1 GODOT Supplementary Instructions (Dec 1993)

With the introduction of an 80486-based PC, the CCD control program, GODOT, has undergone substantial changes. The menu system is the same as before, but the image display and data recording parts have changed. To start the program, type:

CCD

and answer the questions displayed on the colour monitor. The program will take a little time to search for the data storage area, so be patient. The program starts up on the colour monitor, and after the equipment checks and initial data entry it will pause. Press Enter at the pause, and the window/menu system will appear on the monochrome monitor, and your interaction with the program will henceforth be through that screen. Images will be displayed on the colour monitor.

1.1 Mouse

The cursor on the image monitor is controlled by means of the mouse. The **left** button replaces the Ins function of the old program, and initiates measurement or point-marking processes. The **middle** button is only used when Image/Measure has been selected from the menu, and allows a sky value to be measured. The **right** button deletes the cursor and returns control to the main program.

1.2 Image Display

During a readout of the CCD the image is displayed on the monitor. At the end of this, statistics are calculated for a region in the middle of the image, and the minimum, maximum, mean and standard deviation are displayed in the main window. The image is then redisplayed at high contrast, with (mean-3σ) corresponding to 0 and (mean+3σ) to 255 on the display.

1.3 Chip Orientation

It is usually an advantage to have the chip axes aligned as closely to NS and EW as possible. To allow the orientation of the chip to be adjusted, the cryostat is mounted on a turntable. The turntable is locked in place by means of 2 screws just below the filter box, one each on the east and west sides of the mounting plate. These screws must be slackened off with a wide-bladed screwdriver before you attempt to rotate the cryostat. A coarse adjustment can be made by holding the cryostat and rotating it as required. This would normally have been done by the technicians when the CCD was mounted on the telescope for your observing run. For the fine adjustment there is a micrometer attached to a worm shaft. The latter meshes with teeth cut into the outer rim of the turntable. Normally the worm, which is on the north side of the cryostat mount below the main eyepiece, is held away from the rim by means of a clamp. To mesh the worm and the toothed rim, rotate the clamping bar beneath the micrometer fully anticlockwise (as seen from below), push the micrometer towards the turntable rim until the gears are engaged, and then rotate the clamping bar back to its original position. The cryostat can now be rotated by turning the micrometer head. **It is most important to check that**

the two clamping screws have been slackened off. The worm and teeth can be damaged if the micrometer is turned while the gears are engaged and the screws are tight. Once the desired orientation has been achieved, tighten the clamping screws, unclamp the micrometer, disengage the gears, retract the shaft and clamp it in this position. This adjustment would normally be required only on your first night.

1.4 Focussing

The focus routine has been simplified, and it is no longer necessary to move the star image for successive focal settings. Set the star about two–thirds of the way along the long axis on the mid–line of the chip. Set the focus and make an exposure. At the end of the exposure, the shutter closes and the star image is moved electronically along the chip towards the readout end. Change the focus and make the next exposure. There is room for about 8 images. When the chip is finally read out, there will be a series of images, equally spaced except for the first pair. The first exposure is the end one with the larger separation from its neighbour, i.e., the one nearest to the readout end of the chip. Because the final image is redisplayed at high contrast, there will be bands across it, due to the accumulation of successive sky contributions to the preceding exposures. Measure the image diameters in the usual way and decide on the correct focus.

2 Recording data on tape

Images are stored on the disk during the night. You are recommended to copy them onto a DAT tape at the end of each night. A single 60-m tape will hold 1.3Gb of data (more than 3000 full-sized RCA images or 2000 TEK frames) while a 90-m tape takes 2Gb of data..
Recording on tape is done outside GODOT. Exit from the program, and type:

TAPE

A small menu will appear, allowing you to verify the contents of an already written tape, or to write new data on a tape. You are prompted for your initials and for the run number. You should have 2 DAT tapes, usually 60-m, one with a yellow label, thw other with a blue label. The tape with the **yellow** label is the **primary** tape and the other, with the **blue** label, is a **backup** or **duplicate** tape. Some operations of the program are slow, but the actual writing is quite fast. When you **Exit** from the program, the tape will be rewound and will be automatically ejected from the machine. It takes about 50 seconds to eject, so please be patient. Once the tape has been ejected, you will find a summary of its contents in files in your directory called **grp**xyz (primary) and **dgrp**xyz (duplicate) (where xyz is the run number) which you can print on the printer, e.g.,

print grp283

Before you exit from GODOT for the last time at the end of your run, you should print the disk log file (select Disk menu, Print option). This should agree with your written log sheets, and is a useful supplement to the **grp**xyz file.

2.1 Copying procedure

To put the tape into the unit, proceed as follows:
1. Hold the tape with the transparent window uppermost so that you can read the text on the case the right way up. On the right hand side of the end facing you, you should see a small coloured tab (may be white or blue depending on the brand of tape). This is the **write protect** tab. When the **colour fills the window**, the tape **can be written** on. If the tab is moved to the left (with the end of a pen or pencil) and the **window is blank** the tape is **write protected**. The tape-writing program is so organised that it is virtuallly impossible to accidentally overwrite data, so the window should be left closed (the colour should fill the window).
2. Push the tape gently into the slot - do not force it in. When it is almost fully inside, the internal mechanism will pull the tape all the way into the unit, and the yellow light (right hand one of the pair) will start to flash. When it stops flashing, the tape is ready for use. At various times during the operation of the program, and in particular while the tape is being read or written, the green light (left of the pair) will flash. Often nothing will seem to be happening and only the yellow light will be on.
When you exit from the program, you will see the message **Unload**. You do not need to do anything at this stage but wait and the tape will finally (after about 50 seconds) be ejected from the unit automatically. Keep your tapes in their plastic holders away from heat sources and strong magnetic fields.