Daily Alignment Procedure

1. Sign in and turn on column power if off.
2. Make sure that liquid nitrogen is in the TEM dewars.
3. Turn on monitors and camera.
4. Insure that Objective aperture is out (IN/OUT button – left panel – lit means in).
5. Place holey grid in sample holder and insure that it is in the ***standby*** position.
6. Insure that BH is lit – right panel. Select your working HV, HC or HR, and press HV button – left panel. Filament will automatically saturate.
7. Bring beam to crossover with brightness control, center with x/y knobs. Increase magnification so beam is easily seen (~20K).
8. Double click on BD icon in toolbar or under Function command, click on GT (gun tilt now selected). **NEVER USE CHECK BOXES**
9. Click on FIL/BIAS icon in toolbar, reduce filament voltage by clicking arrow.
10. Adjust multi-function x/y knobs to align halo image.
11. Re-saturate the filament to original voltage.
12. Click on BH in BD control window (multi-fn. knobs are now brightness centering).
13. Using the condenser control, take the lens through crossover from both directions. If the beam sweeps in different directions as it grows, the condenser aperture is off center. Center the aperture using the mechanical x/y knobs on the aperture holder. Repeat this step until the beam does not sweep.
14. If beam not round press CS button (condenser stigmator).
15. De-saturate the filament again and use the x/y controls to make image as sharp as possible. (*Sharpen first with brightness control.*)
16. Press **BH** button. Re-saturate the filament.
17. Insert sample into beam path - Turn counterclockwise 45º to lock in place. Find something to image.
18. Press LENS (preset) button, increase mag. to 20K, press WOBBLER.
19. Focus image using Z control knob. Image will stop moving when focused.
20. Press WOBBLER to shut off.
21. Increase mag. to 100K (*Keep brightness centered as you proceed*) and focus.
22. Press MODU button, multi-functions knobs are now BT (beam tilt).
23. Stop image movement using x/y knobs – use binoculars for best accuracy. If image blurs, refocus image while HV modulator is on.
24. If brightness centering needs adjusting press BH, press BT to adjust for image movement - may need to go back and forth.
25. Press MODU button again to shut off HV modulation.
26. Lower mag. to 10K, bring beam to crossover. Spot screen up.
27. Press DIFF button, increase camera length to 2 M using magnification knob – check monitor. Focus diffraction spot using DIFF knob. (If the pattern is not centered, click on PA in the BD control window and use the x/y controls to center pattern. *Be sure to go back to **BH**.*) (F/C – fine/course button - lit = coarse.)
28. Press IN/OUT button to insert objective aperture.
29. Align aperture using x/y mechanical controls.
30. Press ZOOM1 button.
31. Increase mag. to 150K, keep brightness centered using multifunction knobs. As increase mag. find small hole – oblong left to right if possible.
32. Press OS – x/y controls now objective stigmator controls.
33. Compensate for stigmatism. Press **BH.**
34. Push BD PS (PRESET). (**DON'T** push PD RESET.)
35. Put specimen in standby position, mag. to 2K-5K, spread beam, cover viewing screen, start AMT software, and *Acquire Background*.

At End of Session

Objective aperture out, HV off, Screen down, Specimen out, Holder in standby, Cover over viewing window, write down time you leave, and total time on filament (from FIL/BIAS window).

At End of Day

Monitors off, Camera off.