# The best way to contour true thicknesses

Contouring is a commonly used and highly valuable method of analyzing the distribution of many types of data: For example, items from drillholes, 3D block models, Gridded Seam Models (GSM) or Gridded Surface Files (GSF). Use contouring to create surface contours. Or use it to visualize the distribution of different types of data, such as grade or quality items, or true thickness of seams or other bedded deposits.

The MineSight 3D Contour Tool (**Polyline** or **Surface|Contour Tool**) accomplishes many types of contouring. But contouring drillhole data with the tool limits you to contouring either on one plane at a time, or on a surface. Sometimes you would like to see the overall distribution of the item in a specific seam, for all elevations; such as when contouring true thickness of a seam, for instance. Here's how to achieve this. First interpolate the drillhole item into a GSF item. Then use the Contour Tool to contour that surface into polyline contours (Figure 1).

Here's the overall process.

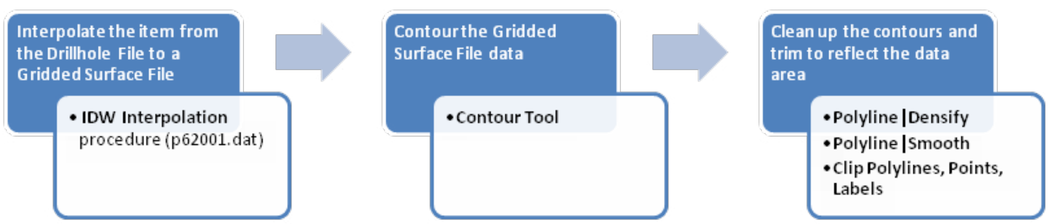


***Figure 1.*** *The process of contouring drillhole data through GSF interpolation.*

To demonstrate, we will use this method to generate true thickness contours from a true thickness item in a drillhole composite file.

## Step 1. Interpolate the item from the Drillhole File to a Gridded Surface File.

Use the MineSight Compass procedure **IDW Interpolation** (Figure 2) to interpolate the value of the true thickness item in the drillhole composite file into a gridded surface item representing that value. This procedure uses Inverse Distance Weighting to interpolate values from a drillhole file into a model file.

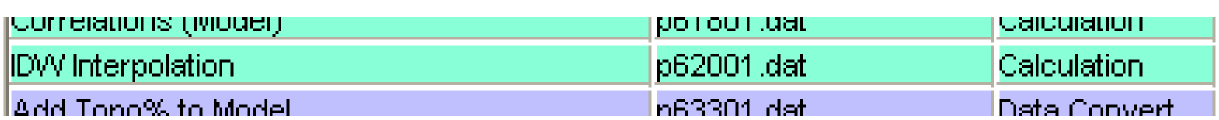


***Figure 2.*** *The procedure IDW Interpolation (p62001.dat) is a Calculation procedure in MineSight Compass.*

On the first panel of the procedure (Figure 3), select the drillhole composite file containing the item for interpolation and the GSF that will receive the interpolated value.

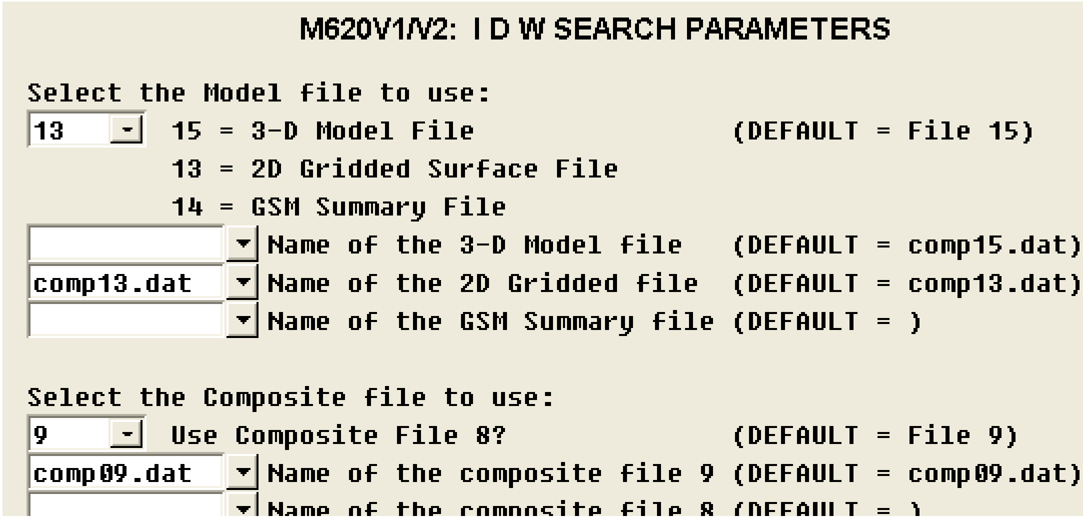


***Figure 3.*** *IDW Interpolation procedure – select drillhole and GSF files.*

On the second panel (Figure 4), set the interpolation parameters such as the search distances and Inverse Distance Weight power.

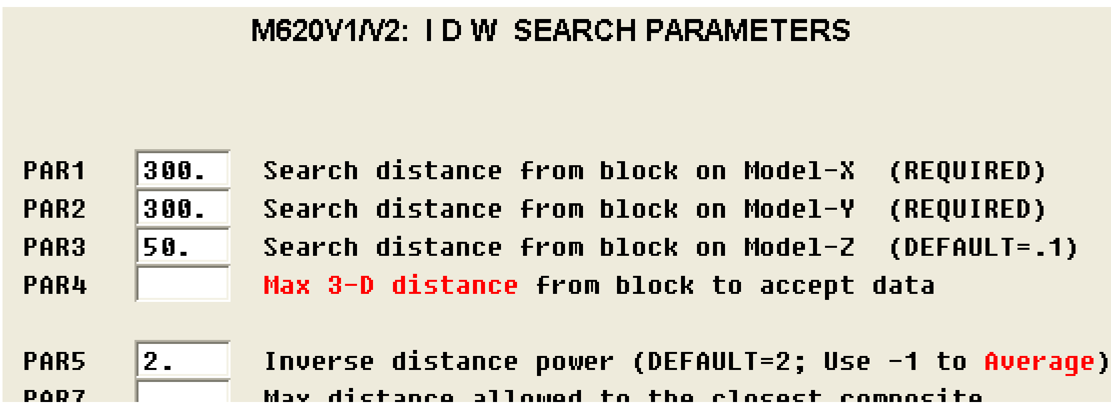


***Figure 4.*** *IDW Interpolation procedure – set the search distances.*

On the third panel (Figure 5), specify which items to interpolate and use the Inverse Distance Weighting calculation type. Our drillhole item is TTHK, and our GSF item is THK1. Before interpolating, make sure that the GSF item receiving this true thickness data has adequate minimum, maximum, and precision. It should be at least that of the corresponding item in the composite drillhole file to ensure that all values will be interpolated properly.

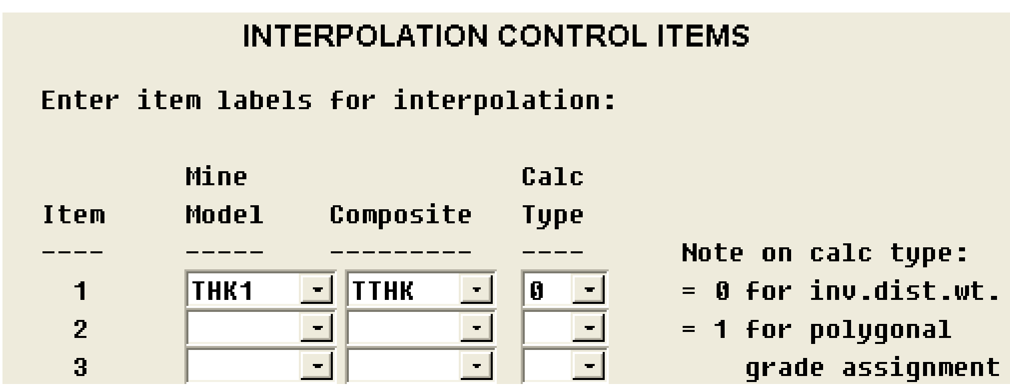


***Figure 5.*** *IDW Interpolation procedure – specify the drillhole item to interpolate and the corresponding GSF item to interpolate it into. Then set to use IDW interpolation.*

We want the true thickness of Seam 33, so we limit the composite data to that seam. On the seventh panel (Figure 6), set the SEAM item to be limited to a value of 33.

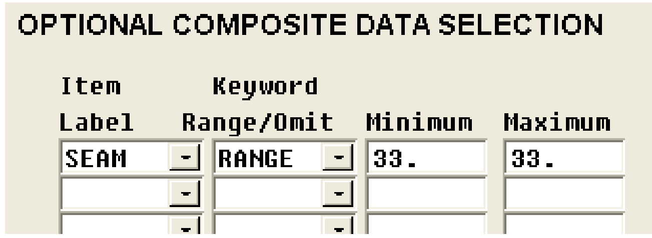


***Figure 6.*** *IDW Interpolation – set to limit drillhole composites used to those in SEAM 33 only.*

Once the procedure runs successfully, create a GSF Model View displaying the newly loaded interpolated item (Figure 7) to verify that the interpolation went as planned.

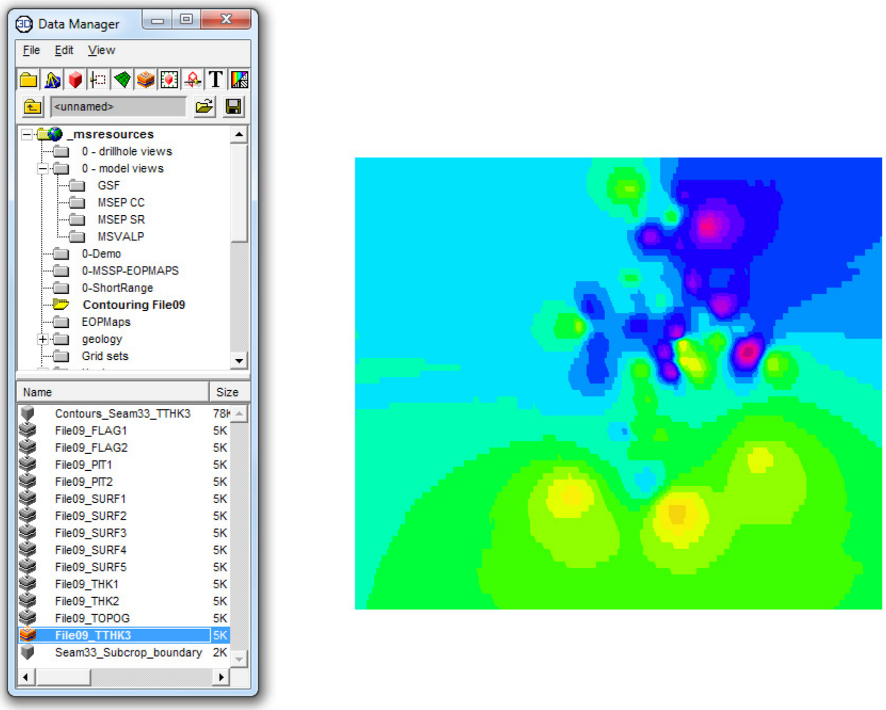


***Figure 7.*** *Model View contour display of the interpolated GSF item THK1.*

## *Step 2. Contour the Gridded Surface File data.*

Now use the Contour Tool (**Surface|Contour Tool**) to contour the new GSF item, THK1 into polyline contours.

On the General tab (Figure 8), select the GSF file and the item to contour. Use the “Item Value on Level” type of contouring, and be sure that your limits cover the data range. The Increment is the increment of the final contours.

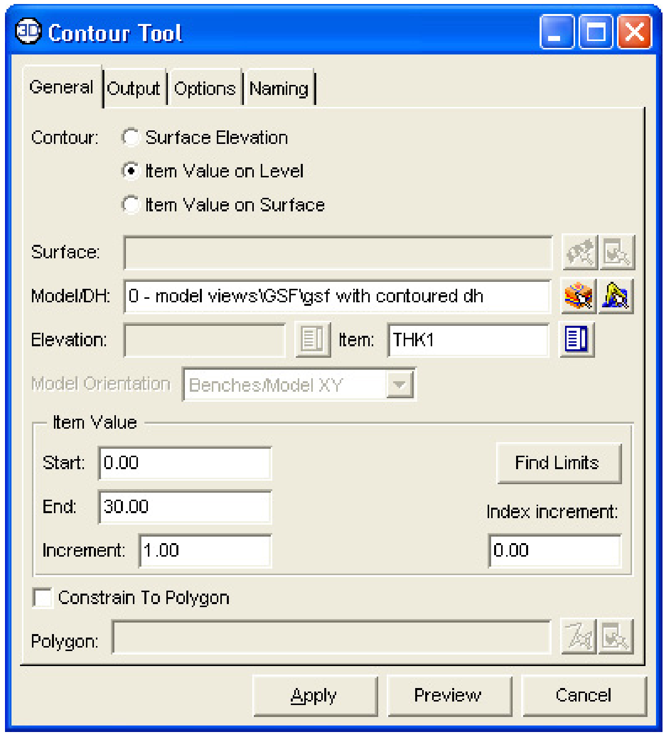


***Figure 8.*** *Contour Tool – specify what type of contouring to perform, the item you will be contouring, its range, and the increment of contours that you want.*

Note that the "Surface Elevation" option should only be used when contouring actual elevation items. It should not be used when contouring GSF items that represent grade or thickness type items. When this option is used, a value in the range of the project's elevation is expected by the program. Values that fall far outside that range will not be properly contoured because the program was not designed to accommodate limits and precision that vary from those of the elevation item.

Next, on the Output tab (Figure 9), use the "Place at contour level".

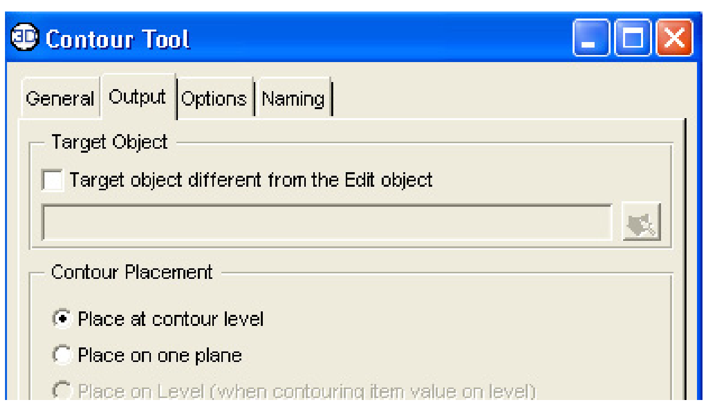


***Figure 9.*** *Contour Tool – specify where the contours will go.*

On the Options tab (Figure 10), select the option "Contour block outlines". This is the best option here due to the GSF item being contoured using "Item Value on Level". The "Contour block outlines" option was selected for visual preference, but is not required for this process. While a smoothing option is available here, it is recommended to use the functions in Step 3 for a better quality clean-up.

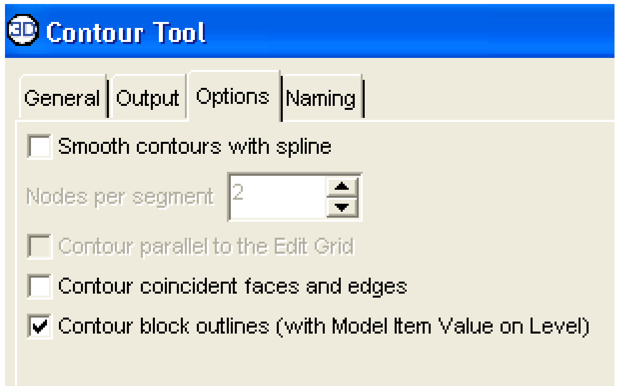


***Figure 10.*** *Contour Tool – set to contour honoring block outlines.*

Once you Apply, the true thickness polyline contours are written to the current edit or specified target object. See Figure 11.

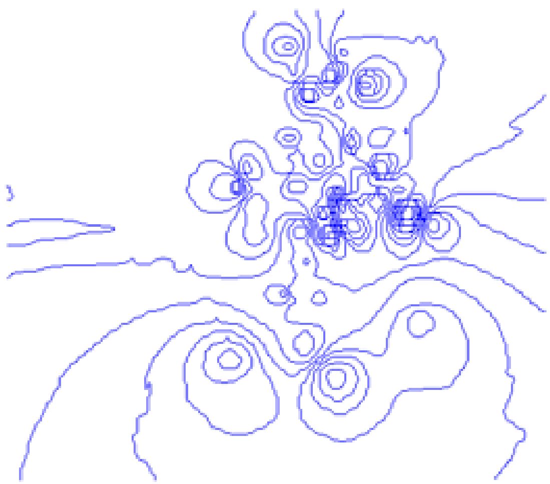

***Figure 11.*** *True Thickness contours of a coal seam.*

While the contours are useful in this raw state, some clean-up can be done to better condition the polylines and to trim it up to the data area.

### *Step 3. Clean up the contours and trim to reflect the data area.*

Once the item has been contoured into polylines, the contours may need to be cleaned up if they were generated with no smoothing or very little smoothing within the Contour Tool. First, use the tool **Polyline|Densify** to add additional points to the contours (Figure 12). After the contours are densified, the **Polyline|Smooth** function can then be used to smooth the contours (Figure 13). The parameters used to densify and smooth the contours will depend on each contoured item and its deposit.

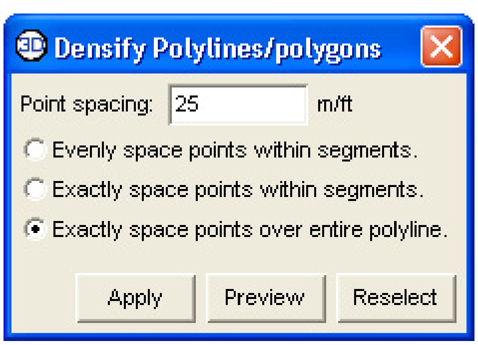


***Figure 12.*** *Polyline|Densify setup.*

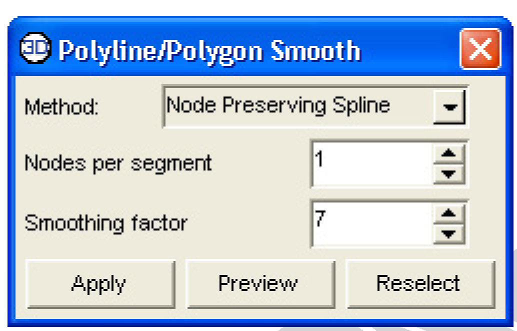


***Figure 13.*** *Polyline|Smooth setup.*

After the contours have been densified and smoothed, the contours may be clipped to reflect the actual data area. Select the contours in the viewer and use the **Polyline|Clip Polylines, Points, Labels** tool (Figure 14). Before clipping, create a polygon that outlines the data area. Then in the tool select the polygon boundary, and the options “Results/Remove Outside”, “Close Polygons against boundary”.

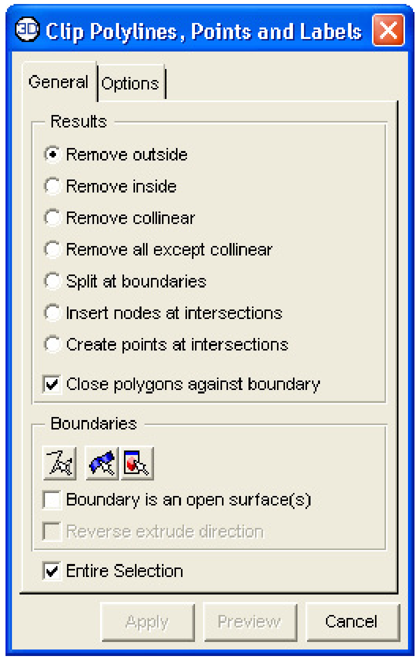


***Figure 14.*** *Clip Polylines, Points, and Labels – removing all polyline data outside of the selected data boundary.*

Once you Apply, you have the true thickness contours for the coal seam within the drilling boundary (Figure 15).

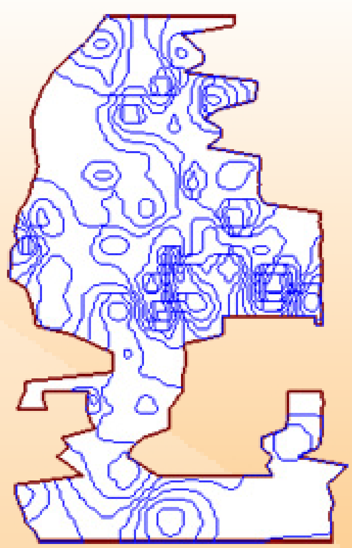

***Figure 15.*** *True Thickness contours of a coal seam trimmed to the drillhole data area.*

For a bedded deposit, the distribution of any composite item can be analyzed through the interpolation of the item into a GSF, and then by generating contours of that item.