

GLAST LAT I&T

*GLAST Monthly
Mission Review
Mar 30, 2006*

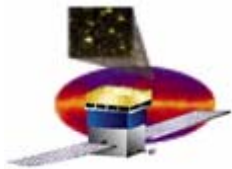


Monthly Mission Review

LAT Shipping and Environmental Test Planning

March 30, 2006

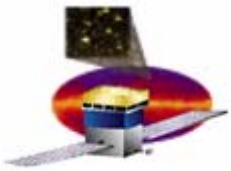
**Neil Johnson
Naval Research Lab
neil.johnson@nrl.navy.mil**



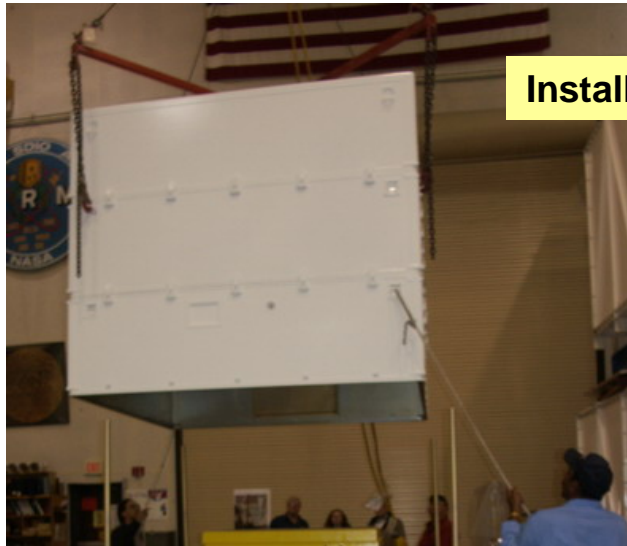
Updates to LAT Transportation Agreements

- **GLAST Project Office and GSFC Transportation Office will take responsibility for the shipping of LAT to NRL and to Spectrum Astro**
 - GPO will take lead responsibility in developing requirements, documentation, and schedule. **GPO (Coltharp) has draft transportation plan.**
 - Ownership of LAT will temporarily transfer to GSFC during the shipping.
 - **Where is LAT when the transfer is made? In the truck, on clean room floor, depending on who “owns” the fork lift.**
 - Final transfer of LAT to GSFC responsibility will occur at Spectrum Astro after completion of LAT post-ship testing by LAT team
- **Baseline shipping method is via air-ride enclosed truck arranged by GSFC Transportation Office.**
 - GSFC will transport LAT in its shipping container.
 - GSFC Transportation Office will provide all required instrumentation.
 - LAT will be responsible for the ground shipment of all non-flight MGSE / EGSE.
 - SLAC & NRL will provide Fork Lifts for loading trucks at SLAC/NRL. GPO will provide the Fork Lift at SASS.
 - **Demo test ride of Transport Container w/ mass simulator was successfully completed March 13th.**
- **B.Graf is organizing a LAT Transportation Review with GSFC Code 300**

Revisions / Updates in Red



LAT Road Trip



Installation of cover



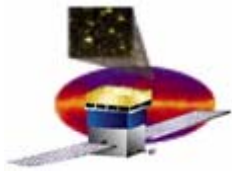
Fork to van



Load on van from
the side door



Tie down in van



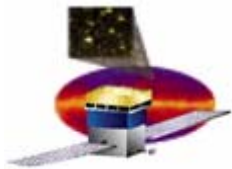
Road Test Summary

□ **No problems.**

- Data is still being processed at GSFC
- Most high g events were related to handling prior to and post road trip.

Example events from LAT interface plate (isolated frame) during road trip:

event # num	time	Peak X g	Peak Y g	Peak Z g	Event
24	00 03/13/06	16:38:07	0.229	0.375	0.945 Ramp from I-295 to I-95
58	00 03/13/06	16:39:48	0.513	0.329	0.808 I-95
114	00 03/13/06	16:45:21	0.229	0.375	0.672 Ramp from I-95 to Rt 4
119	00 03/13/06	16:46:16	0.404	0.602	1.059 Ramp from I-95 to Rt 4
170	00 03/13/06	16:56:08	0.47	0.443	0.945 Ramp from I-95 to Rt 50
294	00 03/13/06	17:07:05	0.185	0.215	0.739 I-295 potholes from Eastern Ave to East Capitol St Exits
297	00 03/13/06	17:07:13	0.251	0.329	0.649 I-295 potholes from Eastern Ave to East Capitol St Exits
298	00 03/13/06	17:07:15	0.535	0.534	1.628 I-295 potholes from Eastern Ave to East Capitol St Exits
299	00 03/13/06	17:07:17	0.557	0.647	1.173 I-295 potholes from Eastern Ave to East Capitol St Exits

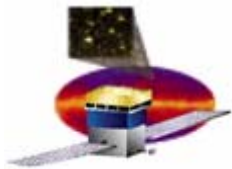


GLAST LAT I&T

Environmental Test: Plan-Level Documents and Status

*GLAST Monthly
Mission Review
Mar 30, 2006*

Document	Title	Status	ECD
LAT-MD-02717-01	LAT Environmental Test Sequence		Released
LAT-MD-01196-03	LAT Dynamics Test Plan		Released
LAT-MD-00276-02	LAT EMI/EMC Test Plan		Released
LAT-MD-01600-03	LAT Thermal-Vacuum Test Plan		Released
LAT-SS-06640-01	LAT Environmental Test MGSE/STE Requirements		Released
LAT-PS-06898-01	LAT Environmental Test Implementation Plan	Final draft in work. Need to incorporate recent QA, Safety and Contamination inputs	Draft
LAT-MD-06560-01	Plan for Integrating and Testing the LAT on the Observatory	Content being transferred to SpecAstro ICD ICN-099	Released
LAT-MD-07727-01	LAT Environmental Test Pathfinding		Released

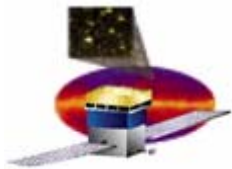


GLAST LAT I&T

Environmental Test: Configuration Drawings and Status

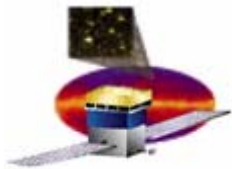
*GLAST Monthly
Mission Review
Mar 30, 2006*

Drawing	Title	Status	ECD
LAT-DS-06188	Acoustic Test Configuration Assembly	Released	
LAT-DS-06185	Thermal-Vacuum Test Configuration Assembly	Incorporating lessons learned from Pathfinder Part Deux	Mid Apr
LAT-DS-06187	Horizontal Vibration Test Configuration Assembly	Released	
LAT-DS-06190	Vertical Vibration Test Configuration Assembly	Released	
LAT-DS-06186	Handling Configuration Assembly	Released	
LAT-DS-06184	Transport Configuration Assembly	Released	
LAT-DS-06189	EMI/EMC Test Configuration Assembly	Released	
LAT-DS-06191	Mass Properties Configuration Assembly	Draft in Development	Mid Apr



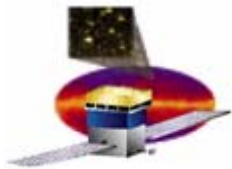
Environmental Test MGSE/STE

- ❑ **Transport Container**
 - **Manufacture complete; Analyses complete**
 - **Proof test complete**
 - **Demo Road Test complete**
 - **Ready to ship – need GSFC definition of bulkhead connector for instrumentation package – critical path**
 - **Waiting for free ride (NAVSEA) – week of 4/7/06 if bulkhead modification made.**
- ❑ **Test Interface Plate**
 - **Complete**
- ❑ **Test Stand/Spreader Bars**
 - **Complete, used in pathfinding**
- ❑ **TVAC Sink Plates – ACD & S/C Simulator**
 - **Complete, used in pathfinding 2**
- ❑ **TVAC Cal-Rod Cage**
 - **Complete, used in pathfinding 2**
- ❑ **Acoustic Simulator**
 - **Complete**
- ❑ **Mass Properties Plate**
 - **Load Cell Interface in manufacture – ECD: 4/03/06**



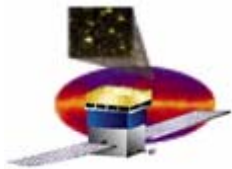
Facilities

- ❑ **Thermal Vacuum Test**
 - Cables and Port Plates – complete
 - Mechanical analyses complete
 - Trolley (cart) – complete, used in pathfinding
 - Chamber rails upgrade – complete and proof tested
 - Pathfinding 2 – complete
 - Chamber refurb, cleaning and recommissioning - started, ECD: 4/17/06
 - GSE bakeout and STE Validation – ECD: 4/27/06
- ❑ **Acoustic Test**
 - Ramp manufacture complete
- ❑ **Vibration Test**
 - Expander head load frame procurement - delivered
 - Load frame manufacture – complete
 - Installation and proof test – ECD: 3/06/06
- ❑ **EMI/EMC Test**
 - Ramp manufacture – complete, used in pathfinding



Pathfinding Part Deux

- ❑ Executed Mar 21- 24, 2006
- ❑ Objectives
 - Radiator installation/removal procedures including timed trial runs (adhesive pot life)
 - TVAC prep work – mount S/C simulator sink plate
 - TVAC configure – another rotation and install on Table / Cart
 - Improved handling procedures for installation and use of test stand extensions
 - Installation of TVAC STE – heater cages, ACD sink plates
 - Transport into TVAC chamber and working around LAT and STE inside chamber.
 - TVAC cable installation and routing



Pathfinding Summary

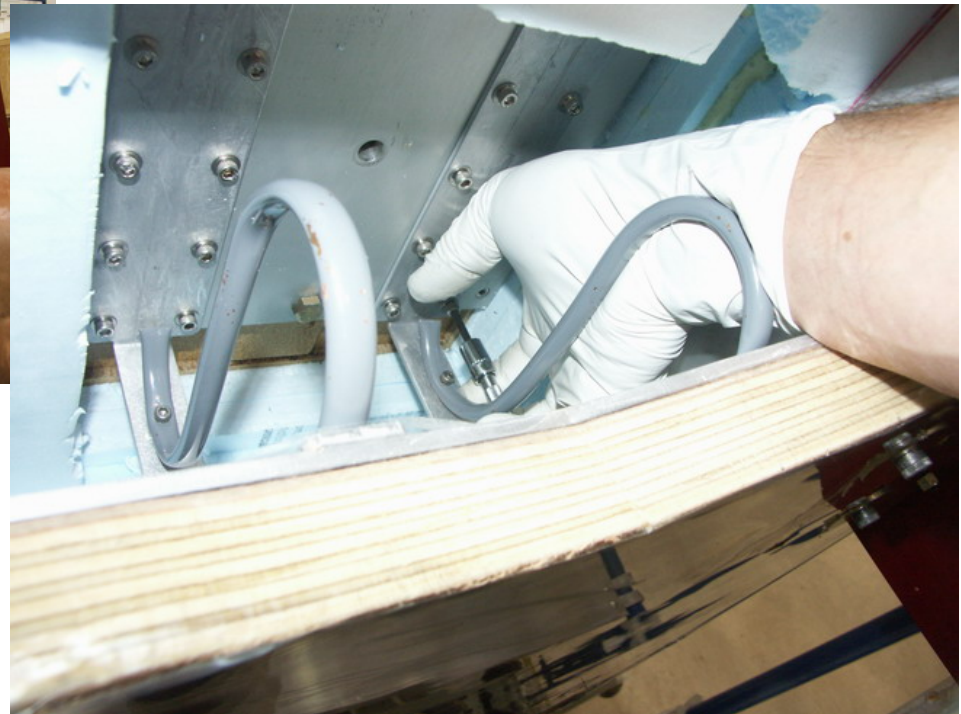
- ❑ **Part Deux** was very successful and beneficial to all involved.
 - No major handling or operations issues identified.
 - Minor mods to MGSE and procedures will improve safety and or execution efficiency.
- ❑ **Radiator Installation**
 - Process could be performed within adhesive pot life
 - Need some special tools to facilitate installation
 - Improvements to scaffolding to protect radiators / personnel
 - Apply adhesive to panel flanges
- ❑ **TVAC Preps**
 - S/C sink plate installation – protect the radiators
 - Heater cage setup – protect the radiators
 - ACD sink plates – cable interferences require modifications, in process
 - Detailed timeline and sequence for STE installation was developed based on lessons learned.

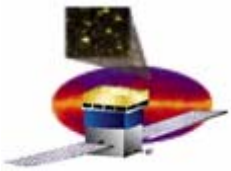
Radiator Installation



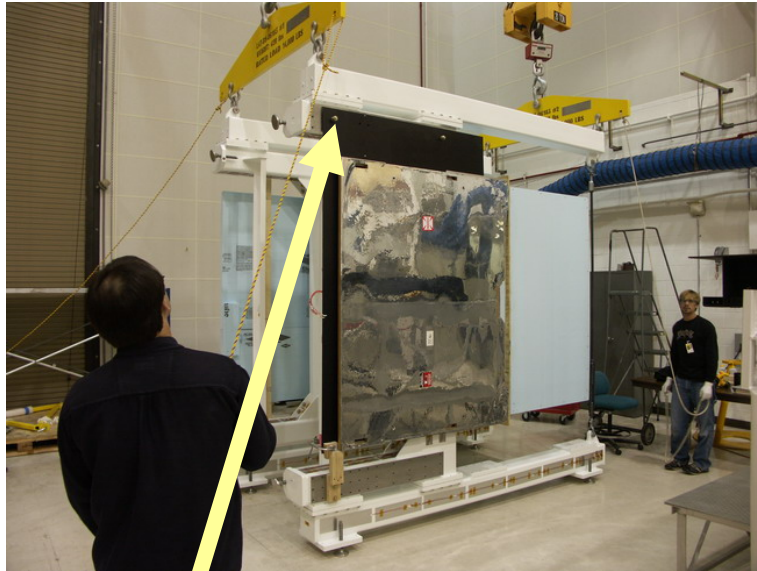
Radiator installation test

Radiator flange access



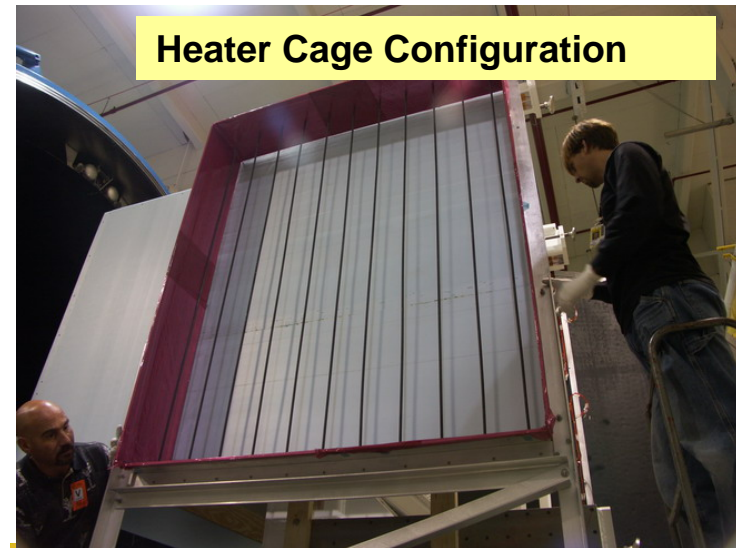


Thermal STE



S/C Sink Plate Configuration

Installation of ACD Sink Plate Panels (5)



Heater Cage Configuration

