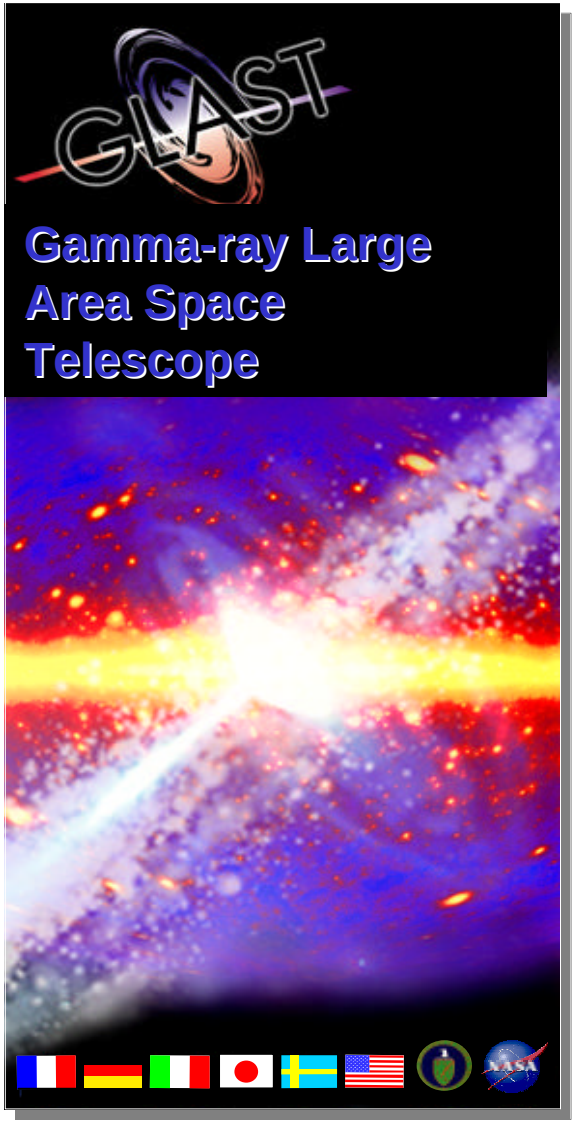

GLAST Large Area Telescope:

Tracker Bottom Tray Redesign
Plan A Modified

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Plan A Modified

- What have we learned over the past few months?
- What is the best workable solution that equals the most cost effective and schedule efficient solution?
- Who should do what?

What have we learned?

- Need to establish design criteria:
  - Random vibration input = GEVS general qualification random vibration levels.
    - Use for all Modeling and testing.
    - Use Margin of Safety of > 0.25 on B allowables and a factor of safety of 1.4 on test and 2.0 on analysis on the qualification peak values (peak is defined as the RMS X 3).
  - Tower fundamental frequency and relative motion = required tower stiffness.
    - Tower stiffness of XX Hz (TBD by system level analysis).
    - Relative motion of single tower irrelevant – EM, Qualification and Acceptance testing all done on single tower.
- Need to review the design
  - Current design "passed" PDR.
  - FEA analysis needs more fidelity in localized areas.

Best Workable Solution

- Modify current design to meet GEVS general qualification random vibration levels:
  - Increase corner joint strength and margins.
  - No change to design to increase fundamental frequency needs to be implemented at this time.
- Reassemble prototype tower and test
  - Additional 5mm higher closeouts and no “pockets” will be additional margin.
  - Verification of design before fabrication of modified EM bottom tray.

Option Trade Cuts

- **Back up Bottom Tray Material –Invar? Metal Matrix?**
  - **Invar: Magnetism and CTE issues make for a difficult solution – terminate effort.**
  - **Metal Matrix: Needs some further study – workable solution If needed. – Document current understanding of material**

Who Does What

- **Hytec:**
  - **Update FEA with modified bottom tray design. Deliver reduced fidelity FEA model for use in LAT model.**
  - **Testing of Proto Tower, write test plan and do analysis correlation.**
  - **Fabricate static load fixture and test Prototype Tower bottom tray.**
- **COI:**
  - **Fabricate and test coupons.**
  - **Fabricate prototype corner flexure mounts.**
  - **Assemble bottom tray for prototype test.**
  - **Support reviews.**
- **SLAC:**
  - **Manage tasks, Coordinate flight fabrication with INFN.**
  - **Update drawings as required.**
  - **Develop thermal interface Tower to Grid plan.**