



Customizing Topcon Tools Application Guide

Part Number 7010-0941

Rev A

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Table of Contents

How to Customize Topcon Tools	1
How to Setup Your Project for a Local Region	1
How to Save the Current Settings	4
How to Install Topcon Tools for a Local Region	5
Typical Installation	5
Custom Installation	5
How to Customize Reports	7
How to Customize the Toolbar for Your Own Tasks	13
How to Customize the Filter	23
How to Create a Custom Format File	25
How to Show Only Desired Columns in Tabular View	28

How to Customize Topcon Tools

How to Setup Your Project for a Local Region

Before importing raw data to the created Topcon Tools job, Topcon recommends customizing this job to work in the desired area.

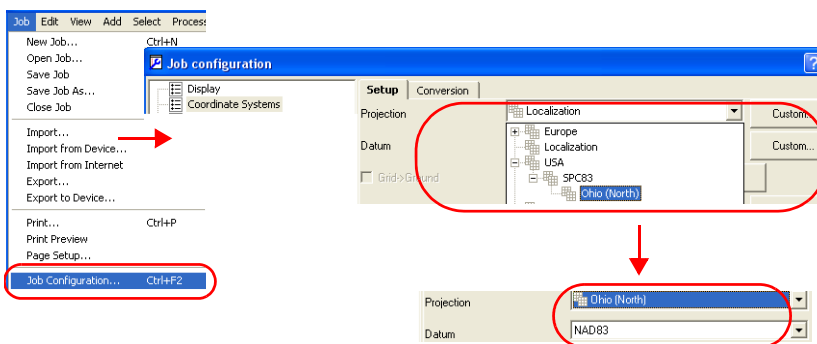
In the job, the user can set:

- The corresponding projection for this region - SPC-83 grid system, zone Ohio (North)
- The geoid model that covers the area where the job's points are located.
- The linear unit used by the surveyor
- The local time

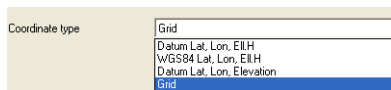
The user sets these items in the tables of the *Job Configuration* dialog box.

Described below is an example of how to configure a new job for RTK data from the Ohio region:

1. To set the desired projection, click **Job ▶ Job Configuration ▶ Coordinate System**. Select **USA ▶ SPC83 Ohio (North)** projection in the *Projection* field.

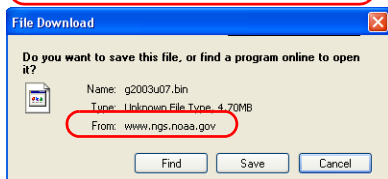
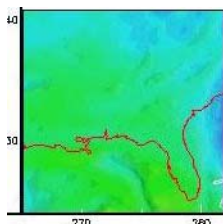


2. Select **Grid** in the *Coordinate Type* field:



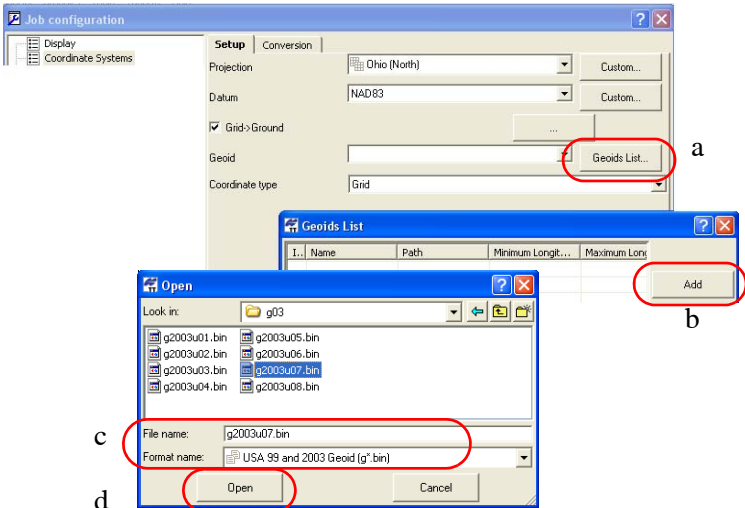
3. To select the corresponding geoid, which covers the work area, please go to NGS web site (http://www.ngs.noaa.gov/PC_PROD/GEOID03/index.shtml) and select the desired geoid. Using information from this page, geoid **g2003u07.bin** is used for an example:

- Binary Grids (all are 1141 columns by 1081 rows and are 4,933,728 bytes in size)
 - **Grid #1** (58 - 40 N & 230 - 249 E)
 - **Grid #2** (58 - 40 N & 247 - 266 E)
 - **Grid #3** (58 - 40 N & 264 - 283 E)
 - **Grid #4** (58 - 40 N & 281 - 300 E)
 - **Grid #5** (42 - 24 N & 230 - 249 E)
 - **Grid #6** (42 - 24 N & 247 - 266 E)
 - **Grid #7** (42 - 24 N & 264 - 283 E)



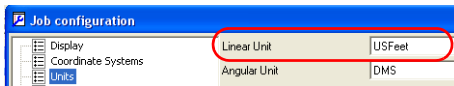
4. In the *Coordinate System* tab click the **Geoid List** button. On the *Geoid List* dialog box, click the **Add** button, select the file format **USA 99 and 2003 Geoid**, navigate to the location of the

corresponding geoid **g2003u07.bin**, and click **Open** on the *Open* dialog box: .

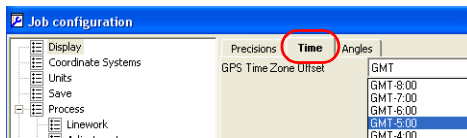


These steps represent a typical installation of Topcon Tools.

- To select the desired linear unit, click **Job ▶ Job Configuration ▶ Units** and select **US Feet** in the field:



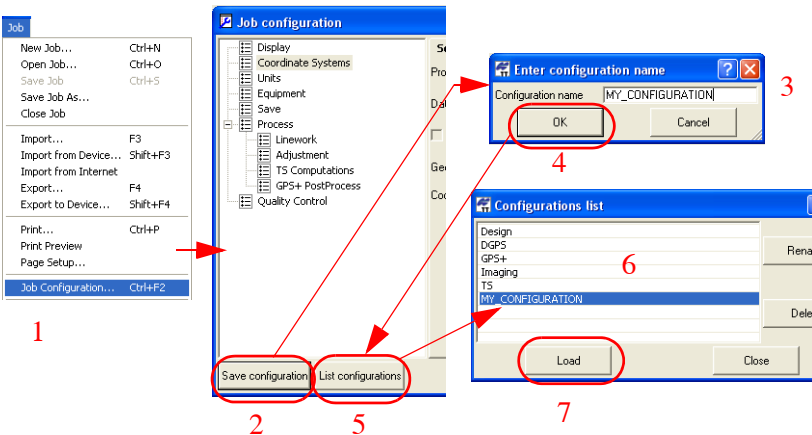
- To set the local time, click **Job ▶ Job Configuration ▶ Display**, and click the *Time* tab.



How to Save the Current Settings

The user can take the above steps only once. You can save these settings and use them for other jobs, and in other computers, where Topcon Tools is installed. To save the entered settings, do the following:

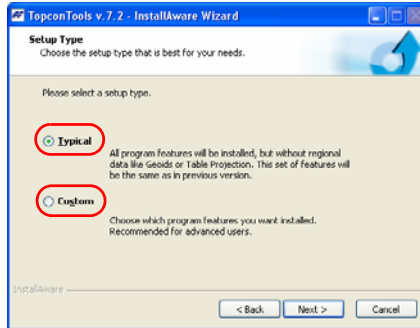
1. Click **Job ▶ Job Configuration**.
2. Click the **Save configuration** button.
3. Type in the desired name into the *Configuration name* field.
4. Click the **OK** button. Topcon Tools creates the file '*MY_CONFIGURATION.ttcfg*' in the *C:\Documents and Settings\User_Mane\TopconTools\Configurations* folder.
5. To use this saved configuration file in any other job, click **List Configuration**.
6. Highlight the desired configuration.
7. Click the **Load** button.



8. To use this configuration in other computer copy the '*MY_CONFIGURATION.ttcfg*' file into the folder: *C:\Documents and Settings\User_Mane\TopconTools\Configurations*

How to Install Topcon Tools for a Local Region

When installing Topcon Tools, the user selects the installation type; either *Typical* or *Custom*



Typical Installation

If the user selects *Typical* and presses **Next**, the installation software automatically selects *all available datums and projections*, except the following Table Projections:

- rdtrans 2004 and rdtrans for Netherlands
- LB72 for Belgium
- KKJ for Finland
- OSTNO2 for United Kingdom

The typical installation does not allow one to automatically install a geoid on the computer.

Custom Installation

The custom installation allows the user to install the highlighted geoid for the corresponding projection(s)/datum(s) of the given region.

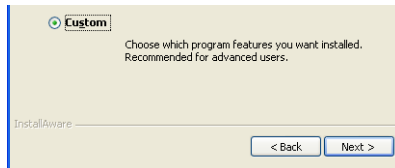
Described below is an example of a custom installation of Topcon Tools for Denmark:

1. Extract the Topcon Tools executable file.

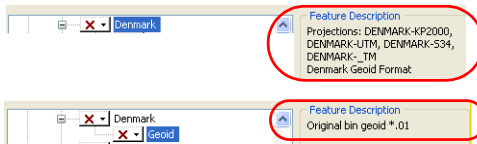
The InstallAware Wizard starts:



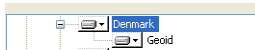
2. Click **Next** to start the installation process.
3. Check the *I Accept the Terms of the License Agreement* box and click **Next** to continue the installation.
4. Type in *User Name* and *Company Name* information, then click **Next**.
5. Select *Custom* and click **Next**:



As you can see from the picture below, Denmark has a list of projections and a regional geoid:

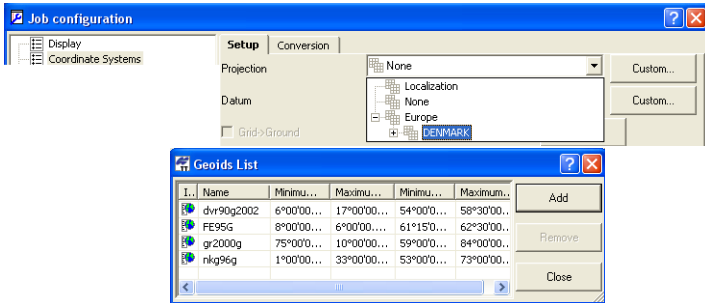


6. To add these projections and the geoid, highlight those features



and click **Next** to continue installation.

7. After installing, Topcon Tools will contain the projections and geoids only for Denmark. To check these settings, click: **Job ▶ Job Configuration ▶ Coordinate System.**



How to Customize Reports

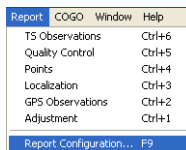
Report customizing allows you to create your own type of report to include or exclude certain information from already generated reports.

As an example, create a report for RTK data that contains the following items:


- The coordinates of network points in the datum and current grid coordinate system with standard deviations for the horizontal and vertical planes.
- The components of vectors “base - rover”, azimuth and slop distance of these vectors.

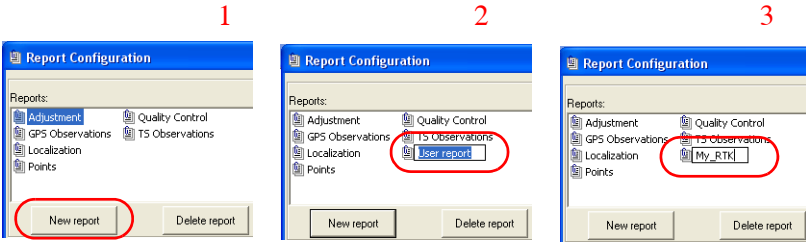
1. To configure a customized report, click **Report ▶ Report**


Configuration:

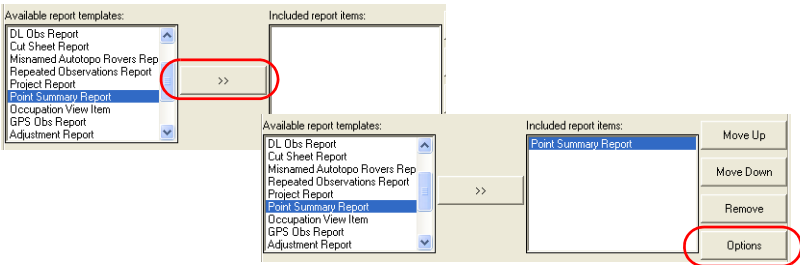


The *Report Configuration* dialog box provides a set of editable templates for creating a custom report.

2. To create a new report, click  and type in the desired name of your report:

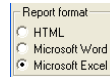


3. To add the point coordinates to the new report, select *Point Summary Report* in the left panel and click  to copy this item to the created report. Click the *Option* button to edit this report.





4. Select the desired format for your report. Topcon Tools allows you to select either HTML, Microsoft Word, or Microsoft Excel.

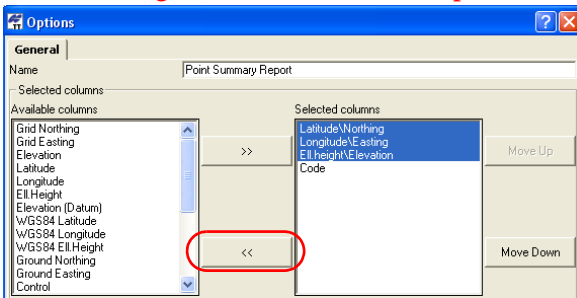
For this example, select Microsoft Excel:



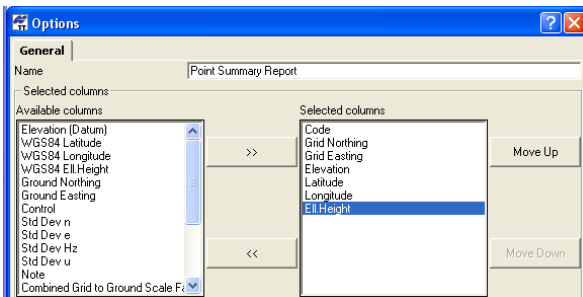
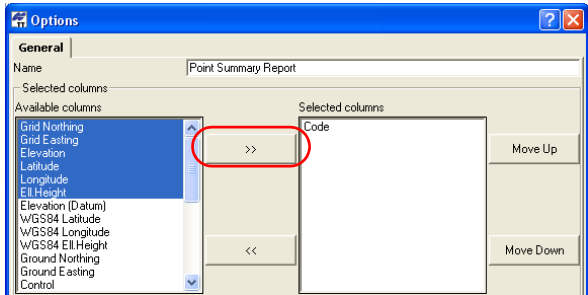
The *Option* dialog box allows you to ‘fill’ your report with all needed components, which describe the point. By default, your report (see the right-hand panel) contains coordinates in *Latitude\Longitude\Elevation* or *Northing\Easting\Elevation* form. This description means that the report will display the coordinate type which is set in the *Status Bar*. For example, if the *Grid* is set in the *Status Bar* - the report will display only *Northing\Easting\Elevation* coordinates.

5. If you want to see all type coordinates independently of your settings in the *Status Bar*, remove the default items from the report (the right panel), and copy the separate components of grid and datum coordinate systems to the report.
6. To remove item(s) from the report, highlight the desired row(s) in the right panel and click  .
7. To add the item(s), highlight the desired row(s) in the left panel and click  .

1) Removing information from the report

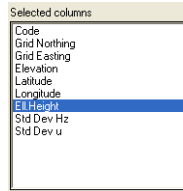


2) Adding information to the report

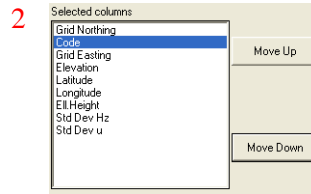
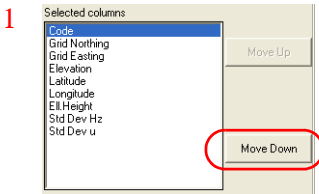


8. Using this technique, add the standard deviations for the

horizontal and vertical planes:



9. Using the **Move Up** and **Move Down** buttons, you can set the order of the highlighted item in your report:



10. The created report for points has to display the coordinates for all

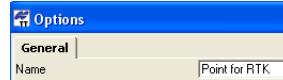
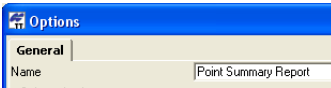
points of the job. For this select *All* in the *Select* field:





11. Before closing this part of report Topcon recommends changing the name of the template in the *Name* field,

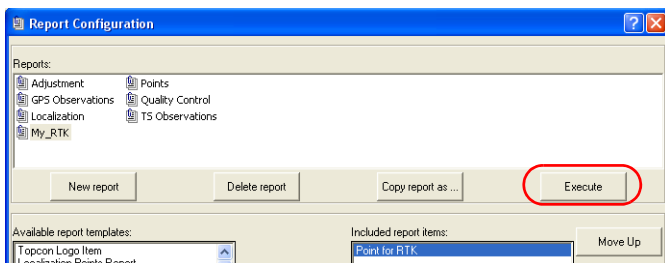
original template name

new template name



12. Click  to save the template and close the *Option* dialog box.

13. To check what your created part displays, click  in the *Report Configuration* window:



	A	B	C	D	E	F	G	H	I
1	Point for RTK								
2	Name	Grid Northing (USF)	Grid Easting (USF)	Elevation (USF)	Latitude	Longitude	Ell Height (USF)	Std Dev Hz (USF)	Std Dev u (US)
3	100	5118.28	5171.041	700.819	40°08'08.6712N	82°59'12.28938W	792.171	0.011	0.01
4	101	5128.082	5336.271	701.14	40°08'09.48293N	82°59'10.42549W	792.457	0.016	0.018
5	102	5075.055	5191.009	699.065	40°08'08.37142N	82°59'11.81779W	790.344	0.019	0.011
6	103	5042.959	5078.604	699.552	40°08'07.50681N	82°59'12.94300W	789.909	0.007	0.008
7	104	5000.02	5000.016	699.878	40°08'06.88860N	82°59'13.61833W	791.343	0.011	0.012
8

14. It is necessary to add information about the coordinate system, projection, linear and angular units to this report. To add this information, select *Project Report* in the left panel and click



15. Click the **Options** button to view and/or edit this report. This template will display the following information (see picture 4):

1 Available report templates:

- Topcon Logo Item
- Localization Points Report
- Map View Item
- Identical Points Report
- DL Obs Report
- Cut Sheet Report
- Misnamed Autotopo Rovers Report
- Repeated Observations Report
- Project Report**

2 Included report items:

- Point for RTK
- Project Report**

3 Options dialog box:

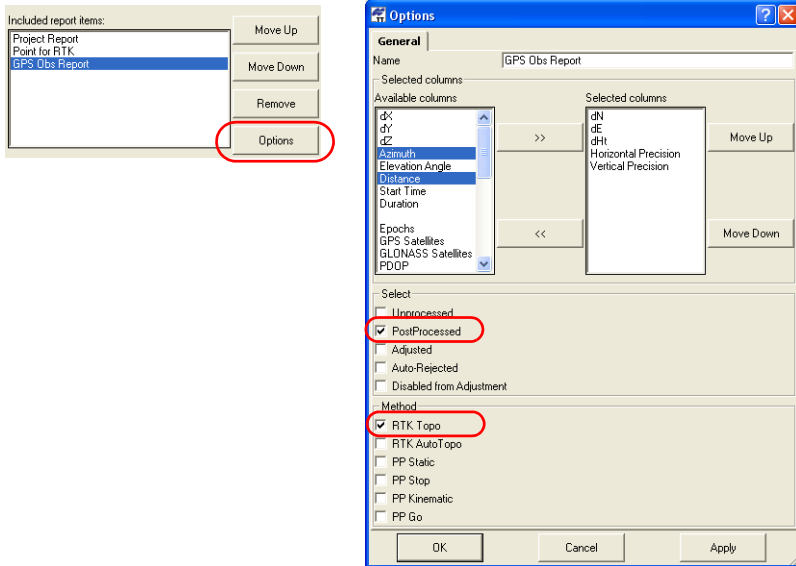
Name: Project Report

Project name: %PROJECT NAME%
 Project folder: %PROJECT FOLDER%
 Creation time: %PROJECT CREATION TIME%
 Created by: %PROJECT SURVEYOR%
 Comment: %PROJECT COMMENT%
 Linear unit: %LINEAR UNIT%
 Angular unit: %ANGULAR UNIT%
 Projection: %PROJECTION%
 Datum: %DATUM%
 Geoid: %GEOID%

4

	A	B	C	D
1	Project Report			
2				
3	Project name: RTK.ttp			
4	Project folder: C:\Documents and Settings\P\TopconTools\Jobs			
5	Creation time: 20.01.2009 13:28:02			
6	Created by:			
7	Comment:			
8	Linear unit: USFeet			
9	Angular unit: DMS			
10	Projection: Localization			
11	Datum: NAD83			
12	Geoid: g2003u07			

16. To add the information about the components of vector base-rover coordinates to the new report, copy the *GPS Obs Report* to the created report. Click the *Option* button to edit this report.
17. To add the azimuth and distance to this report, highlight the desired rows in the left panel and click these items. To display only RTK Topo observations in the report, select *PostProcessed* and *RTK Topo* in the *Option* dialog box:



This part of the report will display the following items:

36	GPS Obs Report								
	Name	dN (USft)	dE (USft)	dHt (USft)	Horizontal Precision (USft)	Vertical Precision (USft)	Azimuth	Distance (USft)	
37									
38	Base2-100	118.575	16.368	2.394	0.011	0.01	7°51'33.1154	119.723	
39	Base2-101	198.643	161.21	2.679	0.016	0.018	39°03'40.4941	255.841	
40	Base2-102	88.185	53.015	0.567	0.019	0.011	31°00'47.7276	102.896	
41	Base2-103	10.809	-34.487	0.132	0.007	0.008	287°24'07.9868	36.142	

18. To save the whole report, close the *Report Configuration* window.

After closing the *Report Configuration* window the report's list displays your created report.

19. To run this report, click on it:

Report:	
TS Observations	Ctrl+9
Quality Control	Ctrl+8
Points	Ctrl+7
My_RTK	Ctrl+6
Localization	Ctrl+5
GPS Occupations-My	Ctrl+4
GPS Observations	Ctrl+2
Adjustment	Ctrl+1
Report Configuration...	F9

All custom reports are saved in the *Topcon Tools Report.jff* file located in the folder *C:\Documents and Settings\User_Name\TopconTools*.

After updating to a new version of Topcon Tools, this folder is not updated and your reports are displayed in a new version.

How to Customize the Toolbar for Your Own Tasks

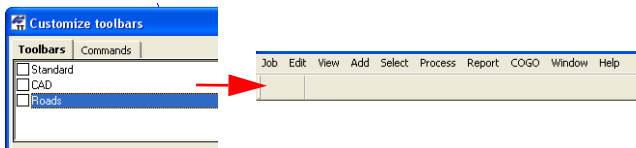
User toolbars can be customized to display the functions most frequently used for individual tasks.

As an example, create a custom toolbar for working with an RTK job which will activate the following functions:

- Import a TopSURV job from a Controller
- Import a TopSURV job from the desired folder
- View the downloaded occupations
- View all collected data in the *Map View*, *Cad View* and *Google® Earth View*
- Compute Coordinates
- Run Localization
- Export the network points to AutoCAD file format

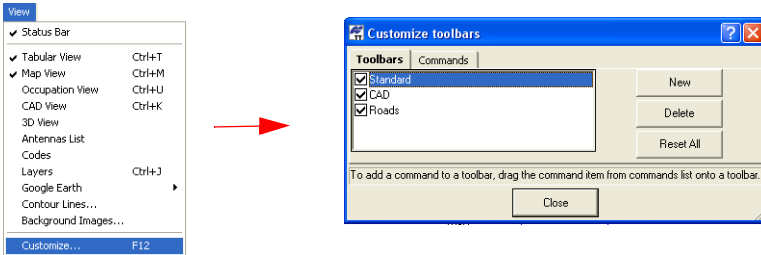
Before creating a toolbar Topcon recommends hiding all existing

toolbars:

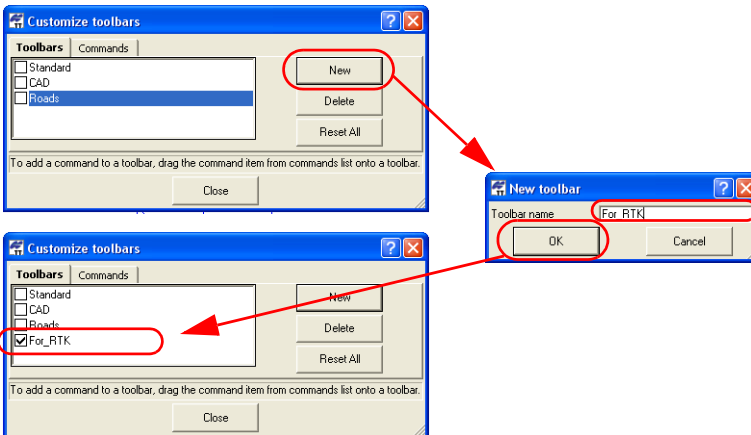


1. To customize toolbar options, click **View ► Customize** and open a job.

The *Toolbars* tab in the *Customize toolbars* dialog box displays all available toolbars for activating or inactivating, and adds or deletes toolbars:

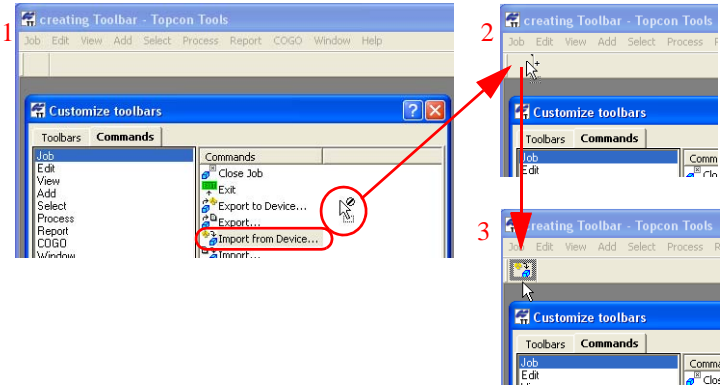


2. To add a new toolbar to the main window, click the **New** button. Type in the name of a new toolbar in *Toolbar name* field and click **OK**. The *Toolbars* tab displays this toolbar:



3. Click the *Commands* tab. To add a command, select the applicable menu (*Job*), which contains *Import* commands.

- Click and drag the *Import from device* toolbar command to the empty toolbar on the main screen:



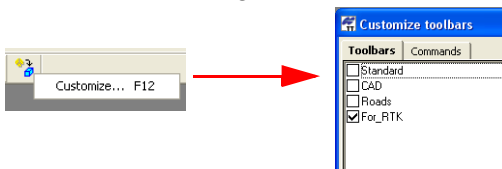
The *Import from Device* button is added to the new toolbar.

- After clicking this icon, the *Import from Device* window shows the list of Topcon devices from which you can import raw data. The user can customize this button to display ONLY one device.

Setting a Mobile Device in the Import from Device Window

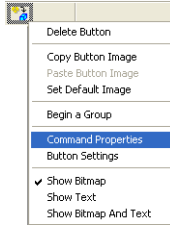
For our scenario, let us show how to set a Controller in the *Import from Device* window:


- Right click on the button and select *Customize* to open the *Customize toolbars* dialog box:

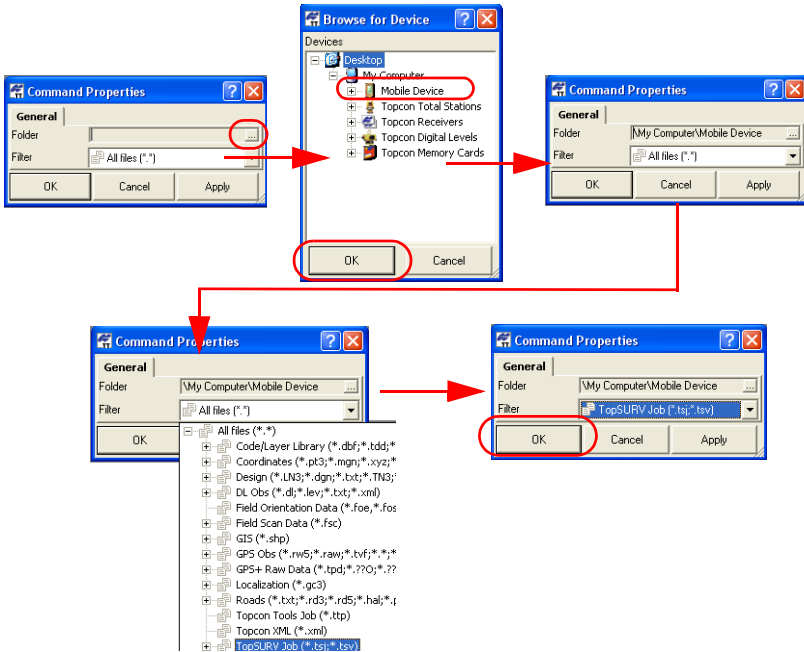


2. Right-click the desired icon and select *Command Properties* from

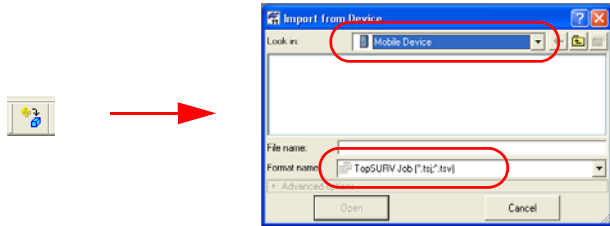
the pop-up menu:



3. Click  in the *Folder* field, highlight the *Mobile Device* in the *Browse for Device* window, select *TopSURV Job* file format as the filter. Click the OK button to save these settings:



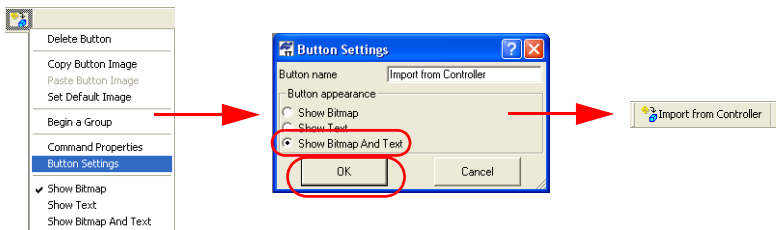
4. Close the *Customize toolbars* dialog box. After clicking this icon, the *Import from Device* window will show ONLY *Mobile device*:



Changing the Name of a Toolbar Button

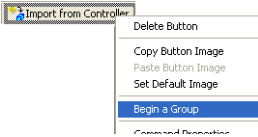
The user can change the name of a button of the toolbar. To do it, take the following steps:

1. Right click on the button and select *Customize* to open the *Customize toolbars* dialog box.
2. Right-click the desired icon and select *Button Settings* from the pop-up menu.
3. Type in '*Import from Controller*' (in this case you can use any language) and select displaying both the image and the text for the button. Close the *Customize toolbars* dialog box:



4. If the user has to create several buttons for similar procedures (such as *Import*, *View*, *Export*), he can create a group for each procedure and add corresponding buttons to this group. After

creating the first button of the future group, select *Begin a Group* in the pop-up menu for this icon. The vertical delimiters appear:

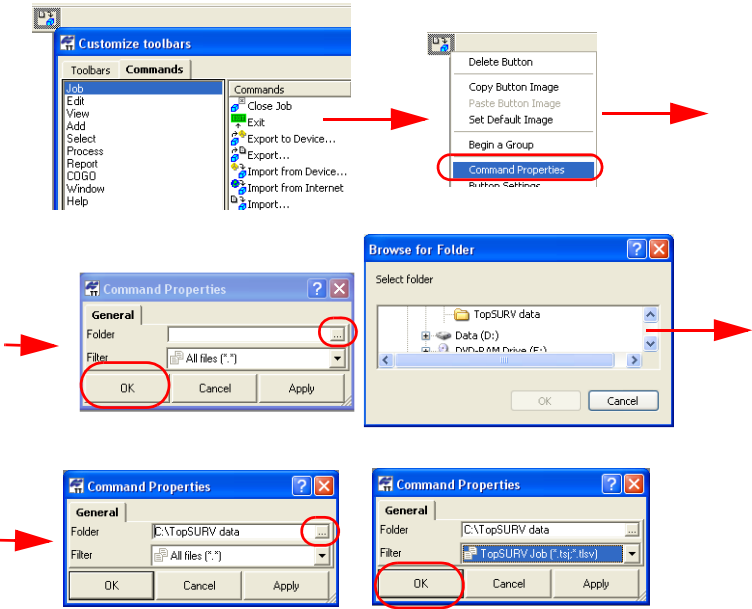


Adding Icons

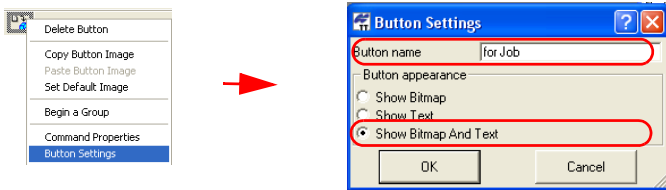
Using this technique, add icons to import a TopSURV job and coordinate file with control points from separate folders:

1. Perform steps 1 and 2 which are described on “Setting a Mobile Device in the Import from Device Window” on page 1-15,
2. Click the *Commands* tab. To add the desired command, select the applicable *Job* menu, click and drag the *Import...* command to the toolbar,
3. Right-click the *Import* icon and select *Command Properties* from the pop-up menu, click in the *Folder* field, select the ‘*TopSURV data*’ folder in the *Browse for Device* window and

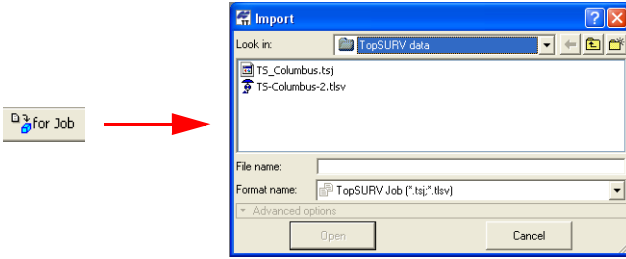
select 'TopSURV Job' file format. Click the **OK** button in the both windows to save the settings



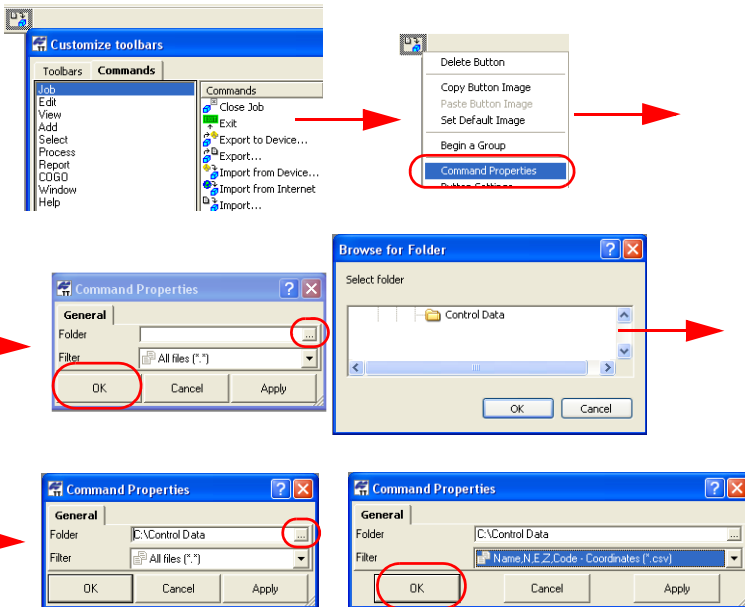
4. The user must add two **Import** buttons for importing different files from separate folders. You cannot change the bitmap for the *Import* command, but you can use a different text for marking these buttons:



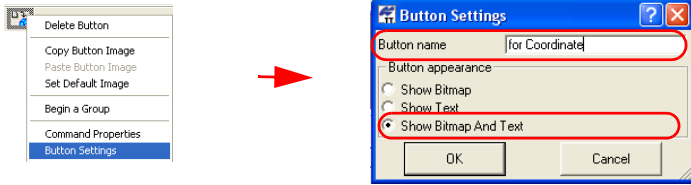
- After clicking this icon, the *Import* window will show ONLY the desired folder and Topsurv jobs contained in it



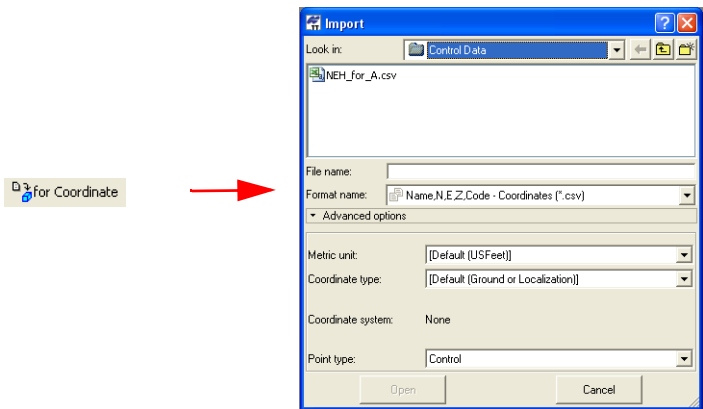
- To create the button for coordinate file, perform steps 1 and 2 which are described on page 18.
- Right-click the **Import** icon and select *Command Properties* from the pop-up menu, click in the *Folder* field, select the *Control Data* folder in the *Browse for Device* window, select *TopSURV Job* file format and click the OK button in the both windows:



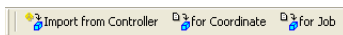
- Rename and configure this icon for displaying the name and the bitmap:



- After clicking this icon, the *Import* window will show ONLY the desired folder and N,E, Z coordinate file contained in it:

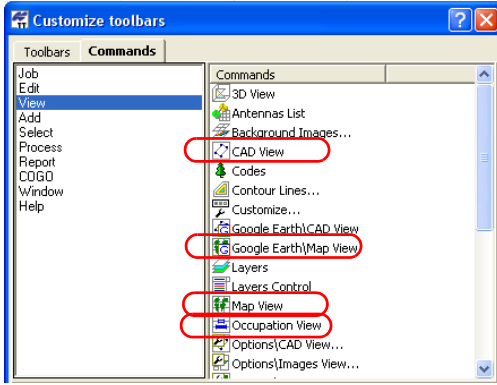


As a result of our action, the group of import buttons is created:

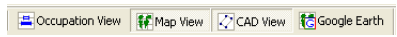


Using this technique we can create the buttons group for viewing collected data in the *Map View*, *Cad View*, *Google Earth View* and occupations in *Occupations View*.

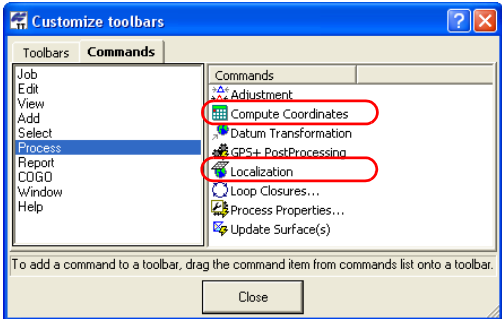
The corresponding commands for these buttons are located in the applicable *View* menu:



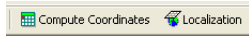
The group of view buttons has the following configuration:



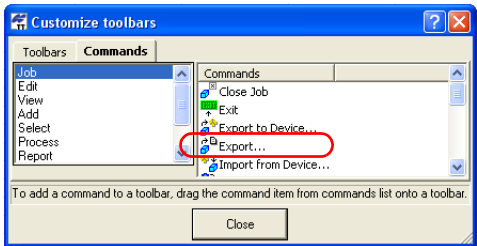
Also we can create the buttons group for calculating coordinates and localization parameters. The corresponding commands for these buttons are located in the applicable *Process* menu:



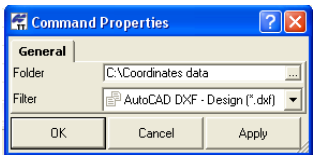
The group of view buttons has the following figuration:



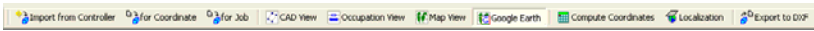
The last button for our scenario is a button for exporting network points to AutoCAD (*.dxf) file format. The corresponding command for this button is located in the applicable *Job* menu:



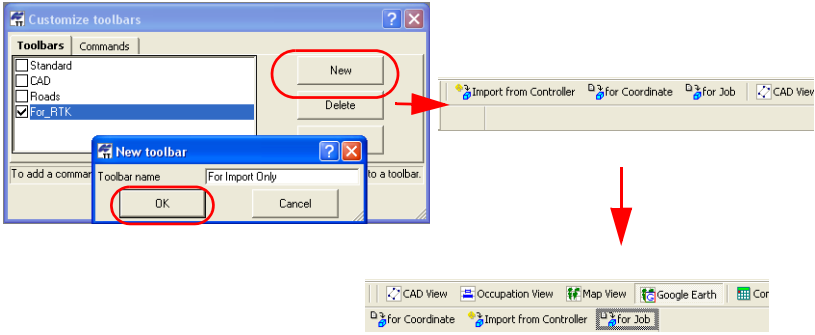
Using *Command Properties* for this button, select the 'AutoCAD DXF -Design (*.dxf)' file format and the folder name where this file will be saved:



The created buttons for our scenario have the following view:



If you want to configure these buttons in two or more rows, you need to create additional toolbar(s) and move the desired buttons to the corresponding toolbar(s):



How to Customize the Filter

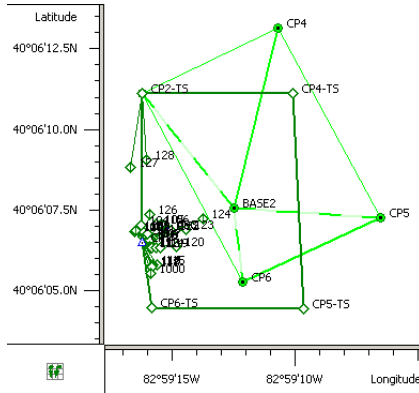
Filtering data is a way of hiding or displaying points, occupations, and observations in all Topcon Tools viewers.

Filtering data is performed by:

- type, time, quality control test and/or code selected in the *Filters* dialog box
- selection of desired objects

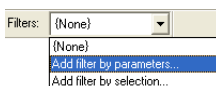
Hidden points, occupations, and observations will be excluded from processing, adjustment, exporting, and reports.

As an example, customize the filter for different type of observations for a network which contains the TS and GPS observations:

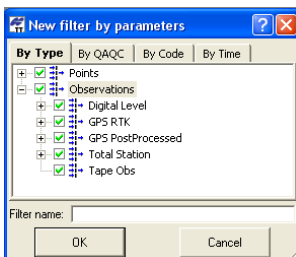


- To customize the filter, click on the *Filters* control and select

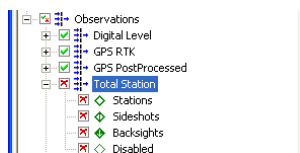
Add filter by parameters:



The *Filter by parameters* dialog box displays:

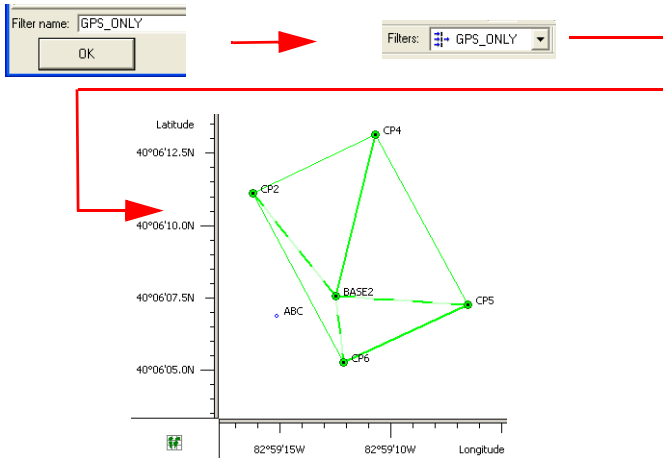


- On the *By Type* tab, open the *Observations* node and click the check marks of the *Total Station* to filter this data:



Data types marked in red are hidden; data types marked in green are displayed.

- Type in the desired name for this filter and click **OK** to save the filter settings. The created filter is automatically set as the current filter of the job in the *Filters* control.



How to Create a Custom Format File

Topcon Tools allows the user to create a custom text format for coordinates files, GPS and TS vector files. The created file format will be included into the format list for import and export.

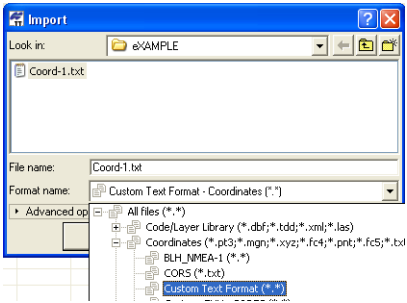
As an example, create a file format which allows import/export of the following coordinates file. The coordinates are in SPC83 grid system, zone Ohio (North), linear units are US Feet:

```

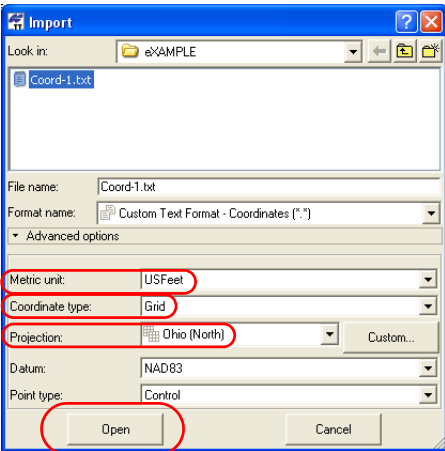
Coord-1.txt - Notepad
File Edit Format View Help
Base2 159017.389 1832308.223 796.529
Name      Northing      Easting      Height
          (US Feet)    (US Feet)    (US Feet)
  
```

1. To import the coordinate file on to an opened Topcon Tools job, click **Job ▶ Import**.

2. Navigate to the location of the coordinates file and select the desired file. In the *Format name* drop-down list, click the **Coordinates plus** button and select *Custom Text Format*.



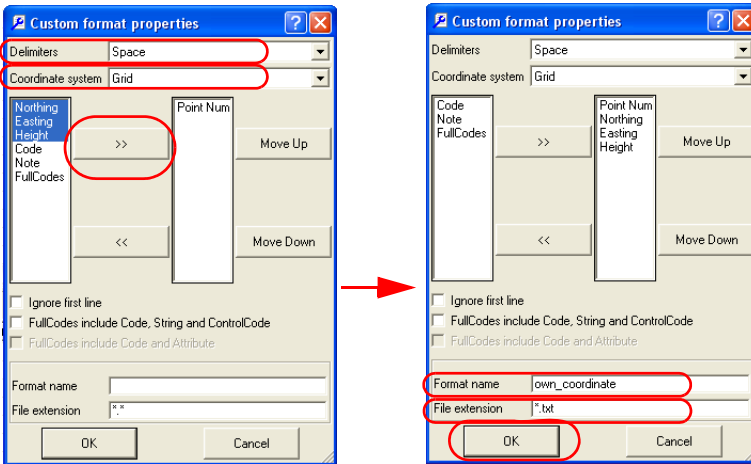
3. Click the *Advanced option* and select the corresponding settings for this coordinates file:
 - *US Feet* in the *Metric unit* field,
 - *Grid* in the *Coordinate type* field,
 - *SPC83 - Ohio(North)* in the *Projection* field:



The orthometric heights displays for *Grid* or *Ground* coordinate systems.

4. Click the **Open** button to start creating the custom file format.

- On the *Custom format properties* dialog box, select:
 - the Space delimiter
 - the Grid coordinate system
 - Select the *Northing*, *Easting*, *Height* elements from the left column and click the move right button (>>) to add it to the right column.
 - Type in a name of this format and an extension type.
 - Click the **OK** button to store the format in the format name list and to open this file:



Coordinates (*.pt3;*.mgn;*.xyz;*.fc4;*.pnt;*.fc5;*.txt;*.xml);*.cr5;*.csv;*.htm;*.htm
 own_coordinate (*.txt)

Icon	Name	Grid Northing (...)	Grid Easting (U...)	Elevation (USFt)	Code	Control	Note
▲	Base2	159017.389	1832308.223	796.529		Both	

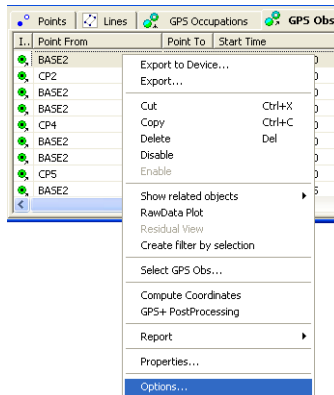
Ready USFeet DMS Grid SPC83-Ohio (North)

How to Show Only Desired Columns in Tabular View

Each of the tabs (excepting the *Images* tab) in the *Tabular* view have *Options* dialog boxes for displaying various information columns. The user can set only needed columns for every tab. The selected configuration is automatically saved after closing the current Topcon Tools job and is used in other jobs.

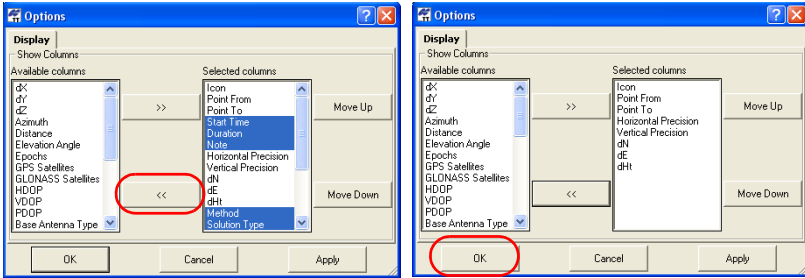
As an example, configure a *GPS Observations* tab for showing vector's components and horizontal/vertical precisions:

1. Right-click on any place of the *GPS Observations* tab and click *Options* on the pop-up menu,



2. Select all columns excepting points name, component and precision, and click the << buttons to remove the selected column to the left panel. The tab displays only columns from the right panel.

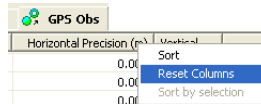
- Click the **OK** button to apply this configuration to the current job and close the window.



Icon	Point From	Point To	Horizontal Precision (m)	Vertical Precision (m)	dN (m)	dE (m)	dH (m)
🌿	BASE2	CP2	0.007	0.011	110.017	-88.057	0.811
🌿	BASE2	CP4	0.004	0.006	172.799	42.257	0.513
🌿	CP2	CP4	0.005	0.008	62.780	130.315	-0.298
🌿	BASE2	CP5	0.002	0.004	-8.719	140.837	-0.032
🌿	BASE2	CP4	0.004	0.008	172.804	42.250	0.516
🌿	CP4	CP5	0.004	0.008	-181.513	98.579	-0.524
🌿	BASE2	CP5	0.001	0.002	-8.718	140.836	-0.040
🌿	BASE2	CP6	0.002	0.003	-70.714	8.325	0.123
🌿	CP5	CP6	0.001	0.002	-62.000	-132.509	0.161
🌿	BASE2	CP6	0.003	0.007	-70.715	8.327	0.130

- To restore the initial column setting, right click on the header of

this table and select *Reset Columns*:



After clicking this command the current table displays the initial status.



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