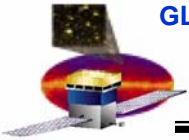


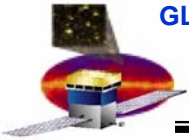
Mechanical Systems January 2004 Status

Marc Campell, Subsystem Manager



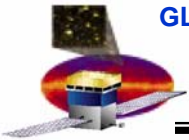
Accomplishments

- **Accomplishments during February**
 - Tapemation has completed the initial final machining operations on Flight Grid #1
 - Tapemation has started the rough machining of billet #2
 - Issued the P.O. change notice for second grid and additional shields & shear plates.
 - Reworked MECH assembly sequence
 - CCB approval expected 2/25/04
 - Revised MECH drawing tree to agree with this sequence
 - Released 5 drawings per plan



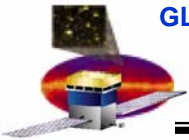
Accomplishments (Cont.)

- **LM Accomplishments during February**
 - **GLAST requested LM submit revised cost and schedule to align PCMS with the current forecasted delivery dates**
 - **LM cost proposal is due 2/26**



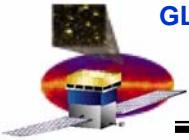
3 Month Milestones Feb - Apr

Milestone Description	Original Date	Current Date	Major Reqmnts to Achieve Milestone	Notes
Deliver 1 x 4 Grid to I&T	09/03/03	Apr 04	Complete 1x4 testing - static load test.	<i>Complete</i>
			Modify Top Flange & cable chaseways	<i>Complete, but changed again</i>
			Drill TRK interface after test.	<i>Pending resloution ofTKR-Grid interface design mods</i>
			Compare 1x4 & 4x4 models to determine if 1x4 can be reworked	<i>in progress</i>
X-LAT Plate MRR		4/15/04	Release of X-LAT Plate IDD	<i>in sign off</i>
			Release of X-LAT spec	<i>released</i>
			LM complete design	<i>in work</i>
			LM complete analysis	<i>in work</i>
Start Grid #1 production	11/15/03	02/06/04	Started	
Receive Grid #1, EMI skirts, details	03/30/04	06/15/04	Close MRR action items	<i>Revised Grid plating requirements to pull in date</i>
			Stop changing the design	<i>TRK mods & wing mods for Radiator installation proposed</i>
			resolve grid plating issues	<i>vendor quote received</i>
Grid #1-BFA match drilling	01/27/04	03/31/04	BFA and Grid available	<i>Grid Available end of March and end of April</i>



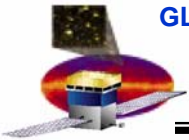
3 Month Milestones Feb – Apr (cont)

Milestone Description	Original Date	Current Date	Major Reqmnts to Achieve Milestone	Notes
Start rough machining of billet #2 (Qual unit)	02/02/04	02/21/04	Started	
Grid #2 MRR	03/01/04	03/31/04	Sufficient progress on Grid #1	
Grid #2 start machining	03/01/04	04/13/04	Sufficient progress on Grid #1	
Grid Heat Pipe bond process Qual	02/24/04	04/02/04		<i>manpower priorities</i>
Radiator Integration Demo	02/19/04	04/15/04		<i>manpower priorities</i>
Grid Assembly MGSE Design	02/04/04	04/09/04	define TRK interface requirements release Top Assy dwgs	<i>in work, need TRK IDD in work drafts available</i>
Order TCS electronics components	01/30/04			<i>activity started</i>
Order TCS flight hardware Heaters, thermostats & thermistors	12/19/03	03/26/04	Update of LAT instrumentation plan	<i>Spreadsheet updated</i>
			Get LM RTD's, thermistors & heaters approved & on EEE parts list	<i>L. Lee working</i>
			Grid heaters	<i>working w/ vendor</i>
			Grid thermostats	<i>on order, due 5/04</i>
			MECH thermistors	<i>on order, due</i>
			Other SS thermistors	<i>ELEC - PO not placed ACD & CAL?</i>
LM procured TCS components	<i>not started</i>			



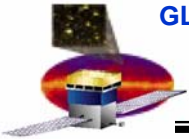
Drawing Release Plan

- **39 of 56 (69%) drawings released**
 - **These are all drawings required for the Grid Box machining at Tapemation**
- **Remaining hardware is needed for MECH assembly operations in May**
 - **Feb. - 5 planned**
 - **Mar. - 8 planned**
 - **Apr. - 4 planned**
- **Known drawing revisions**
 - **Feb. - 3 in work**
 - **Mar. - 1 planned**



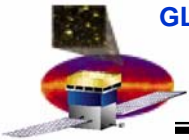
Issues & Concerns

- Grid to I&T delivery date – schedule continues to compress.
 - **Difficult to press vendor if we keep making design changes**
- Grid Box Assy Static Load test will be performed on Grid #2 after start of I&T on flight unit. This increases risk.
- Grid thermal control components & Downspout Heat Pipe to Grid thermal joint are not verified until LAT T/Vac test. Difficult to access these components at this level (remove Radiators & ACD).
- X-LAT plate & Radiator delivery schedule due to late starts.
- Details of how, where & who for Grid Box Assembly work needs to be coordinated with I&T
- 1 x 4 Grid delivery date to I&T.
 - **Need to implement modified Grid – TRK interface**
 - **Meeting planned to examined the best way to verify flight interfaces and support beam test**



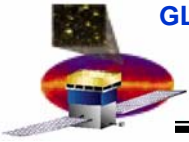
Open Flight Design Issues

- **Grid-TRK interface - define Grid datum & TRK interface**
 - Evaluating if TRK interface can be put into Grid by Grid Vendor
 - Impacts (simplifies) MECH Assy fixture design
 - C0 & C1 TRK cable chase ways are being modified
 - TRK IDD not released
- **Define GBA Static Load test requirements & plans**
 - Prelim plan presented at Peer Review
 - Prelim Stress analysis and load cases are in work
- **Baseline is no thermal cycle test for Grid Box Assy prior to I&T**
 - Need to develop risk assessment & trade study.



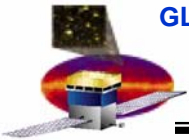
Open Flight Design Issues (cont)

- Radiator integration sequence
 - Study complete – shows that current design works, but may not be practical.
 - Possible modification to Grid wings
- Radiator VCHP Helium leak rate may impact ACD PMT's
 - How to evaluate this? LM can substitute another inert gas, but it impacts ground performance (not on-orbit). LM given the “OK to Fab” the VCHP's up to the charging operation.
 - ACD He sensitivity has decreased by factor of 4
- RFA's closure
 - RFA's addressed at Grid and Radiator MRR's – no show stoppers
 - working with Pat Hascall



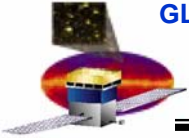
Open Flight Design Issues (cont)

- TCS – location of Grid heaters, thermostats, RTD's and associated wiring needs to be finalized (top assembly drawing)
 - **Layouts started**
- TCS validation vs. LM modified Radiator Thermal Vacuum & Balance plans
 - **What are TCS test requirements? Is this a TCS Qual test?**
 - **Meeting planned with Tom McCarthy early April**



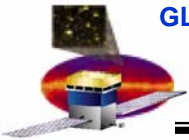
MECH Qualification Program

Qual Test	Status	ECD
Grid-Top Flange Heat Pipe bond process qual	Parts in fab	Apr 04
Grid Box Assy Static Load test	Planning in work. Perform on Grid #2	Oct 04
Grid Box Assy Thermal Cycle test	Plan to delete test	
X-LAT Plate Thermal Vac test	at LMMS	Nov 04
Radiator Variable Conductance Heat Pipe new extrusion	1st article tests planned	Mar 04
Radiator Acoustic	at LMMS	Nov 04
Radiator Thermal Vacuum	at LMMS	Mar 05
TCS-Radiator Thermal Balance	Scope is changing. Need to define requirements	Mar 05



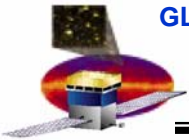
CUM Schedule

- **Budgeted Cost Work Performed** **\$7.014M**
 - **Budgeted Cost Work Scheduled** **\$7.229M**
 - **Schedule Variance** **-\$215K**
-
- **\$189K Flight thermistors not received in Dec**
 - **\$26K for late EM testing**



Program Threats

- **Top threats to maintaining schedule**
 - **Grid delivery from Tapemation**
 - **Highly compressed, success oriented schedule**
 - **Better coordination with ELEC on TCS fab and wiring**
 - **Closure of open items for Grid manufacturing**
 - **LM X-LAT & Radiator delivery dates**
- **Top threats to staying within cost**
 - **Interdependencies with ELEC for fab, assy & test of TCS**
 - **TCS costs**
 - **Prototype may require PDU, SIU & GASU boards**
 - **Plan is to use test bed or Qual units**



Actions Required to Stay On Schedule

- Replan TCS design & development activities including prototype
 - Complete
- Replan Heater Control Box design, fab, assembly, test (including Qual)
 - Complete
- Compress MECH assembly plans again
 - Some tasks will be performed after delivery to I&T
 - Complete
- Release X-LAT spec & IDD
 - Almost complete