	Lightning Shutdown & Startup / Jun 6, 2024 / P Gabor	✔✘
General Remark	**😃 This document is a draft, reflecting the state of the facility at the time of writing. Modifications to the facility and to the procedure will be forthcoming within the Summer of 2024.**	
	The term “Lightning Shutdown” as used on Mt Graham, refers to a complete facility shutdown, designed to award the equipment as much protection as practical when facing the risk of a lightning storm. Typically, it is characterized by isolating sensitive and hard-to-replace equipment by physically disconnecting electrical conductors.	
	A “warm shutdown” can be seen as a subset of the full, “lightning” shutdown. It involves turning equipment off rather than physically disconnecting its electrical connections.	
General rule 0	**😃 Call Gary Gray, Chris Johnson, Michael Franz or other members of the A-team ahead of time if it is not clear how to proceed!**	
General rule 1	**😃 Always make sure you will know how to reconnect any cables you disconnect!**	
Prerequisite	**😎 Observatory is in “warm” shutdown. 😎**	
	Assumes Don's `Automated Shutdown` complete ❓, INDI server and drivers off, and all other relevant software stopped ❓	
Control room	`TomPack Viewer` in `Remote`; double check that everything is off/inactive/disabled including the `Main Don Power`	
Control room	`TomPack Viewer` > `Service` > `General` > `Power Supply` turn `off` the Main Control Cabinet (the Dome Control Cabinet and the Altitude Control Cabinet will be turned off automatically as a consequence).	
Control room	`TomPack Viewer` > `Service` > `General` > `Power Supply` turn `off` the Main PLC.	
Control room	`TomPack Viewer` > `Service` > `General` > `Application Exit` press EXIT	
Control room	In `Remote Desktop` shut down PC-VATT-1 and PC-VATT-2 (You may want to Exit `Tom Pack` beforehand in both cases)	
Control room	Out of the three new X-terms, pick the one where you can reach its own “surfer” desktop most readily (typically by closing various remote sessions). On the X-term's own desktop, open a terminal. In the terminal type either `haltvatt` or `./haltvatt` and hit ENTER. The shutdown script will run, and it will power down every computer, including all four xterms (the three new ones and the older one), the only exception is `vatttel`. (It is no longer necessary to use the power button on `vattdata` to shut it down fully).	
	Note. The `haltvatt` *script is not resident, and so cannot be used, on vattxt3 (the older xterm with the smaller monitor).*	
Server (Instrument) room	Open the computer rack. Check that the servers are off by inspecting their power indicators (they ought to be amber).	
Server (Instrument) room	Press and hold the power button on each of the HP UPSs (bottom of rack, under the `vattdata` server), until you hear the power go off (~5 sec).	
Server (Instrument) room	Close the computer rack. (The doors are electrically bonded to the frames, and a closed rack provides more protection for people and for the computers.)	
10kVA UPS room	Press the `Power` button (top right) until a pop-up screen appears, titled `Option` with three bullet points: `Turn to bypass`, `Turn off output` and `Turn off UPS`; select the latter using the arrow keys (bottom center) and press Enter (bottom right)	

	Lightning Shutdown & Startup / Jun 6, 2024 / P Gabor	✔✘
10kVA UPS room	Another pop-up screen appears, this time asking for confirmation. Confirm by selecting `Yes` (moving the cursor right) and press Enter (bottom right).	
10kVA UPS room	Another pop-up screen appears, titled `Notify`, advising to `Open input breaker to turn off UPS`.	
10kVA UPS room	Go to `Panel C`, and open (switch off) the two bound-together circuit breakers marked `10 kVA UPS` (top left).	
10kVA UPS room	The UPS continues beeping, showing a new pop-up screen, titled `Notify`, advising that `Shutdown in progress`. The shutdown concludes in a couple of minutes: the screen goes dark and the beeping stops.	
Lvl 1, Telecom room	Go to `Panel A`, and open (switch off) the three bound-together 100 A circuit breakers marked `Panel C` (bottom left) in red.	
STARTUP		
Lvl 1, Telecom room	Go to `Panel A`, and close (turn on) the three bound-together 100 A circuit breakers marked `Panel C` (bottom left) in red.	
10kVA UPS room	Go to `Panel C`, and close (turn on) the two bound-together circuit breakers marked `10 kVA UPS` (top left).	
10kVA UPS room	The UPS starts making noises, showing a pop-up screen, titled `Confirm`, advising that “New alarm present”, and asking, “Show log?” Select `No` using the left arrow and `Enter`.	
10kVA UPS room	While the UPS continues to beep, press the `Power` button (top right) until a pop-up screen appears, titled `Confirm`, asking, “Turn on UPS?” Select `Yes` using the right arrow and `Enter`. The UPS will stop beeping and more subtle noises (clicking) will accompany the startup process.	
Server (Instrument) room	Open the computer rack. Press and hold the power button on each of the HP UPSs (bottom of rack, under the `vattdata` server), until you hear the power go start (~5 sec).	
Server (Instrument) room	Turn on the HP servers by pushing their power indicators (they ought to be amber; push them for no longer than 1 sec; they ought to turn green). Other servers have different activation buttons. The two ProjectSoft PC servers have diamond-shaped buttons with a dim white LED. Monitor the process on the KVM as needed.	
Control room	Don's main control panel by the door leading to the elevator etc. Check that the turn switch is in the `Remote` position (at this point, no lights are lit on the control panel).	
Control room	Turn on one of the HP Thin Clients. Check that the screen refresh rate is 30Hz (see What's New at VATT > AOC 4k monitors and the HP Thin Client xterminals). Start a remote desktop session on either `ProjectSoft PC 1` (PC-VATT-1) or `ProjectSoft PC 2` (PC-VATT-2) (launchers on desktop).	
Control room	The `TomPack Viewer` application ought to be running (autostart at Windows boot). If not, use the launcher on the desktop.	
Control room	Log in to the `TomPack Viewer` application using the pictogram of two silhouettes (top right). Select your username (`vattobs`) from the pulldown menu, and type the customary password.	

	Lightning Shutdown & Startup / Jun 6, 2024 / P Gabor	✔✘
Control room	`Tom Pack` > `Service` > `General` > `Power Supply` turn on the Main Control Cabinet (MCC) followed by the Main PLC (the other two, Altitude and Dome cabinets, start automatically later when the Main 'Don' Power is switched on; if you need them on without turning on the Main 'Don' Power, feel free to do so after turning on the MCC and Main PLC). The main control panel by the door: The blue light marked `Remote` comes on.	
Control room	It is possible that Don will display the following alarm: `GENE AL 2, emergency stop (emergency stop is active)` When this happens take the following action:	
Silo, level 2	On the Master Control Cabinet's left door, there is a button marked `Reset ESTOP2`. If it is flashing blue, press it.	
Control room	TomPack Viewer > Main Controls > Oil System > Temperature Regulation : turn the system `ON`. Note: This system is designed to run all the time. That is why the user cannot turn it off once it is running. But, it does not come on automatically when the systems comes live after a lightning shutdown. Therefore, you should turn it on at this point.	
Note 1 😃	Booting up `vattdata` is slow (approx. 10 mins). You can follow the process on its terminal: On the KVM (keyboard-video-mouse) console (Tips on how to use the unit.), highlight the entry labeled `vattdata` using the up/down arrow keys, and press `Enter`. When the RISC drives are mounted and the system is fully booted, the text stops scrolling on the screen and an ASCII list of 12 options appears. This indicates that all is well and no further action is required.	
Note 2 😃	`vattdata` is **no longer** a prerequisite for the boot-up of other servers.	
Note 3 😃	**Booting up the servers** in the computer racks in the Instrument Room. Slide out the KVM (keyboard-video-mouse) console. (Tips on how to use the unit.) Proceed to the other servers and power them **all** up. You may monitor the progress of this operation using the KVM. If you are still connected to `vattdata`, hit `prn sc` and then `Alt+D` to disconnect from the `vattdata` text interface. Green or red status indicators appear in the KVM's list of computers. Now you may also connect the KVM to the servers listed (scroll and `Enter`).	
Note 4 😃	The GPS unit can take up to 10 minutes to startup fully (two blue lights: `Ready` and `Power`). It used to be critical because when `VATTtel` was booting, it needed the GPS unit to be ready. Don has its own GPS unit. Our old GPS unit feeds only our NTP server.	
Note 5 😃	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 `(3) Filter/Guidebox driver`. See What's New at VATT for more details.	