

61" Trainer's Checklist for Basic Certification

Preparing for your observing run:

- How to request keys
- Where to pickup and drop off keys

Site Overview:

- Building layout
- Importance of keys, cell phone and flashlight
- Arrival, departure, parking, and headlights off after dark

Dormitory:

- Food policy - Don't leave food behind
- Write your name on the chalk board
- Where the laundry room is
- Heat turned down to 55 in the winter when you leave
- Quiet hours are until 4 pm
- Keep blinds drawn at night
- How to leave the dorms after your run (strip bed, close windows, draw shades, turn off light, etc)

TCS-NG:

- Go through TCS-NG manual (in binder) having the trainee do the steps listed.
- How to initialize
- MOON Wiki
- NG binder in control room
- Xephem binder in control room
- How to login/passwords to computers/wifi

Mont4K:

- How to use the M4K - go over manual online at the 61" website
- How to use Azcam
- How to use the software on Gerard properly (dataserver, galilserver fw-gui, IRAF, ds9)
- Leave Azcam running at the end of the night/run unless going into lightning shutdown. This helps camera remain stable. If program is closed, it may mess up data quality for next observer.
- Have trainee actually get everything up and running, find focus etc.
- **Dewar filling**
 - LN2 how to fill, use static discharge strap whenever touching the dewar, touch metal fill tube to the outside of the fill port before inserting, etc
 - LN2/gaseous N2 pressurize

- LN2 tank swap procedure – at a minimum review
- **Stress proper PPE use! Wear long pants and closed toed shoes whenever observing. You must wear cryo gloves, goggles AND a face shield when handling liquid nitrogen. Long sleeves must also be worn; we have provided lab coats if you don't have long sleeves**
- For the M4K, the dewar MUST be filled every 24hrs. NO EXCEPTIONS.
- If a camera has gone longer than 24 hours, call a staff member. Sometimes the M4K is warming up deliberately, so always call if you find it over 24 hours between fills.
 - The staff member will probably ask you first if the scope is in lightning shutdown, if not they'll want you to check the cam temp on Azcam. **NEVER FILL THE DEWAR ABOVE -40C**
 - If the telescope is in lightning shutdown, they will ask you to check if the fill port is outgassing. Sometimes it is not readily apparent, so you will need to put your thumb over the fill port for 10 seconds and remove it to see if a spurt of gas comes out. They will also ask if the outside of the dewar is sweating. It will look like condensation on the outside of iced water. From this point on, the staff member will guide you as to what to do next.
 - Warning!!! LN2 can spill out of camera dewar after filling!

Telescope Operations General Items:

- Rules for safe operation of telescope
- Mirror covers are the last thing to open at start of night/first to close at the end
- How to operate exhaust fan downstairs if/when it's necessary. Review when to use the exhaust fan (humidity inside vs. outside)
- Know where the elevator floor is in relation to the instrument and yoke
- Make sure ladders are out of the way
- Use infrared camera and watch every time you move the telescope.
- If operator for a group of people, no one but certified observer can move telescope
- When you leave for the night, make sure you disable the telescope in TCS.
- Laptop is located in the console upstairs in the dome
- Actually use the laptop to move the telescope around
- Where to write fill times and humidity readings
- Limits (hardware limits, software limits, weather limits)
- Check the weather regularly! (Joe checks at a minimum once an hour on good nights)
- Lightning shutdown
- Stowing dome/windcreens
- Video finder scope, hand paddle, finder scopes
- Losing pointing and how to recover, actually lose pointing and have them find it again
- Setting/adjusting the iris
- Don't turn on dome lights with shutter open
- How to get data off Gerard
- How to leave telescope at the end of night when not going into lightning shutdown.

Weather:

- WEATHER LIMITS!
- Humidity, rain

- Wind
- Lightning
- Snow/Ice/Spindrift
- Particulates - dust, smoke
- Where to read measurements

BigAux PC:

- Trouble reports
- Relevant weather webpages, online supporting webpages
- How to login/passwords to computers/wifi

Control Room:

- How to login/passwords to computers/wifi
- Kitchen – how to open refrigerator, work stove etc.
- Heater
- Door close policy when rooms heated (control room and bathroom)
- Regular call list for problems (Dave, Jim, Steve, Joe, Gary, Melanie)
- Emergency call list, other numbers list (Trico, Sheriff Department)

Security:

- Gate needs to be shut at night
- Don't let hikers on to the grounds/in the buildings
- Set the alarm at the 61" and lock the door when you're not there
- Door to catwalk needs to be bolted shut

Power Failures:

- Generator should start automatically. If it doesn't call Mtn Ops for assistance.
- Phase indicator lights in dome and on powerhouse
- Emergency flashlight locations
- Notifying Trico and Mtn Ops

Observer Requirements:

- Need to be certified on telescope, instrument, and NG
- Observer Request Forms – turned in 2 weeks prior

Universal Rules:

- If you give up your run or leave during your run, filling the dewar is still your responsibility. Unless you can arrange with Mountain Operations prior to calling off your run, you must still come up to the mountain and fill the dewar every 24 hours.
- If it is the last day of your run, you must make sure the dewar has enough hold time since the

last fill until the next observer arrives (a safe bet is sunset). Filling the dewar is still your responsibility until the next observer arrives. The only time it's Mountain Operations responsibility is during TBS time, or if you arranged with us to have us fill the dewar ahead of time.

- Check the weather! If there is any chance of thunderstorms during the morning or afternoon of the day you leave, you need to put the telescope in lightning shutdown before you go. If there is a chance of thunderstorms, the scope must be put in lightning shutdown.
- You need to keep on top of the weather. No moisture, condensation, dust, ash, pine needles etc. should ever get on the mirror. Staying open when it's unsafe is grounds for decertification.
- Alcohol and drug abuse while operating the telescope is not tolerated.

Certification Process:

- Contact a certifier and work around THEIR schedule. Observing is a privilege, not a right. If you cannot be certified before your scheduled run you will have to find a certified observer to operate for you or you will lose the nights.
 - [List of Certifiers](#)

Record Keeping:

- Everyone running the telescope needs the proper documentation, otherwise nights may be lost
- Certification sheets can be found in the 61" control room, or our wiki page: https://lavinia.as.arizona.edu/~tscopewiki/doku.php?id=public:observer:certification_form. They must be filled out and signed by both certifier and newly certified.
- You need to turn in a digital picture of yourself along with your completed certification form to be considered certified.
- Certification sheets must then be turned into Melanie Waidanz or Joe Hoscheidt where we can file the hard copy and update our database.
- If we cannot find your documentation, and don't provide us with proof of your certification, your night may be lost.

Certification Eligibility:

- If you are certified but have not observed in a year, you now must take a refresher course with a certifier. This goes over the changes that have occurred since the last time you observed, and is especially relevant at the 61". Failure to work around a certifier's schedule to get refreshed could lead to a loss of your nights. This can be done with any of the certifiers.
- Once again being able to observe is a privilege not a right. The rules are in place to keep not only the telescope and instrument safe but the observers as well. We have the right to decertify anyone if they break the rules.

Required and Suggested Reading Prior to Certification:

- Guidelines for observing (<http://james.as.arizona.edu/~psmith/90inch/guidelines.html>) This is required reading for certification.
- The M4K operating manual if you plan to get certified on it.

(<http://james.as.arizona.edu/~psmith/61inch/CCD/CCDmanual.html>)

- TCS -NG Manual and Telescope Operations Manual

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<https://lavinia.as.arizona.edu/~tscopewiki/> - **MOON**

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