⚠️	Critical point
😃	General principle
😎	Practical guideline

Comments & suggestions welcome

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	Thermalizing M1 and its mirror cell	
	Unless you want to crack the primary mirror, please be careful with the temperature difference between the glass and the air.	
	⚠️ Follow the instructions in Thermalizing M1 ⚠️	
	STARTUP PROPER	
	Action in the Dome	
Dome	Open legacy finder telescope objective cover	
Dome	Open the new finder telescope objective cover	
Dome	This may be a good moment to fill the LN2 if your camera requires it. See instructions in a separate document.	
Dome	At this point, you may need to charge the filters into the filter wheels or to turn on something (GUFI computer).	
Dome	😃 All doors at points of ingress must be closed when VATT/Don is running in Remote mode. This is a safety measure. If the ALT-AZ-derotator motors are running, opening one of these doors in Remote mode will de-energize the motors for the safety of persons who might have inadvertently placed themselves in harms way. There are five items secured with magnetic switches. Check that they are all engaged:	
	1. Elevator door	
	2. West door (leading to ladder to the roof)	
	3. Staircase door (leading to the staircase)	
	4. Trapdoor on the ladder to the roof	
	5. Scissor lift (must be down)	
Dome	Check all lights are off (except for the floodlight operated from Control Room) and, again, be sure to close door to elevator vestibule when leaving	
	15 minutes before sunset	
everywhere	Shutter all windows with blackout shades and curtains (with the exception of the window by the SW porch door in the control room; this can be useful to check the sky brightness visually, as the cameras are very sensitive and may create the false impression that the sky is brighter than it truly is).	
	Control room	
😎	You will need one terminal to run a session on vattcontrol, and another to run a `remote desktop` on ProjectSoft PC 1 or ProjectSoft PC 2. You can use the latter (it being a Windows machine to open a browser and navigate to the live view feeds from the various cameras (Dome, Security & Finderscope Cameras). The key, however, is to run the TomPack Viewer (TPView) utility (user manual).	
Control room	TURN ON VIDEO MONITORS for the legacy Dome, FinderScope and Porch Sky camera feeds, as well as the dome floodlight (left of the SW balcony door)	
Control room	Enable `Live View` from the Hikvision dome, the Hikvision new FinderScope camera, and the Axis thermal IR P12 camera (Dome, Security & Finderscope Cameras)	
Control room	TomPack Viewer > Main Controls > Main 'Don' Power > ON	
Control room	TomPack Viewer > Main Controls > Auxiliary Systems > Hexapod > ON	

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Control room	TomPack Viewer > Main Controls > Auxiliary Systems > Automatic Startup > START	
Control room	TomPack Viewer > Main Controls > Dome > Auto	
Control room	vattcontrol > Start INDI server (double click desktop icon): a terminal appears; you may minimize it.	
Control room	vattcontrol > Start "Secondary and Guidebox" GUI using the desktop launcher. This will open a Firefox browser window should Firefox not be running yet. If Firefox is already running, an error message will appear. Simply open a Firefox tab manually and go to localhost:4002/guidebox_4k.html. Select VATTSpec or VATT4k (default for all instruments other than VATTSpec). The top controls the M2 PI hexapod and the bottom controls various motors in and on the Guide box. The diagram and the text output box scale with CTRL+/- (or CTRL and mouse scroll wheel). Other elements scale when the window is resized.	
Control room	Connect the Guidebox part of the GUI to the hardware by pressing the Connect button. After any loss of power to the Guidebox you must click Reference (the procedure takes several minutes). Use the Initialize button if one of the axes becomes unresponsive (e.g., stuck in a limit). In more extreme cases, e.g., coming out of lightning shutdown, the guide box is likely to run into communication problems. The remedy is to run the INDImon script (its launcher on VATTcontrol's desktop is labeled Restart indidriver), selecting option 0. Filter/Guidebox driver (to the following query, type "Y" followed by Enter).	
Control room	Start autocollimation (more detailed instructions are in a separate document): Press Connect button; field surrounding button should turn green; press Reference button; field surrounding it turns yellow(ish); wait for it to turn green; press Auto Collimate button; M2 will move to previous night's final positions	
Control room	Start PHD2 (double click desktop icon): your main reference should be a separate dedicated document; instructions that follow here are simplified	
Control room	PHD2: Main tool bar, click icon that looks like a USB male connector: connect equipment window appears	
Control room	PHD2: connect equipment, in the camera row, click on Connect.	
Control room	Start XEPHEM (double click desktop icon). We will be using XEPHEM as a star map only. Unfortunately, XEPHEM cannot communicate with 'Don'. This means that the Sky View will not include the symbol showing where VATT is pointing, and we will not be able to use the GoTo command. Very soon we will have a new planetarium software, TheSkyX, which does communicate with 'Don'.	
Control room	XEPHEM: main window: click "Now" on top right and "Update" in bottom bar, then toggle the small "RT" button to the right of Looping [1]; check that the bottom bar says Stop	
Control room	XEPHEM: Open SKY VIEW window: go to the pull-down menu View, and select the penultimate item, Sky view.	
Control room	XEPHEM: Open INDI window: go to the pull-down menu Telescope, and select the item, INDI panel.	
Control room	XEPHEM > INDI: locate the word Connect (bottom of the window); there is a little square button to its left. It is probably engaged (depressed). Make sure it is disengaged.	
Control room	XEPHEM: SKY VIEW window: We used to click grid control (under Images menu) twice, turning RA–DEC grid off and then Alt–Az grid on. This does not seem to work anymore. In the "Control" pull-down menu select "Options", which opens a new window, and toggle "Alt-Az" at the top left of the window.	

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Control room	Start Trouble Report (TRVATT): In menu bar at top of *vattcontrol* desktop, start Firefox; Trouble Report page will open (https://observer-report.as.arizona.edu/). Fill in pertinent fields along top (Observer(s), Instrument, Operator(s), etc.).	
😎	You can use meteorological data from TPView > Main Controls > Meteo Data (`Trends` may provide values more representative; the plot shows moving averages depending on the horizontal scale). You may still benefit from the VATT Weather Dashboard (wfrog, the `3 Hours` tab).	
	TELESCOPE "Go Live" SEQUENCE COMPLETE	
😎	Here is the link to the Focusing & Collimating instructions.	
😎	Instructions for guiding are provided in a separate document. Briefly, once you have a guide star, click on it. A yellowish frame appears. Open the `Tools` pull-down menu, select `Modify calibration > Clear calibration data`, answer in the affirmative when asked whether you know what you are doing, and click on the green `Guide` icon in the main tool bar. PHD2 will perform a calibration of the corrective motions and start guiding.	
😎	*IRAF* In order to work with multi-extension fits files in IRAF, load mscred in IRAF (typing `mscred`), and use `mscexam` command to interact with ds9 (rather than imexam).	

[1)]
These steps were unnecessary at one stage of software development.