ADIVA Editing
(User Guide)

Document: 2/4/2021

Adiva Version 9.5

Notice

Representations in this User Guide are meant as an overview and quick reference. Full details can be found in the On-Line manuals located at the *ADIVA Corporation* website - www.adiva.com

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Why Edit Gerber and Drill Data?

- Gerber files do not line up with Drill files.
- Gerber files do not line up with each other.
- Gerber and Drill data does not line up with CAD database

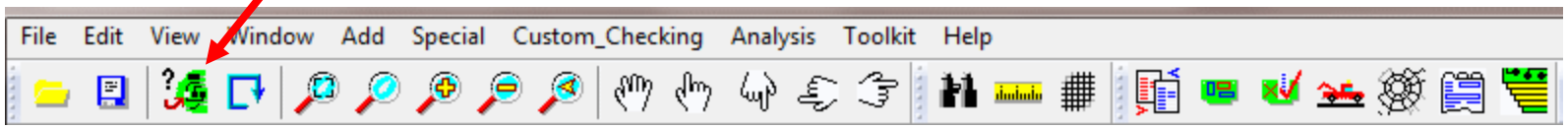
  – VERY IMPORTANT - data coordinates need to be the same as the CAD system for Netlist Compare and Violation location reference in CAD systems.

- Board Outline is not its own artwork file but it is part of another artwork file - it needs to have its own layer for analysis.
- Non-Plated Holes are mixed in the drill with the Plated Holes – they need to have their own layer for analysis.
- It may be worthwhile to remove Title Block data, coupon data, etc… to remove these items from analysis.
- There may be layers of Gerber data, that once visualized could be removed from the database to avoid analysis or unneeded database size. Greatest performance is obtained when hardware memory is not wasted on unchecked data.
- **NOTE:**

  Editing is done early in the process, right after data conversion. The intent is to prepare the manufacturing data for analysis

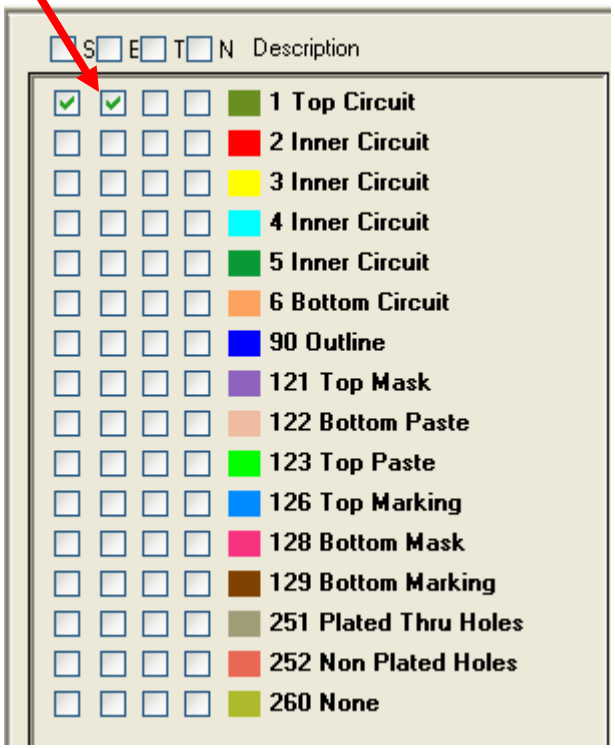
Item Selection

- An important function to understand before editing is the “Select Item” function
- Items on a layer (or multiple layers) can be selected and modified in various ways explained in this session
- To select an item, be sure you are in the “Select” mode. This is done by choosing the “Select Item” icon in Adiva’s toolbar…



Item Selection

Once in “select” mode, be sure a layer(s) is ON for Edit



Then, with the left mouse button, click on any object on that particular layer. It will highlight in white. On the left side of the Adiva screen, a report will display attributes of the selected item.

The item can also be modified by any editing function available.

To select more than one item, hold down the <shift>key while while selecting. Items will be added to a “select” list – a collection of items selected.

Another way to select a group of items is to hold down the left mouse key and drag a box over a group of items to be selected. Everything inside the drawn box will be highlighted in white meaning they are selected.

Another way to select a group of items is to hold down the right mouse key and drag a box (typically a small box) outside of a group of items. Everything outside the drawn box will be highlighted in white meaning they are selected.

Choose the “Select” button again in the toolbar, and everything selected will become un-selected (white highlight goes away).

Editing Processes

Basic Step by Step

- Many times a database is converted to Adiva but the Gerber is offset from the Drill and/or CAD system location. Data needs to align with itself and with CAD for Netlist Compare to function properly and for Violation locations to make sense to the designer during repair of the violation.
- Most edits are rather simple and require only a small amount of effort.
- Typical edits are….
  - Layer Alignment
  - Board Outline creation
  - Splitting Non-Plated holes away from the Plated Holes
  - Removing title blocks, coupons, etc…
- When complete, database should be ready for Netlist Extraction, Netlist Compare then DRC Analysis

Layer Alignment

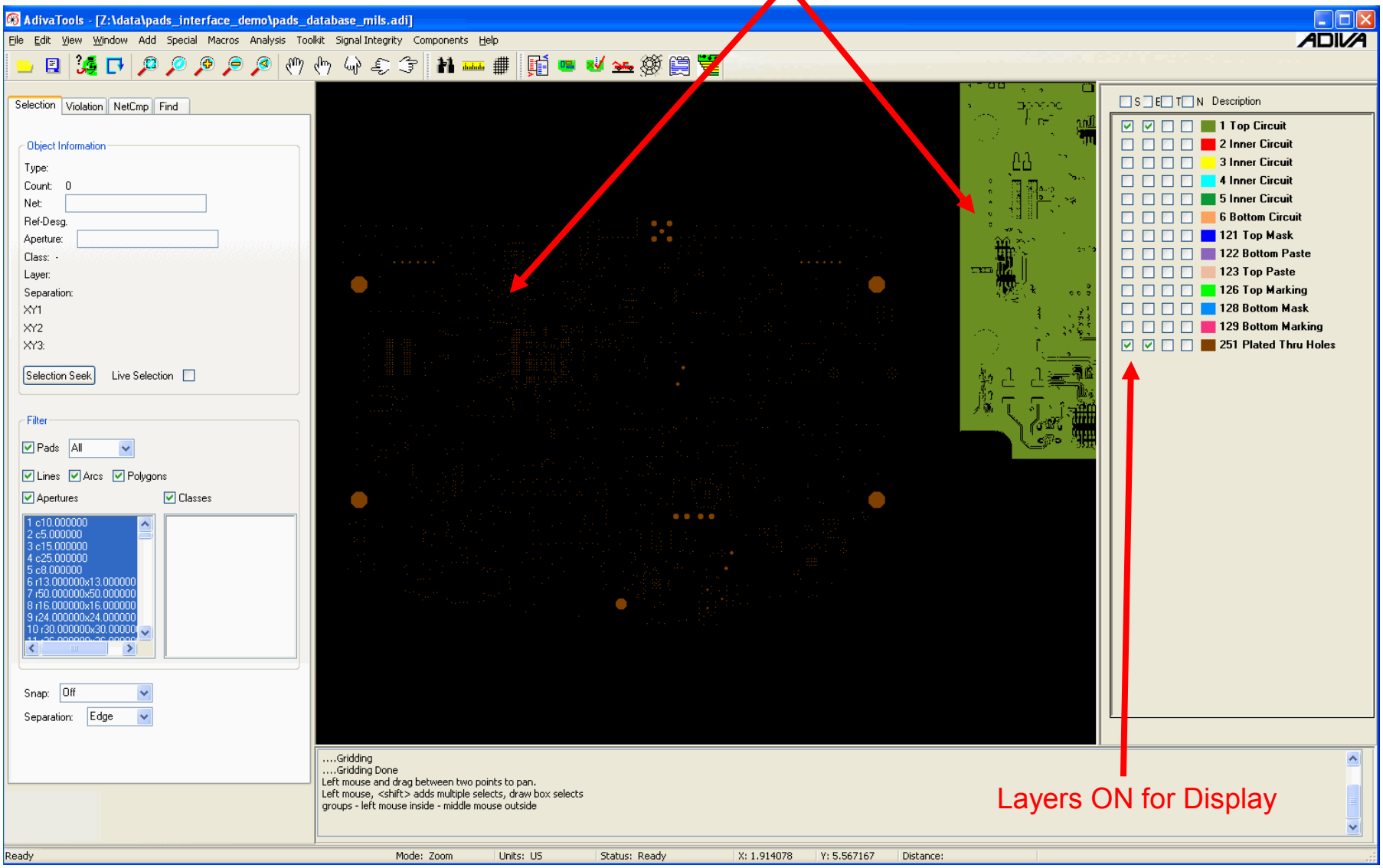
- Problem: Database Gerber layers need to be aligned to the Drill Layers.
- In most all cases, the Drill data is already aligned to the CAD database.
- It is tempting to move the drills to the Gerber location because there are usually only two drill files and many Gerber files. Verify first if the drill is already aligned to the CAD database location. If this is the case, move the Gerber to the drill so that the manufacturing data is aligned to the CAD data.
- Once the database is built, follow one of these two processes…
    - Offset by XY
    - Offset by Point and Click

Offset Layers by XY

(Can be used if offset value is known)

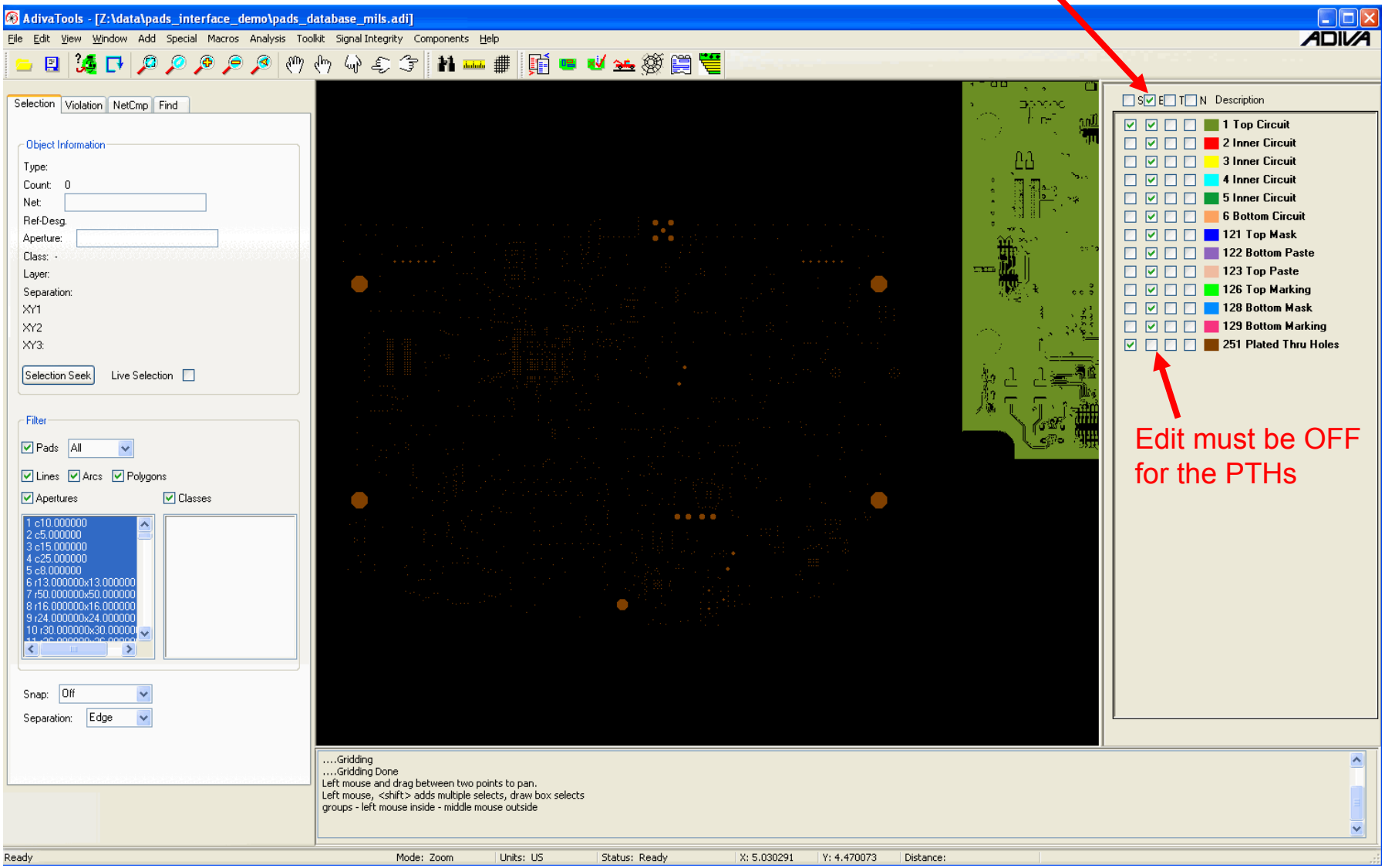
Offset Layers by XY

Notice Layer 1 (all others not shown) does not line up with the Plated Hole layer

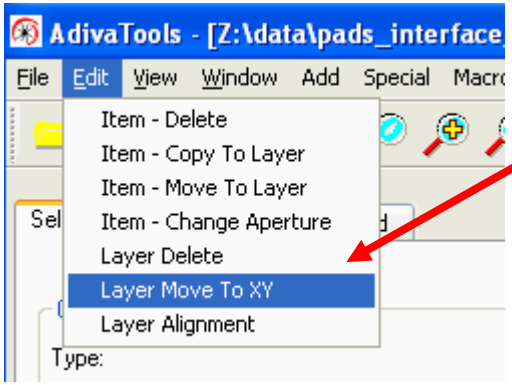


Offset Layers by XY

Turn ALL Layers ON for Edit EXCEPT for the drill layer



Offset Layers by XY

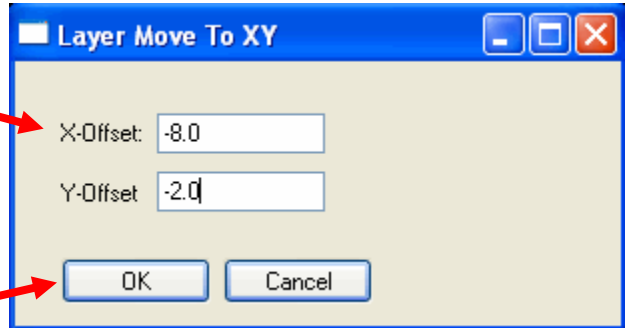


Select Layer Move to XY from Edit menu

When the Layer Move to XY dialog appears, enter an offset value in inches (or mm).

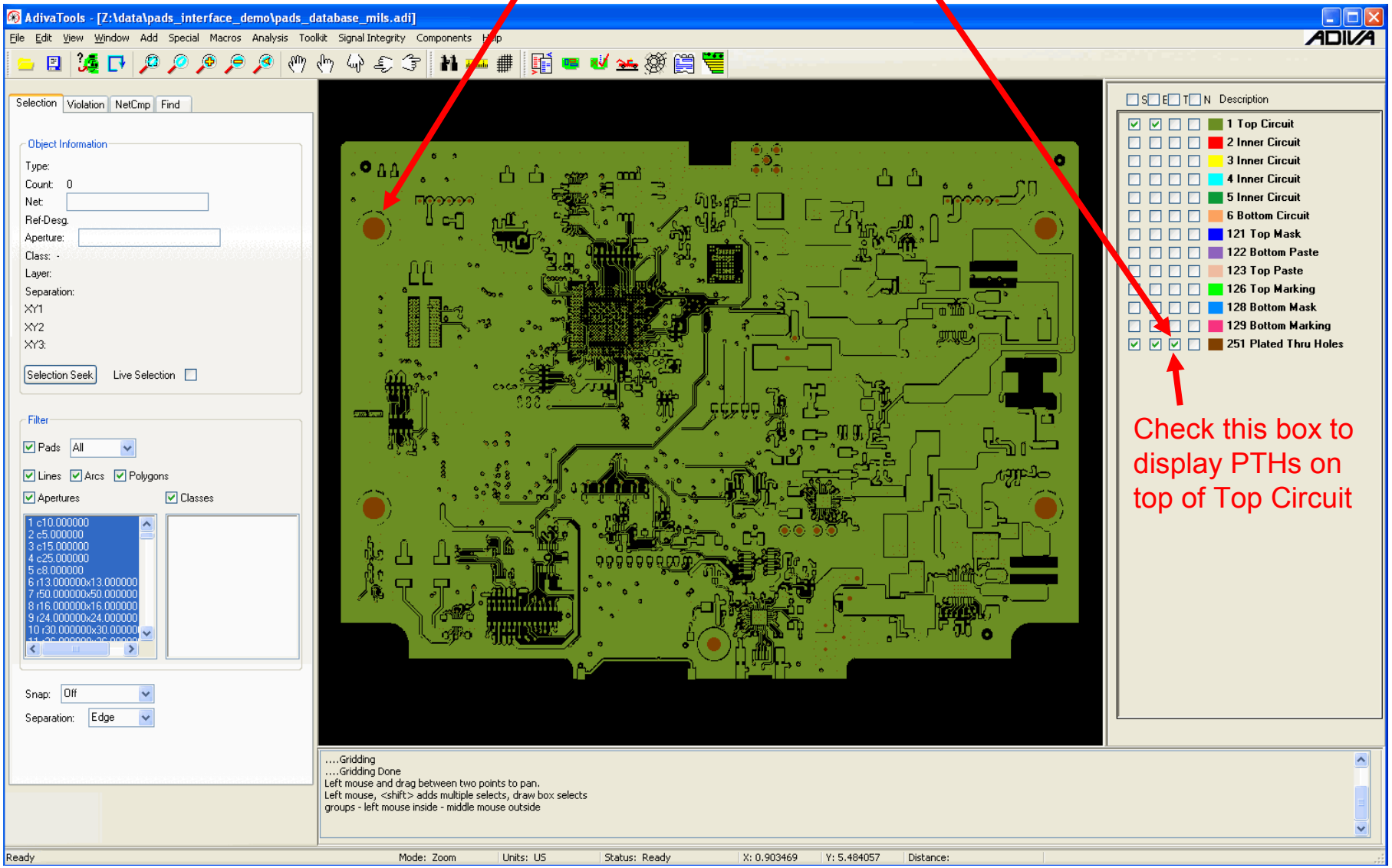
Do Not forget to provide a minus (-) sign if the plan is to move the selected layers in a negative direction.

Then choose OK to move the selected layers the offset value amount.



Offset Layers by XY

Layers should all now be aligned – adjust display to see drills on top of artwork

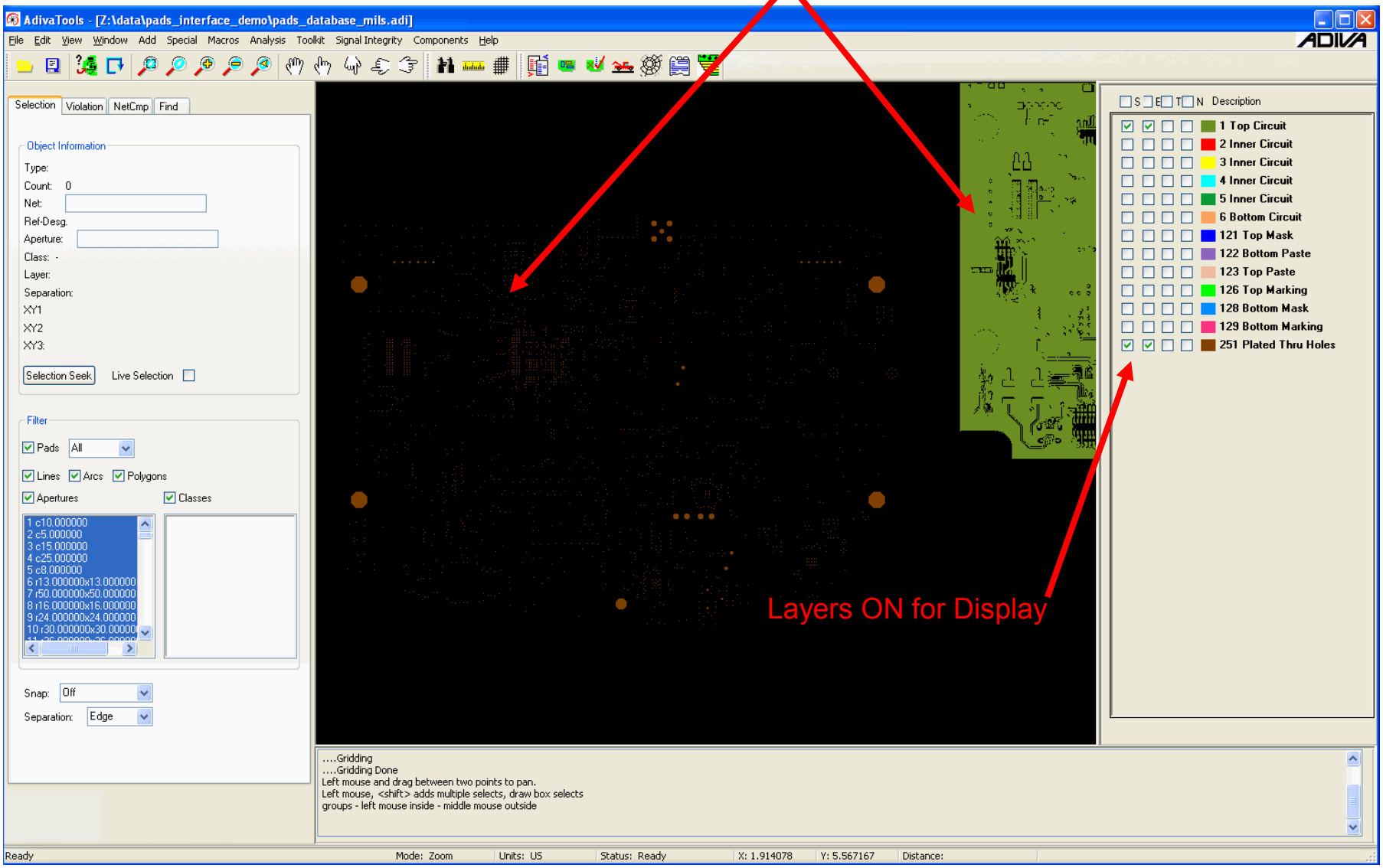


Offset Layers by Point and Click

(Handy to use if offset value is not known)

Offset Layers by Point and Click

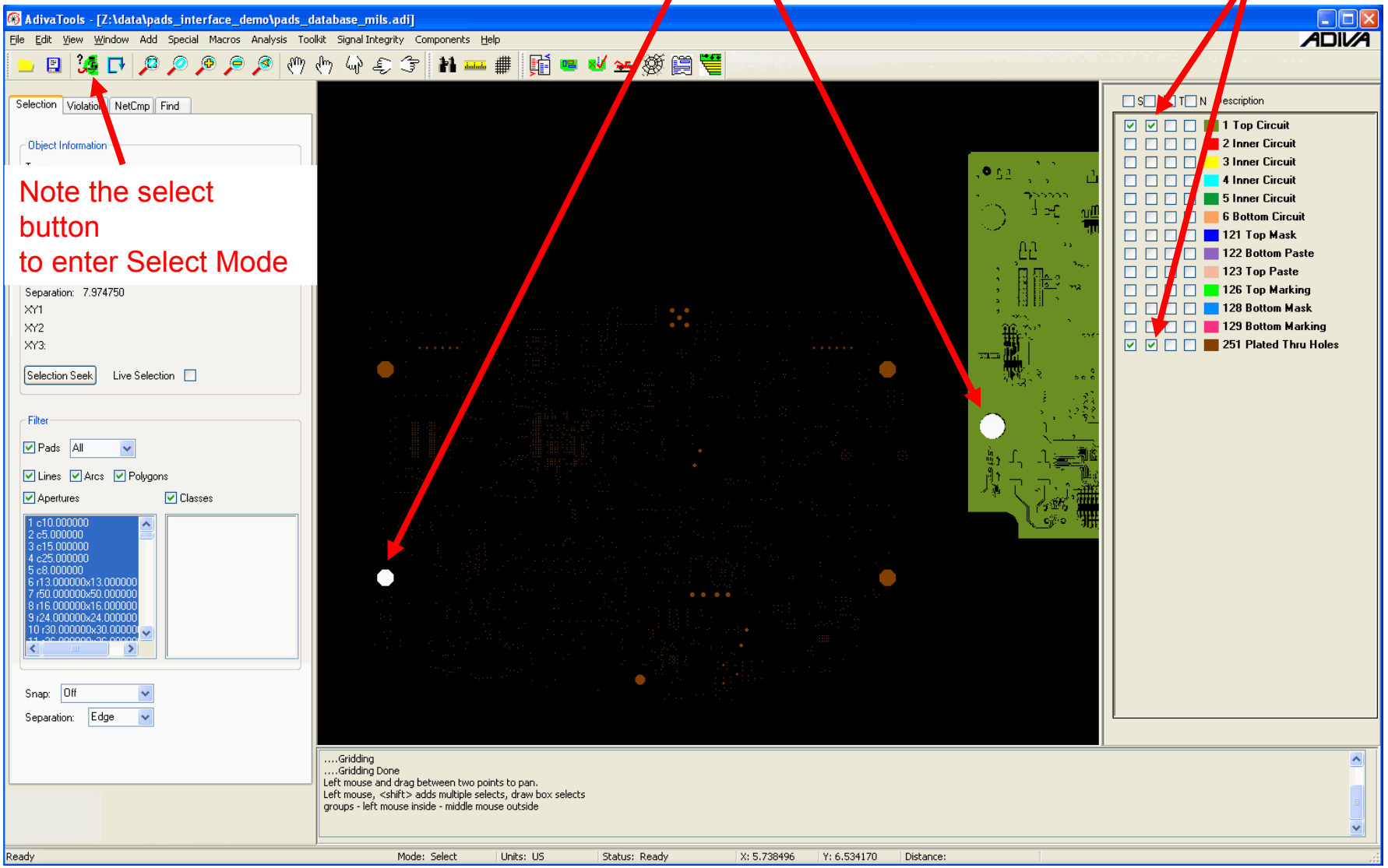
Notice Layer 1 (all others not shown) does not line up with the Plated Hole layer



Offset Layers by Point and Click

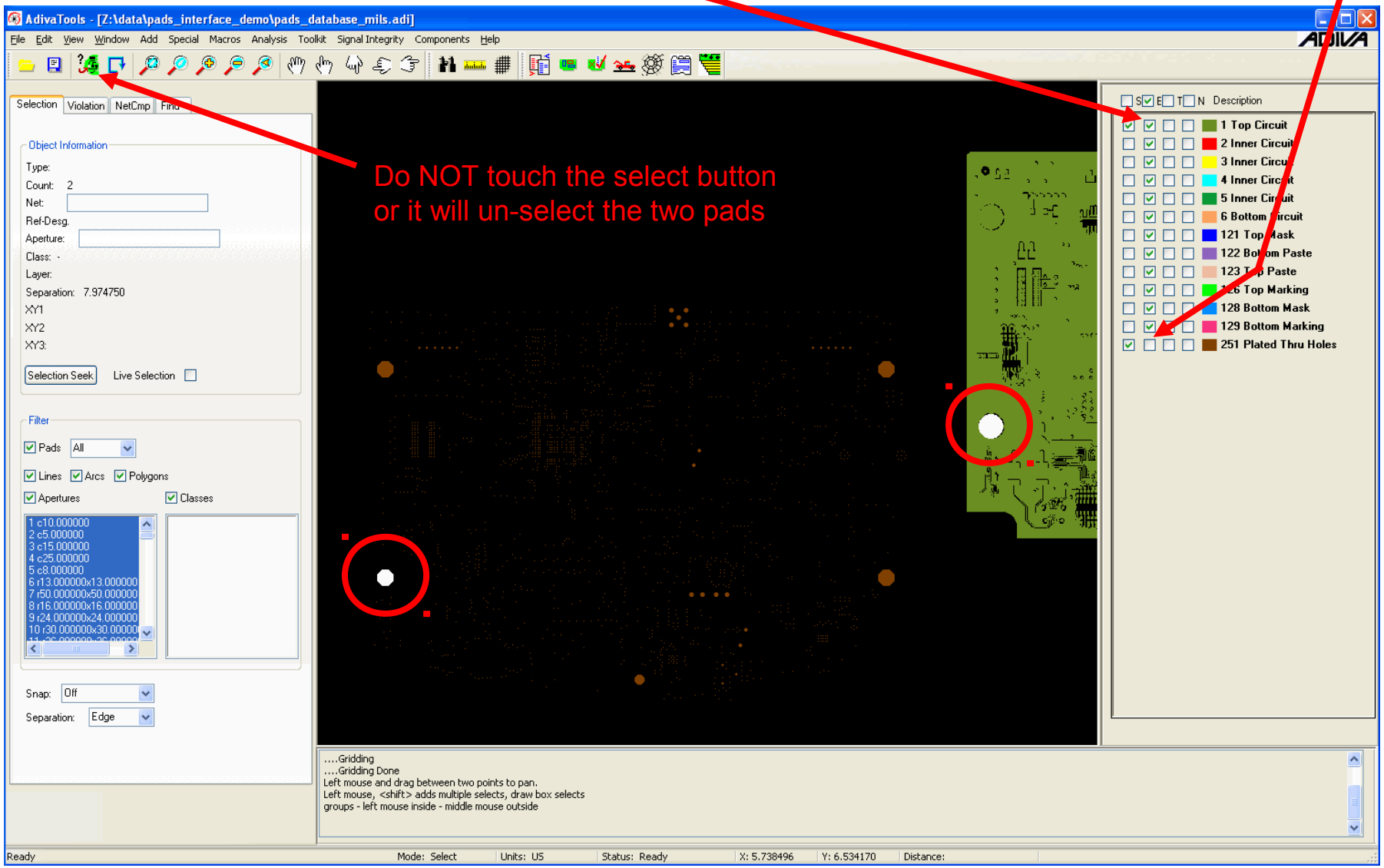
Step 2: Select a pad on layer 1 (from)…
then <shift>select a pad on PTH layer (to)

Step 1: Turn on layers for “edit”

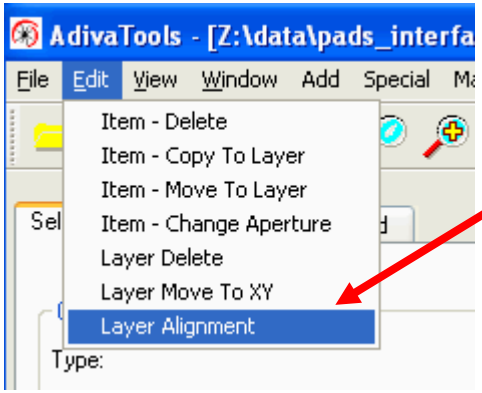


Offset Layers by Point and Click

With both pads selected, turn “Edit” box ON for all layers intended to be moved (holes should now be OFF)



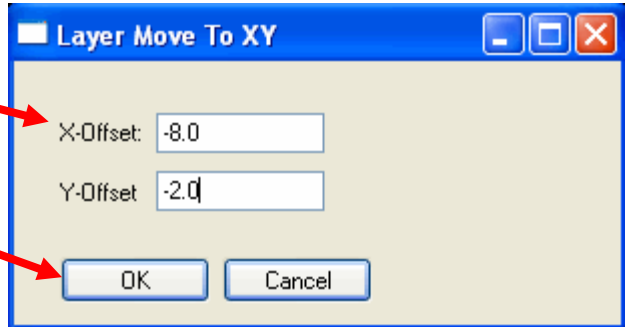
Offset Layers by Point and Click



Select Layer Alignment from Edit menu

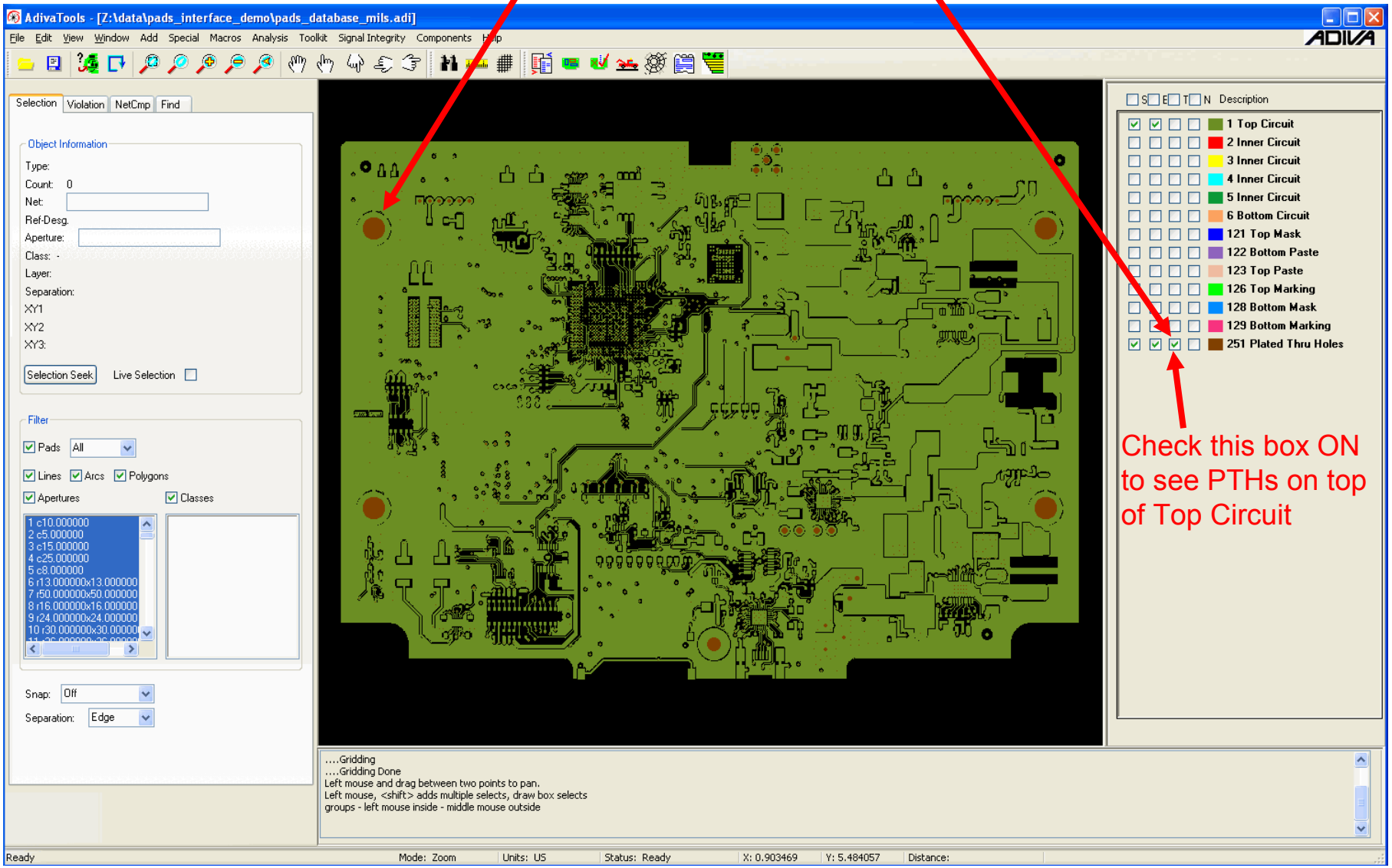
When the Layer Move to XY dialog appears, notice an offset value is already in place.

Choose OK to move the selected layers the offset value amount.



Offset Layers by Point and Click

Layers should all now be aligned – adjust display to see drills on top of artwork



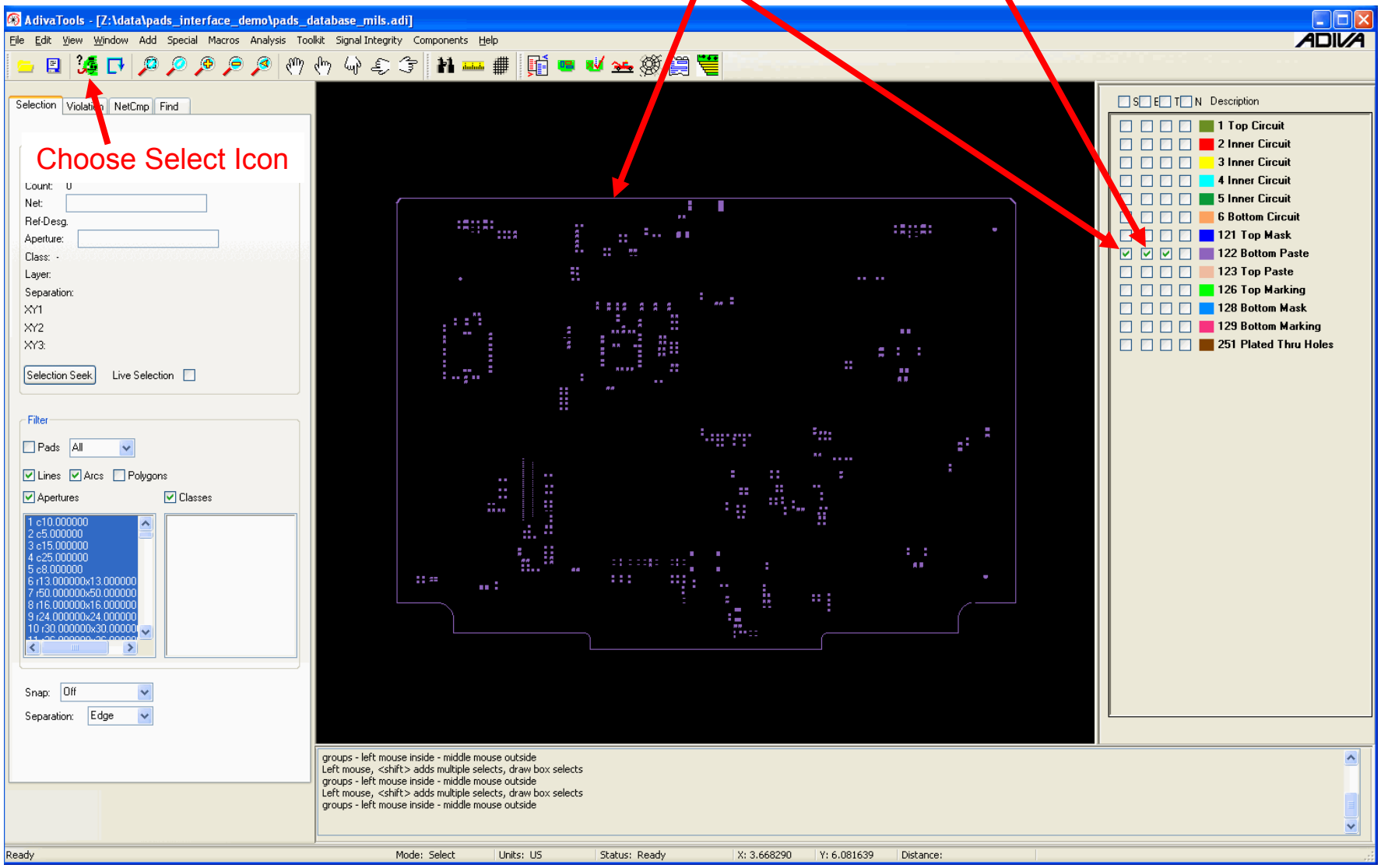
Board Outline Layer

- A Board Outline Layer provides two functions….
  - An object to check copper and other items against to fulfill Board Edge spacing checks…
  - An object to loosely define the “working area” of the DRC checks -- everything inside the board outline “extents” (min / max XY of the Board Outline)
- An artwork that contains only the Board Outline is preferred -- If available this procedure is not needed
- If a Board Outline artwork is not available, sometimes one can be found on another artwork layer.
- This procedure will show how to select a Board Outline from one artwork layer and copy it to its own layer to become the Board Outline artwork layer.

Board Outline Layer

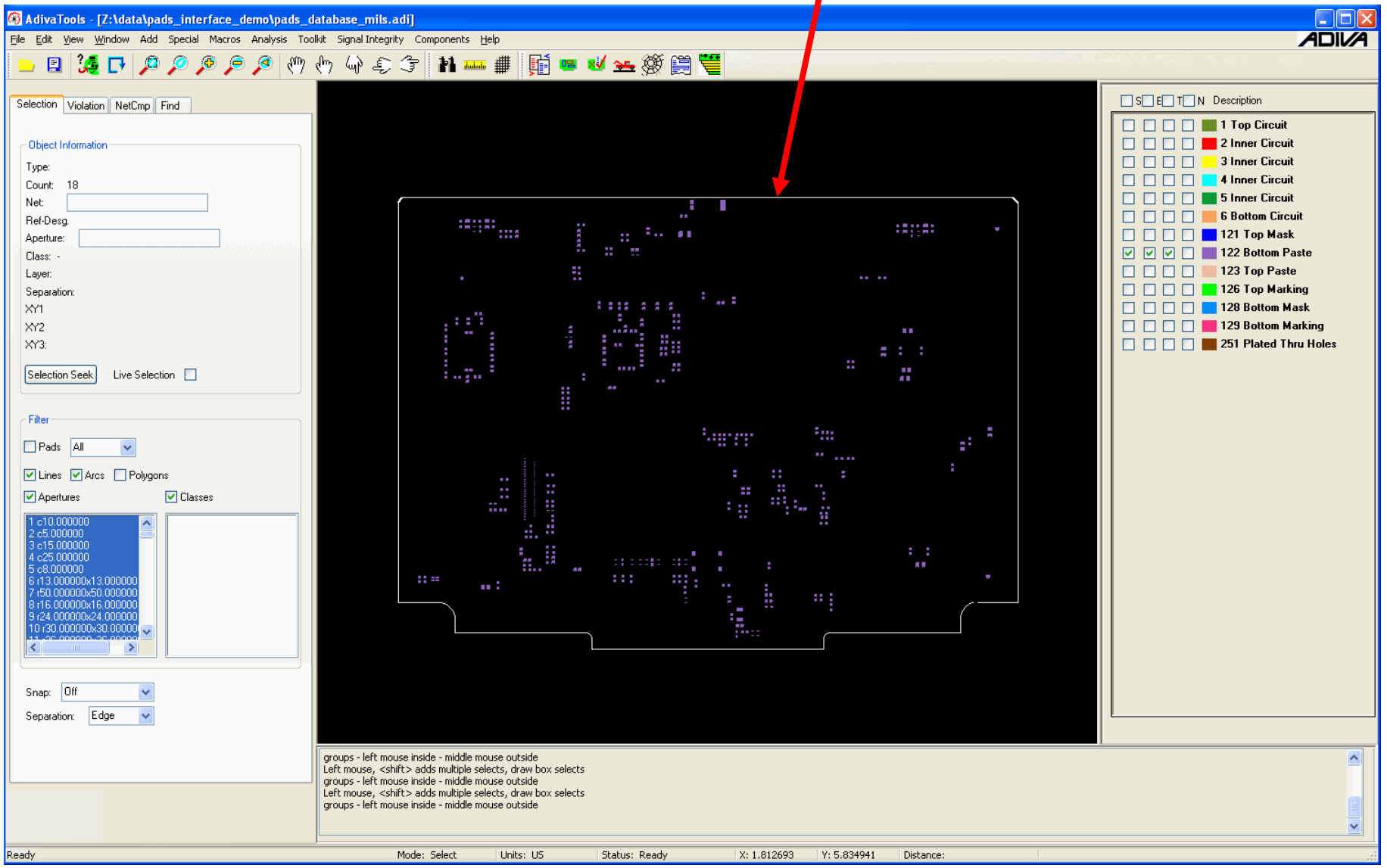
Find an Artwork Layer that contains a Board Outline

Turn it ON for Edit

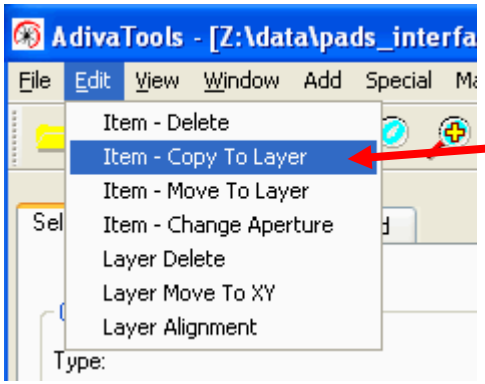


Board Outline Layer

<shift>select all of the segments constructing the board outline

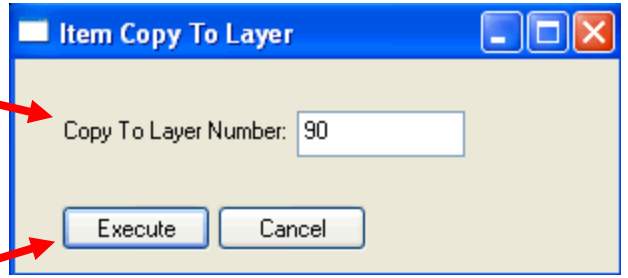


Board Outline Layer



Select Edit > Item-Copy to Layer

Enter a layer number that is not currently used

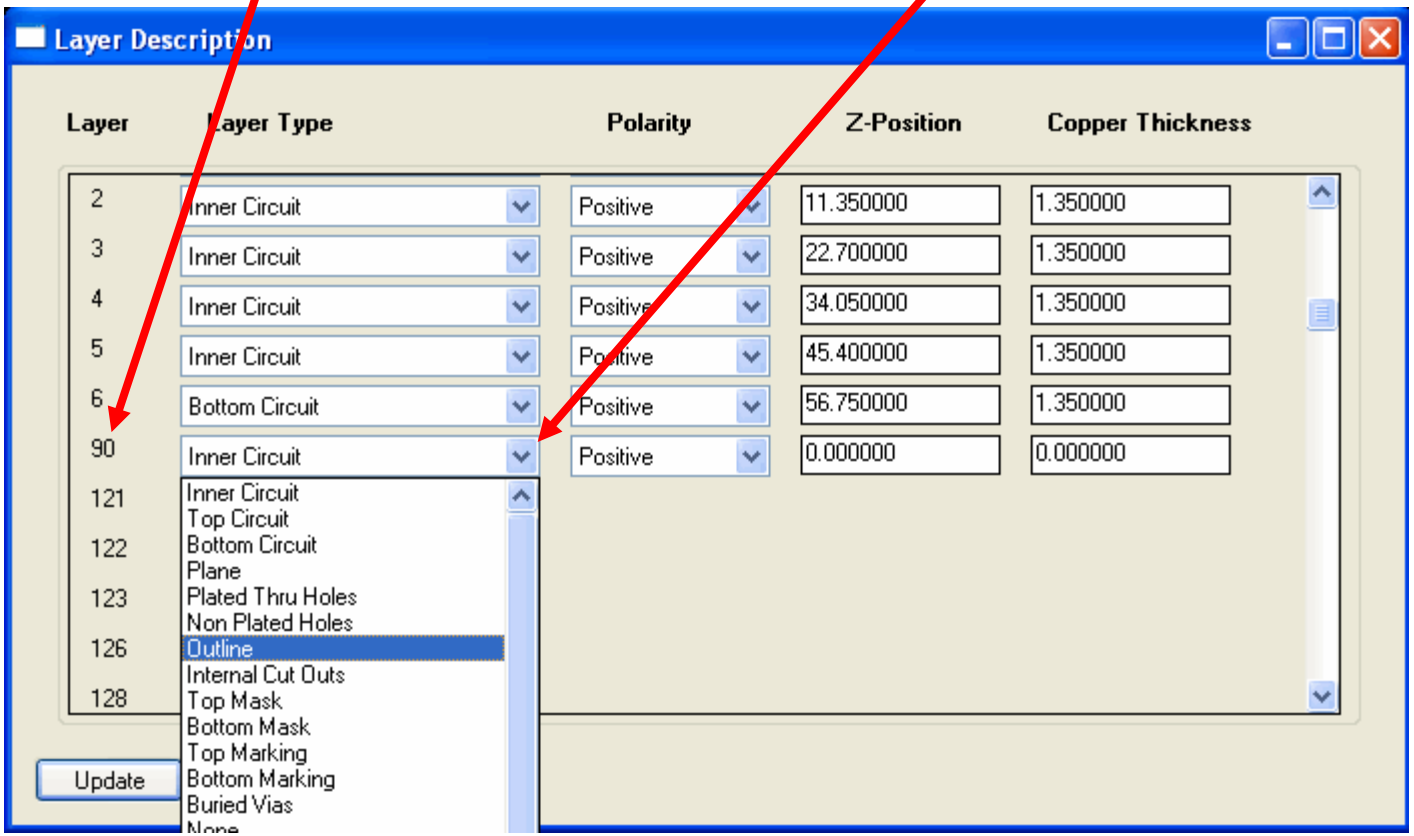


Select Execute to copy the selected Board Outline items to the new layer number entered.

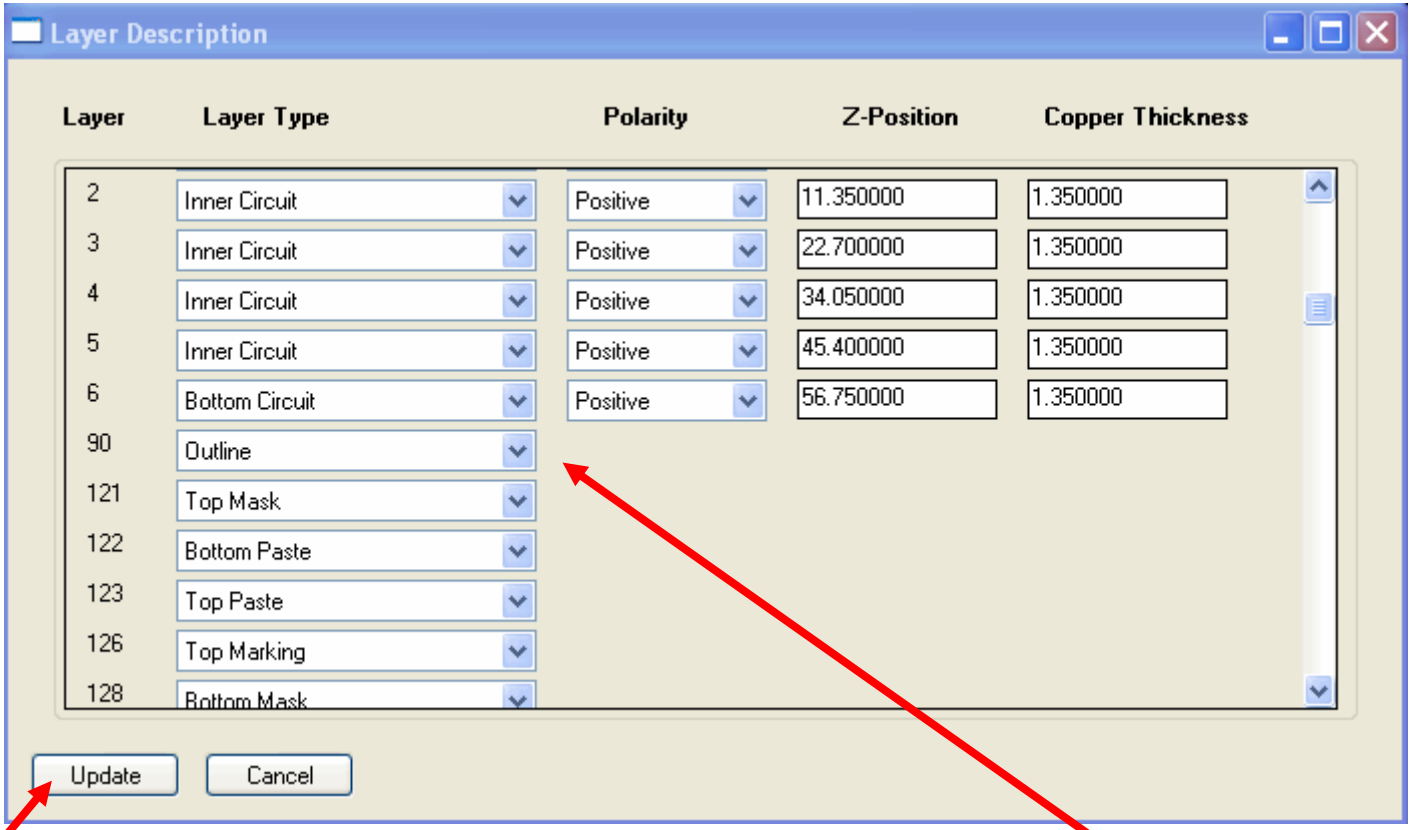
Board Outline Layer

A Layer Description dialog will appear…

Find the Layer Number that was added then choose a layer type to describe the layer



Board Outline Layer

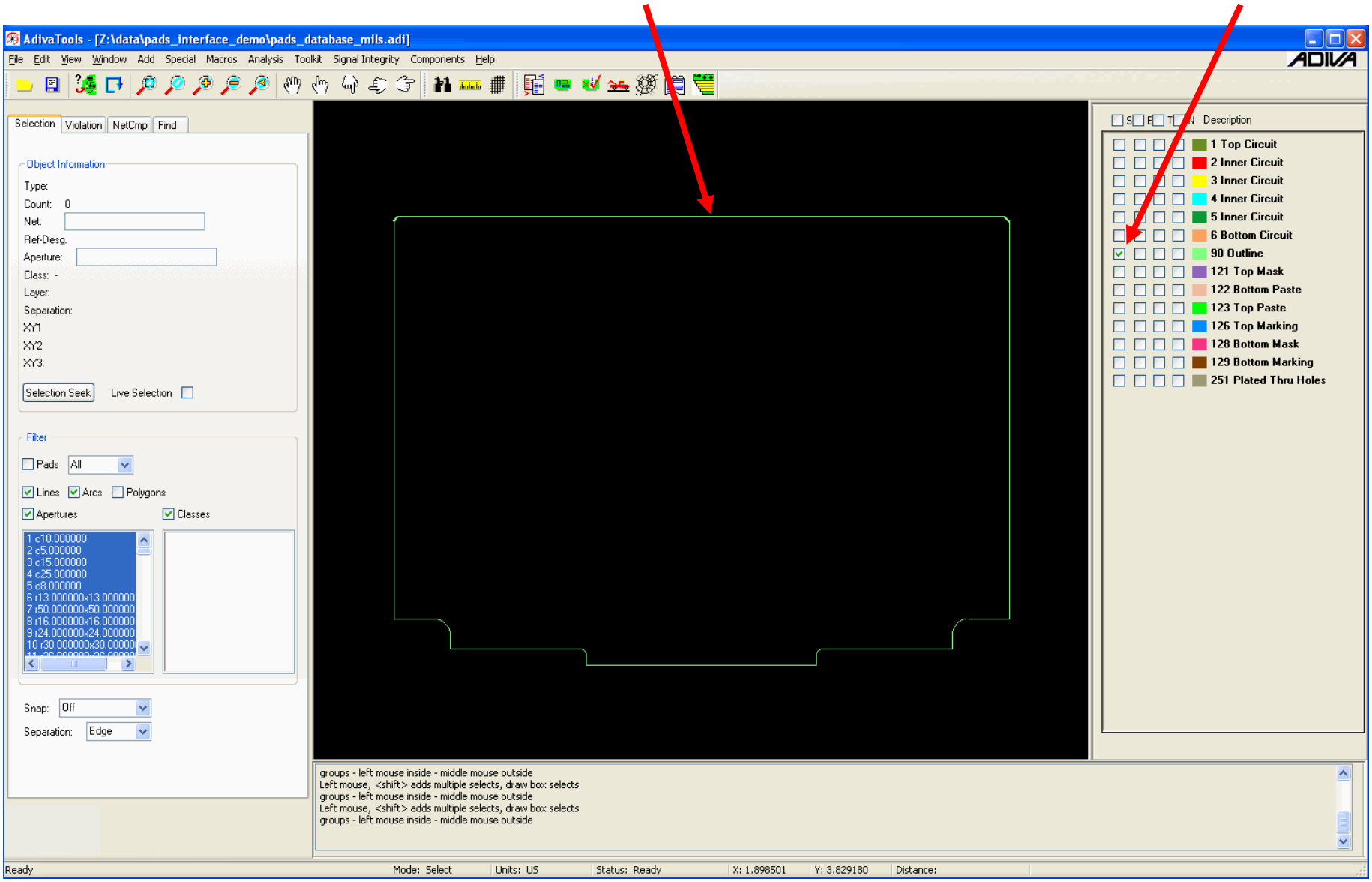


Once the Outline Layer is defined, the dialog will look like this….

Select Update to register the new layer type

Board Outline Layer

The new Outline Layer should now be visible on its own layer and described in the layer list

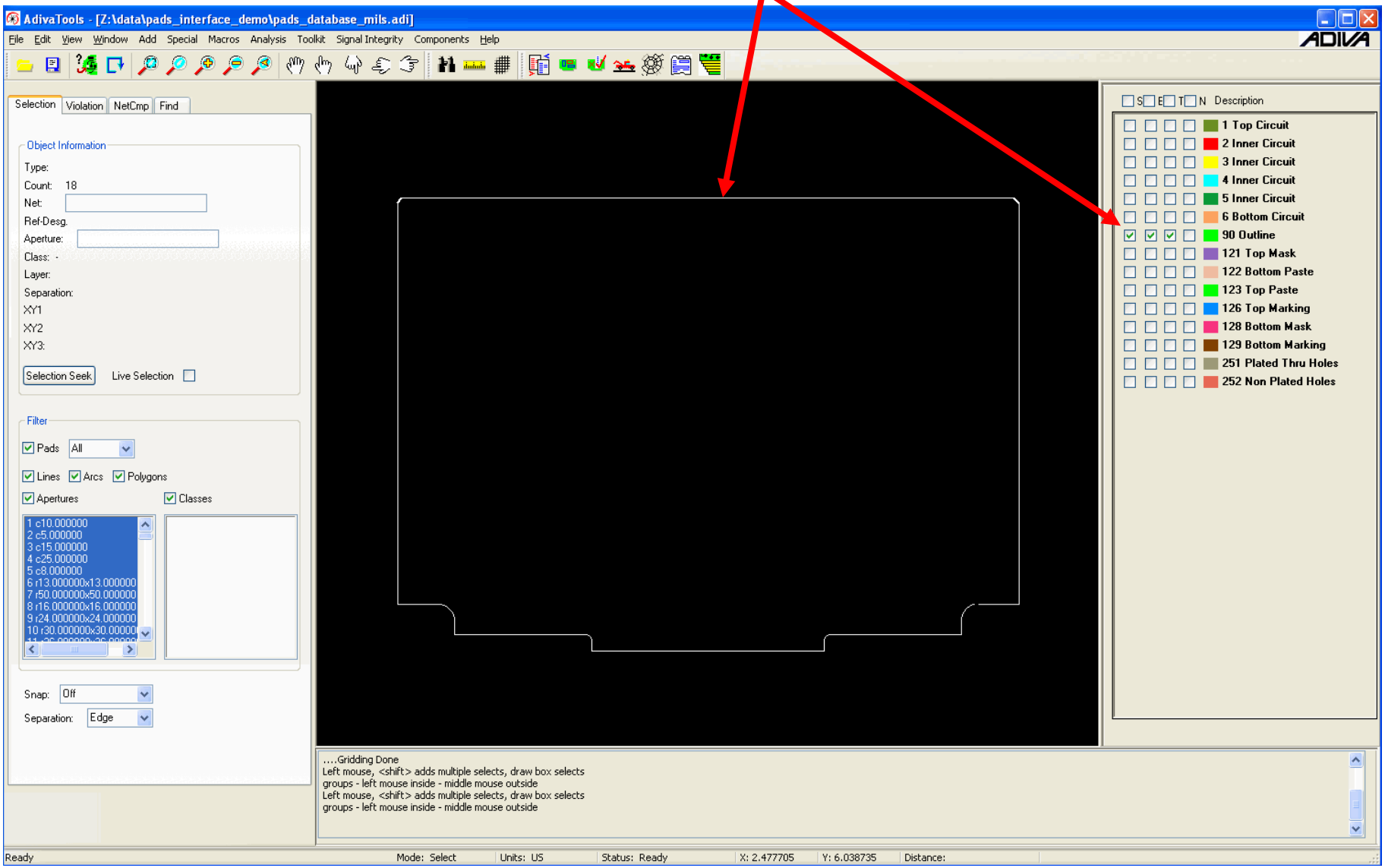


Board Outline Layer

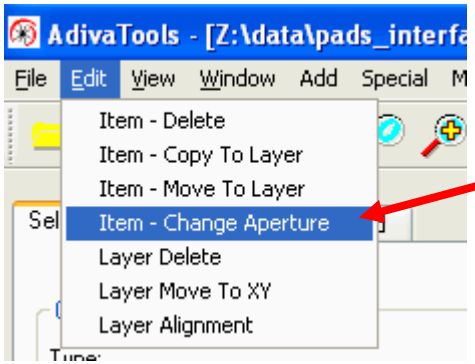
- Depending on the Board Outline data selected and copied to its own layer, there may need to be an adjustment made to the size of the line used to draw this outline
- Most Board Outlines are drawn with a 10-mil wide line
- If DRC checks are going to be run against this board outline, a 5-mil adjustment would have to be made to the parameter to account for the line thickness
- An adjustment can be made to the thickness of the line, if desired to bring the board outline closer to an actual board edge by changing the line thickness to 1-mil thick…

Board Outline Layer

Select the entire Board Outline



Board Outline Layer

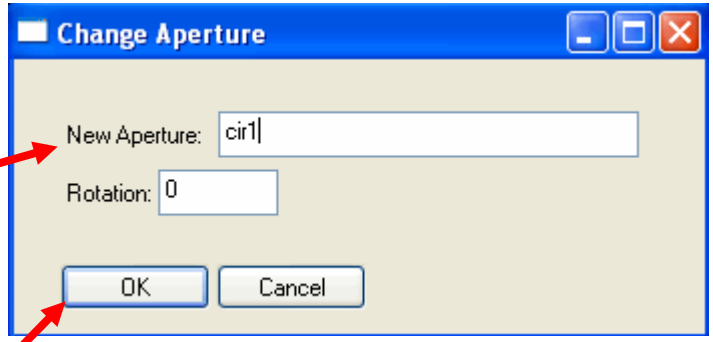


Choose Edit > Item Change Aperture

When the Change Aperture dialog appears,
Enter the new line size value in MILS or MM.

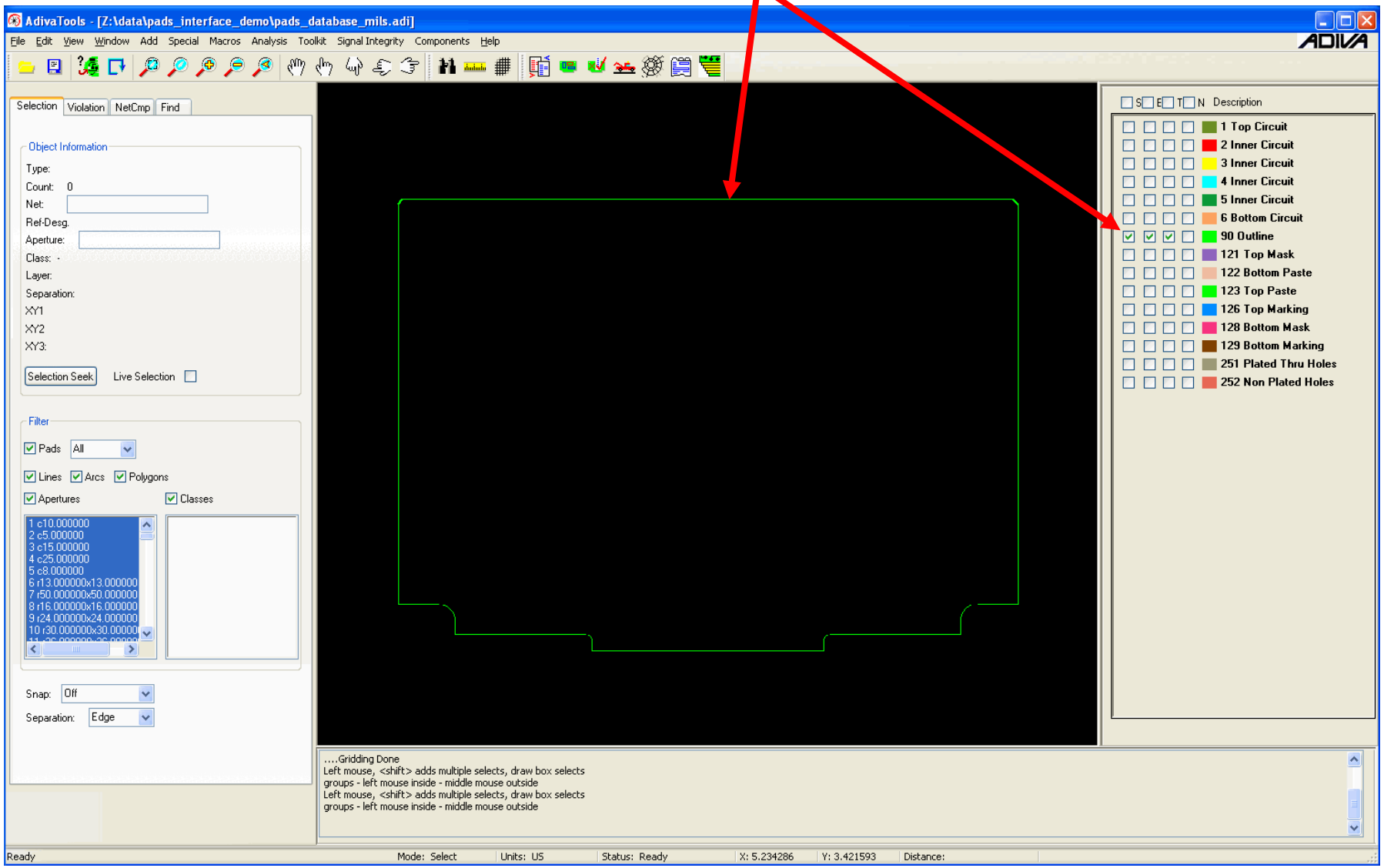
In this case, the new line size is going to be 1-mil wide
Proper syntax is important – lines are drawn with circles
Adiva syntax for a 1-mil wide line is “cir1”

Select OK when complete and aperture size of all lines
Making up the outline will change



Board Outline Layer

Board outline should be much thinner now at 1-mil wide

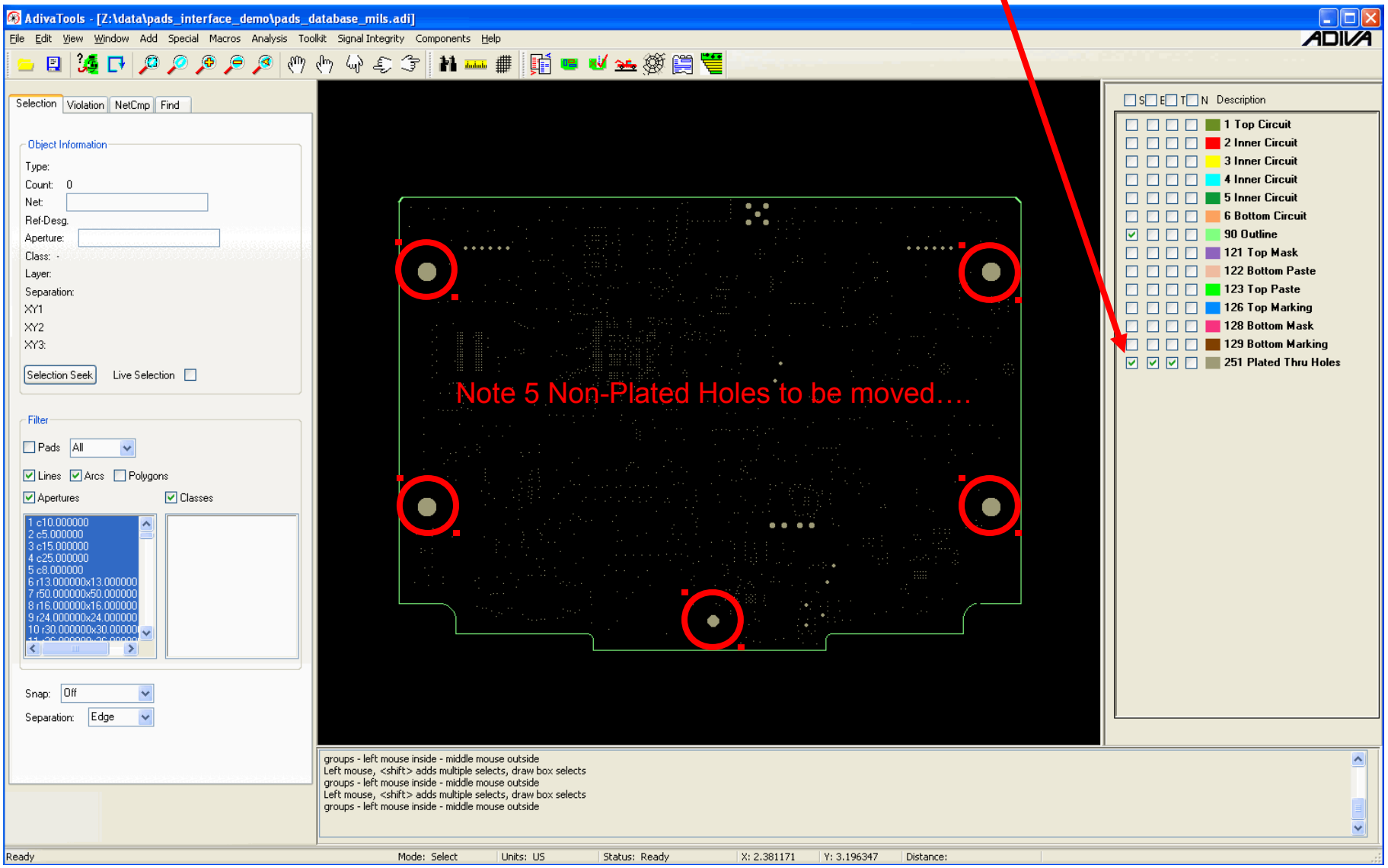


Non-Plated Holes

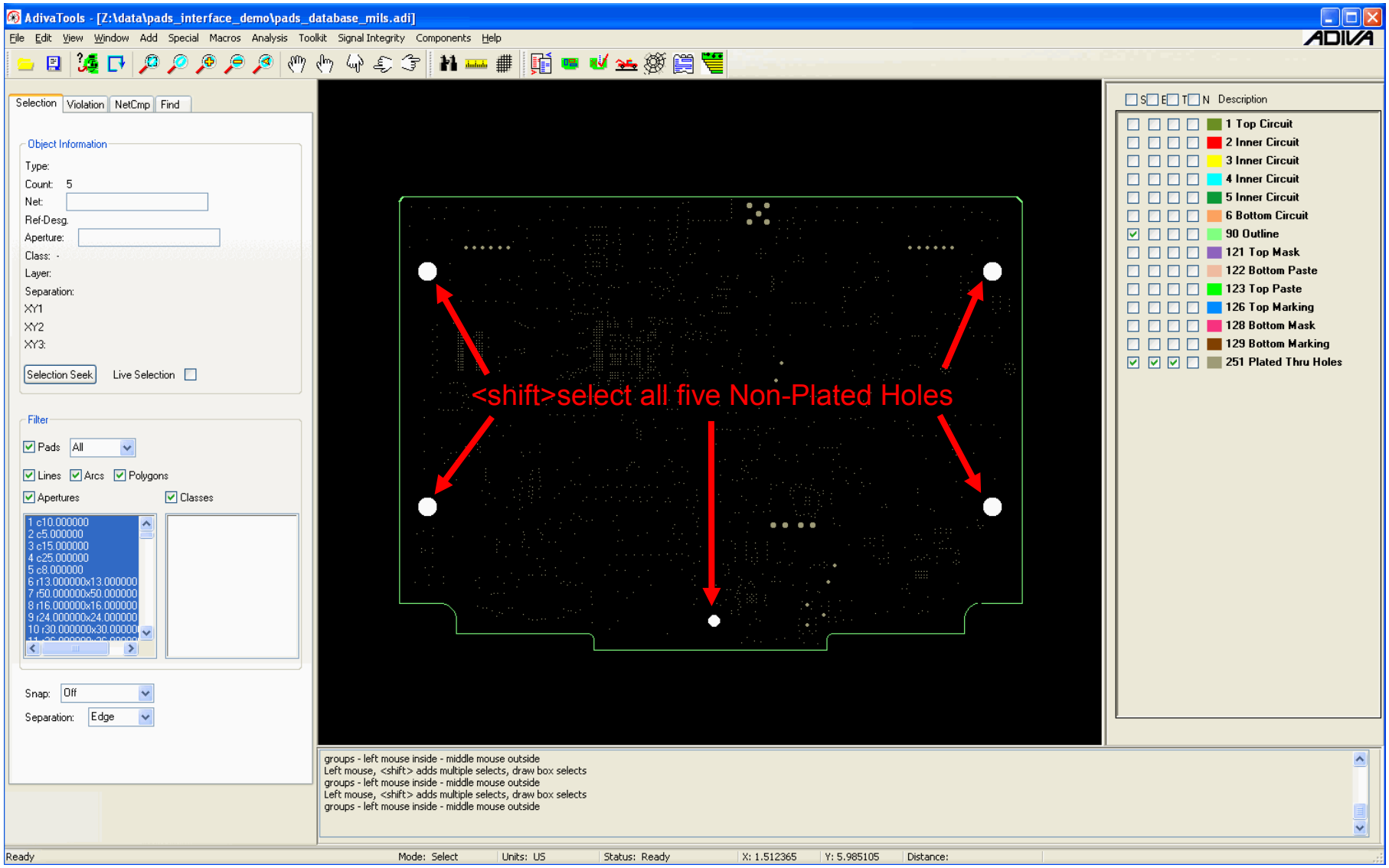
- It is best to have drill layers defined such that Non-Plated Holes are contained in a file of their own – just as one would create Buried or Blind Vias in their own file
- Non-Plated Holes need to have their own layer in Adiva so they can be identified for checks specific to Non-Plated Holes.
- If Non-Plated Holes are merged into the same drill file as the Plated Holes, then these Non-Plated Holes need to be moved to their own layer
- This procedure will show how to select Non-Plated Holes from the combined drill layer and move them to their own layer to become the Non-Plated Hole layer.

Non-Plated Holes

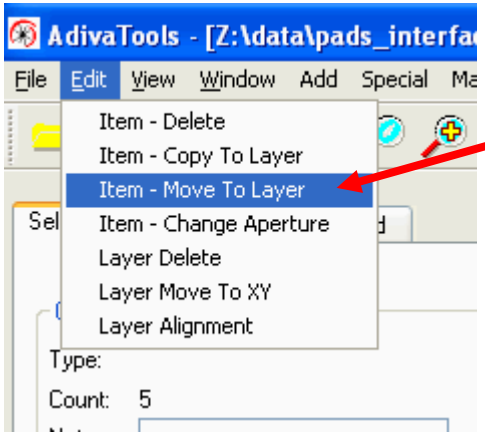
Turn ON Plated Hole Layer for display and edit



Non-Plated Holes

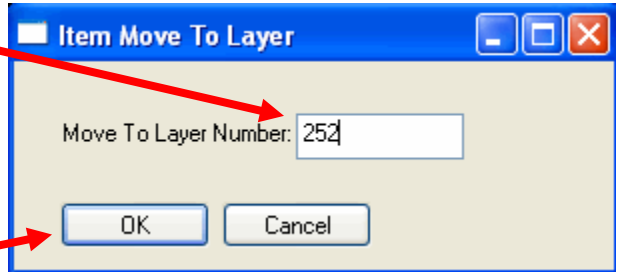


Non-Plated Holes



Select Edit > Item-Move To Layer

Enter a layer number not being used

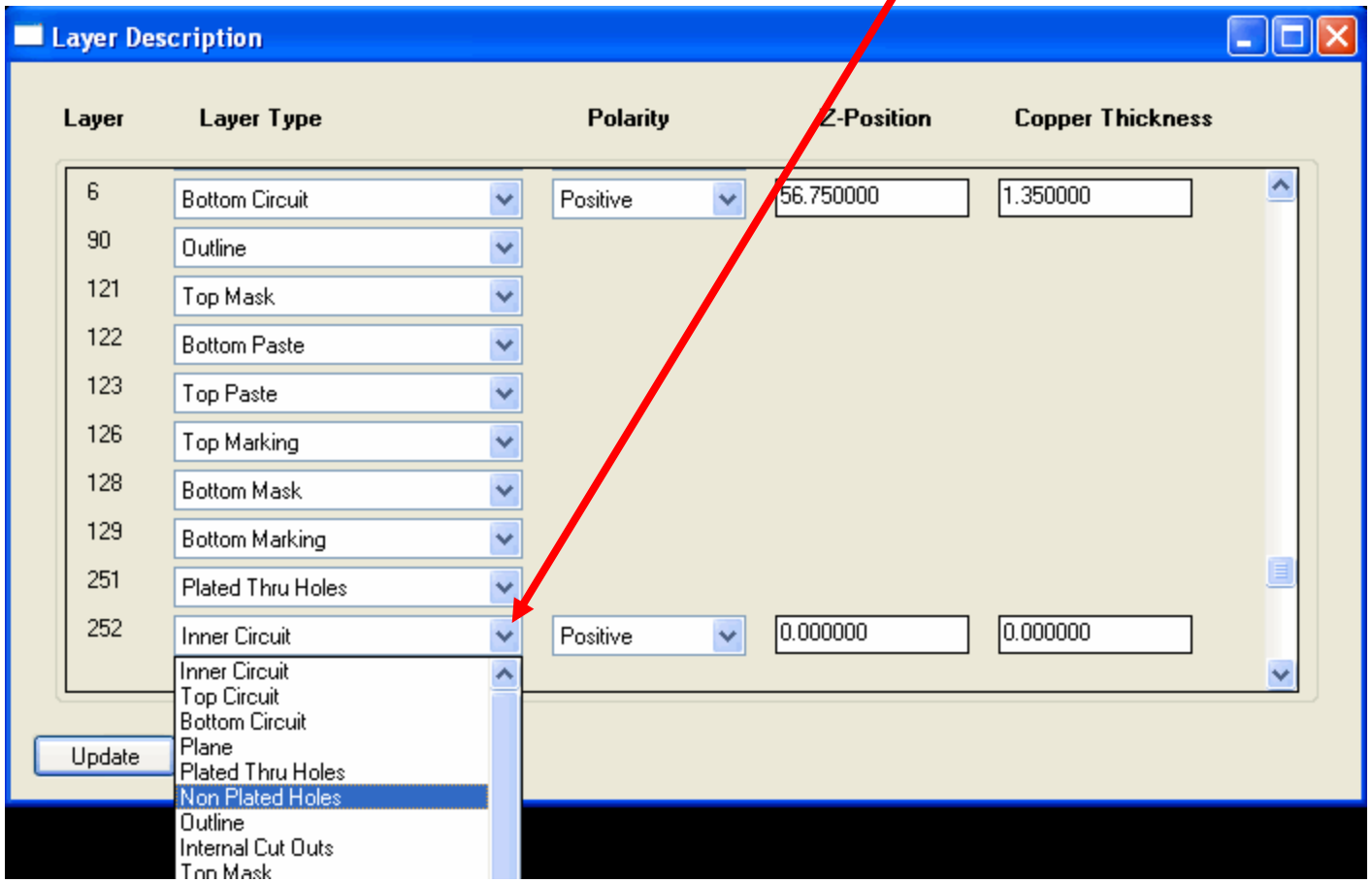


Select OK to move the Non-Plated Holes to the new layer

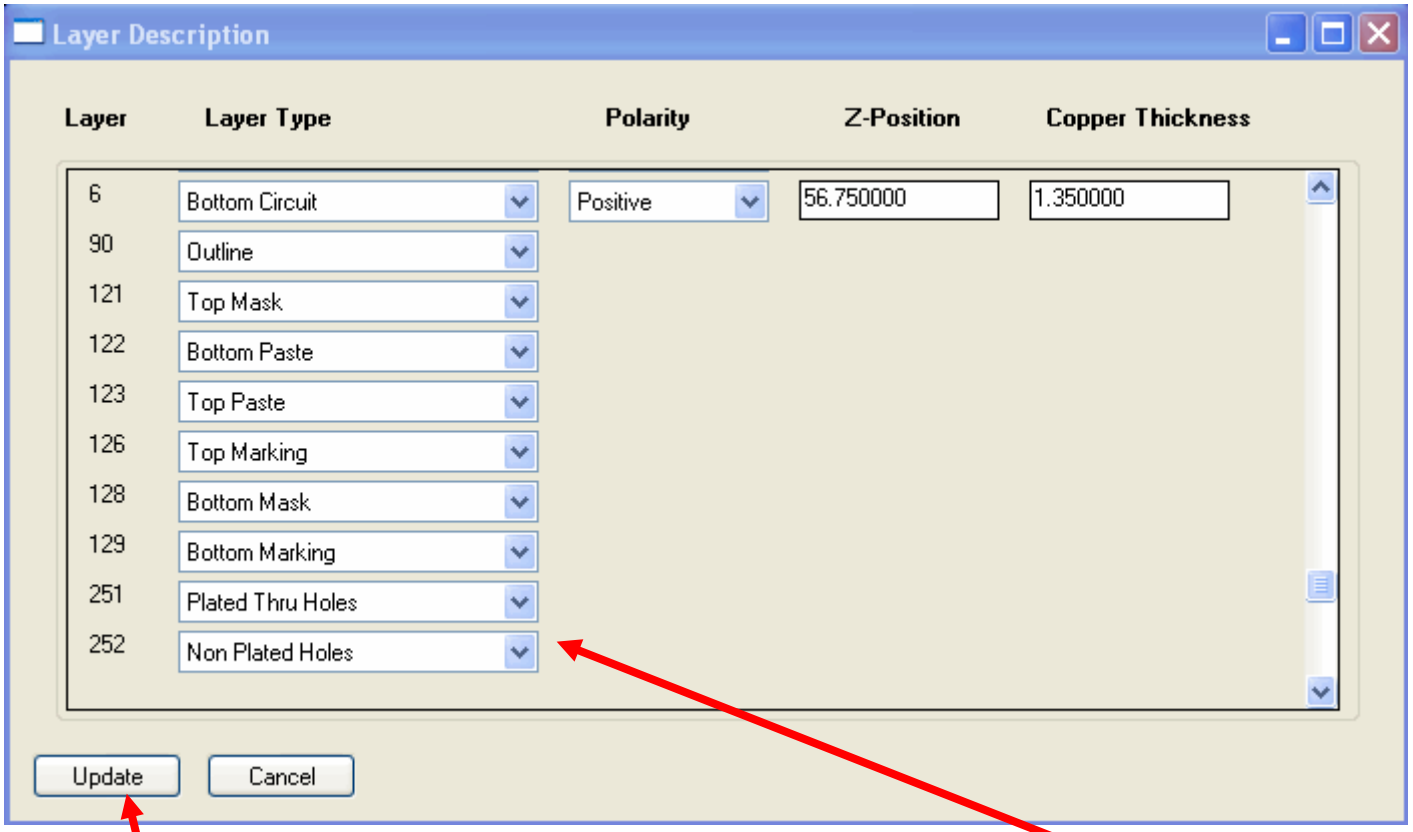
Non-Plated Holes

A Layer Description Panel will appear…

Find the new layer and change its description to Non-Plated Holes



Non-Plated Holes

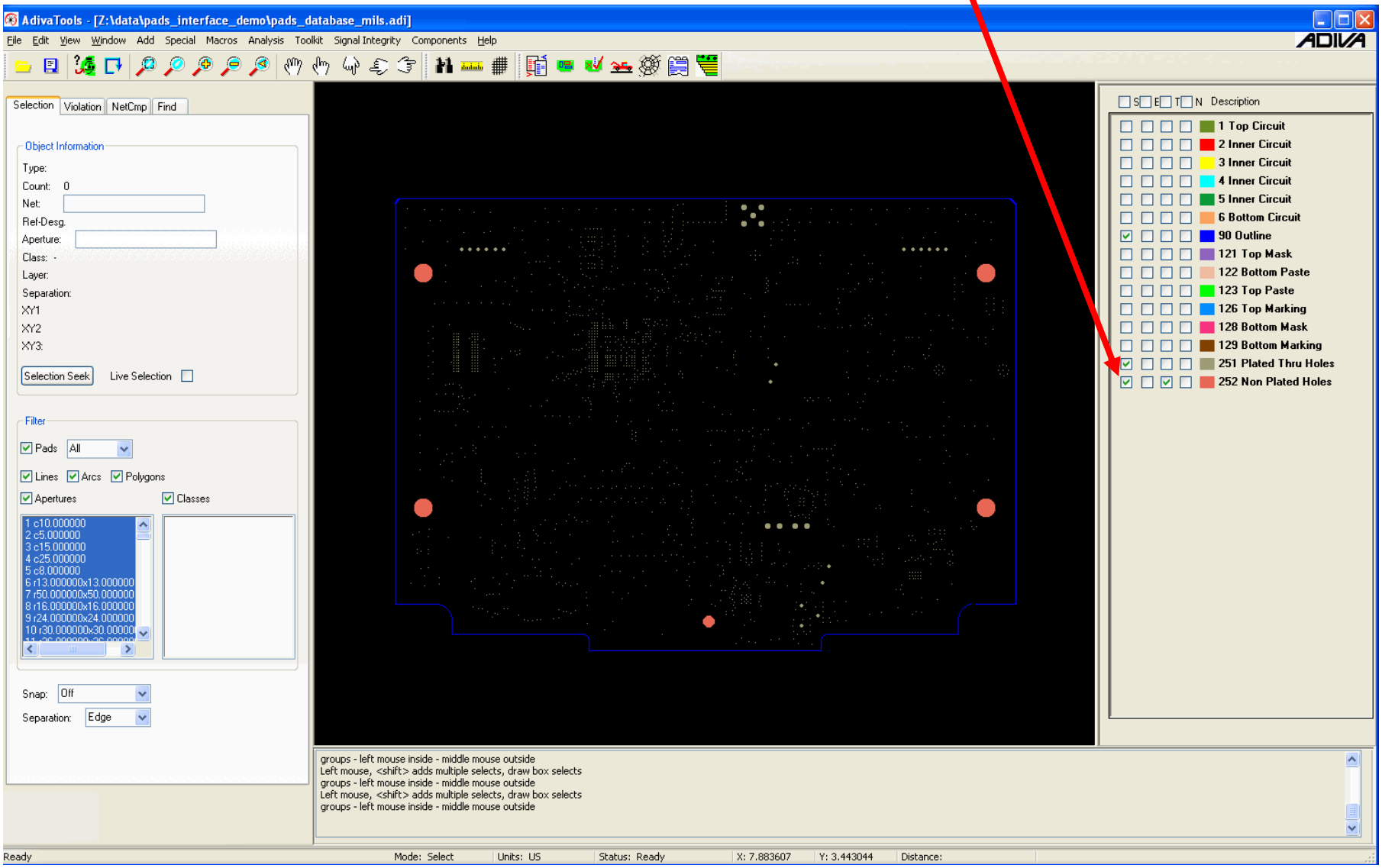


A completed Layer Description dialog will look like this….

Select Update to register the new layer

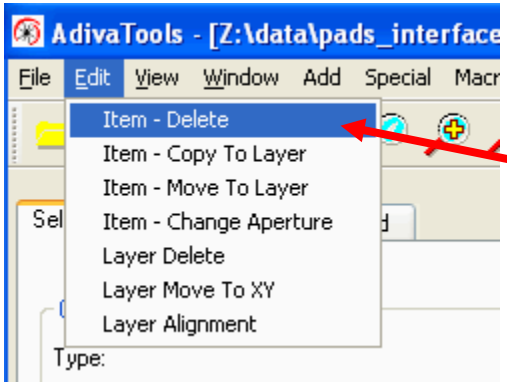
Non-Plated Holes

Notice the new Non-Plated Hole layer added



Item Deletion

- Some Gerber data is supplied with title blocks, coupons, etc as part of the artwork to be plotted.
- It may be advantageous to remove some or all of this data before design analysis to reduce database size or prevent DRC checks from being performed on this data.



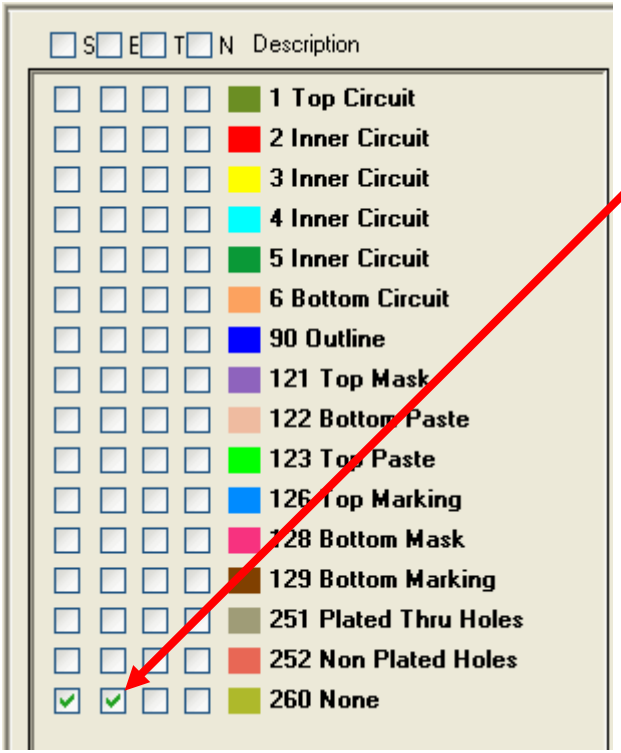
Simply select items to be deleted on any number of layers

Choose Edit > Item-Delete

The selected items will no longer be a part of the Adiva database

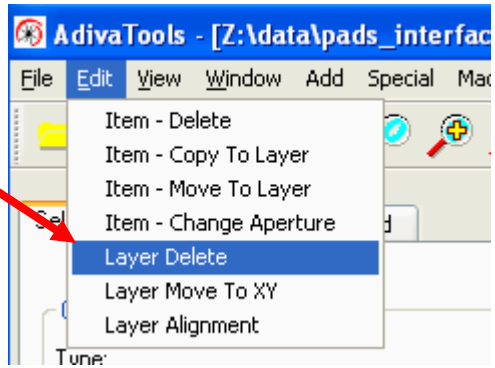
Layer Deletion

- Sometimes data layers are converted into Adiva that on second thought are not needed.
- Many times these are large in size and for performance reasons are not needed and should be deleted.



First choose layer(s) to be deleted by turning them ON for edit

Then choose Edit > Layer Delete to remove the layer from the Adiva database



END
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