Maintenance and upgrades of DK154 during October-December 2013

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1) Exchange of HDDs in computers Linux 1 and 2 was done during 2013 Oct 17 to 21. Four of the eight HDDs in the computers Linux 1 and 2 were not healthy, there were detected bad sectors. We replaced them with new ones, including two other HDDs in the raid. Specifically, the two 500GB system disks in Linux 1 and all the four HDDs in Linux 2 were replaced.

2) We went through the 6-month points of the Projectsoft checklist on 2013 Oct 29, see the protocol (Attachement 1). The only significant issue is the broken AG focusing. All the other things were found to be in a good shape, or we did a small maintenance on them, or they (points C1 and C2) would be fixed in the overhaul of the dome slit mechanics during November 18-22.

3) The primary mirror washing was done on 2013 Nov 11. The reflectivity improved from 71.02 to 87.58% and the roughness from 147.9 to 39.5 A.

4) The dome slit mechanics overhaul was done during 2013 Nov 18 to 22.

5) Filters change and inventory check were done:

5a) Filter No. 749 = H-beta continuum (at position 6 in Wheel A) was replaced by filter g2 which will be used by one of the Czech stellar photometry groups. The H-beta continuum filter is now stored in the dark room with all other unused filters. In the TCS, the name of the filter at position 6 in Wheel A was changed to "g2" (an analogous change in the ARS awaits Projectsoft fixing a bug there) and we set a proper focus offset for automatic refocussing when changing filters. For the filter g2, we made a new filter holder (due to a different diameter of the filter).

5b) Inventory check of all filters stored in the DK154 building was done. Filters were found only in the dark room - placed on the table and in one drawer only. The list of all the filters is in Attachement 2.

6) Upgrades of the TCS meteo safety system were done:

6a) Two brightness limits, high and low, are set. Brightness exceeding the high limit (currently set at 11 kLux for the BrightnessNorth sensor) closes everything (the dome slit and all the ventilation windows). Exceeding the low limit (1 kLux) closes the three ventilation windows in the direction of the sun (E, NE and SE in morning, or W, NW and SW in late afternoon) and the dome slit if it is in azimuth +/- 60 degrees from East (in morning) or West (in evening). This setup allows opening in safe directions when the sun is low in the sky, e.g., preparing for observations, taking twilight flats.

6b) Two wind speed limits are set, one for the dome slit (currently at 18 m/s) and the other for ventilation windows (14 m/s).

6c) Two humidity limits are set, one for closing (currently at 85%) and the other for opening (80%). This hysteresis provides an improved performance when the humidity raises above and then decreases again below the limit.

6d) A timer was added indicating how much time it is before the TCS allows to open after bad meteo conditions cease.

6e) A switch for control of the Cassegrain flap was added, for a case it brokes again.

7) A correction of the imprecise telescope pointing was done: We changed the DS parameter of the pointing model by -25 arcsec. The telescope now points well with a similar accuracy as during our 2012-2013 season (the rms residual about 8 arcsec).

8) The autoguider focusing is broken. We found that it is becasuse of disconnected soldered wire from the motor (the brown one), caused probably by long time bending of the wire close to the motor. We couldn't fix it; a substantial dismounting of things below the primary mirror in the Cassegrain focus would be needed, probably requiring a serious servicing mission.

9) The automatic refocusing of the Autoguider during filter exchange was suppressed by setting the AG Focus Correction Factors (for both filter wheels) to zero. This prevents an occurrence of the AGUIDER FOCUS AL3 (positioning timeout) error during filter exchange.

10) The new AllSky PC was activated. Now the allsky camera runs from this pc during remote observations. (For local observations from the control room, it may be needed to switch back to running the camera from win2.)

11) The Cassegrain flap control was fixed. The broken clutch was repaired (a new plastic parts were made) and installed back between the flap and motor gearbox. The counterweight was installed back, it has been additionally fixed by installing a pin.

12) The parallel data transfer (PaSyC/S) was improved. Specifically, an automated back re-check of transferred images was added. It should fix issues with occassional bad blocks transferred.

13) Padlock at the Danish room door was installed. The key is deposited in a „keybox" in the La Silla reception. One key will be sent to Michael Andersen. Another key is in Ondrejov.

14) New spare parts and tools were put to the Danish room: 4 HDDs (two 500GB and two 2TB), extension cables, boxes of drill bits, fines, knifes with spare blades, various screwdrivers, centre punch, digital calliper, rosin, tin, various pliers, tape measures, tweezers, adhesive tapes, and drawing needle. For list of tools now stored in the Danish room please see Attachement 3.

15) Plastic cover of the Allsky camera lens was cleaned.

16) Two broken handles were repaired - the one on the control room door and another one on the door before stairways to the telescope.

Petr Pravec and Kamil Hornoch, 2013 December 4

Attachements: 1) DK154Checklist_20131029.xls
2) filtersstoredatDK154_2013October.xls
3) toolsstoredatDK154_2013October.xls