

Using the 82" Telescope

Information regarding telescope operations, tech support, emergencies, etc... can be found at <http://snoopy.as.utexas.edu:8080/OS>. Please review all materials before use.

If your program is the first of the SVN series:

1. Deliver the SVN box and eyepiece case stored at Shannon's office cubicle to the dome floor.
2. Remove the white light bulbs from both passage light fixtures on the dome floor and replace with red bulbs. Turn passage lights on to high intensity prior to program start using the slider rheostat control on the right front side of the console, below the console top. Leave white lights on the floor under the SW cove passage fixture.
3. Install red key chain lights on chained platform entrance post and rolling ladder rail. Install lanterns in 1st and 2nd floor bathrooms. Turn on before program. Turn on rope lights under East platform using dimmer on SE platform margin.
4. Guest chairs should already be set up. If not, set up three rows with 5 chairs in each row. Deploy the red barrier stanchions in an "L" pattern. Place one side of the barrier between the chairs and the aluminizing chamber and the other between the first row of chairs and the East platform. Cones and/or barrier stanchions should be installed around the South pier/platform pit. The metal plate should be installed to cover the platform entrance step.
5. Visually confirm the bridge and pulpits are all the way down and are in their park positions. A bright red light on the bridge would indicate it is not stowed. Call OS for help (Coyne G. 661h/114wk, David D. 675h/111, Brian R. 658h/103, Kevin M. 190h/197, Terry W. 629h/174).
6. Import or type your observing list to the work list box at the right of the TRACK82 program window. The work list format is rather free form, but there are rules in the following order:
 - Type an RA DEC and optional EPOCH matching the format HH MM SS.S [+]₋DD MM SS [YYYY]. CAUTION: Use a break character, e.g. #, at the end of your RA DEC and optional EPOCH to avoid parsing incorrectly. For example, write "10 20 30 -15 16 17 # 2051 " to prevent setting EPOCH to the catalog number 2051.
 - Zenith stars in the Setup menu is a special work list that temporarily extends over your work list. After you click on a line the work list will retract and load the Object and Predicted registers. Use the latch on the right side to extend the width of the work list if needed.
 - At the start of the line type the catalog abbreviation letter **in lower case** such as: b (YBS=HR), i (IC), m (Messier), n (NGC) k (FK5), followed by a space and the catalog number, e.g. b 1001, i 432, m 8, n 253, k 123.
 - At the start of the line take the first word and use it as a common object name, e.g. planets, moon, and brightest stars.
7. In the dome, do not ascend the stairwell to the upper deck. There is danger of electrical shock. The stairwell should be sealed with a locked gate.
8. A personal laptop computer is a nice addition to access radar and satellite resources if inclement weather is near.

Start up

1. Upon arrival in the control room (Figure 1), enter the name(s) of the telescope operator + SVN guest number, your assistant observers, instrument (=BFR), detector (=eyepiece) in the Night Report (A.K.A. "Daily Report" or DR) found on the middle monitor below the weather monitor. If the DR is not open, click on the DR desktop icon then enter the appropriate information. Telescope operators and assistants MUST list all or part of their full names.
2. TRACK82 can be running in two places: at the Mac in the dome and in the control room. You can run TRACK82 in other locations, but it will say "Read-Only" in the title bar. This might be useful for pointing a work list from your laptop, for example.
3. Check the weather monitor. Open other computer weather resources if needed at <http://hercules.as.utexas.edu>.
4. Proceed to the dome floor platform console called "OTTO" (Figure 2).

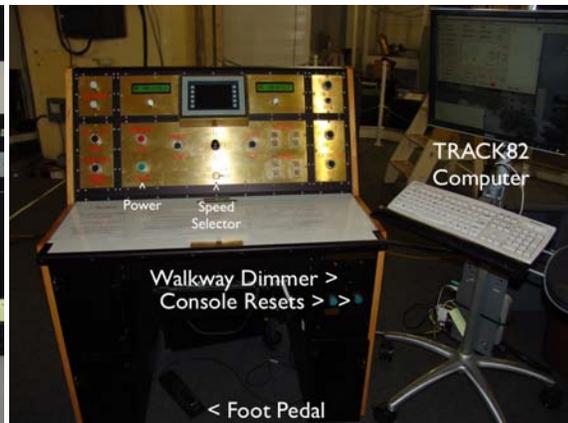


Figure 1. Otto Struve control room, weather & TRACK82/Daily Report monitors.

Figure 2. “OTTO” control console and TRACK82 computer.

5. Turn up the red walkway and white floodlights for initial setup and dome inspection.
6. Turn on the Apple computer monitor. The TCS program TRACK82 should be running. Note: The title bar on the track82 window should read “Track82_Visual (Dome)”. If not, open the setup dialog box and select Visual or contact OS for help reconfiguring.
7. Press the green power button on the console. The button is an unlit on/off toggle and should remain partially depressed until it is pressed again to turn the power off. Power up may take up to 30 seconds. A green **ON** button in the Track 82 window indicates that the telescope power is on. Note: Rarely, pressing the power-on button on the console will result in the motion controller getting a motor phase error, and the controller will refuse to start any motor. If this happens, please turn off the console, wait a few seconds, and power up again.
8. If desired, use the rotary knobs on the console to adjust the console backlights.
9. From the console, move the upper dome curtain off to the west. If it has rained recently or been very humid, dump any water on top of the control room. You will have to press and hold the keyboard SHIFT key (or depress the foot switch) to move the screen.
10. Turn off the white dome floodlights.
11. Check the weather. If conditions permit, open the dome shutter using the panel switch while depressing the keyboard SHIFT key. **If any loud or unusual noises occur, immediately call Physical Plant (DannyS.680h/685, K.Guynes. 657h/127, JimmyC.648h/127).**
12. Note the time that the dome shutter was opened for the Night Report.
13. With the scope still in the park position, open the mirror covers using the switch on the console. Do not extend the baffle tube.
14. Turn RA tracking ON using the mouse and the slider button on TRACK82. DEC tracking should be left OFF.
15. Move any ladders from under the scope before any move. **NEVER** move the telescope in the dark. Turn on enough light to see and use a flashlight. Your assistant should help.
16. Manually slew the scope a few degrees north from the park position. Hold down the keyboard SHIFT key and use the mouse to depress the virtual north button.
17. At the hand paddle: Use the small rotary knobs Line1&2(Fig.4) to adjust the RA/DEC display. Select the correction rate to SET and turn on backlight if needed. Press the dead-man trigger to enable any motions using the momentary buttons.
18. Install SVN eyepiece.
19. Turn on rope lights under the east platform. The dimmer box is on the SE margin of the platform.

TRACK82 Operation:

NOTE: Moves from TRACK82 require the SHIFT key: **DO NOT** use the console foot pedal. (Moves made from the console only can use either the Shift key or the foot-pedal.)

*To move the dome from TRACK82, you must hold down both SHIFT and CONTROL keys.

MOVING TO AN OBJECT:

Turn up passage lights to clearly see telescope before any move.

Raise/lower the platforms simultaneously; Platforms move at different speeds so watch the metal plate covering the east platform entrance step. Level platforms before admitting guests; Use a spotter with a flashlight if operating outside of 50 degree ZD window! Use caution and don't hurry.

Go to your object in three steps (refer to Figure 3, TRACK82 image below):

Step 1: Click on an object in your Track82 work list. Note the positions in TRACK82's new chart: if the object (plotted as a star *) and telescope (plotted as a black circle) are both inside the 50-degree zenith distance contour, you can **GO** to the object. Note: if blue highlighting of work list entries appears to be stuck, just Alt-Click on a line to clear it.

Step 2: Click on **Set Object for GO** button to load the Predicted Object coordinates into the Predicted Object fields in Track82.

Step 3: In the dome on TRACK82: To move the telescope and dome simultaneously, click on the **GO** button holding down the SHIFT+CONTROL keys throughout the entire move. To move telescope only, click on the **GO** button while holding down the Shift key for the entire move. If the dome position is not displayed on the TRACK82 monitor you can move it using the console switch & foot pedal or the hand paddle. When the slew is finished, click again to get exactly on target at SET speed (this service is available when the offset is less than 24s RA, which is attained almost always on the first slew.) The accuracy in DEC is about 30 arc-seconds, and about 20 seconds in RA depending on many factors including weather, and you will usually need to click again to finish off the move automatically in RA and DEC at Set speed. GO is allowed outside the 50 ZD cone for moves of less than 3 degrees in DEC and RA. **Note:** mouse-over the star icon to get the full pointing information. If the object is not initially satisfactorily centered, you may want to zero the system using FK5 zenith stars in the TRACK82 on screen Setup menu. Manually center the object in the eyepiece then click Setup and select Update Zeros. Again click on **Set Object for GO** and verify that the telescope and predicted coordinates are the same.

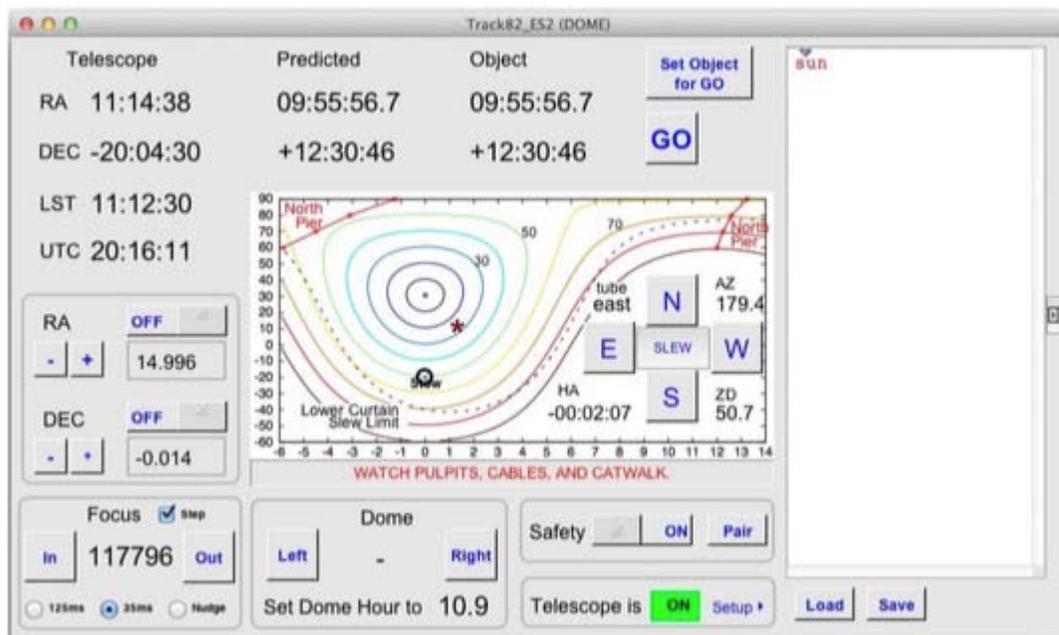


Figure 3. TRACK82 dialog screen.

Stopping a move-If there is a problem and you want to stop the slew:

- Release the shift key. If that fails to stop the slew, then...
- Press the green power button. If that also fails to stop the slew, then...
- Press the E-Stop button. (Last resort. This will kill all power and lights to the observing floor. See end of this document for recovery procedures and Figure 5).

Moving the dome:

The dome can be moved from the console while pressing the foot switch, from TRACK82 while holding down both the shift and control keys, or using the hand paddle on the floor (See Figure 4). TRACK82 displays the current and intended positions of the dome (unless it is disabled).

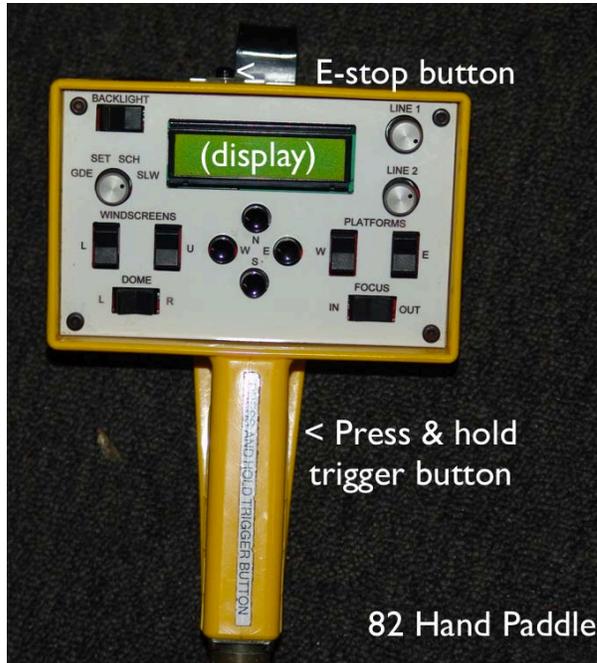


Figure 4. Hand paddle.

Raising the Platforms:

Raise the platforms to a comfortable observing height using the hand paddle and dead-man trigger or from the console while pressing the foot switch. Position the rolling ladder to access the platform entrance. Do not raise the platform higher than the top step of the ladder.

Don't forget to enter the cloud cover and seeing estimates during your program!

SHUTDOWN

Caution: Close the dome shutter and the exterior door before turning on the dome lights.

1. Remove the eyepiece and return to the SVN case. Cap the drawtube/diagonal.
2. Close the dome shutter and note the time.
3. Rotate the dome so that the shutter is facing east (=6h). Use the console switch or TRACK82 to park (unless it is disabled).
4. Close the mirror cover.
5. Lower the floor and move the ladders to a safe position.
6. Turn RA tracking OFF on TRACK82 using mouse to activate slider button.
7. Move the telescope to the park position:
Set RA equal to the local sidereal time (LST) and DEC to -19 degrees.
Click on Set Object for GO then click on GO.
Manually move to an hour angle (HA) of 0:00:00.
Manually move to -20 degrees.

8. Turn off the monitor on the TRACK82 computer.
9. Move the upper dome curtain to cover the optical tube.
10. Turn off the console and hand paddle backlights.
11. Press the green power button on the console to power off the telescope.
12. Turn off the rope lights under the east platform (dimmer box on SE exterior of platform). Leave passage lights on.
13. Turn off the LED keychain lights and bathroom lanterns. If your program is the last, follow the procedures after step 16.
14. Close and lock catwalk doors. Turn off dome white lights.
15. Complete the Night Report in the control room. Note: If the weather prevents opening, please conduct a cloudy night check out to ensure proper operation of the telescope, dome, platforms and control devices. Indicate as cloudy night check in the report.
16. Secure building and check outside gate.

If your program is the last of the SVN series:

- * Remove red light bulbs from both passage light fixtures and replace with white LED bulbs. Turn passage lights on to medium intensity and leave on.
- * Retrieve all key chain lights and red lanterns from 1st and 2nd floor bathrooms, stairs & stairwells and place in SVN box. Return to Shannon Rudine's cubicle.
- * Replace SVN eyepieces/accessories to the Pelican case and return to Shannon Rudine's cubicle.
- * Return eyepiece adapters or plastic dust caps to Ball Focal Reducer drawtube.
- * Fold chairs and stack upright against wall between the east and southeast double doors.

2.1m Telescope User Guide. Additional notes.

Last updated June 21, 2011 by JWK: Modified for VC staff by SFR October 23, 2016

If you are not certain that the telescope will be in a safe position for your selected object, check the TRACK82 plot or use the Safety and Efficiency Chart. -42 DEG is the maximum south declination if you're under the axis, -46 DEG over the axis. We typically don't observe below -25 degrees Declination. Be careful of bridge and pulpits at high zenith angles.

From the console, the telescope can be moved at 3 different speeds in RA, 2 in DEC. Using appropriate speeds (SLEW is fast, SEARCH is moderate) move the telescope to the desired position.

Extreme caution must be used when moving the telescope close to the north pier, platforms, objects on platforms, etc. The bridge on either side of the dome slit can also be a hazard. It is a good idea to move the dome to your approximate telescope position **BEFORE** the telescope is there, if your object is very far over. **Use common sense, and DON'T hurry! Always, always watch (with some kind of light on) when moving the telescope or dome.** Track82 has its own safety system that limits slew, search, and track in dangerous positions. The dome response is sometimes slow--be patient. Rock the dome back and forth if necessary to get it moving. If nothing happens after a LONG time, check the circuit breakers in the Sandiford Echelle Spectrograph storage room. The breaker box in the rack is labeled. Open the door to the rack. On the lower set of breakers, there are some marked DOME ROTATION and WINDSCREENS (breaker # 5). Reset them. (See also under **Power Failure**, if this doesn't work.)

Other checkout procedures:

Note the numerical value of the focus readout before you start. Select the FOCUS setting on the paddle to see if the Focus function is operational. Move the focus in and out using the hand paddle buttons. Make sure the platforms are working by selecting PLATFORM on the hand paddle. Move each platform separately up and down.

During cloudy weather or when the dome cannot be opened, all the functions that can be tested should be tested. Simulate setting on an object using TRACK82 even though pointing cannot be accurately checked.

If any of the functions are non-operational, check the circuit breakers. If any malfunctions are noted, describe it on the Night Report with as much detail as possible, and inform the proper person so repairs can be made.

The SLEW mode can be checked visually by observing the telescope movement while SEARCH, SET, GUIDE, and FOCUS modes can be checked by observing the console or monitor readouts.

Possible hazards and safety rules:

Telescope collision areas

Check the 82" Safety and Efficiency Chart at <http://snoopy.as.utexas.edu:8080/OS>.

Weather

Use the windscreens to stabilize the telescope when windy.

Read the weather rules here or look at them on the bulletin board in the control room. The observer at the 107" is the boss in weather closures, but use your own judgment. Make sure the small domes are notified in case of weather alerts.

Seeing aids

When it is not too windy, open the east catwalk doors to improve circulation. If it IS windy, the telescope will bounce around and you'll lose any advantage the circulation gives you.

The control room has a thermostat at the top of the stairs. To aid seeing and keep the computers happy, set to the coolest comfortable temperature (preferably <65 degrees F).

The telescope cell fan controller should be set to AUTO. The fans will turn on when the mirror is warmer than the ambient air.

The light/air lock doors help eliminate light/heat loss into the dome.

Hazards

Watch for oil under the platforms, especially near the south polar axis.

The dome stairway is a "cowcatcher." Leave the aisle clear. [We don't have access to this area so it should be clear]

If the polar axis support pole is not stowed, the console warning light will be on.

In case of fire, fire extinguishers are located at the east and west catwalk doors. Alarm pull switches are located at the top of the stairs in the control room and one at the west door (none in dome).

During instrument changes and scratch balancing (generally during the day), watch for falling counterweights.

If you MUST use the floodlights at night (this is NOT advised; be prepared to close if someone complains), point the dome NW away from the other domes and close the outside doors.

Power Failure:

If you have a utilities or general power failure:

The UPS's on the Suns have alarms that will go off.

If **EMERGENCY STOP** on the console or hand paddle is hit or there is a power loss inside the dome, there is a RESET button in the cass echelle storage room (adjacent to the north pier) on the circuit breaker panel. If this breaker has blown, resetting it causes a loud bang in the panel (see Figure 5). Also, there is a circuit breaker on the 2nd floor circuit breaker panels (labeled CRITICAL LOAD, Box #27, Breaker #5). If the power loss is only in the control room, the circuit breakers are located in the room on the north side of the stairs.

Other Shutdown procedures:

Set thermostat temperature to <70 degrees F in the control room and make sure it is ON. The computers become VERY unhappy if it gets hot in the control room. Savvy observers also know that keeping the control room hot in winter produces poor seeing when the telescope is in the west, looming over the air roiled by the hot roof.

Close outside doors and make sure they latch.

Emergency Contacts: Use radio on channel 1 (repeater) or telephone appropriate contact.
Fire/Safety: 9+911 Joe P. 663h/156w, Steve B.134h/179w Observing Support: Coyne
G.661h/114w, David D. 675h/111, Brian R. 658h/103, Kevin M. 190h/197w, Terry W.629h/174w



Figure 5. Cass Echelle storage room by north pier on the third floor. Reset breaker location.

S.Rudine Revised 27 March 2017