

LAT Monthly Management Review

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Design Integration and Analysis

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- Tracker open issues list
 - Flexure interface to Grid
 - Corner and mid-side flexure design modified to improve stiffness of connection to Grid—current baseline concept uses pairs of eccentric cones to both tightly locate flexure and provide for adjustment capability
 - Interface Definition Drawing—updated IDD drawing to reflect this change
 - Flexure and bottom tray design details are currently being thoroughly checked and revised to verify that integration and assembly considerations are factored into the details
 - Thorough tolerance review indicates disconnects on fabrication and assembly processes
 - Detailed part designs do not always support the needed assembly-level design requirements
 - Design integration has gotten involved with a team of 3 people to completely review this design

Flex Cable routing

- IDD stay-clear dimensions of cables have been checked against Grid chaseway details and confirmed to fit
- Investigation of the flex cable hardware dimensions brought up potential problems with the fit of the cables in their stay-clears
- We have since deployed 2 people to track down the source of inconsistencies, clean up the solid models, and complete and check all cable models and drawings against their respective stay-clear
- Provisions for fly-away instrumentation mounting and surveying tool
 - Plans for fly-away accelerometer and thermistors on the TKR module tops are now firming up, however there are currently no provisions for supporting the instruments or cabling—this is not a significant design lien and will be addressed after the flexure design is completed
 - Accommodation for survey fixture needs clarification—TKR surveying plans are not well-known; their fixturing needs to be used for LAT-level optical surveys, so these plans need solidification. This will be done in conjunction with instrumentation routing



- CAL open issues list
 - CAL interface to Grid
 - CAL, Grid, and Shear Plate drawings cross-checked prior to Grid drawing release → all flight hardware dimensions and tolerances agree with IDD's and fit together
 - Interface Definition Drawing (LAT-DS-00233-07)
 - Revised IDD draft is complete and one day away from sending out a signature copy
 - This reflects all changes made to the interface over the fall
- ACD open issues list
 - MLI blanket interfaces
 - Blanketing concepts for LAT have been discussed with Spectrum and LM, but these need to be fleshed out to finalize ACD blanket geometry, termination, support, and grounding—Jack Goodman is working this design, and will focus on it after TKR T-Vac planning is complete
 - Fly-away instrumentation
 - Plans for fly-away accelerometer and thermistors on the ACD are nearly complete, however there are currently no provisions for supporting the instruments or cabling—this needs closure once final list of instrumentation is complete



- Radiator open issues list
 - VCHP helium leak rate
 - Need to run confirming analysis that helium leak specification for the VCHP does not produce "pooling" of helium around the ACD PMT's—this is expected to be a low design risk, but needs closure for completion
 - MLI blanketing and interface to spacecraft
 - Blanketing concepts for LAT have been discussed with Spectrum and LM—Jack Goodman is working this design, and will focus on it after TKR T-Vac planning is complete
 - Cable routing
 - Routing of cables on Radiators and placement of instrumentation needs to be checked by LAT, to confirm that everything stays within its stay-clear and is routed correctly—Rich Bielawski working this issue to closure with Mech Systems and Elec
 - Interface Definition Drawing (LAT-DS-01221-01)
 - Needs updating to fix error in heat pipe holes layout, mounting pin size, and to add cable routing information—mark-ups collected and revision is in the queue
- Open issues for X-LAT:
 - Ground cooling
 - Water cooling is spec'd but I&T prefers gas cooling—Jack Goodman will finalize ground cooling plans in early February. This does not impact flight hardware design but may alter manifolding
 - Heat pipe shimming process
 - XLHP-DSHP-VCHP assembly and shimming process and tolerances have been checked and the design confirmed as part of the Grid drawing check → next step is to develop process plan for shimming these joints. Mech Systems is prototyping this in conjunction as first step in qualification testing for this joint
 - X-LAT Source Control Drawing
 - Drawing has been checked by all parties—release print ready to be generated



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- Grid Box open issues list
 - Heater Control Box
 - Rich Bielawski working known interferences between this and the handling bracket—expect to alter GSE bracket and re-route two cables (but not their connector locations)
 - Ground cooling
 - Grid wing chill bar design not yet re-worked with gas cooling—Jack Goodman will complete this in conjunction with X-LAT ground cooling analysis
 - Heaters and thermostats
 - Final heater sizing and placement is being completed now, with involvement by Jack Goodman to ensure they meet thermal requirements
- Electronics open issues
 - X-LAT mounting holes and tolerances
 - Drafts of box drawings have been checked and all hole placement and tolerances is confirmed to work with X-LAT SCD details
 - Cable trays
 - Cable trays design details are in the process of being modified to reflect changes in integration sequence



- LAT Integration Sequence (LAT-MD-00676-02)
 - This was developed in conjunction with subsystem leads, design integration, and I&T
 - It provides detailed sequence information to direct I&T in its procedure writing effort
 - This provides the structure that I&T will use for planning integration activities, GSE design, and work flow around the LAT during integration
 - Document sent out for review on Dec 19, with comment period ending 1/16
 - Plan to distribute signature copy by next week
- LAT Environmental Test Sequence (LAT-MD-02717-01)
 - Started weekly meetings to work out basics of environmental test flow and impact on test configurations and logistics/handling
 - We are working toward a late February release of a draft Test Sequence document
 - This group will also review detailed test plans to ensure they fit logistics plans
- Observatory integration sequence
 - This is the final document in the trilogy
 - Intended to capture all LAT plans for integrating the LAT on the spacecraft
 - This will serve as source of any logistics, access, or handling requirements for the LAT during its integration at Spectrum
 - Not started



Structural and Dynamics Analysis and Test Planning

- LAT FEA model
 - LAT v10.07 posted on 19 Jan 2004—this is the "CDR deliverable" model
 - LAT v10.07S posted on 19 Jan 2004—to be used for STOP analysis
 - Delivery report to follow
- Grid structural analysis report
 - Second draft of report completed on 23 Jan 2004
 - Final release waiting finalization of TKR-Grid interface analysis and checking and editing by LAT IPO
- LAT Environmental Spec update
 - Swales has updated loads tables based on Fall 2003 CLA results
 - Next step is to complete the revision process and release draft
- Modal Test Planning

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- Working on updating modal test plans in response to feedback from 3 successive TIM's on the topic
 - Goal is to spec basic test configuration, STE, and instrumentation so I&T can finalize environmental test schedule and STE planning
- LAT Dynamic Test Plan is being revised at the same time



- Thermal-Vac Test Plan
 - Started revising T-Vac Plan for the LAT in conjunction with NRL test engineer and Env Test working group
 - This includes finalizing test and flight instrumentation lists
- MLI blanket design
 - Developing integrated blanket design
 - Checking AO spec's as part of process in confirming subsystem designs
- Ground cooling
 - Working ground cooling plans and GSE requirements in conjunction with reviewing and finalizing test thermal requirements. Issues:
 - Length of each test and cooling/temp req's for these tests
 - Access for mounting GSE chill bars
 - Is auxiliary cooling needed during LAT and/or Obs T-Vac cycling and if so, how to best include it



Summary of Milestones for the Next 3 Months

- TKR
 - Release TKR IDD
 - Close stay-clear issues at top of TKR
- CAL
 - Release revision of CAL IDD
 - Complete first draft of CAL Outline drawing
- Radiators
 - Release revised Radiator IDD
- X-LAT Plate
 - Release X-LAT SCD
- LAT Integration and Test Planning
 - Release LAT Integration Sequence document
 - Complete draft of LAT Environmental Test Plan and distribute
- Structural analysis
 - Complete modal survey plan and update LAT Dynamics Plan
 - Complete LAT thermal-mechanical analysis
 - Finalize LAT test instrumentation list
- Thermal analysis
 - Complete T-Vac Test Plan revision
 - Spec out ground cooling plans
 - Finalize LAT test instrumentation list