CONDENSED USER INSTRUCTIONS
VISTEC/RAITH EBPG-5200 EBL SYSTEM

6-24-2015 M. YOUNG

1. Enable “Vistec_5200” in Coral. This will power up the monitors at the operator’s console.
2. At the operator’s console, on the vacuum system GUI window, click on “vent airlock”. After about a minute, the airlock door can be opened. Open it carefully, not allowing the door to bang against the airlock as it opens.
3. Carefully remove the holder you intend to use. Carry it to the stainless steel table, and place it on a clean wipe (extra wipes are in the bag on the table).
4. Close the airlock door and click on “pump airlock”.
5. Mount your sample(s) on the holder. **Do not** attempt to do this without having been trained – the holders are delicate, expensive, and almost impossible to replace!
6. Carefully pick up the holder from the table and place it in the microscope stage.
7. Engage the stage lock to secure the holder in the microscope. Switch on the microscope light source and the height meter.
8. Proceed to verify sample rotation (if applicable), and sample height and leveling (if applicable).
9. Center the Faraday cup aperture in the microscope view, at highest magnification, and zero the X and Y channels of the position readout.
10. Drive to your sample, and record the position(s) of the premarker and/or global markers required for your exposure. Alternatively, record the locations of opposite corners of your sample if all you need is the position of the center of the sample (no alignment).
11. Click on “vent airlock” again. While the airlock vents up, unlock the holder from the microscope stage. At this time, switch off the microscope light source and the height meter.
12. When the airlock is vented, open the airlock door, then *carefully* remove the holder from the microscope stage and *oh-so-carefully* reinsert into its slot in the airlock, taking great care not to bump the focus mark/Faraday cup assembly, at the leading edge of the holder, against any object.
13. Close the door and click on “pump airlock” again.
14. Wait until the airlock pressure is < **1.0 x 10^{-5} Torr**. This will take 5 to 10 minutes.
15. Open a terminal window, and type the command “**`subl <n>`**” where <n> is the **slot number** of the holder you are using. Wait for the holder to complete its move to the stage, at which time the command prompt will return.
16. (**Optional**) Type the command “**`pg select holder <m>`**” where <m> is the **table number** corresponding to the table upon which your sample is mounted. The system will proceed to verify the location of the Faraday cup aperture and the focus mark, both located on the holder.
17. (**Optional**) Type the command “**`pg archive restore beam <current>_<aperture>_table`**” to restore the beam definition for the first beam to be used in the expose job. **<current>** is in units of nanoamps, and is expressed using “na” as a decimal point, as in “2na5” for 2.5 nanoamps, “0na5” for 0.5 nanoamps, and “5na” for 5 nanoamps. **<aperture>** is the final aperture size in microns, and can be 200um, 300um, or 400um. The system will restore the column settings for the requested beam, and then verify/adjust the position of the final aperture. N.B.: not all combinations of currents and apertures exist. To see a list of all defined beams, type “**`pg info archive beam`**”.
18. Launch your writing job by typing “**`ce <netid>`**” where **<netid>** is your ND NetID. Then type “**`job jobs/<filename> -f <holder> 0 <xpos,ypos>`**” where **<filename**> is the name of the file you exported from Cjob; <**holder**> is the table number, same as in step 16 above; <**xpos,ypos**> is one or more pairs of coordinates, in microns, corresponding to the center of the sample (for the no-alignment case), or of the premarker (if used), or of three or four global alignment marks (for the alignment case). Do include a comma (but no spaces) between X and Y values, and do include a space between sets of coordinates (if more than one are required).

19. When the write job completes, the command prompt will return in the terminal window. Now type "**`subu <n>`**" where **<n>** is the slot number, same as in step 15 above. Wait for the holder to complete its move back to the airlock, at which time the command prompt will return.
20. Click on "vent airlock". When the airlock has vented to atmosphere, open the airlock door and *carefully* remove the holder from the airlock, and place it on a clean wipe on the table.
21. *Carefully* remove your sample from the holder. Now *carefully* carry the now-empty holder back to the airlock, and return the holder to its slot. Close the airlock door, and click on "pump airlock".
22. Disable the system in Coral. Be sure to answer the questions that Coral will ask you.
23. Tidy up the area, return tools to their proper locations, collect your belongings.