SHOC INSTRUMENT CHANGE NOTES: APPLICABLE TO 74”TELESCOPE ON

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6 Sept 2016	Dave Carter
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01 March 2018	Avhapfani Mulaudzi
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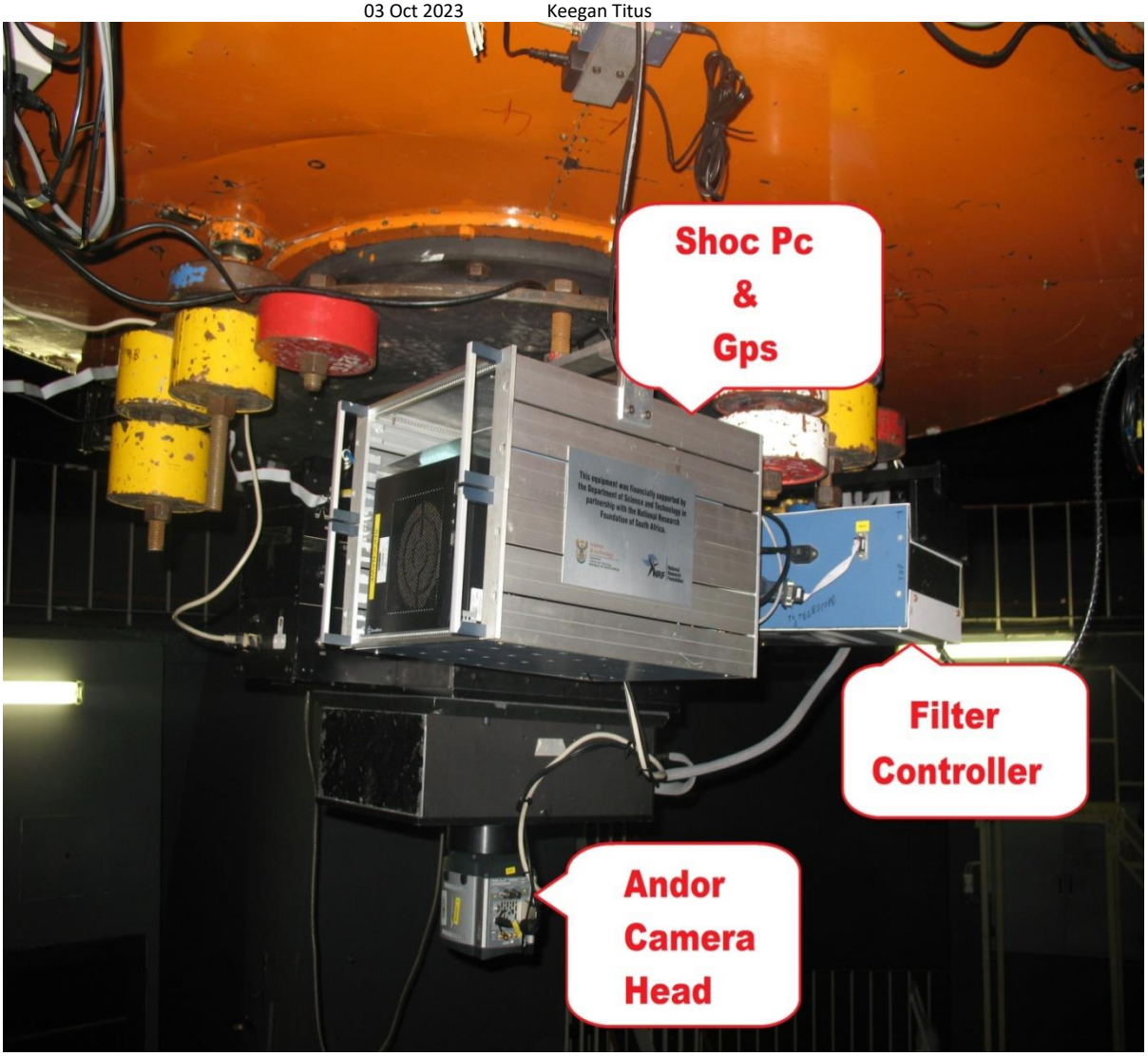

Figure 1: SHOC on the Telescope, view from NE Quadrant

In the Warmroom:

1. Ensure that **TCS** is locked out by turning the **TCS Lockout** switch on the mimic panel (refer to figure 2) to **ON** state. TCS Control indicator will flash as a warning that the TCS is locked out.

Figure 2: ***TCS LOCKOUT SWITCH***

Figure 3: XY-Slides Control Box

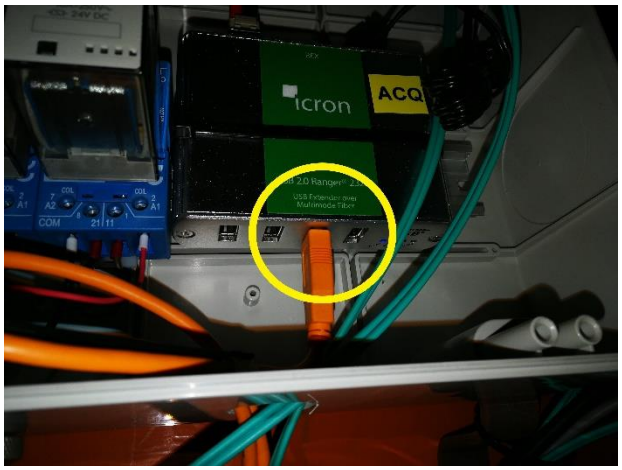

Figure 4: Port to be used on ACQ Icron device for acq. Cameras

On the Telescope:

1. Mount SHOC PC Crate on Telescope (see Fig 1).
2. Mount "XY-SLIDES CONTROL BOX" on the telescope (See Figure 3) and connect up the 2 25way d-type connectors, 15way d-type connector, 4 circular connectors and 1 IEC power plug.
3. Mount XY slides and autoguider on the acquisition box on the South side. Reconnect IEC mains cable and 15-way ribbon cable to the acquisition box.
4. Connect Hippo acquisition camera USB to port shown in Figure 4.
5. Mount filter controller box on Telescope
6. Mount Andor Camera Unit on Telescope (Ensure Camera lens has been cleaned by gently blowing with compressed air.)
7. Check that the correct filter wheels are installed in the filter box – refer to the 'Filter Rota' list on the electronics web page.
8. Connect Filter Wheel Controller filter cables to the filter wheel units. Connect the USB-to-serial cable from filter wheel controller to SHOC PC.
9. Connect GPS Antenna (permanently mounted on telescope) to GPS Unit inside PC Crate.
10. Connect Network Cable (transceiver permanently mounted on telescope) to PC Crate.
11. Connect SHOC PC to Andor Camera Unit.
12. Connect PSU to Andor Camera Unit.
13. Connect GPS trigger signal cable to Andor Camera unit "ext trig".
14. Connect PC Crate to Telescope mains (normal Kettle plug lead).
15. Switch on Crate Power & SHOC PC (in front behind black tape).

In the Warmroom:

1. **Ensure that the following is connected to TCS74v3 PC:**
    - Acquisition camera USB
    - 2 HDMI cables on Dell display ports
    - USB for mouse and keyboard.
2. **Do the following tests:**
    - Initialize the XY-slides. If it fails, make sure that the XY-slides control box is powered on and that the Reset XY-slides button at the east side of the north pier has been pressed.
    - Do an exposure on the acquisition camera and make sure that there are some counts.

3. Useful info may be available at: http://topswiki.saao.ac.za/index.php/SHOC - especially if there's any doubt as to whether these instrument change notes are up-to-date with possible software updates . . .
4. Run the appropriate script as follows:
    3.1 Open xterminal, type in **"ssh ccd@shoc74in.suth.saao.ac.za"** when prompt for a password type "**Saaoccd".**
    3.2 Run ***shocboxswitch.sh*** **command**, then when asked **"Do you wish to revert to the** default?" type **"NO"**
    3.3 When asked "**which telescope should be used?"** then type in 7**4in** and when prompt for a password type ***"Saaoccd"*** the script will run.
5. Connect to the web browser: **http://shoc74in.suth.saao.ac.za:5000.** When prompted to log in, use the username and password below:

    ***VERY IMPORTANT!** See Appendix for a detailed explanation by Amanda about the implications of mounting the "wrong" SHOC Computer on the "wrong" Telescope.

    Username: shoc74in
    Password: Saao74in

    There are three tabs, for **Filter control**, **GPS control**, and **Camera control**

6. Go to the **Camera** tab, click the "**Turn Camera on**" button – see figure 5. If the camera switches on OK the control GUI will appear – See Figure 6.

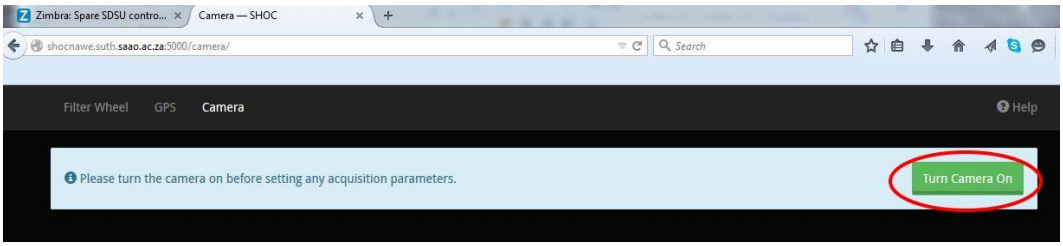

Figure 5: Initial Camera GUI – switch Camera ON

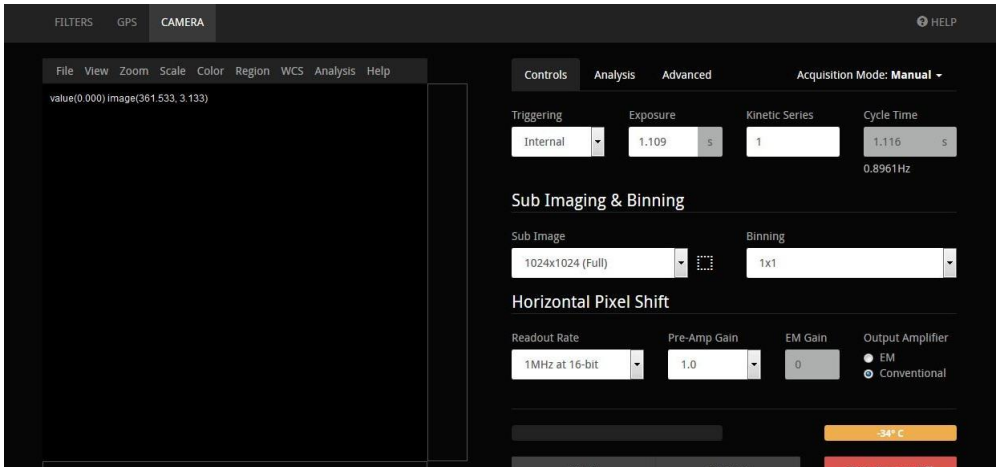

Figure 6: Initial Camera Control GUI

7. Set the camera temperature: See the temperature display/button in the bottom RH corner. It should have an orange background and the reading should start dropping.

- Click on the “Advanced” Tab. The “advanced” tab GUI should appear – see Figure 7.
- To avoid unnecessary stress to the thermoelectric cooler, click on the “Set Temperature” box (Figure 7) and change the set point to -25°C. Check that the temperature settles at the new set point. Note that the servo seems to overshoot quite a lot. Once at the set point, the button background colour changes to green. This can take a few minutes . . .

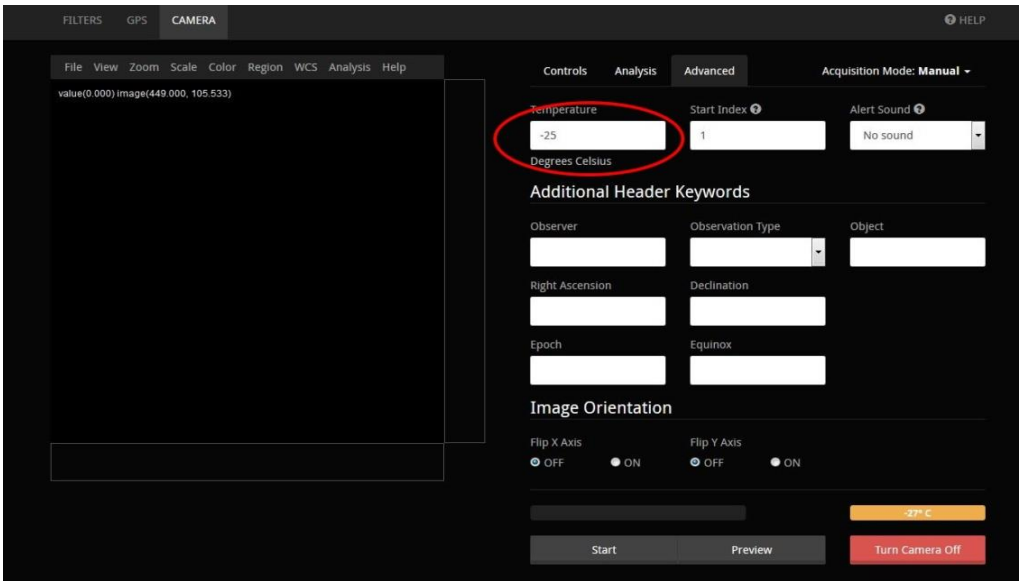

Figure 7: "Advanced" tab GUI

8. Check that the camera is reading out: Click on the “Controls” tab (Figure 8), confirm the setting is full frame, conventional mode (the default) and press "preview". Images should appear every ~ 1.2 sec. Once confirmed that images are coming through, press "stop". Note that camera has no shutter, therefore before bias frames can be taken, the dome lights must be switched off, ensure dome shutters and cover is closed (its not necessary that it should be completely dark inside the dome, but there should be no direct light falling in the optical path). Running the cursor over the image display area will bring up a notification panel with X,Y coordinates and the count at this position. The counts should be around 400 or so.

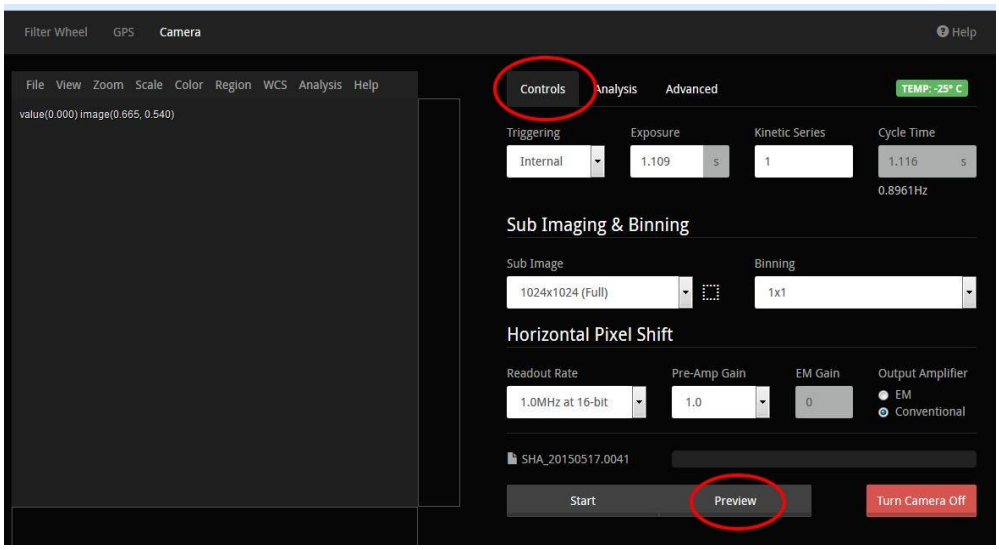

Figure 8: Camera "Controls" Tab

9. Check that the camera fan is running. (Check this at the camera)

10. Turn the camera off: Click on the "Turn Camera Off" button at the LHS bottom corner of the GUI.

11. Check the Filter & GPS operation: Click on the "Filter Wheel" and "GPS" Tabs at the top RH corner of the web GUI to access the controls. See Figures 9 & 10.

12. On the web page Filter Tab initialize and move filters to check their operation.

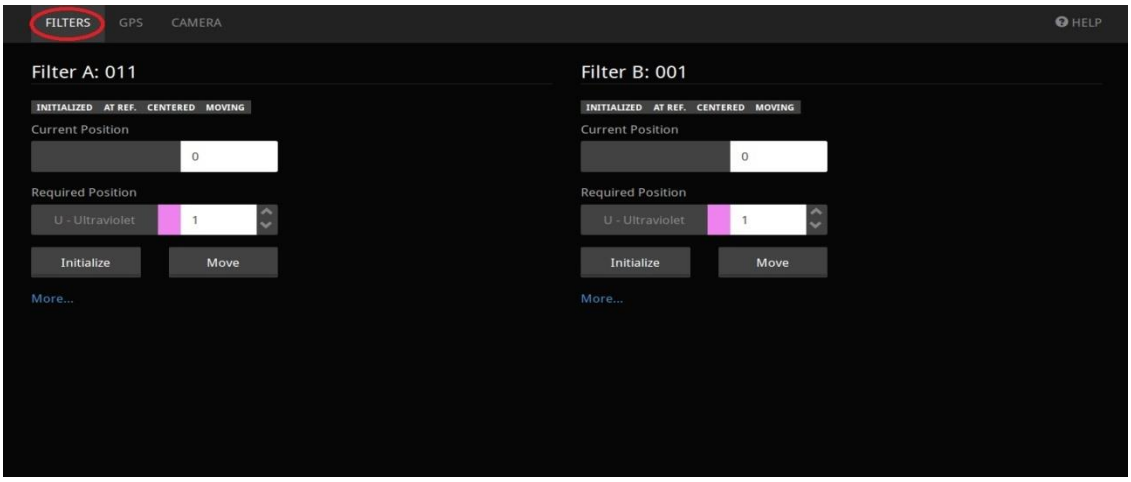

Figure 9: Filter Wheel GUI

13. On the web page GPS Tab, just check to ensure that there is no Antenna Fault (If this happens check that the antenna has been connected properly to the GPS unit in the port labelled "antenna" also refer to page 18 of the user manual under the section titled "hardware fault monitoring" point 2.)

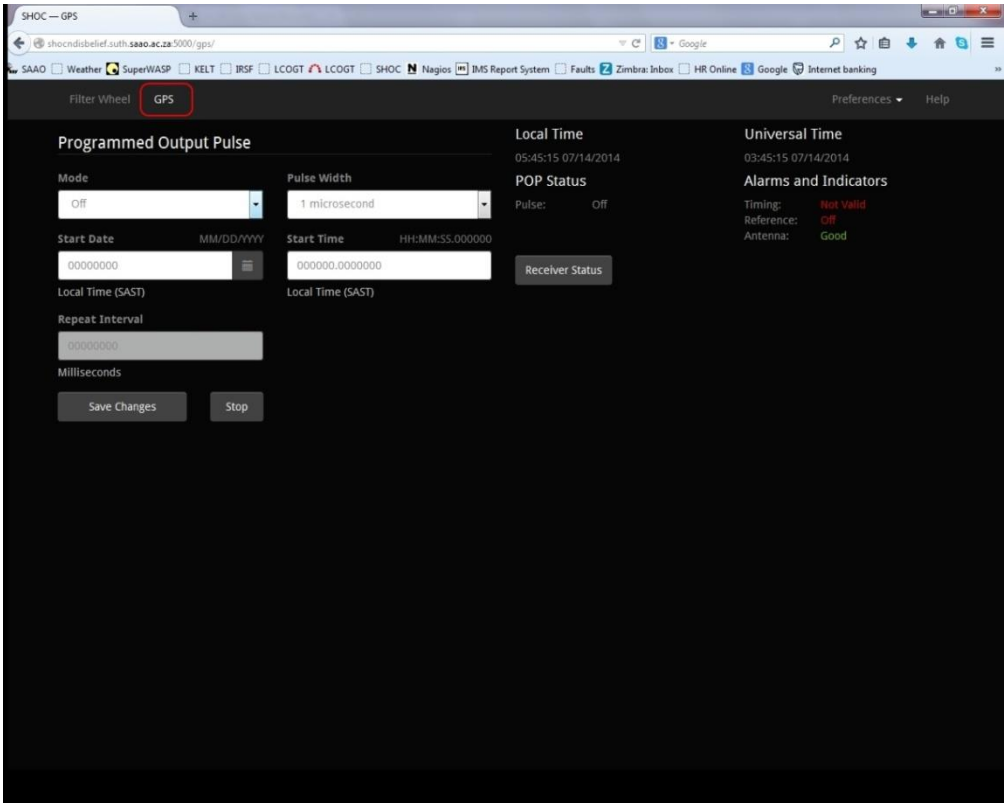

Figure 10: GPS Tab GUI

14. GPS data acquisition is an automatic process and will start as soon as dome is opened.
15. Do the usual checks on the TCS/XYslide/acquisition camera hardware.
16. **NB!!!** Ensure that **TCS Lockout** switch on the mimic panel is set to **ON** state.

Further information and user manuals (for trouble shooting) can be found at http://shoc.saao.ac.za/Documentation.html

Appendix:

In an email dated 15 January 2016, Amanda explained the implications of mounting the “wrong” SHOC Computer on the “wrong” telescope, as follows:

“If the boxes are switched (i.e. shocnawe goes on the 40in or shocndisbelief goes on the 74in), then the observer will not be able to connect to the machine using the appropriate website and account (which is shoc40in or shoc74in for each telescope, respectively).

The instrument could be accessed by logging into the WRONG account, so if shocndisbelief were mounted on the 74in, then the 74" observer could run the shoc40in web interface and transfer data as shoc40in. This would be functional, but then all of the data paths would be incorrect because files would be stored under the 40in telescope folders, and the observer is likely to get confused when logging in and out. Things could get really hairy in this case if for some reason multiple SHOCs were mounted and an observer mistakenly logged into the wrong one, thus controlling the instrument on a different telescope.

The preferred solution is for IT to know how to change whatever information is required so that the SHOC box can be correctly tied to the correct telescope username where it is mounted.”