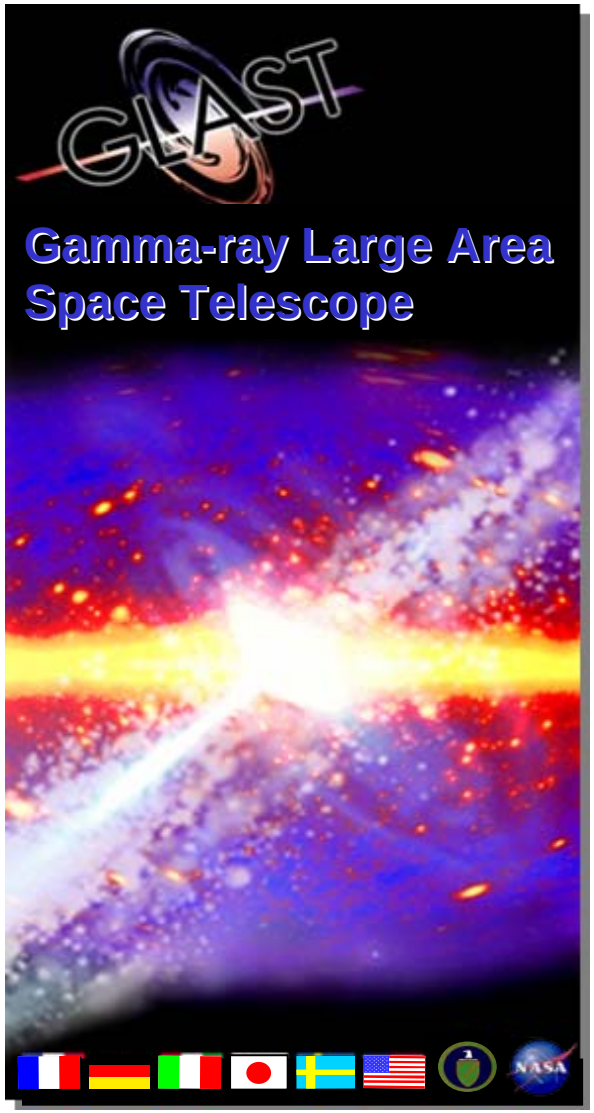

GLAST Large Area Telescope
Instrument Science Operations Center

ISOC Status

Robert Cameron
ISOC Manager
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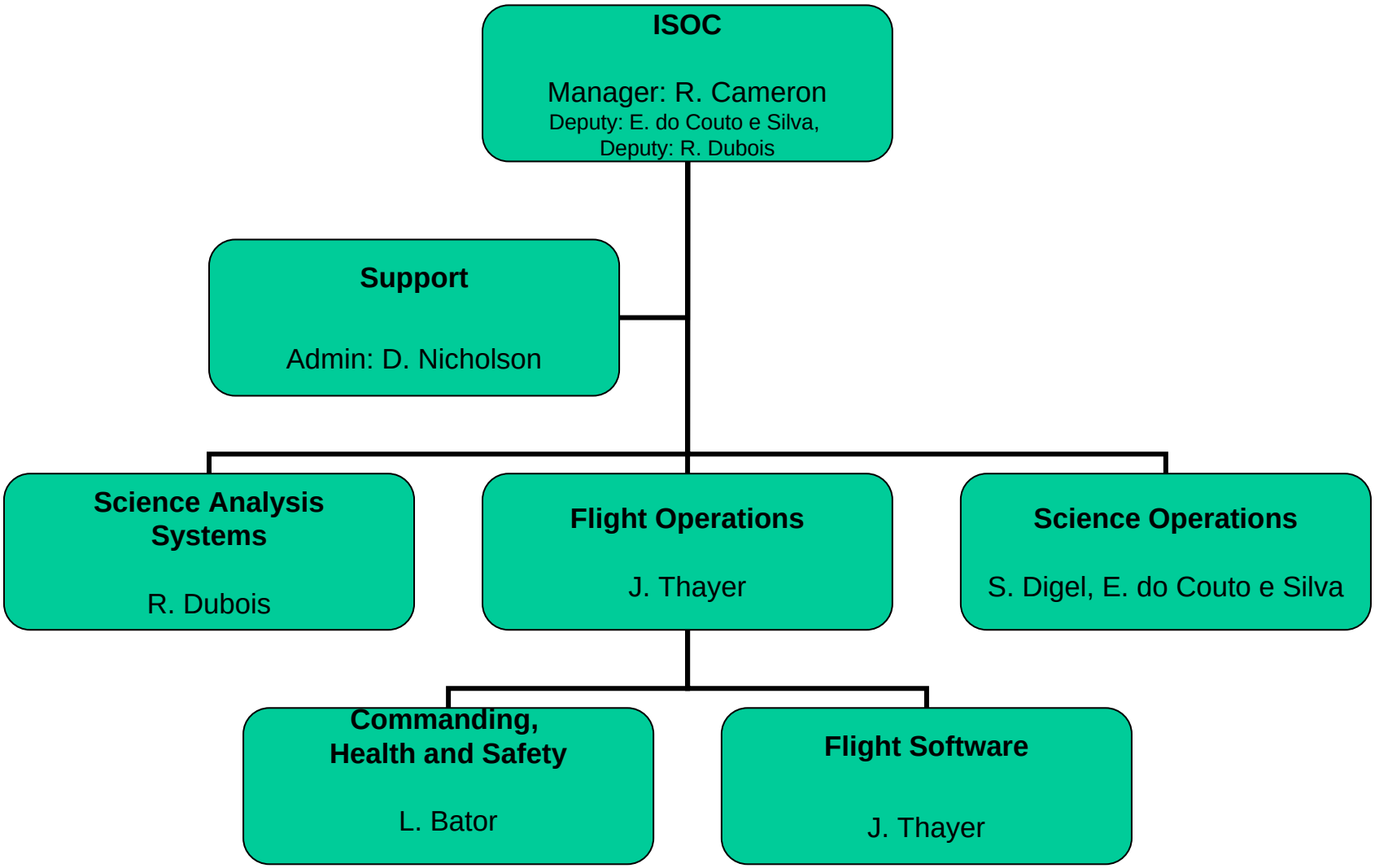
ISOC Organization



ISOC Highlights

- 3 April: End-To-End (ETE) 1A test – start of "flight-like" LAT operations!
- 30 April: LAT Calibration Unit returned to SLAC
- April 30 – May 2: Second ISOC workshop at SLAC
  - 40+ attendees
  - Tutorials/exercises with software tools and data products
  - Look ahead to LAT on-orbit turn-on & commissioning
- May 15-17: Instrument Commissioning Simulation #1, at GLAST MOC
- June 20-21: GRT7, final GLAST Ground Readiness Test
- June 25 – July 13: second GLAST Mission Planning Exercise
- ETE1B: 6 July
- ETE2: 7, 10 July
- ETE1/2 catchup: 8 August
- Upcoming Events
  - ISOC Operations Simulation #1: Oct 8-12
  - GLAST Flight Operations Review @ GSFC: Nov 8-9
  - LAUNCH!

Flight Operations Software Development

- Led by Ric Claus
  - Shared development & resources between ISOC Flight Ops and LAT Integration&Test
- Key Developments:
  - Telemetry filtering packages installed at GSFC
    - provide selected GLAST s/c housekeeping to the ISOC
  - ISOC Mission Planning Tool
  - Web-based Mission Plan Viewer
  - Telemetry Display GUI
  - Web-based realtime LAT telemetry displays
  - Selectable limit sets
  - Derived telemetry
  - Calibration trending
  - Extraction of non-event data types from LAT science data stream
- ISOC's LAT monitoring tools will be available to LAT team members at the MOC

IFC-provided support

- Two people provided to ISOC through OCF
  - Both doing valuable, high quality work for the ISOC
- David Decotigny (IN2P3) joined ISOC in November 2006
  - 100% ISOC core support
  - ISOC software builds and installation
  - Monitoring and alarm logging for ISOC core computers
  - Realtime telemetry displays
  - LAT configuration verification
- Andrea Tramacere (ASI/INAF) joined ISOC in April 2007
  - 50% ISOC core support
  - Implementing LAT pointing and livetime data files
    - Livetime calculation, time/position/attitude data handling, export of FITS files

Release Plan and Status

ISOC core releases are meeting testing functional needs and schedule

	Release Plan & Status (as of 07/31/07)											
	1 6/05	1.2 11/05	1.3 2/06	1.4 5/06	2 7/06	2.1 10/06	2.2 2/06	3 6/07	3.1 7/07	3.2 8/07	4 9/07	
Requirement Category	GRT2	GRT3			GRT5	GRT6	ETE1 MPEX1	GRT7 MPEX2	ETE1b/2	ETE3	ETE4-6	**total**
Misc (Facility, Redundancy, Security, Doc, etc.)	3	1		2	7	4	4		16	5	20	62
Mission Planning	2	2					30	9	2	2	5	52
Telemetry Processing	2	3	1	7	4	14	2	2	4	2	4	45
Science Data Processing		1		1	2	3			6	1	21	35
Telemetry Monitoring		1	1	2	1	15	1	5		6	1	33
Logging			3			4		1			2	10
Trending			12		6	3			1			22
Anomaly Tracking & Notification						6	3		5	2	1	17
# new reqts verified	7	8	17	12	20	49	40	17	34	18	54	276
cumulative total	7	15	32	44	64	113	153	170	204	222	276	

Key:	
	Incremental release (only new requirements tested)
	Major release (all requirements satisfied to date tested)

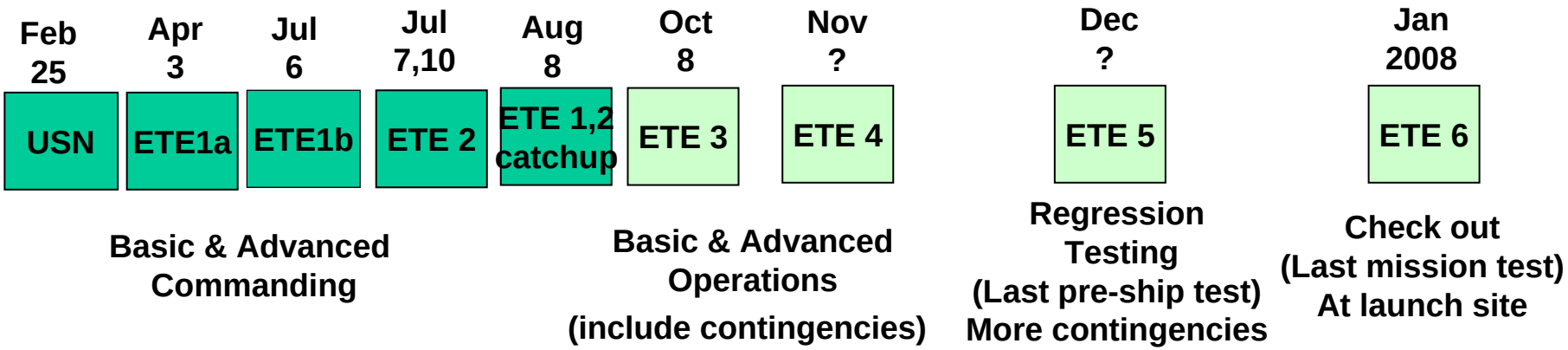
We are here

Narrative Procedures & PROCs

- Narrative Procedures and PROCs are fundamental elements of GLAST operations
- Narrative Procedures used to define LAT commanding in real-time in the MOC
  - Led by Lori Bator
  - Step-by-by step commanding with expected telemetry response
  - All LAT commands are in Narrative Procedures
  - Nearing completion of development
    - Total of 111 NPs identified
    - 102 written
    - 35 have PROCs completed and tested in an ETE
- PROCs are executable scripts used for LAT control from the MOC
  - Development led by Elizabeth Ferrara @GSFC
  - Derived from Narrative Procedures
  - Tested on LAT testbed before use on LAT
  - Verified in ETE tests
  - 49 of 128 PROCs tested on LAT to date
    - Some to be retested after revision/correction

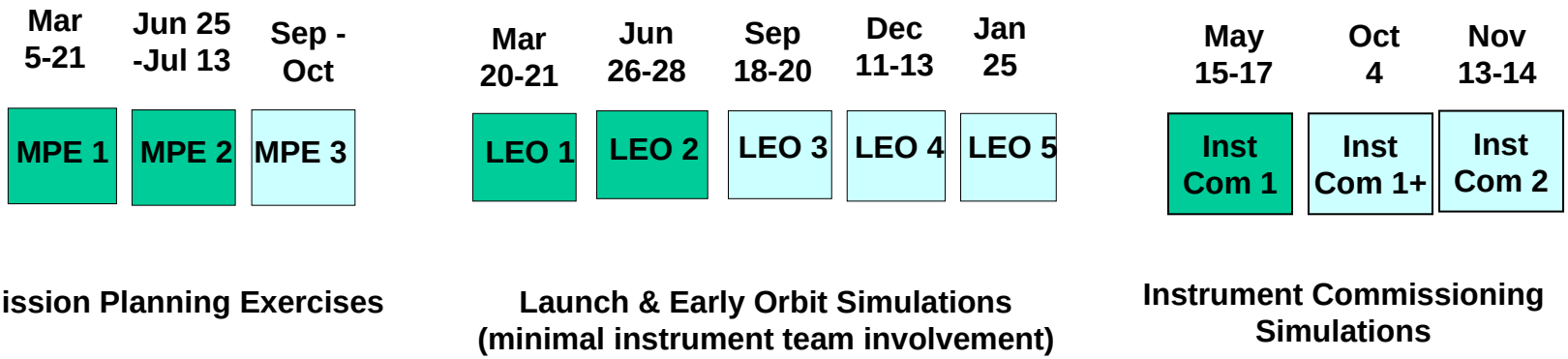
End-To-End Tests

- All GLAST ground elements work together in "flight-like" operation of the Observatory
- Scheduling of ETE tests is dynamic, to match GLAST I&T schedule
- ISOC is meeting test objectives
  - Largely successful validation of LAT PROCs
- Provide valuable operations training opportunities
  - ISOC staff have been "on console" at MOC and at SLAC
  - ISOC @ SLAC connected to NASA ops communications



Mission Simulations

- To ensure operational readiness of the Mission Operations Team for Launch and Early Orbit (L&EO) phase, Observatory and instrument activation, and mission planning.
- Neither the spacecraft nor the instruments are involved – simulated data (no science data) using MOC simulators are used.
- ISOC staff "on console" at the MOC and at SLAC for the simulations.

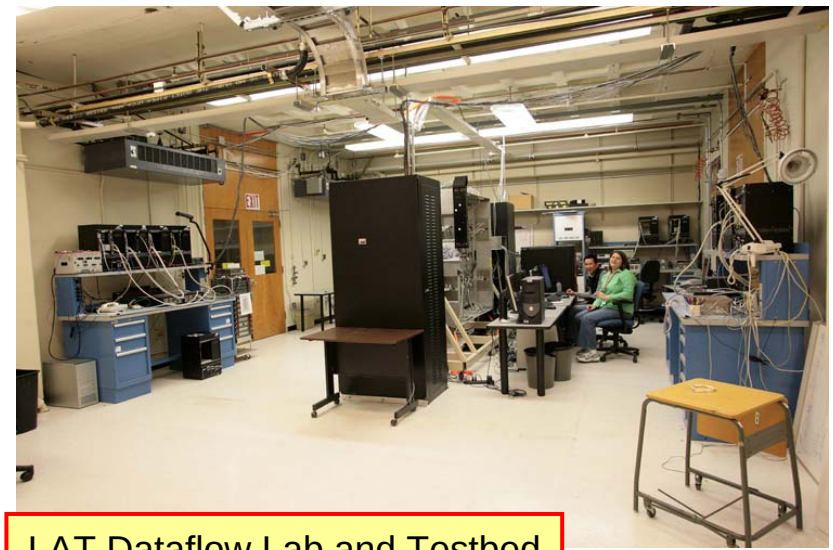


ISOC Facilities

- New mission support area being routinely used during GLAST operations tests
- Preparations continuing for bringing LAT Calibration Unit into Dataflow Lab

ISOC Ops Support Area

LAT Cal Unit @SLAC



LAT Dataflow Lab and Testbed

ISOC Page: http://glast-isoc.slac.stanford.edu

GLAST LAT Instrument Science Operations Center (ISOC)

Site Map Glossary ISOC Home not activated

News | Education & Public Info | LAT Science Products | LAT Operations | ISOC Teams: Science | Flight | SAS | GLAST: Stanford | GSFC | SLAC | Quick Links

Space Environment Center | Launch Schedule | Speaker's Bureau

Welcome to the Instrument Science Operations Center for the Large Area Telescope (LAT).

Scheduled for launch in 2007, GLAST has two instruments onboard: the Large Area Telescope (LAT), and the Gamma-ray Burst Monitor (GBM).

Responsible for maximizing the LAT's science performance, the LAT ISOC is organized into three groups:

- Flight Operations
- Science Operations
- Science Analysis Systems

...more about the ISOC

Meetings:

- EVO Meetings (Confluence)

Experiencing Problems? See: Troubleshooting EVO

- Upcoming Group Meetings (Confluence)

Current Activities:

- LAT Collaboration Mtg. (July 31-Aug. 3, 2007)
- Spacecraft Integration
- Service Challenges

Links:

- ISOC Workshop (Apr. 2007)
- Collaboration Mtg (Mar. 2007)
- Beam Test at CERN
- Beam Test at GSI

Launch:

181 days, 13:23:56 left until launch.

Based on official target Launch Readiness Date (LRD) of: January 31, 2008.

LAT (top) shown during spacecraft integration

Note: For a **description of the key LAT subsystems,** (1) click on the image; then (2) hover over each of the callouts in the popup window. Note that the description of the DAQ Electronics is in a pdf file; click on the DAQ callout to download the file.

Summary

- The GLAST operations testing program is well underway
  - Ambitious operations test schedule is integrated with remaining Observatory environmental and functional tests
- Major elements of ISOC function are in place
  - All ISOC elements are hard at work preparing for launch, on-orbit commissioning and the science mission
- The LAT Collaboration is key to the success of the ISOC (and vice versa!)
  - Well demonstrated in the following Science Operations and SAS presentations