GLAST Large Area Telescope
Monthly Mission Review

LAT Flight Software Status

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FSW Status

• FSW B1-0-4 ready for upload 10/30/07
  – FQT and LICOS CPT testing against Testbed in progress
  – Release handed to I&T online for preparation of LICOS_* releases that go with the new build
    • Some scripts require updating to take advantages of new filters and features
• During the process of putting out the FSW release, a few problems were uncovered and several rebuilds were done
Update to FSW build names

The build that will be uploaded to the LAT (B1-0-4) will contain the following functionality:
- Low rate science counters can be routed to SDI
- Bug fixes to GRB algorithm
- Tweaks to PIG/LIM to adjust delays and fix bugs
- Filter statistics added to science stream to monitor performance of onboard event filter
- Report HSK information on LAT power and LAT physics acquisition

Staged FSW releases to minimize impact on testing/debugging between now and upload

- **B1-0-2**
  - Built on 10/18
    - Discovered problems in response to GRB messages
    - Several problems in ground software coherency
  - Internal release – does not include housekeeping additions

- **B1-0-3**
  - Built on 10/22, rebuilt on 10/26
  - Cleaned up the minor issues in B1-0-2 in a coherent build
  - This build is viable, fully tested, and can be uploaded to the LAT
  - Housekeeping additions omitted from this build

- **B1-0-4**
  - Built on 10/27
  - Includes B1-0-3 + housekeeping additions (in other words, everything)
  - Undergoing a repeat of B1-0-3 testing
  - No issues so far
Issues and concerns

- Duplicate event ID bug
  - Repaired in B1-0-3 and B1-0-4
- GRB feature
  - GBM repoint recommendation immediately followed by closeout
  - Addressed in B1-0-3 and B1-0-4
- Miscellaneous ground software issues
  - Repaired in B1-0-3 and B1-0-4
- Solaris 5.10 issues
  - Nothing has been done to address compiler warnings at this time…
Duplicate event IDs

• During the last CPT, there were several runs containing events with duplicate event IDs
  – Affected runs: 077015242 (July 14), 077015893, 077015894, 077015895, 077015896
  – Problem was not discovered immediately:
    • Error flagged in digi report only if counters go backwards.
    • Not all events with duplicate event IDs cause this to happen.
  – Affects all runs that include diagnostic filter; exacerbated in runs with low acceptance rates
• Bug was discovered/fixed in EFC in B1-0-2 during implementation of FSW-999
  – Every event that is read out gets passed through the software filters that are enabled for that run.
  – Each software filter determines whether it can veto the event before it unpacks the event. If it doesn’t have to unpack the event, it won’t.
  – The bug: The diagnostic filter always assumed that the event it was processing had been previously unpacked and grabbed the GEM contribution from where it was supposed to be.
    • This worked when another filter had already unpacked the event.
    • When only the diagnostic filter passed the event, the diagnostic filter was grabbing a stale GEM sequence number from the previous event and we saw duplicate event IDs
• The fix: Diagnostic filter now unpacks an event if it has not been previously unpacked.