Amateur Astronomers Association of Princeton Washington Crossing Observatory Guide

First draft 1/2000 K. Alexander, revised 7/2000 W. J. Murray, revised 1/2001 R.A. Parker

Keyholder Duties

Along with the privilege of having full access to the AAAP's telescopes and observatory facilities, <u>all</u> <u>keyholders</u> must participate in the AAAP's public observing programs as outlined below, and are expected to contribute to occasional maintenance and work sessions at the observatory.

Each keyholder will be assigned to a public observing duty team of approximately four keyholders. Each team will have one team leader. The leader and his/her team will have full responsibility for operation of the observatory and for public interactions during the public observing sessions. Each team will pull duty on a rotating schedule of the designated public observing nights. The current public night schedule consists of the first and last Friday nights of each month from March to November, plus each Friday night in May and October. The latter are joint AAAP-New Jersey State Planetarium observing sessions with relatively large groups. The schedule is published in the SIDEREAL TIMES and on the club's website (princetonastronomy.org).

- The observatory will be open each <u>scheduled public night</u> when there is a reasonable chance for clear or even partly clear skies. When conditions are uncertain, phone your team leader regarding status.
- If you cannot make a scheduled public night, it is your responsibility to contact your team leader in advance if possible, or the observatory chairman if the former cannot be reached. You must arrange for your own substitute if one is needed.

KEYHOLDER PUBLIC NIGHT DUTY IS MANDATORY. IT IS THE RESPONSIBILITY OF EACH KEYHOLDER TO KNOW THE DUTY SCHEDULE AND HIS/HER DUTY NIGHTS. PERSISTENT ABSENCES FROM DUTY NIGHTS WILL RESULT IN LOSS OF KEYHOLDER PRIVILEGES.

Dealing with the Public

Keyholders are ambassadors of the AAAP to the public. Patience must be exercised and respect shown when responding to the various questions and situations that arise when public is on the premises. Be prepared to direct the flow of people through the observatory and the grounds when there are large groups. Be aware of traffic and the status of parking to maintain good control.

Keyholders are expected to be knowledgeable about astronomy and our equipment, and to be able to communicate basic astronomical and telescope principles to the public. Use the opportunity to educate and entertain as appropriate for the audience. Communicate the need for control of light pollution, for example, point out that homeowners can minimize outdoor lighting.

It is suggested that the observing team agree in advance on a list of desirable objects to show the public (refer elsewhere for suggested talking points for topics to raise). These should include a mix of the best Messiers plus planets and moon as appropriate. Since many people stay for only a brief period, it is advisable to rotate through a list of prime objects a few times during a night's session.

If non-members arrive at the observatory on non-public nights, keyholders should briefly describe the observatory and point out the public observing schedule. Always be polite in turning away visitors. It is your option to provide a few observations to public under these circumstances.

Gate Opening Procedure

There are three locked gates between RT 579 (Bear Tavern Rd) and the observatory in Washington Crossing Park. Recent security problems in the park dictate that the following procedures be followed at all times by all keyholders. **FAILURE TO FOLLOW THESE PROCEDURES WILL RESULT IN LOSS OF KEYHOLDER PRIVILEGES.**

Each gate is secured in an identical fashion: a length of chain is run through the gate latch with the park's lock on one end and the AAAP's lock on the other end. When securing a gate it is to be locked only in this way. DO NOT ATTEMPT TO LOCK ANY GATE BY ATTACHING THE AAAP'S LOCK DIRECTLY TO THE GATE LATCH—THIS IS NOT ACCEPTABLE TO THE STATE PARK RANGERS

If a keyholder enters the park to use the observatory on any night other than a designated public night all three gates are to be secured upon entering the park and after leaving the park. THE GATES MUST NOT BE LEFT OPEN. It is also not sufficient to close the gate but leave the lock on the chain unlocked or locked with one number shifted for easy egress from the park after an observing session is finished. The gate must be locked and the numbers spun on the lock so that anyone who comes by cannot easily guess the combination and gain access to the park. This procedure must be applied to all three gates. It is not sufficient to lock the RT 579 gate but leave the other two open, all gates must be locked.

The only deviation from the above procedure is if there are campers in the park, especially in campsite D near the last gate. The campers need access to the park and therefore the first two gates must be left open. However, the last gate must always be secured on a non-public night. It is the duty of the first keyholder to enter the observatory on a given night to note the state of the gates and communicate this information to any other keyholders who arrive at the park later. If you plan to stay at the observatory later than the keyholder who first opened the observatory, make sure that you find out the status of the gates before he/she leaves.

On designated public nights all three gates may be left open to facilitate entry of the public to the park. HOWEVER, ALL GATES MUST BE LOCKED AND SECURED NO LATER THAN 11:30 PM. This means that if there are still members of the public present at the observatory who do not wish to leave by 11:30 PM they will be locked in the park until a keyholder leaves and secures the gate(s) behind him/her. At 11:30 PM a keyholder must leave the observatory to secure and lock all three gates. (If there are campers in the park only the last gate needs to be locked and secured.)

If during entry you are stopped by a park ranger or (on non-public nights, particularly off-season) by township or State police, identify yourself as a member of the AAAP and assure the police that you have authority from the Washington Crossing State Park to be on the premises. Always be polite if you are stopped.

We realize that the above procedures will be an inconvenience to many keyholders, but they must be followed if we are to maintain the good will of the park administration.

Parking at the Observatory

On nights other than public observing nights, keyholders are free to drive back to the observatory on the gravel driveway and park there. The unlocked gate at the entrance to the gravel driveway will normally be closed to prevent the public from driving back to the observatory. It should be closed when a keyholder is leaving the park after finishing an observing session.

On <u>public nights</u>, the gravel driveway is reserved for off-loading equipment by AAAP members. If there are only a few such members they are free to park near the observatory. However, if a large number of AAAP members bring scopes then the on-duty keyholders should restrict driveway parking, allowing people to drive back to unload and pack up equipment only.

Parking on other park roads is restricted to parking along the side of the road in front of the observatory, but not on the gravel shoulder or on any grassy area. This restriction applies to all AAAP members as well as the

public. People parking on park roads should attempt to park as far over on the side of the road as they can without parking on the shoulder in order to not block road access.

When large groups of people are expected at the observatory, such as on planetarium nights, the public should be directed to park in the grassy field near the last gate and walk over to the observatory. These situations should be planned in advance by the duty team along with the leaders of the public groups (teachers, planetarium staff, etc).

Opening the Observatory

- Unlock the door by unlocking both the key lock and the combination lock.
- Turn on the lights (switch located on your left as you enter the observatory).
- Disable the alarm.
- Make an entry in the observatory log. (The log is located on the top of the yellow desk near the main observatory light.) LOG ENTRY IS MANDATORY FOR THE FIRST KEYHOLDER TO ENTER AND THE LAST TO LEAVE THE OBSERVATORY EACH NIGHT OR DAY. The minimum log entry includes date, time and the keyholder's name. At this time look around the observatory to see if anything is amiss (lights left on, scopes still plugged in, eyepieces not put away, etc.) and make a note of it in the log. Also check the previous few log entries to see if other keyholders have made entries about problems with the equipment.
- Loosen and unhook the four turnbuckles at the corners of the observatory.
- Unlock the two dead bolt locks that secure the roof flap and push the flap out.
- Untie the flap cord from the cleat and raise the flap. Make sure the flap is as high as it will go or you will be unable to clear the roof gear at the other end of the observatory when rolling back the roof.
- Tie the cord back on the cleat making sure that there is no excess cord hanging down to catch on the scopes as the roof is rolled back.
- Roll the roof back using the hand crank near the computer room. The roof should roll back easily. During the winter months snow on the back roof and frozen moisture bowing the metal flashing on the roof can impede roof motion. If the roof appears to be very difficult to remove DO NOT ATTEMPT TO APPLY EXCESSIVE FORCE TO THE GEAR CHAIN MECHANISM. Use the ladder on the back of the observatory to check the back roof for snow and ice. Remove show/ice with the snow shovel taking care not to damage the roof or chain. If it is still difficult to remove the roof then close the observatory, make a note of the problem in the log and contact the observatory chairman to apprise him of the problem. NEVER APPLY EXCESSIVE FORCE TO THE GEAR/CHAIN MECHANISM.
- When rolling the roof back do not attempt to roll it back all the way to the end of the rails. Only roll it back about a foot beyond the back wall of the observatory.
- Unlock Door and proceed immediately to disable Alarm
- Adjust Red lights in Computer Room
- Open Computer Door and Power-up Computer
- Power on Monitor
- Unlock and tie open Trap Door at South end of Observatory
- Loosen and Disengage Roof Tie-down Bolts
- Retract Roof using hand crank
- Log any observed anomalies in log book.

Setup -- Telescope - C14/Paramount

- Locate Eyepiece case and place on work desk
- Remove lens caps from C14, Finderscope, eyepiece holder and place in a safe location on the work desk
- Check operation/battery power of Telrad and JMI Focuser on C14. Note dead batteries in log. Replace batteries if necessary.
- Check that eyepiece holder on C14 is securely attached to back of telescope
- Install an eyepiece such as the 35mm Panoptic in the eyepiece holder on the C14. ALWAYS PUT ONE OF THE HEAVIER EYEPIECES IN THE C14 BEFORE FIRST POWERING UP AND SLEWING THE MOUNT IN ORDER TO MAINTAIN PROPER BALANCE

• Plug-in Paramount power cable and switch on Mount

Setup -- Telescope - Refractor

- Remove the brass lens cap from the front of the refractor.
- Remove bungy-cord from the back of the refractor. Do not remove the bungy-cord before removing the lens cap or the front of the telescope will swing down.
- Place the gray 6" dew shield on the front of the refractor to reduce dew buildup on the lens.
- Remove film canister from refractor diagonal.
- Place an eyepiece (1.25") in the refractor diagonal.
- Plug-in Losmandy power cable and switch on clock drive.
- Turn on Telrad.
- Center a star in the eyepiece field of view and check the alignment of the finderscope and Telrad, adjust if necessary. The refractor may be moved manually in all directions and will track any object it is pointed to.
- Remove bungy cables securing telescope carefully noting their routing for later re-installation
- Remove lens caps from front and rear of telescope and finderscope
- Plug-in Losmandy power cable and switch on clock drive

Setup -- Computer

- Note functioning of warm-box infra-red heat system to maintain constant temperature of computer in winter. This should maintain approximately 40-50 degrees.
- Adjust computer clock by synchronizing with the electronic clock on the desk:
 - double-click on the time counter in lower right of screen
 - adjust settings to about 30 seconds ahead of electronic clock
 - watch electronic clock and click on "Apply" when time matches your setting
- Launch "The Sky" by double clicking icon on the desktop
- Activate the mount by selecting from the menu: Telescope->Link->Establish
- Prepare to Synchronize the Telescope Position
- Choose a bright star well above the horizon in the East
- Double click on this star in the sky picture and verify you picked the right one
- Center image on the screen by clicking the icon in lower left corner of Object Information pop-up
- Find the "Slew" icon (a little telescope) at the bottom and click on it
- Look out at the telescope and call out "Ready to Slew?"
- If all is clear click on the Slew button but KEEP AN EYE ON THE SCOPE
- If the scope does not head for the star you picked immediately CLICK CANCEL
- You must now position the scope manually on the star using the paddle

• Manual Synchronizing Procedure:

- Look through the Eyepiece and verify that your chosen star is dead center in the eyepiece; use the hand paddle motor drive to correct if necessary. Note that higher power eyepieces are more accurate.
- Return to computer and click the Telescope tab of the Object Info Pop-up
- Click Sync; Click Ok to confirm Sync
- Telescope should now be properly located. Verify by choosing another object and slewing to it to confirm proper synchronization.

Operation

- Enjoy your evening by locating and VIEWING a number of objects around the sky.
- Always warn others before slewing the telescope
- Be prepared to *cancel any slew* if the telescope makes strange noises or if it starts on a path pointing towards the ground
- If you cancel, manually (i.e., motor drive with hand paddle control) return the scope to a known position and re-sync. Test safe operation by slewing first to an object near-by
- Should computer fail to cancel a slew, POWER OFF MOUNT immediately to avoid damage to mount
- Continue to check secure attachment of diagonal and eyepiece...especially when switching eyepieces
- Note any irregularities of operation in log book; similarly, share any special finds in the log

Shutdown -- C14/Paramount

- Check fellow observers to be sure they are clear of telescope for moving it to park position
- Click on an object to open the object information pop-up if necessary
- Select the Telescope Tab
- Call out "Slewing or Parking Telescope" and click on Park (alternatively you can do this from the menu by selecting Telescope->Options->Park from the top menu of The Sky
- Keep your eye on the scope until it is safely parked in a horizontal position being prepared to cancel its motion should anything go amiss.
- Exit from The Sky
- Shutdown the computer using the shutdown menu found under "Start" in the lower left corner of the screen
- Power off the computer when you see message indicating this is safe
- Power off Computer Monitor
- Close and Secure Door to computer cabinet
- Power Off and Unplug heater
- Power Off Red Lights in Computer Room and turn on white light in observatory
- TURN OFF TELRAD BY PLACING TOGGLE SWITCH (THREE POSITION SWITCH) IN CENTER OFF POSITION.
- Turn off JMI focuser.
- Remove eyepiece and return to case. IF DEW HAS FORMED OR IF IT IS EXCEPTIONALLY HUMID, ALWAYS DRY OFF THE EYEPIECES USING THE HEAT GUN (HAIR DRYER) BEFORE PUTTING INTO CASE.
- Cap all eyepieces, close case and return to shelf
- Locate all lens caps and re-install on scope and finderscope. IF IT IS EXCEPTIONALLY HUMID, BLOW
 HOT AIR FROM HEAT GUN INTO THE OPEN DEW CAP END OF THE C14 BEFORE COVERING
 FOR THE NIGHT.

Shutdown - Refractor

- Return the refractor to its initial horizontal position
- Turn off Losmandy drive and unplug mount. Do not unplug mount before turning off drive.
- Return all eyepieces to case.
- Insert film canister plug in refractor diagonal.
- TURN OFF TELERAD.
- Reinstall bungy cord to keep scope in horizontal position. Do not replace the brass lens cap before the bungy cord is in place or the front of the telescope will swing down.
- Remove 6" dew shield from front of refractor and store on shelf.
- Apply a stream of warm air to the front of the refractor lens for 30 to 60 seconds using the heat gun (hair dryer). Do this even if there appears to be no dew on the lens. DO NOT REPLACE BRASS DEW CAP BEFORE PERFORMING THIS DRYING PROCEEDURE.

• Replace brass dew cap on scope.

Return Refractor to its initial horizontal Position Turn off and Un-plug mount Return eyepiece to case Re-Install bungy cords to keep scope in position Re-Install Lens caps on scope and finderscope

Closing the Observatory

- Check all items under Shutdown categories especially the safe horizontal position of scopes
- Crank the Roof closed watching carefully to make sure it clears BOTH telescopes
- Lower the Trap Door on South end of observatory
- Lock the Trap Door and tie up the cord
- Secure all 4 tie-down bolts
- Tidy up everything and secure trash can
- Remove all personal items from the observatory
- Close bathroom door
- Check time and note closing hour and final comments in the log
- Set the Alarm for 5-10 minutes and switch on both switches
- Turn off the main light switch and be sure computer room lights are off also.
- Close computer room door and exit observatory
- LOCK THE DOOR TO THE OBSERVATORY (TWO LOCKS)!
- Contact Observatory Chairman if you found ANY problems at the observatory.
- Remember to follow the gate locking protocol upon exiting the park.