GLAST Large Area Telescope:

LAT System Engineering

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Topics

- **Status**
  - **Perf and ops signoff status**
  - **Particle test status summary**
  - **Plans to get to full LAT level test definitions**
  - **Trigger tests**
- **Data Bases**

Performance and Operations Test Plan (LAT-MD-02730)

- Status
  - Out for signature
    - Have received significant comments from Eric Grove and Martin Nordby, those comments are being incorporated
  - Particle Test Status
    - The muon collection test case review and update is complete
    - The VDG tests were approved for the single tower
    - The Am241 test was approved for the single tower
- Future plans
  - Contains test definitions through two towers, could be used up through 16 towers without flight GASU, EPU, SIU or PDU.
    - Current testing uses subsystem scripts in series, I&T is evolving to parallel testing
  - Utilize FSW capabilities as the definition matures to define more efficient testing that matches in orbit operations
  - Refine testing based on experience gained on single and two tower tests
  - Rich Baun leading this effort

LAT Level Test – Strategy

- An initial set of LAT Level test cases based on Subsystem tests has been identified (ACD, CAL, FSW, PWR, and TKR)
  - Support needed from ELX to identify test cases to verify T&DF functionality
    - Current approach has the ETE Test Cases, but additional tests are needed
  - Support needed from all Subsystems, FSW, and I&T to convert test cases to LAT Level and to identify possible efficiencies through use of FSW
- Will utilize FSW capabilities to test the LAT like it is flown
  - Plan to use modified FSW tests to conduct many LAT Level tests
  - Support from FSW is needed to
    - Provide detailed info on FSW capabilities and their use
    - Work with I&T and SE to modify FSW scripts so they sell the necessary requirements and run at the LAT Level
    - Work with SE and Subsystems on FSW capabilities (e.g. Diagnostic and Charge Injection) to support test
- Refine testing based on experience gained during integration
  - Support needed from Subsystems and I&T to identify and apply lessons learned
- Utilize Working Groups to define test details and present at weekly Test Planning Meeting for review

Performance &Ops Test Plan – Schedule

LAT Level Test Version	ECD
– Finalize requirements and functionality to be verified	1 April 05
– Identify FSW capabilities that will efficiently perform subsystem and LAT level test cases	15 April 05
– Detailed CPT, LPT, and test sequence definition	29 April 05
– Detailed test case definition	27 May 05
– First Draft available for review	13 June 05
– Initial release	15 July 05

Trigger Tests

- Trigger tests defined so far focused on single tower testing, with a single additional test defined for multiple towers
- Trigger group started meetings with JJ and Mike to review the existing tests and determine modifications for single tower, multiple tower and full LAT testing
- Meeting on March 16 to identify a draft list of additional tests, and prioritize those to be developed for single and two tower use
- Plan forward
  - Single and two tower test implementation to start immediately, with the focus on the two tower tests
    - Mini-tower differences from flight tower complicate the development, trigger team requests time on the flight tower to complete the test development
  - By end of March provide a plan for implementation of the remainder of the tests

Data Bases

- **Issue:**
  - Setting up for Tower A test highlighted the need for a coherent plan to capture and configuration manage:
    - Instrument setup data (hardware and software configuration)
    - Calibration data used to interpret the event data
    - Engineering telemetry coefficients
  - Parts of this information are in scattered data sets held by different organizations
- **Plan Forward:**
  - The approach must be a coordinated effort that includes:
    - SE
    - Subsystems
    - I&T
    - Off-line
    - ISOC
    - FSW
- **Rob and I will set up a working group to address the issue and formulate a plan**
  - Systems to drive the process initially to gather the list of data sets involved and high level flows
  - ISOC to provide the data base expertise to formulate the solution