

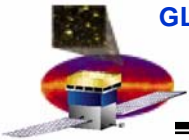
**LAT Manager's Meeting**

**5 August 2004**

# **LAT Analysis Status**

**Martin Nordby**

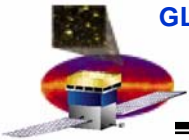
**nordby@slac.stanford.edu**



## Structural Analysis: Completed Tasks

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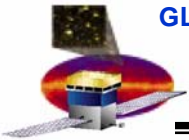
- **LAT System Level**
  - Environmental spec review cycle complete, release imminent
  - LAT Instrumentation plan released
  - LAT Acoustic Test Issues Supported
    - Completed trade study to evaluate risks of omitting LAT and/or subsystem tests
    - Discussed acoustic test STE design options with GSFC, i.e. whether or not a SC simulator is needed; resolution expected by around 8/6/04
  - LAT Dynamics test plan draft complete; release expected within the month



## Structural Analysis: Completed Tasks

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- **LAT Subsystem Level**
  - **TKR Subsystem**
    - **TKR Flight Design and Final Analysis complete** – all new TKR parts analyzed for with positive margins
    - **TKR GSE Assemblies**
      - Lift Fixture analysis, report and proof test complete
      - Inner Shipping Container analysis complete (report and proof test pending)
      - External Shipping Container evaluation complete (proof test TBD)
    - **TKR Structural Testing**
      - TWR A Bottom Tray Static Test Procedure revised and released – ready to test
      - TWR A Vibration Test Procedure revised and in review – ready to test by September 6
    - **TKR Additional Studies**
      - Bias circuit delamination analysis at 85C confirms CTE mismatch as cause of initial failure
      - Bias circuit analysis at 55C complete but yields inconclusive results
  - **EBOX Subsystem**
    - Reviewed EBOX TEM/TPS vibration test procedure
  - **Grid Subsystem**
    - Supported Radiator Test plan
    - Supported closure of two Grid NCRs
  - **MGSE**
    - Analysis and report complete for most MGSE required for LAT I&T

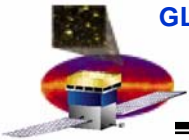


## Structural Analysis: Current Tasks In-process

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- **LAT System Level**
  - **LAT Dynamics Plan is being actively reviewed between SLAC and GSFC; closure by Aug-04**
  - **LAT Acoustic Test Plan Closure by Aug-04**
  - **LAT Vibration Test Plan pending**
    - Preliminary analysis complete (ER, JK)
    - Final analysis pending agreement on LAT Dynamics plan (ER) ECD=Sep-04
  - **LAT Thermal Distortion Analysis**
    - Preliminary analysis complete (MO)
    - Final analysis and reporting of results pending further discussion (MO) ECD=Oct-04
  - **MGSE for Integration Analysis**
    - Additional analyses being performed to address lift stability and other issues
  - **Shipping Container Analysis**
    - Preliminary analysis complete (YI)
    - Needs to be performed with new parameters (ER), ECD=Nov-04

\*Performed by: JK=John Ku; MO=Mike Opie; ER=Eric Roulo; YI=Youssef Ismail; MM=Mark Molini; SAI=Swales

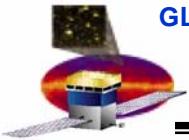


## Structural Analysis: Current Tasks In-process

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- **LAT Subsystem Level**
  - **TKR Subsystem**
    - Continued support of TKR TWR A testing, as-needed (MO, ER) ECD=July/Aug-04
    - Continued support of TKR NCR disposition, as-needed (e.g. bias circuit delam) (JK) ECD=Ongoing
    - Analysis of TKR Turn-over fixture and other MGSE (JK, MO). ECD=Aug-04
    - Support proof testing of TKR related MGSE (JK, MO). ECD=Aug-04
  - **EBOX Subsystem**
    - Re-analyze EBOX for new design and loads (SAI). ECD=Aug-04
    - Develop EBOX test plan/procedure (SAI). ECD=Aug-04
    - Test EBOXs (JK,ER) ECD=Sep-04?
  - **Grid Subsystem**
    - Grid Static Testing (for strength and stiffness survey, performed by SAI). ECD=Sep-04
    - Grid Static Test plans/procedures/STE (SAI). ECD=Nov-04
    - Test Grid (JK, SAI) ECD=Feb-05
    - Support RAD and XLAT issues, as needed (JK) ECD=Ongoing

\*Performed by: JK=John Ku; MO=Mike Opie; ER=Eric Roulo; YI=Youssef Ismail; MM=Mark Molini; SAI=Swales



## Interface Analysis of As-Built Components

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- **Tracker**
  - Finalized TKR Tower Alignment Plan (LAT-MD-03566)
  - Prototyped the measurement and alignment procedure on the mock-up tower in Pisa using SLAC-provided CMM script with Pisa's CMM and operators
  - Successfully reduced data to evaluate tolerance condition of as-aligned tower
  - Next step:
    - Complete small changes in script and put under configuration control
    - Re-run alignment process on SLAC's CMM to independently validate the program and verify that the CMM at Pisa is correctly running it
    - Use this for Tower A, with small known tweaks needed to accommodate final flight hardware design that was not present in the mock-up
- **Grid**
  - Grid #1 inspection is going on now (more on that later)
  - We are working with Mech Systems to reduce the inspection data and evaluate tolerance condition and pass/fail of as-built features (in-progress)
  - Also using this data to evaluate fit of TKR and CAL modules in each Grid bay (in-progress)
  - Next step:
    - Finalize inspection pass/fail evaluation
    - Complete analyses of TKR and CAL fits based on as-built dimensions
- **E-Box Stack**
  - Updating stack-up tolerance analysis based on as-built dimensions to catch last-minute changes in Grid manufacturing
  - Supporting investigation of feasibility of on-Grid replacement of E-Boxes and impact on stack-up tolerances and measurement