GLAST Large Area Telescope

Systems Engineering

Test Status, NCRs and Verification Status

Pat Hascall
Systems Engineering
Joe Cullinan
Quality

Stanford Linear Accelerator Center
LAT Test Status

• The LAT CPT test status
  – Completed Spacecraft B side testing, no significant issues
  – Supporting command/telemetry QAR resolution
    • My assessment
      – Telemetry drops are largely explained with a low risk that there is any flight hardware involved, work continuing
      – Command drops are partially explained
        » AstroRT buffer overwrite fixed March 30 during CPT (checksum errors)
        » QAR 1196-5013 covers dropped commands between AstroRT and the spacecraft FSW
      – Other misc issues are being resolved as we work through the list

• Radiator installation
  – Three thermistor pairs appear to be swapped
  – Unpowered test planned to verify understanding
  – Expected resolution is to change paper

• EMI test preparations
  – Unshielded temperature sensors not an issue
    • Analysis and test results resolved
      – Final LAT analysis/test assumes as built harness shielding and no blanket shielding
      – SC circuits easily handle the generated voltage
      – Report in process
  • Requires blankets to be properly dressed for EMI testing
## NCR Summary Status

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<th>Closure Plan</th>
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NCR Progress

• NCRs closed
  – NCR 983 LTC file size changed
• NCRs in process
  – NCR 992 (TEM phasing errors)
    • GSFC asked for additional information on this based on comments from the PER team.
      – ASICs were received as bare dice, so life testing was not performed on as-received lots
        » All ASIC testing was performed at MCM assembly level, 85 C, 168 hours
      – To mitigate some observed shorting, PWBs were baked out at Teledyne prior to assembly beginning in Feb. 2005; affected MCM was built April 2005
      – Isolated part failure (internal short in either ASIC or PWB) remains the most likely root cause after additional investigation.
• NCRs closing
Summary of 50V ceramic capacitors in low voltage applications on LAT

Follow up from PER:

- QAR 1196-5184 has been opened to track and document this LAT issue
  - Creating this QAR addresses PER RFA #17

- 100% of 50V capacitors screened for low voltage failure susceptibility have passed
  - unscreened parts are identical to screened parts except for different date lot codes
  - GSFC to complete DPA and final report on screened parts, ECD 5/31/07
LAT Level Verification Status

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<tr>
<th>Category</th>
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- **Progress this month**
  - All 458 VPs are Final
  - All VPs planned for execution to this point have been performed
    - 410 VPs have been executed to date
  - 405 VPs approved and 5 VPs conditionally approved by GSFC
- **Status**
  - VCRM version 25 released
  - All deferred GRB reqts will be sold post FSW B1.0 installation
Tracker Efficiency Update

- We have observed what appeared to be a step change in tracker efficiency after the LAT was integrated to the spacecraft
  - Efficiency numbers were down to 99% against a spec of 98%
  - Efficiency numbers are rising toward the normal level
- Review of historical data shows that this metric drops whenever the LAT has been unpowered for a length of time
  - LAT has had the longest unpowered intervals after the final stand-alone testing
  - Did not drop when unpowered during TV after initial bakeout
- Tracker team is fully involved to see if they can understand the phenomenon
- Following plots illustrate the history of the phenomenon
  - The metric is from the digi files and is related to 1-efficiency
  - Magenta line shows the times when the LAT was off
  - B side LAT CPT continued the expected downward trend