Caltech Optical Observatories
Palomar Adaptive Optics

February 5, 2006 LGS Facilty IPT Meeting Minutes
A. Bouchez 2/6/07

Caltech: Angione, Bouchez, Cromer, Guiwits, Moore, Roberts, Shelton
Palomar: Tripathi

1. Laser head upgrade

Report by Renu: Ed left this morning. Much time over let two days spent modifying parts in the machine shop. Got the 1.06 um cavity lasing at 12.3 W at 400 Hz. Saw a decrease in laser power when they increased the diode drive current past 110 A (previously run at 125 A). However, one of the 1.06 cavity mirror got bumped during alignment of the 1.32 um laser, and it is now at very low power. The 1.32 um laser is at 8W at 110A, 360 Hz. Alignment on the diode lasers was completed, but not optimal.

Renu is concerned about the possibility of the coolant lines being damaged. Changing their routing is a high priority. Renu will spend the next 2 days completing the cavity alignment. Then Chris will assist on Thursday, and map out what needs to be done to bring the laser back up to power by the Feb 26 engineering run.

2. Punch lists for all subsystems
Items in blue are postponed until after the Feb. engineering run.

2.1. Laser
- Optimize both lasers, particularly 1.06 (RT)
- Equilibrate cavity lengths using AOM performance as feedback (RT)
- Protect water lines (RT). Renu to order right angle fittings today.
- Install new data logging card in servo control box. (CS - next week).
- Reduce frequency dither step size. (RT/CS - next week)
- Order replacement knob for PZT etalon mount, install (RT)
- Adjust power display gain controls (RT/CS - next week).
- Write up etalon calibration results (RT)

2.2. BTO
- Clean BTO Boresight mirror. (RT)
- Clean all other optics. (AB)
- Replace M3 controller and install heating device. (JH)
- Restore BTO FSM resolution to original values (JH)
- Fix M1 run-away when light is blocked (JA)
- Update operating manual (JA) AB to send john setup writeup.
- Recalibrate BTO motor positions (JA/AB, 2/22 - AB to check with Joe and Bob).
- Improved BTO GUI. John handing off to Steve, decided not to persure for the moment.
- Testing of solid-state disk. Disk works fine, AD driver needs work. Writing better driver for LGS computer will address this. (SG)

2.3. LGS Computer
- Implement temp on/off control of individual chanels (SG).
- Write up data paths and operating modes. (AB)
- Working on getting photodiode communications. Steve to send status on Fri.
- Order of work (SG):
    - Get communication working with servo box "brick".
    - Develop photodiode FUI.
    - Log temperatures and photodiode value to AODR.

- ○ Implement outer frequency servo loop.
- ○ Write LGS ADC driver (for diag. bench photodiodes)
- Do we need remote reboot capability? No.
- If LGS computer is ready to go up to Palomar on 2/22, Steve could come up to install. <u>Antonin to order shelving.</u>

2.4. Laser diagnostics

Punch list items based on 2/5 email:
- SW models for:
  - ○ 2-inch pulnix mirror for sky viewing mode
  - ○ Stage for beam block and 589nm filter at coude
- Cardboard layout of baffle for coude
- Cardboard layout of enclosure for prime focus
- SH assembly and calibration

At Palomar (Feb 22-24, will coordinate with Renu)
- Swap wedges on LLT bench
- Install various items made above
- Adjust filters at coude
- Adjust filters at prime (NB this can only occur on Monday of run)
- Silastic all LLT components when we're happy with their position-
- otherwise they will move during installation
- Draw up cable layout (FINAL) with Steve for John Henning and Palomar
- staff
- Labview software for displaying cross sections etc
- Calibration- power for PDs and scale for images

2.5. Safety systems

- Modify Coude room door sign circuit to allow chillers to run on "green". (JH)
- Implement fix for client DS9 crashes (JC).
- New goggles have arrived. Small ones don't fit. <u>Renu will replace.</u>