Overview: Beginning the Run  (D.Fisher, May 2008)

From the screen menu (right mouse click) select:

1) (Re) start ARCON session
   - (answer ‘y’ to synchronize parameters)
   - Be patient – this takes a long time to start up or to shut down the programs.
   - Starts up 3 (blue) ARCON windows: Status, Console, Acquisition

2) IRAF

3) Ximtool

4) Is Dual-Amp R/O set?  Gain = 4?  If not, contact telescope operator

In the ARCON Acquisition window:

1) Make a directory for the night’s observations, typically the date:
   cl> mkdir ‘080520’ ; note: single quote needed because of leading zero
   cl> cd ‘080520’

2) Set up the CCD and observation parameters:
   xstart=1, ystart=400,
   xsize=2048, ysize=1200

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ARCON Status window
Integration, Picture number
Shows status of exposure and readout

ARCON Console window
arsh> arsh show picsyntime ; shows how often computer time synchronized
arsh> arsh set picsyntime 10 ; syncs with GPS time every 10 sec

ARCON Acquisition window
Data taker keywords (runs under IRAF)
cl> observe ; starts an exposure (“obj” also works)
cl> more ; repeats the previous observation request (same name, exp time)
cl> stop ; stops an exposure (does not abort)
cl> tchange 30 ; increases the current exp time by 30 s
cl> tchange -30 ; decreases the current exp time by 30 s
cl> obspar ; to change obs parameters such as picture number or root filename
cl> setdet f+ ; to change parameters for the CCD (start row, number of rows for readout)
   xstart: 1
   ystart: 400
   xsize: 2048
   ysize: 1200
**Idiosyncrasies of the data-taker:**

a. If you stop during a loop of observations (no way to abort exposures), the observation numbers (“picture” numbers) are reserved for the initial loop. For example, if you start a set of 10 exposures and decide to stop after 5 and the initial picture number was obj1011, (you stop at obj1015), the next time you start an exposure the number will be obj1021 (leaving obj1016 – obj1020 as unused picture numbers.)

b. If you want to change the exposure time mid-exposure, use the tchange keyword. However, if you are in a loop of 10 observations, subsequent observations will use the original exposure, not the updated one. If you decide to stop the loop (e.g., to change the exposure time or to fix an incorrect object name), beware of point a above.

c. Disk space is limited! This is important to check at the beginning of the night and throughout the night.

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[Ximtool Experimental GUI]

[IRAF]

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cl> display obj1000 1 ; displays image in Ximtool
cl> imexam ; interact with Ximtool

In Ximtool:
    c: column cut
    r: row cut
    v: vector (use twice to mark beginning and end of lines) plot
    q: quit
    ?: help window for interactive commands

cl> imcopy obj1000.imh obj1000.%imh%fits% ; copies imh to fits format
cl> imdel obj1000.imh ; properly deletes imh and pix files
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For more IRAF documentation, *A Beginners Guide to Using IRAF* can be downloaded from [http://iraf.noao.edu/docs/recommend.html](http://iraf.noao.edu/docs/recommend.html)
Cut to the chase: Nightly checklist

Each afternoon:
I. Setup Subdirectories for the night
   1. set up a new subdirectory on the data-taking computer and cd to that directory in both the ARCON Acquisition window and in the IRAF window
   2. on laptop: set up a new directory to hold the raw fits images: /mir7/raw/2008May19-20 for the night that starts on May 19 and ends the morning of May 20, 2008.

II. Check the temperature on the I2 controller should be 55 C and can be left on for the entire run. First time starting the temperature controller: for some reason, the temperature tends to overshoot and alarm. As the temperature approaches 55C, turn off the controller and wait for the probe temperature to start to drop. Then restart the controller – remember to turn it on, and push “run” and wait to see the temperature rising. Keep the front panel covered in the spectrograph room.

III. Check the focus
   - Take a ThAr image
     a. I2 cell out of path
     b. Flip prism “In” on the small silver control box
     c. Turn on ThAr lamp
     d. 20 sec exp
   - Run foc.pro on the ThAr image (e.g. obj1000.imh)
     e. on the laptop, type “focus” in a terminal window to go to /mir7/focus_archive directory
     f. idl> foc, /plt, /mark, inpfile='obj1000.imh'
     g. the fwhm should be about 1.8 pixels for columns > 500. If this is much different, contact

III. Take 50 flats
   a. I2 cell out of path
   b. Flip prism “In” on the small silver control box
   c. Turn on the Quartz lamp
   d. 1 sec exp
   e. filter???

IV. Start the “CTIO Observer Notes.” This will be used to annotate the electronic logsheets generated at the end of the night. The logsheets will have a default I2 designation, but this should be checked and edited if necessary, so keep track of this on the Observer Notes.

Beginning observations:
   I. Check the temperature on the I2 temp controller (nominally 55C)
   II. Make sure I2 cell is in path for program observations
III. Make sure the prism (for calibration lamps) is out of the path and calibration lamps are off.

IV. Check the disk space on the data-taker.

V. Telescope operator will have opened the dome and will point to the program stars and set up the guiding.
   a. Your mission is to run observing sequences on the data taker. The observing sequence for alpha Cen is 10 observations of A, then 10 of B on and on (about 30 sec exp times in good seeing for A and 90 sec for B).
   b. Ask the telescope operator, or you can move back and forth between A and B between loops, check the images now and again:
   c. Good counts? On Ximtool, the Na-D lines can be found at about (645, 745) - take a column cut between them; the counts at about column 600 should be about 10K. The detector saturates above 65K – try to stay < 30K at the peak counts.
   d. Decent I2 lines? Take a row cut through the order below the Na-D lines using imexam and “V” to mark both ends of the cut. The I2 lines should be at least 10% deep.

VI. For stars other than alpha Cen, since there is no exposure meter, the midpoint times will be a large source of RV error. There’s no point in observing these stars if the seeing is marginal (worse than 1.5") or there are clouds. The night needs to be essentially photometric to make observations longer than 5 minutes for precise Doppler measurements.

Managing Files and Disk space:
During or at the end of the night, write the .imh files to .fits files and transfer them to /u600/v17/xxxxxx (where xxxxxx is the subdirectory named by the date – e.g. 080521). From /u600, transfer the files to the laptop: scp *.fits debrafischer@139.229.13.148:/mir7/raw/2008Mayxx-xx. Once the fits files are copied to both /u600 and to the laptop, they can be deleted from the data-taking computer to save on disk space. Do not delete the .imh files.

Guiding and Acquisition Module:
There is a GUI to run this. More later..

End of the night
1. Take a set of 50 Quartz lamp exposures (1 sec each).
2. Take one or two ThAr exposures (20 sec)
3. Leave the I2 temperature controller on (unless it’s the end of the run)
4. Make sure all files are ftp’d to the laptop – back up to DVD in 4G blocks
5. Run logmaker and annotate with comments from the Observer Notes
6. Turn off LCD’s (not the data taker or the monitor with the CCD image)
7. Turn off power on the electronics box on the telescope