MMT Observatory
Smithsonian Institution &
The University of Arizona

HECTOSPEC OBSERVER'S CHEATSHEET

The following is a list of instructions about running the Hectochelle instrument intended to assist the attending astronomer. If the run has already underway or if the spectrograph is already running, skip to item 8.

1) Login to **lewis** as user '*chelle'*, ask the robot operator for the password. Have the robot operator login to **clark** and **hudson** as well.

2) In an xterm on **lewis** , type:
> ***go.go***

3) Once the **Spice** window is up, select the **startup tab**, and press "*Start Pulizzis*" (wait about 10 secs).

4) Then "*Start Rack*" (wait **2 minutes**).

5) Then "*Start Bench*" (wait ~30 seconds).

6) Then "*Home Bench*" (wait ~1 minute).

7) Then "*Start CCD*", and finally

8) Start "*DomeCal*".

9) Now go to the **Configure tab**, enter the observers' names, select the correct telname (*mmt_f5_adc*), the correct instrument ("*hectospec*"), and the correct detector ("*specs*").

10) Insure the *binning* and *grating* are correct.

11) At the start of the run, or if a new order has been selected, press **ConfigBench**, and wait about 10 seconds.

12) Go to the **StandardOps tab**. Select "*bias*" for the exposure type, and take *~10 frames*. Inspect these on "*ds9*", and insure there is no pattern noise. The first image or two may be saturated - ignore these.

13) Take a *300s dark exposure*, 2 or three if there is time. Use "*iraf*" > **implot** to inspect these for excess counts. A line plot where several hundred lines have been averaged is the best way (e.g., **implot filesname.fits[im2],** then **:l 4000 4200**, that's letter l, not the number 1. The pixels beyond 1075 are overscan. The dark level should not be more than about 0.6 counts above the overscan in 300 seconds. If it is, call an expert.

14) Have the robot operator configure the fibers to the calibration setup. Have the telescope operator open the mirror covers.

15) Select **qfocus**. Turn on the *penray lamps*, set the *starting focus* to the current value, and the *exposure time to 2 seconds*, and take an exposure (note: this can be done with the mirror cover on). When the exposure is over, go to the "iraf" window, and type **qfocus filename.** Inspect the graph for the *best focus*. If there is a change, go to the **Focus tab**, and enter that value as a *New Focus*. Press **apply and save**. Now select the **Config tab**. Press **ConfigureBench.** If the focus hasn't changed, skip all this. *Turn off the Penray lamps*

16) In the **StandardOps tab**, select **domeflats**. Turn on the *continuum lamps*, and take *10 exposures of 2 seconds for the 270gpm grating*, or *10s for the 600gpm grating*, at each setting planned for the night.

17) Now *turn off the continuum lamps*, and select **comps**. For the *270gpm grating*, turn on the *HeNeAr lamps* and take *5 x 300s exposures*. Turn off the lamps when finished. For the *600gpm grating at a blue setting* (6300 or bluer), also use the *HeNeAr lamps* with *exptimes of 480s*. For *redder settings*, use the *Penray Lamps, exptime of 3s*. Take a set for each planned central wavelength setting for the night.

18) If you are able to open the telescope at sunset, start taking *skyflats* as soon as possible, beginning with *2 second exposures*. The robot operator will move the telescope in between exposures. 5 of these are sufficient - do not take so many that you are delayed in acquiring the first field. If you are changing gratings in the middle of the night, make sure to take calibrations for that in the morning. Otherwise, no more calibrations are required.

19) Bring up the schedule, by typing in a terminal > **cd ; schedule chelle 2008c** , for instance, but use the current trimester name ("a"=Jan-Apr, "b"=May-Jul; "c"=Sep-Dec". Select the current **calendar day (not UT day) tab**, and click on **print**.

20) Review the program information from the proposals (these are kept in */home/spec/*.pdf* use **gv** to view). In particular note which orders are to be used for that night. The robot operator may have already printed out the schedule & proposal list, please co-ordinate with them.

21) After the robot operator configures for a new field, **Spice** will know about the exposure info and title. So most of the time you simply have to click **"*GO*"** to take the exposure. If the order has been changed, you'll need to **ConfigBench** in the **Config tab** before exposing (a warning will remind you of this).

22) During the night, monitor the time and try to keep to the schedule. *Enter comments* in to the logs about the conditions (seeing and clouds) and problems. **qspec** is run automatically on the data; *check these spectra to insure good data quality*. In particular, make sure there are indeed objects in the spectra, because occasionally there aren't any, due to astrometry errors. If there is such a problem, abort the field and move on to the next scheduled field.

23) The robot operator & TOs are always there to help you.