

AntiCoincidence Detector

# **GLAST Large Area Telescope: Cost/Schedule Review**

## **April 26, 2005**

### **AntiCoincidence Detector (ACD) Subsystem**

#### **WBS: 4.1.6**

**David J. Thompson  
Thomas E. Johnson  
NASA Goddard Space Flight Center  
Subsystem Manager/Instrument Manager**

**David.J.Thompson@nasa.gov  
Thomas.E.Johnson@nasa.gov**

# Significant Accomplishments

---

- **Completed delivery of all eight Electronic Chassis to I&T.**
- **Successfully integrated and functionally tested six Electronic Chassis's. All eight are now integrated and functionally tested.**
- **Completed mating 146 fiber cables (73 detectors) to their respective PMTs. Light tight testing is in progress and will be completed by Tuesday, May 24.**
- **Completed handling layer, 6 top and 8 side Kevlar layers, 1 foam layer, and 1 Nextel layer on the MMS.**
- **Resolved the noise anomaly. Preliminary close out report distributed.**
- **Made significant progress on the EGSE.**
- **Prepared to begin installing 3<sup>rd</sup> and 4<sup>th</sup> row TDAs on Tuesday, May 24.**
- **Performed our first full functional with 73 of 97 detectors integrated to the PMTs. The remaining 24 PMTs were operating, but capped off.**

# Significant Accomplishments

---

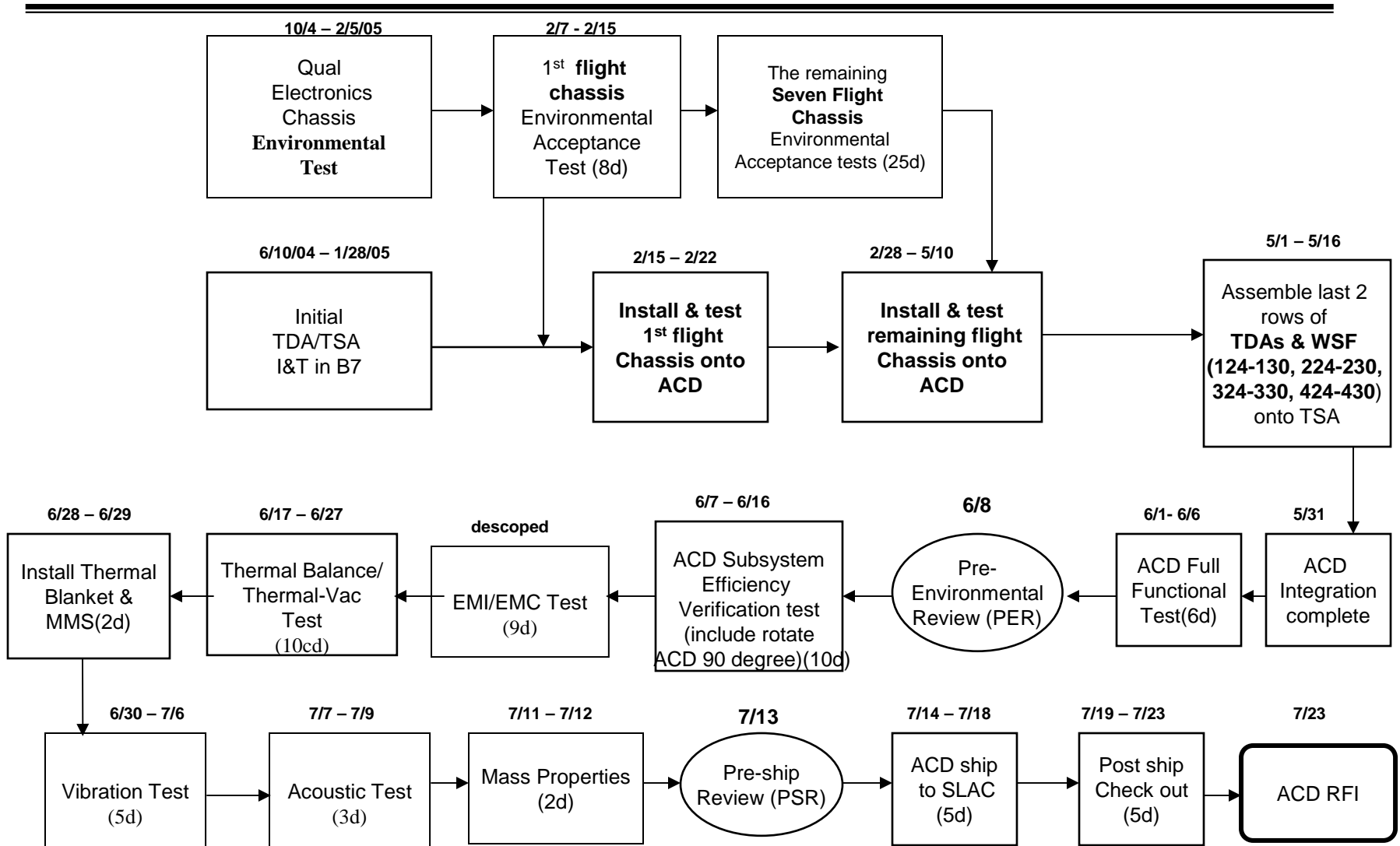
- Final light tightening and shielding of the PMTs – 73 of 97 detectors completed



# Near Term Milestones

Milestone Description	Date	New Date	Status/Notes
(4) electronic chassis vib/ tvac tested and RFI	3/5/05	<u>4/26/05</u>	<u>COMPLETED</u>
(4) electronic chassis vib/ tvac tested and RFI	3/28/05	<u>5/13/05</u>	<u>COMPLETED</u>
ACD Integration Complete	4/6/05	<u>5/31/05</u>	<u>Slipped ~2 weeks from last months plan due to delays getting ECs delivered (paperwork mostly) and the EGSE port issue.</u>
ACD Functional Test	4/13/05	<u>6/6/05</u>	<u>EGSE and Test Scripts are the primary schedule threat. Ran first full functional with 73 detectors on May 23</u>
ACD PER	5/24/05	<u>6/8/05</u>	<u>Finalized date with Mark Goans</u>
Efficiency Verification Test	6/3/05	<u>6/16/05</u>	<u>Recently resolved a data format and analysis issue. Jump starting this effort by performing tests and gathering data now (24 hour testing performed last night).</u>
Thermal Vacuum	6/15/05	<u>6/27/05</u>	<u>Two issues. 1. MMS/TB will not be ready for start of test. 2. Need to complete test by 6/24 due to facility constraints. MMS will be ready for test and facility constraint has been extended to 6/27.</u>
MMS/TB Installation	6/17/05	<u>6/29/05</u>	<u>Completion date for MMS is June 1, TB is June 15.</u>
Vibration Acoustic Detector	6/23/05	<u>7/6/05</u>	4

# Schedule Flow



# EGSE – Test Stands

---

## Recent Activities

- Two of the EGSE ports (for EC's 2L and 2R) are not communicating with the ACD as designed. Working with the LAT on-line team to resolve, but not getting much support. It is a software configuration issue, not a hardware issue. We are working around the issue.
- Software for handling calibration files and establishing baselines is still in development (not just scripts)
- We have working (though not final) versions of all of the ACD test scripts. The real test will not come until the ACD is fully assembled.
- There appears to be another memory leak in some of the software. While operating 12 FREE boards this is going to be an issue. Working with Ric to resolve.
- Resolving many of the test script errors and closing out PRs.

# Other Issues

---

- **GASU Vacuum Testing**
  - **Issue: GASU#8 has never been tested in vacuum. Therefore there is a risk that an issue could arise during full up ACD thermal vacuum testing. We need a response to our request concerning this issue.**
- **EMI Descope CR needs to be approved.**
- **Thermal Balance Descope CR needs to be approved.**

## ACD Problem /Failure Report Status

---

As of 5/23/05 a total of 298 PR's have been opened (55 opened this month)

- ▶265 PR's have been closed (78 closed this month)

- ▶33 PR's open (23 less than last month)

  - ▶22 for test script failures, 7 BEA Mech, 1 MMS, & 3 TSA

A total of 18 PFR's have been opened (0 opened this month)

- ▶5 PFR's are open

  - ▶3 Red – PMT noise

  - ▶2 yellow – PMT noise and fiber to PMT tilt

- ▶13 PFR's closed (0 closed this month)



# Lien List

**In place of cost/schedule charts this month, here is an updated lien list.**

LIEN #	Description	LAT Cost	Full Cost
1	ACD Thermal Vacuum/Balance descope. Ten day schedule and associated cost savings assumed in current ACD plan. Updated plan has the ACD performing 1 thermal cycle with the MMS installed. This would take 2 days so the schedule savings is 8 days and the cost savings would be reduced accordingly. Cost delta between 8 and 10 day schedule savings during TVAC is \$22.6K for LAT, \$46K full cost.	140	257
2	MMS/TB Bakeout. Assumes 7 day B/O followed by chamber certification. Assumes no schedule impact. \$15.3K for facility (email from L. Tilwick on May 9) assuming facility cost sharing and \$4.5K for test set up / tear down.	19.8	23.8
3	TVAC in SES vs. Facility 225. Total cost difference provided, 540 has already agreed to pick up 1/2 of the difference. Based on 10 day test, \$3K manpower and \$2K LN2 daily delta (based on educated guess, 549 has not provided final estimate yet)	50	50
4	Eight day schedule delay due to documentation, integration issues, technical issues, etc. Per day cost. = \$6.3K (\$18K full cost)	50.4	144
5	GASU #8 Vacuum Test - GASU #8 has not seen vacuum testing and will be vacuum tested with flight hardware. Failure could damage ACD flight hardware. Performing this test has an estimated 5 day schedule impact and this impact is figured into the cost estimate.	43.5	109
6	Additional stress analysis on MMS/TB attachment points to incorporate thermal loads imparted by MMS/TB	8.5	18.5
7	Increase manpower support on MMS to pull in delivery date.	35	35
8	Additional S&MA support to prepare for PER, close out PRs, and monitor floor activities	15	15
9	Alignment hardware for the Optical fiber to PMT connection.	8	8
	TOTAL	370.2	660.3