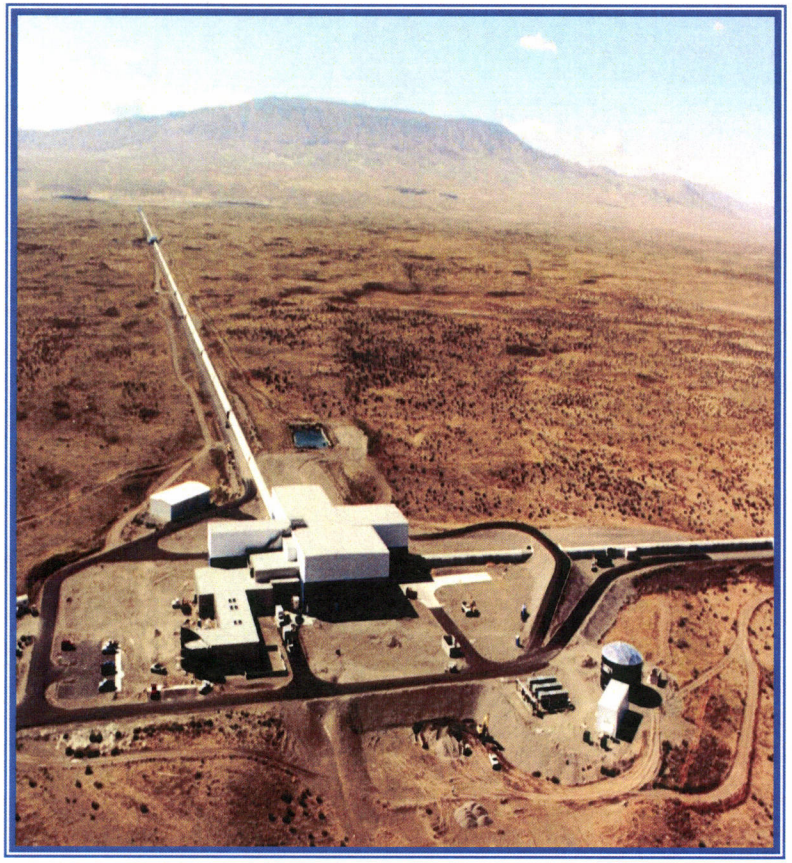
LIGO Laboratory All-Hands Meeting



Jay Marx
All-Hands meeting
July 19, 2007

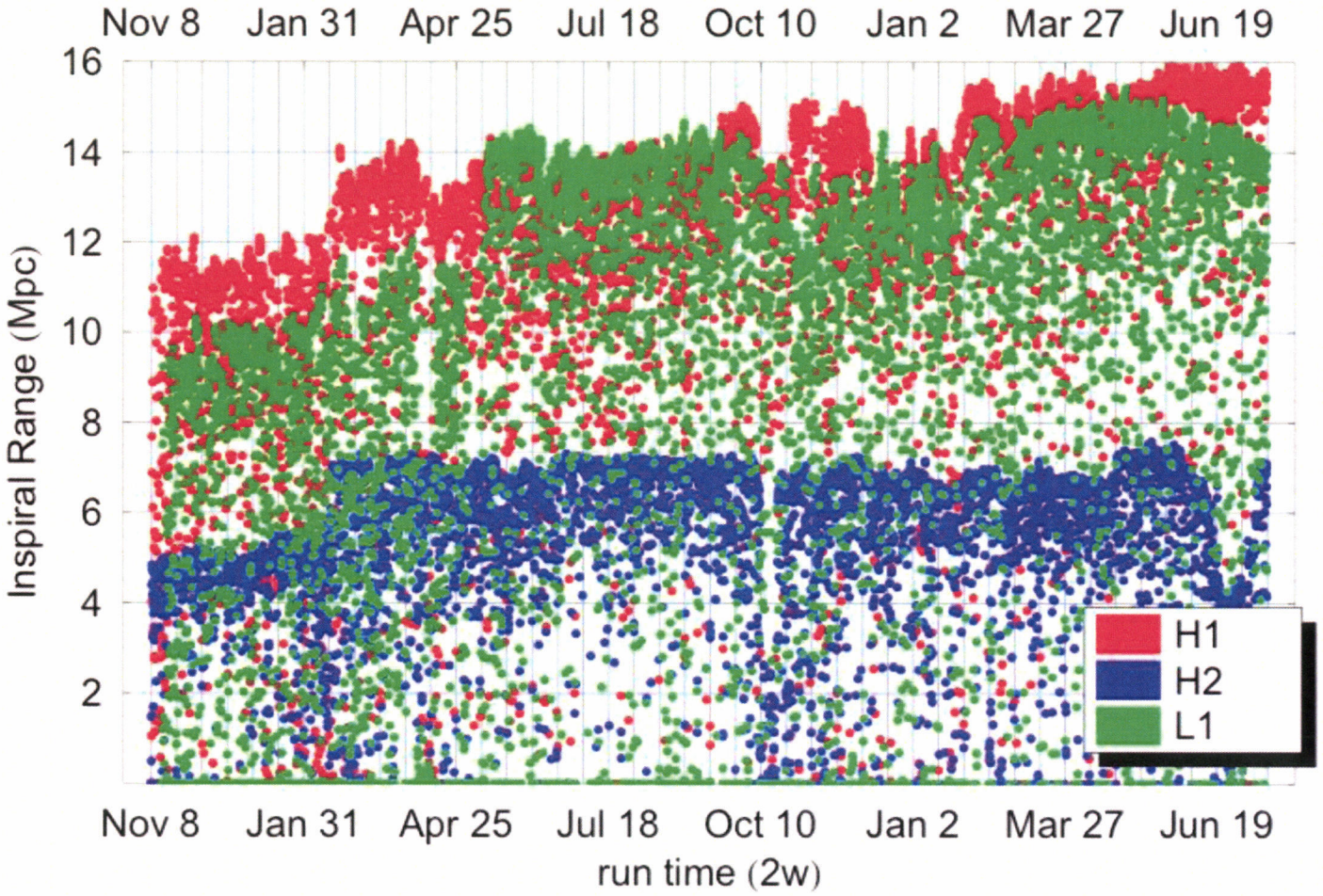
G070490-00-M

Topics to discuss

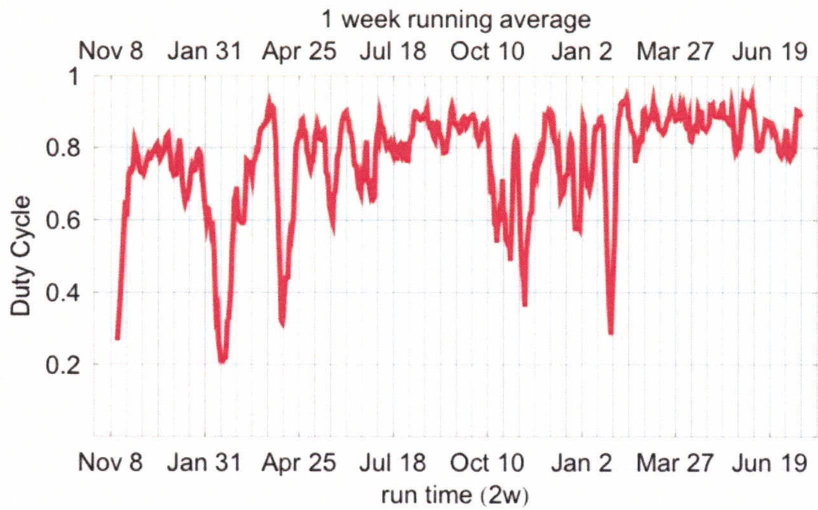
- Status of S5, Enhanced LIGO, Advanced LIGO
- Laboratory administrative matters
  - » Performance appraisals
  - » Management of government-owned property
  - » Cyber security
- The upcoming NSF Total Business Services Review
- The proposal for our new operations grant (FY2009-FY2013)
- Budgets

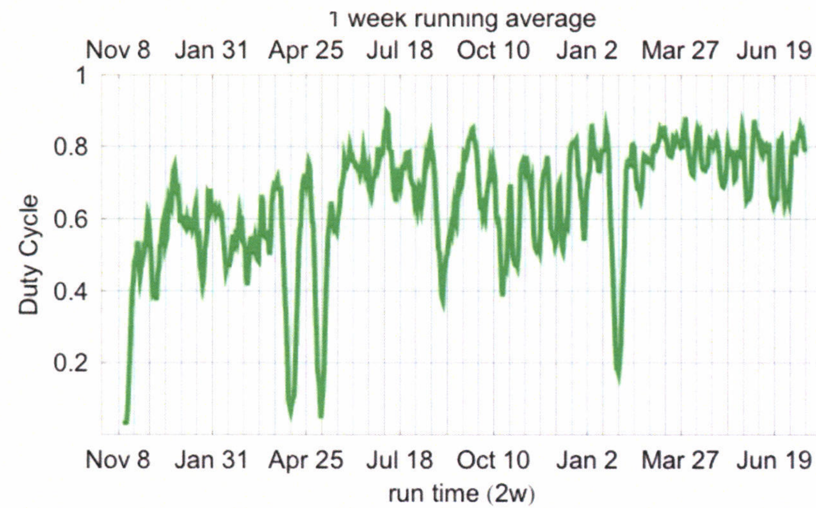
Status of S5, Enhanced LIGO, Advanced LIGO

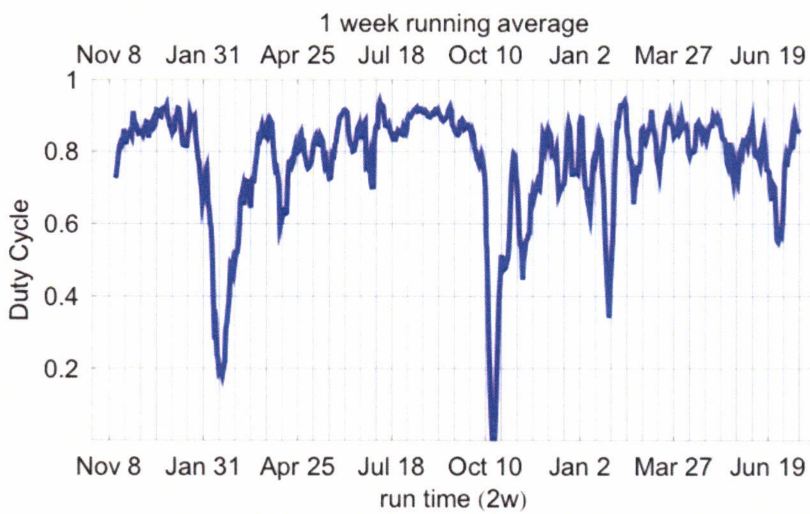
Status of S5 run- combined range



Status of S5 run- IFO duty cycle







A significant milestone reached this week

-- 1 year of 2-site coincidence data--

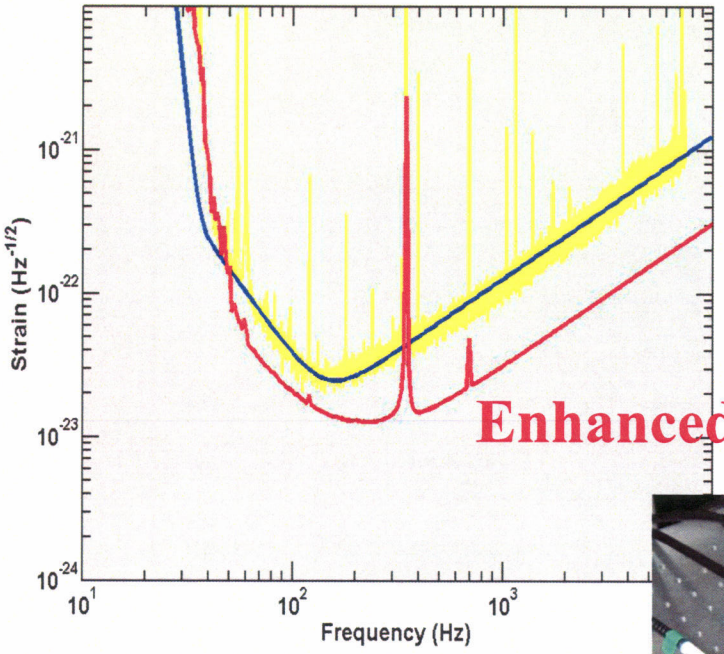
When will the run end

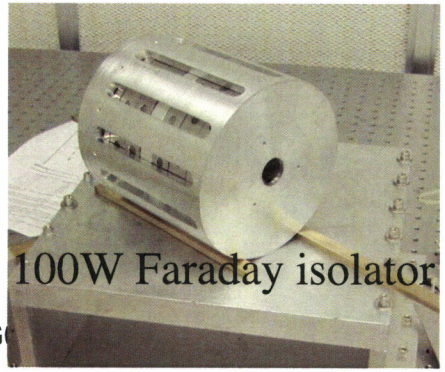
- Criteria
  - » Enough data; e.g 1 year triple coincidence
  - » Enough concurrent running with Virgo; 4 months is ok with Virgo
  - » Enhanced LIGO ready to begin installation after ~1 month of post-run activites
- Current projection of end of run
  - » Projected triple coincident 1 year data set ~early October
  - » 4 month anniversary of start of run with Virgo; September 18
  - » Schedule (time early) for Enhanced LIGO gives end of run ~late-September
- Discussions with other projects about keeping some observational capability between end of S5 and beginning of S6
  - » For LIGO, must not interfere with preparations for enhanced LIGO
  - » Astrowatch by others in world- bars, TAMA and GEO and possibly H2 operated by students as LIGO contributions

Status of enhanced LIGO

- Will double sensitivity of the interferometers in 2009
  - » Increase extragalactic volume probed by factor 8; large increase in detection probability
- Enhanced LIGO is happening
  - » Hardware is being built and tested
  - » Uses designs and prototypes for Advanced LIGO
  - » Reduces risk for Advanced LIGO and give early experience with Advanced LIGO technology
- Schedule
  - » Ready to begin installation in September 2007 (time early)
  - » Commissioning of full ELI begins summer 2008
  - » Science run with enhanced LIGO (S6) begins in early 2009

Enhanced LIGO





Status of Advanced LIGO

- Ready to start construction at beginning of FY2008 (October 1, 2007)
- Latest NSF review of project status--June 2007
- We said
  - The project is ready to go --our progress with R&D is consistent with our planned start of construction;
  - Un-inflated cost and overall start-finish schedule is unchanged compared to a year before;
  - Need $4.32M more to cover increased inflation projected by OMB/NSF during project (bringing total cost to $209.44M);
  - $$ contingency has increased form 26% to 28% because of a more effective way to handle administrative costs saves money

Status of Advanced LIGO

- Report of NSF review
  - » Review committee gave us high grades, agreed that we're ready to start construction;
  - » Recommended the extra $4.32M.
  - » Encouraged NSF to give us more favorable funding profile
  - » Said R&D progress does support construction start in FY08
  - » Technical recommendation-- development of coatings is important and should continue during construction

- So now we continue preparations to srart construction in a few months and await the conclusion of the budget process for FY08 in Washington (more in budget section)

Performance Review process, and Annual Salary Increase (ASI) process

LIGO Annual Performance Review

- Annual reviews are important opportunity for structured feedback between employee and supervisor.
- Caltech is working on revising an online employee evaluation system to better serve staff doing the kinds of things we do but they have not finished.
- LIGO Lab management has decided that we really need to complete a written performance evaluation process *by the end of September*, so:
- LIGO is using our own paper forms this year.

  These forms will be used throughout the Caltech-administered LIGO Lab (i.e., not at MIT).

  They incorporate (we hope) the better aspects of those used at Caltech and other institutions.

  (Contractors, postdocs and CIT faculty are evaluated by different methods.)

Evaluation form: A brief written dialog

- The forms are intended to be filled in by hand, rather than allowing various versions to fly around via email.
  - This should minimize confusion and protect privacy.
- The intent of the process is to record on paper a brief dialog between the each of us and his or her immediate supervisor:
  - Includes input from matrix supervisors to line supervisor
  - Self evaluation of performance, supervisory support, and development objectives.
  - Performance ratings, narrative assessment, performance objectives and development goals, by supervisor.
  - Employee comments (at the end of the appraisal process).

Evaluation process

- The forms are distributed and explained in group meeting by supervisors
- "Self-evaluation," Section 1 (pp 2-3) is filled out by each employee, returned to your supervisor.
- Your supervisor gets input from relevant matrix project managers, and then fills out Sections 2 and 3 (pp 4-6)-- "Supervisor's evaluation of employee performance and objective for coming year."
- Supervisor has one-on-one meeting with each employee to discuss the evaluation.
  - » During or shortly after this meeting, there is an opportunity to fill out section 5, the "employee comments" at the end of the evaluation process.
  - » Supervisor and employee signs his or her form.
- Completed paper forms delivered by supervisors to Albert by *October 1st.*

Annual Salary Increase (ASI) for Caltech Employees

- This year Caltech will authorize an Annual Salary Increase which is merit-based
- The ASI is not necessarily correlated with the performance evaluation;
  - » Caltech tries to take into account many factors in setting salaries and determining raises so we can attract and retain a first quality team.
- Process:
  - » LIGO receives information on ASI parameters from HR
  - » Group leaders receive instructions shortly thereafter.
  - » Group leader gives his input to Directorate by mid August, and then (Directorate gives its combined input to HR).
  - » After Caltech approves ASIs, group leader will meet with each person to discuss the ASI.
  - » We expect salary increases to take effect by October.

Management of government-owned property

Written Lab policy to be released

- The LIGO Laboratory is required to maintain a property management system that provides for effective use and control of government-owned property entrusted to its care.
- Property at the Livingston and Hanford sites is government-owned property.
- The purpose of the Lab. policy is to assure that government property at LIGO observatory sites is managed, utilized and protected in compliance with appropriate government and Caltech requirements and to assure that the responsibility for proper control and effective use of government owned property is clearly understood by all cognizant staff.

Property management

- Policy explains the responsibilities of Business Services Group, Site Head, Site Property Representative, property custodians ("owners")
- Important-- each piece of property must have a knowledgeable "owner." A staff person who has responsibility for control and proper use of each piece of government-owned property
- Bottom-line--- Compliance with NSF requirements is very important. We must know where all government-owned property is located at all times. Missing property could jeopardize our credibility with NSF and our funding

Cyber security

Cybersecurity-- Challenges and Issues

- Computer technologies are a critical aspect of all activities that are part of LIGO's Scientific Mission.
- Therefore cybersecurity is critical to LIGO accomplishing its scientific mission
- Why must we take cybersecurity very seriously?
  - » Because it is mandated by NSF (a recent change)
  - » Even if it wasn't, we must protect our equipment, data and reduce cyber risks, eliminate vulnerabilities and avoid computer related incidents that can seriously interfere with our abilities to do science.

National Science Foundation has new Cybersecurity requirements

- New language to appear in all NSF Cooperative Agreements beginning this year
- What this means for LIGO Lab:
  - » Security for all information technology (IT) systems is LIGO's responsibility, and….
    - LIGO shall provide appropriate security measures to protect research and education activities in support of the award
    - LIGO will provide notification procedures in the event of a cyber-security breach
    - LIGO shall address appropriate security measures required of all subawardees, subcontractors, researchers and others who will have access to the IT systems employed in support of the award
- We all need to help the Lab succeed in meeting the new requirements

What should LIGO Lab staff do

- Familiarize yourself with LIGO's Computing Policies: LIGO-M020105
- See LIGO's Computer's "Do's and Don'ts"
  - » http://www.ligo.caltech.edu/LIGO_web/GC/comp_abbr.shtml
- Use encryption with LIGO services (secure email, ssh logins, VPN)
  - – Contact local system administrators for help with encryption techniques
- Contact LIGO's Cyber-Security Staff with any and all questions:
  - » Kent Blackburn: Cyber-Security Officer
  - » Shannon Roddy: Cyber-Security Coordinator and Network Administration lead
  - » David Barker: Observatory Critical Systems Committee Lead
  - » Larry Wallace: General Computing Lead
  - » Stuart Anderson: LIGO Data Analysis Systems Lead
  - » John Zweizig: DMT (non-critical) Lead
- Looking further down the road to improvement
  - » Will be necessary to bring LIGO Cyber-Infrastructure up to date
  - » Improve Risk Assessment Analysis
  - » Improve Training and Awareness of Users
  - » Conduct routine checking and analysis of network and computing services

NSF Total Business Services Review
TSBR

TBSR

- What is it
  - » NSF evaluating business practices of their large grantees and host universities
  - » Site visit and evaluation by team from NSF about how LIGO and Caltech handles business practices related resources provided by LIGO operations grant
- Why now?
  - » NSF wants to beta test a new process for large grantee TSBR
  - » A natural time for NSF to check that LIGO Lab is "doing business" in a fully compliant and responsible manner
    - – because Advanced LIGO will begin with new Cooperative Agreement and a second new Cooperative Agreement will be needed for our new operating grant beginning in FY2009.

TSBR

- When will it happen
  - » TSBR team at Caltech August 20-24;
  - » Will also visit one or both observatory sites in September
- What does it mean to you
  - » TSBR team will interact directly with Caltech & LIGO people who handle property management, HR, finances, procurement, and other business practices.
  - » TSBR team will evaluate Caltech/LIGO documentation before arriving and them have sit-down discussions with cognizant Caltech/LIGO people
- A heads-up--TSBR of MSU-- input from friends after their TSBR
  - » handled reasonably and responsibly; not an audit…a review of business practices looking for things to improve and "best practices" that would help other NSF large grantees

Status of proposal for our new operations grant

Proposal for next operations grant for Lab

- The proposal for the next 5 year Cooperative Agreement will be submitted to NSF in early September
- Will cover 5-year period FY2009-FY2013
  - » Operation of interferometers for S6 with enhanced LIGO
  - » Data analysis and science from S5 and S6
  - » Expanded education and outreach
  - » Preparing to operate Advanced LIGO
  - » R&D to reduce risks for Advanced LIGO, for enhanced Advanced LIGO and for future capabilities
- Total requested funding ~$158M for LIGO Lab operations
  - » Not Advanced LIGO--that's separate funding

Proposal status

- Fairly mature draft and staffing & budget model exists
- Some more editing and tweeking before ~August 1
- Then proposal goes to Caltech Contracts and Grants for ok and formal submission to NSF (early September)
- Annual NSF review of LIGO will be the peer review of this proposal- ~November 2007
- From NSF Physics to MPS to National Science Board for approval in spring 2008
- Funding under new grant begins October 2008

Budgets--what's going on in Washington

Status of FY2008 budget for NSF

- Both House and Senate Appropriations committees have "marked-up" their bills for FY2008
  - » Very good budgets for NSF--big increases over this year in both versions for NSF research (~10%) and for NSF big projects (MREFC)
  - » NSF MREFC funding appropriation includes our full request for $32.75M for Advanced LIGO!!
  - » Still ahead--
    - – Passage of bills by full House and full Senate
    - – Conference committee to resolve any differences in two versions
    - – President's signature
    - – Could take many months for all of this to be resolved

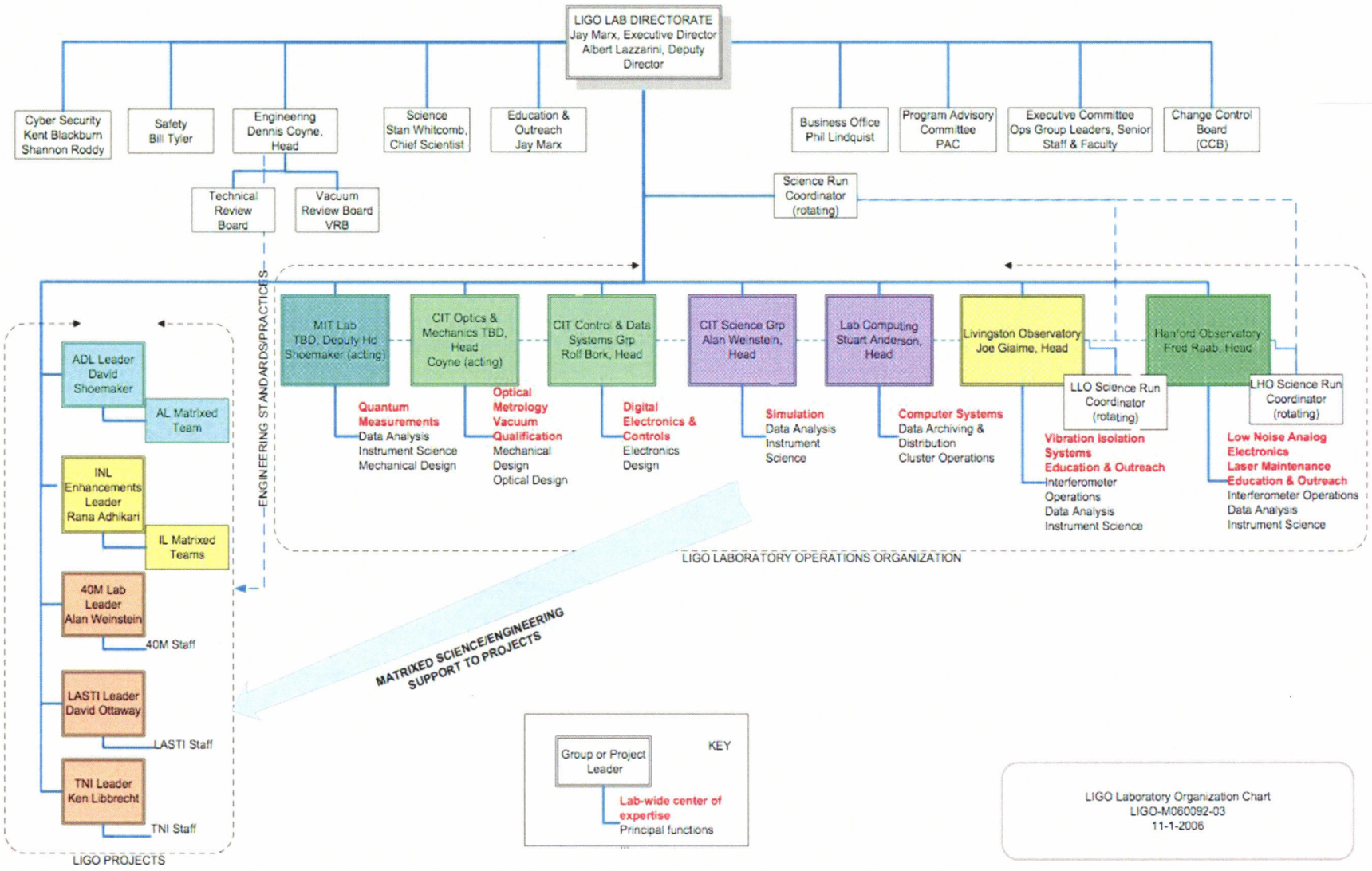
LIGO Lab budget for FY2008

- Lab operations for FY2008--- requested $28.2M
  - » Less than FY07 ($33M) because of staff funded on Advanced LIGO construction
  - » Looks extremely likely that this will be the funding we get since both versions of NSF budget are very favorable

- Advanced LIGO construction funding
  - » Only new project start requested by NSF
  - » Our great reputation helps give Congress confidence in starting a new project even though some other NSF projects are having problems
  - » Requested $32.75M
  - » In both House and Senate appropriations version
  - » Good probability this will wind up the funding we get
  - » But still several steps to go.

Wrap-up

- LIGO is the world-leading gravitational wave observatory
- LIGO has a clear scientific vision for the next decade and beyond-- S5, Enhanced LIGO, Advanced LIGO
- LIGO Laboratory is very health with excellent funding prospects, a great staff, and the Advanced LIGO project that will assure our future


LIGO LAB DIRECTORATE
Jay Marx, Executive Director
Albert Lazzarini, Deputy Director
Cyber Security
Kent Blackburn
Shannon Roddy
Safety
Bill Tyler
Engineering
Dennis Coyne, Head
Science
Stan Whitcomb, Chief Scientist
Education & Outreach
Jay Marx
Business Office
Phil Lindquist
Program Advisory Committee
PAC
Executive Committee
Ops Group Leaders, Senior Staff & Faculty
Change Control Board
(CCB)
Technical Review Board
Vacuum Review Board
VRB
Science Run Coordinator (rotating)
ENGINEERING STANDARDS/PRACTICES
MIT Lab
TBD, Deputy Hd
Shoemaker (acting)
CIT Optics & Mechanics TBD, Head
Coyne (acting)
CIT Control & Data Systems Grp
Rolf Bork, Head
CIT Science Grp
Alan Weinstein, Head
Lab Computing
Stuart Anderson, Head
Livingston Observatory
Joe Giaime, Head
Hanford Observatory
Fred Raab, Head
Quantum Measurements
Data Analysis
Instrument Science
Mechanical Design
Optical Metrology
Vacuum
Qualification
Mechanical Design
Optical Design
Digital Electronics & Controls
Electronics Design
Simulation
Data Analysis
Instrument Science
Computer Systems
Data Archiving & Distribution
Cluster Operations
LLO Science Run Coordinator (rotating)
Vibration Isolation Systems
Education & Outreach
Interferometer Operations
Data Analysis
Instrument Science
LHO Science Run Coordinator (rotating)
Low Noise Analog Electronics
Laser Maintenance
Education & Outreach
Interferometer Operations
Data Analysis
Instrument Science
LIGO LABORATORY OPERATIONS ORGANIZATION
ADL Leader
David Shoemaker
AL Matrixed Team
INL Enhancements Leader
Rana Adhikari
IL Matrixed Teams
40M Lab Leader
Alan Weinstein
40M Staff
LASTI Leader
David Ottaway
LASTI Staff
TNI Leader
Ken Libbrecht
TNI Staff
LIGO PROJECTS
MATRIXED SCIENCE/ENGINEERING SUPPORT TO PROJECTS
Group or Project Leader
KEY
Lab-wide center of expertise
Principal functions
LIGO Laboratory Organization Chart
LIGO-M060092-03
11-1-2006