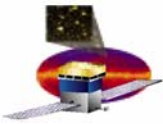


GLAST Large Area Telescope: Performance & Safety Assurance

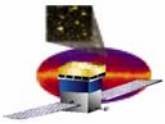
Darren Marsh
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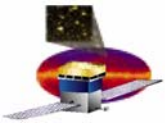
Mechanical Subsystem – Grid Status

- Ni plating being performed per AMS 2451 on grid at Platron (Hayward, CA) will be completed this week
 - Inspection and data review to be performed at Platron upon completion of plating
 - Grid will return to Tapemation after plating for helicoil and bushing installation, EMI shield fit checks, RMB shimming, Spacecraft interface dimension verification
- Mechanical Subsystem parts inspection and acceptance status
 - TCS EEE parts
 - 4 part types received and have gone through incoming inspection to date (4 total parts required)
 - 3 part types approved for “flight use”
 - Grid assembly mechanical parts
 - 25 mechanical parts will be required for grid assembly activities
 - QA met with Mechanical Subsystem personnel on part status since no parts had come through LAT QA
 - Mechanical subsystem is following up on part order status
 - LAT QA has identified 4 parts received and is currently processing parts through inspection
- Reviewing qualification and acceptance test activities for bonding heat pipes, heaters, thermistors, and thermocouples
 - Drawings and procedures need to be released and work order generated



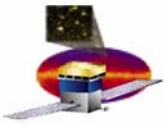
Tracker Subsystem QA Activities

- **Accomplishments**
 - Replacement Novacap HV capacitors received and will be cut in to production at Teledyne on MCMs
 - MCM Omnetics connectors qualified and approved
- **Issues**
 - **Bias Circuit Bonding Failure**
 - Kapton bias circuits bonded to the tracker trays fail under T/V testing at 55C
 - Tiger Team recommendations are currently be implemented
 - **Flex cable coupon failures**
 - Coupon evaluation results received from GSFC show failures on 5 Parlex flight flex cables
 - 1 coupon had internal annular rings missing and separations between barrel plating and internal layers
 - 4 other coupons had separations between barrel plating and internal layers
 - LAT Team visited Parlex 8/27 to discuss failures
 - Parlex and LAT personnel were at GSFC 9/1 to review sample preparation procedures and coupon results
 - Corrective action for separation issue currently being implemented
 - Additional coupon testing required to accept received cables
 - A follow-up meeting at Parlex is required to assess corrective action



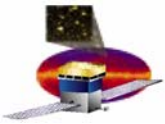
Tracker Subsystem QA Issues

- **MCMs Issues**
 - **Pitch adaptor trace cracking**
 - Traces on the MCM pitch adaptor show cracking in the nickel at the bend region; some cracks result in open traces
 - Qualification of “revised” pitch adaptors design (no nickel or gold plating in bond area) not successful; second design iteration complete
 - Design review took place and new production run initiated
 - **MCM board shorts**
 - 6 MCMs have developed internal board shorts (3 more MCMs may be suspect)
 - Investigation and analysis is underway
 - Status meeting with GSFC to take place this week
 - **Workmanship issues (peeling of conformal coating, bubbles, and solder and solder on connector leads)**
 - Plan for 100% reinspection of MCMs developed and approved
 - Reinspection to commence this week
 - Corrective action associated with workmanship issues discussed at Teledyne 9/27
 - Follow-up visit to Teledyne with NASA personnel this week



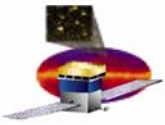
Tracker Subsystem QA Issues (Con't.)

- **MCMs Issues (Con't.)**
 - **Charge injection read-back errors at +60C**
 - **MRB held on May 28th – Additional tests and analysis performed by Tracker team that isolate the error to be internal to the GTRC chip**
 - **Traced to GTRC timing margins, which were found to be sensitive to clock duty factor**



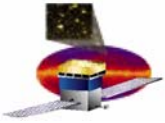
DAQ Subsystem - Part Status

- **Tower Electronics Module (TEM) EEE parts inspection and acceptance**
 - 36 part types received and have gone through incoming inspection to date (38 total parts required)
 - DPA samples from 3 part types submitted to GSFC for evaluation passed (7 TEM part types require DPA)
 - 28 part types approved for “flight use”
- **Tower Electronics Module Power Supply (TEM-PS) parts inspection and acceptance**
 - 77 part types received and have gone through incoming inspection to date (77 total parts required)
 - DPA samples from 6 part types submitted to GSFC for evaluation passed (14 TEM-PS part types require DPA)
 - 68 part types approved for “flight use”
- **GASU EEE Parts inspection and acceptance**
 - 34 part types received and have gone through incoming inspection to date (50 total parts required)
 - DPA samples from 3 part types submitted to GSFC for evaluation passed (9 GASU part types require DPA)
 - 13 part types approved for “flight use”



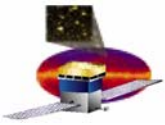
DAQ Subsystem - Part Status (Con't.)

- **LCB EEE parts inspection and acceptance**
 - 8 part types received and have gone through incoming inspection to date (11 total parts required)
 - DPA samples from 2 part types required
 - 7 part types approved for “flight use”
- **PDU EEE parts inspection and acceptance**
 - 42 part types received and have gone through incoming inspection to date (61 total parts required)
 - DPA samples from 10 part types required
 - 31 part types approved for “flight use”



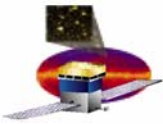
DAQ Part Activities

- **EEE Parts screening, qualification and acceptance issues are discussed weekly in LAT Parts Control Meeting**
- **DAQ EEE Part Inspection backlog eliminated**
- **Part Issues**
 - **FPGA reliability issue outstanding**
 - **cPCI connector qualification plan requires finalization**
 - **14 NCRs initiated based on inspection of DAQ EEE Parts (wrong part number, parts not on tape and real, no surge testing)**
 - **NCRs are being addressed in DAQ Production Meetings**



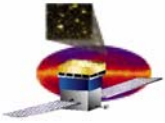
DAQ ASICs Inspection & Test Status

- **GLTC3 – 645 each (GASU); GTCC1 – 881 each (TEM); GCCC1 – 824 each (TEM)**
 - **Screening and Qualification Plan, LAT-TD-02656, released and approved**
 - **Visual inspection and serialization completed**
 - **Thermal cycling completed**
 - **GTCC1 and GCCC1 have completed thermal cycling 4/2/04**
 - **GLTC3 requires thermal cycling**
 - **Electrical testing and burn-in performed at SLAC in Building 33 (LAT I&T Facility)**
 - **Initial Electrical Test at 25C**
 - » **GTCC1 – 384 of 405 accepted**
 - » **GCCC1 – 192 of 221 accepted**
 - **Dynamic Burn in for 168 hrs. at 85C**
 - » **GTCC1 – 384 of 384 accepted**
 - » **GCCC1 – 192 of 192 accepted**
 - **Electrical Test post burn in at 25C**
 - **GTCC1 – 224 of 224 accepted (Enough GTCC1s for 28 TEMs)**
 - **GCCC1 – 112 of 112 accepted (Enough GCCC1s for 28 TEMs)**
 - **Radiation testing (TID) to be performed in Italy**
 - **10 ASICs from each ASICs type to be sent to Italy (GTCC and GCCC have been sent)**
 - **Qualification testing will be performed at GSFC**
 - **52 ASICs from each ASICs type need to be provided to GSFC (GTCC and GCCC have been sent)**
- **DPA evaluation performed on all three ASICs and passed**



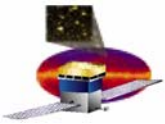
TEM & TEM-PS Activities

- **Manufacturing Readiness Review performed on 9/23**
 - **9 action items generated from MRR**
 - **Two QA action items completed**
- **Parts kit audit performed by LAT QA prior to shipment to General Technology**
- **Source inspector reviewed GTC internal conformal coating procedures**
- **Travelers & Controlled Assembly Aid (CAA) are being reviewed for completeness by LAT QA and Manufacturing personnel**
 - **Final approval of travelers & CAA performed by LAT Source Inspector**
- **Production activities will commence this week on Qual + 2 units**



Flight Software QA Activities

- **Software Quality Engineering brought on staff this past month**
 - **Attending weekly flight software developers meetings**
 - **Attended and participated in the Flight Software Peer Review**
 - **Attended IV&V meeting conducted at SLAC**
 - **Reviewed the FSW Test Plan and discussed with Test Lead**
 - **Reviewed the FSW Requirements Document**
 - **Reviewed and discussed anomaly tracking with Test Lead**



LAT I&T QA Activities

- **Facility Readiness Review (SLAC I&T Facility – Building 33) was performed by LAT QA on May 19th & 24th**
 - **Facility Readiness Review performed to evaluate readiness of facility to receive, store, assemble and test flight hardware**
 - **4 findings and 22 observations were identified and documented**
 - **4 findings and 20 observations have been closed to date**
 - **Weekly surveillance of I&T facility is performed by LAT QA to verify compliance to cleanroom facility requirements**
 - **Performed with participation of I&T personnel**
 - **1 finding and 10 observations are open**
- **Developed and submitted for released Redline/Blackline Procedure, LAT-TD-03474**
- **Tracking actions required to make the ACD Tent Operational**
- **Witnessed installation of mock-up Tracker into 1X1 grid**