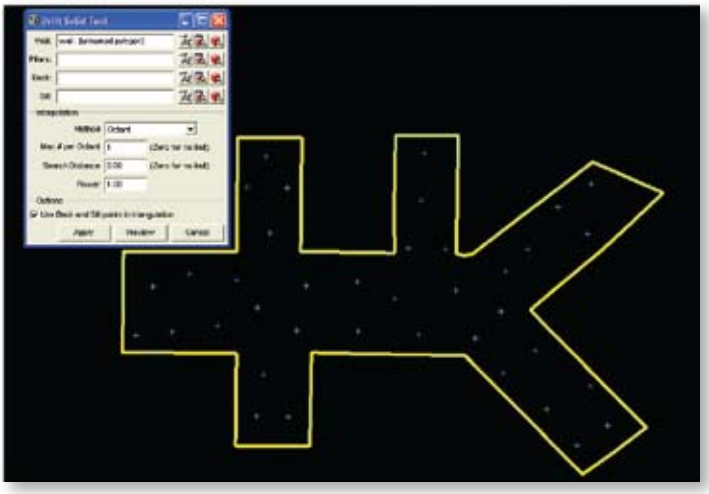
Tips from tech support

# Useful Survey Tools

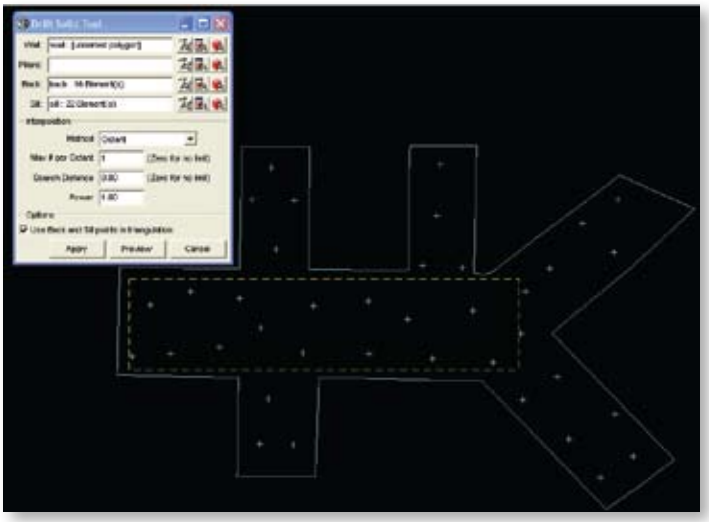
MineSight® 3-D (MS3D) was designed to help you work more efficiently. There are several ways of importing survey formats into MS3D. The January and February 2008 issues of *MineSight® in the Foreground* introduce the user to import formats. This article will discuss survey tools that can be useful in short-term planning, long-term planning, and modeling.

## Drift Solid Tool

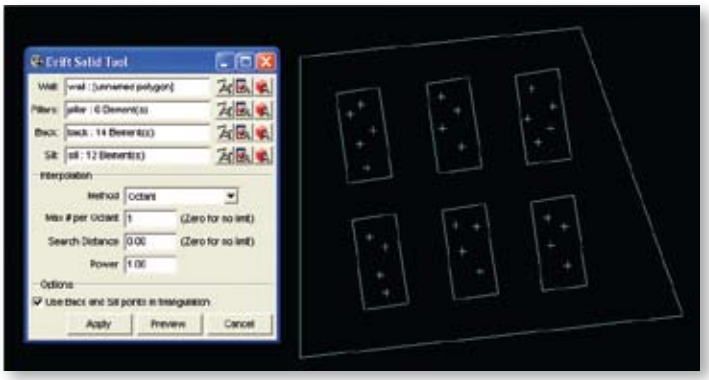
The **Drift Solid** tool can be used in long-term and short-term modeling for underground mines. The tool is used to create an underground drift (or drifts) solid surface using a wall outline (polygon) with random sill and back survey points. It can be accessed from the **Engineering Tools |Create from survey | Drift Solid Tool**. The following are examples using the **Drift Solid Tool**:



*Select the wall which is the polygon outline of the solid.*



*Select the back and sill. The example above illustrates the use of points with different elevations, but they can also be polygons or polylines. A box can be drawn to select more than one point at a time. The use of pillars is optional. This example doesn't use pillars.*



*The example above shows the use of pillars. The pillars are the polygon cutouts in the solid.*

### Interpolation Method

The **Drift Solid Tool** includes selecting an **Interpolation Method**. The **Interpolation Method** assigns an elevation to the back and the sill. There are four **Interpolation Methods** available: **Nearest Neighbor**, **Circular**, **Quadrant**, and **Octant**.

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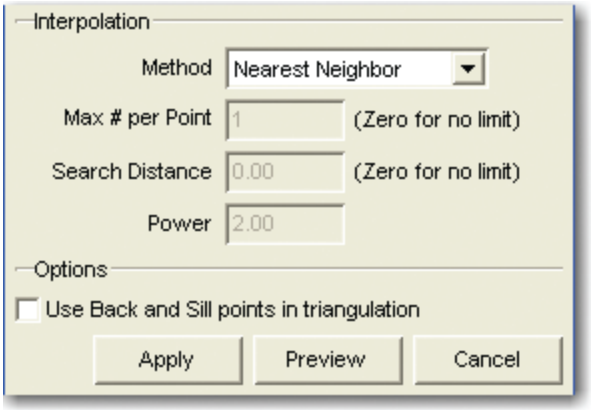
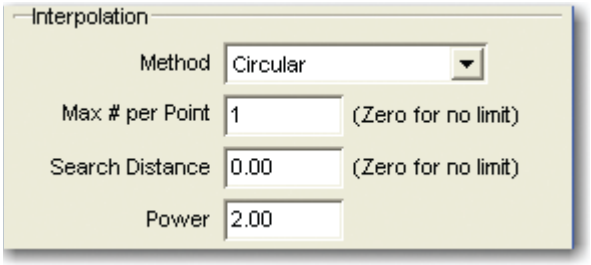
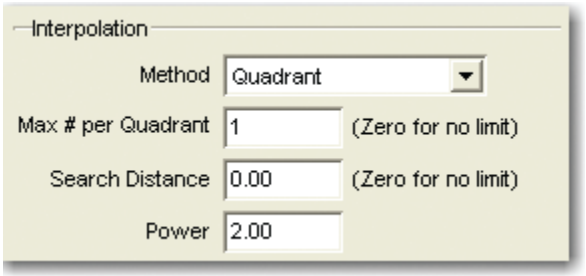
**Nearest Neighbor** method: The **Nearest Neighbor Interpolation Method** finds the closest point and uses that elevation level.



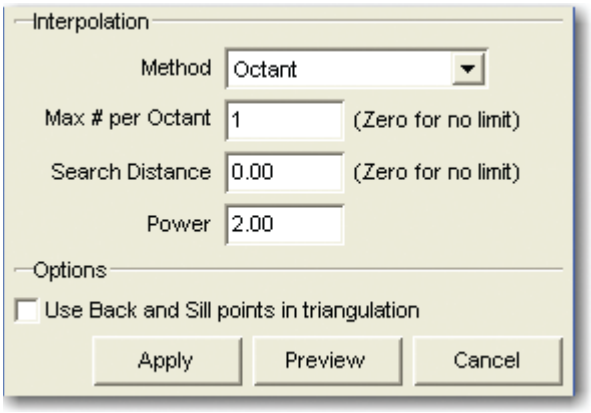

**Circular** method: The **Circular** method uses a circular search pattern to find elevation points within the search distance. The **Max # per point** selects up to the maximum number of closest points with which to perform the elevation interpolation.




**Quadrant** method: The **Quadrant** method uses a quadrant search to find the points in the search distance. The search radius is divided into four areas and uses the **Max # per Quadrant** in the interpolation.

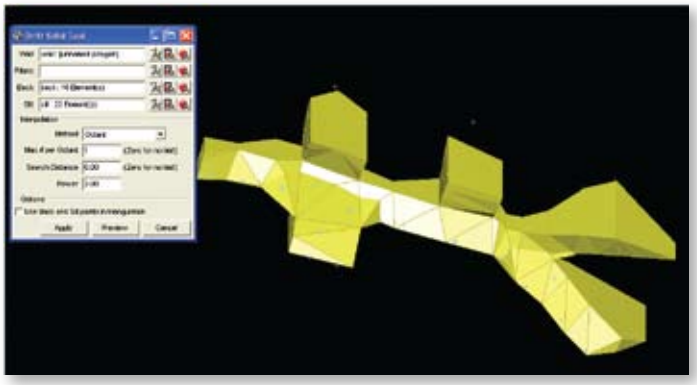



**Octant** method: The **Octant** method uses an octant search to find the points in the search distance. The search radius is divided into eight areas and uses the **Max # per octant** in the interpolation.

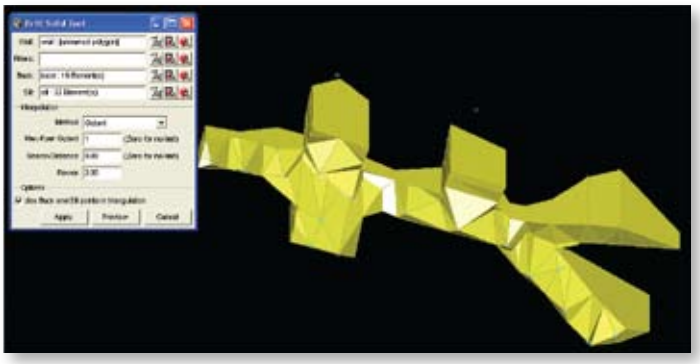



The search distance is the maximum distance to accept points to use in the interpolation. Power is the inverse distance to use in the interpolation. The effect of the power is the larger the power, the greater the influence on the number of points used in the interpolation. As power is decreased, nearby points are averaged.

The wall and pillar outlines are always used in the triangulation. You can toggle on the option to use back and sill points in triangulation to include the point data in the solid's top and bottom.



*The above example does not use the option of using the back and sill points in the triangulation.*



*This example shows the option of using the back and sill points in the triangulation. Selecting this option may add more visible dimension to the solid.*

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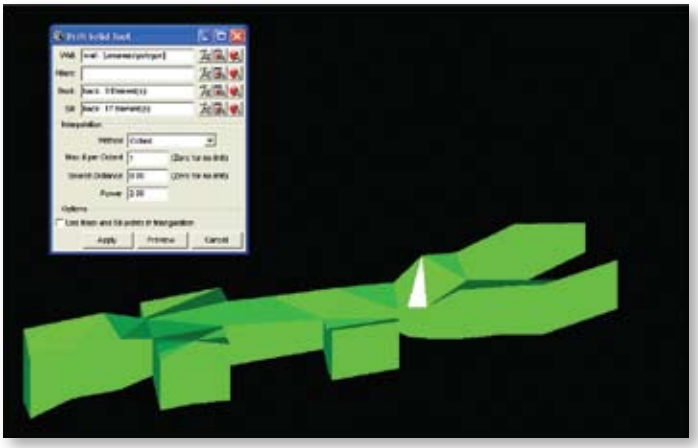
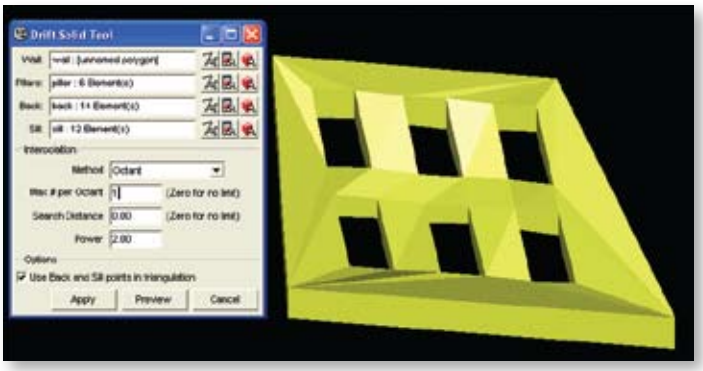


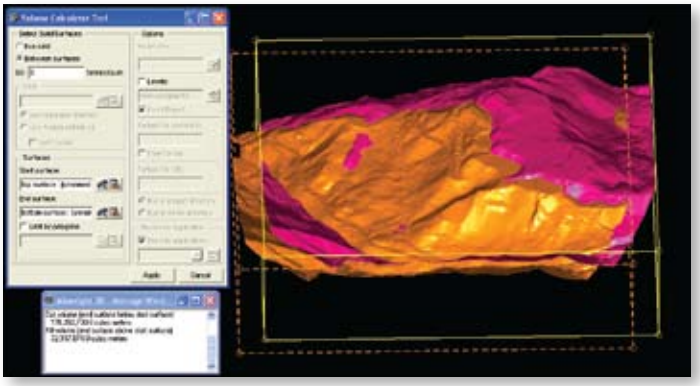
*The resulting solid for the non-pillar example is shown.*



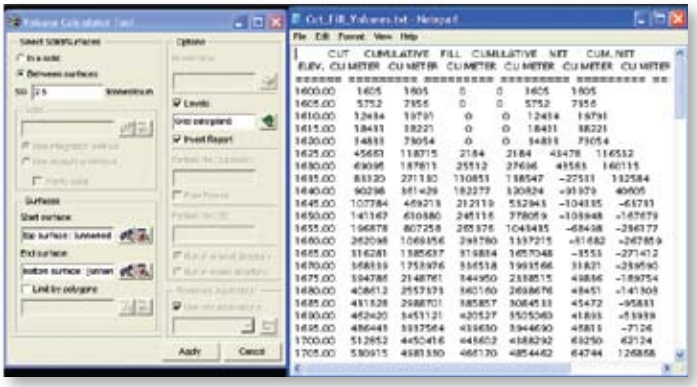
*This shows a resulting solid as the example with pillars.*

## Calculate Volume Tool

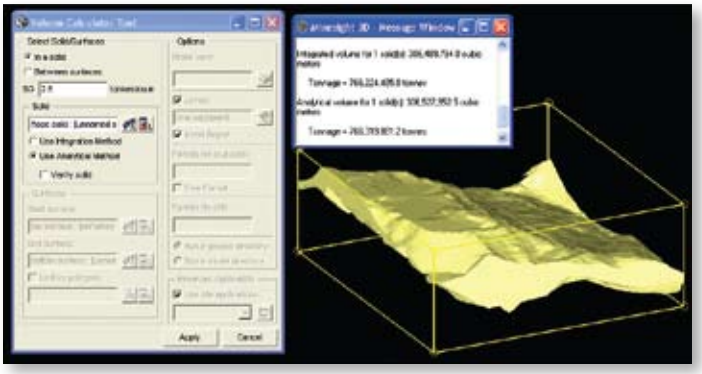
The **Calculate Volume** tool can be used for long-term planning and scheduling. For example, it can be used to calculate tailings dam, waste dump, and road and pit volumes. It can also be used to calculate the amount of material moved. The **Calculate Volume** function calculates the volume within a solid, between two surfaces, and can optionally report by levels defined with a grid set. Calculation of the volume within a solid can be performed using the integration or the analytical method. The integration method calculates volume based on 3D integration. This volume is an approximation. The analytical method will calculate the true mathematical volume of the solid based on a 3D matrix determinant calculation. This tool can be accessed from **Surface | Calculate Volume Tool**.



*The screen capture above illustrates the resulting cut volume and fill volume when selecting the* **Between surfaces** *option as shown in the message window.*



*In this screen capture, the* **Between surfaces** *and the* **Levels** *options were used. Select the grid set for the levels you want. The result is given as a report. The* **Invert Report** *option displays the results in reverse level order.*



*In the screen capture above, the* **In a solid** *option was used. The results are shown in the message window for both the* **Integration Method** *and the* **Analytical Method**.

## Calculate Analytical Volume(s) with Selection

Calculation of analytical volume can be performed using either the **Calculate Volume** tool or more directly through the **Analytical Method** option. Using the latter method will calculate the analytical volume of a solid or solids selected from the viewer. The analytical volume will

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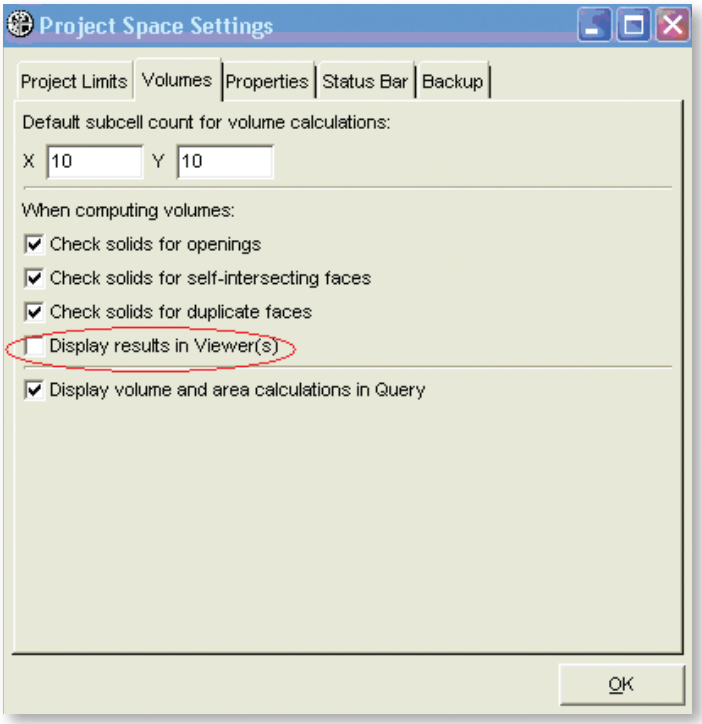
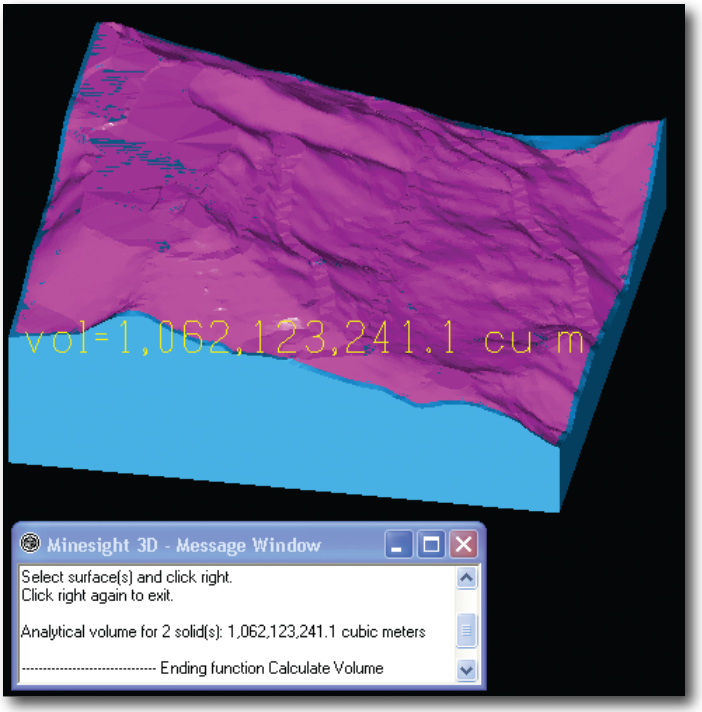
appear in the message window. The total number of solids will be reported. The final result is a sum of volumes of all solids included. This method is accurate and automatically checks if any selected element or any solid inside of a merged shell element has openings. The volumes can also be written to the viewer using the **Display results in viewer** option under **File | Project Settings |Volume**.




*In the above screen capture, the analytical volume for two solids using the option of* **Display results in viewer** *is shown.*

If you have questions or need more information on using Survey Tools, contact Mintec Technical Support at ts@mintec.com.

## Announcing Electronic Newsletter Now Available

**To distribute information more efficiently, Mintec now offers an electronic subscription to the MineSight® newsletter. E-newsletter subscribers will also receive additional industry updates, news, and events.**

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**Thank you for subscribing!**

## New General Manager for Chile Office

Mintec is pleased to announce the new General Manager for Chile, Juan Martinez. We are excited that he has joined the Mintec family.

Juan is a 1995 graduate of Mining Engineering from the Universidad de Santiago de Chile. He brings many years of experience and knowledge with him in the Mining Industry and is a current member of Mining Engineering Chilean Institute.

We look forward to introducing him at the Chile Regional Seminar, November 13 and 14, 2008. He will be available to answer questions and most importantly meet our clients.