

GLAST Large Area Telescope: Performance & Safety Assurance

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4.1.A P&SA – Status November 2005

- DAQ/Electronics

GASU:

- Completed handoff of 1st GASU to I&T
 - 3 NCRs open from T/V test but are ready to close, all other NCRs closed
 - Finalizing acceptance data package

EPU/SIU:

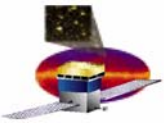
- Completed environmental testing on proto-flight and first four flight boxes
 - NCRs on first four flight boxes are closed
 - Fifth box is completing T/V testing this week

PDU:

- 2nd PDU received; incoming inspection complete

HCB:

- Supported inspection and start of environmental testing on first two modules



4.1.A P&SA – Status

November 2005

- DAQ/Electronics
 - X-ray evaluation of cPCI soldered pins
 - SLAC/GSFC MRB has reviewed and approved cPCI connector soldered pin x-rays for all SIU/EPU boards for first five flight boxes
 - Maintaining detailed pin-by-pin documentation of connector x-rays, pin solder touch up, and MRB acceptance for each SIU/EPU board.
 - SLAC/GSFC MRB will continue to review cPCI x-rays for final approval of each board. Remaining boards to be evaluated are spares.



4.1.A P&SA – Status November 2005

- DAQ/Electronics

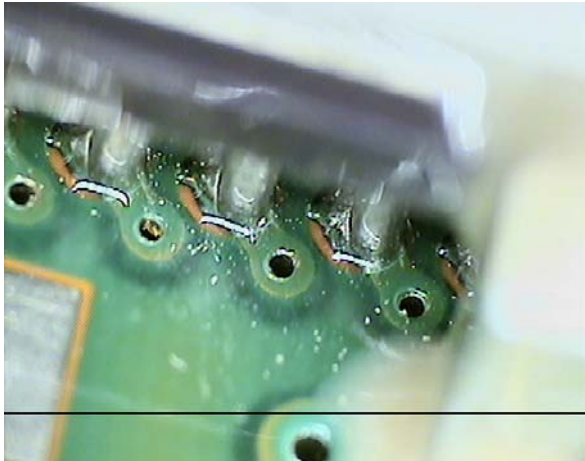
RAD750 boards

- SLAC received sixth flight board (S/N 013)
 - Observed particulate contamination on board when received (NCR 737)
 - Contamination level was far less than the contamination levels observed on Spectrum Astro boards.
 - SLAC, GSFC and BAE representatives inspected contamination on S/N 013 on site at SLAC
 - With BAE concurrence, S/N 013 was cleaned by SLAC personnel on site. S/N 013 was accepted following successful cleaning to remove particulate contamination.
 - S/N 013 will be used in sixth crate (spare)
- SLAC also received final RAD750 board (S/N 031)
 - No additional cleaning was required
 - Minor workmanship issues were observed (NCR 758) and resolved
 - S/N 031 is integrated in fifth crate

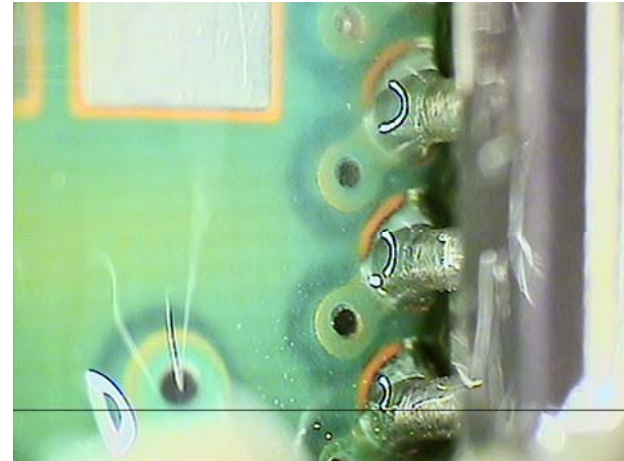


RAD750 S/N 013

Before and After Cleaning at SLAC



S/N 013
Before cleaning particulates
around U8

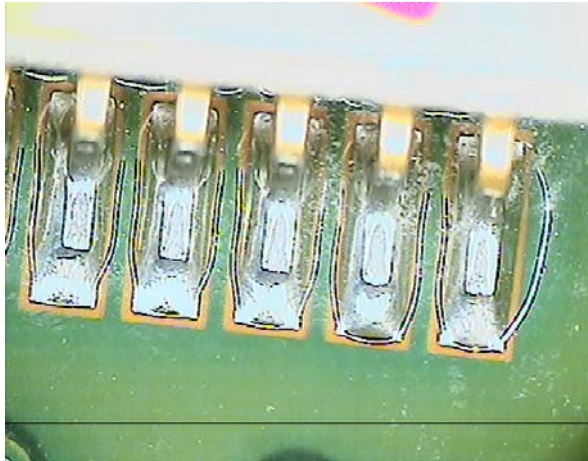


S/N 013
After Cleaning around U8



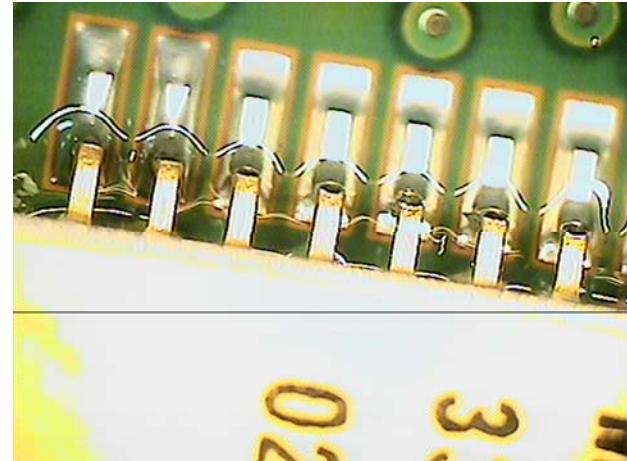
RAD750 S/N 013

Before and After Cleaning at SLAC



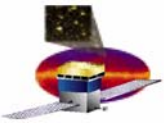
S/N 013

Observed surface contamination
near U12, before cleaning



S/N 013

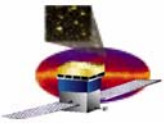
U12 after cleaning



4.1.A P&SA – Status

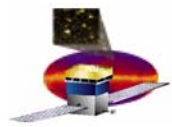
November 2005

- Integration and Test
 - Supported integration of PDU to LAT
 - Supported cable and thermistor integration on LAT
 - Resolving issues with cable fit and length (NCRs 736, 741)
 - Need to remake some cables that were too short
 - Supported X-LAT plate fit check on LAT
 - Fit check on LAT showed 15 through holes required reaming to clear interferences with attachment holes on Grid (NCR 744)
 - X-LAT was removed from Grid; reaming completed
 - Supported integration of ACD to LAT
 - Issues with ACD integration:
 - 6 fasteners on +X side of BFA not completely torqued. I&T torqued fasteners prior to integration. Notified the ACD team of this discrepancy (NCR 753)
 - Fasteners securing ACD to corners of Grid are too short; plan is to use longer fasteners (NCR 754)
 - Bottom edge of micrometeor shield appears to partially obscure some connectors on BFA; likely will require rework of shield to eliminate interference. I&T will work with ACD team to resolve (NCR TBD)



4.1.A P&SA – Status November 2005

- Tracker
 - Qualification testing of Parlex and Pioneer flex cables
 - Trace Labs (Hunt Valley, MD) will conduct the same qualification testing on Parlex and Pioneer cables
 - Qual test final report for parlex cables scheduled for completion next week. No problems/failures during testing have been reported by Trace Labs
 - Pioneer has submitted test cables to Trace Labs in mid November; testing is underway with no problems reported to date.
 - GSFC Mission Assurance requested responses to specific INFN NCRs related to early TCMs produced using silicone masking tape, trays that used epoxy encapsulant on wire bonds, trays with noisy channels, and observations of wire bond breakage and shorting
 - Responses were submitted; need to review with GSFC for closure



4.1.A P&SA – Status November 2005

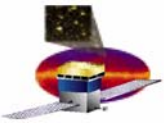
- Mechanical Systems

Static Load test (Grid #2)

- Supporting Test at NTS
- Observed galling of interface pins during separation of Grid #2 from non-flight flexures (NCR 740)
 - Pins were replaced, Grid bushings and flexure holes were repaired per MRB concurrence.
 - To avoid pin galling during Grid/flexure separation, threaded fasteners must be loosened before pins are removed
 - Grid was successfully attached to flexures following repair, and test is proceeding.

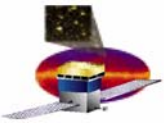
Lockheed Martin deliverables

- Identified open items in acceptance data packages for Radiators and X-LAT
- LM has not yet delivered data packages
- Final hardware (MLI, isolators) have been delivered



4.1.A P&SA – Status November 2005

- FSW QA
 - Completed four successful formal dry runs of test scrips
 - Supported V&V of LATTE Release R4.11.0
 - Continued support of FSW Test Script development, dry runs and LICOS development



LAT NCR Metrics 12/1/05

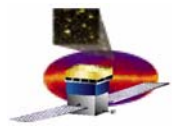
Subsystem	Open NCRs	Closed NCRs last 30 days	NCRs Open 30 days or more	NCRs open 90 days or more	NCRs ready to close (disposition complete; need final QA review to close)
DAQ	55	40	35	15	20
Tracker	25	8	25	23	20
Mechanical	7	0	4	1	3
CAL	0	0	0	0	0
ACD*	12*	0	10	0	0
I&T	25	14	22	18	4

* includes 5 open ACD PRs and PFRs from GSFC



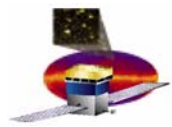
Issues and Concerns

- Flex Cable Qual Testing
 - Successful completion of qual testing of Parlex and Pioneer flex cables pending.
- Grid #2 Static Load Test
 - Successful completion pending
- Final data packages for Radiators and X-ALT from Lockheed Martin
 - Open items in data package are identified; need LM support to close
- Continued focus on addressing and closing NCRs



4.1.A P&SA – Planned Accomplishments December 2005

- Support testing of final flight electronics boxes and handoff to I&T
- Support formal dry runs of FSW test scripts/procedures
- Finalize Pioneer and Parlex flex cable qual testing at Trace Labs
- Support completion of Grid static load testing
- Finalize plan for QA support of LAT environmental testing at NRL (will utilize SLAC, NRL and/or GSFC QA personnel)



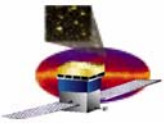
4.1.A P&SA – GSFC Resident Quality Engineering Status at SLAC

- Bob Navarro has joined the project and will support part-time as senior engineer
- Kishwer Khan has transferred from SLAC PSA group and will be full time GSFC resident QE



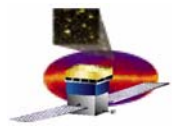
Cost Report

Reporting Category	Cost Incurred/Hours Worked				Estimated Cost/Hours to Complete			Estimated Final Cost/Hours		Unfilled Orders Outstanding
	During Month		Cum. to Date		Detail		Balance of Contract	Contractor Estimate	Contract Value	
	Actual	Planned	Actual	Planned	NOV05	DEC05				
4.1.A PERFORMANCE AND SAFETY ASSURANCE										
4.1.A.1 PERFORMANCE ASSURANCE MANAGEMENT	3	32	793	968	33	27	803	1,656	1,656	
4.1.A.2 QUALITY ASSURANCE	71	74	3,041	2,770	76	48	366	3,531	3,531	
4.1.A.3 TRAINING	0	0	14	14	0	0	0	14	14	
4.1.A.4 RECORDS MANAGEMENT	0	0	42	42	0	0	0	42	42	
4.1.A.5 SYSTEMS SAFETY	0	0	0	0	0	0	0	0	0	
4.1.A.6 EEE PARTS CONTROL PROGRAM	0	0	214	210	0	0	-4	210	210	
CAPW[3]Totals:	74	107	4,105	4,004	109	75	1,164	5,452	5,452	

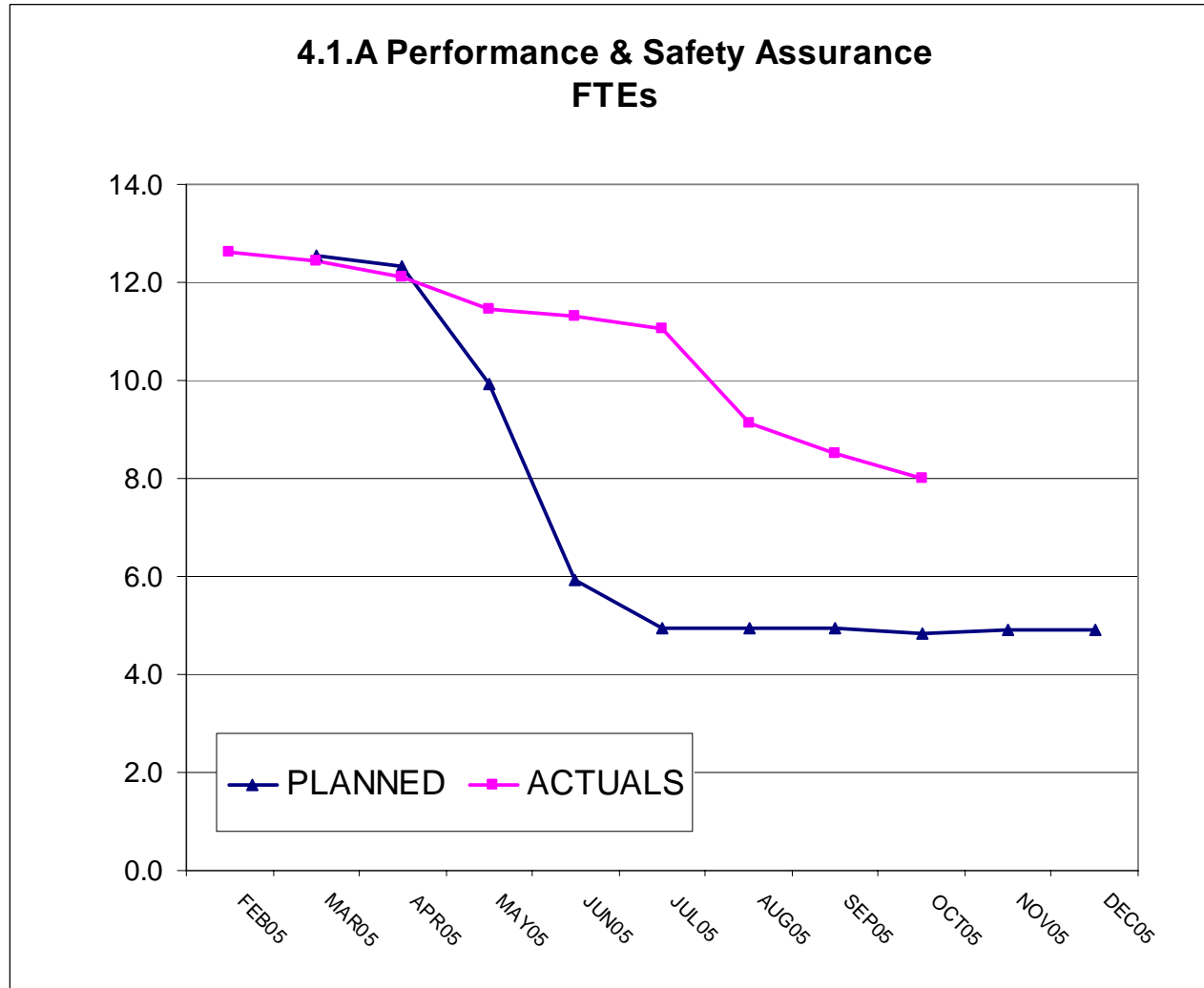


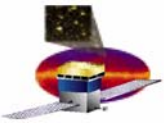
Cost Variance Explanation

- **Why overrun/underrun?**
 - **Underrun due to cost accounting changes. Not all contract employees are included in cost. Surplus DOE funding also being used to cover higher QA headcount**
- **What will be done to correct?**



FTE Report (DOE/NASA-funded only)





FTE Variance Explanation

- **Why overrun/underrun?**
 - **Needed to continue higher than budgeted level of QE support at SLAC.**
- **What is the impact?**
 - **FTE continues to decrease. Will see decrease of approx 1 FTE in November (SLAC QE left project). Will see decrease of 1 FTE in December (SLAC QE picked up as GSFC resident QE at end of November)**
- **What will be done to correct?**