A typical polarized SANS set-up might look something like this:

1) Chose detector distance, source aperture, wavelength, and wavelength spread. Set-up (or copy from template) Cell files #1-20 (see 'File Header Labeling' link for details) in scan slots 1-20. Patch sample location to Huber for files #1-20; initialize electromagnet if it will be used.

2) Slots 21-25 might be used for alignment scans. For example: #21 alignment of polarized beam center and attenuation determination (trans), #22 alignment of polarized beam stop and determination of size needed (scatt), #23 alignment of unpolarized beam center and attenuation determination (trans), #24 alignment of unpolarized beam stop and determination of size needed (scatt). The beam center, beam stop size, and beam stop alignment probably won't change between polarized and unpolarized condition (though it should be checked), but the minimum attenuation needed for transmission scans certainly will change!

3) Align sample with laser, then move guide 9 (under DeviceMove) to "empty" and fix. A neutron camera may be necessary for sampled housed within a cryostat.

4) Run a quick scattering run to make sure the sample alignment looks good.

5) Add 3He to sample chamber, check solenoid movement in and out of beam, then pump down. To enable 3He type IFOpen HeInterface, and then IFTalk HeInterface "He3AnaEnabled()".

6) Run scan #1 to get beam center and figure out minimum number of attenuators needed for unpolarized transmissions. Patch beam center for files #1-20. Set attenuation for files # 1, 2, 3, 9, 15, 16, 17, and 18.

7) Run scans 2 and 3 to get initial 3He polarization (use modules 1 and 2 in IGOR polarized reduction).

8) Set field and temperature to desired state.

9) Run scan #4 to determine minimum number of attenuators needed for polarized beam transmission and patch this number into files 4, 5, 6, 7, and 8. If polarized beam center differs from unpolarized transmission value, update the new beam center into files 4-8 and 10-14.

10) Run scans #4 thru #8 to determine supermirror and flipper efficiency (using IGOR module 3). You may need to change vertical flipper current slightly; if so patch this value into files #1-20. To change 3He orientation use IFTalk HeInterface "He3AnaFlipOff()" and IFTalk HeInterface "He3AnaFlipOn()", for "Up" and "Down", respectively.

11) Using an alignment scan similar to #10, center beamstop and check your scattering intensity. Patch the Y beamstop value into scans #1-20. Patch the X beamstop values into scattering scans 10-14 and 19-20. All other (transmission scans) should have the X beamstop value set to -15.0.

12) If desired, check the unpolarized beamstop scattering position in an alignment scan similar to #19 and patch any changes in beamstop position into scans 19 and 20.

13) Run blocked beam polarized and unpolarized scattering # 14 (and #20 if using unpolarized scattering).

14) Check that flippers are turned on for scans 5-6 and 11-12, and off for all other scans. Enter relevant values into File Parameter Checker (column B) and check that your files #1-20 match the setting given in columns E through V.

Congratulations, you are now ready to run this configuration! (If you have more configurations, you may want to align them now in a similar fashion using slots 21-40, 41-60, etc.)

Basic polarized run sequence files may look something like:

IFTalk HeInterface "He3AnaFlipOff()" //to be sure the 3He is set to "Up"

run scan 1-2 //check 3He polarization (scan 3 is already done)

run scan 9 //Check sample transmission (this could change over time due to ice formation, precipitation, cleaving, etc.)

run scan 11 //DU Scatt

run scan 10 //UU Scatt

run scan 11 //DU Scatt

run scan 15-16 // (scan 8 already done)

run scan 1-2 //check 3He polarization (scan 3 is already done)

IFTalk HeInterface "He3AnaFlipOn()" //FLIP CELL DOWN

run scan 1-2 //check 3He polarization (scan 3 is already done)

run scan 17-18 // in combination with 15-16, this measures sample depolarization, plus SM and flipper efficiencies

run scan 13 //UD Scatt

run scan 12 //DD Scatt

run scan 13 //UD Scatt

run scan 1-2 //check 3He polarization (scan 3 is already done)

// CHANGE SAMPLE OR CONDITION AS DESIRED

run scan 9 //Check sample transmission (this could change over time due to ice formation, precipitation, cleaving, etc.)

run scan 13 //UD Scatt

run scan 12 //DD Scatt

run scan 13 //UD Scatt

run scan 17-18 // (scan 8 already done)

run scan 1-2 //check 3He polarization (scan 3 is already done)

IFTalk HeInterface “He3AnaFlipOff()” //FLIP CELL UP

run scan 1-2 //check 3He polarization (scan 3 is already done)

run scan 15-16 // in combination with 17-18, this measures sample depolarization, plus SM and flipper efficiencies

run scan 11 //DU Scatt

run scan 10 //UU Scatt

run scan 11 //DU Scatt

run scan 1-2 //check 3He polarization (scan 3 is already done)

REPEAT AS NEEDED. DON’T FORGET TO TAKE AN EMPTY CELL AS A SEPARATE CONDITION, ALTHOUGH FOR THIS CASE UU AND DU SCATTERIGN ARE SUFFICENT IF THE HOLDER IS NON-MAGNETIC (I.E. DD AND UD AREN’T NECESSARY).