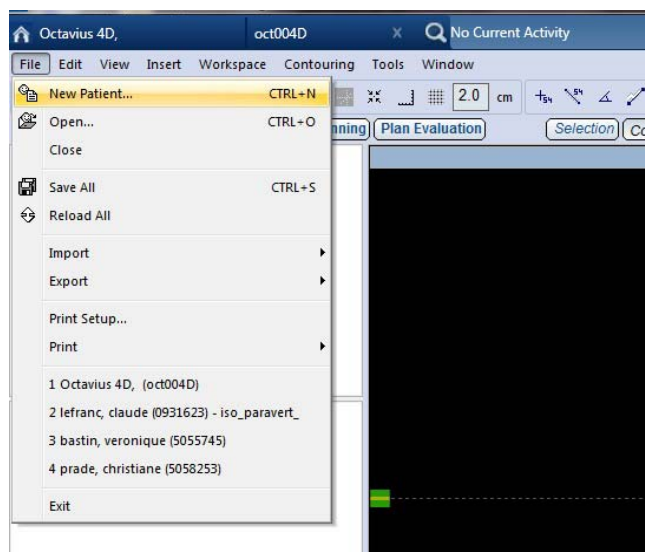


How to create a phantom in Eclipse

This technical note describes the procedure to create an OCTAVIUS 4D phantom in Eclipse. This can be useful if the import of the artificial phantom (provided with the phantom) fails, or if an extra-large image is needed to allow insertion of a large couch.

1. Make a new patient:



The screenshot shows the 'Patient Explorer' dialog box. The 'New' tab is active. The 'Patient Personal' section contains the following fields: Last Name (Oct4D), First Name (Oct4D_XL_for_couch), Middle Name, ID1 (Oct4D), Universal ID, SSN, Birth Date, Age, Citizenship (none), Sex (Unknown), Marital (none), Passport Number, E-mail Address, Home Phone, Work Phone, Mobile Phone, Mobile Phone Provider (none), Other Phone, Fax Number, Pager Number, and Clinical Trial (unchecked). The 'Address' section shows Hospital (Sainte Elisabeth) and Show History (unchecked). The 'Patient IDs' table is as follows:

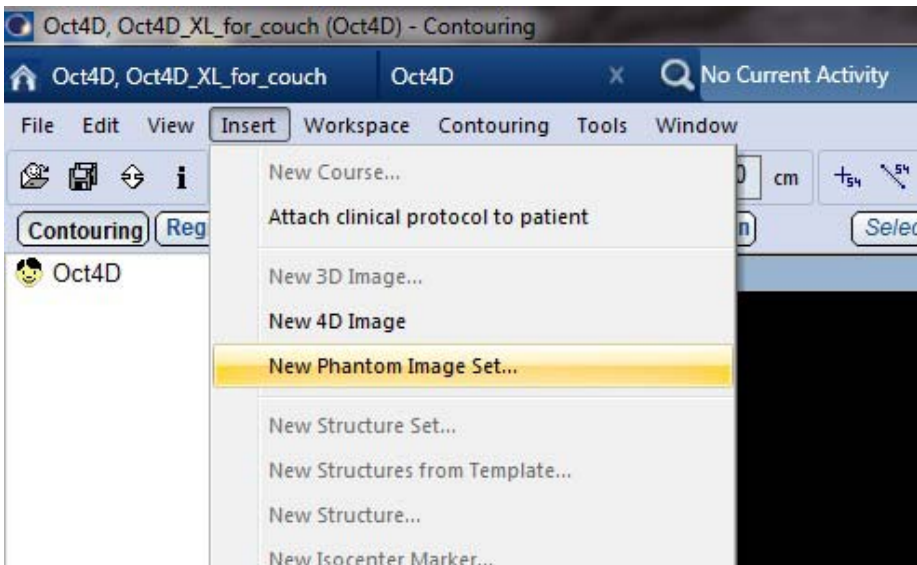
Patient ID	Value	Entered On	Expiry Date
- Global IDs			
ID 1	Oct4D	02.07.2014	Active
ID 2			

The 'Hospital' section shows Hospital (Sainte Elisabeth) and Status (New Patient (NP)). The 'Department' table is as follows:

Primary	Department	Hospital
<input checked="" type="checkbox"/>	Radiotherapie	Sainte Elisabeth

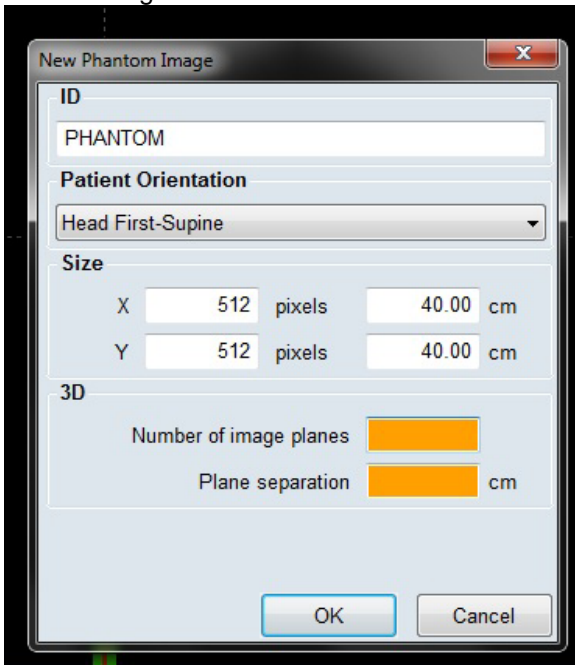
Buttons: Help, Assign/Detach..., OK, Cancel.

2. In the contouring workspace, insert a new phantom image set:

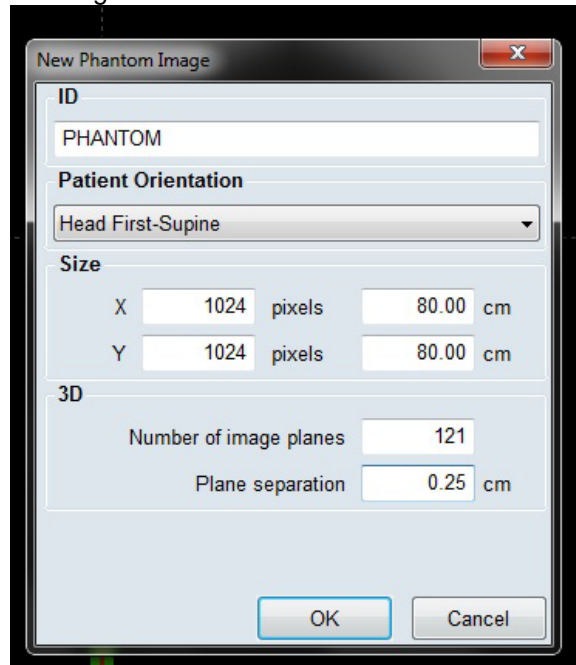


If you wish to insert a standard Varian or Brainlab couch afterwards, you can use the default size for the CT slices because Eclipse will automatically enlarge the image sizes according to the couch. However, if you want to insert a user definable couch (or if you want to considerably move the couch in the lateral direction), it is advisable to make the slices large enough from the start. Do not forget to increase the number of pixels accordingly.

Default image size:

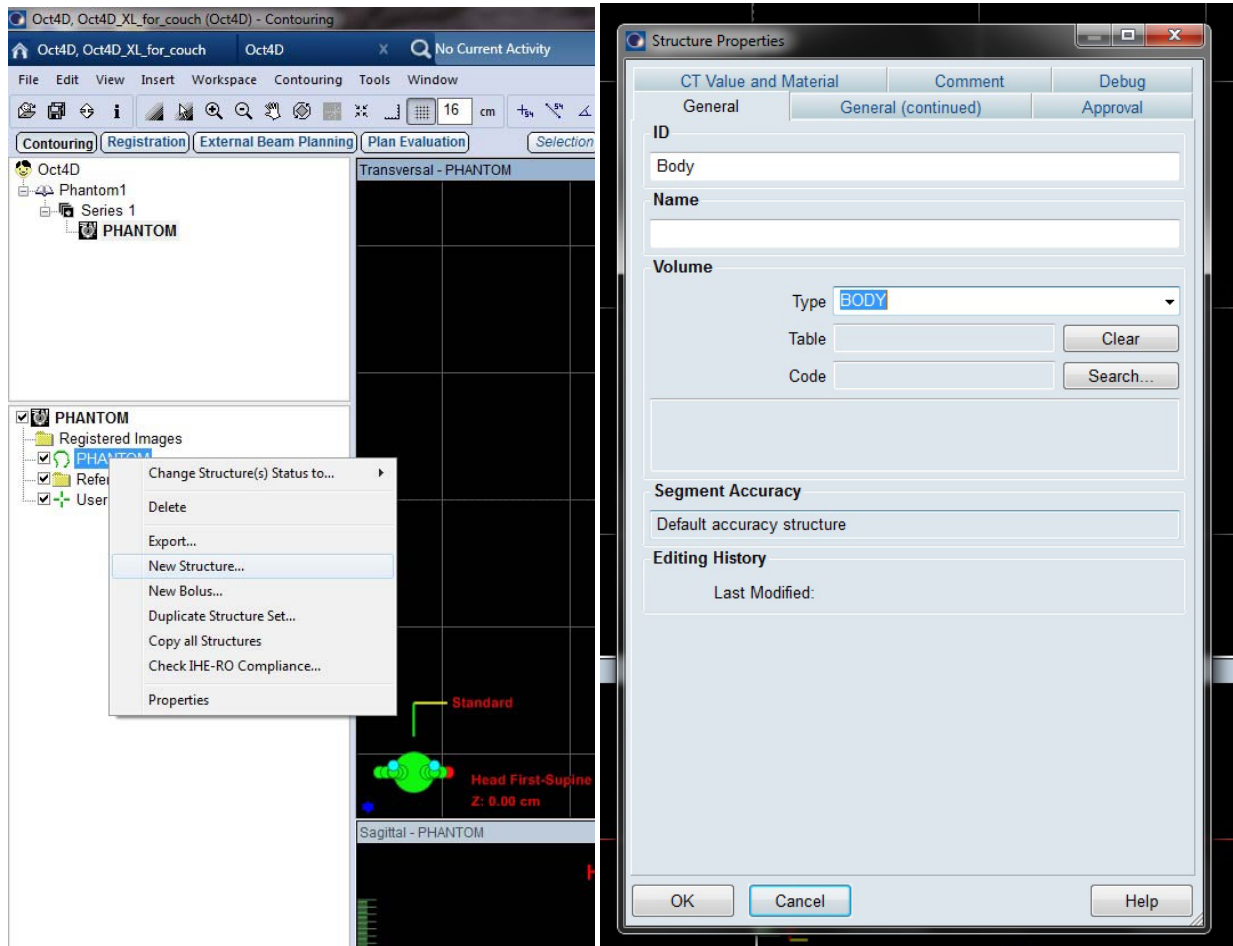


XL image size:

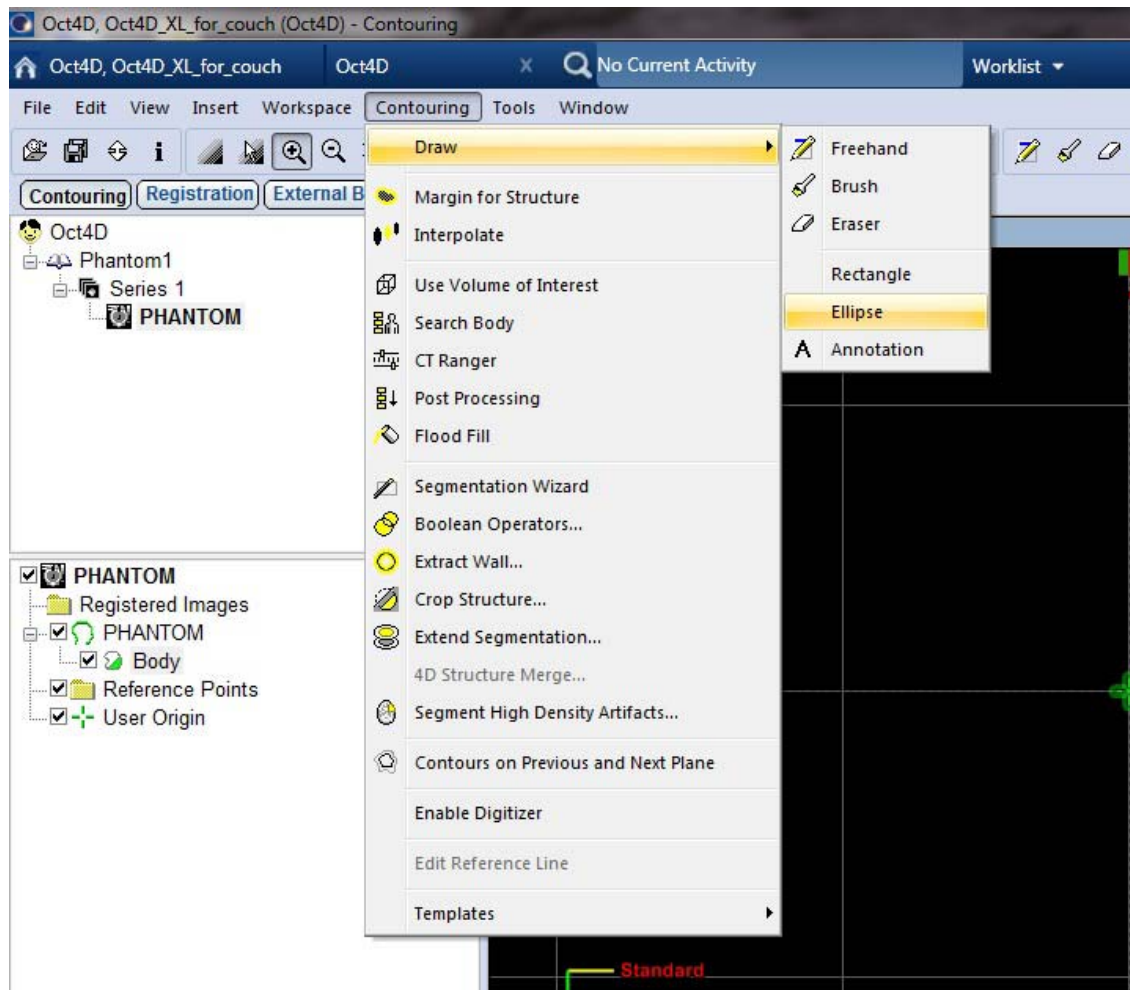


3. Make the body outline of the phantom:

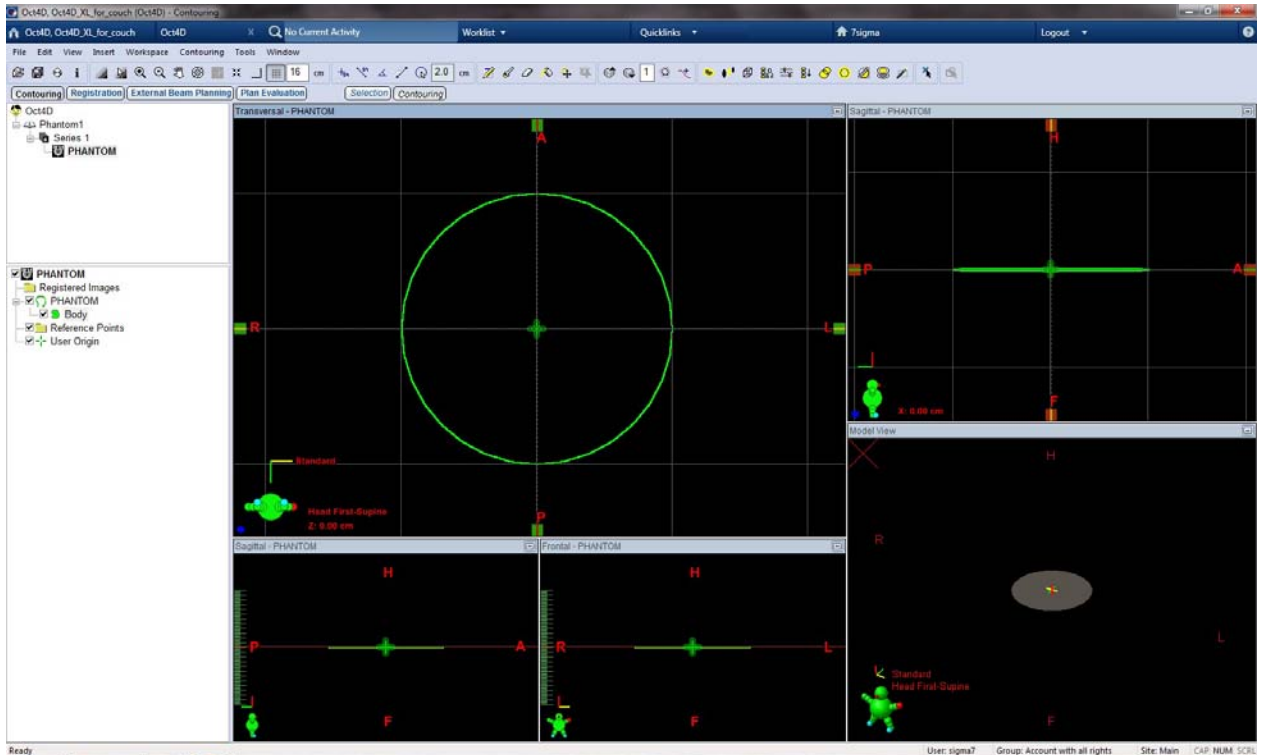
Insert a new structure:



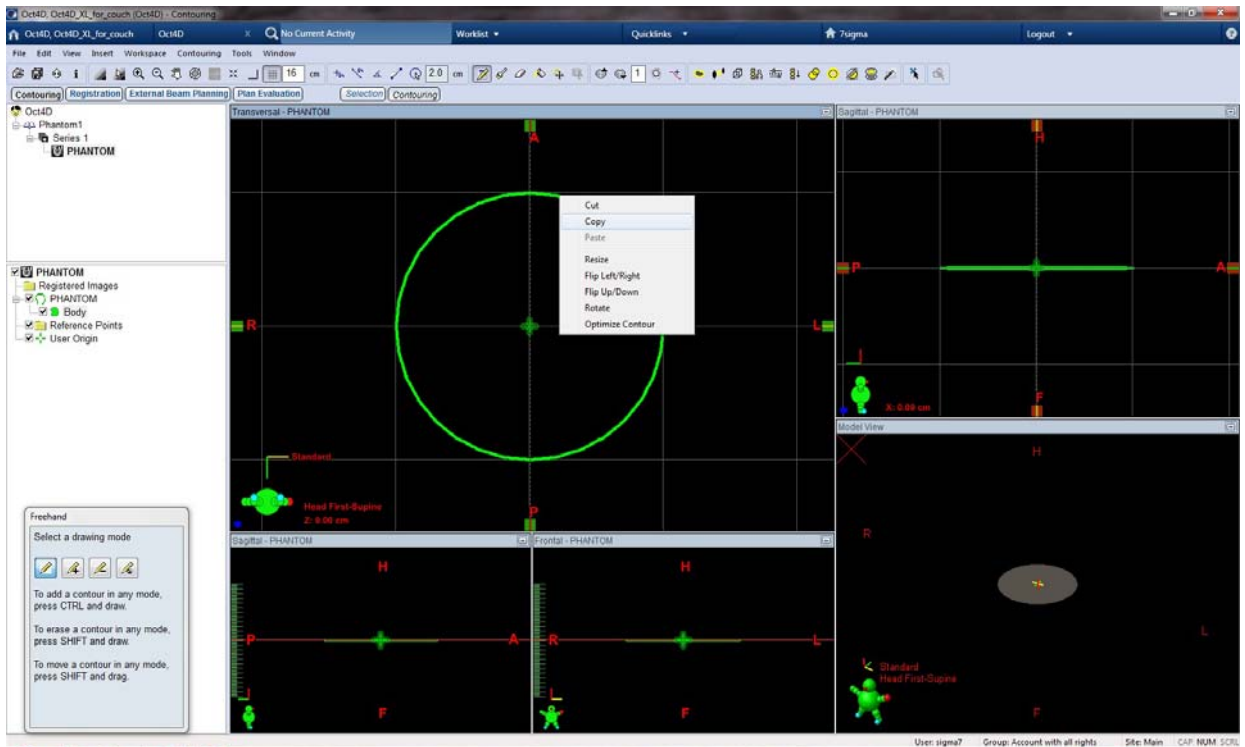
Draw a cylindrical body outline by means of the 'Ellipse' tool. By holding the 'shift' key down during the contouring of the structure, Eclipse will make a cylinder instead of an ellipse.



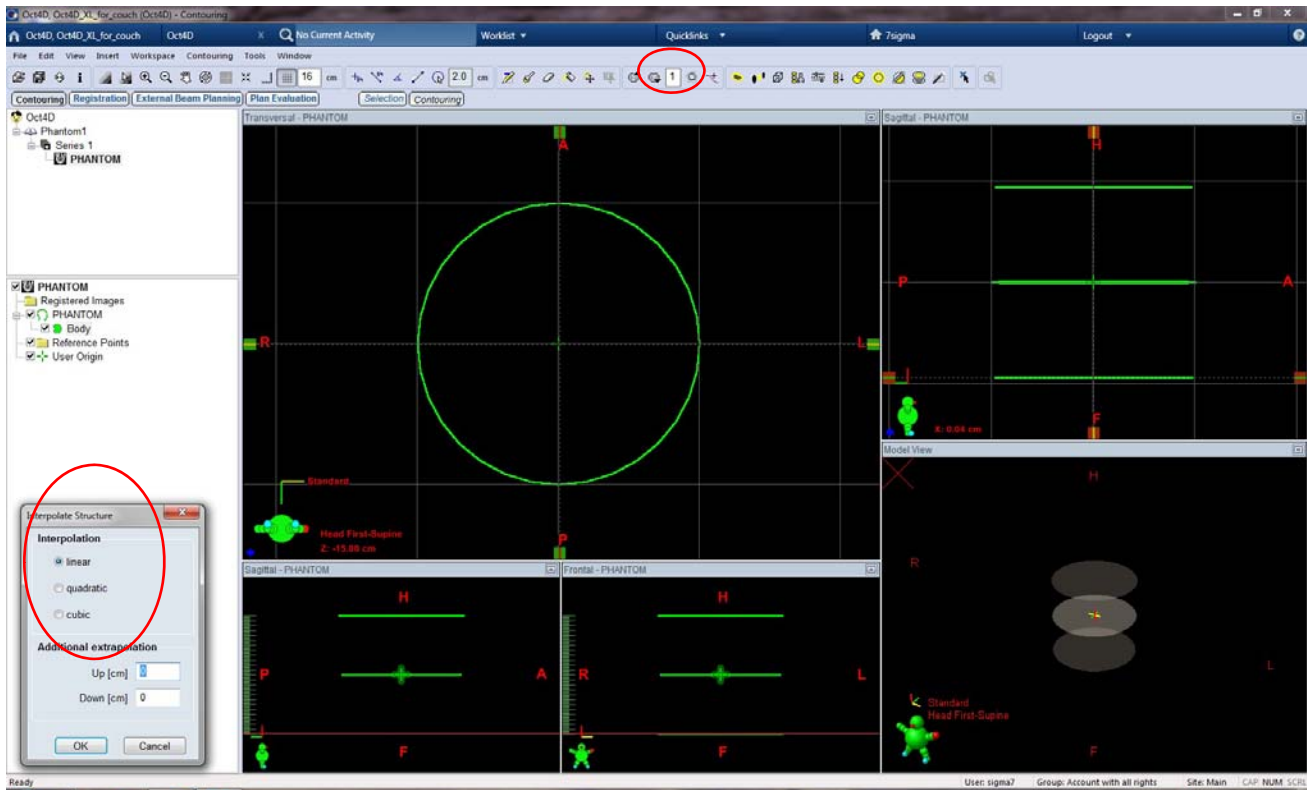
To contour a cylinder of the correct diameter (32cm), it is easier to set the grid to 16cm:



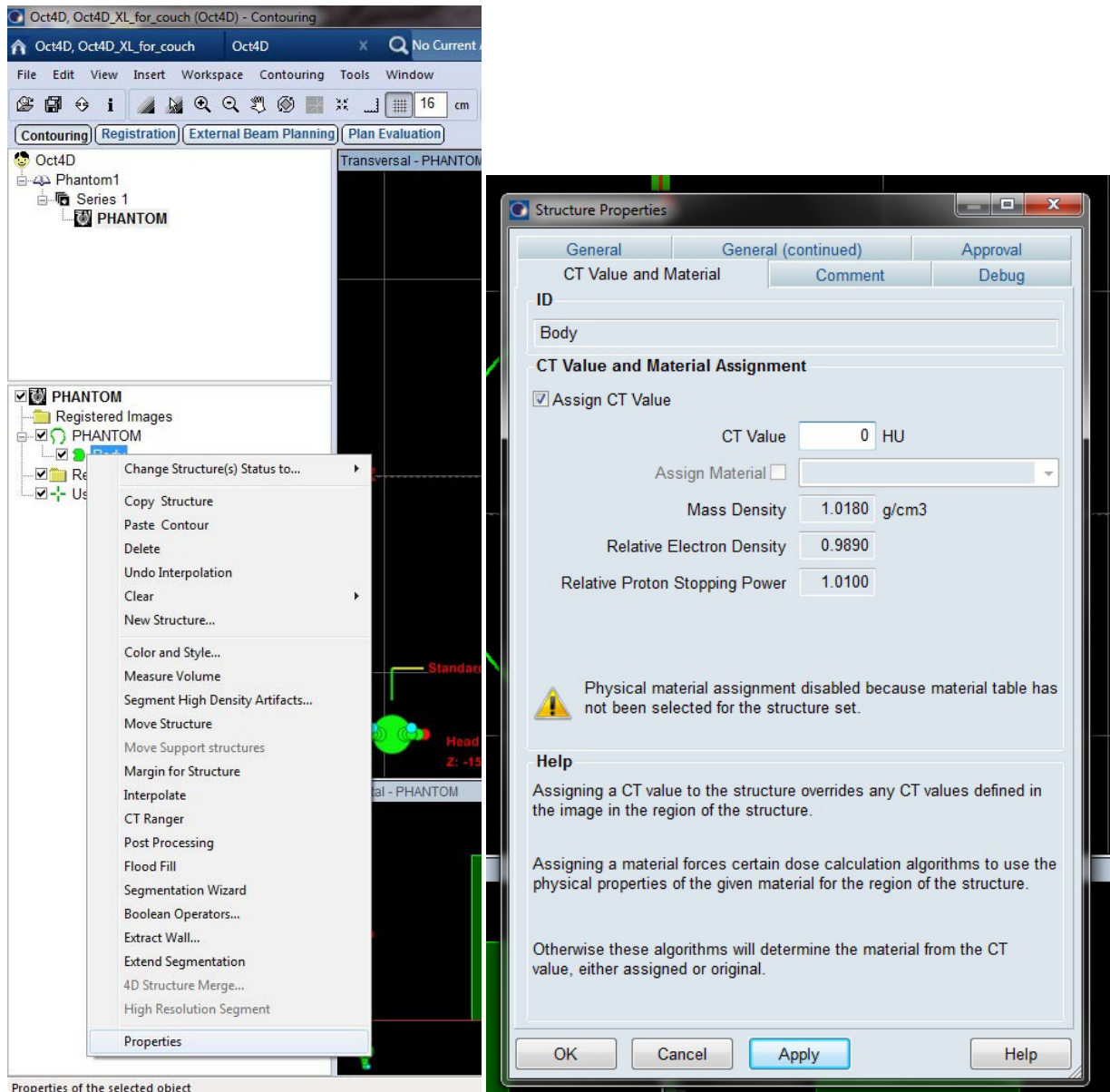
With the 'freehand' tool selected, right-click on the contour, then select 'copy'. Now paste this contour into the first and last CT slice as well (right-click on the empty slices, then paste).



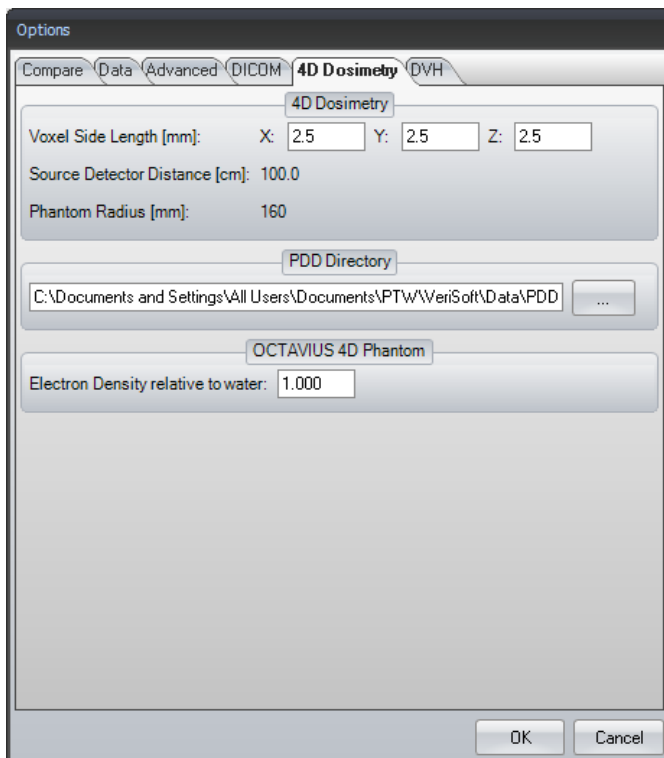
Interpolate the slices in between:



Now assign a HU to the phantom you've created by opening the properties tab of the structure:

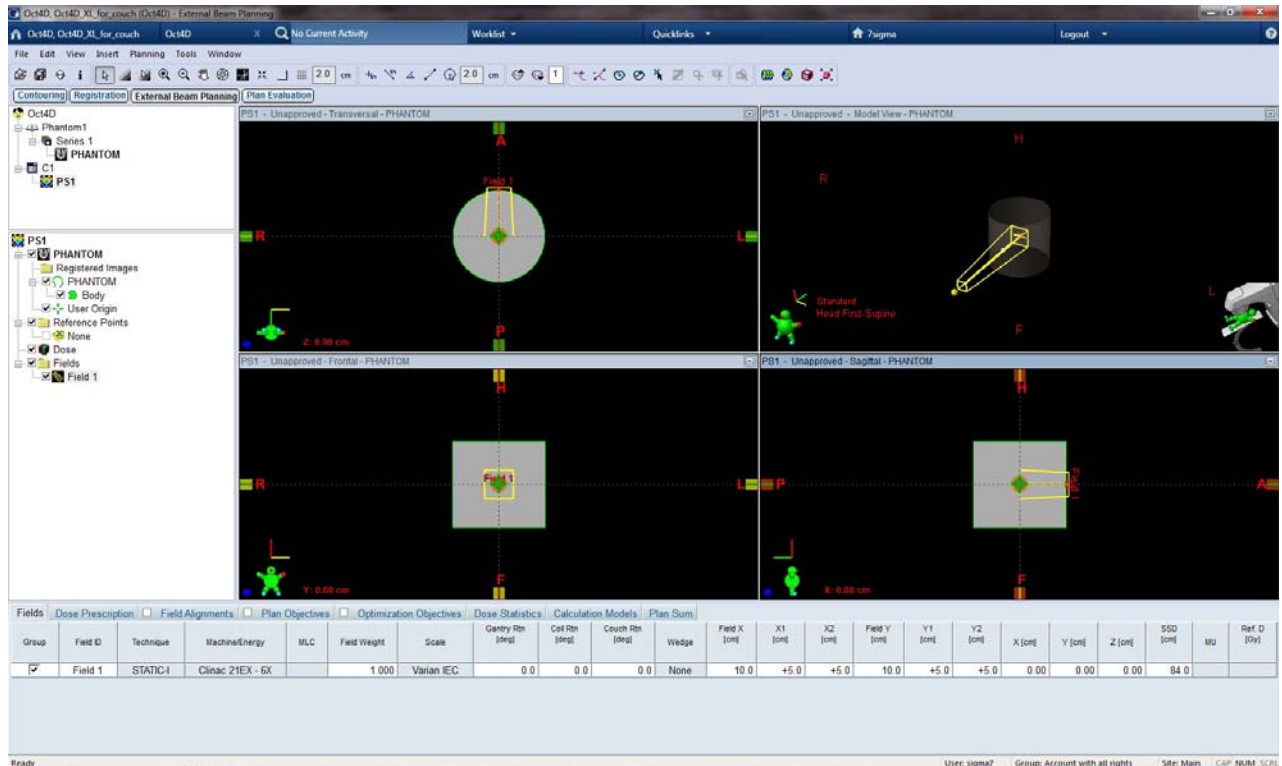


Note: When assigning HU=0 to the phantom, make sure to set the electron density to 1.000 in the VeriSoft options tab as well:



The phantom is rather close to being water equivalent. Doing all QA in water equivalent mode eliminates the need for the rescaling of the PDDs and avoids uncertainties related to the choice of material and dose to water/dose to medium issues when using e.g. the Acuros algorithm. Should you wish to assign a different HU or a material to the phantom instead, make sure you verify the consistency between the open field depth dose curves on the beam axis as calculated by e.g. Acuros and as reproduced by the OCTAVIUS 4D system.

3. To check the diameter of your contour, go to the external beam workspace and place a field on the phantom: at all gantry angles, the SSD should be 84.0 +/- 0.1 cm. If not, go back to contouring, erase your contour and start over again, this time possibly with a zoom to the appropriate grid size.



4. You can now insert the couch of your choice.

Thank you to Ann van Esch from 7Sigma, Belgium, who provided this information.

Disclaimer

Although the information in this document has been carefully assembled, PTW-Freiburg does not guarantee that this document is free of errors. PTW-Freiburg shall not be liable in any way for any consequence of using this document.

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