnel to ELX test lab to exercise procedures