

VATT Warm Startup/Shutdown Checklist (for PEPSI student operators) ver. of
05/29/2018

1. **START THIS PROCESS ~2 hrs. BEFORE CIVIL TWILIGHT (scope and dome temp conditioning: isothermal)**
2. IN BASEMENT
 - Start building and pier fans.
3. IN SILO, 2nd FLOOR
 - First night of run only, check glycol level before starting Neslab; not necessary on following nights, unless there is a visible leak.
 - ! Access hatch is on the top of the cabinet, at the far left. Under the hatch is the hatch into the coolant reservoir, removable with two captured thumbscrews. Coolant should cover the visible, coiled pipes. DO NOT ADD COOLANT WITHOUT CONSULTING THE DAY CREW (Gary Gray): it is better to run with the coolant slightly low (i.e., ~1/4 of the diameter of the top, coiled pipe exposed) than to put the wrong coolant mixture into the reservoir.
 - Turn on Neslab (toggle switch up, then turn side valve handle to “up” immediately thereafter: gauge at ~56 psi).
4. IN VATTTEL ROOM
 - Check both toggle switches on clear panel under vatttel keyboard are toggled down.
 - Turn on vatttel monitor and check for error messages.
 - If vatttel is not running, check GPS and Guider Electronics box both on. If not, turn them “On”.
 - Wait for the blue GPS “Ready” light to illuminate (this takes ~5 – 10 minutes).
 - Then boot vatttel.
 - Watch vatttel monitor to make sure kernel loads from networked server.
 - Cycle the power on the secondary hexapod controller.
 - Switch on (toggle up) Dome amplifier (fan will start, and amps will show on LCD readout).
5. IN CONTROL ROOM
 - Turn on Dome video monitor and intercom (“On” button must be tapped lightly sometimes, to get sound).
 - If vatttel was booted during step 2, wait ten minutes or so while guider initializes; listen for end of sequence in intercom, then wait a few minutes more (there are significant time intervals between initialization steps; make sure vatttel is done booting).

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- Turn on computer/xterm monitors; boot xterms now if they're not already up.
- Log in to vattcontrol as vattobs, using corner xterm/monitor.
- Start TCSGlue, from desktop icon or "VATT" menu.

→ In smaller TCSGlue window (VATT Paddle and Mount Control)

- Press Open Slit button. Dome shutters (slit) will not open, as there is no power to the motor yet.

→ In larger TCSGlue window (VATT TCS Information Display)

- Left-click Dome position display in lower-left area of window. Header will change from Dome – Not Tracking to Dome – Tracking.
 - Sometimes, but not always, the dome will rotate a bit at first (audible in intercom and visible in Dome monitor).

6. IN DOME

- If Dome Short is in, remove it.
- Plug in slit power (quad box on curved wall, below dome short installation position). Slit will begin to open. Unplug the slit power when the slit is ~1/2 open (keeps sun off of secondary can).
- Check dome home position and if necessary, correct it by lifting the encoder wheel, spinning it about ½ - turn (usually clockwise as viewed from the top) and immediately setting the wheel back down, into contact with the abrasive surface. Watch dome position until it settles down (usually overshoots at least twice, at varying velocities).

7. IN CONTROL ROOM

→ In VATT Paddle and Mount window, Mount Control tab:

- Turn Cell Fans "On", listen for two-stage startup in intercom (volume "Up" for this).

<<< and then IMMEDIATELY perform next step >>>

→ In VATT Paddle and Mount window, Thermal tab:

- Immediately turn Thermal "On".
 - Make sure thermal stays "On", and click "On" as many times as needed, until it stays "On".

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→ On the wall to the right of the back porch door

- Push “On” (green) button to start big dome vent fan.
- Make sure speed-adjusting knob is full counter-clockwise (Yes, 0 = the highest speed).

>> STOP HERE AND WAIT UNTIL ~ ½ HR. BEFORE OPENING TIME TO CONTINUE <<

→ In 2nd – floor Control Room and bedrooms, and 1st – floor living area and bedrooms

- Close all window shades.
- Turn big fan down to 8, to make the dome comfortable for next step: “IN DOME”.
- Turn on remaining video monitors: Finder, Guider, and Porch Sky Cam.

8. IN DOME

- Open ventilation registers if necessary.
- Check whether dome direction has drifted and correct, if necessary, using small turns of the encoder wheel and waiting while observing the dome’s position.
- Check derotator home switch magnet is showing, near sensor.
- Plug in power to slit: it will open fully.
- Turn on finder scope power (toggle switch atop gray box on east fork leg).
- Open finder scope cover.
- Power up guide camera on control unit, on bracket, SW side, top, of guider.
- Plug in stow pin power and toggle power switch on (up). Remove stow pins (100+% on LCD readout). Toggle stow-pins power off.
- Check azimuth hardstops’ flippers are showing green (manually flip if not).
- Check azimuth alignment arrows are fairly closely aligned.
- Check all lights off and close door to elevator vestibule when leaving.

9. IN BASEMENT

- Start azimuth hydrostatic bearing pumps (on white control box: Step 1 and Step 2).
- Open door into silo and make sure all lights are off in pier. Close the door.

10. IN VATTTEL ROOM:

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- Switch on (toggle switches “Up”) remaining three amplifiers; Az, El, Derot.
- Turn vatttel monitor off.
- Turn off light.
 - Make sure bellows door is fully open after leaving the room.
- Close doors to silo and to the instrument room (air flow management).

11. IN CONTROL ROOM

→ At xterm to the left of console

- Log in to vattarchive as vattobs.

→ In menu bar at top of vattarchive desktop

- Double – click VATT_telem_monitor_no_camera icon and pick “Run in terminal” option.

! This will give you a telemetry monitor in a green window. This is handy, because it will issue a <beep>, once a second, any time the telescope is not tracking, i.e. it is slewing. If you are rather sure that the telescope is not supposed to be slewing, because it should be tracking, illuminate the dome immediately. If the telescope is spontaneously slewing, hit the <Stop> button at the top of the VATT TCS Information Display window. If the telescope does not stop, hit the <emergency stop>, firmly. If, rather than slewing, the telescope is accelerating beyond slew speed, hit the <emergency> stop, instead of trying to stop it in software (the software is malfunctioning if this happens). If you hear a very rapid sequence of beeps, this means the network connection to either vattarchive, or vatttel, or both has failed. CALL FOR HELP unless the network connection restores itself in a relatively brief period of time.

- Open an xterm and start the VNC viewer using this command:
 - `vncviewer -via ajarvinen@ssh.lbto.org -shared -viewonly 192.168.164.19:1` (pressing the “Up” arrow at the command prompt should load this stored command).
 - Enter password (pepsi4you) when prompted.

→ At xterm to the right of console

- Log in to vattarchive as vattobs (OK to have two logins of same operator on this machine).

→ In menu bar at top of vattarchive desktop

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- Start Firefox, hover near the top of the display to lower the title/URL bar enough to access, and use address bar drop-down history to open <http://10.0.2.11/local/viewer/axisvid.html>.
- Click on All Sky window, then make Firefox full-screen by pressing F11 (not necessary if Firefox was left in full screen mode when last shut down).

12. AT CONSOLE

→ In menu bar at top of vattcontrol desktop

- Start Firefox; Trouble Report page will open.
 - Open new tab in Firefox, and open VATT Weather Dashboard from Bookmarks bar. Click 3 Hours tab.
 - Fill in pertinent fields along top (Observer(s), Instrument, Operator(s)).

→ In smaller TCSGlue window (VATT Paddle and Mount Control) Mount Control tab

- Press Open M-Cover button, listen to cover open fully and stop.
- Press Enable Drives and immediately move mouse out of window (buttons move and an accidental button press sometimes occurs).

→ In larger TCSGlue window (VATT TCS Information Display)

- If Derotator Tracking is not enabled
 - Right- or left-click Derotator position window.
 - Disable derotator tracking and close dialog box.

→ In smaller TCSGlue window (VATT Paddle and Mount Control) Mount Control tab

- Press Calibrate, watch telescope azimuth axis rotate eastward and return. Wait for all axes' position windows to turn green.

→ In larger TCSGlue window (VATT TCS Information Display)

- Right- or left-click Derotator position window.
 - Disable derotator tracking and close dialog box.

→ In Telescope Control desktop

- Start Guider Application, Xephem, and New Secondary, using menu or desktop icons.

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→ In the Guider Application

- “Guider” top menu, click <View field center> and wait for steppers to stop (listen to intercom).
- In the “Guide Box” tab, clear all user offsets.
- In the “Camera” tab, click <Init. Camera> button, wait for <Start> button to become usable
 - Click <Start> button, and wait for progression box to step across bottom of Guider monitor.
 - Click <Contrast +> once.

→ In New Secondary window

- Press <Connect> button; field surrounding button should turn green.
- Press <Reference> and wait for field to turn green.
- Press <Auto Collimate>
 - Hit <enter> in Focus, TipX, and TipY boxes, to move secondary to previous night’s ending positions.

→ In Xephem

- Click MST Calendar → Now; click Update (large button at bottom); click Night → Looping → Now. Night N Steps should read .9999 or .9998.
- In Xephem, View menu, start Xephem Sky View. Resize Xephem Sky View window.
- Minimize Xephem window.

→ In Xephem Sky View window

- Click grid control (under Images menu) twice, turning RA – DEC grid off and then Alt – Az grid on.
- In Telescope menu, click Configure. Dialog box, Xephem Telescope Configuration, will open; should have two radio buttons pressed: Show Sky View marker and Enable Telescope GoTo. If these are not pressed, press them.
- Press Running button. If a smaller dialog box opens, xeglue: Running, click Ok (box disappears). In Xephem Telescope Configuration box, click Close. If the smaller, xeglue box doesn’t open, just click Close anyway. Wait to verify target, signifying telescope position, appears at zenith.

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- Watch for stars to become visible in the Finder window (this is usually preceded by the appearance of a dim/dark spot in the field, top-center of the monitor field).

→ In Firefox, Trouble Report

- Fill in opening time and weather data, using averages from latest, 3 – hour Weather Dashboard numbers (from 3 Hours' numbers, below graphs).

→ In Xephem Sky View window

- Pick a fairly bright star, close to the meridian and somewhere between 30° and 60° elevation, right-click on the star, and send the telescope to that star by using the Telescope GoTo command in the right-click dropdown menu.

- !** **Watch the telescope behavior immediately after commanding the motion, to make sure the motion seems to be appropriate and that the telescope is not accelerating to slew-speed, non-commanded co-ordinates (i.e., “running away”).**

If the telescope runs away (an exceedingly rare phenomenon), **immediately click the red Stop button at the top of the TCS Information Window. If the telescope still continues to accelerate, hit the red Emergency Stop button on the console, to your right, above the phone. Then call me at 520-343-1521 for instructions.**

As the telescope descends in elevation, the target should enter the Finder Scope display from the bottom, stopping somewhere near the grease-pencil marks.

- !** **If the target doesn't appear**, select a fast speed (50"/sec or 100"/sec) and use the “S” button on the paddle to move south to get the star into field and near the grease-pencil target on the Finder monitor
- !** **If the target traverses the display completely, entering from the bottom and exiting through the top**, pick a fast speed (50"/sec or 100"/sec use the N (north) button to bring the star in from the top of the screen. Continue to move it towards the center until it is near the grease-pencil target.
- !** Pick a slow speed (1"/sec or 5"/sec) and then use paddle to center it, first on the grease-pencil target and then on the Guider monitor.

→ In VATT TCS Information Window

- Press <Init. Coords.> to initialize pointing on this target.

→ In Guider application, Guide Box tab

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Move guide camera focus to ~-30 (should produce a defocused “donut” image of the starlight).

Insert either the Blue or Bl+ND filter in the CamFW section, near bottom.

→ In New Secondary window

Center the secondary in the defocused “donut” by using TipX and TipY and paddling the image back into the center while doing so.

Paddle donut back into center of monitor after each Tip correction, if necessary.

→ In VATT TCS Information Window

Press <Init. Coords.> to re-initialize pointing on this target.

→ In Guider application, Guide Box tab

Remove guide-camera filter by selecting “Clear” in the CamFW section.

→ In Guider application, Guide Box tab, Mirror section at bottom

Move mirror to “U-Mirror” position.

“U-Mirror” position will turn green after movement, having achieved the new position.

→ In Firefox, Trouble Report, report text window

Fill in Focus, TipX, and TipY values from New Secondary.

If it is necessary to change these values during the night (unusual, but if anything changes, it’s most like to be focus), fill in values again and label first set “beginning values” and last set “ending values”.

13. IN CONTROL ROOM

Increase dome ventilation fan speed to 6 (medium – fast).

Dim dome floodlights until scope is dimly visible.

14. AT CONSOLE

Await PEPSI operator preset of telescope on first science object

→ In VATT Paddle and Mount Control window, Paddle tab

Move (paddle) object closer to grease pencil target on finder ‘scope monitor, if needed.

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Move (paddle) object into PEPSI guiding window (on vattarchive VNC display), if needed.

→ In VATT TCS Information Window

Init. Coords. again, if the object was paddled very far to get it into the PEPSI guider window

15. IN CONTROL ROOM

Turn dome light off completely, using lower button of wall switch.