

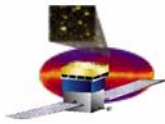
# GLAST Large Area Telescope:

## I&T Overview

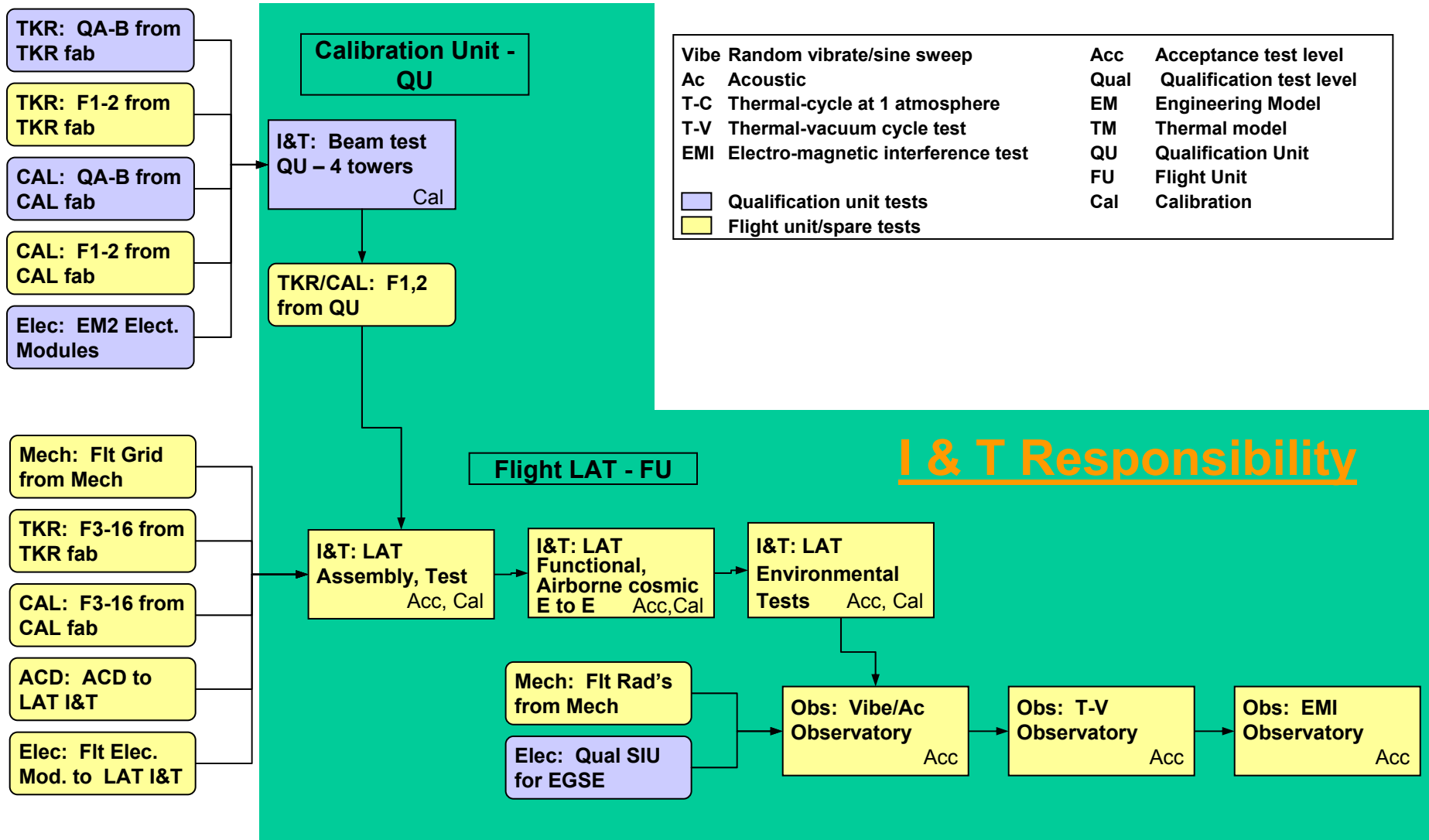
### WBS: 4.1.9

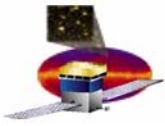
**Elliott D. Bloom**  
**Stanford Linear Accelerator Center**  
**I&T Subsystem Manager**

[elliott@slac.stanford.edu](mailto:elliott@slac.stanford.edu)



# LAT I&T Verification and Calibration Flow

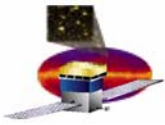




# Level III Requirements Summary

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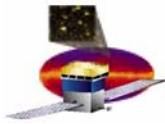
- **Science Requirements**
  - **Defined by Instrument Performance Spec 433-SRD-0001**
  - **Verification will be performed by a combination of particle tests**
    - **Cosmic Ray**
    - **Van de Graff**
    - **End Station A Beam Test**
- **Design Requirements**
  - **Test methodology defined by Mission Assurance Requirements 433-MAR-0001**
  - **Instrument Verification will be performed by**
    - **Electrical Performance Tests**
    - **Structural and Mechanical Tests**
    - **EMC/EMI Tests**
    - **Thermal Verification Tests**
    - **Visual Inspection**
    - **Instrument Monitoring**
    - **End-to-end test (at ~ 35,000 ft in a jet airplane during transport to NRL for environmental tests)**
  - **Produce a Working Instrument**



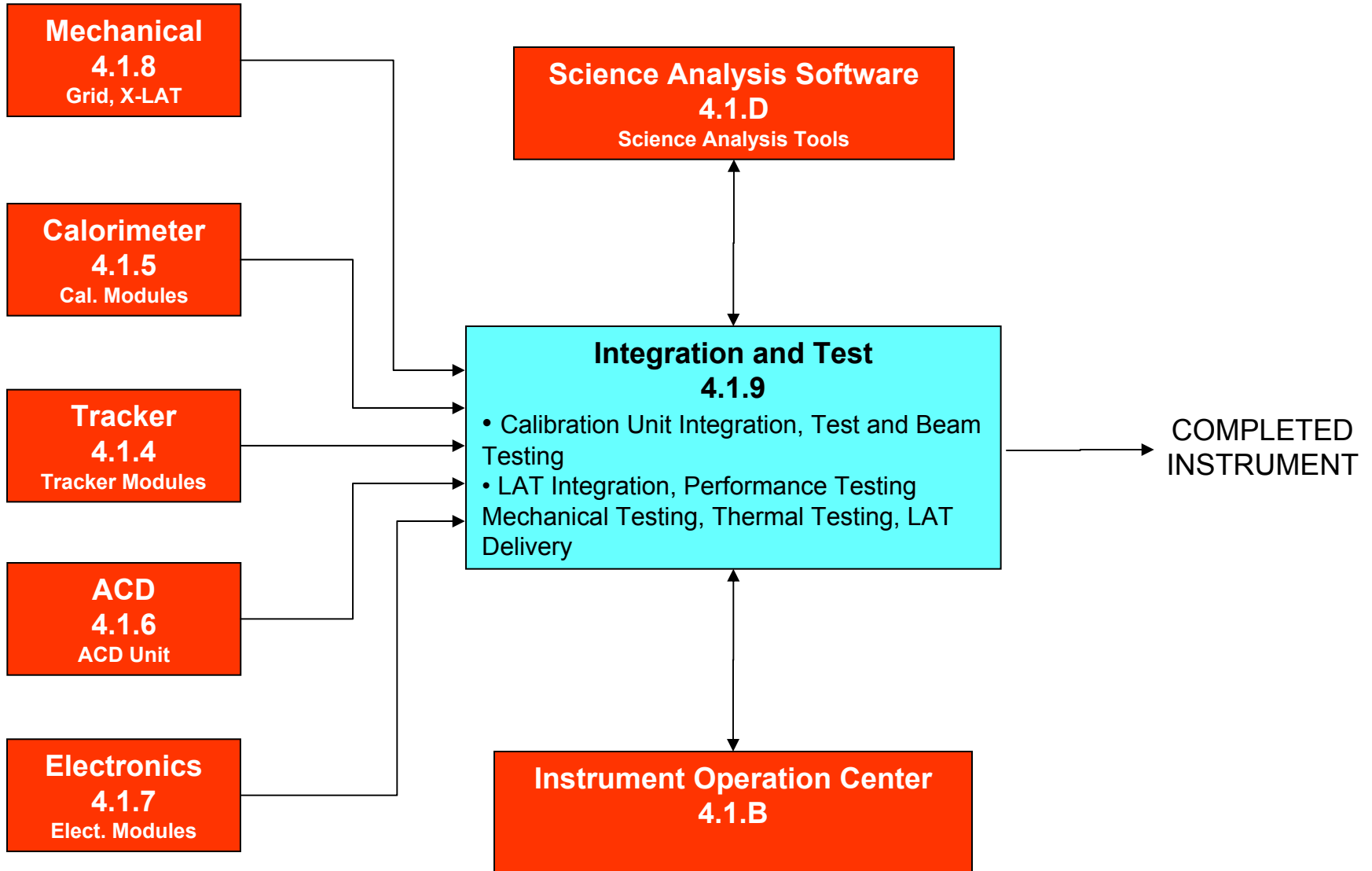
# I&T Status

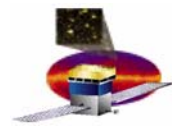
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- **PDR presentations complete.**
- **PDR report complete.**
- **Design Products defined.**
- **As of November 1, 2001 Larry Wai on board as Integration, Facilities, Configuration, and Test Department Manager. Except for our MGSE department manager this completes the I&T management staff buildup begun in late August.**
- **In process on a Mechanical Ground Support Equipment department manager.**
- **EGSE Level III requirements complete.**
- **I&T Contamination Control Implementation Plan Complete (TBR).**
- **Calibration Plan Complete (TBR).**
- **Particle Test Plan Complete (TBR).**
- **RFI for commercial air transport of LAT to NRL complete.**
- **RFI for Environmental Tests of LAT complete.**

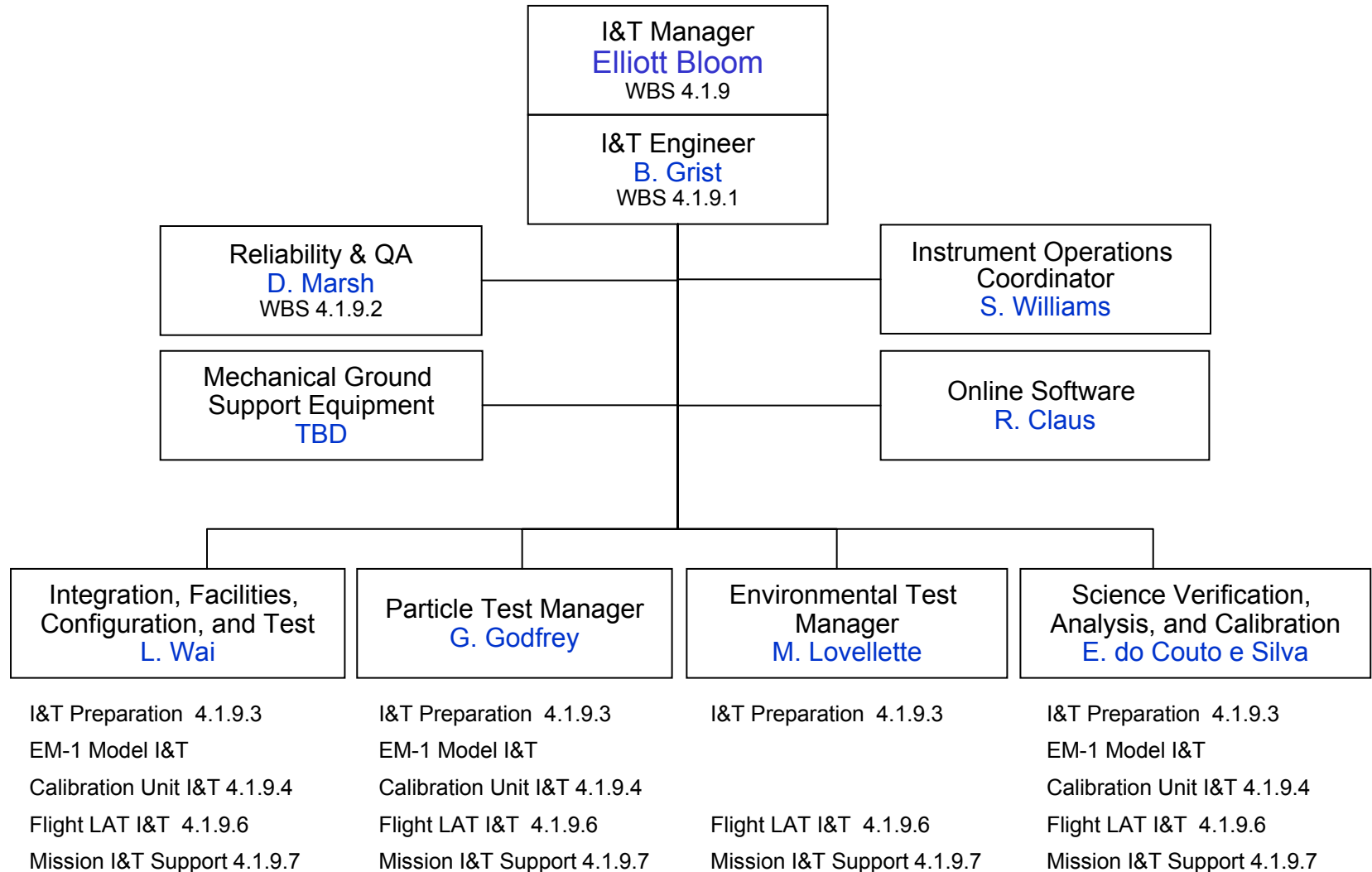


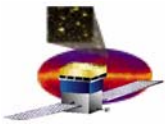
# Subsystem WBS Interfaces





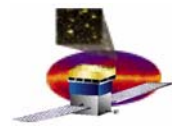
# I&T Organization Chart





# Key Level III Milestones

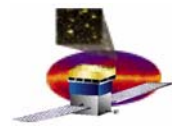
EGSE Workstation / Software #1 (I&T to ACD)	03/15/02
MGSE Requirements for ACD (from I&T to ACD)	03/22/02
SLAC Facilities Specification (from I&T to ACD)	03/22/02
EGSE EM1 H/W Release-Elec to I&T	04/22/02
Online System Spec from I&T to IOC	05/01/02
EGSE Workstation / Software #2 (I&T to ACD)	07/01/02
Doc defining Backsplash Test Model (ACD to I&T)	01/03/03
EGSE EM2 Release-Elec to I&T	01/15/03
EGSE Workstation / Software #3 (I&T to ACD)	03/03/03
EGSE Qual Unit Release-Elec to I&T	05/16/03
Tracker Modules A & B RFI ( for Calibration)	08/15/03
Calorimeter Modules A & B RFI ( for Calibration)	08/15/03



# Key Level III Milestones

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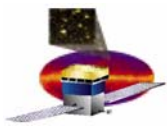
EM2 TEM Assy A,B-Elec to I&T	08/15/03
EM2 TEM PS Assy A,B-Elec to I&T	08/15/03
Sub System-TRKR RFI's --1st Article	08/15/03
Sub System-CAL RFI's --1st Article	08/15/03
EM from CAL to I&T	08/29/03
Sub System-MECH-(GRID) RFI's	10/24/03
Tracker Modules 1 & 2 RFI ( for Calibration)	11/03/03
Calorimeter Modules 1 & 2 RFI (for Calibration)	11/03/03
ACD Calibration Test Unit at SLAC, Tested & RFI	11/03/03
Flight TEM PS Assy 1,2-Elec to I&T	11/03/03
EGSE Flight Unit Release-Elec to I&T	11/05/03
Flight Grid RFI-Mech to I&T	01/02/04



# Key Level III Milestones

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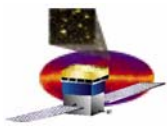
Flight Tracker Tower 3, 4 RFI	01/02/04
Flight Calorimeter Tower 3, 4 RFI	01/02/04
Flight TEM Assy 1,2-Elec to I&T	01/14/04
Flight Tracker Tower 5, 6 RFI	01/15/04
Flight Calorimeter Tower 5, 6 RFI	01/15/04
Calibration Unit Beam Test from I&T to IOC	01/15/04
Flight TEM Assy 3,4-Elec to I&T	01/16/04
Flight TEM PS Assy 3,4-Elec to I&T	01/16/04
Flight Tracker Tower 7, 8 RFI	01/29/04
Flight Calorimeter Tower 7, 8 RFI	01/29/04
ACD Test Scripts (from ACD to I&T)	02/02/04
Flight TEM PS Assy 5,6-Elec to I&T	02/02/04



# Key Level III Milestones

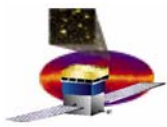
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Flight Tracker Tower 9, 10 RFI	02/12/04
Flight Calorimeter Tower 9, 10 RFI	02/12/04
Flight TEM Assy 7,8-Elec to I&T	02/17/04
Flight TEM PS Assy 7,8-Elec to I&T	02/17/04
Flight TEM Assy 5,6-Elec to I&T	02/20/04
Flight Tracker Tower 11, 12 RFI	02/26/04
Flight Calorimeter Tower 11, 12 RFI	02/26/04
Flight TEM Assy 9,10-Elec to I&T	03/02/04
Flight TEM PS Assy 9, 10-Elec to I&T	03/02/04
Flight Tracker Tower 13, 14 RFI	03/10/04
Flight Calorimeter Tower 13, 14 RFI	03/10/04
Flight TEM Assy 11, 12-Elec to I&T	03/12/04



# Key Level III Milestones

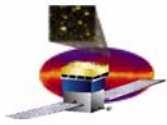
Flight TEM PS Assy 11, 12-Elec to I&T	03/12/04
Flight Tracker Tower 15, 16 RFI	03/24/04
Flight Calorimeter Tower 15, 16 RFI	03/24/04
Flight TEM Assy 13, 14-Elec to I&T	03/26/04
Flight TEM PS Assy 13,14-Elec to I&T	03/26/04
Flight TEM Assy 15, 16-Elec to I&T	04/01/04
Flight TEM PS Assy 15,16-Elec to I&T	04/01/04
Sub System-ACD RFI's	04/12/04
Flight Tracker Tower 1, 2 RFI	04/26/04
Flight Calorimeter Tower 1,2 RFI from I&T to I&T	04/26/04
ACD Flight Unit at SLAC, Tested/Inspected & RFI	04/26/04
Flight ICM/GLT-Elec to I&T	04/26/04



# Key Level III Milestones

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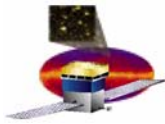
Flight SIU-Elec to I&T	04/26/04
Flight Event Processor Units-Elec to I&T	04/26/04
Flight ACD Module-Elec to I&T	04/26/04
Flight Harness-Elec to I&T	04/26/04
X-LAT Thermal Plate RFI from Mech to I&T	04/26/04
LAT Ready for Enviromental Testing-I&T to Mech	07/07/04
Integrate LAT on Vibe Mount-I&T to Mech	07/12/04
LAT EMI/EMC Test from I&T to IOC	08/09/04
LAT Vib/Acoustic Test from I&T to IOC	08/30/04
Integrate LAT on Thermal-Vac Mount-I&T to Mech	09/14/04
LAT Thermal Test from I&T to IOC	09/21/04
LAT Performance Test from I&T to IOC	10/26/04



# Key Level III Milestones

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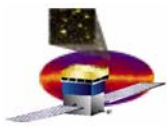
Radiators ready for Mission I&T from Mech to I&T	12/01/04
LAT Observatory TV Test from SCO to IOC	04/20/05
Ground System Interface Test from SCO to IOC	09/16/05
Mission Sequence Test from SCO to IOC	10/17/05
End-to-End Test from SCO to IOC	01/17/06



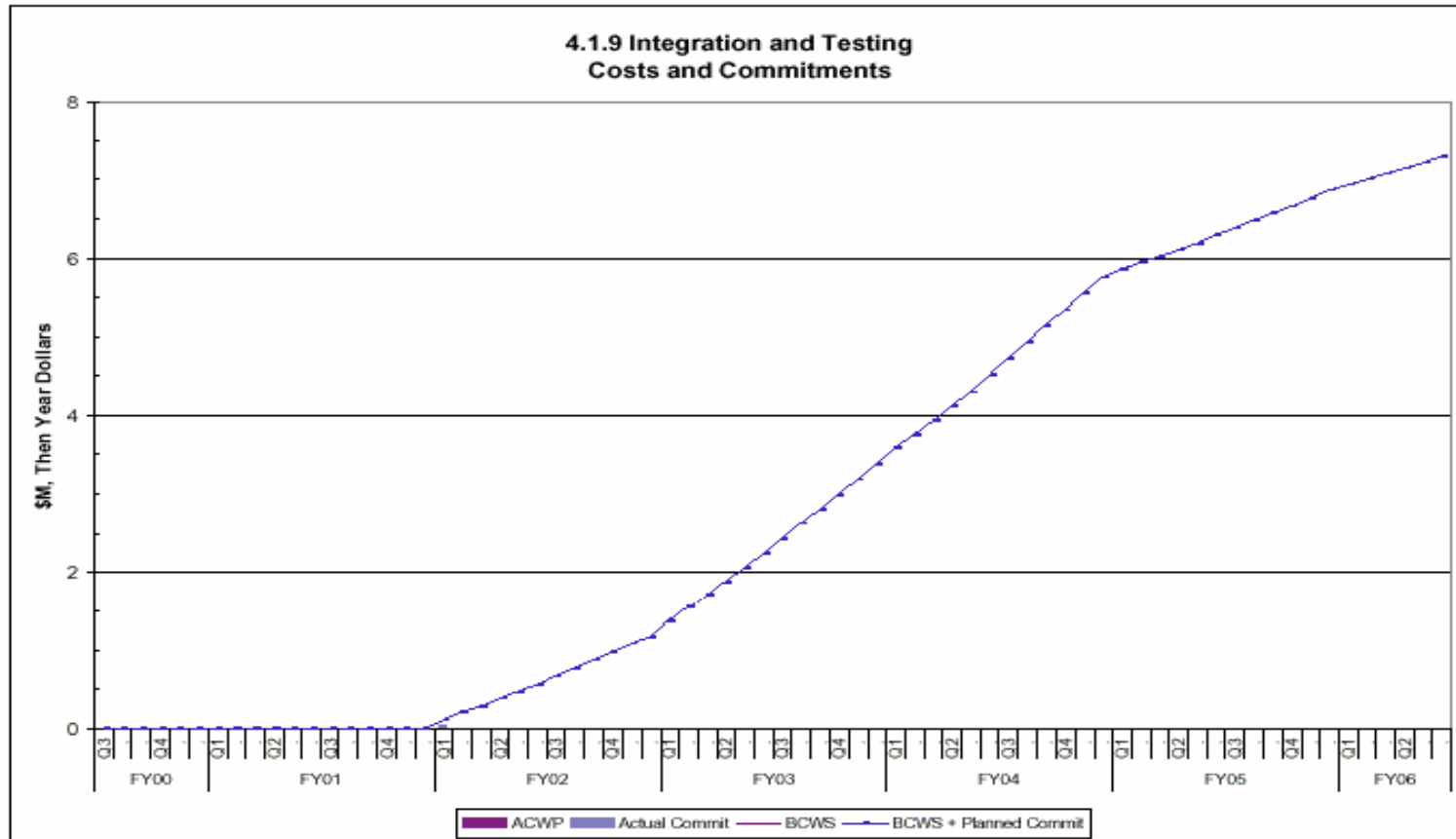
# Key Level IV Milestones

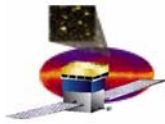
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ND: EM from Calorimeter to I&T	08/29/03
Calibration unit Beam Test complete	03/15/04
IA: TKR Flight Modules 1, 2 RFI into LAT	04/12/04
IA: CAL Flight Modules 1, 2 RFI into LAT	04/13/04
AV: LAT Ready for Environmental Testing	07/07/04
LAT Ready to Ship	02/22/05



# Integration and Test Cost & Commitments





# Integration and Test Cost Profile

