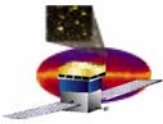**Gamma-ray Large Area Space Telescope**

GLAST Large Area Telescope:

Electronics, Data Acquisition & Flight Software W.B.S 4.1.7

June Status 06-30-04

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TEM & TEM-PS (1)

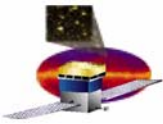|	Start/Status	End/Release
Fab Drawing Release		**Done**
Vendor: Enclosure Fabrication (all 21)	**Received all TEM enclosures, TPS due 7/7**	**7/7**
Vendor: PCB Fabrication (4 first articles, plus 18)	**Jun 29 started fab**	**Jul 7**
All components in (risk item), see next slide		**Jul 15 (Aug 8?)**
Test-plan/procedures	**Final draft**	**Jul 1**
TC/Vibration/TV/EMI procedures (EMI plan is risk)	**Final draft, EMI only first draft**	**Jul 15**
Vendor: Assembly (3 first article, one qual, TWR A &B); TC & vibration. Deliver box to SLAC	**July 15 (Aug 8?)**	**Aug 20**
TV (5d); Dyn. Burn-in (5d); EMI (5d)	**Aug 20**	**Sep 15**
RFI TWR A	**Sep 15**	
Vendor: Assembly (19; 15 + 4 spare); deliver box to SLAC **	**Sep 1**	**Oct 1**
Flight Acceptance Test	**Oct 1**	
RFI	**Nov 1; sets of 2 with 2 weeks lag**	**Jan 15**

TEM & TPS (2)

- **Component delivery of two Zener diodes.**
  - **Were ordered 10/1/03, original due date March 04. First delayed to July 22, now August 8. Investigating whether we can get them earlier by accepting them ahead of completion of Group B testing. (Nick is in contact with Microsemi).**
- **ACTEL FPGA programming (done at ACTEL) and then lead-forming at separate vendor. SOW for lead-forming in review, contract needs to be placed.**
- **Program for ACTEL can only be finalized when engineer is back from vacation (week after July 4). (Back-flow pressure had minor change)**
- **Found some CRYSTEK connectors with internal shorts, albeit not from flight order, but from EGSE lot. Should probably test connectors for shorts before assembly.**
  - **Sent one connector with shorts to Nick Virmani for investigation**
  - **SLAC QA is in contact with Crystek to get information**
- **Poly-switches in screening at GSFC, expect them back before July 15.**
- **Technical meeting with SLAC personnel at assembly vendor today to discuss technical details. Will send test-stands in week after July 4. Then send Dave N. (TPS) and Leonid S. (TEM) to get both test-stands ready.**
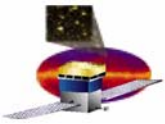
ASIC

- **TEM ASIC's test & dynamic burn-in**
  - **Tested/burned-in/tested 16 GTCC's and 8 GCCC's. No failure after burn-in**
  - **New batch of 32 GTCC's and 16 GCCC's will start burn-in 6/30.**
    - **Need 24 GTCC's and 12 GCCC's for 3 first-article TEM's**
  - **After that burn-in will ramp up using x4 burn-in boards**
- **GLTC ASIC's (for GASU)**
  - **Burn-in & test fixture assembled, test program in debug**

GASU & GASU-PS & PDU

|	Start/Status	End/Release
Fab Drawing Release (all mechanical GASU drawings were submitted)		July 15
Vendor: Enclosure Fabrication (all 3, qual/flight/spare)	Aug 15	Sep 30
Vendor: PCB Fabrication (all 6 plus 4 spare)	Sept 15	Sep 30
All components in		Sep 30
Test-plan/procedures	now	Aug 30
TC/Vibration/TV/EMI procedures (EMI plan is risk)	now	Sep 30
Vendor: Assembly (first article, qual; deliver box to SLAC)	Sep 30	Oct 30
TC (1d); Vibration (2d); TV (5d); Dyn. Burn-in (5d); EMI (5d)	Oct 30	Nov 30
Done Qual	Nov 30	
Vendor: Assembly (2; 1 + 1 spare); deliver box to SLAC **	Nov 15	Dec 15
Flight Acceptance Test	Dec 15	Jan 19
RFI	Jan 19	

- To be done:
  - PDU common-mode filter, test with SAI PRU (week after July 4)
  - ACD power-switch & monitoring circuit (done, modulo a few resistor changes)
  - More testing of trigger & event-builder
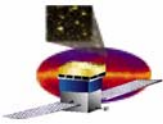
SIU/EPU

|	Start/Status	End/Release
Fab Drawing Release (all mechanical drawings were submitted)		**Aug 15**
Vendor: Enclosure Fabrication (all 8, qual (1) /flight (5) /spare (2))	**Aug 30**	**Oct 15**
Vendor: PCB Fabrication (all 10 plus 2 spare)	**Oct 1**	**Oct 15**
All components in (Issue: Oscillator, see below)		**Oct 15**
Test-plan/procedures	**now**	**Sep 15**
TC/Vibration/TV/EMI procedures (EMI plan is risk)	**now**	**Oct 15**
Vendor: Assembly (first article, qual; deliver boards to SLAC)	**Oct 15**	**Nov 30**
TC (1d); Vibration (2d); TV (5d); Dyn. Burn-in (5d); EMI (5d)	**Nov 30**	**Jan 15**
Done Qual	**Jan 15**	
Vendor: Assembly; deliver boards to SLAC	**Jan 1**	**Feb 15**
Flight Acceptance Test	**Feb 15**	**Mar 30**
RFI	**Mar 30**	

- **To be done:**
  - **Figure out details of test-plan/procedure for each PCI module**
  - **PCI code/P&R tayloring to make PCI standard-timing in 72 series (almost done)**
  - **Test LCB FPGA slave interface code function (is used in EPU)**
  - **Investigate occasional SIB EEPROM first-address corruption when power-up**
  - **More testing**
- **Issue: delivery of 48-MHz oscillator for SIB: now Jan 5 delivery date. Working on the problem)**
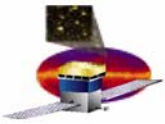
EGSE- GASU

- **Boxes with 3 versions of DAQ boards**
  - **Version 1's with reprogrammable FPGA's at**
    - **ISIS (does not have science interf., but everything else) might not be used anymore see below**
    - **GSFC ACD (G3#1), used for SW development. Only primary is being used. Tobe shipped back to SLAC**
  - **Version 2's with one-time programmable ACTEL's at**
    - **GSFC ACD (G3#2) (Prime&Red)**
    - **GSFC ACD (G3#3) (Prime&Red)**
    - **Test-bed (Prime&Red)**
    - **FSW (Prime) used for ACD software rate-counter code test**
    - **ISIS (Prime) connected to SIU crate, trying to get LATTE to work with SIU/GASU**
    - **(New power-switching/current limiting circuit as well as current monitoring circuit were designed/built/tested/incorporated since last meeting)**
  - **Version 3 with layout changed to incorporate power-switching/monitoring mods (version 2 had daughter-card)**
    - **30 boards back from fab**
    - **1 board loaded**
    - **5 additional board due back from loading July 6**
    - **GSFC ACD (G3#4) expected to be shipped week after Jul 6.**
    - **ISIS replacement for prime-only box**
    - **GSFC ACD (G3#5) for TV: need version 1 enclosure back and then incorporate version 3 boards)**
    - **I&T (2)**
    - **FSW (2)**
    - **DAQ (2)**
    - **spare (1)**
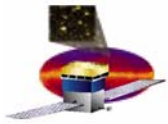
EGSE- PDU

- 1 on Test-bed
- 1 given to ISIS
- Fabricated 10 more boards
  - In loading (2 per enclosure)
  - Available mid/end of July
  - FSW/DAQ (2)
  - I&T (1)
  - spare (1)

EGSE-TEM

- **CAL:**
  - 6 at NRL (5 for AFEE test, 1 for TV)
  - 1 needs to come back briefly for shorted connector fix/retest
  - 1 has apparently more noise on one of 4 connectors, but can't be….need to check
  - 4 more for TV in staking/coating, another week before ready.
  - Owe 2 more after that?
- **TKR:**
  - 1 in building 33 used for MCM screening
  - 4 in Italy (one had grounding problem but was fixed with replacement cable)
  - 1 (and only one?) for TV to be shipped 2nd week of July
  - Owe 2 more?
- **testbed:**
  - has 16
- **I&T:**
  - received one for mini-tower
- **Potential Issue: having enough Motorola CPU boards (also used on ASIC tester at SLAC, will be used for ASIC qual at GSFC, TEM & TPS set-ups at TEM/TPS assembly house, more FSW stations, additional EGSE stations since order)**

EGSE SIU/EPU

- **Crates**
  - **Crates are being used by Testbed/FSW for FSW development/test**
  - **Assembled two more crates,**
    - **1 to be used for ISIS, being tested**
    - **1 in testing, goes to NRL**
  - **BAE750 boards**
    - **Received all ordered boards (have total of 8)**
    - **Two additional ones which were to be ordered can't be purchased anymore**
   - **However BAE will instead be loaning 2 boards for a while….**

Testbed

- **All Front-End Simulators (40) installed on testbed**
  - **In commissioning**
- **All 16 TEM & TEM-PS installed on test-bed**
  - **Being tested**
- **GASU/PDU/SIU installed on test-bed**
- **Harness**

- **Testbed being used for SAI PRU test/debug this week for road-show next week.**
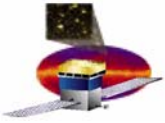
Threads to maintain schedule/cost

- **Connector savers ($100k just for TEMs)**

- **Lead-forming ($40k)**

- **EGSE cost (cables very expensive, paid substantial expedite fees)**

- **TEM assembly more than expected (many QA clauses)**
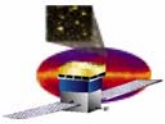
Schedule/Budget

- **Total budget: $21,685**
- **Work Scheduled up to date: $16,279**
- **Work Performed: $15,120**
- **Actuals: $14,626**
- **Schedule Variance $-1,159k (-7.9%)**
  - **Qual/Flight work should have been started, reflects current status**
- **Cost Variance: $494k (3.4%)**
  - **EGSE Labor over budget (26-00068)**
  - **FSW labor seems under budget, but that is misleading because new FSW PCMS is only being included next month (passed CCB)**