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The following changes have been made to DAT/EM products between Release 6.5 and Release 6.6. Please review these revisions made to the software and update your software to implement changes.

As always, DAT/EM welcomes comments and suggestions from you, our clients, so please don't hesitate to contact our support department at [support@datem.com](mailto:support@datem.com), or by calling in or faxing us with your requests.

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Operating Systems

Release 6.6 is supported on Windows XP Professional and Windows 7 Ultimate or Professional operating systems. Testing no longer occurs for Windows 2000 or VISTA Ultimate. If you have a question, please contact Support.

CAD Versions

Release 6.6 has interfaces to the following 32-bit and 64-bit CAD versions:

- **AutoCAD:** Autodesk 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, and 2013 products. This is the first version to support AutoCAD 2013. DAT/EM software will install for multiple AutoCAD products of different year numbers on the same computer; however, it will not install for multiple same-year versions together. For example, it will not install for both 2012 and Map3D 2012.  
**BE ADVISED: Version 6.6 no longer supports AutoCAD 2000-2002 versions. If you use these old AutoCAD versions, please upgrade to AutoCAD 2004 or higher. AutoCAD version 2007 or higher is needed in order to use the new MAPEEDITOR.**
- **ArcGIS:** ArcMap 9.1, 9.2, 9.3 (service pack 1), 9.3.1(service pack 2) and 10.0 (service pack 4)
- **MicroStation:** MicroStation V8 and V8 2004 Edition, XM, V8i Select Series 1 and 2, and Bentley Map Select Series 1 and 2 are approved. Select Series 2 is recommended over Series 1.
  - o **Note for Select Series 1-to-2 upgrades:** If you upgrade to MicroStation or Bentley Map from Select Series 1 to Select Series 2, you must reinstall any DAT/EM software after installing Select Series 2.
  - o **DO NOT USE SELECT SERIES 3:** DAT/EM software does not install for Series 3.

Hardware Locks/Dongles



Please install Microsoft Updates and Service Packs for your operating system before applying lock reset programs. Network licensing should have the same Sentinel driver version on both the server and the local computers running the software.

## Summit Evolution

The following changes have been made to Summit Evolution and the applications that are provided with it.

1. There is a new **Groups** tab on the Project window for all stereo project types. Groups are subsets of the models in a project. They allow you to define groups of models so that the **Tools>Options>Project>Automatically load next model...** function will only open models from the same Group.
  - Groups are especially useful when the project contains multiple image sets from different times/sources, and you want a view each set in a different viewport. For example, you have imagery from every two years; create Groups for 2008, 2010, and 2012 so that each of three viewports can only open models from its assigned Group year.
  - Groups can only be used for stereo imagery in the same Summit project file. That is, all the images are from the same major image type (such as all aerial), and all have the same input coordinate systems.
  - Alternative: If your image sets must be in different .smtxml projects or can't contain model definitions, please use multiple Summit instances as described in 0 below. Examples of image sets that can't use Groups include: A combination of aerial and RPC satellite imagery (these require separate projects), any image sets that have different input coordinate systems (these require separate projects), and Orthophoto Collection projects (these are not stereo, so they can't define models).

To make groups, start with a Summit project that has models defined. Select the **Groups** tab on the Project window.

Select the  button, enter a name for the group, and select models to add to the group. Either highlight multiple models and press the  button or double click a single model to move it to the opposite list.

If all the model names to be selected have a similar string in their name, such as "6\_4" in this example, enter the characters in **Regular Expression** and press the **Select** button to help highlight the models.

Select **OK** to finish the group. Repeat to build each group.

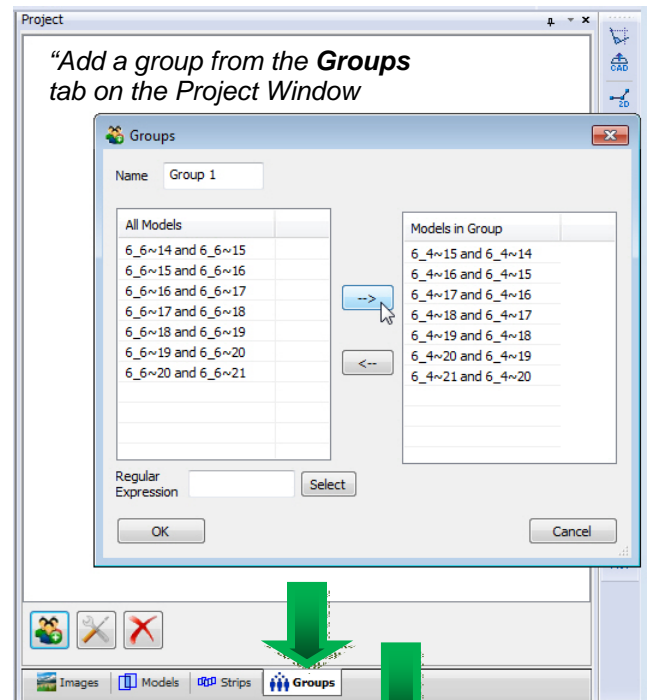
A model can belong to more than one group.

Use  to edit and  to delete a highlighted group.

To use Groups, open multiple viewports (**View > Viewports**). From the **Groups** tab, drag a group name or a model from within the group into a viewport. The viewport will show the model and group name in the viewport title. When this viewport has focus, it will only automatically load the next model if the next model is in its group.

A group may be open in more than one viewport.

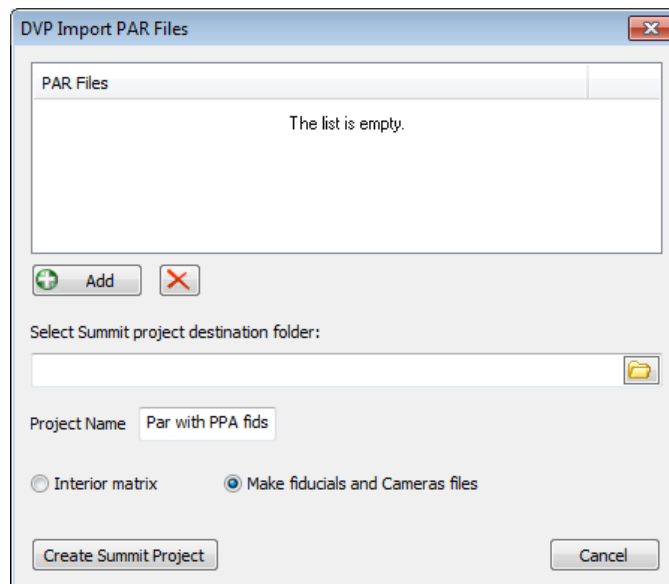
As always, non-group models may be opened at any time in any viewport by opening the model from the **Models** or **Images** tabs. Opening a model from the **Models** or **Images** tab cancels any group that might have been active in the viewport.



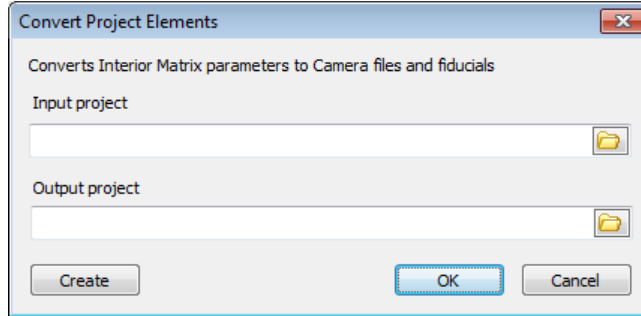
2. Multiple instances of Summit have changes and may be used as follows:
  - a. Any number of Summit instances can now automatically share the 3D input device. (Previously, only two instances could share it.)
  - b. The Summit instance that has current Windows focus automatically gains control of the 3D input device.
  - c. If a non-Summit application has current Windows focus, the Summit instance that most recently had focus retains control of the 3D input device.
  - d. The SUMMIT that controls the 3D input device can control the cursor in all the other Summit instances, as long as the projects have the same output coordinate system. For example, open an aerial project in one instance, and open an RPC satellite project of the same geographic area and the same output coordinate system in another instance; one instance can control the cursor position in the other instance. The instance that has control of the cursor will move the most smoothly.
  - e. Alternative: If there is only one .smtxml project file, it is better to use Groups in one Summit instance instead of opening the same project in multiple instances (see Groups in item 1 above).
  
3. Some imported project types, such as DVP and Socet Set SUP, import interior matrices and do not create camera files or fiducials. A .smtxml project that does not have a camera file cannot be imported by Trimble Inpho products. For this reason, two methods have been added to create virtual camera files and fiducials that result in the same orientation as the interior matrices. Please note:
  - The calculated fiducials will not match up visually with the actual fiducial marks on the image (if there are any), just as the virtual camera file is not the same as a camera file created with the actual camera calibration report. These are calculated fiducials and calculated camera files that produce the same orientation as the previously imported interior matrices.
  - DVP digital camera projects will most likely make only one camera file to be used by all the images, but other projects will most likely make a different camera file for each image.
  - The virtual camera file name(s) will match the image file name(s) unless only one camera file needs to be made.
  - Notes inside the new camera file(s) will say, "Virtual camera file."

The two new methods are as follows:

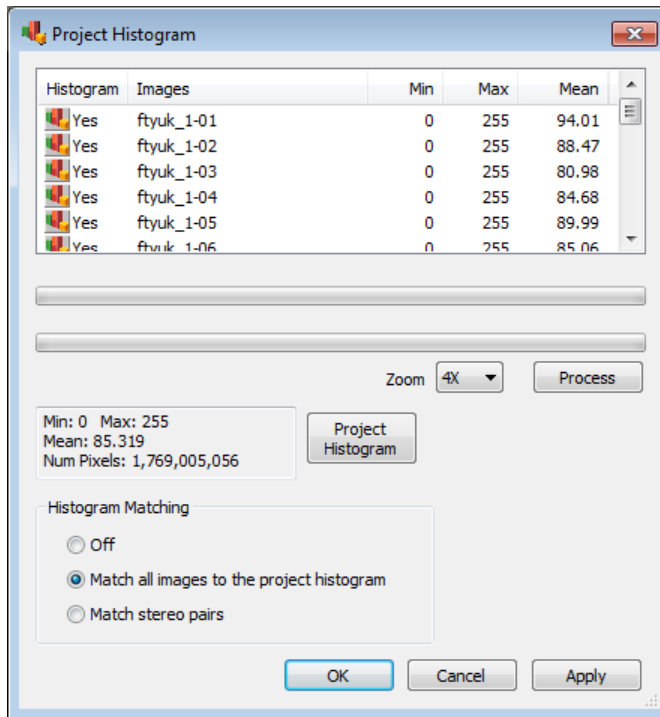
- a) When importing a DVP PAR files project, there is a new choice to create an interior matrix or fiducials and virtual camera files. The **Interior matrix** choice is the original functionality that imports an interior matrix, but does not create a camera file. **Make fiducials and camera files** is the new setting:



- b) For any existing project that has interior matrices without a camera file, select the new menu option, **File > Convert interior matrix**. Supply the input .smtxml project file and a new output project name. A new project with fiducials and one or more virtual camera files will be made.




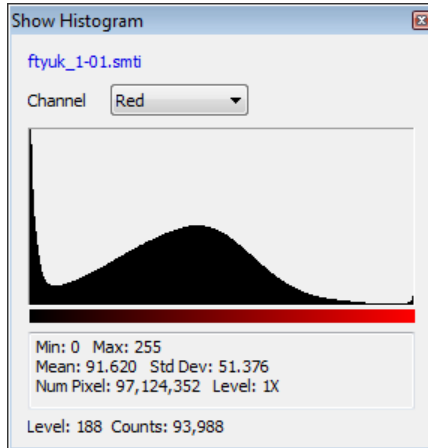
4. Summit>Imagery>Project Histogram is a new option to generate histogram files for each image and apply histogram matching to the images in the Summit view.



The first part of the dialog lets you generate histogram files. These are binary files that contain the images statistics. The file extension is **\*.histohfa**. These files will be placed in the same folder as the image files. Note that they are a binary format, so you cannot view them with a text editor. Next to the **Process** button is a **Zoom** level selection. For most purposes this should be left at **1X**. You can generate them at higher levels, but this would mostly be for speed. Images that take 2 minutes to process at 1X might take less than two seconds at 8X. Once the histogram file is created, there is no need to process them again unless you want to use a different zoom level. For example, if you generate them at 8X and then switch to 2X and hit **Process**, it will generate new histograms; however, if you select 16x it will not generate new files, because the current files are already at a higher level. Please note that higher levels are better and there is usually no reason to decrease accuracy.

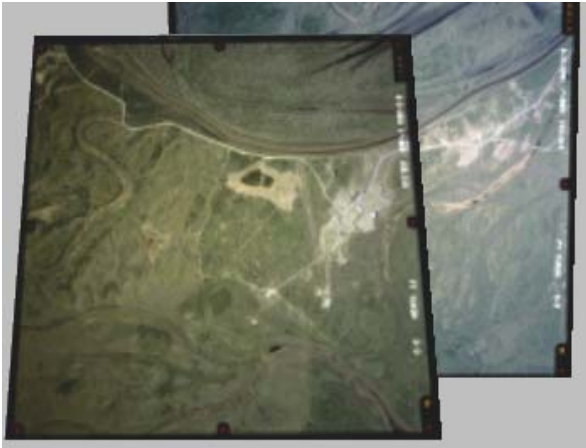
Note that 1X **.histohfa** files may also be generated by Image Creator. See item 16.b. on page 12.

After generation there will be a button,  Yes , for viewing the histograms for each image. For example:

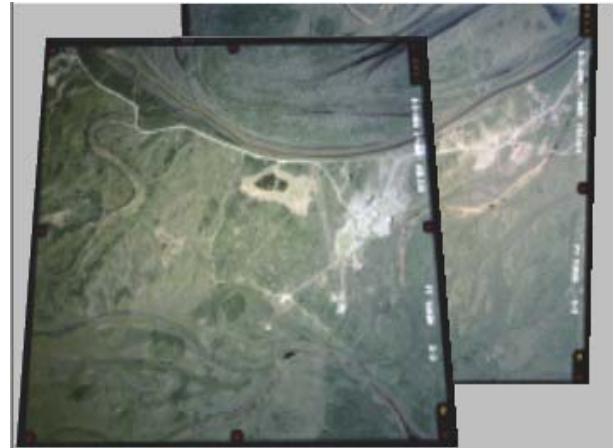


The next half of the dialog deals with Histogram Matching: **Off**, **Match all images to the project histogram**, and **Match stereo pairs**. These are project settings. The histogram files are required to use these settings. If the files are not there, nothing will happen. With a model open and using the **Apply** button, the effects for the matching can be viewed. Note that if all the images are similar it will be hard to notice the effects. This histogram adjustment happens before any other adjustment. The following is an example of this setting:

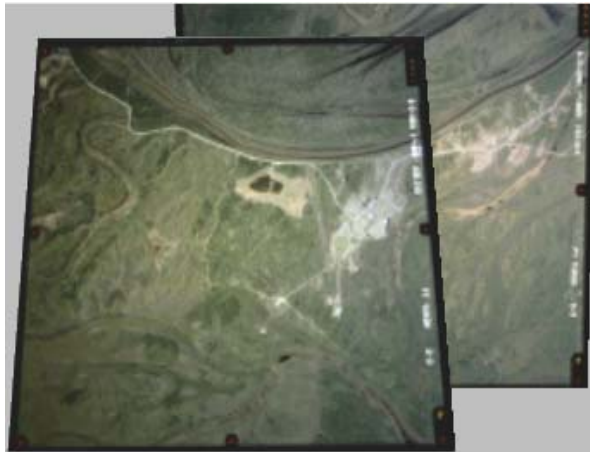
*Off.*



*Match all images to project histogram:*

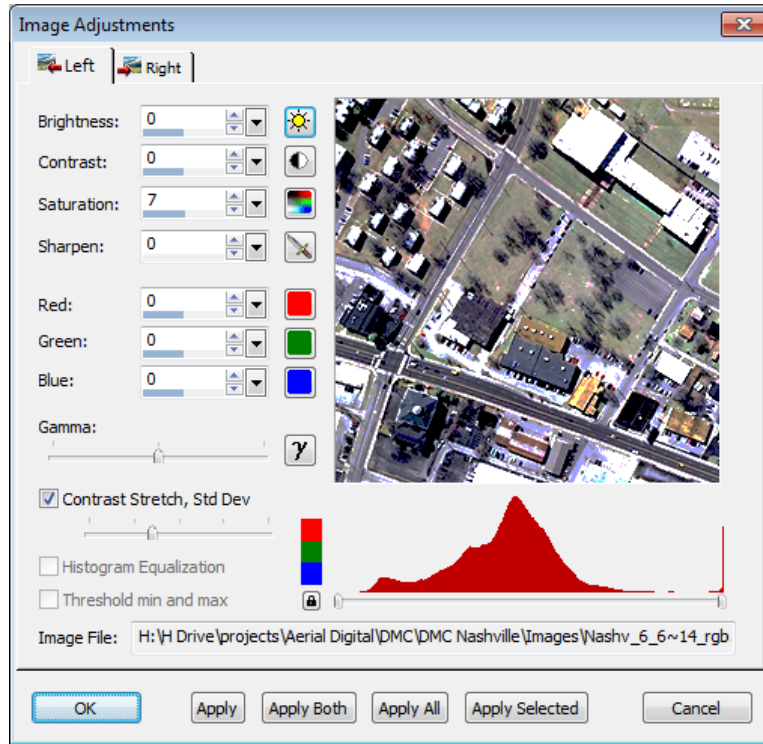


*Match stereo pairs (this is the average histogram of the two images):*



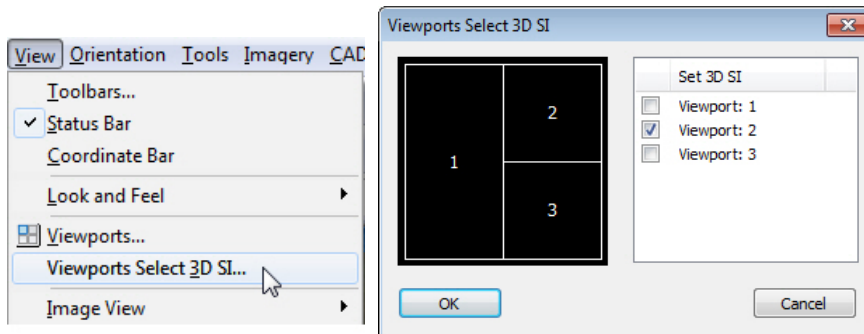


5. **Contrast Stretch** is a new adjustment option on the **Imagery>Image Adjustment** dialog. **Contrast Stretch** is a linear histogram equalization using the standard deviation locations as the new minimum and maximum. The slider bar is the number of standard deviations (StdDevs) from the mean. The range is from 1 to 3 with a default of 2 StdDevs. The larger the StdDev, the less effect of the stretch. The histogram is stretched from the number of StdDevs to the edges of the histogram. The images that would benefit the most have a histogram distribution bunched around the mean. The new distribution would be across the whole histogram.

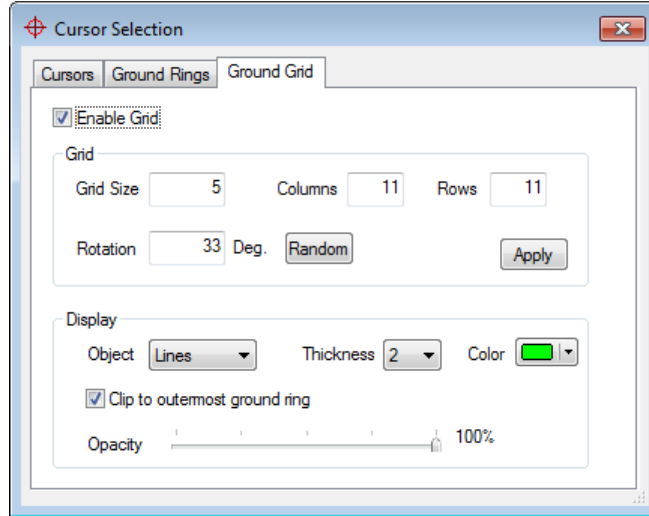


*New Contrast Stretch setting*

6. **View > Viewports Select 3D SI** is a new menu item that allows everyone – including system mouse-only users – to toggle the 3D SI-only view in any viewport. The 3D SI-only view was a new option for multiple viewports in version 6.5, but could not be set by system-mouse-only users, because it could only be accessed from the right click menu in the viewport. The right click menu does not appear if using a system mouse as a SUMMIT digitizer.



7. Summit's Cursor Selection dialog has a new **Ground Grid** tab to set a grid of lines or points around the cursor center. This grid can be clipped to the ground rings (set on the adjacent **Ground Rings** tab) area or not, and has other settings such as angle, color, ground size, and opacity.

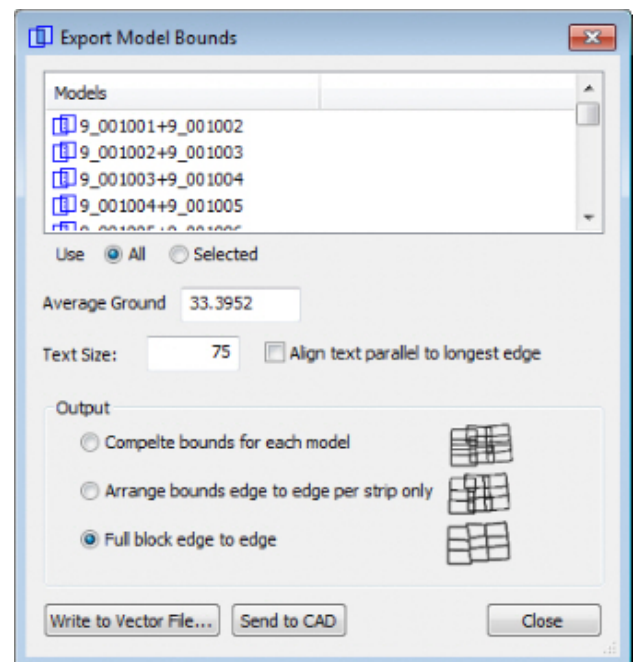


The new **Ground Grid** settings



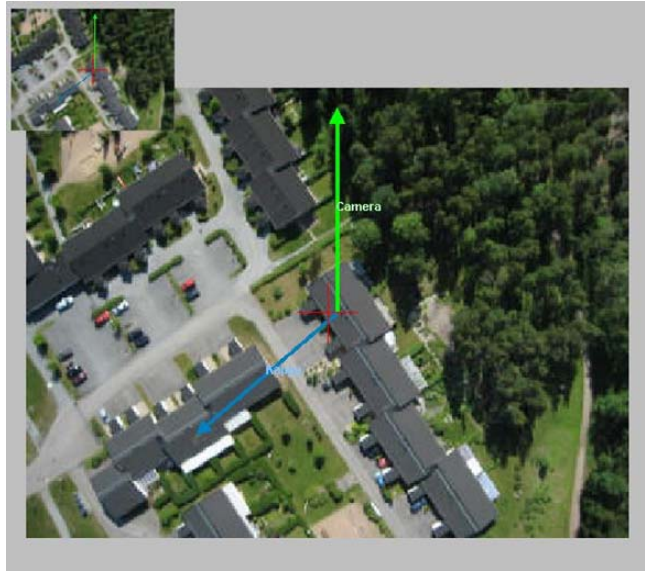
Examples of different **Ground Grid** settings results

8. SUMMIT's **File > Export > Export Model Bounds** has three new **Output** options:
- **Complete bounds for each model:** Draws a polygon around each models' entire stereo area, no matter how much it overlaps any other models.
  - **Arrange bounds edge to edge per strip only:** Draws model boundaries that do not overlap the stereo area of the adjoining images in the same strip, but may overlap stereo model areas from other strips.
  - **Full block edge to edge:** Draws completely non-overlapping polygons around stereo areas. In areas of multiple-model stereo overlaps, it splits the multiple overlap area among the overlapping models.



9. Summit's superimposition has the following updates:

- a. AutoCAD polyline closing "segments" that have an arc bulge factor now display correctly as arcs in superimposition .
- b. **Orientation > Show Camera/Kappa Direction** is new. It toggles camera direction and kappa angle arrows for one or two open images. The setting is off by default and is not a saved setting, so that it is off every time Summit starts. The arrows appear at the origin of each open image's center. For best viewing, zoom out so that one or both image centers are in the Main View.



*Camera direction and kappa angle display for a single open image*



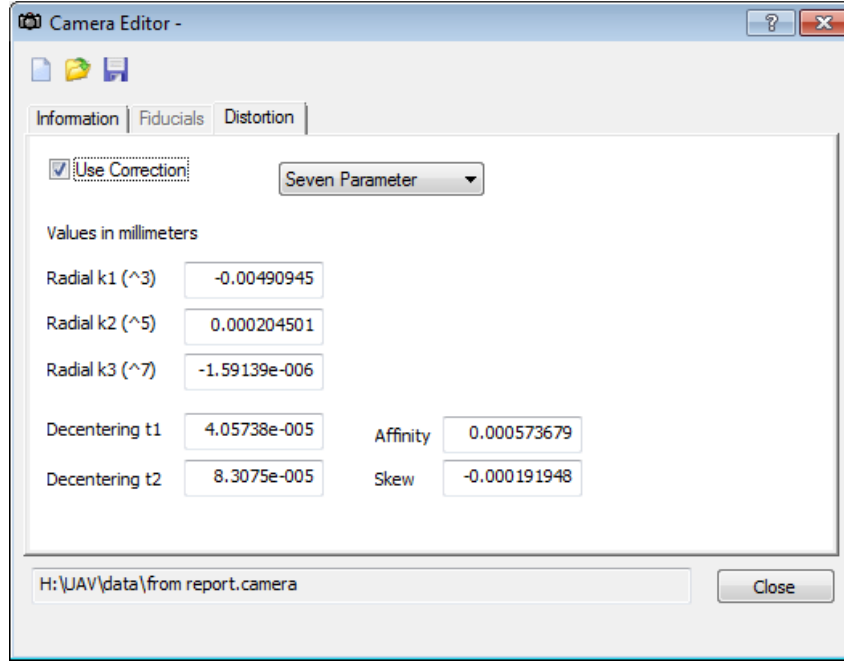
*Camera direction and kappa angle display for two end-overlapped images from different strips. The camera angles are opposite each other, since the airplane was flying different directions for each image. The origin for each arrow set is at the image center. Zoom out if this is not currently visible.*



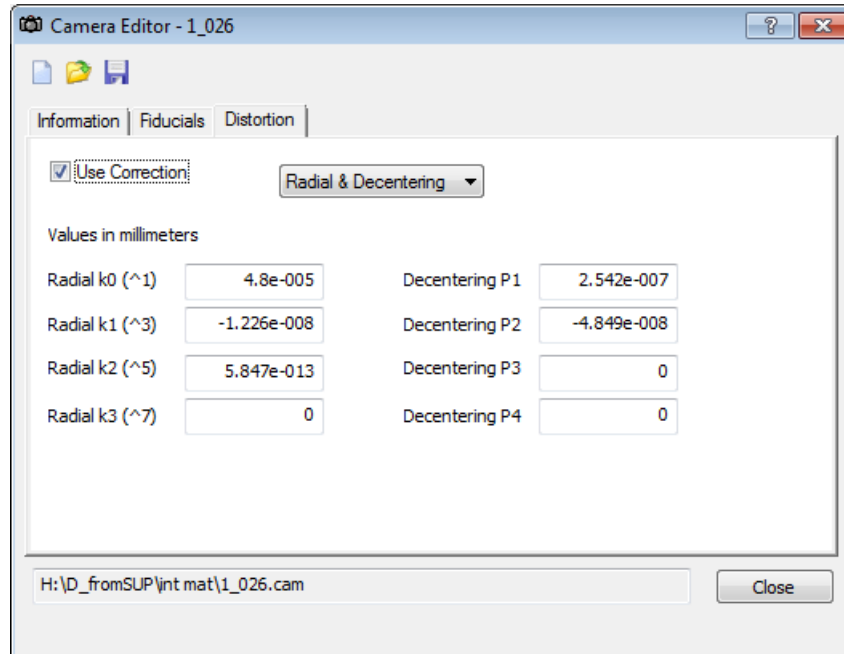
10. The Camera Editor (**Edit > Camera File**) has two new **Distortion** settings:

**Important!** The two new camera distortion methods are not backwards compatible with previous versions of DAT/EM software. If either of these distortions are present in the camera file, the project must be used with DAT/EM software version 6.6 or higher. Older versions will fail if they encounter the new distortions. Camera files that do not use either of the new distortions will be backwards compatible.

- a. **Distortion > Seven Parameter:** This has been added for UAV (Unmanned Aerial Vehicle) projects.

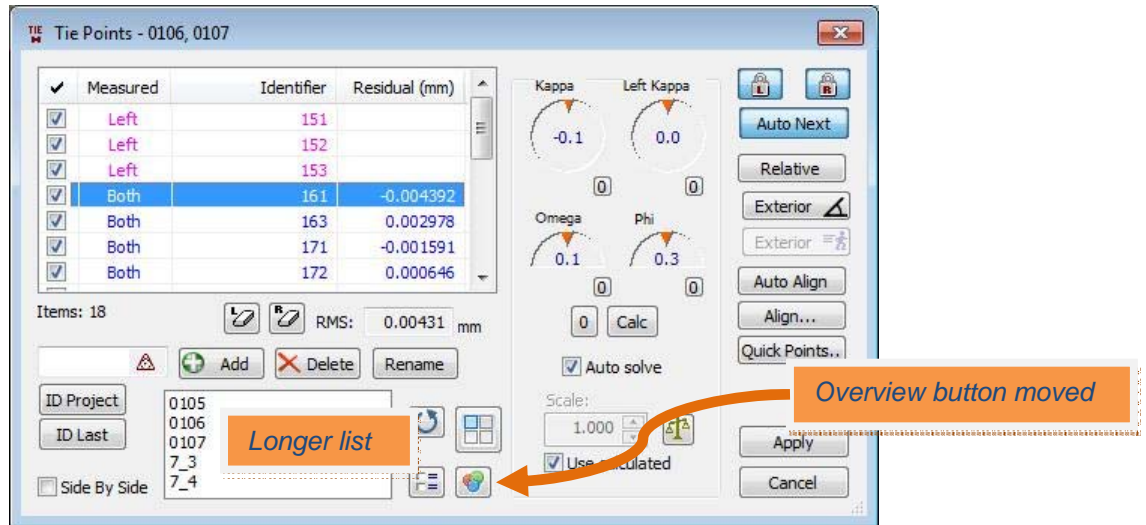


- b. **Distortion > Radial & [and] Decentering:** This is an eight-parameter version that is mostly used when importing SUP file distortions.

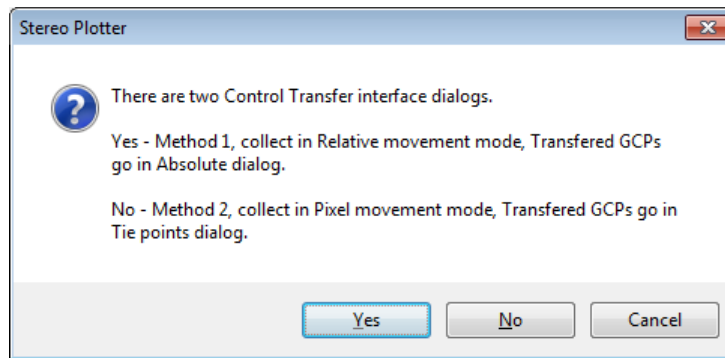


11. Aerial projects have the following orientation and orientation-related changes:

- a. Scanned images from a single frame film camera at different scan scales are now supported. Previously, frame aerial images that were scanned at different micron levels did not produce good stereo. Summit's epipolar adjustment now corrects properly for scan scale.
- b. In previous versions, if an UltraCam camera's project had no EO (exterior orientation) values, **Tools>Reports** placed "Focal Length = 0" in the report file. Now the focal length is reported correctly.
- c. The **Tie Points Relative Orientation** dialog has two changes: The **Overview** button has moved to prevent accidental activation; the list of models where a point is found has expanded to show more models before the gaining a scroll bar.



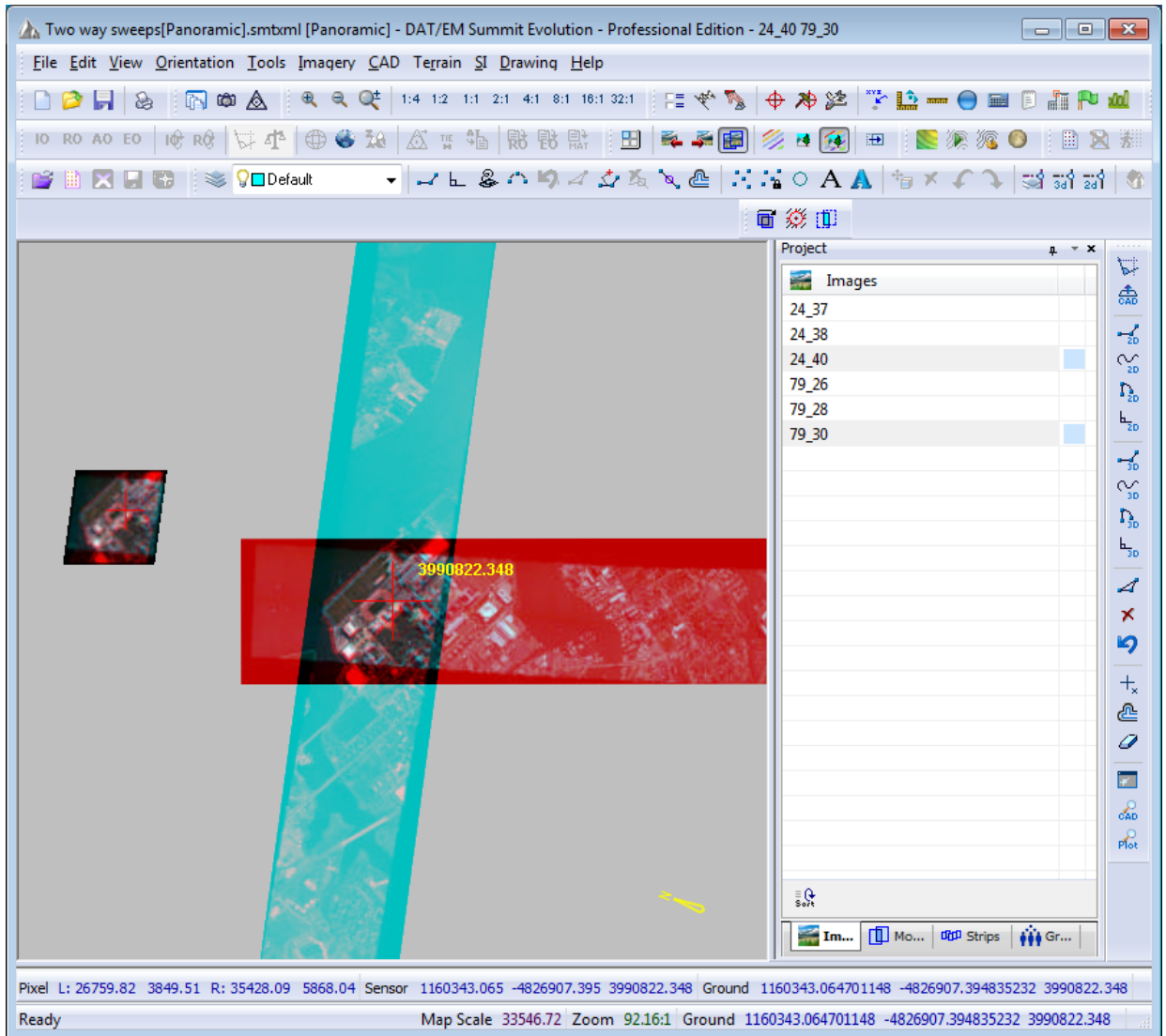
- d. Control Transfer for aerial projects has two methods now. Control Transfer changed in version 6.5 to allow more project types and to make it work for single images. The new method does not require a relative orientation and does not move in relative mode. However, some users missed the aerial project method that was available in version 6.4 and lower, because they liked the relative movement mode and seeing the points in the Absolute Orientation dialog. Both methods are available now in 6.6. When **Orientation>Control Transfer** is started in an aerial project with relative orientation, a question appears:



- **Yes-Method 1** is the method from version 6.4 and lower that shows the points in the Absolute Orientation dialog. This method requires a relative orientation and it moves in relative mode.
- **No-Method 2** is the new method that shows the control points in the Tie Points dialog. A relative orientation is not required. It moves in pixel mode.
- This is completely the user's choice. The method makes no difference to the resulting orientation.

12. VisionMap A3 projects have the following changes:

- a. When a VisionMap A3 projects was open, the north arrow display pointed to the negative of the actual north angle. For example, if north was 15°, it would point to -15°. This was a display issue only and had no effect on the A3 project.
- b. If two A3 images that are not from the same model are opened, Summit will perform an automatic kappa rotation for each image separately in the view. This makes it possible to view two images that “don’t go together” for possible stereo viewing. If the images overlap the same ground area, there may or may not be good stereo in some parts of the overlap. Summit cannot epipolarize A3 imagery, which means that any scaling and skew differences are not corrected. This new kappa rotation may be of some limited use in some projects. It is always best to open two adjoining flight line images for a “real model”.



*VisionMap A3 images that “don’t go together” displayed at their kappas for possible stereo viewing*

13. Orthophoto Collection projects (Summit projects made of orthophoto images, *not* for orthophoto creation) have the following changes:
- Coordinate transformation is now available. Note that this makes orthophotos more useful for use with multiple SUMMIT instances that need to control each other's cursor position, since all such projects need to have the same output coordinate system (see item 2 on page 3 above).
  - The Project Edit dialog now allows you to select multiple orthophoto image files to add to the project. Previously, only one image could be selected at a time.
14. Satellite RPC projects can now use Astrium© Pléiades satellite imagery. Order the Pléiades Level 1A stereo or tristereo imagery in either TIF or JPEG2000 format. JPEG2000 may be preferable due to Windows 7 large TIF problems. Create the project with Summit's RPC satellite project type.

Note that Pléiades imagery is offered in either TIF or JPG2000. Use the Image Creator for either format:

- Pléiades TIF is not tiled and does not contain image pyramids, so it must be processed with DAT/EM Image Creator with a recommended setting of **New TIF and PYR**. "New TIF" tiles the 1X image and "PYR" makes the zoom level pyramids. Microsoft Windows 7 has known problems dealing with large TIF files; be sure your original TIFs are not located in the same folder as the "New TIF" destination. Use a different destination folder in Image Creator. If the folder is the same, Windows will fail to rename the new file "\_new" to differentiate it from the old file, and the original file may disappear. Windows 7 can also lock up when copying or moving Pleiades TIF files; this is not DAT/EM's problem, but rather Microsoft's.
- Pléiades JPG2000 may be opened as-is, but be aware that JPG2000 is slower to load and tile than TIF. DAT/EM strongly recommends processing JPG2000 with the Image Creator set to **New TIF and PYR**.

Note that once a Pléiades RPC project is made, it must be used with DAT/EM version 6.6 or higher; it is not backwards compatible due to Pléiades' new RPC file format and new JPG2000 format.

15. Contour Creator has no changes. Please note that Contour Creator can trigger a MicroStation V8i Select Series 2. This problem is in DAT/EM Capture for MicroStation, not Contour Creator. The problem was identified too late to be completely fixed for version 6.6. If you experience this problem, please contact DAT/EM Support and ask to be notified when an update is available.

16. Image Creator has the following changes:

- It can now process the new JPEG2000 image format changes as seen in Astrium Pléiades satellite imagery. This file format compatibility applies to Image Creator, Summit Evolution, and any other DAT/EM product that reads images.
- Generate histogram file** is a new setting to create 1X-level histogram **.histohfa** files. These may be used in Summit's new **Imagery>Project Histogram** tool shown above in item 4 on page 4.

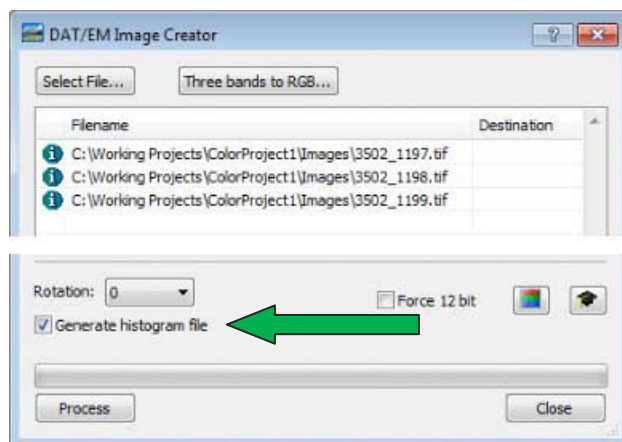


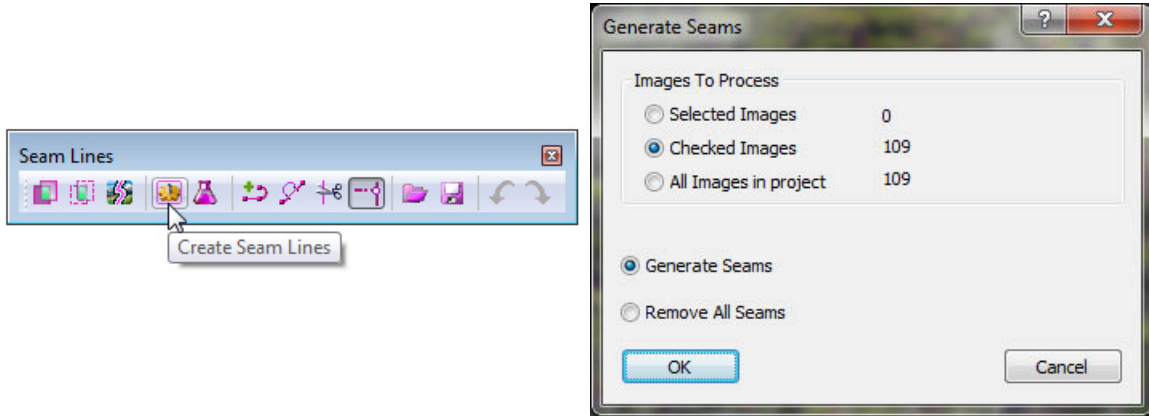
Image Creator's new **Generate Histogram File** setting



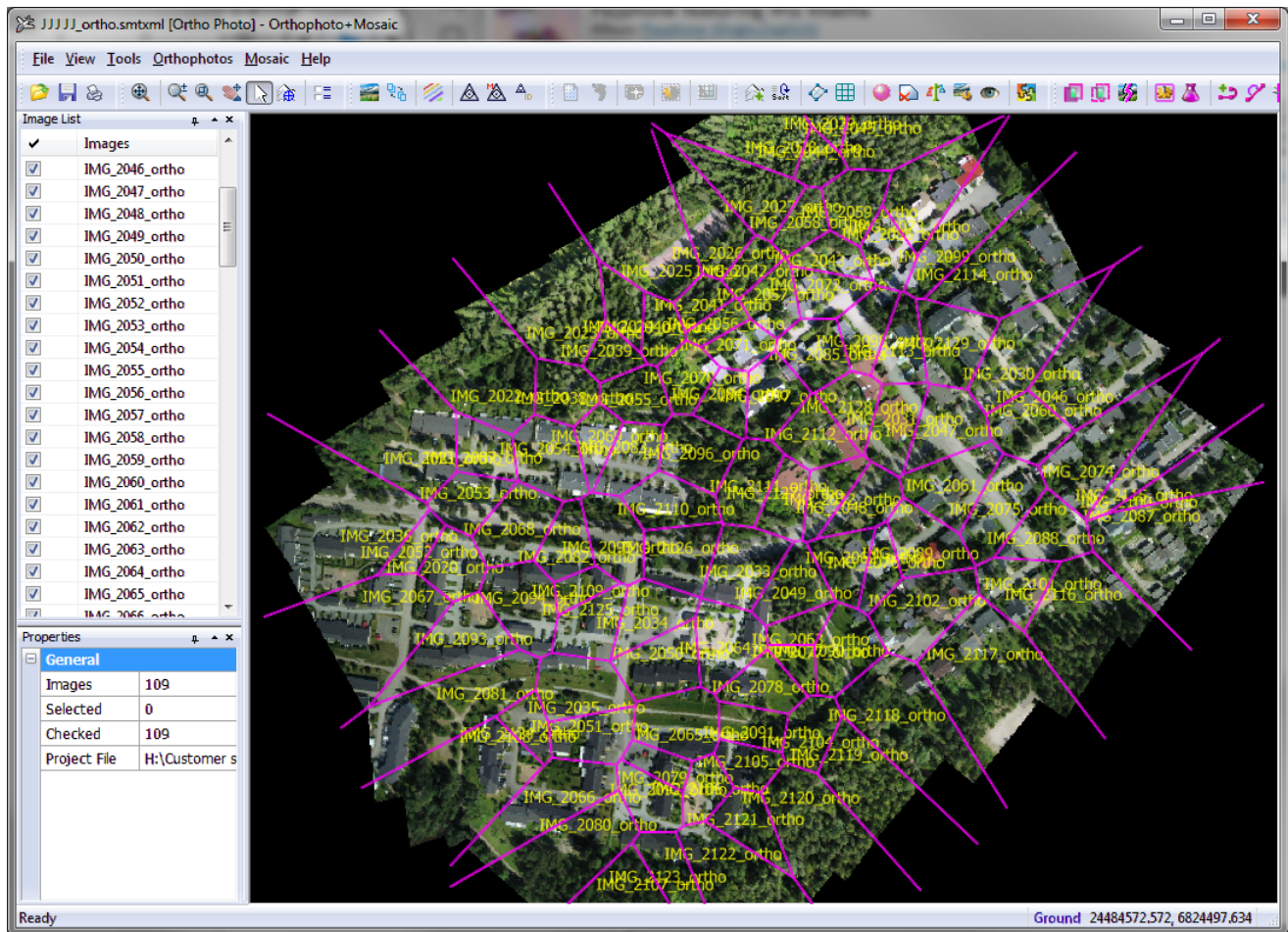
17. Project Viewer / Ortho+Mosaic has the following changes:

- a. Both the straight seam line and optimized seam line generators have been rewritten. They now create joined seams, no matter how many image overlaps and kappa angles are present.

The Generate Seams dialog is simplified to only ask to generate or remove seams:



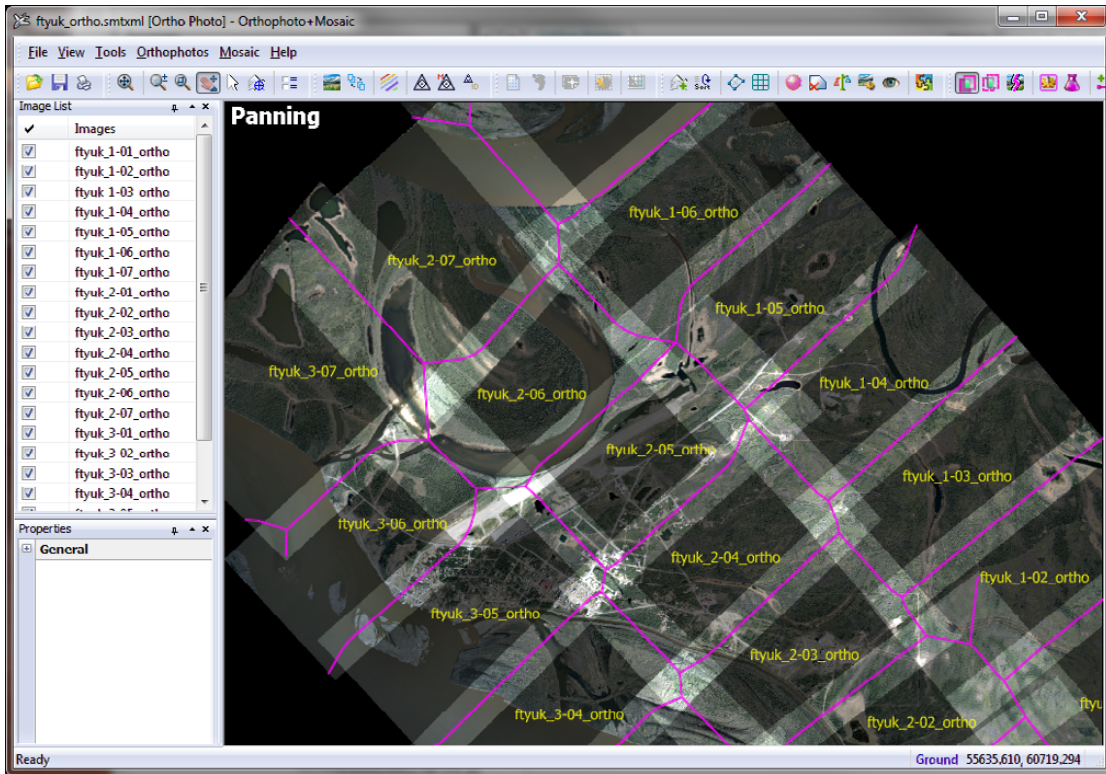
*New version of dialog for straight line seams*



*This example shows the seams generated for 109 greatly overlapping images with many different flight line angles*



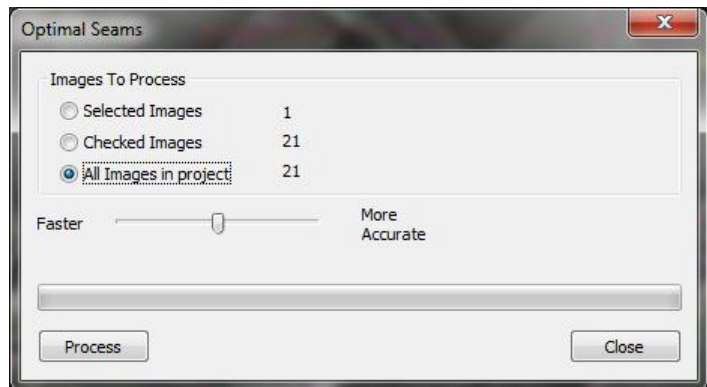
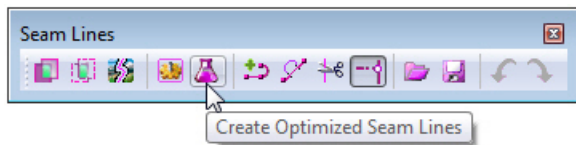
*Project Viewer / Ortho+Mosaic changes, Continued.*



*This example shows the seams generated for a set of traditional left-right/right-left flight lines. It is no longer necessary to edit separate seam lines to meet at the higher-overlap-level corners; this is done automatically. Edit manually only if you would like the seams to follow a different path.*

The Optimized Seam Line generator additionally processes the seams to find the best path through areas of most similarity. For example, forests, water, and buildings tend to be dissimilar between orthophotos, so the paths tend to avoid these. Roads tend to be similar, so the paths tend to follow them.

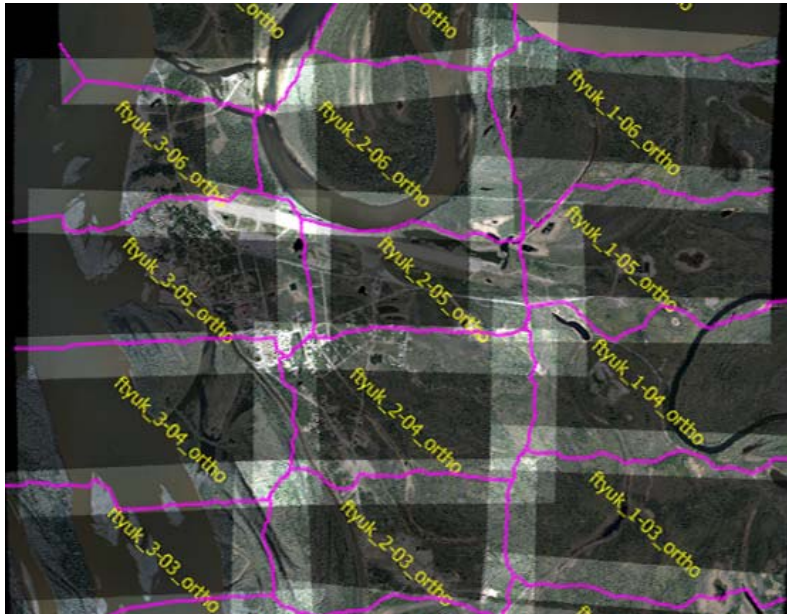
The Optimal Seam Line dialog has a slider with three states. The leftmost setting will generate the fastest, but will have result in less defined paths. The rightmost setting will generate the slowest, but will result in better defined paths. The middle setting is often the best choice and is always the default. The generator is multithreaded and will use up to 5 background threads, depending on the computer. This processes much faster than the older version.



*New version of the dialog for optimized seams*

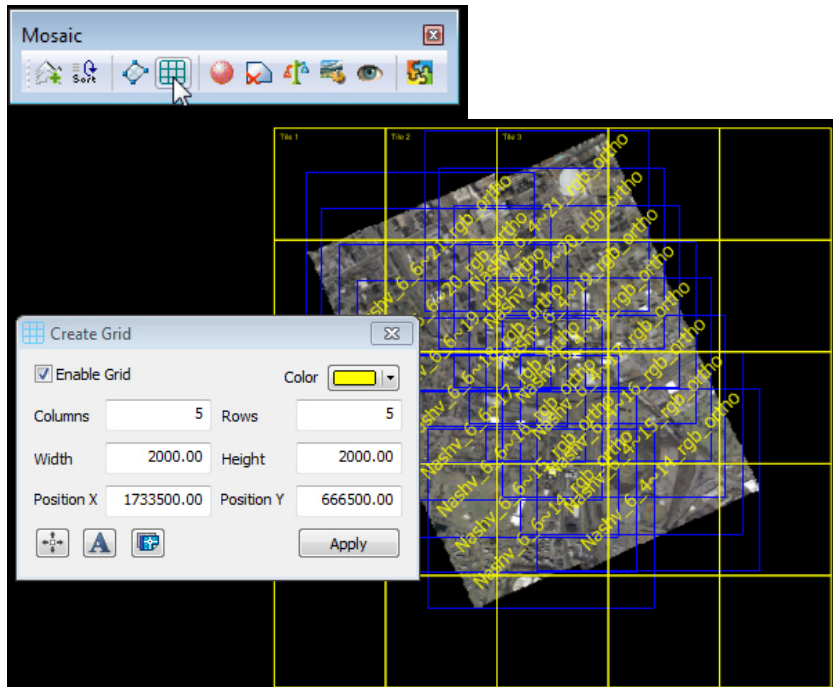
*Project Viewer / Ortho+Mosaic changes, Continued.*

The only points that are not optimized or moved are the join locations where multiple seam lines meet. The join point may not be on an optimal path, but it is the best join location in the overlap area. If desired, view each join and manually edit only if necessary.






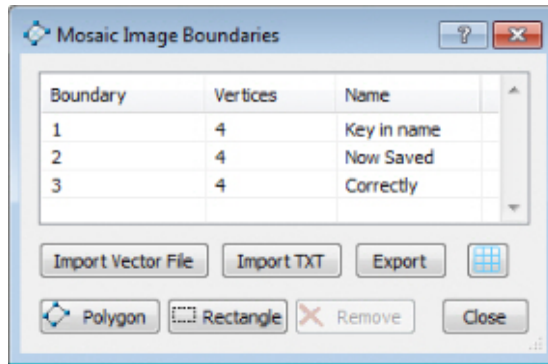
*Example of optimized seam lines generated at the default (middle slider bar) setting*

- b. Defined mosaic boundaries that are not positioned over any input orthophoto will be written out as 100% background pixel color. Previously, the image would not be created if it didn't have any image pixel colors in it. Now DAT/EM assumes that if the user creates a mosaic boundary, then the image should always be created. It is up to the user to use or discard all-background-color images if they are not wanted.
- c. Boundary Grid is a new interactive method to create a grid of named mosaic boundaries:
  - Select the **Grid Boundaries** icon on the **Mosaic** toolbar and make settings:



*Project Viewer / Ortho+Mosaic changes, Continued.*

- Either key in exact coordinates or move the grid interactively on screen using the  button.
  - Use the  button to label each grid location. Mosaic files will be named according to these labels.
  - Use the  button to export the grid boundaries to a CAD/GIS file.
  - The new boundary grid will not have a 1-pixel overlap. It is made to use with the *overlapped* boundary processing method, which will always be used automatically.
  - A boundary grid may be combined with any other boundaries, if necessary.
  - If a boundary grid is in use with other boundaries, *all* boundaries are treated as *overlapped* regardless of the **Inclusive/Overlapped** setting that is made on the **Main** tab of the Create Mosaic dialog.
  - If a boundary grid is not active, then any other boundaries may use either **Inclusive** or **Overlapped** on the **Main** tab of the Create Mosaic dialog. (Note that these settings were added in version 6.5. Use the context-sensitive “?” dialog help for information on these settings.)
- d. Mosaic boundary names keyed in to the Mosaic Image Boundaries dialog were not being saved. The names would be blank the next time the dialog was viewed, and the names would not be used to name the output files. This has been fixed.



*“Name” column contents now saved correctly*

## Landscape

The following changes were made to Landscape:

1. A problem was fixed for running the Key Points filter twice with the same filter settings on the same file. Previously, this could remove all the points.

## DAT/EM Capture for ArcGIS

The following changes were made to DAT/EM Capture for ArcGIS:

**Compatible with 32-bit versions of ArcGIS 9.1, 9.2, 9.3.1, and 10.0 (each with the latest service packs installed)**

1. It is now possible to set a field value from the DAT/EM Keypad, other touch device, or digitizer button. Syntax:

**SetFieldValue Layername:FieldName:value**



For example,

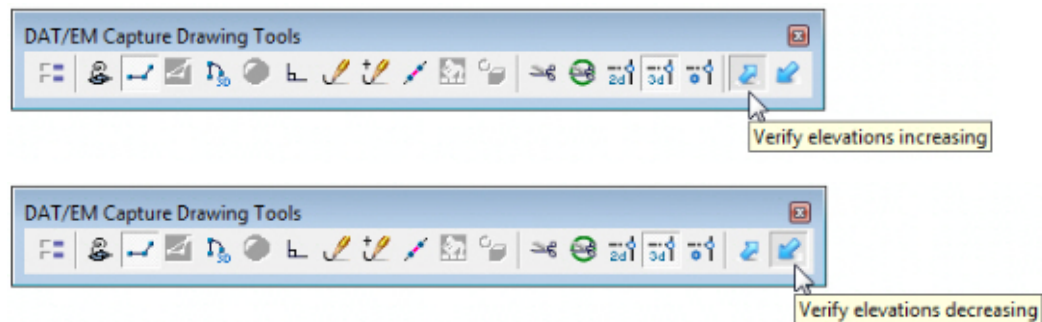
**SetFieldValue Obstacle:Description:Building.**

Fields and values that contain spaces must be grouped with quotes, for example:

**SetFieldValue Obstacle: "Description field with spaces": "Multiplex residential".**

It supports using the field alias instead of the field name. For example, **SetFieldValue Obstacle: "Alias of Description Field": "Single family home"** where "Alias of Description Field" is the field alias.

2. **CutPolygonTask** is a new keyword to use on the DAT/EM Keypad, other touch device, or digitizer button. It is the same as setting the task to **Cut Polygon Features** on the ArcMap 9.x Editor toolbar or setting **Cut** from the ArcMap 10.x DAT/EM Capture Drawing Tools toolbar. Suggestion: Add **Draw Arc**, **Draw PointToPoint**, or **Draw Square** to **CutPolygonTask** to activate both polygon cutting and a DAT/EM drawing tool.
3. **Use DAT/EM tools to clip with interpolated Z** is a new variation on the previously existing DAT/EM clip tool. Both tools clip interior rings into polygons. The method used to draw the interior ring is the same as for the older clip tool. Both of these tools are located on the DAT/EM Capture Drawing Tools toolbar.
  - The older clip tool, , draws the interior ring at the stereoplotter elevation. This has not changed.
  - The new "interpolated Z" version, , matches the Z of each vertex of the interior ring to the Z interpolated at the closest location on the exterior ring.
4. In previous versions, if the cursor got within snapping distance of a true circle object (not a DAT/EM-drawn segmented "circle"), an error message would appear for every possible snap position. The user would be required to "OK" each message. This message has been removed.
5. **Verify elevations decreasing** and **Verify elevations increasing** are two new monotonicity settings that work together with DAT/EM drawing tools. When on with a drawing tool, they check the previously digitized elevation and do not allow lower (for **Verify elevations increasing**) or higher (for **Verify elevations decreasing**) elevations to be digitized. These are found on the DAT/EM Capture Drawing Tools toolbar:

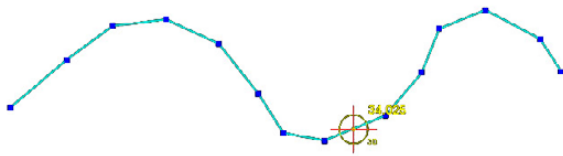


Along with these monotonicity settings are two new keywords, **MonoDown** and **MonoUp**, to activate them from the DAT/EM KEYPAD, other touch device, or digitizer button. **MonoDown** turns on the **Verify elevations decreasing** option. **MonoUp** turns on the **Verify elevations increasing** option.

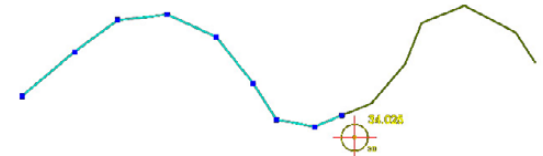


6. DAT/EM's version of **Cut Polygon** (Cut Polygon with a DAT/EM drawing tool) has several improvements:
  - a. The DAT/EM **Draw Stream** tool has been activated for use drawing the cut line. **Draw Stream** may be used exclusively or toggled to/from other active DAT/EM drawing tools.
  - b. The **Trace Multiple** drawing tool is automatically deactivated if the task is set to Cut Polygon Features (9.x) or Cut (10.x). Trace Multiple is not compatible with cutting polygons.
  - c. Undo now works to undo segments or arcs from the cutting edge while it is being drawn.
  - d. Undo used after cutting a polygon successfully reverts back to the polygon's original state.
  - e. Cut Polygon no longer crashes when using the DAT/EM arc drawing tool to draw the cutting edge.
  - f. **CutPolygonTask** is a new keyword to use on the DAT/EM KEYPAD, other touch device, or digitizer button. See 2 on page 17 above for more details.

7. The **Clip Polyline** tool can now cut a polyline into two separate, end-snapped polylines. To do this, pick twice in the same location. Note that the tool still has its original two functions as well: Clip off the shorter end of the polyline and clip into two polylines separated by a gap.



*Activate Clip Polyline and pick twice in the same location*



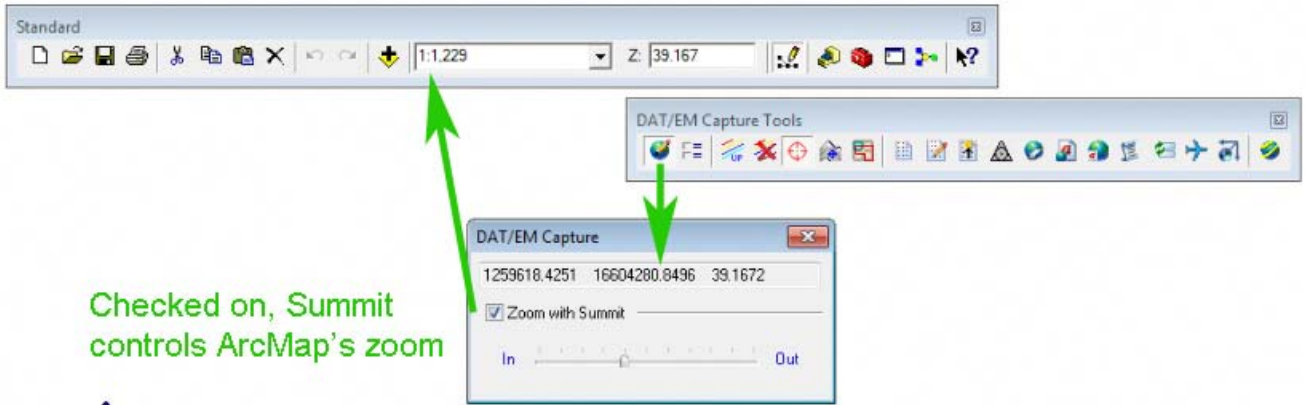
*The result is two end-snapped polylines*

8. Some redraws after edits, such as after using Field Update, would draw the edited object at Z=0 in SUMMIT's superimposition (SI). A further SI Update would redraw it at the correct elevation. This has been fixed to draw the object at the correct elevation immediately after the edit.

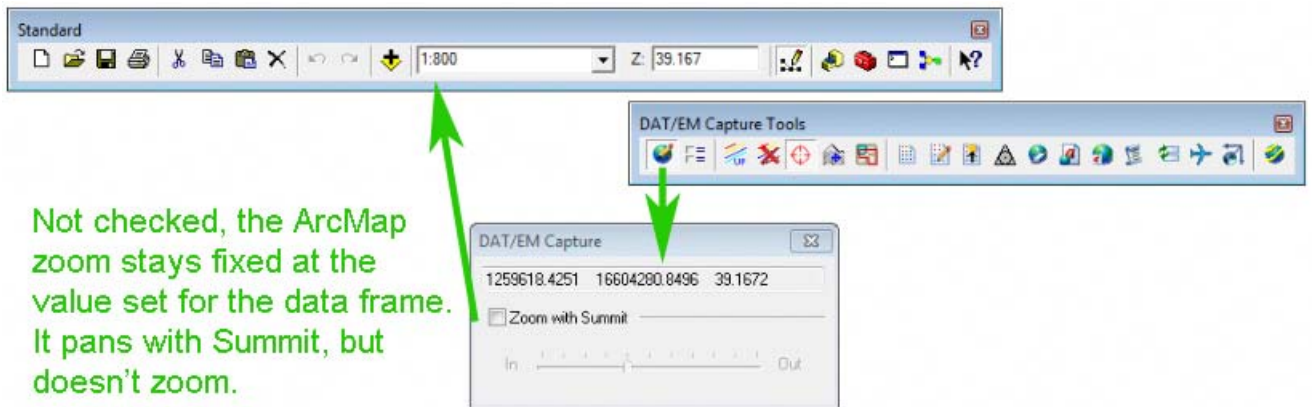


9. There is a new **Zoom with Summit** checkbox in the DAT/EM Capture coordinates dialog.

- **Zoom with Summit** checked on (previous functionality), the ArcMap view zooms in and out when SUMMIT zooms in and out, with a relative scale set by the slider in the DAT/EM Capture dialog.




- **Zoom with Summit** unchecked (new functionality), the ArcMap view does not change scale when SUMMIT zooms; it stays at the scale set on the Standard toolbar.



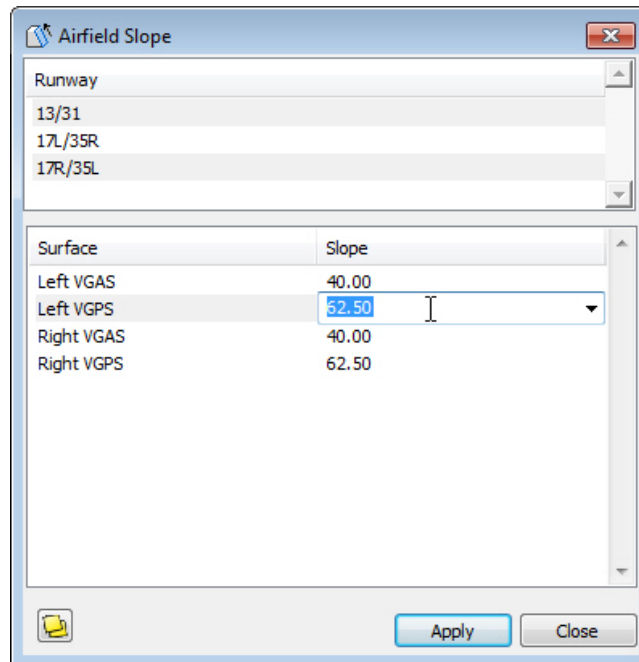
Note that the ArcMap view always *pans* with SUMMIT, no matter how **Zoom with Summit** is set.

10. Airfield3D has the following updates:




- a. There is a new Airfield Slope dialog that allows you to change the slope of the Left and right VGPS and VGAS surfaces or reset them to the 18B defaults. Several customers requested differently sloped surfaces in these areas to temporarily work with non-18B specifications. Start Airfield3D on the ArcMap

side. Select the  Airfield Slope button from the lower edge of the dialog. Select one or more runways from the **Runway** list. Set the desired slope from the **Slope** list for the particular surfaces below. Either select a value from the menu or key in a new value. Select **Apply** to activate the different slope settings. All surfaces for all runways will be recalculated and redrawn. In Summit's superimposition, all runways will be reset to checked on and all OEIs (One Engine Inoperable) surfaces will be unchecked. You may then check and uncheck any surfaces using the Airfields dialog in Summit.

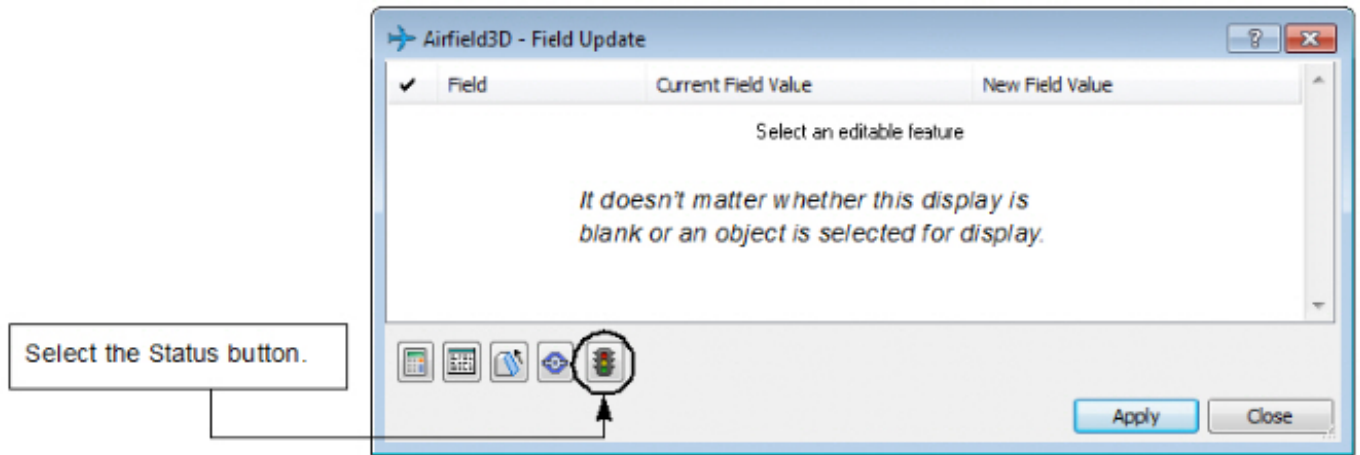
To reset the values to the 18B defaults, select the reset button,  .



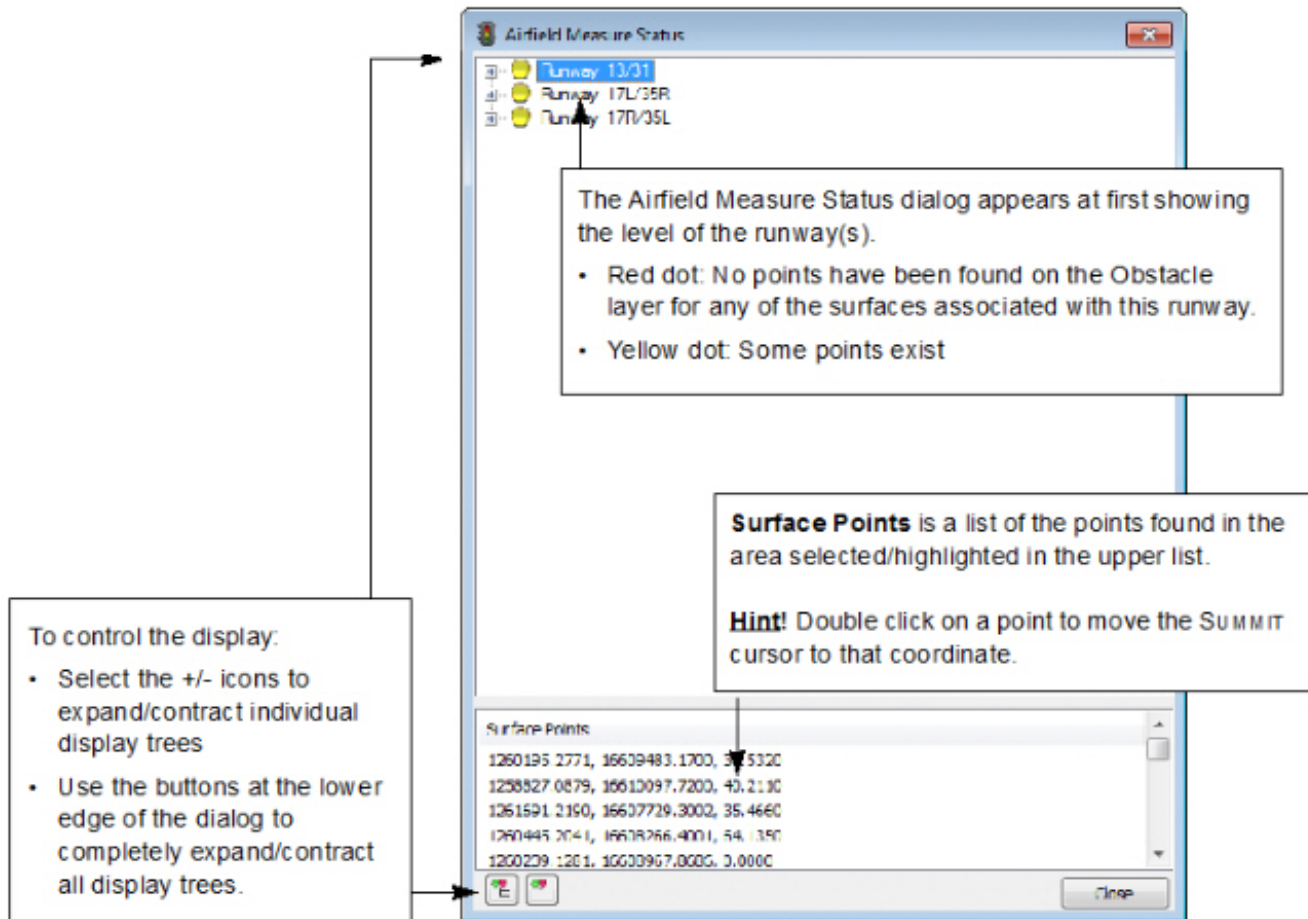
- b. The **SetFieldValue** option mentioned in item 1 on page 17 above may be especially useful for Airfield3D tasks.
- c. The **Natural** and **Manmade** settings have been removed from the **Airfield3D – Field Update** dialog. These settings made the user decide whether or not to measure the height of the objects for the “Above Ground Level” field. Measuring the height of an object is necessary for manmade features only. Now this is determined automatically when the “Obstacle Type” field is set.
- d. Airfield3D has a new status tracking tool called **Measure Status**. Use it to quickly see whether enough points have been digitized within each surface area. Points on the Obstacle layer are counted and displayed, and the areas are color coded as follows:

-  Red dot: No points in area.
-  Yellow dot: At least one point, but not enough points, in area.
-  Green dot: Enough points to meet the 18B standards for the area.

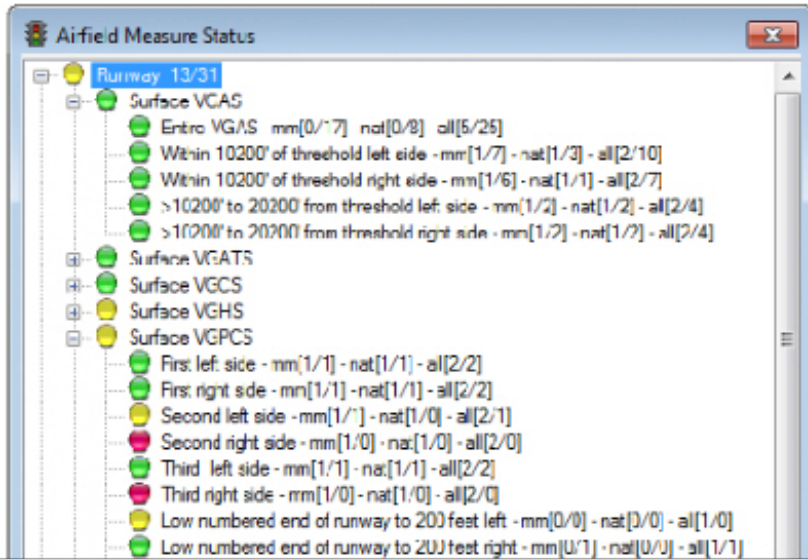
To use the **Measure Status** tool, select the stoplight-like button on the Airfield3D - Field Update dialog:






The **Airfield Measure Status** dialog appears. Get information and/or move the cursor as described in the graphics below:



When the list is expanded, information about individual surfaces is visible:



**Color Key:**

-  Red dot: No points found in the area.
-  Yellow dot: At least one point found, but not enough for the area.
-  Green dot: Enough points found. The ultimate goal is to see a green dot next to every display.

**Abbreviations, Types of Points:**

- mm = man made feature
- nat = natural feature
- all = man made plus natural features

**Number displays such as [0/17]:**

- In a display such as "[0/17]", the number on the left is the number of points required by the 18B. The number on the right is the number of points that were found.
- In the "all" display, the number on the left may sometimes be higher than the number of required "mm" (man made) plus the number of required "nat" (natural) features. "All" shows that the indicated number of points must exist, but for some areas, they can be any mixture of man made and natural features. There may or may not be a requirement that at least one must be natural or at least one must be man made.
- For example, if the display shows a yellow dot with "mm[1/4] - nat[1/0] - all[2/4]", you see that there are excess man made features (1 is required, but 4 found), and not enough natural features (1 is required, but 0 found). In this case, you might double click on a point in the lower list to get the cursor into the general area, then digitize one additional natural feature. The dot would then be green with a display, "mm[1/4] - nat[1/1] - all[2/5]".

## DAT/EM CAPTURE and MAPEDITOR for AutoCAD

### Changes apply to:

**32-bit AutoCAD 2004-2013 versions with the latest service packs.**

**64-bit AutoCAD 2008-2013 versions with the latest service packs.**

**BE ADVISED: Version 6.6 no longer supports AutoCAD 2000-2002 versions. If you use these old AutoCAD versions, please upgrade to AutoCAD 2004 or higher before installing DAT/EM version 6.6.**

**DAT/EM software will install for multiple AutoCAD products of different year numbers on the same computer; however, it will not install for multiple same-year versions together. For example, it will install for AutoCAD 2011 and AutoCAD Map3D 2012 together, but it will not install for both AutoCAD 2012 and AutoCAD Map3D 2012.**

**Reminder: You must run AutoCAD at least one time to activate its license *before* installing DAT/EM software.**

The following changes were made to DAT/EM Capture and MapEditor for AutoCAD:

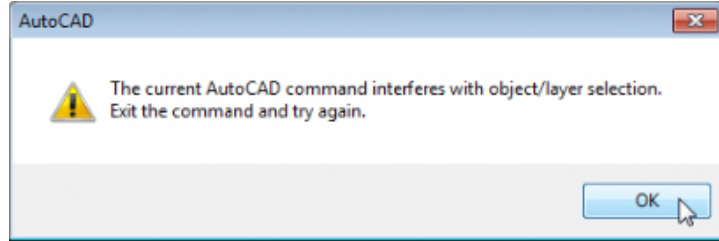
1. Version 6.6 is the first version to be compatible with AutoCAD 2013.
2. DATDRAW has the following changes:
  - a. DATDRAW's rubber banding was causing Summit Evolution's superimposition to be slow. Since superimposition has its own rubberbanding, DATDRAW's rubberbanding has been removed.
  - b. During stream digitizing mode, key in "N" or "n" to activate a "pen up" mode. The polyline will still be in process, but no points will be added to the line until the digitizing button is pressed again to resume the "pen down" mode.
3. The stand-alone CROSSCHECK command (as well as the version in MapEditor) has performance improvements. One example file that contained many polylines previously processed in 7 hours and now takes 20 minutes. Please be aware that the time it takes to process polyline crossings is exponential based on the total number of polyline segments. Please plan to allow enough time for the process to run.
4. The stand-alone GRIDIT command could insert the wrong block due to incorrectly alphabetizing the block list. This has been fixed so that the selected block name is the block that is inserted.
5. AUTOLIST no longer causes AutoCAD to crash if the application is loaded, unloaded, and loaded again.
6. AutoCAD polyline closing "segments" that have an arc bulge factor now display correctly as arcs in SUMMIT's superimposition.
7. DTMIT has improvements:
  - a. Previously, when a point was skipped, the stereoplottter would move to the correct (x,y), but an incorrect elevation for the next point; now the elevation does not change during the skip.
  - b. When both **Show grid** and **Alternating drive direction** were on, **Collect** could start at the last point of the first row, skipping any previous points in the first row. Now **Collect** always starts on the first point of the first row.
  - c. If Osnap was on during DTMIT data collection, it would give unreliable results. Now DTMIT saves the previous Osnap state, turns Osnap off during data collection, and restores the original Osnap setting when finished.
  - d. It could show all the same IDs for individually selected objects on the **Select** tab. This was a display-only problem; the proper IDs were used internally. The display has been fixed.
  - e. If **Define Sample Points** (also known as "Sparse Points") is on with **Free Movement** on and **Drive To Ground** off, only one digitized point is necessary to insert each data point. Note that for all other settings combinations, two digitized points per data point are still necessary.



8. MapEditor for AutoCAD has the following changes:

MapEditor Operational Changes:

- a. Some AutoCAD commands such as PAN can interfere with MapEditor's selection tools. Only one command that requires a selection should run at a time. If a command such as PAN is active when a MapEditor selection tool is started, a message now appears:



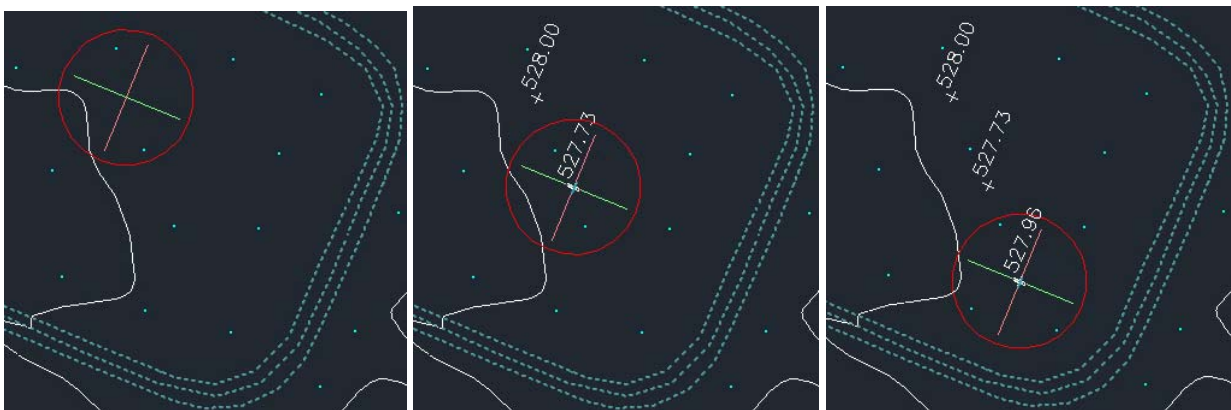
*A message appears if an AutoCAD command such as PAN is running when a MapEditor selection tool is started*

If this message is received, select **OK**, cancel the current AutoCAD command, and try again.

- b. Some select-layer-from-object controls were visible on the dialog, but not operational. These have been activated.
- c. AutoCAD could sometimes give multiple "!" error messages or a loud double beep sound as it closed after having had the MapEditor loaded. This was annoying to the user, but did not have any lasting bad effects. These messages and sounds have been eliminated.

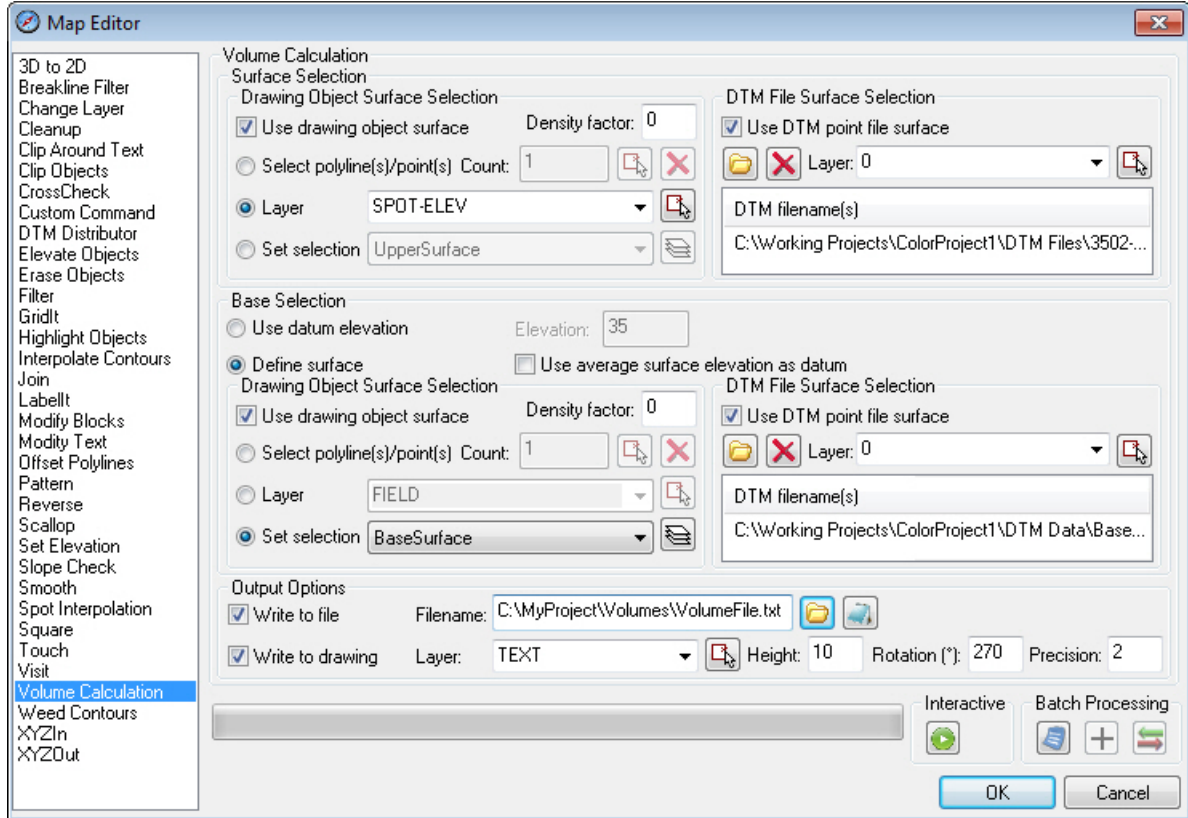
MAPEDITOR New Tools:

- d. **Spot Interpolation** is a new tool to interactively insert spot elevations based on the elevations of nearby existing objects. This tool runs interactively only; it cannot be added to a batch file. Set "**Interpolation Objects**" to define the existing objects that will provide the elevation data, for example, breaklines and elevation contours. Choose "**Nearest Neighbor...**" to determine the elevation based only on the single closest possible point in the input set. Set "**Use interpolation objects within search range**" to determine the elevation based on all input objects within the "**Radius**". Make settings for the text and mark appearance. Select the green **Run** button. Click once in the AutoCAD view to activate a circle around the cursor. Objects that fall within this circle will be used as interpolation objects. Follow the prompts to select locations for new spot elevations. When finished, key in a blank return or <Esc> to return to the dialog.

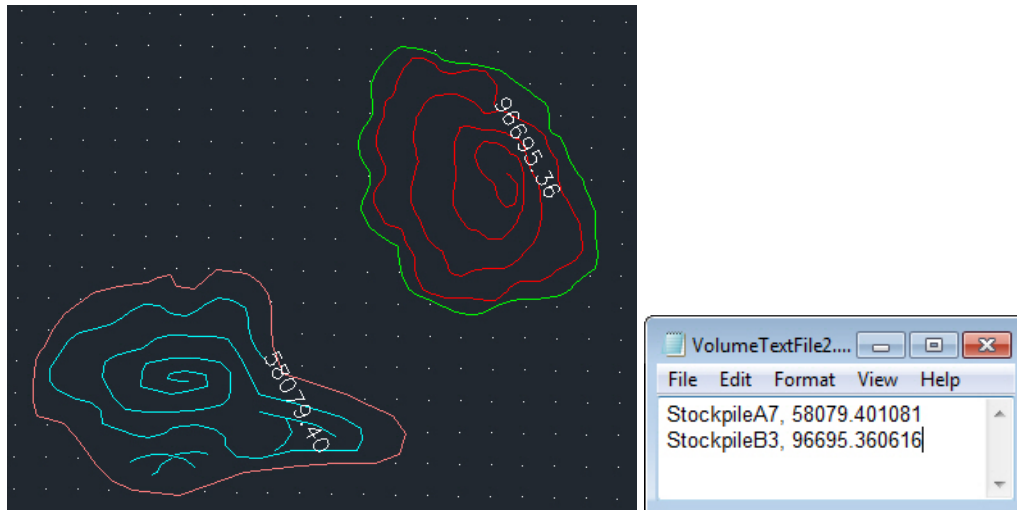


*Example of **Spot Interpolation** selections*

- e. **Volume Calculation** is a new tool to calculate volumes based on an upper surface and base elevation definition. Create a base definition and a surface definition. The definitions may either be objects in the drawing file, a DTM/DEM in a file, or both. If running more than one distinct area at one time (for example, two gravel piles drawn with polylines), place any base and surface definition objects on separate layers. The **Base Selection** has a **Densify factor** setting for drawing objects; this setting interpolates points at the set ground distance along polyline vectors, so that long segments are treated as having more vertices. The results are expressed in cubic ground units.

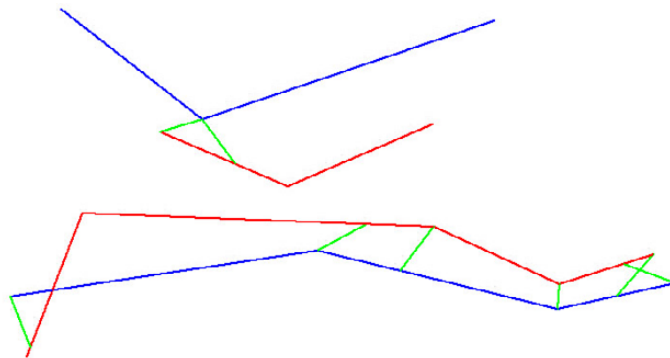


New MapEditor Volume Calculation tool



MapEditor Existing Tools:

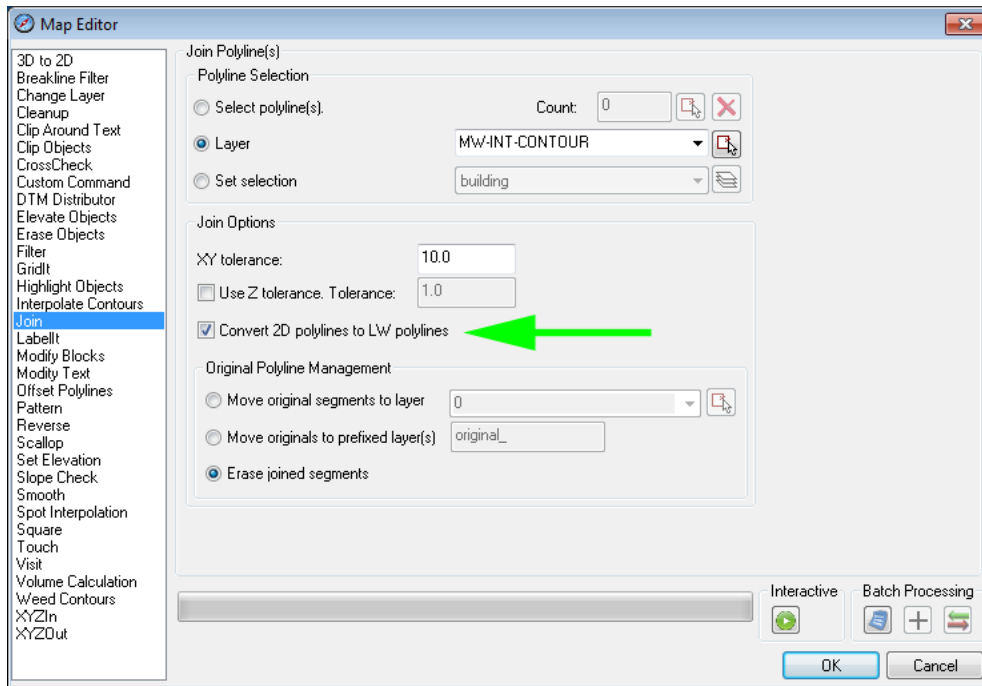
- f. In rare cases, **Cleanup**'s zero-length polyline check could remove polylines that had a non-zero length. This has been fixed.
- g. **Clip Object** now clips splines and lines in addition to polylines.
- h. **CrossCheck** has the following changes:
  - o **CrossCheck** will now make a new layer from a keyin in the **Insert text > Layer** field. Previously, it would not make the new layer, and after running, the text would be on layer 0.
  - o **CrossCheck** has a new option to find intersections inside or outside one or more closed polyline boundaries. If the setting is not checked, the whole file will be searched. To use boundaries, check on **Use boundaries** and use the arrow button to activate the settings dialog. Both the boundary settings and the previously existing marking/reporting options have been moved to separate settings dialogs.
  - o **CrossCheck** has performance improvements. One example file that contained many polylines previously processed in 7 hours and now takes 20 minutes. Please be aware that the time it takes to process polyline crossings is exponential based on the total number of polyline segments. Please plan to allow enough time for the process to run.
  - o **CrossCheck** uses an Autodesk ARX function that should not project the end of the polyline, but unfortunately, it projects the line in some cases. This could lead to false "intersections" being indicated a certain small distance away from the end of a polyline, where the polyline actually falls short of another polyline instead of intersecting it. **CrossCheck** now additionally checks that there is an actual intersection at the location. This could increase the processing time, but will also increase the accuracy of the results.
  - o **CrossCheck** has a new "near intersection" option to mark polylines that are within a distance tolerance of each other. In the case that two input lines are parallel and within the "near" x-y search distance, there are an infinite number of near intersections; therefore, the algorithm is restricted as follows: The algorithm finds near intersections at each "from" and "to" line vertex. At each vertex, intersections are determined by intersecting a circle centered at the vertex with other input polylines. The radius of the circle is the x-y tolerance. The marking label is centered on the "from" vertex where the search was conducted. The corresponding "to" marking label is centered at the closest point that the search circle intersected the "to" polyline or, if there are vertices between the two intersections, the intersection point or vertex that is closest to the circle center. (The closest distance is relative to the "from" vertex.) There is an option to draw a line that connects the near intersections.



*Example of "Near intersections". Green lines are from the "Add line" marking option.*

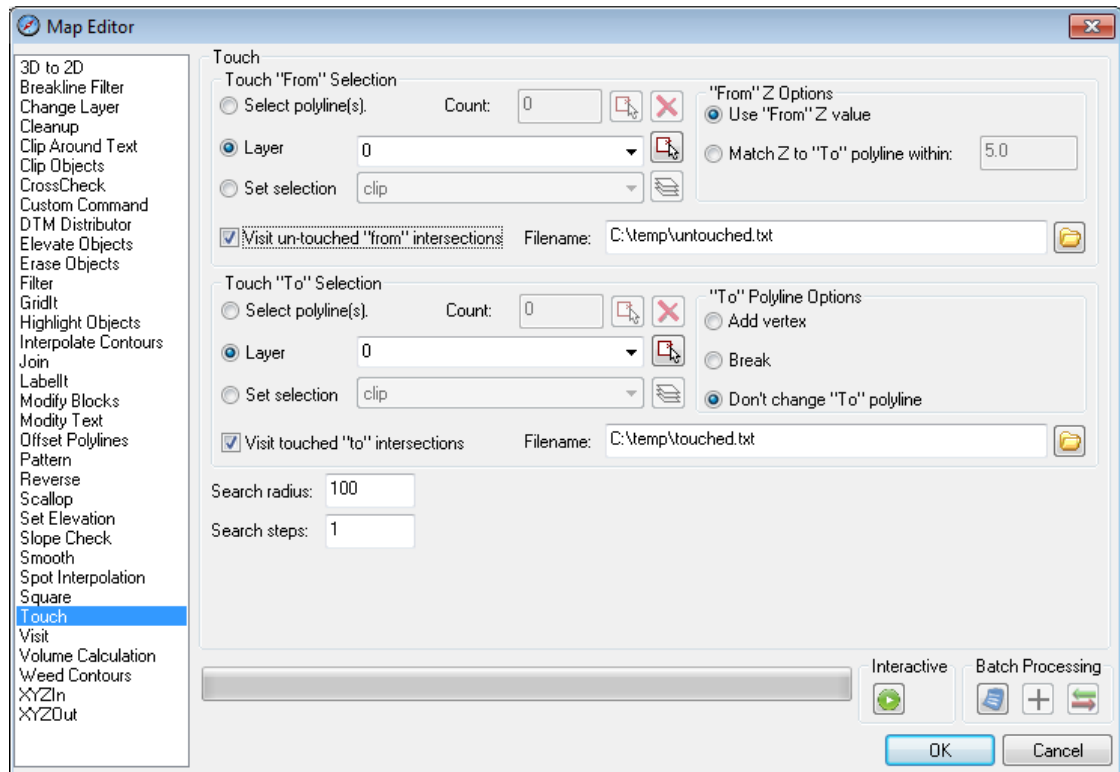
- i. **XYZOUT** previously ignored the **Y** and **Z Decimal precision** settings and used the **X Decimal precision** setting for all coordinates. This has been fixed so that the **Y** and **Z Decimal precision** settings are applied correctly.

- j. **Join** has a new checkbox to allow older 2D polylines to be converted to LW polylines. This enables the 2D polylines to be joined to LW polylines. If the setting is not on, 2D polylines will not join to LW polylines.



Join's new "Convert 2D polylines to LW polylines" setting

- k. **TOUCH** has new output file options to write "touched" and "untouched" coordinates to two separate Visit files. "Untouched" coordinates are polyline endpoints that were checked for touching, but did not find anything to touch within the **Search radius**.



New TOUCH file output options: "Visit un-touched..." and "Visit touched..."

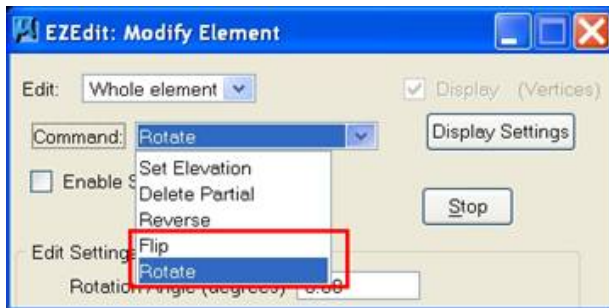
## DAT/EM Capture and MapEditor for MicroStation

Changes apply to Capture for MicroStation V8/2004 Edition, MicroStation XM, and MicroStation V8i Series 1 or 2 on 32-bit and 64-bit operating systems. Note:

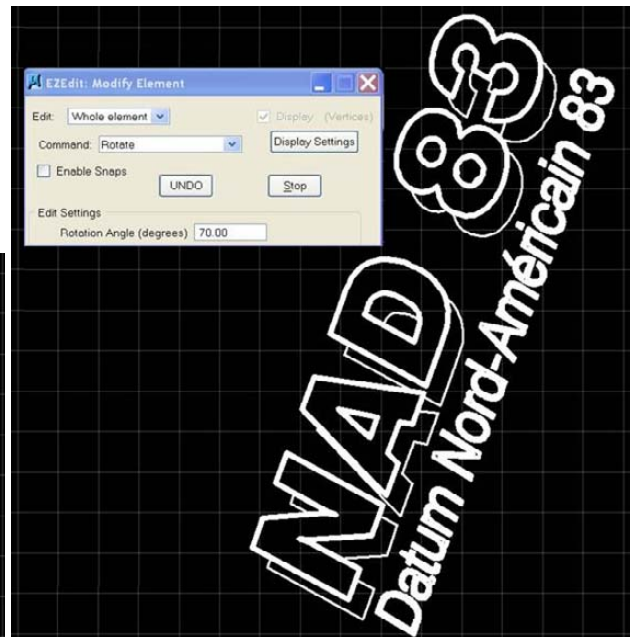
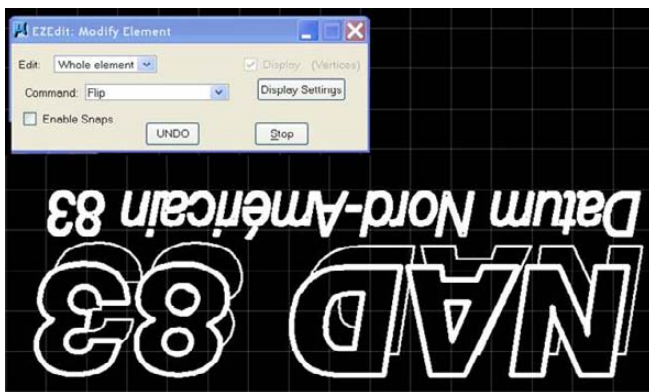
- **MicroStation V8 and V8 2004 Edition:** Version should be 08.05.00.34 or higher.
- **MicroStation XM and V8i Series 1:** XM version should be 08.09.04.88 or higher.
- **MicroStation V8i, V8i-based Bentley Map and Map Enterprise Select Series 1 and 2:** Select Series 2 is recommended over Series 1.
  - If you upgrade from Select Series 1 to 2, you must reinstall DAT/EM software after installing Select Series 2.
  - **DO NOT USE SELECT SERIES 3:** DAT/EM software does not install for Select Series 3. Development for this version is ongoing.

The following changes were made to DAT/EM Capture and MapEditor for MicroStation:

1. CLIP's exterior mode in MicroStation V8i SS2 now handles shared cells correctly.
2. ELEVATE (Drape) can now use points as input.
3. EZEDIT has two new **Whole Element** options: **Flip** rotates the selected object 180 degrees around its center. **Rotate** rotates the selected object to the set number of degrees.



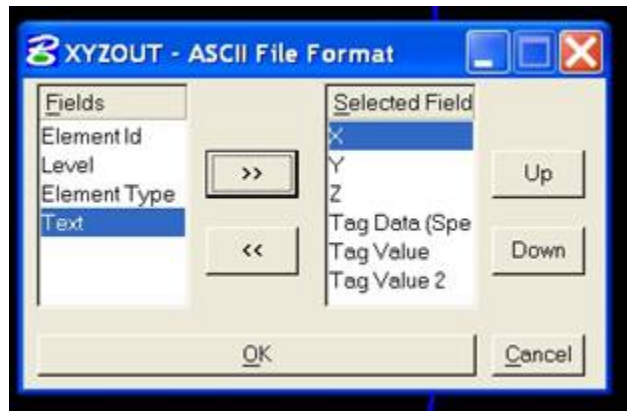
EZEDIT with a cell to rotate



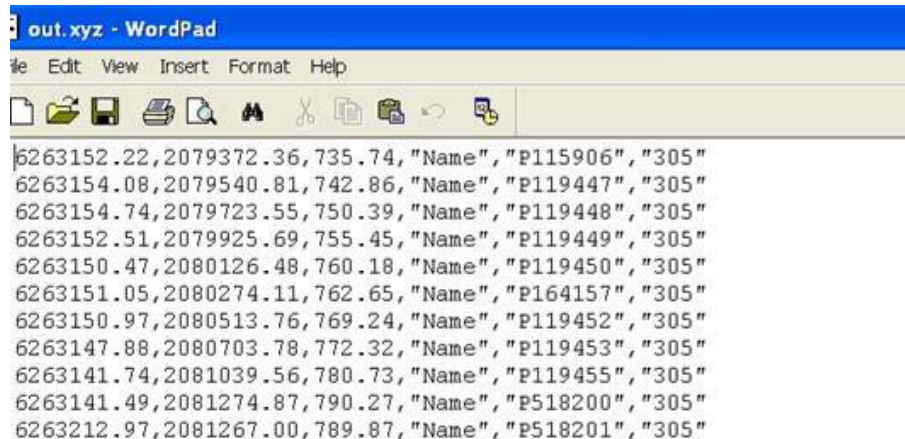
After EZEDIT > Whole Element > Flip and Rotate



4. The ZLABEL family of commands has the following changes:
  - a. ZLABEL's router dialog now closes automatically after an option is selected from it.
  - b. ZLABEL GUIDERS now always aligns the text upright in the direction of the guider, but at the same time aligned to the polyline it is labeling. Please draw all guiders in the direction of upright text.
  - c. The ZLABEL SETTINGS dialog's "Align Text Labels to Guider" has changed to "Align to labeled object".
  - d. ZLABEL PICK now activates a two-pick placement option. The first pick is the center of the text and the second pick defines the text angle. This allows the user to decide the final text angle in places where "most north" or aligned to the polyline doesn't give the desired angle.
  
5. XYZOUT can now export tag values. The existing **Tag Data** field has been renamed **Tag Data (Spec)** [**specification**] to clarify that it is the tag data specification name, not the value in the tag. The new fields are called **Tag Value** and **Tag Value 2**. **Tag Value** will always return the value of the element's first tag. **Tag Value 2** will always return the value of the element's last tag. Tag field data types of *Double*, *Char*, and *Long* are supported.



XYZOUT's renamed **Tag Data (Spec)** field and the new **Tag Value** and **Tag Value 2** fields



Example of XYZOUT results with **Tag Data (Spec)**, **Tag Value**, and **Tag Value 2** fields

6. In the Parameter File Editor, the Pattern Settings dialog now starts correctly when **Unpattern (pattern)** is selected.
7. The "Pick Classes" list previously allowed duplicate class specifications. It now filters out duplicates from the list.

8. The PSQR Object dialog is activated by adding **PSQR** to a parameter file or by selecting **PSQR Object** from the MapEditor "Run Single Commands" menu. This dialog's **2D** setting previously had no effect. This has been fixed so that 2D on and off have the originally intended effects:
  - If **2D** is checked on, each vertex in the building element will be set to the elevation of the first digitized vertex.
  - If **2D** is off, each vertex in the building will retain its current elevation as long as the elevation has changed more than **Z Tol**(erance) from the elevation of the previous vertex.
  
9. PSQR OBJECT and MEPSQR have the following items fixed or changed:
  - a. They could sometimes unsquare an element that already had square (90 degree) corners. This has been fixed so that it will pass an already squared element through without changes.
  - b. PSQR ELM and PSQR OBJECT did not handle duplicate points correctly. They now eliminate duplicate points correctly from the final result.
  - c. PSQR OBJECT was losing the last vertex on snapped and closed elements when the closed button was unchecked. This has been fixed.
  - d. For open, un-snapped objects, PSQR OBJ and PSQR ELM were adding an extra vertex that was far from the object. In addition, PSQR ELM was attempting to join the start and end vertices, which moved both vertices far from the object.
  - e. PSQR OBJECT was using the shape checkbox as the only criteria for whether the new element was a shape. For example, shapes would be converted to line strings by PQSR if the box was not checked. Now, if the box is checked, all elements are converted to shapes. If it is not checked, the element preserves its type (shapes remain shapes, unclosed elements remain unclosed). This is consistent with the way PSQR ELM preserves element type.

Note: the PSQR tolerance can be adjusted (down) to avoid squaring stroked arcs. Because there was a work around in the current infrastructure, no modifications were made in this area.
  
10. DAT/EM Contour Creator can trigger a MicroStation crash when writing contours directly into MicroStation V8i Select Series 2 and 3. This problem is in DAT/EM Capture for MicroStation, not Contour Creator. This problem was identified too late to be completely fixed for version 6.6. If you experience this problem, please contact DAT/EM Support and ask to be notified when it is fixed.

11. **BETA VERSION: Volume** and **Volume Text Settings** are two new commands in the Parameter File Editor command list. These are beta versions. If desired, try this command and give DAT/EM feedback on operation and requests. Prepare files or objects that define the base ground level. To calculate the areas of multiple distinct areas (such as multiple gravel piles), place each area's elevation-defining objects on unique levels/attributes. First add the **Volume Text Settings** command to the parameter file. Next add one or more **Volume** commands. The text settings line should always appear before any volume lines in the parameter file.

