# Operating Procedures for RECO1 & RECO2

<u>Reconstruction of Data</u>

1) Open **CT Pro 3D** CT Pro 3D
   a. Remember, when the computer you are working on is receiving files from the scanner, it cannot reconstruct data
   b. You will need to use the other RECO computer to reconstruct during scans
2) **File** -> **Open** -> navigate to your scan's .xtekct file (usually on D drive or possibly on the Teilhard server)
3) **Image Tab** -> **Comparison of sequential images** -> check **+/-1**, set speed to fastest, keep **At sequence end, reverse direction** checked and click **Start**
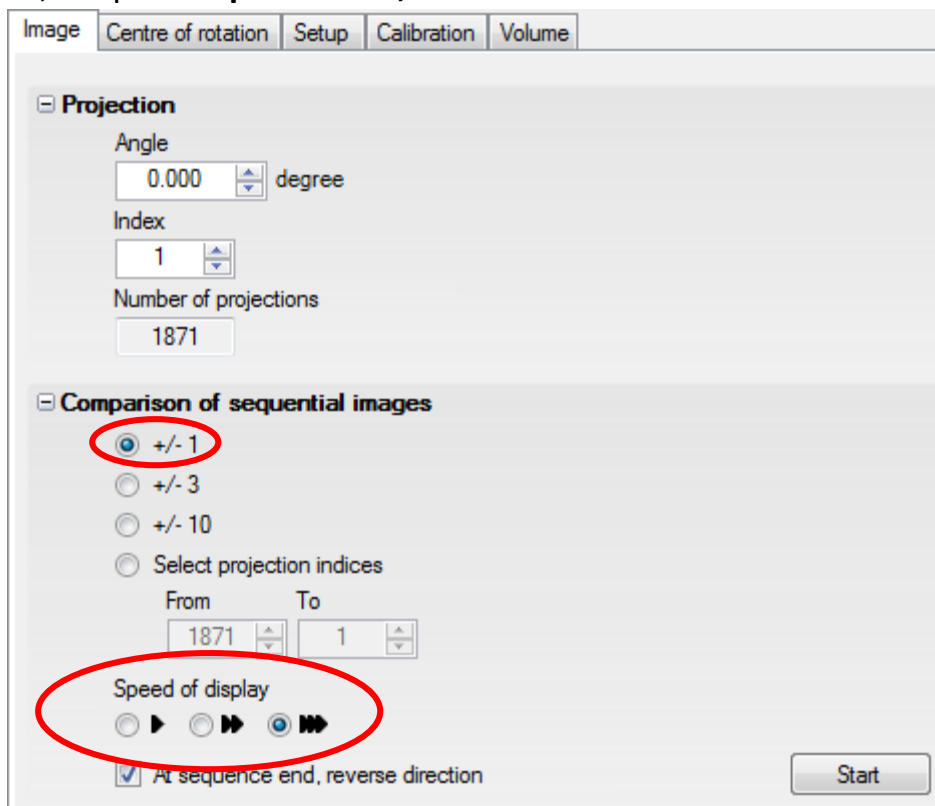
4) Watch image on right, if sample changes place significantly it may need to be rescanned or be the cause of artifacts discovered later on in procedure. Take note, but proceed either way.

5) **Centre of rotation Tab** -> **Centre of Rotation** -> **Slice selection** -> select **Dual**
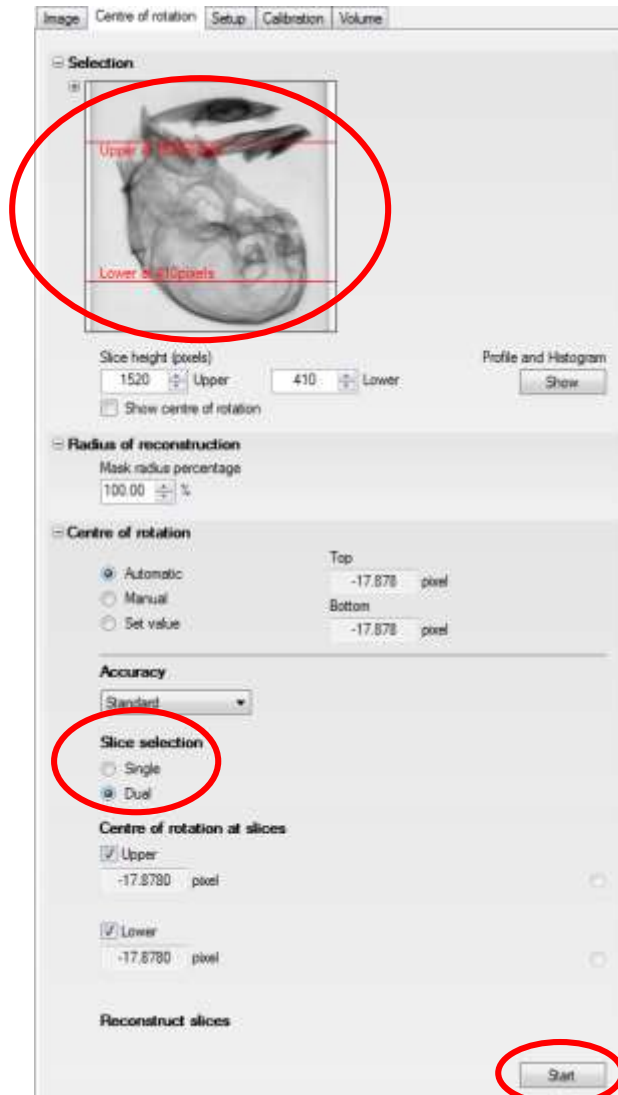
6) Move red lines in top left image to intersect sample at two different, semi-distant points
   a. Make sure these cross sections contain a decent amount of contrast in the image otherwise the center of rotation calculation may fail.

7) Click **Start**

8) Within 1-2 minutes **Found** should appear next to **Upper** and **Lower**

9) Check Image at right, if it's in focus proceed onto next step, if it's out of focus consult a SMIF staff member for using the **Manual** option under **Center of rotation**

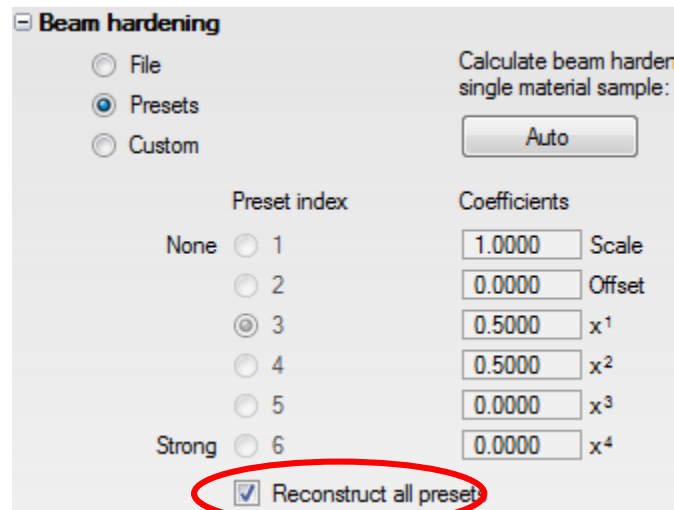10) **Setup Tab** and position red line to create a cross section of your sample
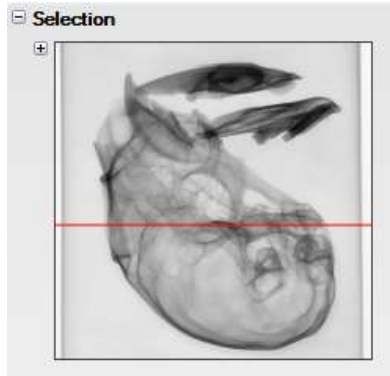
11) Under **Radius of reconstruction**, change **mask radius percentage** to **75%**
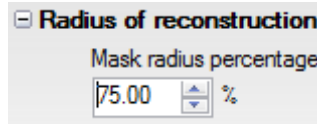
12) Under **Reconstruct slice** at bottom of panel, change **Quality** to **25%**
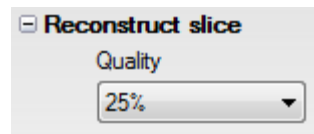
13) Under **Beam hardening** menu check **Reconstruct all presets** and click **Start** at bottom of left panel

14) Cycle through the presets leaving selected the one that results in the best quality image on the right

15) Under **Noise reduction** menu check **Reconstruct all presets** and click **Start** at bottom of screen (same process as steps 13 and 14)

16) Cycle through the presets leaving selected the one that results in the best quality image on the right

17) When satisfied with reconstruction image quality at right, change **Mask radius percentage** back to **100%** and **Quality** back to **25%**

18) Go to **Volume Tab**

19) Crop image on right in both views by selecting the appropriate view from the top left of the screen by dragging the sides of the red box

    a. Make sure that you leave a good amount of space on either edge as you could be cropping your sample on other not currently viewable angles
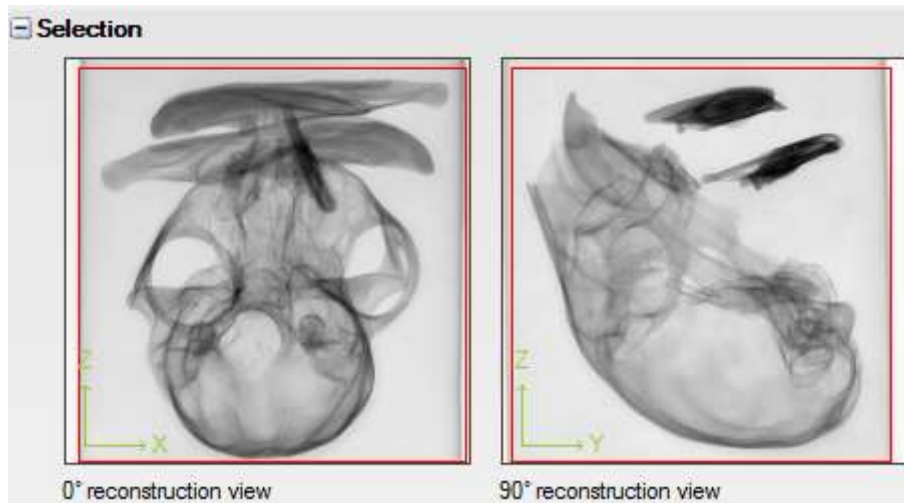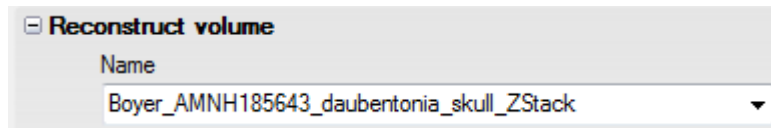

20) Double check to make sure box does not clip out any part of your region of interest

21) Under **Output Format** select **16bit** under **TIFF image stack** and change
Maximum: values above this are clipped to **65535** under **Specified scaling**
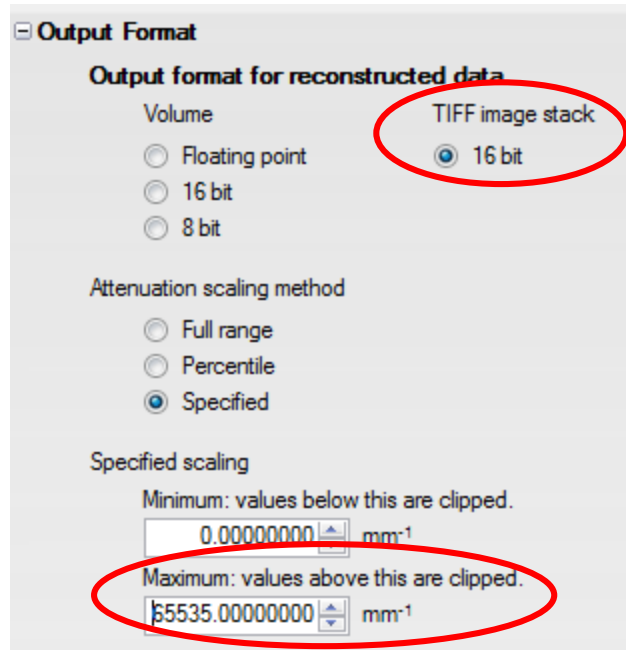
22) **Reconstruct volume** -> Name should be in form to that in below image

23) Click **Start (ONCE!)** [Start] and message should appear next to button
stating "CT agent accepted file (YourFileName.xtekct)

24) **Right-Click** [4:23 PM 8/28/2013] , select **Restore** and **CT Agent** window
should appear to indicate reconstruction time

25) Note time and status of CT Agent before trying to reconstruct additional
scans on computer or loading current scan into Volume Graphics
   a. Multiple reconstructions can be set up to run one after the other by
      repeating this procedure and selecting the **Pause** button in CT Agent
   b. When ready, the press the **Play** button and the reconstructions will
      be completed in the order they are in on the CT Agent Queue

26) When CT Agent says "**Idle**" your scan has been reconstructed and saved