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The following changes have been made to DAT/EM products between Release 6.7 and Release 6.8. 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, or by calling in or faxing us with your requests.

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Operating Systems and Windows Updates

Release 6.8 is supported on Windows XP Professional and Windows 7 Ultimate or Professional operating systems.

Install all critical Microsoft Windows Updates before DAT/EM software installation.

Microsoft Office 2007 users must install all available Microsoft Office updates before installing DAT/EM version 6.8.

Advance Notice of Windows XP End of Lifecycle, April 2014

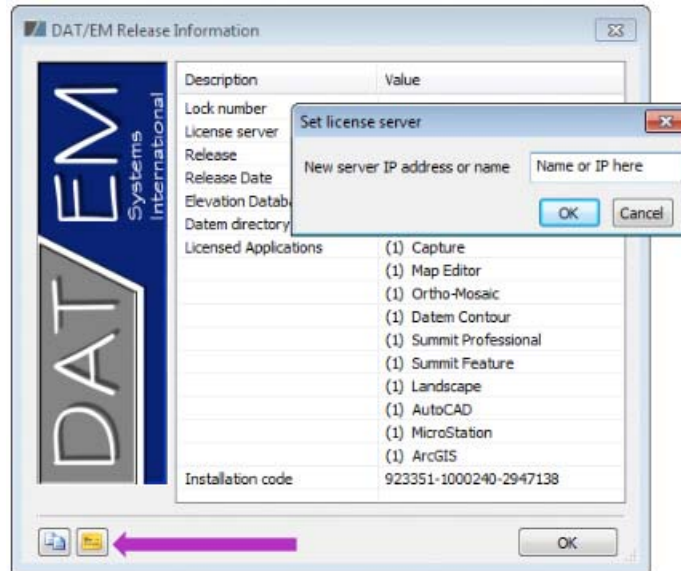
DAT/EM plans to stop support for Windows XP on the same date that Microsoft stops support for it. According to <http://support.microsoft.com/ph/1173>, "The support for Windows XP with Service Pack 3 ends April 8, 2014."

Please plan to upgrade any remaining XP workstations to a higher version of Windows before that date. Windows 7 is the only upgrade allowed as of version 6.8. Do not use Windows 8, which is not supported.

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.

DAT/EM Release Information (Windows Start > All Programs > Datem Software > Release Information) has a new “Set License Server” button in the lower left corner of the dialog. This allows you to move the hardware lock to a different computer and force a DAT/EM workstation to find the lock if it can’t do so automatically. This is usually used for moving a network lock. The user must have administrator privileges to use this button.



Key-in for name or IP address of the computer that holds the hardware lock

CAD Versions

Release 6.8 has interfaces to the following CAD versions. These are both 32- and 64-bit versions unless otherwise noted:

- AutoCAD:** Autodesk 2004, 2005, 2006, 2007, 32-bit 2008, 2009, 2010, 2011, 2012, 2013, and 2014 products. Note that 64-bit AutoCAD 2008 is not supported. Install all available service packs. 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. Note that files may be copied manually to activate more same-year versions (contact DAT/EM Support for instructions).
BE ADVISED: Versions 6.6 and higher no longer support AutoCAD 2000-2002 versions. If you use these old versions, please upgrade to AutoCAD 2004 or higher. AutoCAD version 2007 or higher is needed in order to use the new AutoCAD MAPEDITOR.
- ArcGIS:** ArcMap 9.1, 9.2, 9.3 (service pack 1), 9.3.1(service pack 2), 10.0 (service pack 4), and 10.1 (service pack 1).
BE ADVISED: DAT/EM has tentative plans to drop support for ArcGIS 9.x versions at the second DAT/EM software release in 2014. This would be approximately one year from the 6.8 release. Please prepare to upgrade ArcGIS to a 10.x release. Contact DAT/EM if you have concerns about upgrading.
- MicroStation:** DAT/EM software installs for the following versions: MicroStation V8; V8 2004 Edition; XM; V8i Select Series 1 (1 not recommended), 2, and 3; Bentley Map and Map Enterprise Select Series 1 (1 not recommended), 2, and 3.
Note for Select Series 1-to-2, 1-3, or 2-4 upgrades: If you upgrade to MicroStation or Bentley Map to a higher Select Series number, you must reinstall any DAT/EM software after installing the Select Series upgrade.
Note for Power GeoPak Select Series 3: DAT/EM Software *installs* for Power GeoPak SS3, but it does not run well. Power GeoPak has timing problems loading other vendor’s applications. For example, when DAT/EM applications are loaded, the “Common.ma” file will not load. When DAT/EM applications load automatically, the “GeoPak” menu disappears from the menu bar. Therefore DAT/EM version 6.8 should not be installed for Power GeoPak.

Video Drivers

Please note our video driver installation/update recommendations:

- DO NOT install the driver on media packaged with a video card. It will be too old.
- 1st: Get the latest driver for your video card and operating system from www.nVidia.com.
- 2nd: If the driver on www.nvidia.com does not work, contact support@datem.com for advice. We may ask you to download an older driver from either www.nvidia.com or www.datem.com, depending on your hardware.
- If you need to change (update or back out) a video driver, please follow the instructions at www.datem.com **Support > Downloads > Manuals > Installation Instructions**>“StereoLCDInstallationInstructions.pdf”. This shows how to replace drivers and verify that the new drivers have been installed properly. It is very important to check on the “Custom” and “Clean” installation choices.
- On existing workstations, check your video driver periodically. The easiest schedule is to check it before installing each DAT/EM software update. If you use a single-panel LCD display and the video driver is older than the one currently offered at www.nvidia.com, please update it using the “Custom” and “Clean” installation options.

Further notes:

- When checking your installed video driver version, remember that the actual version consists of the last five digits with the decimal point moved two spaces to the right. For example, 6.14.12.7642 is really version 276.42. In the past, nVidia sometimes omitted a zero (0) from the version; for example, version 6.14.13.732 was really 307.32.
- To check the installed video driver version on Windows 7, right click anywhere on a blank area of the desktop. Select **Screen Resolution > Advanced Settings > Adapter tab > Properties > Driver tab > Driver Version**.
- To check the installed video driver version on Windows XP, right click anywhere on a blank area of the desktop. Select **Properties > Settings tab > Advanced > Adapter tab > Properties > Driver tab > Driver Version**.
- For video settings, see www.datem.com **Support > Downloads > Manuals > Installation Instructions**. Most users will want either “PlanarInstallationInstructions.pdf” for Planar dual-LCD monitors or “StereoLCDInstallationInstructions.pdf” for single LCD stereo monitors.

Software Installation and File Locations

The following has changed for DAT/EM software installation or the location where DAT/EM applications store data:

1. Previously, DAT/EM applications often stored settings and files in the **\Program Files\Datem Software** or **\Program Files (x86)\Datem Software** folder. Now files that are common to all users or common to all DAT/EM applications will be stored in **\ProgramData\Datem Systems** OR equivalent Windows XP location. Here is a list of items that have been moved:
 - Geocalc data files and folder, which includes the elevation database
 - Cursor files
 - Keypad files
 - .reg files

If your DAT/EM Keypad Controller files used any .bmp graphics from the former location, they may appear as a red “X” the first time you open the Keypad overlay. Use Keypad’s Tools>Image Directory to change the paths.

Files placed in this location will be accessible by all users, so permission will no longer be an issue. Therefore, users will not need to have administrator privileges to save or change this data.

Data can be stored per user. The **stereoplottter.mac** and **Landscape.mac** files that store shortcuts will be stored in **\Users\<username>\AppData\Local\Datem Systems\<application name>** (also has hidden attributes). Previously, custom shortcuts applied for all users. Now, they will be stored separately for each user.

DAT/EM Systems International RELEASE 6.8 Product Notes

2. There is a new DAT/EM-PCI Runtime ProPack installation to install after installing version 6.8. It allows you to use Geomatica 2010-to-2013 projects. Download the file at www.datem.com and install it. It will launch the PCI License Utility, which contains a fingerprint and a link to a web request form. Copy the fingerprint and use the link to send the fingerprint to PCI.



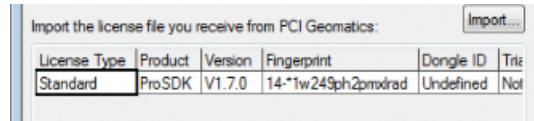
PCI will send a license file. Rename the file to "lserverc.txt" and copy it to both the 32-bit and 64-bit locations:

- \Program Files (x86)\Datem Software\ProPack\exe
- \Program Files\Datem Software\ProPack\EXE

Run the following files in the 32- and 64-bit locations.

- \Program Files (x86)\Datem Software\ProPack\exe\licenseutility.exe
- \Program Files\Datem Software\ProPack\EXE\licenseutility.exe

Select the "Import" button, and browse for the "lserverc.txt" file in that same folder. Information will appear in the license file list below the "Import" button. Close.



Select "Import" and browse for lserverc.txt

Finally run the following file in the 32- and 64-bit locations:

- \Program Files (x86)\Datem Software\ProPack\exe\lsinit.exe
- \Program Files\Datem Software\ProPack\EXE\lsinit.exe

PIX images should now open in Summit. If they do not, please contact DAT/EM Support.

64-bit Beta Applications in \Program Files\Datem Software

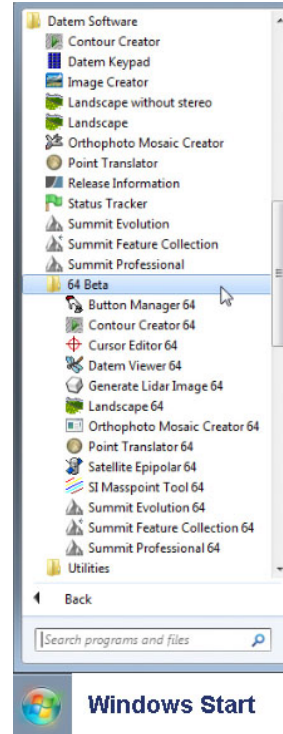
Anyone is welcome to try the beta 64-bit DAT/EM applications that are installed for 64-bit operating systems in the **\Program Files\Datem Software** folder.

Please be aware that these are beta versions and could contain previously unreported problems. Please report any issues or suggestions to support@datem.com. The 64-bit applications can be found in Windows **Start > Datem Software > 64 Beta**.

Summit .smtxml projects created by the 64-bit Summit may be opened later by the 32-bit Summit and vice versa.

Speed improvements for 64-bit applications may be particularly noticeable in Ortho+Mosaic processing.

Hint: In cases where the 32-bit Summit runs out of memory while importing a very large 3rd-party project (such as Z/I or SocetSet), try importing with the 64-bit Summit instead. After the .smtxml is created, it may be used with either the 32- or 64-bit version of Summit.



Windows 7 on a 64-bit computer

32-bit applications

Beta versions of 64-bit applications that anyone is welcome to try

DAT/EM Keypad

The following changes have been made to the DAT/EM Keypad products during the 6.8 development cycle:

1. Version 1.2 of the DAT/EM Keypad Advantage application was posted to the Google Play Store on Dec. 13, 2012. This update contains the following:
 - a. Allows the keypad diagram on the Android device to use font sizing and font effects such as underline. Note that the list of fonts supported by the Android OS is limited; if Android does not find a font, it defaults to its Droid font.
 - b. If a key is set to "Header" in the Keypad Controller, it shrinks the height on the Android side to 75%.
 - c. Displays the Keypad Controller's "Landscape" (non-Portrait) mode on the Android device correctly.
2. Version 1.3 of the DAT/EM Keypad Advantage application was posted to the Google Play Store on January 11. DAT/EM version builds from this time forward contain an updated Keypad Controller application and Blue Tooth driver for Windows XP 32- and 64-bit OS. The DAT/EM Keypad Advantage is now considered to be both Windows XP and Windows 7 compatible. A newer installation document has been posted to www.datem.com.
3. Version 1.4 of the DAT/EM Keypad Advantage application was posted to the Google Play Store on January 31. It allows a single key setting to both send a Capture command string and change the keypad overlay.
4. DAT/EM has some new driver recommendations for the BT 4 Blue Tooth emitter. The BT 4 is like the original Medialink emitter, but the chipset is slightly newer and requires a different driver. The Medialink device uses the 2070 driver and the IOGear device uses the 20702 driver. On Windows 7, the user does not have to do anything (the OS installs the correct driver). On Windows XP, the normal XP install procedure is required, but use the 20702 driver. If you purchase a Blue Tooth device that does not work with any of the Windows 7 automatically installed drivers or the Windows XP drivers supplied by DAT/EM, please contact DAT/EM Support.
5. The DAT/EM Keypad controller will no longer clear your current overlay if you (usually accidentally) select the "Paste the current overlay" button without having previously copied an overlay. If there is a copied overlay and the current overlay contains any button definitions that will be overwritten, it will prompt to be sure you want to paste.

Summit Evolution

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

1. Jpeg2000 (JP2) images are now a very reasonable replacement for Tiff/Jpeg for use in Summit. In the past, memory use with very large JP2 files could be a problem. This problem has been vastly reduced by some library optimizations and tile size choices. Now we can officially say that JP2 is as good as TIFF for use in Summit.

Any DAT/EM applications that write JP2 will now automatically choose the optimal tile size that minimizes memory use and preserves performance. Tile sizes will range from 512 to 1024. Therefore, Image Creator will always generate JP2 files that will be the fastest and use the least memory for DAT/EM applications. For images over 2GB, the program automatically increases tile sizes to minimize memory use.

Just like TIFF, not all JP2 we receive from other sources will work well. For instance, the Pléiades satellite JP2 files we received use a tile size of 2048; this size results in poorer performance. Like non-tiled Tiffs, users can run these through Image Creator and generate optimal JP2 files.

Reasons to use Jpeg2000:

- It can compress any number of bands. Tiff/Jpeg can only compress 1 or 3 bands.
- JP2 can compress 8-16 bits. Tiff only supports compression of 8 or 12 bits.
- JP2 supports lossless compression.
- JP2 compression has fewer visual artifacts than Jpeg. Think of this as a higher quality compression.
- Very useful for 4- or more-band mosaic generation.

Possible reason not to use Jpeg2000:

- With DAT/EM software, JP2 should work very well. The problem is that other software may not support it. For example, Trimble (Inpho) MATCH-T does not read JP2. If the images will be used in any 3rd-party software that does not support JP2, use Image Creator to convert to TIF.
2. Summit Evolution, Image Creator, and all other image-reading DAT/EM applications now accept BigTiff format. Image Creator and Ortho+Mosaic's mosaic creation also write BigTiff. BigTiff should be a good alternative to JP2 for those who do not want to apply image compression.
 - a. Note that the older-format 32-bit Tiffs are limited to 4 GB, because the internal pointer offsets are 32 bits. BigTiff is a special Tiff that breaks through this 32-bit limit and allows almost unlimited image sizes. BigTiff can be any size over or under 4 GB.
 - b. In DAT/EM's tests, BigTiff images with zoom levels worked very well and were approximately as fast to generate as 32-bit Tif.
 - c. The user will be responsible for choosing this format. DAT/EM applications will not automatically attempt to convert a Tiff to BigTiff if a file size over 4 GB is detected. If a "normal" Tiff goes above 4GB it will be corrupt.

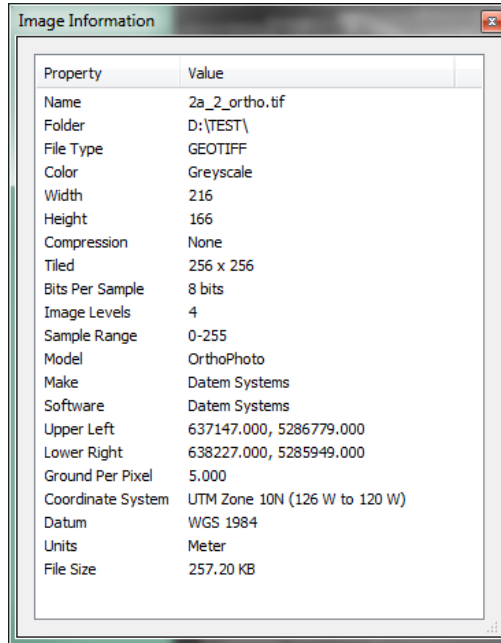
Advantages of BigTiff:

- All the benefits of Tiff, plus nearly unlimited size. Will work seamlessly in DAT/EM software just as if it were a "normal" Tiff.
- Can still use JPEG compression.
- Is faster than JP2, but not by much (assuming nicely tiled BigTiff, of course).
- Could make unlimited size mosaics without any compression.

Disadvantages of BigTiff:

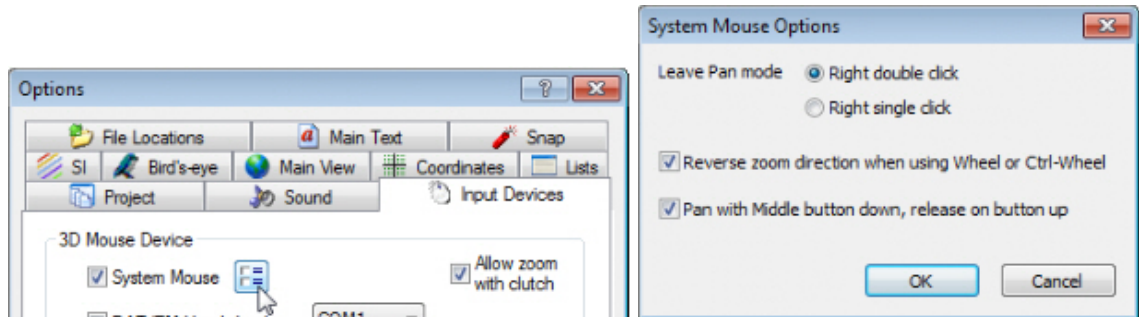
- Like JP2, there are many 3rd-party software packages that do not support it.
- It uses the TIF filename extension, but a "normal" TIFF reader will not be able to read it.
- Photoshop cannot currently read BigTiff, although it can read JP2.

3. For Jpeg2000 and geoTiff, Summit Evolution's image information "i" will show the geoTiff metadata if the values exist in the file header. This includes coordinate system, datum, and units.
 - a. Note: Ortho+Mosaic will write this information if it is found in an input file.
 - b. Note: Image Creator will retain and write this information if it is found in an input file, but Image Creator's information "i" will *not* show the information. This is to ensure that Image Creator can run on a computer that does not have the Blue Marble geo database installed.




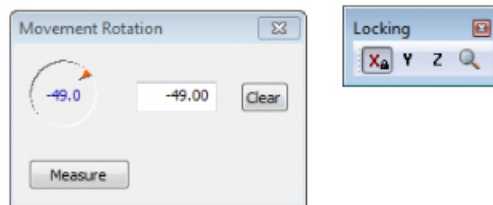
Coordinate system, datum, and units added to "i" information

4. **Summit > Tools > Options > Export and Import** can now save and load a user-supplied filename. Previously, it saved under a default filename, which the user did not control.
5. **Summit > Tools > Options > Input Devices tab** has a new system mouse options button with the following settings available:



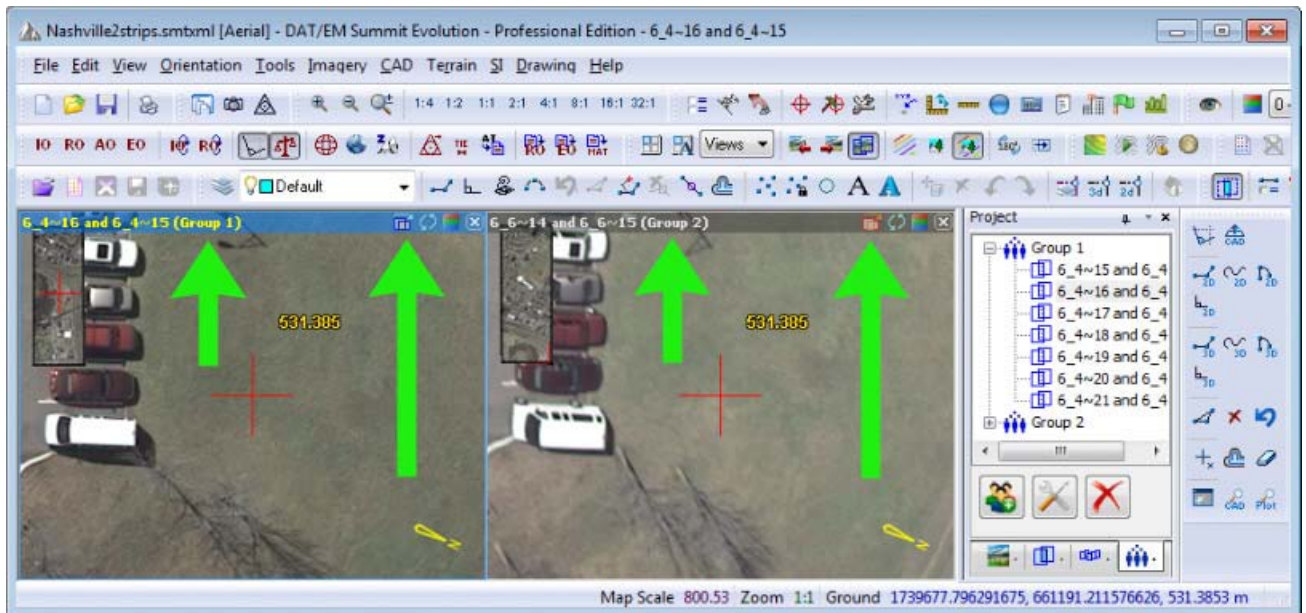
- a. **Leave Pan mode: Right double click** or **Right single click** to stop controlling the cursor in Summit using two or one right mouse button clicks.
- b. **Reverse zoom direction when using Wheel or Ctrl-Wheel:** Reverses the default zoom in and zoom out direction for the mouse wheel-activated zoom. Reversing may be useful to match the behavior of the mouse wheel zoom in the ArcMap data view, which is opposite to Summit's default zoom direction.
- c. **Pan with Middle button down, release on button up:** This allows the system mouse to pan the Summit cursor quickly with or without previously activating the mouse control of Summit with a single right click. When the middle mouse (wheel) button is pressed down, Summit pans. When it is released, it is always in system mouse mode, not controlling the Summit cursor.

6. Summit tools and Summit-related applications that have a “pan hand”  on a toolbar can now quickly activate panning. Press down and hold the system mouse wheel button to activate panning. Release the button to stop panning. Spinning the system mouse wheel zooms in and out as it did before. Affected tools and applications are the Status Tracker (now a separate application), Summit’s Tie Point Overview, Image Viewer, and Project Viewer/Ortho+Mosaic.
7. Summit and Ortho+Mosaic 6.8 will now always save **.smtxml** and **.omxml** project files with point “.” as decimal markers, no matter what the current setting for **Tools>Options>Coordinates>Coordinate Format>Standard/European**. When reading new 6.8+ projects, the “.” is assumed. New project files will never be saved with a comma “,” as a decimal marker. If the project version stored in the **.smtxml/.omxml** 6.7 or lower, it will automatically detect whether commas are in the numeric fields, read the file correctly, and adjust the locale appropriately. Therefore, the **Coordinate Format** setting will no longer affect reading and writing of projects; it will only affect on-screen decimal number displays. This change fixes a problem where Summit could not read the project’s decimal format when **Coordinate Format** was currently set to the opposite decimal style.
8. Sharpening in the video card previously slowed down the panning speed when loading tiles. DAT/EM implemented its own new sharpening algorithm and moved it to a different thread so that sharpening no longer slows down the video card.
9. If **Summit > Tools > Movement** rotation is active, the movement angle is preserved even when **Lock X** and **Lock Y** are active on the **Locking** toolbar. In previous versions, locking X or Y would reset the movement rotation to zero degrees.



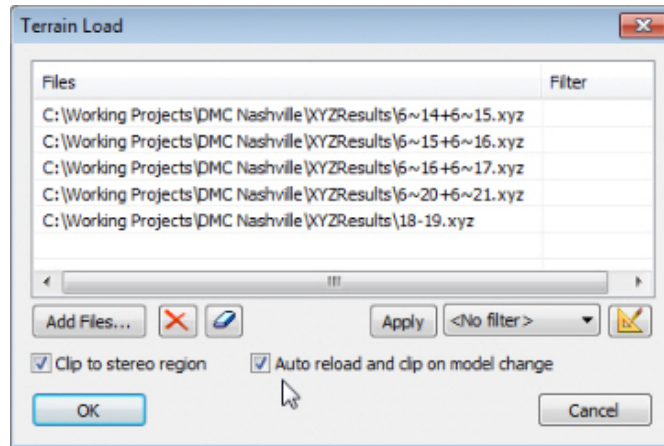
Movement Rotation preserved with X or Y locking

10. Multiple viewports that have a group open each have a new option to automatically open the next model when they leave their own model’s stereo area. This appears as a toggle button on the view’s title bar. The button is outlined in blue when on and red when off. Each viewport initially takes the **Tools>Options>Project tab>”Automatically load next model...”** setting.



New automatically load next model toggle in viewports that have a group open (blue=on, red=off)

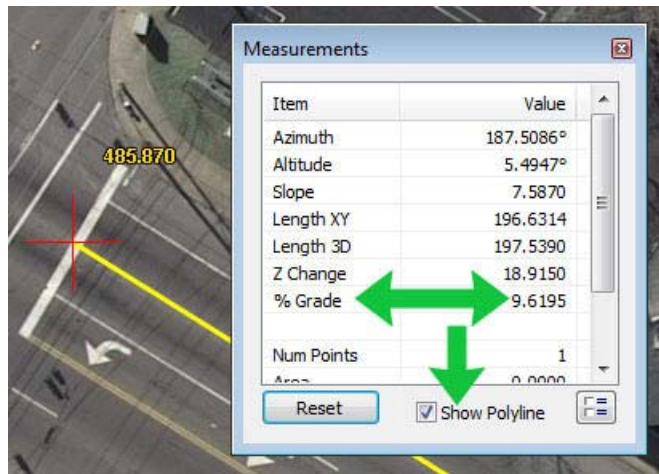
11. Opening a control file by double clicking its file name will no longer open a second instance of Summit if a first instance is already running.
12. The Terrain Following tool has the following changes:
 - a. If one or more terrain files were loaded when the project was closed, it will automatically reload the files when the project is reopened. Terrain Following mode on/off is automatically reactivated also.
 - b. It has a new **Auto reload and clip on model change** setting that allows the terrain following file(s) to automatically load when a model opens. This setting takes effect only if **Clip to stereo region** is on. It works when a model from the project first opens and when Summit automatically loads the next model. Previously, the terrain following points would unload when another model opened, and the user had to use the dialog to reload the file.



*New **Auto reload and clip on model change** setting*

13. **Tools > Measurements** has two changes:
 - a. **Show Polyline** draws a temporary graphic polyline to show the coordinates that have been picked. This line disappears on **Reset**.
 - b. **(Percent) % Grade** display based on the equation:

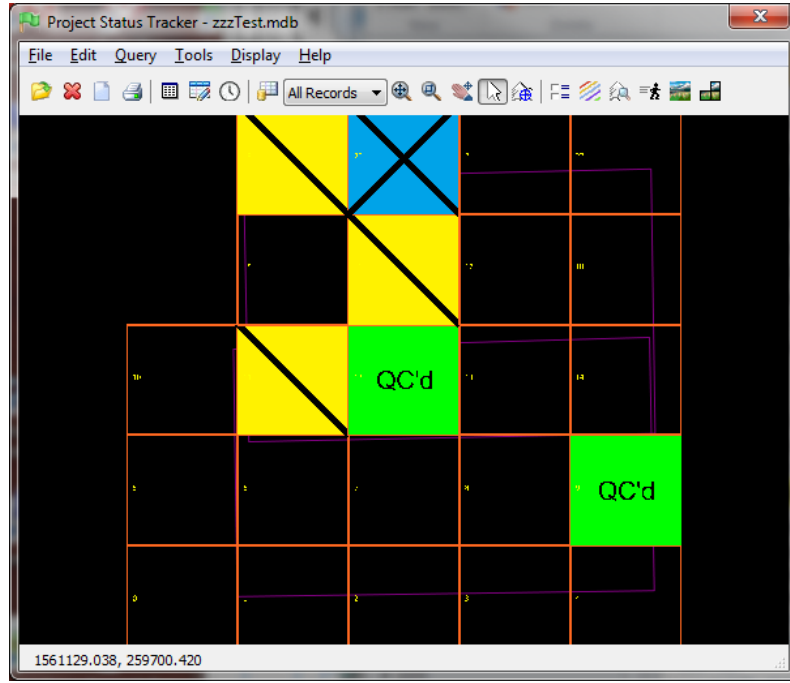
$$(\% \text{ grade}) = [(Z \text{ change}) \div (XY \text{ change})] * 100$$
 Note that **% Grade** only refers to the last segment,



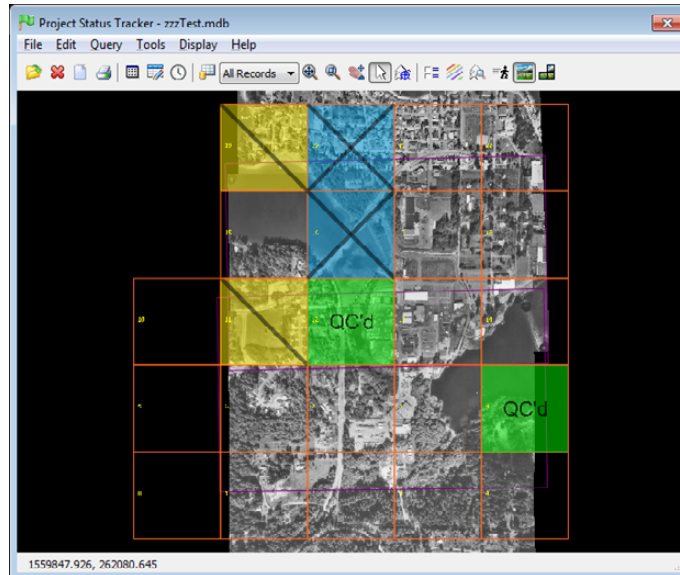
Tools > Measurements > % Grade and Show Polyline

14. Status Tracker has been removed from Summit and made into a separate executable. It can still be launched from Tools>Status Tracker as before. It may also be launched from \Program Files (x86)\Datem Software\StatusTracker.exe or from Windows Start>All Programs>Datem Software>Status Tracker. The program is unlocked so that it can be used on any computer. If you would like a keycode for a stand-alone Status Tracker, please send a request to support@datem.com ; a keycode may be included in your update email message. Status Tracker also has the following enhancements:

- a. Hours and progress tracking have been added to Status Tracker.

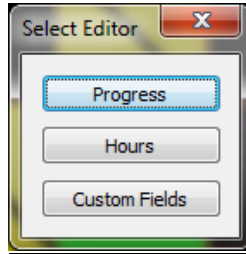


Status Tracker progress coloring example



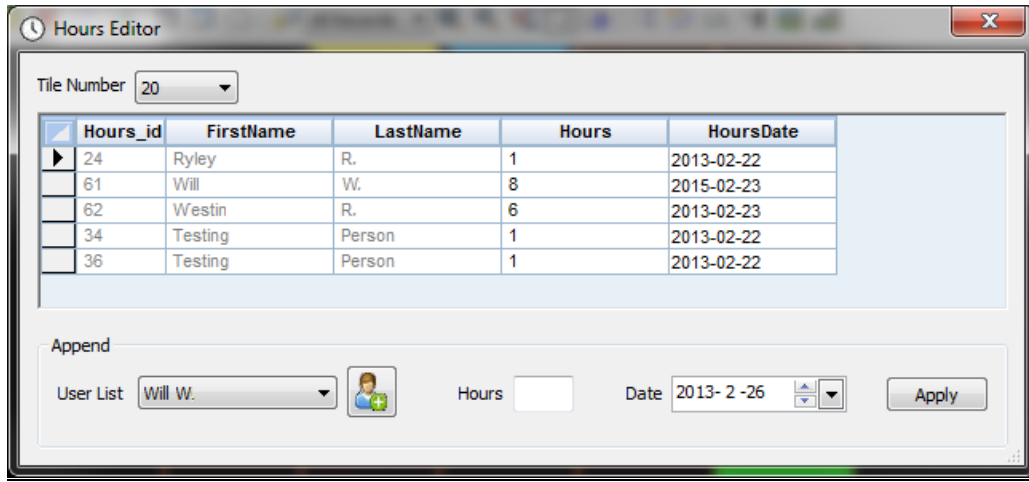
Status Tracker has an opacity setting for progress coloring

When you click on a tile, a small dialog will pop up; it lets you select an editor for the tile.



Select an editor for the tile

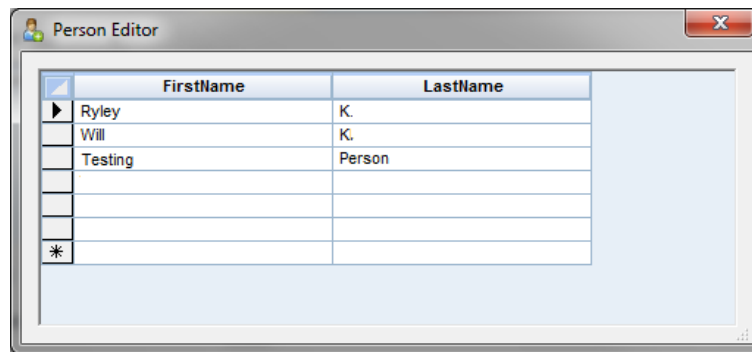
The "Hours" button activates the Hours Editor dialog:



Status Tracker's Hours Editor

The bottom of the dialog lets you append new hours information. You can also delete and edit entries using the list. To delete, select a row and hit the delete key. This will only delete the hours record and not the associated person. You can pick other tiles while the grid is up.

To add new persons, click the add person button. **Note that if you delete a person that it will result in all hours records associated with that person to be deleted!**



Status Tracker's Person Editor

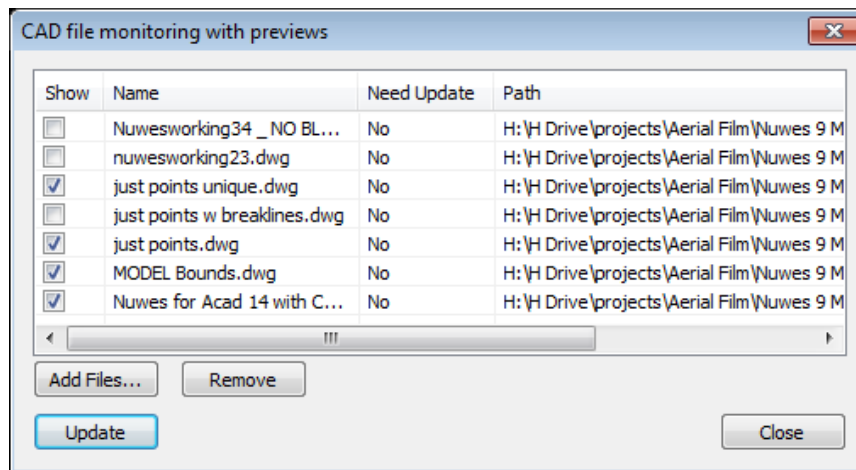
You can also view all hours in all tiles using the Project Hours dialog.

- b. Status Tracker has a new CAD file monitoring tool that does the following:
- o Selects CAD files for monitoring (CAD formats are .dxf, .dwg, .dgn. and .shp)
 - o Simplifies polylines and reduces points and triangles to create “CAD previews” for display in Status Tracker
 - o Saves the simplified CAD previews for quick loading and viewing.
 - o Detects file modifications and reloads and recreates previews if the file has been modified since last preview creation

To use:

- o Select **Status Tracker > Display > CAD File Monitoring**.
- o Use **Add Files** to build a list of files to monitor.
- o Check or uncheck files for display.
- o Select **Update** to build any necessary CAD previews.
- o Whenever you want to see an updated view, start the dialog and select the update button again. Any files that have been modified will reload and new previews will be created. For unmodified files, the previously made previews will load (this is very fast).





For example, a very large AutoCAD file may take one minute to load the first time, because it must make a preview. After that, as long as the file stays unmodified, it will seem to load instantly as it accesses the existing preview. If the file is modified, there will be another delay while it makes a new preview.

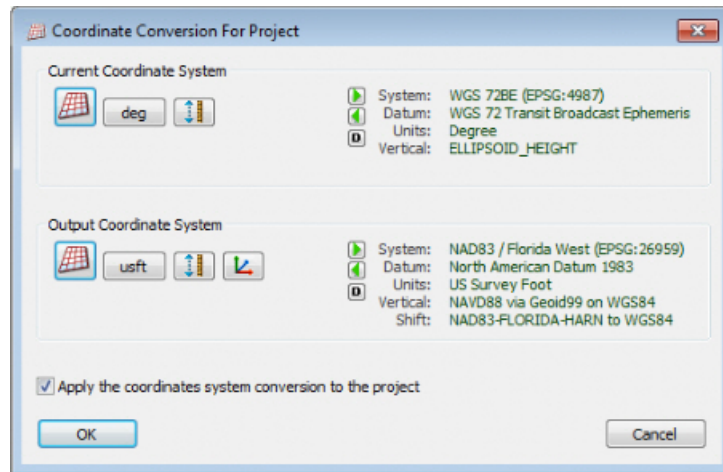





Status Tracker's CAD file monitoring dialog

The CAD previews are not displayed when first loading a database and are not automatically updated. Activate the dialog and select **Update** when you want see the most current view of the CAD files.

15. Coordinate system transformation settings have the following fixes and changes:

- a. The Coordinate Conversion for Project dialog is accessed from the  button on the Orientation toolbar. This dialog now has new buttons for quickly setting commonly used choices or to reset.
 -  **Load coordinate system** loads the settings saved most recently by the **Save coordinate system** button.
 -  **Save coordinate system** saves the current settings. Use this button after selecting the settings for a system that you use often.
 -  **Set default coordinate system WGS84** clears current settings and resets to WGS84.



New    buttons on the Coordinate Conversion dialog

- b. Project Edit dialogs for ADS40/80, VisionMap A3, and RPC satellite imagery no longer have their own coordinate system settings. They now have a button that launches the Coordinate Conversion for Project dialog shown above. This is the same dialog that is shown for all other project types that allow coordinate conversion. Projects that formerly did not allow an input system to be set, such as ADS40/80 and RPC satellites now allow the input system, so that different types of WGS84 may be set when necessary:

16. Aerial projects have the following changes:

- a. Absolute Orientation (AO) was fixed to avoid a problem as follows: Relative Orientation (RO) was not applied to the current model properly if the model stayed open after RO and AO started right away. The RO could actually save properly; if the model closed and reopened, the RO was correct and the problem was avoided. The most obvious symptom was that the images jumped apart when AO was started and the cursor moved.
- b. The Summit .smtxml project file now stores the most recently used camera file (or files) in the project as an “emergency backup” camera. The externally referenced camera file has priority. If the externally referenced camera file is not found, Summit uses the version that is found inside the .smtxml file. The camera file or files are stored in the project file every time the project is saved.


Note: Control files will not be saved internally; they can be too big to write to the project file.

Note: Camera files are saved internally for aerial and close-range project types only.

- c. Camera files with long lists of distance distortions could cause Summit to crash. This has been fixed.

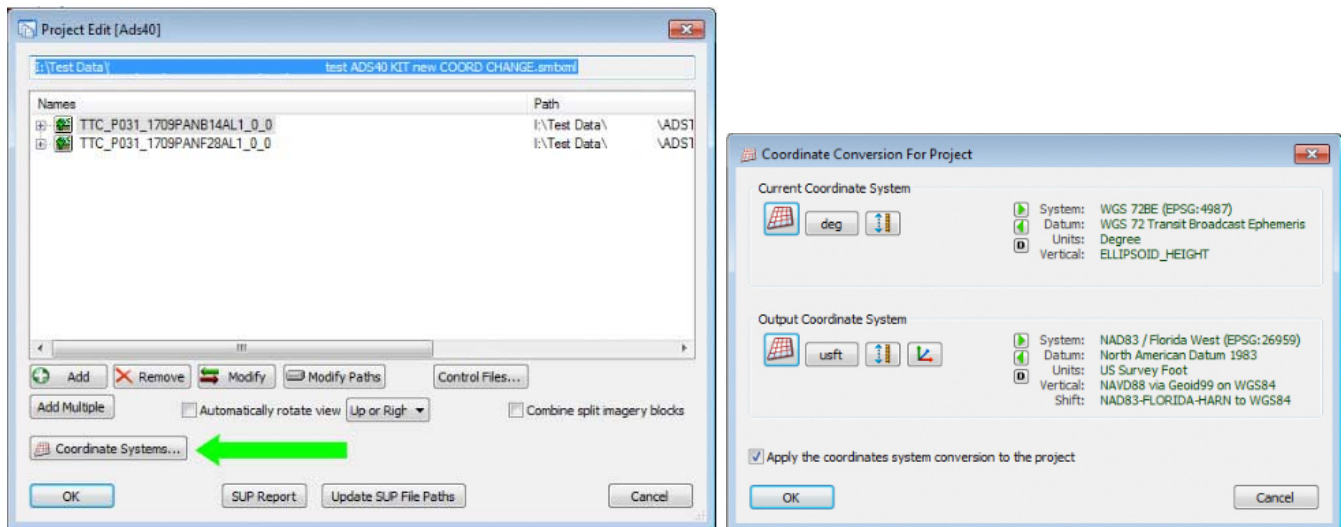
17. Close-range projects have the same ability as aerial project to save the camera information in the project file and save long lists of distance distortions in the camera file. This is described in the “Aerial projects” item above.

18. ADS40/80 projects: have the following changes:

- a. The “Add Multiple” Project Editor button now works for JPEG2000 (JP2) format images. The check for duplicate file names of different file extensions order is: SMTI, JP2, TIF. That is, if you have an SMTI and JP2 with the same name, it will select the SMTI. If you have a TIF and a JP2, it will select the JP2.
- b. The ADS40/80 Using Leica Kit project type now allows a choice of input systems. Previously, one type of WGS84 was set automatically and could not be changed by the user. Customers reported having ADS40/80 projects used a newer form of WGS84. The coordinate system settings that used to appear in the dialog are now accessed from a **Coordinate Systems** button, which brings up the same dialog as the  button on the Orientation toolbar.


It is the user’s responsibility to set the correct input and output coordinate systems.

When you open an already existing ADS40/80 project, check the input and output settings and make sure the **Apply the coordinate system conversion to the project** is checked on.

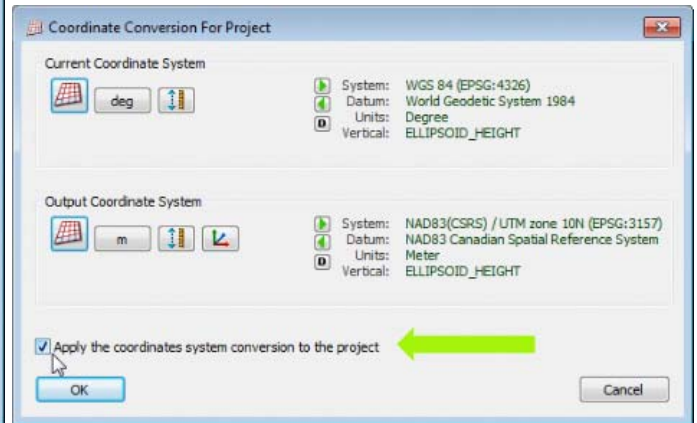
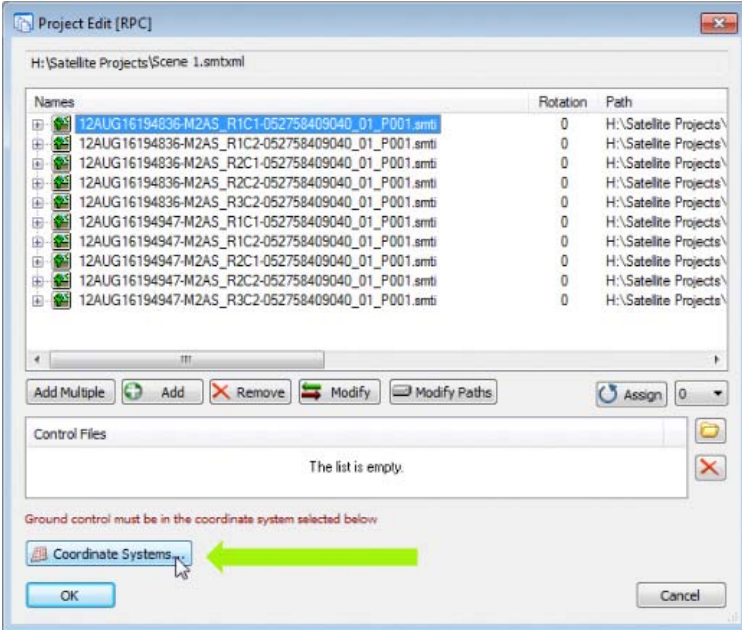


19. Satellite RPC and ALOS-1 projects have the following changes and additions:

- a. In the RPC Project Edit dialog, you can now browse for and select multiple control files at the same time.
- b. The ALOS project type “Add CEOS” button can now find and process an additional set of file names. This was to accommodate a customer’s set of files that had slightly different names. Previously, “Add CEOS” would not find or add any files to the project for these ALOS files.
- c. In ALOS projects in version 6.7 and lower, there were cases where measured ground control points could be mistakenly used as tie points. This happened with latitude-longitude coordinates. This has been fixed.
- d. A readme.txt file now appears in the folder with any DAT/EM-generated RPC projects. This describes the projects and how they are named.
- e. The Pleiades TIL tile file will now be created correctly for projects that have 1KB TIF file tiles, which are placeholders for blank tiles.
- f. The RPC project type now allows a choice of input systems. Previously, one type of WGS84 was set automatically and could not be changed by the user. WGS84 (EPSG: 4326) will still be the input system for most RPC projects, but other systems could be set if necessary. The coordinate system settings that

used to appear in the dialog are now accessed from a **Coordinate Systems** button, which brings up the same dialog as the  button on the Orientation toolbar. This is consistent with all other project types. It is the user's responsibility to set the correct input and output coordinate systems.

When you open an already existing RPC project, check the input and output settings and make sure the **Apply the coordinate system conversion to the project** is checked on.



RPC projects now use a full “Coordinate Conversion for Project” dialog. Make sure “Apply the coordinates...” is on.

20. VisionMap A3 projects have a fix to correctly rotate AutoCAD's tablet so it is not 180° from Summit's kappa.
21. Photo Stitch projects now turn on “Auto Next” by default in the Tie Points dialog.
22. Importing DVP Projects: Summit > File > Import > DVP DAT Files > **Exterior in Radians** is a new checkbox to import the omega, phi, and kappa values in radians instead of degrees. Some older projects may need this setting on. The project where DAT/EM found this to be necessary was from 1999. If importing as degrees fails to produce good stereo, import the DAT file again with the **Exterior in Radians** setting on.
23. Superimposition has the following changes:
 - a. A memory issue was fixed. Symptoms included missing vector data from large CAD/GIS files and incomplete redraws after model changes.
 - b. Some rubber banding issues were fixed for various CAD commands.

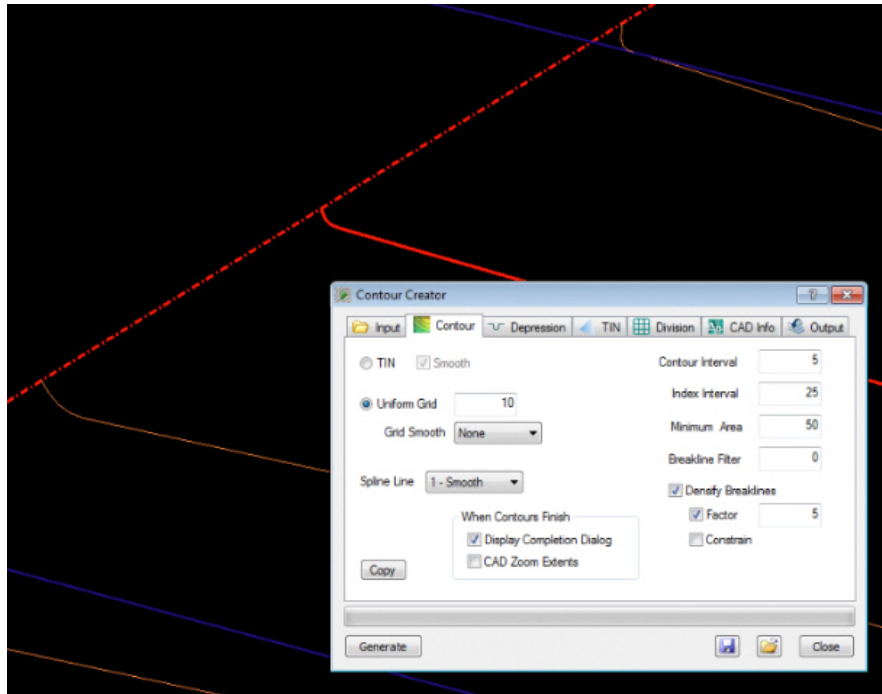
24. Stereo Mate Generator has the following changes:

- a. There is a fix for SID format file input. Previously, it would write a few lines of correctly colored pixels, but the remainder of the file would be all black pixels.
- b. A ½ –pixel shift in the blended pixels was fixed.

25. Point Translator: An error has been fixed for reading large “SDT DiAP files” **.sdt** format. Smaller files could be read properly, but the application would crash if the file was too large. This fix applies to Point Translator and any other DAT/EM application that reads point files, including Landscape, Capture for ArcGIS “Drape” tool, Contour Creator, Ortho+Mosaic, etc.

26. Contour Creator has the following changes:


- a. With **Constrain=off** and breakline-only input, the resulting contours could have a “curled” or “hooked” appearance at the clipping boundary. This has been fixed.



Contour Creator no longer creates curled contours at the clipping boundary

- b. The default tolerance values for the collinear test were different if **Spline Line** was off or on. The value with **Spline Line** off was very small, so that the line vertices were only removed if the segments were very close to being collinear. With **Spline Line** on, the value was much bigger, so that too many vertices could be removed. Now they work the same and both use the smaller value.


27. Image Viewer has the following changes:

- a. DAT/EM Image Viewer now allows selection of bands for viewing. The 4th band item under the **View** menu is removed and replaced with a **Channel Manager**.
- b. Image Viewer is one of several Summit-Related tools and applications that can now quickly activate panning using the system mouse wheel. To activate the “pan hand”  panning mode, press down and hold the system mouse wheel. Release the wheel button to stop panning. Spinning the system mouse wheel zooms in and out as it did before.

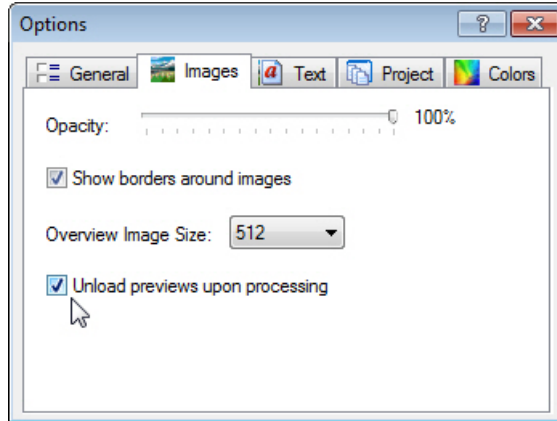
28. Image Creator has the following changes:

- a. Image Creator v.6.7 had a bug in the Jpeg2000 writer that is now fixed. There was a 25% chance that image tiles on the right and bottom could be corrupted, depending on the width and height of the image.
- b. In Image Creator's advanced options, the **Reduce to 8 bit** could have trouble if the input image contained any pixels with bits that did not match the selected bit number. It would remap the out-of-range bits to an undesired color. Now if it encounters bits different than the selected number, it maps the color to the highest 8-bit output value of 255.
- c. If a compressed image was smaller than the 4GB TIF image size limit, but its decompressed size would be larger than 4GB, **Reduce to 8 bit** processing would have problems. It would decompress the whole file during processing, then have problems associated with exceeding the TIF standard. Now it decompresses only part of the file at any one time, thus avoiding going over the 4GB limit.
- d. An error has been fixed for reading large "SDT DiAP files" **.sdt** format. Smaller files could be read properly, but the application would crash if the file was too large. This fix applies to Contour Creator and any other DAT/EM application that reads point files, including Landscape, Capture for ArcGIS "Drape" tool, Point Translator, Ortho+Mosaic, etc.

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

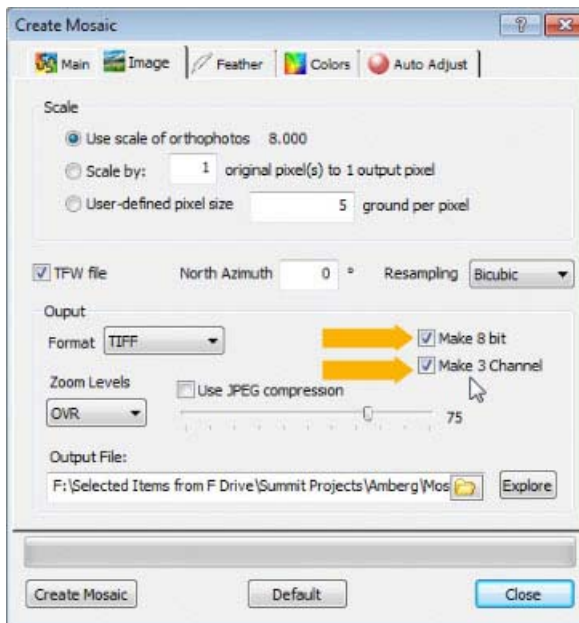
- a. Orthophoto and mosaic generation will now be much faster while using less memory using newly optimized processing methods.
- b. The following additional Summit image adjustments are now supported in Ortho+Mosaic: gamma, sharpening, and minimum/maximum threshold.
- c. The state of checked and unchecked images is now saved between runs of the application.
- d. ArcGIS SHP shapefiles now work correctly as orthophoto vector files and mosaic image boundaries. Previously, they were ignored or did not offer the "Shapes" and "Breaklines" checkboxes for the layer.
- e. Ortho+Mosaic will open much faster for Summit projects that have many points in the control file(s).
- f. Project Viewer/Ortho+Mosaic is one of several Summit-Related tools and applications that can now quickly activate panning using the system mouse wheel. To activate the "pan hand"  panning mode, press down and hold the system mouse wheel. Release the wheel button to stop panning. Spinning the system mouse wheel zooms in and out as it did before.
- g. An orthophoto boundary generation error has been fixed to prevent "zingers" that have a coordinate such as (0,0,0) when a low edge percentage is selected.
- h. An error has been fixed for reading large "SDT DiAP files" **.sdt** format. Smaller files could be read properly, but the application would crash if the file was too large. This fix applies to Ortho+Mosaic and any other DAT/EM application that reads point files, including Landscape, Capture for ArcGIS "Drape" tool, Point Translator, Contour Creator, etc.
- i. Shapefiles (.shp) with polygon geometry will now load properly as vector input files.

- j. Ortho+Mosaic and Summit 6.8 will now always save **.smtxml** and **.omxml** project files with point “.” as decimal markers, no matter what the current setting for **Tools>Options>Coordinates>Coordinate Format>Standard/European**. When reading new 6.8+ projects, the “.” is assumed. New project files will never be saved with a comma “,” as a decimal marker. If the project version stored in the **.smtxml/.omxml** 6.7 or lower, it will automatically detect whether commas are in the numeric fields, read the file correctly, and adjust the locale appropriately. Therefore, the **Coordinate Format** setting will no longer affect reading and writing of projects; it will only affect on-screen decimal number displays. This change fixes a problem where Ortho+Mosaic could not read the project’s decimal format when **Coordinate Format** was set to the opposite decimal marker style.
- k. **Unload previews upon processing** is a new option in Ortho+Mosaic **Tools > Options**. This clears the image previews out of memory when orthophoto or mosaic generation starts. DAT/EM highly recommends keeping this setting checked on, especially if there are many images in the project.



*New **Unload previews...** setting clears the memory used by image previews*

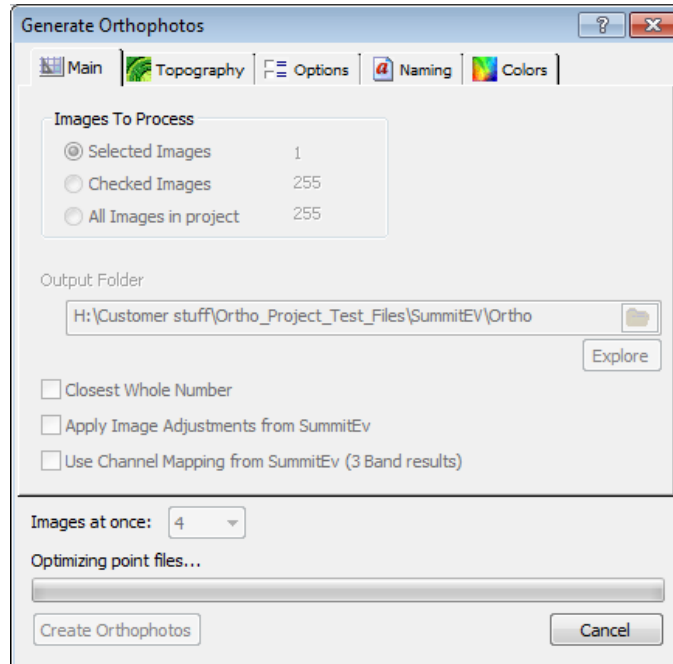
- l. Two new settings appear on the Create Mosaic **Image** tab: **Make 8 bit** outputs as an 8-bit image for higher-bit input; **Make 3 Channel** outputs only the first three channels for 4-band or higher-band input.



*New **Make 8 bit** and **Make 3 Channel** settings for mosaic output*

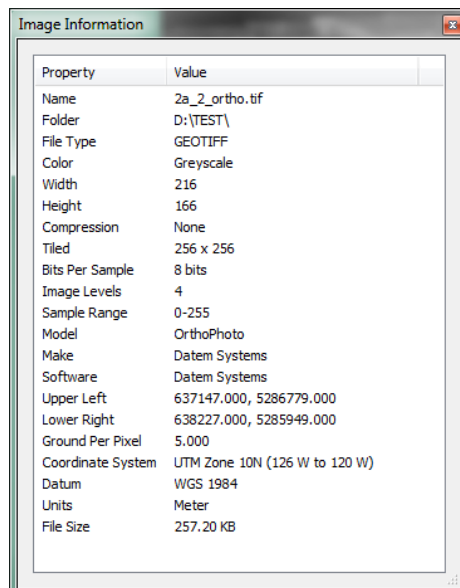
- m. Orthophoto generation will now automatically optimize the DEM (point file) formats if necessary. This solves the problems of using slow-to-read formats like TXT and also of using very big files with large numbers of points. Slow files (such as ASCII files) are converted and large files are automatically tiled. The optimal number of points in a file is from 5 to 10 million points. The “optimal” files are stored in the

<settings_projectName>\optDEM folder. This optimization is only done once per project unless the DEM files are modified. An XML file is used to keep track of any changes. When changes are detected, it will re-optimize. For example, TXT files with approximately 1 million points each took around 11 minutes to process; after optimization, the generation took about 5.5 minutes, including optimization. Likewise, a 21-million-point LAS file took 11 minutes before tiling and less than 6 minutes after tiling. “Optimizing point files” may sometimes appear at the lower edge of the Generate Orthophotos dialog:



“Optimizing point files” will appear for some point file formats or file sizes

- n. For Jpeg2000 and geoTiff, Ortho+Mosaic can now write geoTiff metadata into the orthophoto or mosaic if the values exist in the file header of the input file(s). To make the geo metadata available, the original Summit project must have at least an input coordinate system defined. If coordinate system transformation is not on in Summit, and the input coordinate system is set to something other than “WGS84 (EPSG: 4326)”, then the input system will be written to the orthophoto header. If an output coordinate system is defined and coordinate transformation is on in Summit, the output coordinate system will be written to the output file. Use Summit’s or Ortho+Mosaic’s “I” information to see the metadata.



Example of Coordinate System, Datum, and Units metadata in an orthophoto header

- o. Mosaic generation now supports up to 10 image bands. (Previously, it was limited to 4 bands in version 6.7 and 3 bands in 6.6 and lower.) New features are as follows:
- Processes up to 10 bands.
 - These bands are supported by all mosaic processing including things like hotspot and balancing.
 - JPEG2000 (JP2) and BigTiff have been added as output format options. (For more information on BigTiff, see item 2 on page 6. Information on JP2 appears below.)
 - User interface improvements.
 - DAT/EM Image Viewer now allows selection of bands for viewing. (See item 27.a on page 16.)

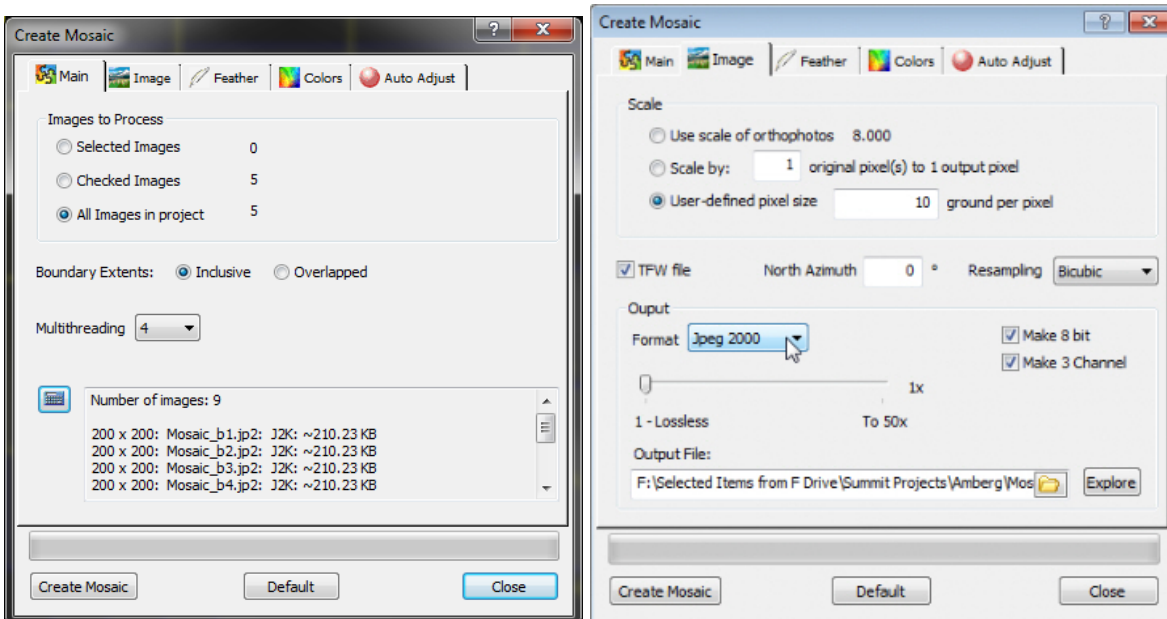
Why did DAT/EM add the JPEG2000 output format? The older TIFF/JPEG solution has limitations. You could only compress 3 or fewer bands, which is a limitation of the JPEG compression standard. Additional problems were that TIFF files are limited to 4GB and TIFF/JPEG compression is limited to 8 or 12 bits.

The good things about the new JPEG2000 format are as follows:

- Compresses any number of bands.
- Supports 8-to-16 bits.
- Supports lossless compression.
- Can make mosaic files over 4GB.
- Supports embedded zoom levels.
- Supports geographic information in the form of XML inside the JP2 image. A TFW (Tiff World) file can also be output for JP2.

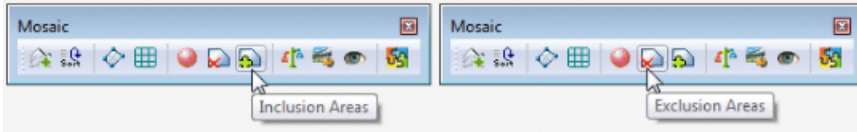
However, there are also drawbacks to JPEG2000 as follows:

- Slow reading speed. This is due to the decompression. This is really the main reason that prevents JPEG2000 from being a really great format.
- JPEG2000 is not supported by many vendors, although higher-end software like Adobe® Photoshop® does support it.

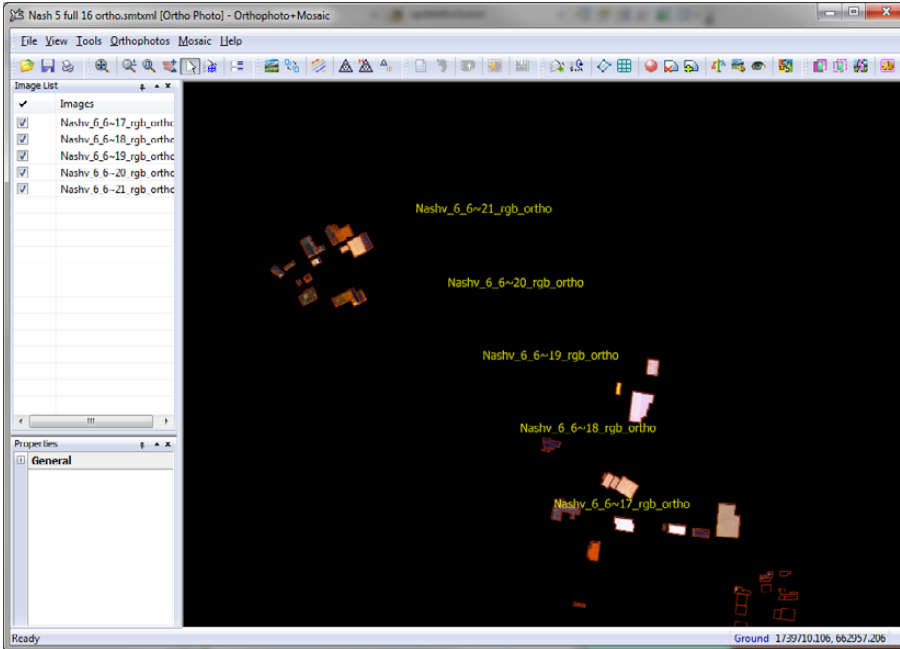


The Mosaic Main and Image tabs have changed for up to 10-band output and JP2

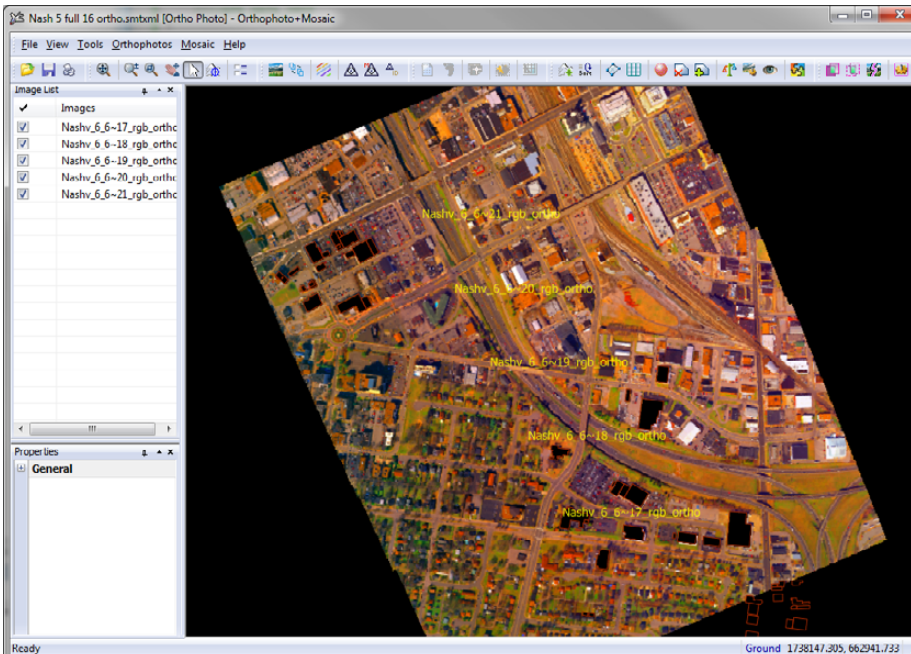
- p. **Inclusion Areas** and **Exclusion Areas** have been added to mosaic generation. These import vector files that contain polygon areas to include in or exclude from mosaic generation.



In the following demonstration (not a real case), building polygon vectors have been imported as inclusion areas:

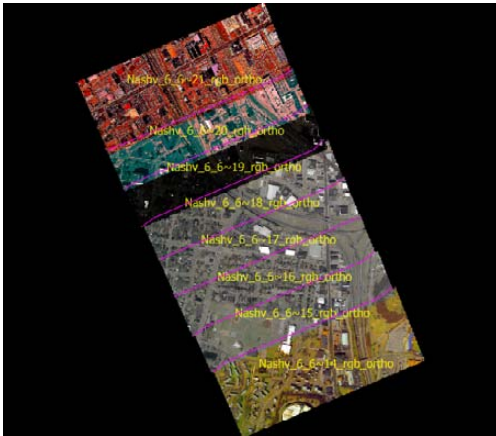


If these same building vectors are imported as exclusion areas, everything outside the buildings is used:

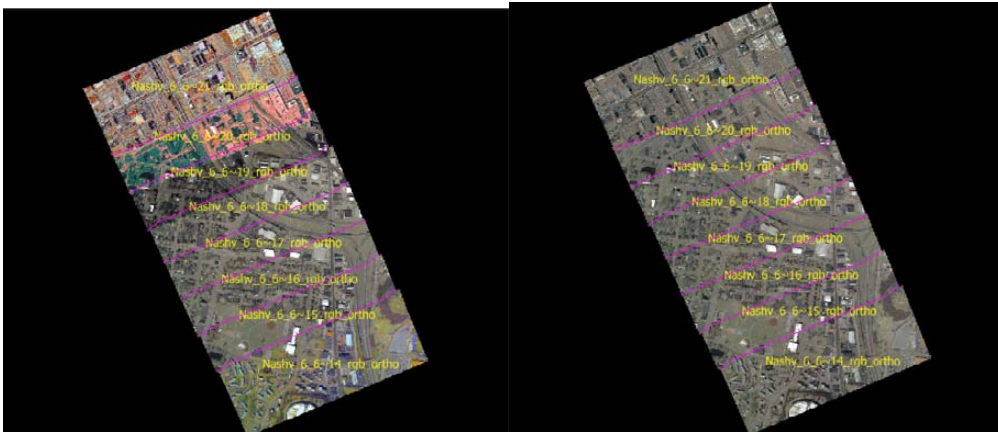


Inclusions are processed first, then exclusions. If an area lies in both an inclusion and an exclusion area, it will be excluded.

- q. There is a new, much improved exact histogram matching algorithm. Briefly, pixels are ordered strictly so that every pixel is unique. The uniqueness is accomplished by using averaging kernels around the pixels. This algorithm is much more complex and it will take longer to balance images; however, the improved results were deemed worth the extra production time. For faster results, try using the beta 64-bit Ortho+Mosaic application.

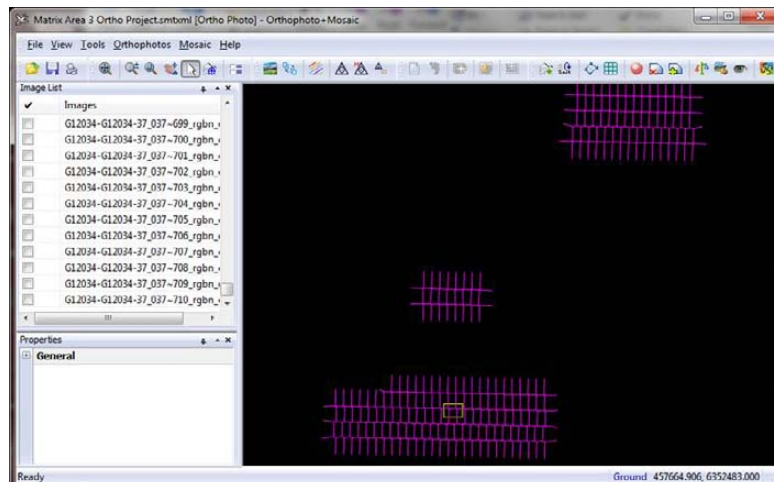


Example: Original images purposefully made to have extreme color differences



Left: V. 6.7 results matched to the bottom image. Right: V.6.8 results.

- r. Mosaic seams previously failed for disjointed model areas. They are now calculated correctly:



Seams are calculated correctly for disjointed model areas

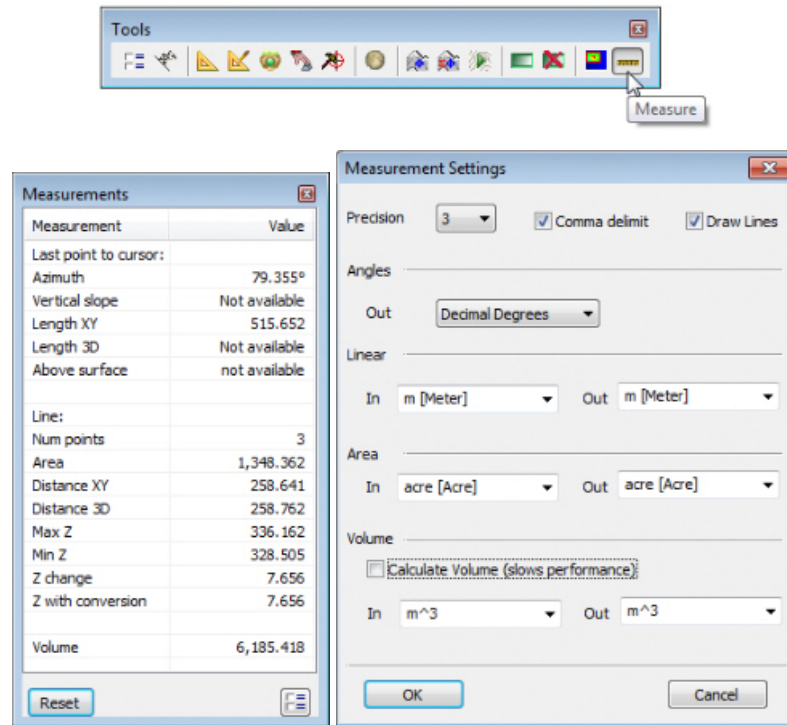
DAT/EM Scheduler

The DAT/EM Scheduler now offers Landscape in addition to the existing AutoCAD MapEditor. It offers both the official 6.8 32-bit and the beta 64-bit beta versions. See more information in the “Landscape” section below.

Landscape

The following changes were made to LANDSCAPE:

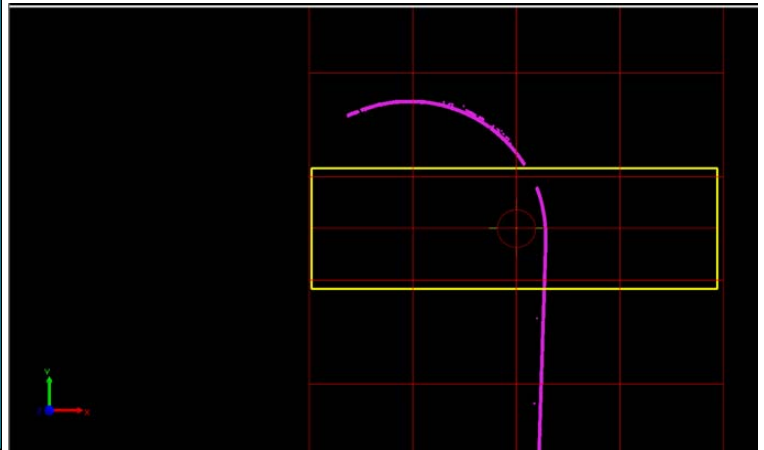
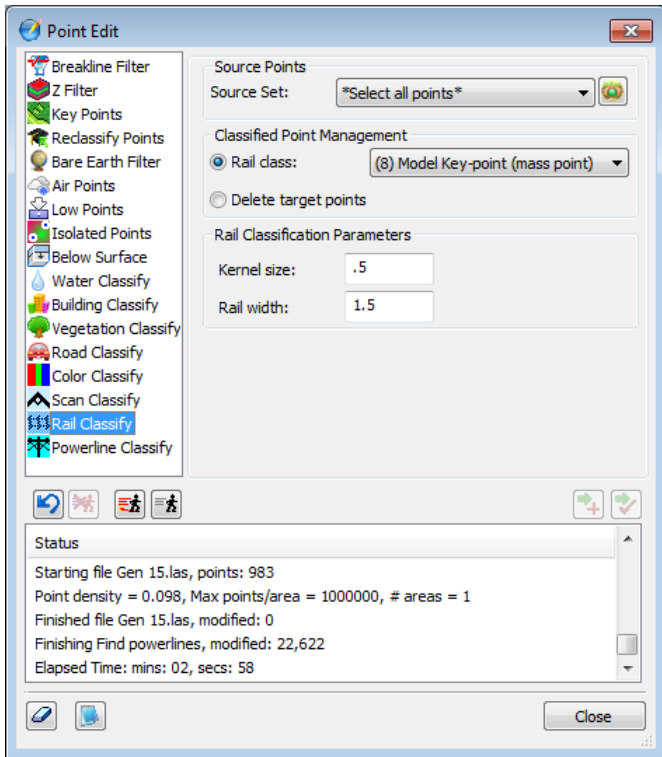
1. An error has been fixed for reading large “SDT DiAP files” .sdt format. Smaller files could be read properly, but the application would crash if the file was too large. This fix applies to Landscape and any other DAT/EM application that reads point files, including Ortho+Mosaic, Capture for ArcGIS “Drape” tool, Point Translator, Contour Creator, etc.
2. An error connecting to Capture for AutoCAD was fixed.
3. Landscape has a new distance measuring tool similar to the one in Summit Evolution. Select Landscape > Tools > **Measurements** or select **Measure** from the toolbar. Pick point(s) in Landscape and move the cursor to see the various distance, angle, and related calculations for the current point set. To clear the point set, select the **Reset** button. To make units and related settings, select the options button.



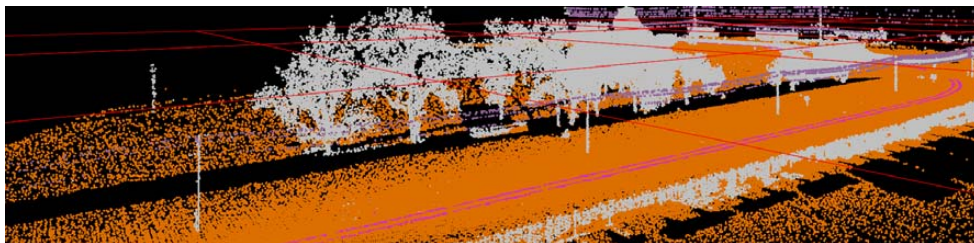
Landscape’s Measurements display tool and its settings dialog

4. Landscape's Point Edit dialog offers new point filters:

- a. **Vegetation Classify**
- b. **Road Classify**
- c. **Color Classify**
- d. **Scan Classify**
- e. **Rail Classify**: This tool requires high resolution data (~> 50 points/m²). The statistical analysis is run in the kernel. **Kernel size** usually should be set to 1. A higher number such as 5 will run faster, but the accuracy will be lower.

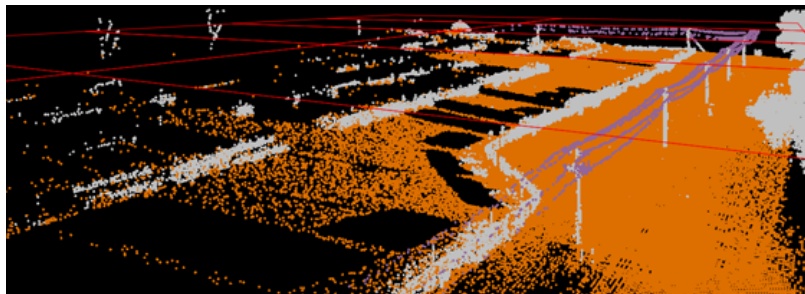
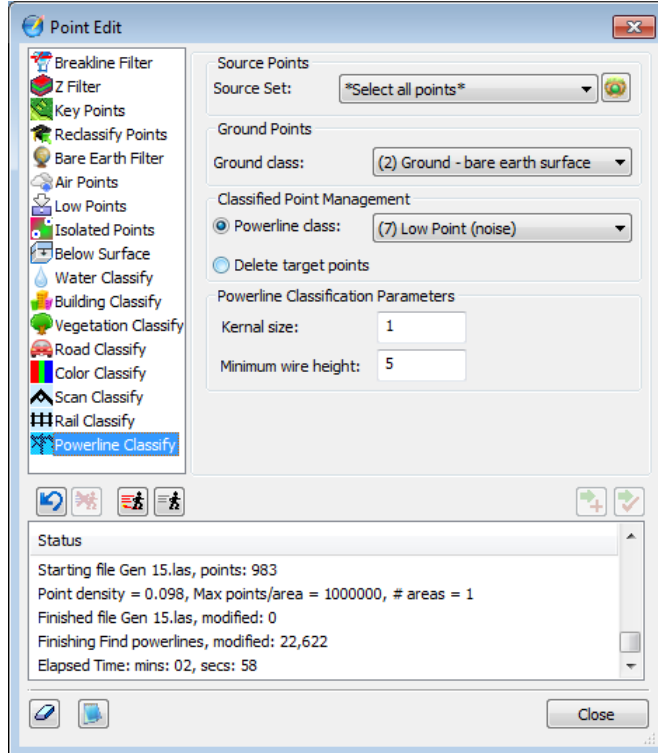


Rail line classification in a top view

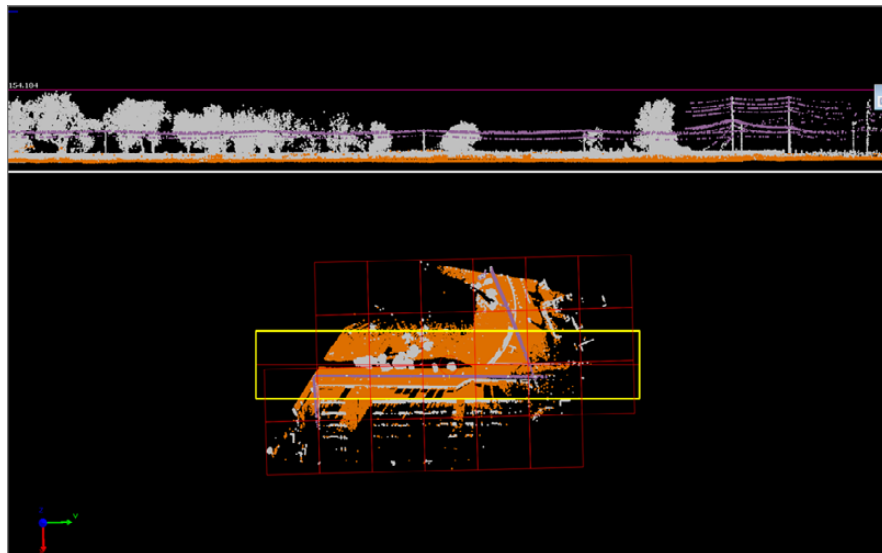


Example of power line and rail classification

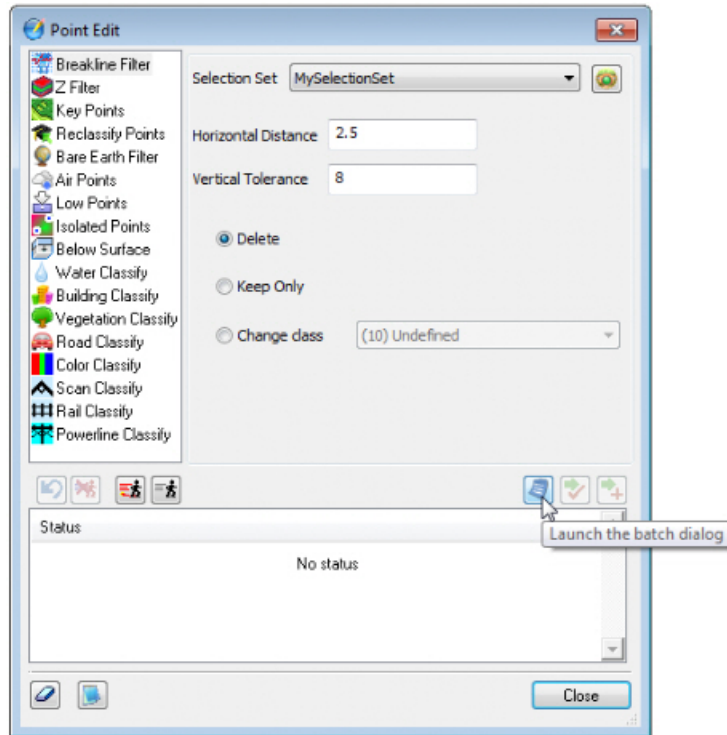
- f. **Power Line Classify:** This tool requires high resolution data (~> 50 points/m²). The statistical analysis is run in the kernel. **Kernel size** usually should be set to 1. A higher number such as 5 will run faster, but the accuracy will be lower.



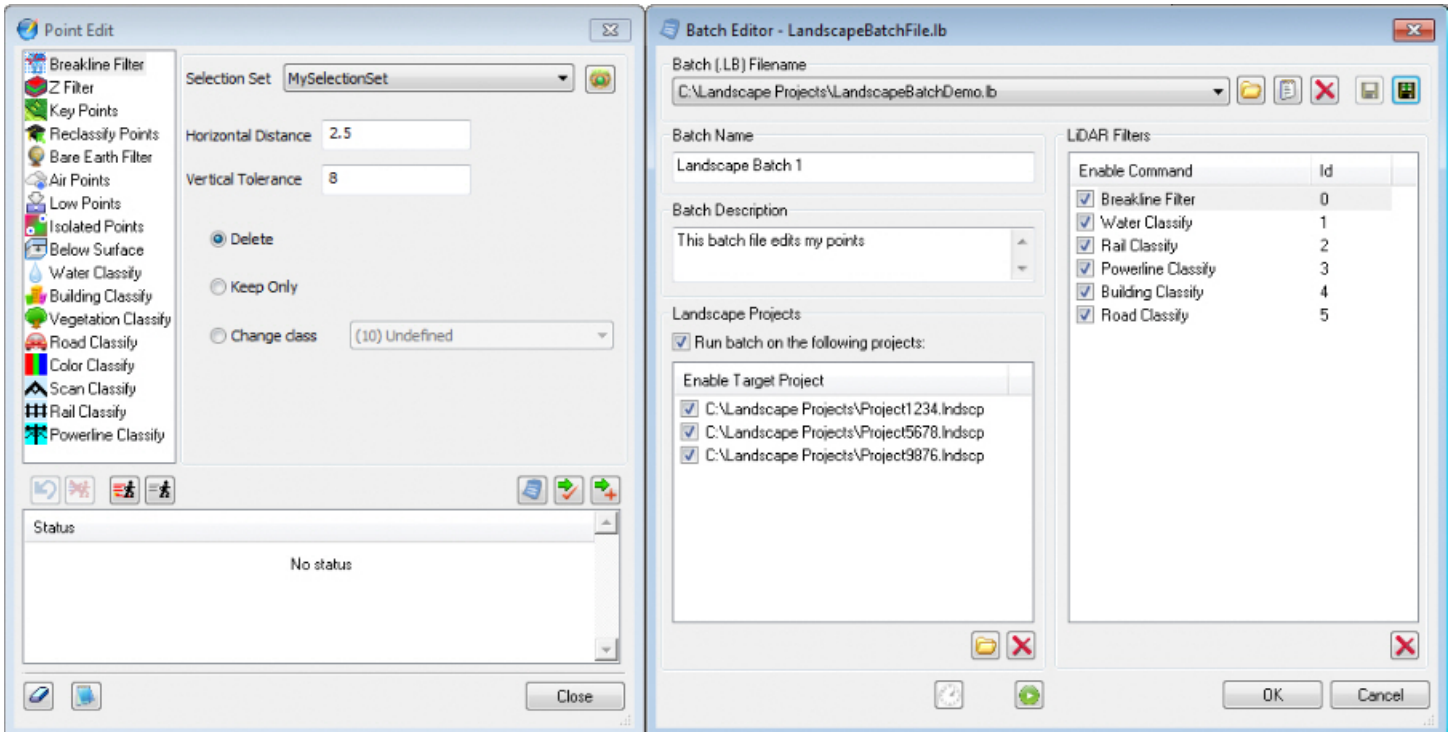
Example of power line classification



- Landscape's LIDAR Point Editor has a new batch file utility. Create batch files to run again later on the current file or a list of files. To use, activate "LIDAR Point Edit" and select the "Launch the batch dialog" button on the right:



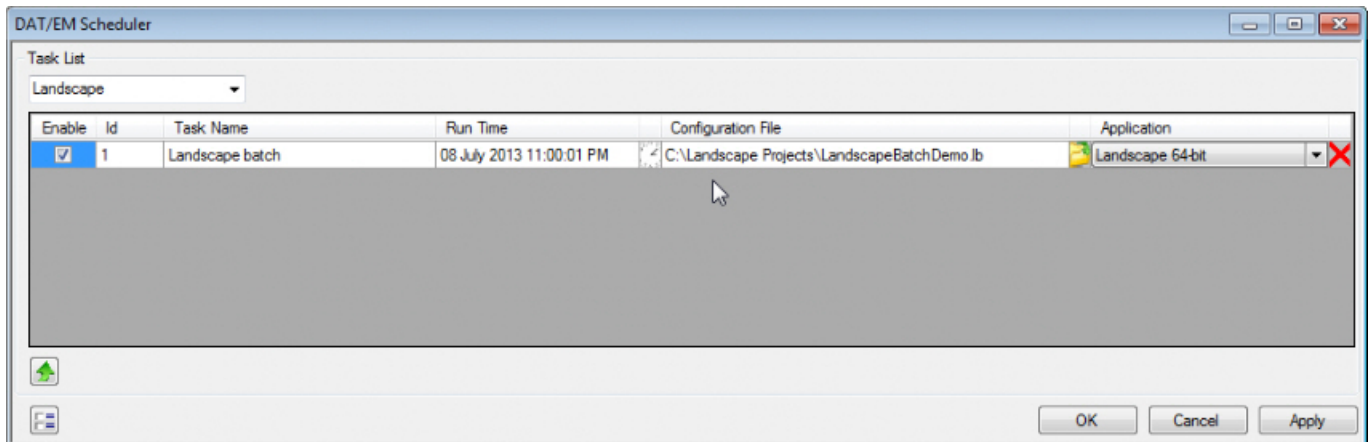
The Batch Editor dialog will appear and the "+Insert the current filter at the selected position" ("+") and "√ Modify the existing batch filter" ("√") buttons will activate on the original Point Edit dialog.



- Use the buttons along the top to prepare the .lb “Landscape Batch” batch file.
- To add a new filter to the batch file list, highlight the filter on the Point Edit dialog and make settings. If necessary, highlight (click on) the existing line to appear *above* the new line in the “LiDAR Filters” list. Select the “+” button located on the Point Edit dialog.
- To edit an existing filter, click on it in the “LiDAR Filters” list. Its current settings will populate the fields in the Point Edit dialog. Make changes and select the “√” button on the Point Edit dialog.
- To sort the filters, drag and drop the lines into the correct positions in the list. Filters will be run in the order they appear in the list.
- To delete a filter, click on it in the “LiDAR Filters” list. Select the “X” button below the list.

There are three choices to run the **batch file**:

- ✓ **Run now on current project:** Uncheck the “Run batch on the following projects” setting. Select the green “Run current...” button at the lower center of the Batch Editor dialog to run on the project that is currently open in Landscape.
- ✓ **Run now on list of projects:** Check on “Run batch on the following projects” and browse for projects to create a list of .Indscp files. Select the green “Run current...” button at the lower center of the Batch Editor dialog to run on the list of projects in the “Enable Target Project” list. Note that the list may contain, but is not required to contain the project that is currently open in Landscape.
- ✓ **Run later using the DAT/EM Scheduler:** Check on “Run batch on the following projects” and browse for projects to create a list of .Indscp files; save the .lb file. Select the white “Start the DAT/EM Scheduler application” at the lower edge of the Batch Editor dialog. Select “Landscape” in the DAT/EM Scheduler’s Task List and select its green “Create a new task” arrow. Click in the fields to edit the entries; browse for the .lb Landscape Batch file in the “Configuration File” field. Choose the 32- or 64-bit version of Landscape, if available. Set a time in the future and check on the “Enable” checkbox. Select Apply and OK. The application will run at the scheduled time. Please note that the file(s) it runs on are set earlier in the Batch Editor and are contained in the .lb file.



DAT/EM Capture for ArcGIS

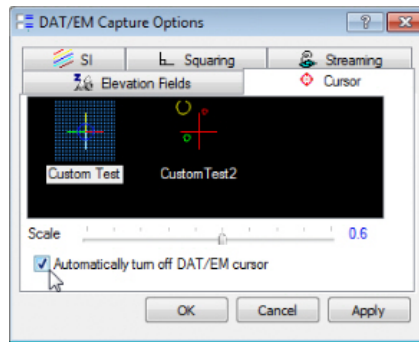
Version 6.8 is compatible with ArcGIS 9.1, 9.2, 9.3.1, 10.0, and 10.1 (each with the latest service packs installed)

BE ADVISED: DAT/EM has tentative plans to drop support for ArcGIS 9.x versions at the second DAT/EM software release in 2014. Please prepare to upgrade ArcGIS to a 10.x release. Contact DAT/EM if you have concerns about upgrading.

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

1. There are changes to the behavior of system mouse cursor in Summit and the DAT/EM Cursor setting in ArcMap. **Automatically turn off DAT/EM cursor** is a new setting that automatically turns off the DAT/EM cursor if an ArcMap tool is selected and turns it back on when a DAT/EM tool is selected. This may be especially helpful for Summit Lite Edition users and anyone else who uses a system mouse as the main Summit input device.

Automatically turn off DAT/EM cursor enables you to use ArcMap's drawing and editing tools using Summit's digitizer as the input device. Note that ArcMap's digitizing tools are prone to mistakes if Summit digitizes a point at the same time the ArcMap view pans; if this becomes a problem, set DAT/EM Capture Coordinates **Zoom with Summit** off. Note also that all ArcMap tools use the ArcMap data frame's pixel coordinate system instead of Summit's subpixel image coordinate system, whether or not Summit is the digitizer. That means coordinates are rounded off to the ArcMap view's pixel size, with more aggressive rounding the more zoomed out the view is.



New "Automatically turn off [toggle] DAT/EM cursor" setting

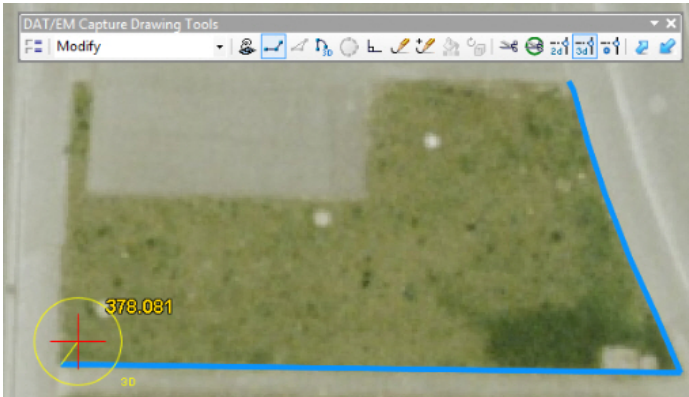
2. **Zoom Summit** is a new setting in the DAT/EM Capture Coordinates dialog. When it is checked on, Summit's main view zooms based on zoom changes activated from the ArcMap data frame. When it is off, Summit's zoom does not change when the ArcMap zoom changes. Although they are opposites, both **Zoom with Summit** and **Zoom Summit** may be on at the same time.



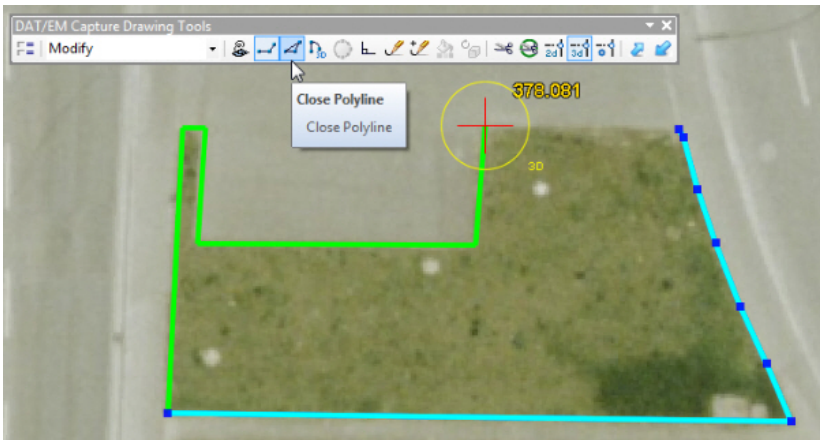
New **Zoom Summit** setting zooms the Summit view based on zoom changes in the ArcMap view.

3. An error has been fixed for reading large "SDT DiAP files" **.sdt** format. Smaller files could be read properly, but the application would crash if the file was too large. This fix applies to the Capture for ArcGIS "Drape" tool and any other DAT/EM application that reads point files, including Landscape, Ortho+Mosaic, Point Translator, Contour Creator, etc.

4. Two fixes have made it easier to add vertices to the end of an existing polyline:
 - a. Snapping to the endpoint of an existing polyline object with the Modify task has been fixed. It is now possible to set the task to Modify, activate a DAT/EM drawing tool such as point-to-point, snap to the end of an existing polyline, and draw new vertices onto the end of the polyline.
 - b. **Close Polyline** is now active in **Modify** mode. After adding vertices to the end of a polyline as described above in 3.a., select **Close Polyline** to draw a segment from the most recently drawn vertex to the first vertex of the original polyline.



Turn on snapping for the layer. Set the task to **Modify**, select a DAT/EM drawing tool, snap to the end of the existing polyline, and draw new vertices. (Endpoint snapping has been fixed.)



While drawing vertices in **Modify** mode, **Close Polyline** is now available.



After **Close Polyline**, the endpoints of the polyline are snapped together.

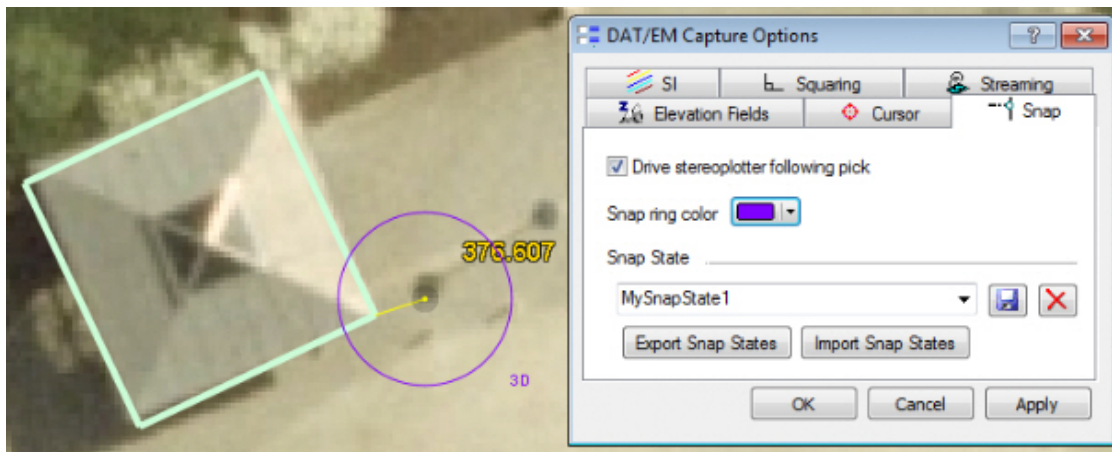


Note: The first snap does not need to be on the endpoint; to replace part of the existing end section, snap to a segment or another vertex to replace the shorter polyline remainder. **Close Polyline** is still available.

5. There is a new **Snap** tab in DAT/EM Capture Options (on the ArcMap side). It offers the following:
 - a. **Drive stereoplotter following pick**, when checked on, moves the stereoplotter cursor to the snap location when the snap is accepted.
 - b. **Snap ring color** sets the color of the snap ring that appears in Summit's main view. (Note that the snap line is set separately by Summit>Tools>Options>SI tab>Rubber Banding.)
 - c. **Snap State** exports and imports the checkbox status of the layers in the Classic Snapping Environment window. To load the snap state settings from the keypad or digitizer buttons, use the **LoadSnapState** keyword followed by the name of the snap state you would like to restore.


LoadSnapState <snap state name>

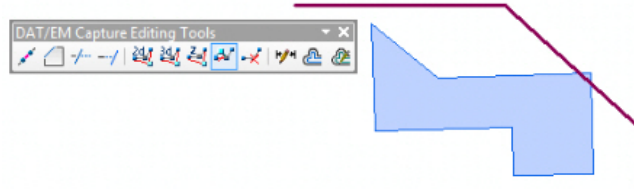
Example shown below: **LoadSnapState MySnapState1**



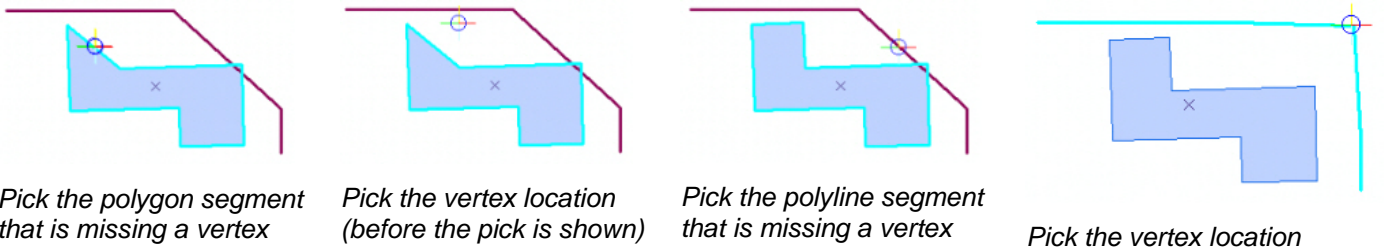
New Snap tab in DAT/EM Capture Options on the ArcMap side (**Snap ring color** demonstrated)

6. **Visit** is a new command to drive the stereoplotter to a list of points. Complete instructions appear in the file "**Product Notes Supplement - VISIT ArcGIS 6.8.pdf**".

7. **Add Vertex**  is a new editing tool that adds a vertex to an existing polyline or polygon using the Summit digitizer with DAT/EM Cursor on. Turn on classic snapping for the layer (preferably edge snap). Set the task to **Modify**. Pick anywhere on the existing segment where the vertex will be added; move the stereoplotter cursor to the final location of the vertex and pick to place it at that (x,y,z). The keyword to add this command to the DAT/EM Keypad or a digitizer button is: **AddVertex**.



Here, a polygon and a polyline are both missing a vertex. Select Add Vertex.




Pick the polygon segment that is missing a vertex

Pick the vertex location (before the pick is shown)

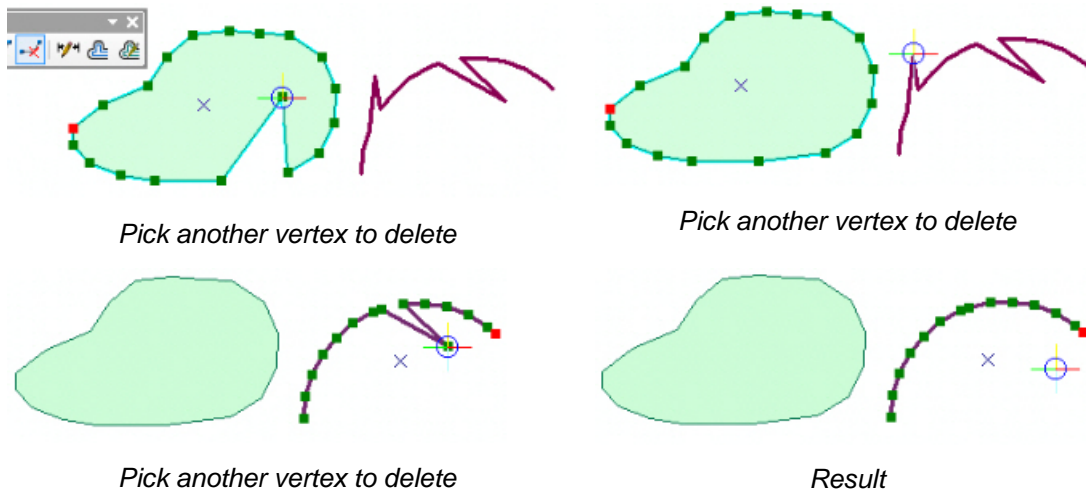
Pick the polyline segment that is missing a vertex

Pick the vertex location

8. **Remove Vertex**  is a new editing tool that removes a vertex from an existing polyline or polygon using the Summit digitizer with DAT/EM Cursor on. Snapping must be checked on in the Classic Snapping Environment for the object's layer. Either 3D or 2D snap must be on; if it is not on, it will be turned on automatically when you select the Remove Vertex tool. To use, set the task to **Modify** and select the **Remove Vertex** tool. The keyword to add this command to the DAT/EM Keypad or a digitizer button is: **DeleteVertex**.



Here, a polygon and a polyline have unwanted vertices. Select Remove Vertex and pick a vertex to delete.



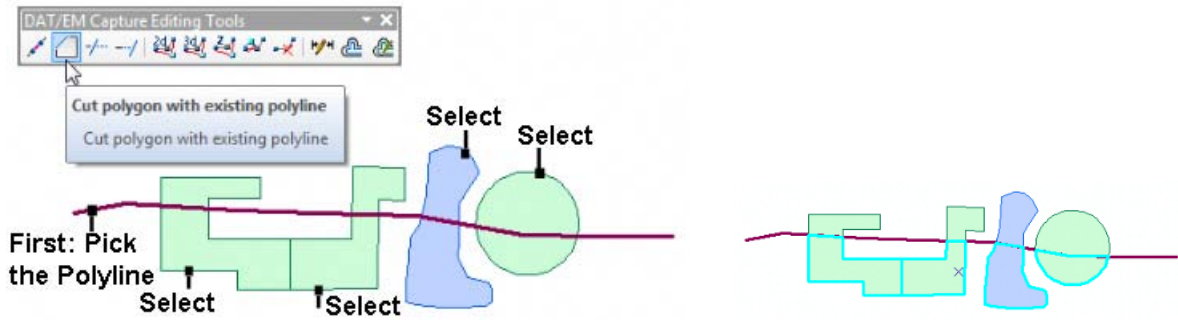
Pick another vertex to delete

Pick another vertex to delete

Pick another vertex to delete

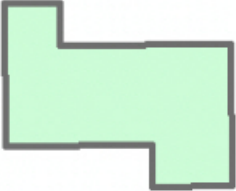
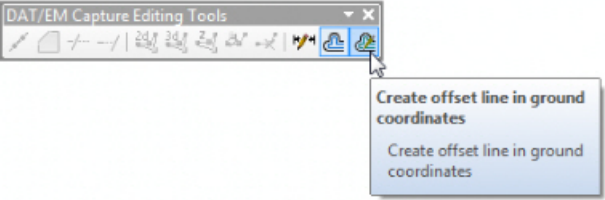
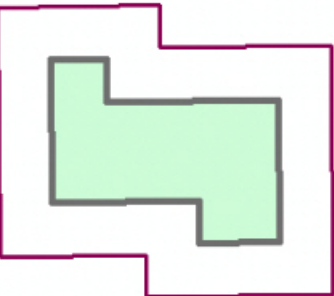

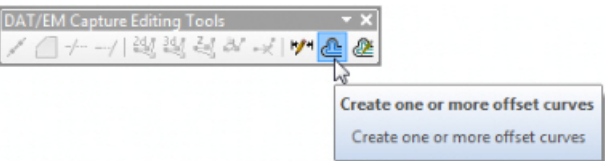
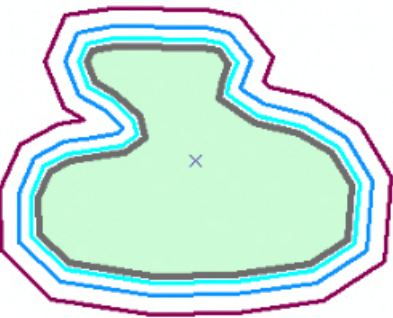
Result

9. **Cut Polygon with Existing Polyline** can now cut multiple polygons without having to reselect the polyline. Select the polyline first, then select any number of polygons to be cut. To start a new set of cuts on a different polyline, select that polyline instead of another polygon; other ways to cancel and restart the prompt are to press the Cancel/Reset/Finish button or the <Escape> keyboard key when ArcMap has Windows focus. Note that clearing selections in ArcMap will not clear the active polyline.



Cut polygon with existing polyline can cut multiple polygons.

10. The offset tools can now offset polygons and closed polylines and use either geometry type for the offsets. Previously, they could only input and output polylines.

 <p><i>Polygon or closed polyline before offset tool</i></p>  <p><i>Select the layer in the Create Features window or target field. Use Create offset line in ground coordinates to pick the offset location</i></p>  <p><i>Offset can be either a closed polyline or a polygon, depending on the destination layer</i></p>	 <p><i>Closed polyline or polygon before offset tool</i></p>  <p><i>Select Create one or more offset curves and set a table of offset definitions. Select either polyline or polygon layer destinations in the table.</i></p>  <p><i>Offsets can be either closed polylines or polygons or a mixture of geometry types</i></p>
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11. The SI Drape tool now works on 3D layers as well as 2D layers. If the data already has a Z value, it will be replaced by the Drape DTM/DEM surface.
12. Elevate Layers was fixed as follows:
 - a. It operates on a layer that contains one or more space characters in its name.
 - b. It now operates properly on layer subtypes. Note that ArcGIS Standard or ArcGIS Advanced are required in order to create subtypes.
13. An .mxd saved in layout view no longer crashes ArcMap when it is reopened (with the DAT/EM .dll currently registered).
14. The Fill Polygons tool could turn on unexpectedly when ArcMap reopened or a new map file was opened. Now it keeps its most recent on/off state.
15. Superimposition was fixed to better handle large amounts of vector data.
16. Shift Features has the following changes:
 - a. **Shift Features > Shift Using Stereoplotter > Vertical** previously moved an object in an offset fashion from the first stereoplotter Z to the second stereoplotter Z. Now it moves the object to the second stereoplotter Z regardless of the initial Z. Snap is not required for **Shift Using Stereoplotter**. For the first point, it automatically picks the object at the point on the object that is nearest to the picked XY and uses the object's Z. This allows it to move the object to the exact stereoplotter Z of the second pick.
 - b. It now opens with its most recent settings active. Previously, some settings would always default to on or off, regardless of previous settings.
 - c. It no longer has a problem with reactivation if it was the last-used command and its icon was still highlighted.
17. The "**SetFieldValue layername:fieldname:value**" keypad and button function did not work in ArcGIS 10.0 or 10.1 with previous versions of DAT/EM software. Now it is fixed; however, the layer name and field name values are case sensitive. That is, if the layer is called "ThisIsMyLayer" and the field is called "MyFIELD," the characters must be entered as "**SetFieldValue ThisIsMyLayer:MyFIELD:525**". By comparison, "**setfieldvalue thisismyayer:myfield:525**" will *not* work. An ArcGIS function that was not case sensitive in ArcGIS 9.x is now case sensitive. Please change your keypad overlays and button functions to be case sensitive.
18. Airfield3D: Setting an obstacle's FAACODE could corrupt the object in version 6.7. This is fixed. Several other changes were implemented. If you use Airfield3D, please contact support@datem.com for update information.

DAT/EM Capture and MapEditor for AutoCAD

Changes apply to:

32-bit AutoCAD 2004-2014 versions with the latest service packs.

64-bit AutoCAD 2009-2014 versions with the latest service packs. Note that 64-bit AutoCAD 2008 is not supported.

BE ADVISED: DAT/EM Capture 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 6.8.

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. Please note that files may be copied manually to activate more same-year versions (contact DAT/EM Support for instructions).

Autodesk Infrastructure Design Suite installs three same-year AutoCAD versions (AutoCAD, Map3D, and Civil3D). You must run each version and register/"accept" each one before installing DAT/EM software *whether or not you intend to run every version with DAT/EM Capture active*. DAT/EM software will install completely for only one of them. After that, the user can manually copy the AutoCAD \datem folder and the wintab driver file into the other two versions of AutoCAD. Contact DAT/EM Support for instructions.

Reminder: Install all available AutoCAD service packs and updates before installing DAT/EM software.

Reminder: After every new AutoCAD installation, you must run AutoCAD at least one time to activate its license *before installing DAT/EM software*. This applies to every version of AutoCAD on the computer *whether or not you intend to use every version with DAT/EM Capture*.

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


1. Version 6.8 is the first version to install for AutoCAD 2014.
2. There is a new snap line indicator in Summit's superimposition. With Osnap or AdvOsnap (DAT/EM Advanced Osnap layers) on, when the Summit cursor approaches a snappable object, a superimposed line will indicate the potential 2D or 3D snap. Snapping will work with all AutoCAD tools in Summit now. Snapping control is via the AutoCAD snap options.

Hint: Users who have a 3D digitizing device with several buttons may want to add a series of Osnap settings to a button. Use Summit's Button Manager. For example:

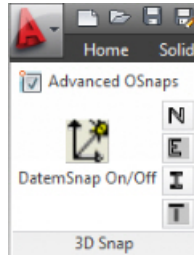
Type=**UserCAD**, Action=**'-osnap off{RET}:'-osnap end{RET}:'-osnap near{RET}**

Press the button multiple times to scroll through the Osnap modes. The '-' allows you to enter these commands transparently and without the dialog, so you can change the Osnap mode without interrupting the digitizing command. The new snap line will make it easy to see which type of Osnap is active.

3. AutoCAD's SuperImposition has the following updates:
 - a. Some existing SuperImposition rubber banding issues were corrected to work with the new snap indication line.
 - b. There were fixes for superimposition problems that happened when the Summit model changed automatically during an AutoCAD polyline drawing command.
 - c. The results of AutoCAD's TRIM and EXTEND commands now update automatically in Summit's superimposition.
4. ADVOSNAPS (Advanced OSnaps) was improved for use with AutoCAD 2009 and 2010 and added to AutoCAD 2013 and 2014.
5. CAPT2D and CAPT3D now accept "_CLOSE" to close the polyline. This command is issued from "Close" on

Summit's CAD toolbar, . Previously, the underscore character, _, prevented "_CLOSE" from working in CAPT2D/3D. Note that the underscore worked with AutoCAD's own commands, such as 3DPOLY, in English and international versions of AutoCAD.

6. DATEMSNAP is a command to make the Summit Evolution cursor move to accepted snap points during certain command such as 3DPOLY and CAPT2D/3D with Osnap on. DATEMSNAP was not functional for many years. The command has been revived and updated to work with all supported versions of AutoCAD. In addition, DATEMSNAP has replaced a misnamed entries on the “DATEM” pull-down menu and ribbon toolbar:



DATEMSNAP On/Off on “DATEM” ribbon toolbar

7. AUTOLIST was not working in version 6.7. It is fixed in 6.8 for all supported AutoCAD versions.
8. AUTOARC2D/3D, CAPT2D/3D, DATDRAW, and EDITLINE have a new “Trace” mode. “Trace” allows the polyline to draw along and match the vertices of another polyline. To use Trace from any of the commands that offer “Trace” in their command line menu:
- Enter “t” for trace.
 - Pick the first point and last point to trace along another polyline.
 - If the other polyline is closed, pick a third point along the path of the trace. This prevents the trace from going around the closed polyline on the wrong side.

For example, trace is offered for EDITLINE’s end, inner and join modes.



Two polylines before EDITLINE Trace mode



Activate EDITLINE, choose Trace, and select the first trace point on the other polyline.



Select the end of the trace. If the other polyline is closed, select a point along the traced section to indicate which side to trace. Continue with EditLine.

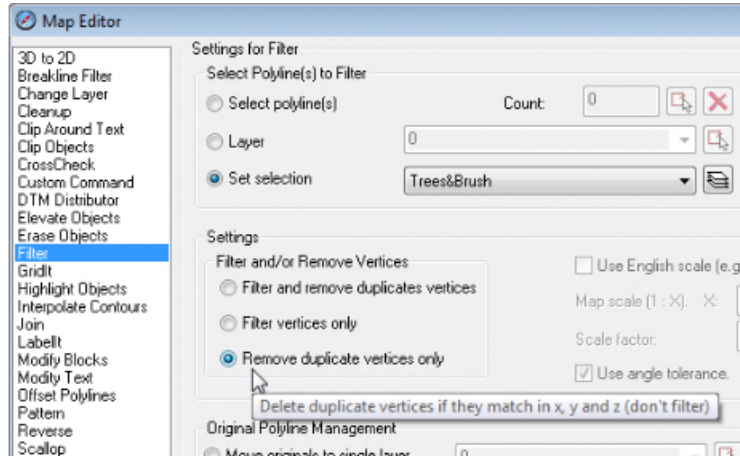


The two polylines now match vertex to vertex along the traced section.

9. LC and LCF commands are fixed to avoid an AutoCAD problem that inserts a blank text style. This caused LC and LCF to place text as the previous text style (alphabetically) to the selected style.

10. MapEditor for AutoCAD has the following changes:

- a. FILTER has a new “Remove duplicate vertices only” setting. This setting searches for and removes duplicate consecutive vertices in a polyline.



New Filter “Remove duplicate vertices only” setting

- b. TOUCH has fixes to prevent overshooting the “to” polyline and other miscellaneous problems with some special cases.
- c. TOUCH has several fixes that mostly affect interactions with arcs.

DAT/EM Capture and MapEditor for MicroStation

Changes apply to Capture for MicroStation. DAT/EM software installs for the following MicroStation versions on 32-bit and 64-bit operating systems:

- **MicroStation V8 and V8 2004 Edition: Version should be 08.05.00.34 or higher.**
- **MicroStation XM: Version should be 08.09.04.88 or higher.**
- **MicroStation V8i, V8i-based Bentley Map and Map Enterprise Select Series 1 (1 not recommended), 2, and 3**

If you upgrade from Select Series 1 to 2 or 3, you must reinstall DAT/EM software after installing the Series upgrade.

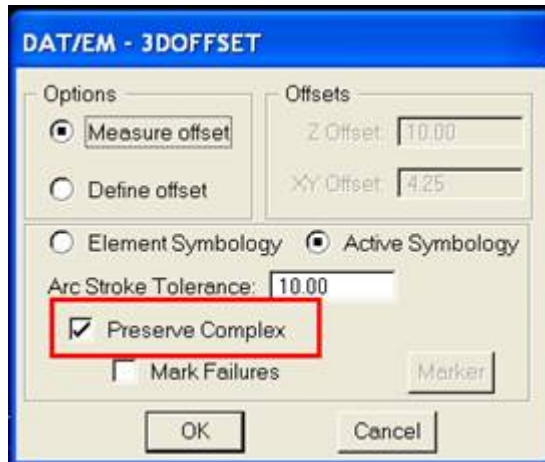
DAT/EM will install for all versions of MicroStation that are present on the computer at the time of the DAT/EM installation.

Note about Power GeoPak Select Series 3: DAT/EM Software *installs* for Power GeoPak SS3, but it does not run well. Power GeoPak has widespread timing problems loading other vendor’s applications. For example, when DAT/EM applications are loaded, the “Common.ma” file will not load. When DAT/EM applications load automatically, the “GeoPak” menu disappears from the menu bar. Therefore DAT/EM version 6.8 should not be installed for Power GeoPak.

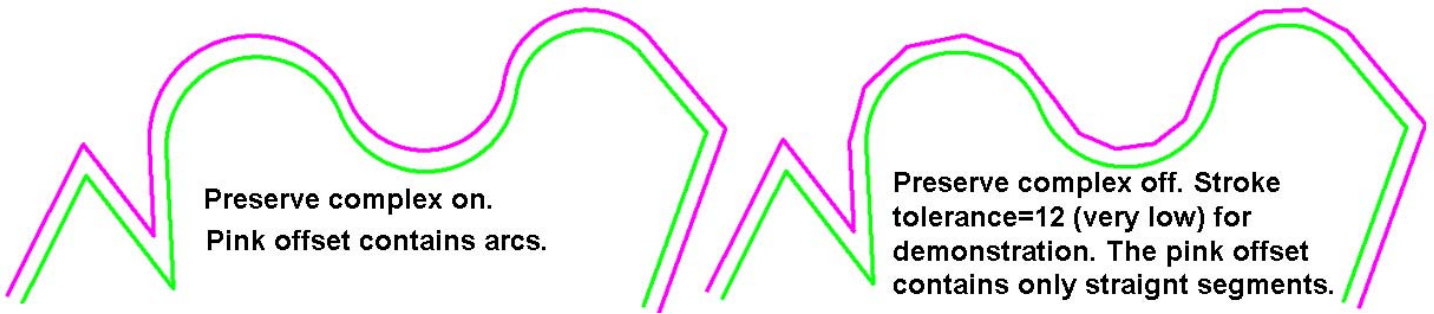
The following changes were made to DAT/EM Capture and MapEditor for MicroStation:

1. Capture initialization and synchronization are now about twice as fast for version 6.8 than they were in 6.7.
2. The tentative point marker and tentative text refresh and draw better on both the Summit superimposition and MicroStation sides. Tentative marker timing was improved.
3. A rare startup crash was fixed. It was due to the timing of loading the DAT/EM applications.
4. The precision of the Selection Set Editor’s “Fence to Set” selection tool has been improved.
5. The Selection Sets Editor will no longer allow mesh elements to be added to a set. There are no MapEditor commands that process mesh elements.

6. MapEditor .PAR parameter files have the following software fixes:
 - CLIP "VIEWOPT" setting is now ignored (instead of being rejected). Only top view (XY) clipping is supported.
 - Commands related to text handling, such as MECHANGETEXT and XYZOUT, no longer fail on MicroStation's "Enter Data" text elements.
 - If ZCHECK was selected to add to a parameter file in the Parameter File Editor, the "MEXPORT" dialog would launch instead of "ZCheck". The correct dialog now launches.
7. A problem was fixed in AUTOARC, FACESHIFT, PSQR, DATDRAW, and TOUCH. They could crash after opening a new design file in the same MicroStation session.
8. Our customers have found some MicroStation files that contain shapes that have a 1-UOR (unit of resolution) gap between the first and last point. It is unknown how these shapes were created. DAT/EM altered the following commands to accommodate these not-quite-snapped-endpoint shapes: DTM CALCULATE, DTM SELECT, and MECLOSE. In addition, EZEDIT and all MapEditor shape commands will fix such shapes by either adding a vertex or moving the end vertex, depending on how close the first and last vertices already are.
9. 3DOFFSET has a new checkbox setting called **Preserve complex**. The keyins to control this checkbox are 3DOFFSET PCOMPLEXOFF and 3DOFFSET PCOMPLEXON.
 - (3DOFFSET PCOMPLEX OFF) When **Preserve complex** is not checked, 3DOFFSET works exactly as it did in previous versions. Arcs are offset as series of stroked, short line segments.
 - (3DOFFSET PCOMPLEX ON) When **Preserve Complex** is checked, complex elements are reconstructed to match the original in a final added step. The new element will have the same construction as the original, with the same sub-elements and same number of vertices. A projection of each vertex and sub-element of the original element is created



In the following examples, the original element is depicted in blue, the 3DOFFSET (stroked) element in white and the new 3DOFFSET (Preserved) element in red. A caveat is that the projection is made during post processing and some of the problems with the current algorithm (e.g. not handling self-crossing elements) are still there.



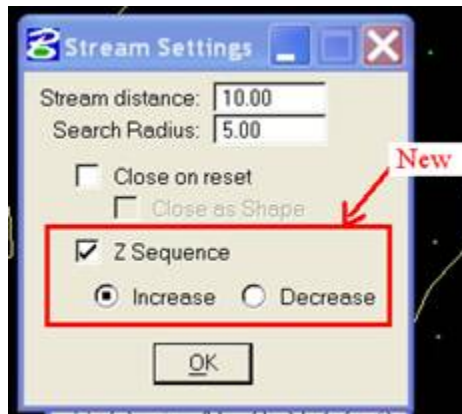
3DOFFSET's Preserve Complex setting on (above) and off (below)

10. BKTRACK has new monotonicity settings similar to the ones in DATDRAW. To activate, check on **Z Sequence** and choose a setting:

- **Increase:** The point is added to the line string only if it is higher in elevation than the previous point.
- **Decrease:** The point is added to the line string only if it is lower in elevation than the previous point.

Associated key-ins are:

- **BKTRACK ZSEQUENCE INCREASE** – Turns on monotonicity checks and ensures digitized stream is moving up in elevation.
- **BKTRACK ZSEQUENCE DECREASE** – Turns on monotonicity checks and ensures digitized stream is moving down in elevation.
- **BKTRACK ZSEQUENCE OFF** – Turns off BKTRACK monotonicity checking.



New BKTRACK settings

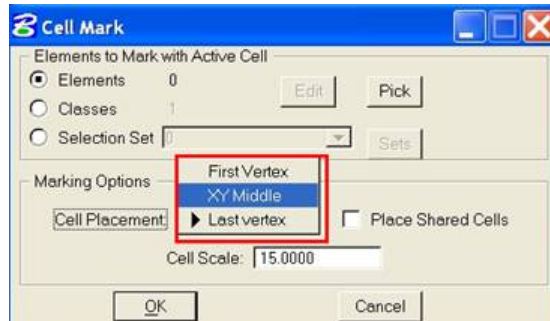
11. CELLMARK is a new family of commands to place cells on other elements. CELLMARK can be configured and run with a series of keyins or through a dialog. The command allows the user to place the currently active cell at the start vertex, end vertex or middle (XY midpoint) of select linear elements (lines, line strings, shapes, complex strings, or complex shapes). Cells will be oriented to the angle of the labeled element (at the point at which it is placed).

- **CELLMARK** – Opens the CellMark dialog.
- **CELLMARK START** – Sets the CellMark placement so cells will be placed at the starting vertex of selected elements.
- **CELLMARK MIDDLE** – Sets the CellMark placement so cells will be placed at the XY midpoint of selected elements.

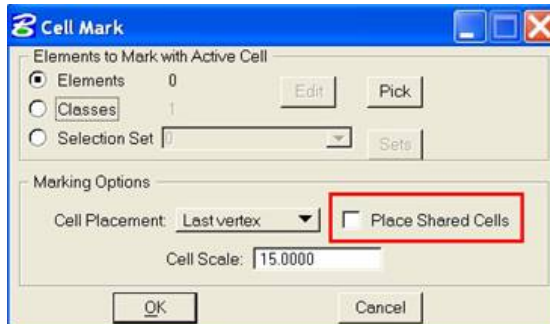
- **CELLMARK END** – Sets the CellMark placement so cells will be placed at the ending vertex of selected elements.
- **CELLMARK SET <setname>** – Runs CellMark as a keyin using <setname> to determine the elements to label, placing the currently active cell and using the most recent CellMark settings.
- **CELLMARK SHARED** – Sets the CellMark shared cell setting so shared cells will be placed when CellMark is run.
- **CELLMARK NONSHARED** – Clears the CellMark shared cell setting so regular cells (non-shared) will be placed when CellMark is run.
- **CELLMARK SCALE <cell scale size - decimal>** – Sets the CellMark cell scale (size).

Using the dialog, elements can individually for CELLMARK cell placement, identified by class (symbology and level), or identified by a selection set. Using the keyin (CELLMARK SET <setname>) only placement by selection set is available.

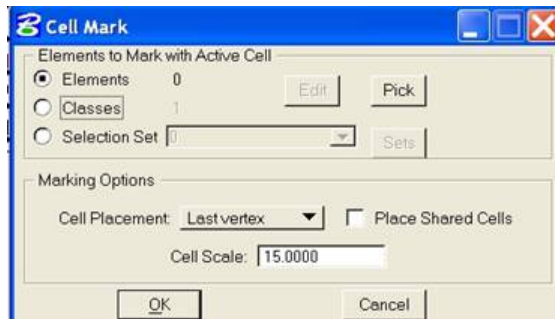
The location of placement is set by one of the keyins (CELLMARK START, CELLMARK Middle or CELLMARK END) or in the dialog.





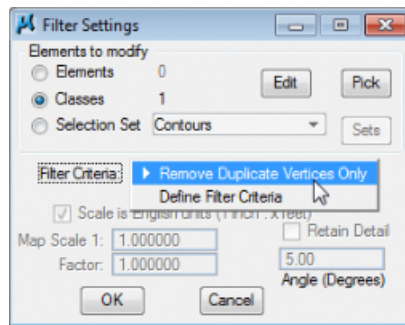
The user can choose to place shared cells or regular cells with keyins (CELLMARK SHARED or CELLMARK NONSHARED) or with the dialog checkbox (Place Shared Cells – checked places shared cells, unchecked places regular cells).



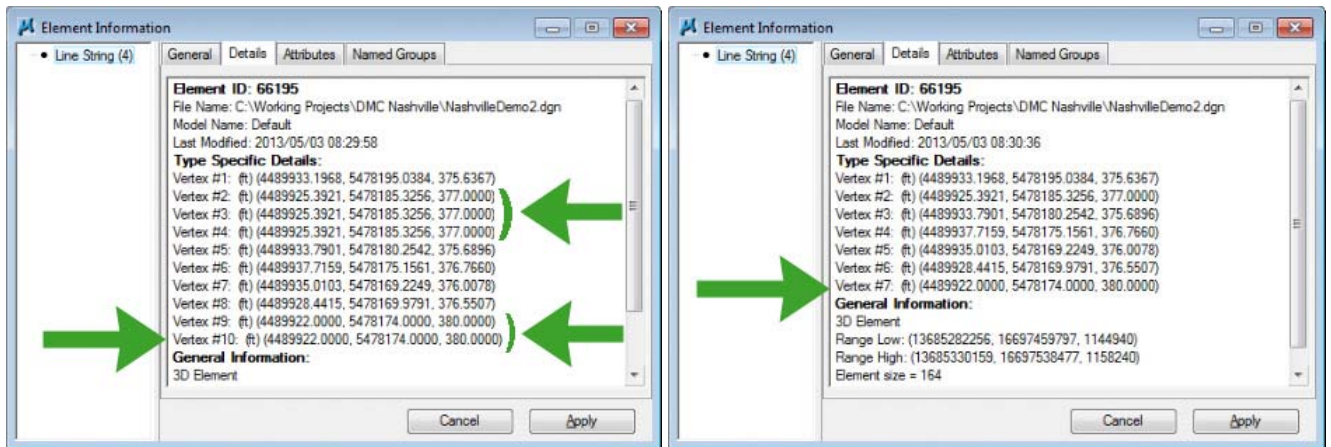
The size of the cell is determined by the active MicroStation true scale setting and the CELLMARK setting (keyin CELLMARK SCALE <cell scale size - decimal> or **Cell Scale** in the dialog).



12. CHANGE ATTRIBUTES INTERIOR can now process complex elements containing arcs as boundaries. While it might have worked for the first complex boundary, subsequent boundary processing could have added deleted/clipped/broken elements back into the file. Note: Boundaries that contain arcs are very slow to process and are not recommended; Stroke Element may be used to drop complex on such elements.
13. CHECK ATTRIBUTES INTERIOR can now properly process arcs in boundaries.
14. "Close using Last Settings" MELCLOSE is now working. It runs MECLOSE using the most recent settings. It was previously documented, but never fully implemented.
15. CROSSCHECK has the following improvements:
 - It now preserves the direction (order) of string vertices. Previously, it could reverse the direction.
 - There are performance improvements to make it run faster.
16. CULVERT has two new keyins, CULVERT MIDLINEON and CULVERT MIDLINEOFF. Previously, the midline (the line between the culvert endpoints) was always placed. Now the midline is optional.
 - CULVERT MIDLINEON: This is the default. Place the midline with the cells. 
 - CULVERT MIDLINEOFF: Place cells only without the midline. 
17. DATDRAW UNDO had a superimposition (SI) redraw issue where the original, retained portion of the line string was missing from Summit's SI. It would reappear in SI when the element was finished. This has been fixed.
18. DTM SAMPLE and DTM CALCULATE no longer fail on shapes that have endpoints that are not quite snapped. DAT/EM received .dgn files with shapes that had a one unit of resolution gap between the endpoints. (It is unknown how these shapes were created.)
19. FILTER (MEFILTER) has a new setting that removes duplicate vertices.



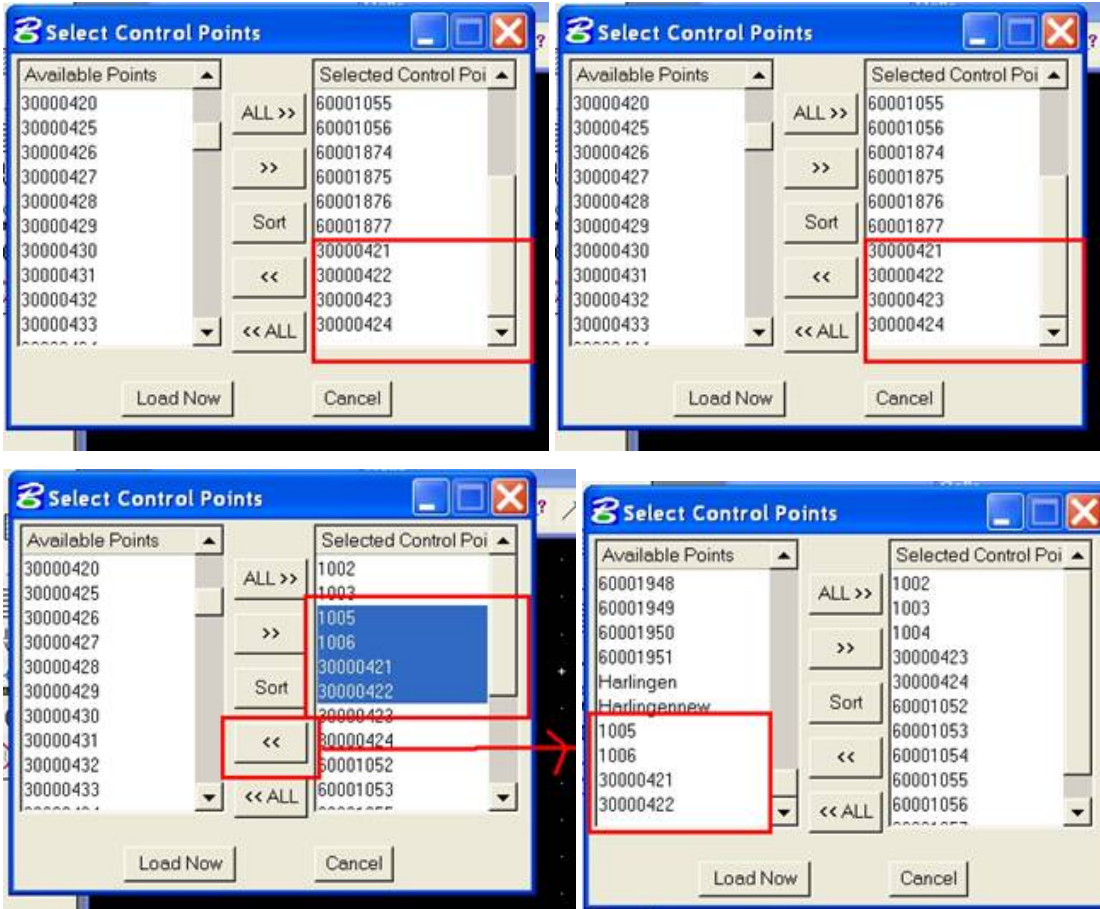
New "Remove Duplicate Vertices Only" setting in MEFILTER



Example: Duplicate vertices 3, 4, and 10 are removed.

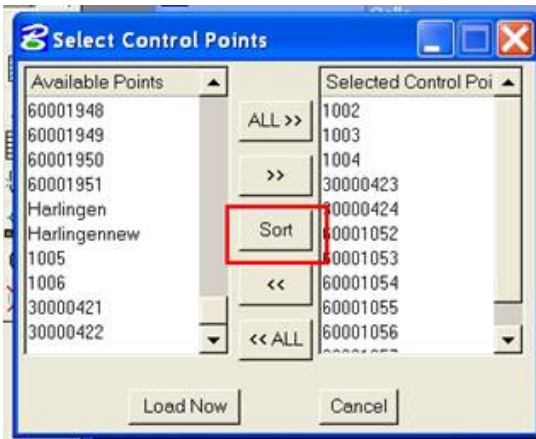
20. LD CP FILE (“Load Control File”) has the following changes:

- It is fixed to properly clear previous control points between multiple runs that load different files.
- It runs much faster on large control files.
- Multiple selections are now allowed:

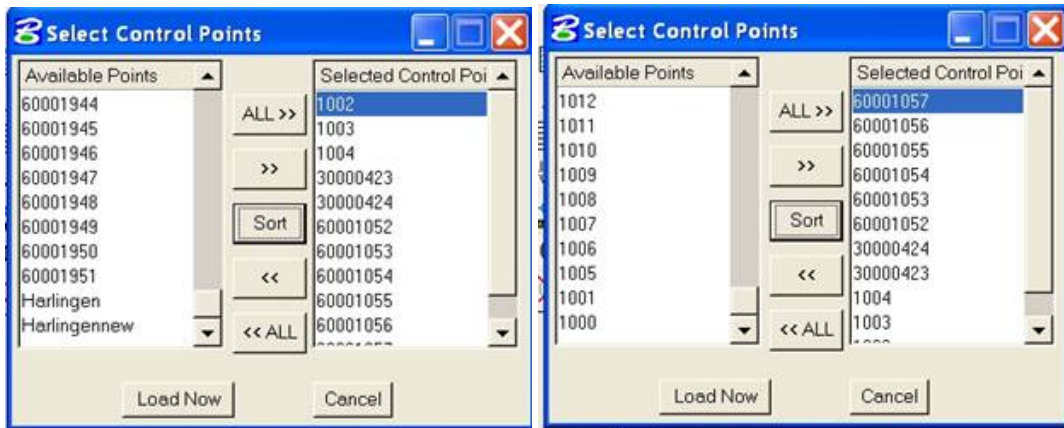


LD CP FILE multiple selections

- A sort button has been added. It applies to both the “Available Points” and “Selected Control Points” lists.



The sort is instant, applies to both lists in the same way, and toggles back and forth between ascending and descending sorts.



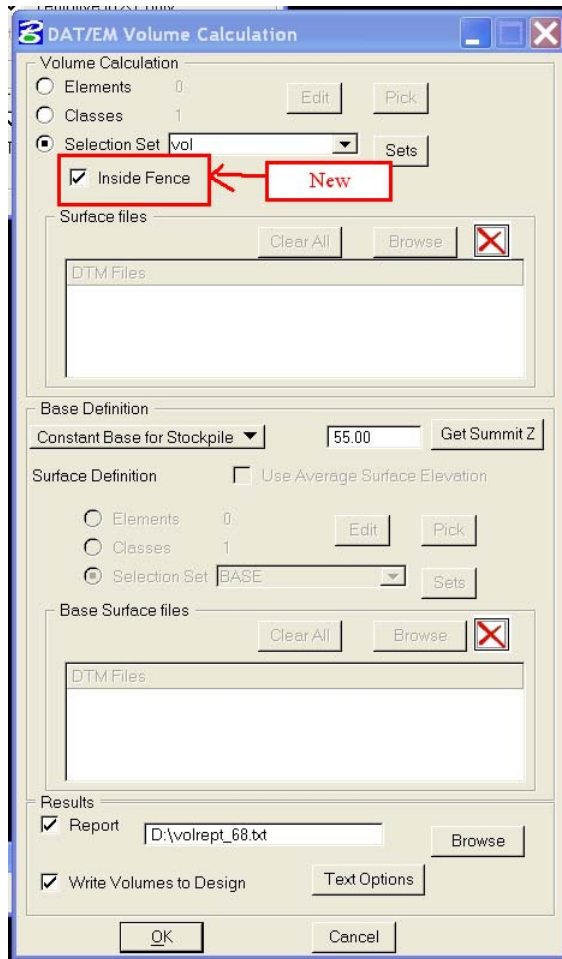
LD CP FILE sort option

21. PSQR has increased error checking. It had crashing issues that are now fixed.
22. REPLACE OBJECT (MEREPLACEOBJECT) has some added error handling.
23. ROAD has the following changes:
 - Increased memory and error handling. Previously, it could crash on some input objects, especially short line strings.
 - Fixed rubber band so that it extends from the most recent vertex instead of the first vertex.
24. SHEETCUTTER is a new tool to cut map sheets. Complete instructions appear in the file **“Product Notes Supplement – SHEETCUTTER 6.8.pdf”**.
25. VISIT has many changes and improvements.
 - **VISIT <filename>** allows the user to drive to coordinates in a design.
 - **VISIT DESIGNS** allows the user to quickly step through design files in a directory.
 - **VISIT ELEMENT** allows the user to drive to elements by class or selection set. Commands, such as ZCHECK, JOINIT, BMARK, CROSSCHECK, SLOPECHECK offer users the option to VISIT points of interest based on error checks, edits or candidate edits.

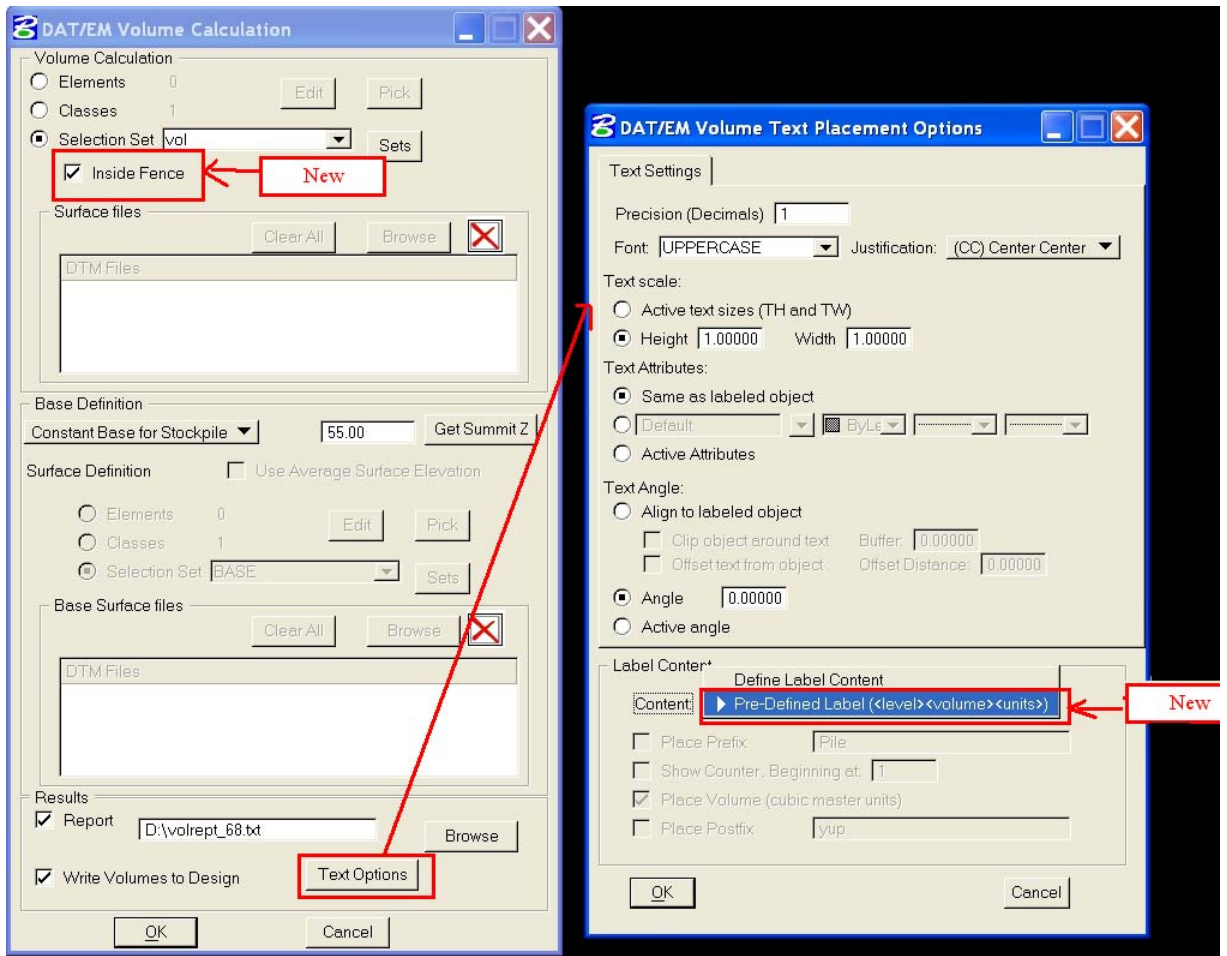
Complete VISIT instructions appear in the file **“Product Notes Supplement - VISIT MicroStation 6.8.pdf”**.
26. XYZIN can now place objects on the level found in the “Level” field in the defined file format. If “Level” is specified in the format, it will override any level setting above in the dialog and use the level from the file.
27. ZCHECK has the following changes:
 - ZCHECK has performance improvements and runs significantly faster now.
 - If it was selected to add to a parameter file in the Parameter File Editor, the “MEXPORT” dialog would launch instead of “ZCheck”. The correct dialog now launches.
 - The “run forward” and “run backward” buttons have been swapped to have “run forward” on the right.
 - There are new sort options to sort the columns as ascending or descending.
 - If Summit is running, it can drive Summit to the coordinates in its list of elevation errors.

28. VOLUME (MEVOLUME) has the following changes:

- **Inside Fence:** The interactive version of MEVOLUME now allows the user to restrict volume calculation to a geographical area defined within an active fence. To use this feature
 - i. Running in a top view is very important! Set the active view to the top view (XY plane).
keyin: **VIEW TOP <pick view>**
 - ii. Place a fence around the area for the calculation.
 - iii. Run MEVOLUME.
 - iv. Check the **Inside Fence** check box.
 - v. Set the desired configuration for MEVOLUME calculation and output.



- **Text Options>Pre-Defined Label:** The new **Pre-Defined Label** option places text in a level, volume, units format.



Example of the new Pre-Defined Label (<level><volume><units>) format:

