
# GLAST Large Area Telescope

## Instrument Flight Software

## LAT Monthly
## Sept 27, 2005

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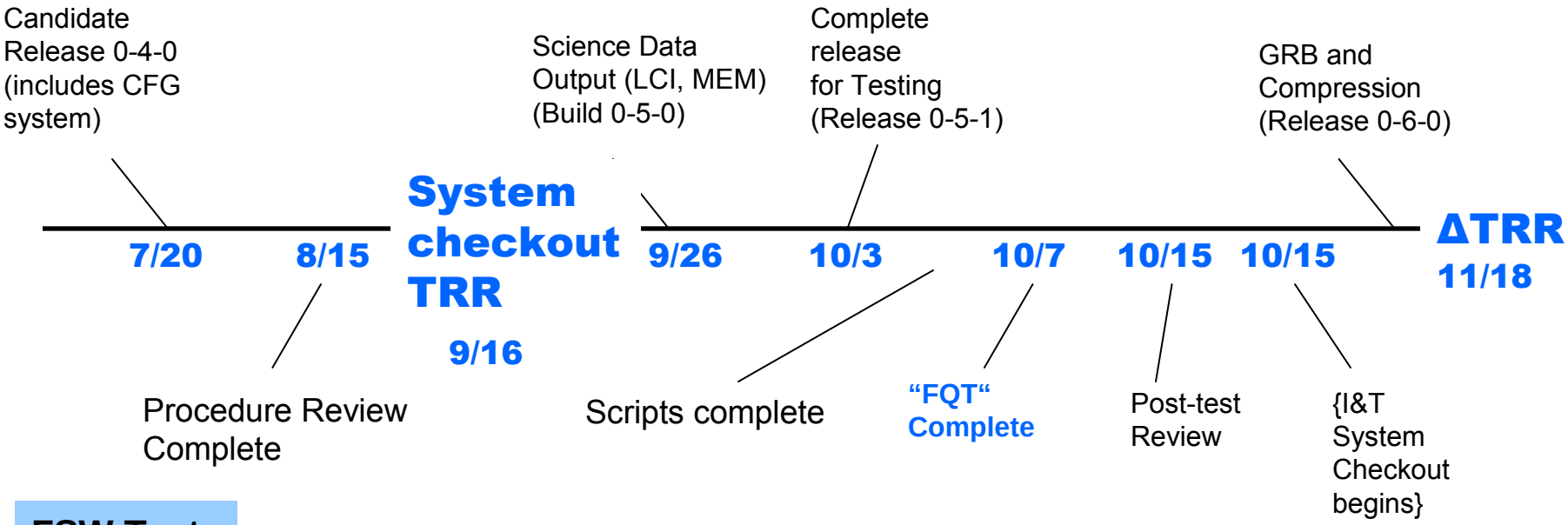
# FSW Status

- FSW Short term plans
  - Run calibration on the LAT with a FSW build OCT 1
  - Run FSW build for engineering FQT OCT 7
    - Build will have all FSW functionality with a small number of well identified liens (eg GRB identification)
  - Engineering FQT during Oct  with Formal FQT in Dec

- We now have a new build (B0-5-0)
  - Provides output to SSR
    - Calibration, memory dumps, etc
  - Working on filter configuration, diagnostic and science data output
    - (0-5-1)
- Most FSW packages under CCB control with this build
  - 9 left and will be picked up with 0-5-1
    - LCI  LTC LPA
- Had a successful engineering TRR
- Have ISOC ICD draft ready & plan to put into LATDOCs this week

# FSW Development and Test Milestones for FQT

## FSW Development




## FSW Test

# TRR Scope and Objectives

- System Checkout FQT Goal
  - Verify functionality before running in I&T System Checkout environment (not a “run for the record”)
    - Formal run of test scripts prior to delivery
    - All scripts will be re-run during pre-System Test run for the record
- System Checkout TRR Goals
  - Demonstrate thoroughness and completeness of test program
  - Show clear mapping of requirements to procedures
  - Describe test environment
  - Identify open issues
  - Communicate action plan to address open issues, identifying clear entrance/exit criteria for System Checkout FQT
- Verification of GRB-related requirements and standards requirements deferred to System Test FQT

# FSW System Checkout FQT Lien Summary

- **Documents**
  - **Final updates to test procedures as needed based on formal dry runs**
  - **Telecommand and Telemetry Formats to be generated and approved by FSW CCB (LAT-level approval to follow, but not a lien)**
- **Development: Create FSW build to address the following**
  - **Implementation of output to the Science Data Interface**
  - **Command/control/telemetry/mode interface to event data (LPA)**
  - **Open JIRA items (excluding those already identified as deferred)**
  - **science data decoder**
- **Scripts**
  - **Complete each script, incorporating cleared development liens as applicable**
  - **Dry run each script**
- **Individual scripts can be run for FQT once liens against it are cleared**

# Sept Activities

- Emphasis on
  - integration and Build for engineering FQT ( and delivery to I&T)
  - using new ability to write to the SSR
  - using an well constructed data formats
  - making the LCI (LAT Calibration) work for the real instrument

- started on configuration of LPA package and managing the event handlers (of which filters are the most notable class) and the summary diagnostic data
- Updated the LIM design document with new configure telecommands.
- Included proper timestamps in the telemetry packets sent by the LIM and MEM packages
- Released first round of changes to LTC package with
  - ADC->temperature conversion table
  - LTC master configuration file

# FSW Outstanding Issues

- CR 0-5-1 needs to be made with formatted filter output to SSR
  - LPA (physics) output
  - File dumps
- Completion of high priority Lien list items
  - Finish any missing event formats needed for FQT
  - Finish event decompression & decoder
  - GRB identification
- Discovered bugs need to be addressed and CR 0-5-X made to run system checkout FQT against.
- EGSE software decoder
- Gain operational experience and address any high priority issues

# Test Script Status (1 of 3)

| Test Script (in priority and planned execution order) | Tester | Initial Dry Run | Open Dev Liens* Complete Dry Run | | Peer Review | Formal Dry Run |
|---|---|---|---|---|---|---|
| | | Milestones | | | | |
| **Primary Boot (nominal)** | | | | | | |
| FSWINI_001: SIU primary boot | IK | √ | | √ | | |
| FSWINI_009: SIU boot status on discrete lines and SIU boot housekeeping telemetry | IK | √ | | | | |
| FSWINI_005: EPU primary boot | IK | √ | | √ | | |
| CMDFNC_001: Soft reset | SC | √ | | √ | | |
| | | | | | | |
| **Secondary boot (nominal)** | | | | | | |
| FSWINI_010: SIU and EPU secondary boot | IK | √ | | | | |
| NBTLMV_001: Housekeeping and low-rate science | SC | √ | | | | |
| | | | | | | |
| **Configuration (nominal)** | | | | | | |
| SIUCFG_001: LAT subsystem data collection | SM | √ | 2, 3, | | | |
| SIUCFG_002: LAT subsystem configuration | SM | √ | 2, 3, | | | |
| FILMGT_001: File management | SC | √ | | | | |
| | | | | | | |
| **Mode Control** | | | | | | |
| OPMODE_001: Mode control | SM | √ | 2 | | | |
| | | | | | | |
| **Charge Injection** | | | | | | |
| FECALB_001: TOT measurements | IV | √ | 2, 3, | | | |
| FECALB_002: TKR Threshold and charge scans | IV | √ | 2, 3, | | | |
| FECALB_003: TKR Trigger check | IV | √ | 2, 3, | | | |
| FECALB_004: ACD CI | IV | √ | 2, 3, | | | |
| FECALB_005: CAL CI | IV | √ | 2, 3, | | | |

# Test Script Status (2 of 3)

| | | | | | | |
|---|---|---|---|---|---|---|
| **Diagnostic functions** | | | | | | |
| DCMODE_001: ACD Diagnostics and Calibration | SM | √ | 2, 3, | | | |
| DCMODE_002: CAL Diagnostics and Calibration | SM | √ | 2, 3, | | | |
| DCMODE_003: TKR Diagnostics and Calibration | SM | √ | 2, 3, | | | |
| EVTPMO_001: Deadtime | IV | | 2, 3, | | | |
| EVTPMO_002: VETO rates from GEM | IV | √ | 2, 3, | | | |
| EVTPMO_003: L1 Trigger Rates | IV | | 2, 3, | | | |
| EVTPMO_004: Monitor CNO Rates | IV | | 2, 3, | | | |
| | | | | | | |
| **Filter** | | | | | | |
| EVTFIL_001: Interface from the Event Builder | IV | | 2, 3, | | | |
| EVTFIL_002: Rates and capacity | IV | √ | 2, 3, | | | |
| EVTFIL_003: Reprogramming | IV | | 2, 3, | | | |
| EVTFIL_004: Filter bypass | IV | | 2, 3, | | | |
| WBTLMV_001: Science data format and volume | IV | | 2, 3, | | | |
| | | | | | | |
| **Primary boot (non-nominal)** | | | | | | |
| FSWINI_002: Boot self-test | IK | √ | | | | |
| FSWINI_003: Multiple boot images | IK | √ | | | | |
| FSWINI_004: SIU hardware reboot in response to signal on the discrete lines | IK | √ | | | | |
| FSWINI_007: Storage and retrieval of system errors during SIU primary boot | IK | √ | | √ | | |
| FSWINI_006: Reset source | IK | √ | | √ | | |
| FSWINI_008: Storage and retrieval of system errors during EPU primary boot | IK | √ | | | | |
| FSWINI_012: SEU protection | IK | 9/29/2005 | | | | |
| FSWINI_013: Memory scrubbing | IK | 9/29/2005 | | | | |
| FSWINI_014: Watchdog management during boot | IK | 9/29/2005 | | | | |

# Test Script Status (3 of 3)

| | | | | | | |
|---|---|---|---|---|---|---|
| **Secondary boot (non-nominal)** | | | | | | |
| FSWINI_011: SIU and EPU secondary boot error mitigation | IK | √ | | | | |
| CMDFNC_003: 1553 interface and command functional verification | SC | 9/29/2005 | | | | |
| | | | | | | |
| **Configuration (non-nominal)** | | | | | | |
| MEMMGT_001: Memory managment | SC | √ | | √ | | |
| MEMMGT_002: Memory load data | SC | √ | A | | | |
| | | | | | | |
| **Other non-nominal** | | | | | | |
| NBTLMV_003: ACD HSK anomaly response and alert telemetry | SC | 9/29/2005 | | | | |
| TIMPRC_001: Time Services | SM | √ | 2, 3, 7 | | | |
| | | | | | | |
| **Interface formats** | | | | | | |
| NBTLMV_002: Diagnostic telemetry | SC | √ | | √ | | |
| IPCFNC_001: Inter-processor communications | SM | √ | 2, 3, 7 | | | |
| VSGIFV_001: Discrete Signal interfaces | SM | √ | | | | |
| | | | | | | |
| **Thermal** | | | | | | |
| THRMCS_001: Thermal control system | SM | √ | | | | |

***Development Liens**

1) Closed.
2) VSC science data processing
3) Event data formatting - SIUCFG,DCMODE,TIMPRC,IPCFNC
4) Closed
5) Closed.
6) Closed
7) M7 in SSR telemetry - JIRA FSW 163 - TIMPRC,IPCFNC

**Other Liens**

A) Autoboot