

X-Mailer: QUALCOMM Windows Eudora Version 6.2.1.2

Date: Fri, 15 Jun 2007 08:40:20 -0700

To: Tom Carruthers <tcarruth@nsf.gov>, Beverly Berger <bberger@nsf.gov>

From: Phil Lindquist <lindquist_p@ligo.caltech.edu>

Subject: Fwd: NSF Monthly Reporting (End of May 2007)

Cc: "Phil Lindquist" <lindquist_p@ligo.caltech.edu>,

Jay Marx <marx_j@ligo.caltech.edu>,

"Stan Whitcomb \ (E-mail\)" <whitcomb_s@ligo.caltech.edu>,

Linda Turner <turner@ligo.caltech.edu>,

"Thomas B. Lucatorto" <toml@nist.gov>, dcc@ligo.caltech.edu,

Albert Lazzarini <lazz@ligo.caltech.edu>,

Dave Beckett <beckett@ligo.caltech.edu>,

Dave Reitze <reitze@phys.ufl.edu>

X-Spam-Score: undef - Domain Whitelisted (ligo.caltech.edu:)

X-Scanned-By: CanIt (www . roaringpenguin . com) on 131.215.115.14

X-Scanned-By: CanIt (www . roaringpenguin . com) on 131.215.115.19

Subject: **LIGO End of May 2007 Highlights**

Reference: **LIGO-M070101-00-P**

LSC

The second joint LSC-Virgo meeting was held in Cascina, Italy from May 21-25. This was the first meeting hosted by Virgo, and by all measures the meeting was a success. There were approximately 130 registered participants with roughly half of the attendees from the LSC and half from the Virgo Collaboration. Highlights of the five day meeting included a press conference at the Virgo site to announce the beginning of the first Virgo science run and joint running with LIGO and GEO. Well recieved presentations were made by the Director General of the CNRS, the Vice President of the INFN, the Associate Director of the Math and Physical Sciences Division of NSF, the Virgo and LSC Spokespersons, and members of the Virgo Collaboration. In addition, many LSC members enjoyed a site visit to Virgo. At the meeting, there were many reports from the joint analysis groups and instrument science groups, including a report on the status of the GRB070201 search. Meetings of the joint run planning committee and data analysis council were held to continue developing scenarios for post-S5 planning.

Other notable activities:

- The LSC submitted a total of 37 abstracts to the Amaldi meeting. Amaldi will be held in Sydney, Australia in July.
- Gregg Harry (MIT) was elected as the chair of the Optics Working Group.

Publications

The following paper was provisionally accepted in Phys. Rev. D

- Upper Limits on Gravitational Wave Emission from 78 Radio Pulsars

Two LSC observational papers were submitted in May:

- Search for gravitational-wave bursts in LIGO data from the fourth LSC science run (Classical and Quantum Gravity)
- Search for gravitational waves from binary inspirals in S3 and S4 LIGO data (Phys. Rev. D)

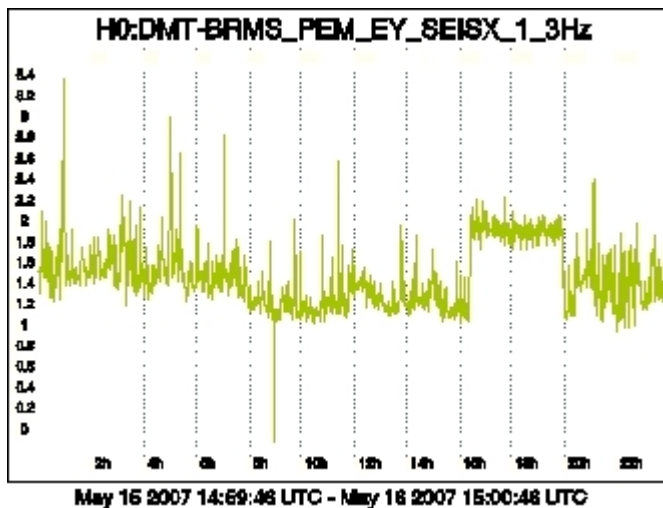
S5 Science Run

S5 running for May 2007 was dominated by weather, industrial activities, and LIGO commissioning and development.

At Hanford Energy Northwest (the commercial nuclear power station east of the Hanford site) is undergoing a maintenance and re-fueling cycle. We see activity on the seismic monitors and the impact on the inspiral range. Thanks to the microseismic servo, the four-kilometer interferometer (H1) is much less sensitive to this class of background noise. A group with an interest in windfarm development has undertaken a study of the propagation of seismic and acoustic waves from a location on Rattlesnake Mt. to the site. A series of explosions of varying size and depth was carried out May 17-21, 2007. The blast times have been noted and an analysis of the signal in the Hanford interferometers and seismometers is underway.

At the Livingston Observatory commissioning and development activities spent the 25 hour allocation on output port mode cleaner commissioning and on DC locking techniques. Techniques for DC locking and the measurement of transfer functions were carried out with good success. The role of the OSEM magnets in the upconversion of noise has been elucidated.

Both sites contended with weather and manmade noise as the dominant source of loss of science-mode running: LHO had winds and LLO had thunderstorms. Livingston had to deal with power outages and logging.



Refueling and maintenance activities at a commercial nuclear power station east of Hanford site.

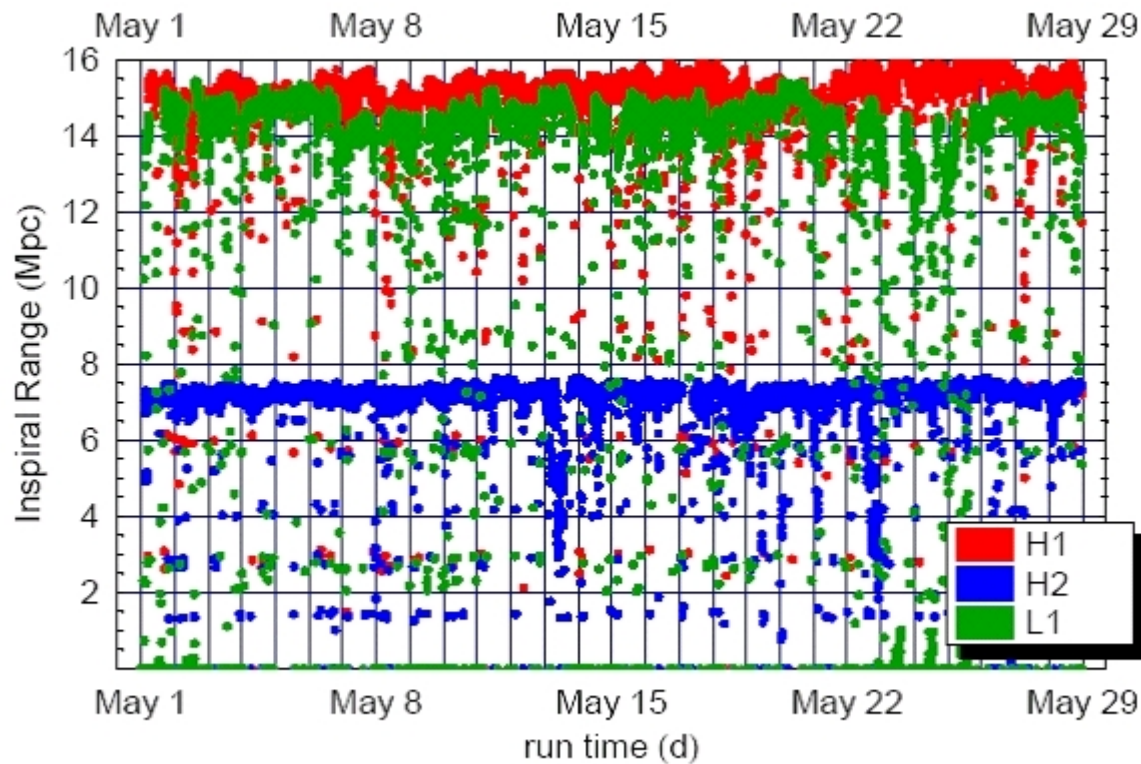


Logging about 1Km just south west of the Livingston X-end station.

Statistics for May 2007

IFO(s)	Hours	Duty Factor (%)
Hanford 4-km (H1)	628.2	87.2
Hanford 2-km (H2)	581.4	80.8
Livingston 4-km (L1)	539.3	74.9
H1+H2+L1	442.2	61.4
(H1orH2)+L1	505.7	70.2

Inspiral ranges for the three interferometers during May 2007.



Education and Outreach

Hanford

Hanford hosted 12 tours and field trips during May, including a visit from 40 7th and 8th graders from Mt. Adams Middle School, which is located on the Yakama Indian Reservation. Off-site outreach activities included LIGO's participation in Pasco's Cinco de Mayo festival, two family science fairs at local schools and the 2007 Mid-Columbia Literary Festival at which Fred Raab hosted a panel discussion of Thomas Friedman's "The World is Flat." LIGO received a Community Award from the Southeastern Washington Association of School Administrators. The Observatory also received a lovely Galileo Thermometer, plaque and \$5K from WA LASER for the previously announced Science Education Advocate Award.

Livingston

The LIGO Science Education Center, Livingston, LA, hosted nine field-trip visits from schools. The 556 students visiting LIGO SEC included:

- 275 Elementary Students (pre-K – 5th grades)
- 195 Middle School Students (6th – 8th grades)
- 86 High School Students

There were two Teacher Professional Development Workshops conducted: 22 teachers

There were Five special events:

- (1) LIGO SEC staff provided science/career activities for 155 students at Albany Middle School
- (2) LIGO SEC staff provided science/career activities for 150 students at Broadmoor High School

- (3) The LIGO SEC staff presented material to DEMCO Power and Light Company as part of a regional meeting of about 30 executives. DEMCO supplies LIGO Livingston's electrical power.
- (4) The LIGO SEC staff presented science content material to four Tulane University students who will mentor science lab students from the Sophie B. Wright Charter School in New Orleans. This is part of the Science Buddies project.
- (5) LIGO SEC hosted the Baton Rouge Astronomical Society for a Start Party in late May which featured a 25-inch reflector telescope.

Media Relations.

LIGO SEC hosted Southeastern Louisiana University's camera and reporting team from the SLU Channel as part of an education channel program. We have not yet received the promised DVD.

Enhanced LIGO

The Lab held an internal review of the Enhanced LIGO program, which went very well. There are no significant schedule or technical problems at this time.

We have completed the design of the Output Mode Cleaner, and all custom fused silica parts are on order and due to appear in the coming few weeks.

The commissioning team at Livingston made some measurements of a prototype in-air DC readout system operating on their four-kilometer interferometer. Initial noise spectra were 10x better than the previous OMC tests at Hanford. The test was important in verifying that a LIGO style interferometer can be locked with a DC readout scheme.

Advanced LIGO

We conducted an internal review of the status of Advanced LIGO in preparation for the June Update Review scheduled by the NSF. Each of the subsystems presented an evaluation of technical progress, anticipated project costs, ability to meet the remaining development schedule and the planned Project schedule, and the adequacy of available labor resources in this context. The presentations were reviewed by colleagues, the Advanced LIGO and LIGO Laboratory leadership, and the Advanced LIGO Project Advisory Panel. The cost and schedule baselines were revised, but modestly, indicating stability in the overall project costs and concordance with the schedule previously presented to the NSF.

We have started fabrication of the prototype HAM isolation systems, to be employed in the enhancements to initial LIGO; the costs are as anticipated for this Advanced LIGO element, providing confidence in the cost estimates, and the planned fabrication schedule is consistent with the Project needs.

A full-sized LIGO Optic test piece has been coated for integration with a prototype test-mass suspension. The piece arrived at Caltech, where it will be characterized and then shipped to the MIT LASTI test facility for integration. The test-mass suspension, designed by the UK team, has been fabricated and is now being cleaned.

The suspension design for the Advanced LIGO Output Mode Cleaner has been fabricated and assembled, and is now being characterized. This suspension, integrated with a prototype Output Mode Cleaner, will be used in the enhancements to initial LIGO.