LAT Planning Meeting

Mechanical Systems
October 2003
Marc Campell
Chips are flying!
Current MECH Work Flow Summary

Does Not support LAT schedule
Proposed MECH Work Flow Summary

Dedicated Qual Grid removes Static Load Test from critical path
Interdependencies with other subsystems, instrument office, and/or project office.

- CSE – Analysis support for design release – in work
- S/C - need tool to drill S/C I/F on Grid (Jan – Feb 04)
- TRK – Need flex cable design released
  - need TRK supplied tool to drill TRK-Grid I/F
- ACD – need BEA to match drill Grid-BEA I/F (Dec-Jan)
- LM – X-LAT plates NOT needed for GBA testing
  - Deliver directly to I&T
  - Radiators needed for fit check during LAT environmental tests
- IPO – LM ITAR hardware in B33
- ELEC – TCS design, prototype fab
  - TCS EGSE design & fab for Radiator Thermal balance test
  - Coordinated TCS procurements
  - Real estate in connector plates for venting & ground cooling
  - Heater control box design & cable routing
  - Internal design review MECH + ELEC
Interdependencies with other subsystems, instrument office, and/or project office.

- **ELEC needs**
  - Release of E-box enclosure designs
  - X-LAT plate thermal performance
- **I&T - Schedule space in B33 for MECH assy & test**
- **I&T needs - Grid to start integration**
  - Shear plate installation procedure
  - EMI skirt & Grid provisions for ground cooling
  - Jeff Wang responsible for thermal analysis of ground cooling
Open Flight Design Issues

1. Finalize CAL-Grid interface design - complete-peer review held
2. Finalize X-LAT to E-box design – design complete, analysis in work
3. Close Grid-ELEC interface issues (grounding & EMI) - in work
4. Delete Radiator level EMI test requirement - Deleted (repeat EM test w/ Aluminum tape over heater)
5. Mechanically install Radiators for LAT EMI test (T. Liesgang to revise LAT test plan)
6. Grid-TRK interface - define Grid datum & TRK tooling interface – concept being analyzed
7. Define GBA Static Load test requirements & plans – prelim plan presented at Peer Review
8. S/C Flexures for GBA static load test – Spectrum will provide
9. GBA Thermal cycle vs Thermal Vacuum test - approved
10. RFA on adding a U heat pipe to X-LAT plate in case of XLHP failure – will be implemented
11. Other RFA’s closure
12. X-LAT plates not available for GBA static load and thermal cycle tests – No longer required for these tests
## MECH Changes Since CDR

<table>
<thead>
<tr>
<th>ITEM</th>
<th>IS</th>
<th>WAS</th>
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<tbody>
<tr>
<td>CAL-Grid I/F</td>
<td>CAL Shear Plates</td>
<td>Friction Joint</td>
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<tr>
<td>X-LAT - Ebox I/F</td>
<td>Bolted connection</td>
<td>Veltherm</td>
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<tr>
<td>X-LAT Plate</td>
<td>Single plate</td>
<td>3 Plates bolted together</td>
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<tr>
<td>X-LAT U-shaped heat pipe</td>
<td>2 new HP’s added</td>
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<tr>
<td>X-LAT component testing</td>
<td>Structural test</td>
<td>TBR</td>
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<tr>
<td>Qual X-LAT plate</td>
<td>Deleted</td>
<td>Qual program</td>
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<tr>
<td>Radiator Testing</td>
<td>Low Level Sine Vibe Structural Test (TBR) Acoustic Low Level Sine Vibe IR Signature Mass Properties Stand alone Thermal Vac/ Th Balance</td>
<td>Deleted Sine Vibe &amp; EMI tests &amp; Thermal Balance w/ X-LAT Plates</td>
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<tr>
<td>eNickel &amp; EMI gaskets</td>
<td>Grid, EMI Skirt &amp; X-LAT interfaces are nickel gasketing is TBR</td>
<td>alodine surfaces</td>
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<td>S/C interface</td>
<td>Wider footprint</td>
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<td>CRES bushing for pin</td>
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Flight hardware procurements – schedule for existing and plans for remaining

• Long-Lead Procurements
  – Grid # 1 in rough machining
  – Billet #2 being remade ECD 10/31/03 – will hold until ~ Jan 04
• Major Upcoming Procurements Near-Term (< 4 months)
  – Flight Hardware for Thermal Control System - started
• Minor Upcoming Procurements
  – GSE – 6 designs est Nov 03
  – Grid Assembly Fixtures, Test Equipment est Dec 03
  – Thermal-cycle Test Fixtures est Jan 04
# Flight Hardware Manufacturing Plans

- 3 Assy plans: Drafts
- 3 Assy Procedures: Not Started
- ~12 Process Specs (some used by LAT): Not Started
- 2 Test Plans: SLT started
- 2 Test Procedures: Not Started

- Does not include LM or Grid Vendor plans & procedures
  - Tapemation Grid Mfg plan draft out for review
Concerns & Risks

1. Will we be ready to cut Grid chips on Nov 1 (was 9/12)
   a. Detailed stress analyses complete
   b. Close all open design issues
   c. Design mods incorporated & drawings released
   d. Successful MRR
2. Manpower (Engr & Techs) availability – Req for ME opened
3. Details of how, where & who for Grid Box Assembly work (Larry Wai)
4. Finalizing CAL & X-LAT designs
   a. CAL Shear plate & X-LAT – Ebox stack EM testing & flight grid fab in parallel
5. Cost & availability of EGSE for Radiator Thermal Balance Test
6. Adequate support for LM efforts – Jack Goodman to pick up many of these tasks