COOKBOOK for IDS

1 Afternoon procedure

1.1 Starting the computer system

- Log on to the main system terminal lpss13. Check the username and password on computer screen.
- System start a pink window and an orange window. Type **obssys** in the orange window.
- Type **startobssys** on the orange window and select any option (check the white board for the right one).
- Now, type **obssys** and startobssys on the pink window selecting the right option again. This will bring up some extra windows.
- Log on to the Data Reduction System and start an IRAF session to check your frames. Username and password should be on the computer screen.
- Take a bias to check the CCD:
  SYS> bias
- Check the bias in the Data Reduction computer (DRS) using imexam or whatever. Ask your support astronomer or duty tech if you get something strange.
- Check the slit lenght on the CCD:

  SYS> complamps CuNe+CuAr

  SYS> arc 6 “arc test”

  DRS> imexam r??????[1]
- Window the CCD to the full slitlegth:
  SYS> window 1 “[800:1200,1:4200]”
  SYS> window 1 “[1:1124,420:690]”
  These are normal values for EEV10a and Tek5 respectively.

1.2 Changing gratings

- To change gratings on IDS you must type the following command on lpss13:
  SYS> change_ids.
- Go to the telescope and take your old and new grating boxes
- Open the grating box and open the three screw which fix the grating
- Take out the actual grating in IDS
- Mount the new grating with the labels in right position depending on the camera (check that on the labels under the grating door) and fix the screws.
- Close the grating door and come back to the telescope control room.
- Click the OK botton and change the appropiate information on the grating box
- Open the camera shutter and the grating shutter:

  SYS> gshut open

  SYS> camshut open
- Now select the request central wavelenght typing:
  SYS> cenwave 6000

1.3 Changing collimators

- To change collimators on IDS you must type the following command on lpss13:
  SYS> change_ids.
- Go to the telescope and take your old and new collimators boxes
- Open the collimator box and open the three screw which fix the collimator
- Take out the actual collimator in IDS

- Mount the new collimator. There is just one permitted position for collimator.
- Close the collimator door and come back to the telescope control room.
- Click the OK botton and change the appropiate information on the collimator box
- If necessary, open the camera shutter and the grating shutter:

  SYS> gshut open

  SYS> camshut open

1.4 Focusing the spectrograph

- Mount an appropiate grating to give well separtted and distributted lines on the CCD (e.g. R1200B, R1200R,...)
- Select an appropiate central wavelength (e.g. cenwave 7300)
- Take an arc to check counts and rotation (CCD should be windowed in the spatial direction)
  SYS> complamps CuNe+CuAr
  SYS> arc 4 "CuNe+CuAr"
- Inside IRAF type **ing** to active the ING package.
- Run ids_rotation_udas to check the image rotation:
  in¿ ids_rotation_udas r??????[1]
- If necessary (rotation $>$ 0.5 pixels), go into the dome and apply the recommended rotation offset
- To correct from tilts, select three isolated spectral lines in your arc. That's lines should have good SN, not saturated, and present on aprox. The left, center and right part of the detector.
- Put the collimator at the nominal position:
  SYS> collimator 220

- Take two exposures, one with the left hartmann shutter closed and one with the right Hartmann:
  SYS> hart 1 0 SYS> arc 8 "Hartman L" SYS> hart 0 1 SYS> arc 8 "Hartman R"

- In the DRS, run the ids_tilt_udas script:
  ing> ids_tilt_udas r345678[1] r345679[1] 177 559 978

- Check the pixels shifts obtain, and if you have resonable numbers...

- Apply the recommended turns for A,B, and C capstan or the focus offset:
  SYS> collimator 230

- If all the pixels shifts are lower than 0.5 pixels, don't apply captain offsets (if any). Sometime there are errors in the captan recommended values.

- Repit the above procedure before you can get pixels shift lower than 0.5 pixles in the nine positions.

- Don't forget to open both Hartmann shutters:
  SYS> hart 0 0

- Don't forget to write down the micrometers positions for A,B,C, and D in the captains folder

1.5 Biases, lamp flats, and calibration arcs

BIAS You can take bias frames (dome lights off!!!) with the commands:
SYS> bias → only one bias exposure
SYS> multbias 4 → a serie of 4 bias exposures

Flats You can take lamps flats as follow.
SYS> cenwave 5000 → Select the central wavelength
SYS> slitarc 1 → Change the slit with to 1 arcsec
SYS> compmirror in → Put a mirror on the beam path
SYS> complamps W → Turn on the tungsten lamp.
SYS> compnd 1 → Neutral density for comparison lamps equal 1

(only if lamp flats saturate without neutral density filters)
SYS> flat 4 "lamp flat 4s nd1.0 5000A" → Take the exposure
SYS> complamps off → Turn off the tungsten lamp.

Arcs Follow the same procedure as for lamp flats, but turn on turn on the appropiate lamps:
SYS> complamps CuNe → Turn on Copper-neon lamp
SYS> complamps CuAr → Turn on Copper-argon lamp
SYS> complamps CuAr+CuNe → Turn on both Copper-neon and Copper-argon lamps
Don't forget to turn off lamps after your calibration frames.

1.6 Sky flats

You can take sky flats at zenith or at a 'blank' field. Ask to your TO to go to a blank fild.

- Be sure your setup is right. Check central wavelength, slitwidth, turn off calibration lamps, etc...
- **SYS> sky 2 "sky flat 5000A slit 1arc"**
- Check the counts level of your sky flats in the DRS

1.7 Focusing the system telescope-spectrograph

- Ask to your TO to adquire an standard star near zenit.
- Open the slitwidth some arcsec:
  SYS> slitarc 10
- Take an exposure:
  SYS> run 60 "focus ???"
- Check the FWHM of the star in the DRS
- Change the telecope focus and do the same.
- Take as best focus the one with lower FWHM.

1.8 Writing data tapes

To write the D tape for the ING archive:

- Take one of the D-tapes from the box, and fill in your initials and D-tape number in the folder
- Put the D-tape in the DAT drive
- In the DRS, open a window and, type:
  > **cd /obsdata/inta/yyyymmdd**
  > **fitsinit** and answer prompts
  >**fitsout** and answer prompts

You can write the C tape (for your records) in the same manner, or you can copy the data to the scratch partition, compress it, and tar it:
> **cd /obsdata/inta/yyyymmdd**
> **cp * /scratch/inta/yyyymmdd**
> **gzip ***
> **tar -cvf /dev/rmt/0n ***

1.9 Commands related to IDS control

bscf Move the below slit colour filter

bsnd Move the below slit neutral density filter

camshut Move the IDS camera shutter

cenwave Change the grating angle to give the give central wavelength

change_ids List all exchangeable optics and allow changing

collimator Move the position of the collimator

dekker Move the dekker slide

gshut Move the grating shutter

hart Move the hartmanns

slit Set the slit width in microns

slitarc Set the slit width in arcseconds

1.10 Commands related to A&G box control

ascf Move above slit colour filter

asnd Move above slit neutral density filter

autofilt Change the autoguider filter wheel

autocentre Centres the autoguider XY probe

autopark Parks the autoguider XY probe

autoxy Move the autoguider XY probe

change_agb List contents of all filter wheels and allow a change

compfilta Move comparison filter wheel A (formerly afarc)

compfiltb Move comparison filter wheel B (formerly bfarc)

complamps Control comparison lamps

compmirror Move comparison mirror - and TV shutter

compnd Move comparison filters A and B to get desired neutral density

flipmirror Move the flip mirror

tvfilt Change the TV filter

tvcentre Centres the TV XY probe

tvpark Parks the TV XY probe

tvxy Move the TV XY probe