

Full Cold START UP Checklist

Mount Lemmon 60”

ver. 4.0 - Last Update: 09/01/2019

This is for a NORMAL Start up from a Lightning Safe Condition.

Note that CSS cables that **MUST** be disconnected for shutdown and reconnected NOW, during start up are marked with RED tape. Cables that should NOT be disconnected are marked with WHITE tape. **KEEP AN EYE OPEN FOR ANY CABLES MARKED WITH WHITE TAPE THAT HAVE BEEN DISCONNECTED!** Reconnect them if you can identify where the connections should be made. Legacy TCS cables are labels with blue tape and can be ignored.

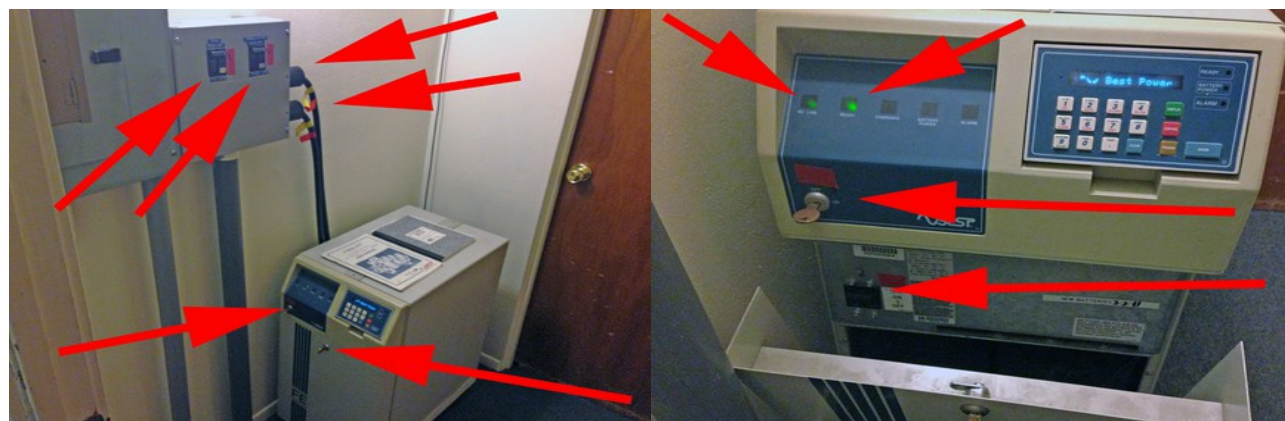
Call for assistance if you cannot identify ANY cables!

NOTE: THIS CHECKLIST DESCRIBES THE CORRECT PROCESS, **IN THE PROPER ORDER**, TO BRING THE TELESCOPE OUT OF A FULL COLD SHUT DOWN. THESE INSTRUCTIONS WILL SHOW YOU A PHOTO OF THE LOCATION FOR THE NEXT STEP IN THE PROCESS AND THEN PROVIDE THE INSTRUCTIONS ON WHAT TO DO IN THAT PHOTO.

Providing Power to the System

1. Location: “The Foyer”

NOTE: THIS SECTION **MUST** BE DONE IN THE FOLLOWING ORDER **EXACTLY** TO AVOID CREATING AN ALARM CONDITION!



1. **PLUG IN** the two (2) 220V power cables into the outlets on the east wall.
2. Switch **“ON”** the breaker next to the 220V outlets marked RAW 208VAC TO UPS
3. Unlock the front door of the UPS unit, switch the internal breaker **“ON”** and close & re-lock the door.
4. Switch the UPS **“ON”** using the key switch on the front of the unit.
Switch “ON” the breaker next to the 220V outlets marked REGULATED 240VAC FROM UPS

The UPS should be powered up correctly with no alarms as indicated by the green lights.

Attending to the Computers

2. Location: **“Computer Rack, Observer's Position”**



1. **Plug in the Computer Power Cable** into the outlet on the east wall.
2. **Power up** all of the computers in the rack.
3. Power up all of the monitors.

There are no additional items here.

3. Location: **“The SO Computer & Network Closet”**

1. **Plug in and power up “Agincourt”**. It is the computer labeled “Camera 40”. The computer on the floor next to Agincourt is not used and does not need to be plugged in or turned on. Ignore it.

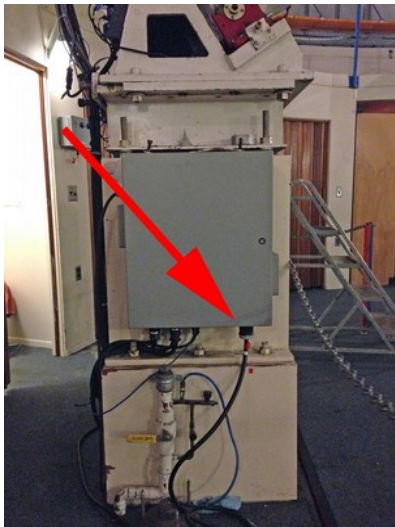
Attending to the Telescope and Instrument

4. Location: **“The Dome”**



1. At the east dome door, **connect the dome encoder** to the **TCS-NG port**.

5. Location: **“South Pier”**

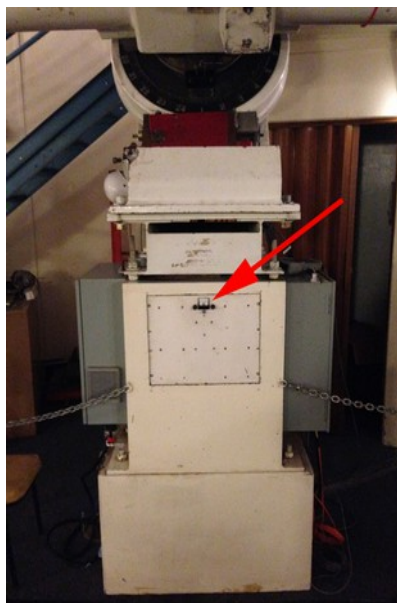


1. **PLUG IN** the “**Fat**” TCS-NG Power cord to the TCS-NG box on the east side of the south pier of the telescope.

6. Location: “**Central Console**”



1. **Press** the black, round “**Main Power ON**” button to energize the system. Then, **press** the **square red button** to energize the drive system and the TCS-NG computer. Confirm that the Override switch is off and the cover is in the down position, as shown in the image.



2. **CONFIRM** that the **voltage meter** on the telescope's south pier shows the circuit is live.



3. **PLUG IN the green Shutter Controller power cord** at the outlet box located within the northwest (circular) base at the bottom of the telescope, indicated by the lower arrow, above.
4. **Confirm** that the 1-wire network cable is connected to the switch.

NOTE: The elevator is no longer in service. Use the step ladder.

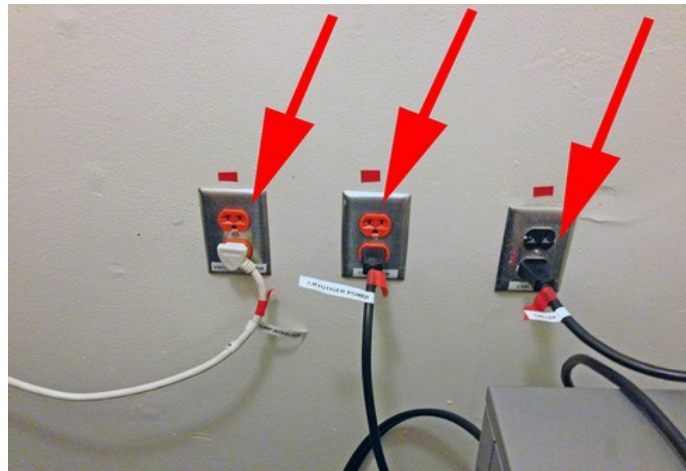
7. Location: **“South Wall and Tiger Cage”**



1. On the south dome wall, **CONNECT** the pig-tail cable labeled **“Dome Controller”** into its socket on the bottom of the controller box below the label **“Dome Controller”**.



2. Inside the south closet, **plug the two (2) “Dome Power” cable pigtails together**
3. Turn **“ON”** the **wall type switch** on the lower right of the box.

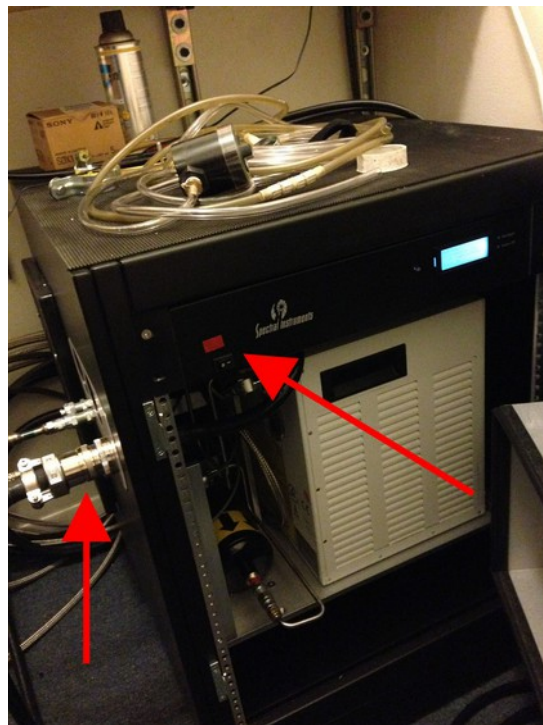


4. On the south wall, there are **THREE** electrical cables that need to be plugged in for our camera, and each unit gets it's own outlet.
 1. **Plug in** the **“Vacuum Pump and Interlock Valve power strip”** (Labeled **VPIV**)
 2. **Plug in** the **Cryotiger+power supply “service module”** (Labeled **CSM**)
 3. **Plug in** the **Chiller**.
5. Note: The air compressor and air dryer are to be left plugged in and running at all times now. If the compressor has been turned off and/or the air dryer unplugged, turn **ON** the compressor and plug in the dryer now.

6. Check the small, clear “tower” on the top of the dryer unit. Blue colored crystals indicate the dryer needs maintenance. Check the Wiki for instructions. (Note this image is of the dryer tower at the Schmidt. It is identical to the one here.)



7. CONFIRM that air is flowing through the dryer and into the tubing by checking the flow meter on the right side. The flow indicated 0.5 (One Half) cubic feet per minute. If this is not the rate, adjust using the knob.



8. **Connect** the cable on the side of the CSM BEFORE turning on the power!

9. After plugging in the cable to the **Cryotiger & power supply “Service Module” (CSM)**, open the door on the left-hand side by lifting the lock handle and then flipping the rocker switch to the **“ON”** position.



10. After plugging in the Chiller, lift the blackout cloth from the front of the Chiller unit and press the Power button to turn it ON.

8. Location: **“Observer's Position”**

1. Start **Control** and **TCS-GUI** as usual.
2. Start camera cooling.
3. If required, start the Vacuum Pump following the directions on the wiki.

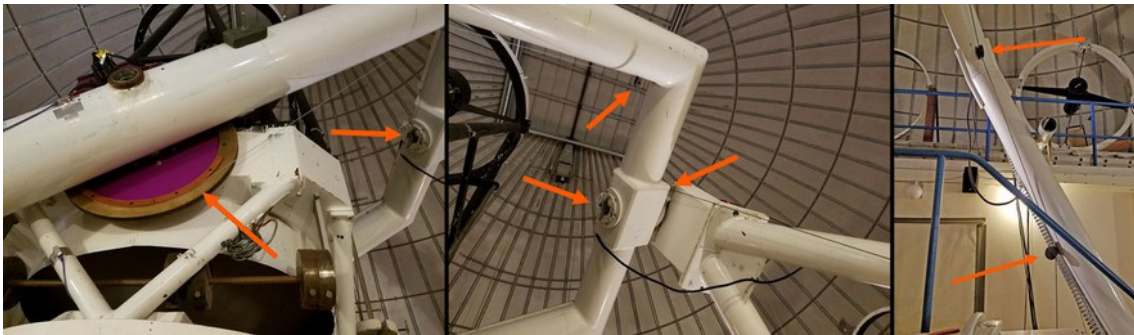
Final Checks and the Start of the Night

Once the camera has cooled to optimal operating temperature (-100C)

9. Location: **“The Dome”**

1. It is a good idea to monitor the physical condition of the telescope mount and drives. The observer may put this section into their start up routine at any place where they feel it works best for them. It is placed in these procedures here only because the time spent waiting for the vacuum pump to spin down and stop offers an ideal opportunity for the observer to make these checks!

1. If you have already engaged tracking and Periodic Error Correction (PEC) via TCS-NG, and **LISTEN** to the **Right Ascension Drive** for any abnormal sounds.



2. **INSPECT** the pre-load cables and weights for any fraying, kinking, no longer riding in a pulley, obvious wear, loose weights, etc. The most likely locations for damage to the cable are near the pulleys, so pay particular attention to those areas. Use a flashlight to better illuminate these areas if necessary.
 3. **INSPECT** the telescope and yoke section of the mount for any cables that appear loose, taugt, kinked or otherwise damaged
 4. **CONFIRM** that there is nothing within the normal arc of travel of the telescope that could come in contact with the telescope during the night.
(Effectively, anything on the elevator floor.)
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2. **CONFIRM** the **exhaust fans** are “**ON**”.
 3. **CONFIRM** all of the door to the Tiger Cage and all of the doors into the dome are fully closed and secured.
 4. **All of the lights** are “**OFF**”.

10. Location: “**The Dome**”

1. At the appropriate time, **OPEN** the **dome shutters** and **telescope dust covers**.
2. Turn “**ON**” the **exhaust fans**.
3. Turn “**OFF**” any unneeded lights.

The telescope should be ready for the night's observing.