

LCOGT Telescope Network Capabilities

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June 2010: Back Parking Lot (BPL) site in Goleta. Aqawan clamshell for up to two 0.4m, Weather, Dome for 1m, site-services building (SSB) container. The SSB and Aqawan in right foreground are for CTIO. See 7737-24 for Site Development.



May 2010: Crane to lift a complete, aligned & tested 1m mount, cell and M1 into an 18' Ash Dome. Process takes about 1.5 hours.



Piers waiting inside the modified Ash dome. Dome shutter control panel, fans and 1m control panel. Dome has 2m-wide shutter opening.



The complete, aligned mount, mirror cell, with primary installed, cover, temporary (0.4m) control panel.



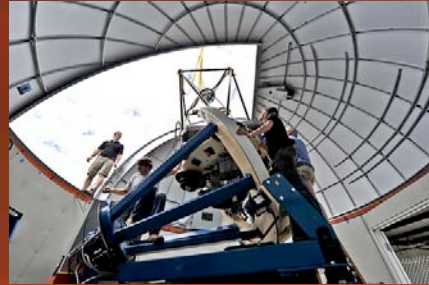
A close but adequate fit through the 2m aperture.



Mount lowered onto fixators on piers for easy polar alignment.



Primary is 2m above grade level. Piers are on isolated concrete. Lens/CCD are for quick mount alignment and "Context" imaging. A collimating telescope is mounted temporarily at the Cassegrain.



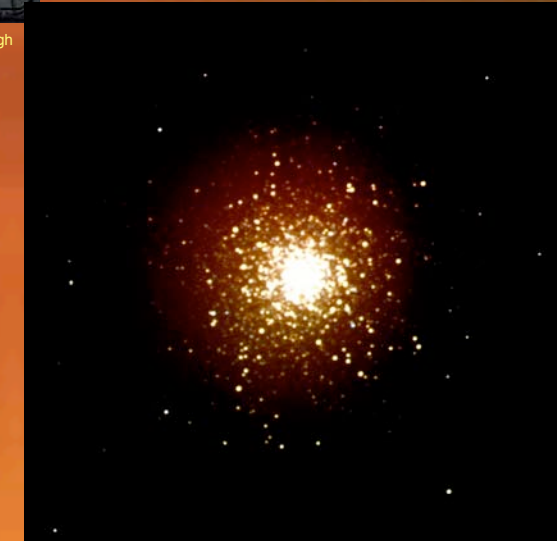
Truss and pre-aligned M2 are craned in and bolted to four locations around mirror cell & cover. Pre-alignment is preserved.



The baffles and thermal management are still being built. See 7739-62 for complete OTA description.



June 2010: BPL with working 0.4m in Aqawan clamshell and 1m in Dome



11 June 2010: M13 - Official First Light in BPL, poor seeing, bright lights, no baffles (yet). But mount, tracking, mirrors, collimation, focus all working. Now we are developing java TCS, integrated network control, thermal management and dry air system for humidity spikes.



June 2009. First mount and C-ring received from Rettig Machine (Redlands CA) and Assembled in LCOGT shop. See 7739-61 for LCOGT Mount.



July 2009. Test fixture illustrates 18-pt whiffle for axial support, and central hub contacting via O-rings on upper & lower inner diameters of the Hextek primary. M1 tilt is $\pm 35 \mu$ at edges, radial $\pm 20 \mu$, no hysteresis. Mirrors were polished, coated (and SiO2 overcoated) at LZOS, Russia.



Dec 2009: "Zeroth" light, eyepiece through optics on test mirror cell.



April 2010, first complete 1m in shop. Mirror cell with primary location clips, ports for cables, fans and embedded control blackfins & bolt circle for instrument. The telescope is being commissioned with a 4K SBIG CCD with internal guider. The science Fairchild CCD486, with in-house Sinistro controller, 2 off-axis guiders, fiber feed for MedRes Spectrograph and fast photometry port will be commissioned in 2011.

1m Sinistro Instrument: <http://www.youtube.com/watch?v=9clEm5ZbJU>

Network: Wayne Rosing: <http://www.youtube.com/watch?v=fnCGVrSLtQ>

Network Summary, see also 7737-25 for full description

- TAC layer to receive science applications and assign network time
 - Educational time is assigned in parallel.
- Scheduling layer to assign targets to nodes at each site.
 - updated monthly, weekly, daily, and more frequently for ToO.
- Operations layer to manage all sites:
 - weather, enclosures, telescopes, instruments
- jTCS layer with astrometric kernel (Tpoint) for each telescope node
 - manage drives, servos, collimation/focus blackfins etc.
- Instrument control software: detectors, filters, thermal management
- Data layer
 - flash processing at each site for initial Quality Assurance
 - data transfer to Santa Barbara (SBA)
 - pipeline processing and data serving to PIs and (after 12 months) to world.



For LCOGT the telescope IS the network. At least twenty-four 0.4m, twelve 1m and two 2m nodes at 6 or more sites for latitude and longitude coverage, to enable observations of all scheduled time-varying and ToO targets at optimal times. Each node must operate robotically, reliably and efficiently to assure effective network operations.

Links to descriptive Videos

1m Technical Description: http://www.youtube.com/watch?v=rCY-F_VkLJO

1m Optics: <http://www.youtube.com/watch?v=DnADHGXQapw>

1m Sinistro Instrument: <http://www.youtube.com/watch?v=9clEm5ZbJU>

Network: Wayne Rosing: <http://www.youtube.com/watch?v=fnCGVrSLtQ>



1m



Optics



Sinistro



Wayne Rosing

SPIE San Diego 2010



<http://lcogt.net/en/science/article/1m-spie2010-poster.pdf>