NRG Survey System for Windows Version 12.0

V 12.0 Available October 2008

Summary of new features

DTM / Map

- DXF Background
- COGO
- Least Squares Transformation

- New Surfacing Options
- Auto Boundary
- Select Points From Background Model
- Swap Background & Foreground Models
- Copy Selected Points to Clipboard
- Command Switch Replacements

The solution to all your geospatial problems is launched...

CoGeo

Logger, Level Book and Calculator!!!

Our latest copy of the Engineering calculator

The CoGeo from NRG will handle it all:

from simple geometry such as a right angled triangle where check boxes allow the user to select which data is entered with it calculating the rest, through specific functions for calculating volumes and drawing contours from 3D coordinates.

View a CAD drawing, select points, offset points or lines and paste to other functions of the calculator. There's also regression analysis to determine 'best fit' - used in best fit line, circle and points.

There is a traverse editor offering 3 different methods of adjustment, a level book that will connect to digital levels and a field obs module that supports total stations.

- Best fit circle, lines & points
- Least squares transformation
- Pile void volume
- Parallel lines
- Add curve
- Level book
- Reduce field obs

- Traverse adjustments
- DXF Viewer / point selection
- MX Viewer / point selection
- ACSII file support
- Level and Total station support
- WGS84 to Cartesian Convertor

DXF Background

We have added an option to load a DXF file as a background to your survey.

Use the DXF button to load a file and select the layers and aspects to draw.
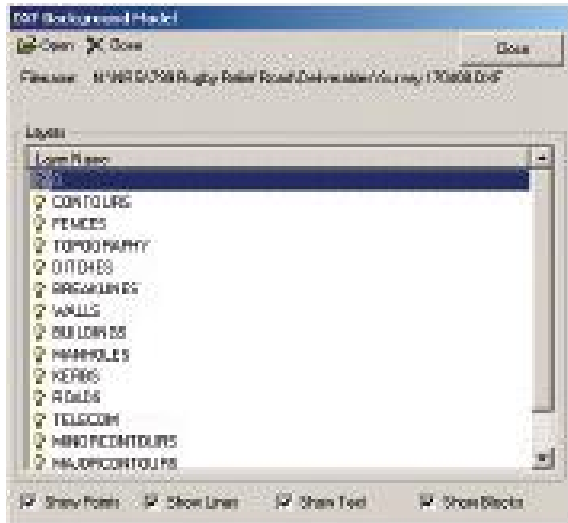
In addition we have added an option to select points from the background and either add them into the editor or write them to another file.

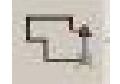Select points from the background by one of the options;

All

Polygon

Point

Crossing line

Line

View the selection

Paste selection to this model

Write selection to a file

COGO

COGO replaces the point to point function and has a whole range of additional functions.
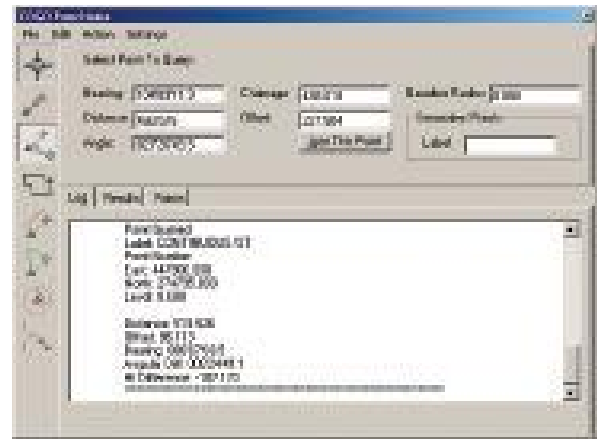
There are 3 tabs, the Log tab showing the results of each action in turn. The Results tab which tabulates the results and a Points tab which stores all of the points that have been added. These can be added to your editor model using the add to editor button on the tab.

Select base point

Select end point (of line)

Select point to query
(in relation to the base point and line)

Right angle point entry

Add multiple points on the line

Intersect distances

Add circle of points

Attach levels to points

Least Squares Transformation

Least squares is a form of regression analysis to determine the best fit of a set of data points.

$$S = \sum_{i=1}^{i=m} r_i^2$$

Where best is when the sum of squared residuals are a minimum.

By entering two sets of data into the columns marked originating and destination you will see transformation parameters at the bottom of the screen and residuals shown against each of the points. In addition we have drawn error elipses on the plan to assist you.

By pressing ok, the data in your editor model will be transformed by each of the parameters you have selected.

Surfaces

Once again we have come up with new ways of changing surfaces on your model.

Change surface by area constrained by breaklines

This allows the user to place the cursor at a point on the model and then track around from that point until it meets a breakline. There is an option to enter a 'gate' size which is there to help you avoid it leaking out through gaps in the breaklines.

Change Contiguous surface

Allows the user to place the cursor on a point on the model where it will track around and find all connecting triangles of the same surface.

Auto Boundary

A 'convex' hull algorithm has been introduced which attempts to trace around the physical boundary of points.

Use the advanced option to view the effects of the autoboundary and change it's smoothness coefficient.

Select Points From Background Model

It is now possible to select points from the current background model and paste them into the editor.

Select the pointer to drop the list of options
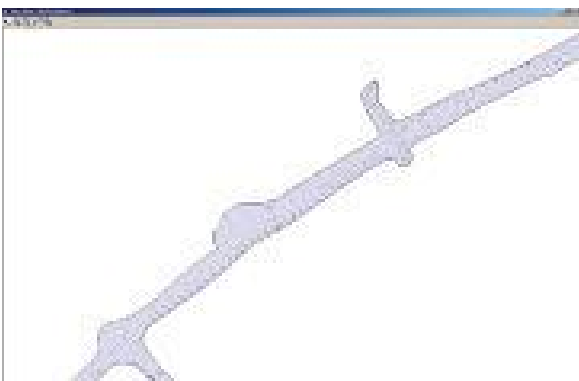
All

Polygon

Point

Crossing line

Line

View the selection

Paste selection to this model

Write selection to a file

Copying Selected Points to the Clipboard

This option allows you to copy the data for selected points to the clipboard.

From the Select menu, choose Copy Selected and you will be presented with a preview of the points currently selected. From here you can switch columns on and off that you want the data from.

Swapping Background & Foreground Models

A new button on the background model list allows you to quickly move a file from background into the foreground editor without having to close the file and open it again.

This will also add the current foreground model into the background list.

Engineering Calculator

Best Fit Circle

Calculates a circle based on a least squares best fit from each possible 3 point solutionc text and sort the feature codes into a priority list.

Best Fit Line

Fits a line between a group of points using least squares.

Best Fit Points

Finds the optimum centre of a group of points using least squares. Also displays the mean position.

Least squares Transformation

Used to determine the best fit of two sets of data points, reporting the optimum shift, rotations and scale.

The second tab allows the user to enter points that need to be transformed by the resulting parameters.

Parallel Lines

Enter the x and y values of points along a line and a distance to offset the line by.

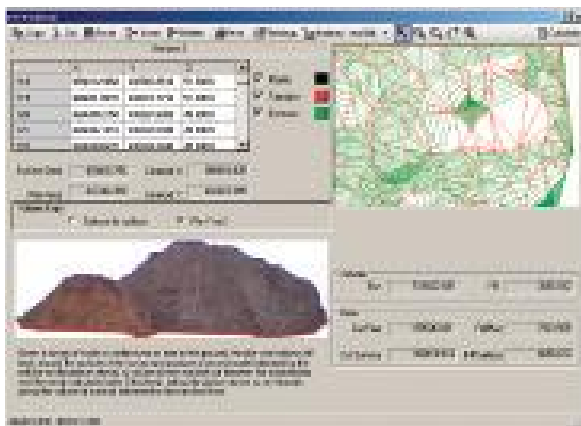The resulting coordinates will be displayed in the results grid.

Volumes

Some major changes have been made to the volumes, in particular the user interface.

Now the graphical editing may be done full screen with easier control over deleting and swapping triangles.
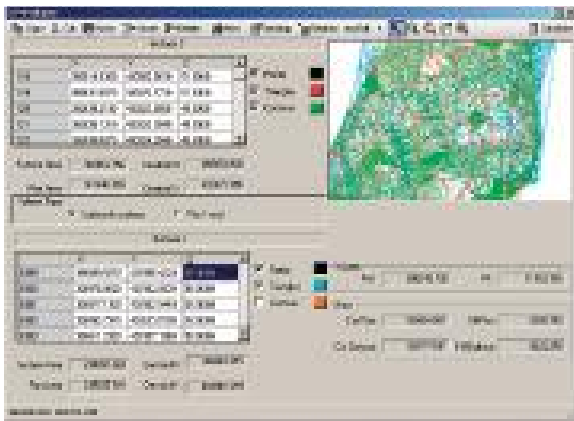

Pile / Void Volume

If you only have a top or bottom surface of an excavation or a pile then enter these as surface 2 and press the pile / void button. The perimeter of the model is then used as surface 1 and a volume shown.

Add Curve

To calculate a series of points developed from a curve between two tangent lines.

Enter the coordinates of the tangent lines, a radius and the interval between points.
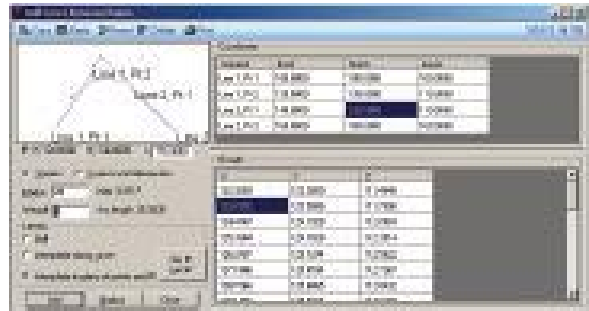
Level Book

Our popular stand alone level book has been incorporated into the calculator now, it has direct communication with level instruments and will import most data formats… As well as supporting manual input of course.

The printout is rather nice with what we believe will be a 'familiar' look for most users.
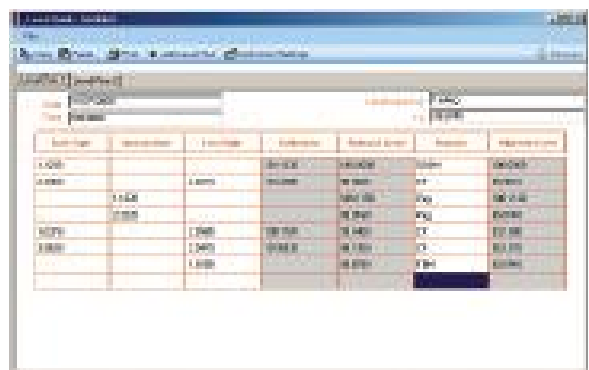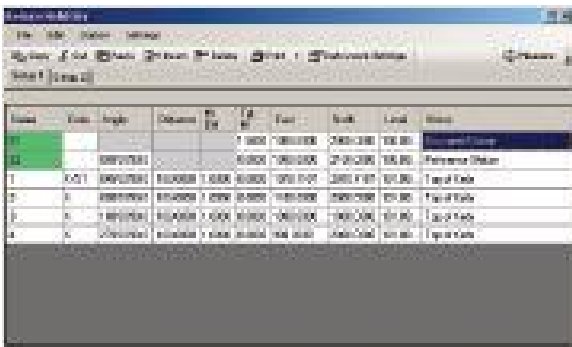
Reduce Field Obs

A much easier to use interface for surveyors than before, plus we have added the ability to communicate with an instrument, effectively making the calculator a logger.
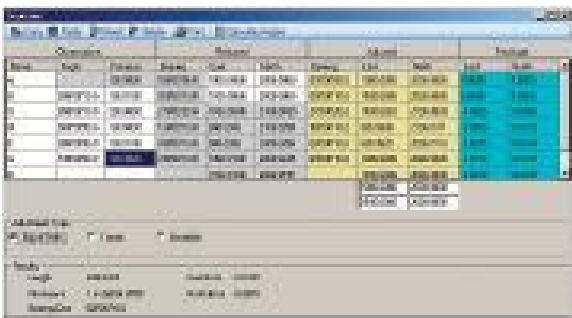
Simply place the cursor on a row and press measure… it couldn't be simpler.

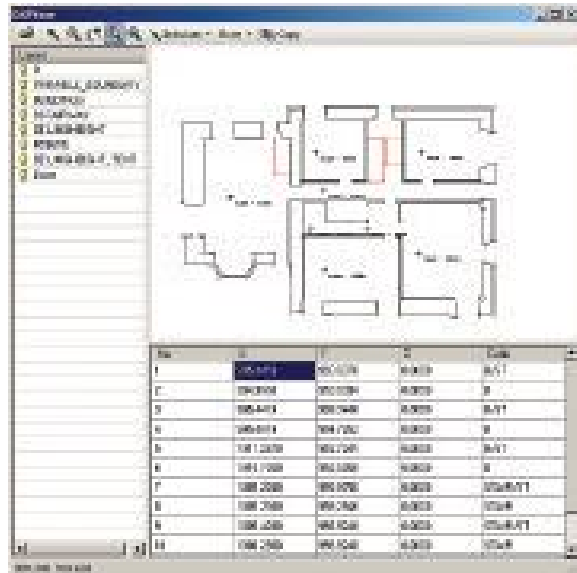### Data Logger, Calculator and Level Book combined!

Traverse

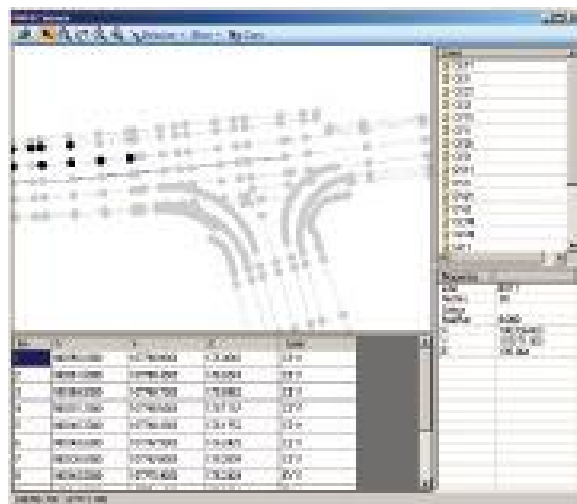A new traverse editor that reduces and adjusts observations using a variety of adjustment methods.

DXF Viewer / Point selector

Imagine this…. a utility to open and view DXF files, allow you to select points, offset them and paste them into the setting out function, you wouldn't believe it would you.
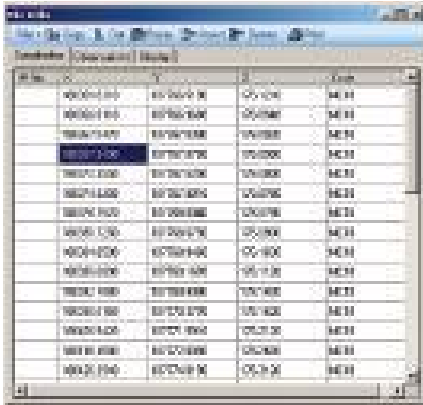
MX Viewer Point grabber

But to do it for MX files is just showing off...

ASCII File Support

The calculator now has it's own data utility providing a place to store coordinates and observations between copying and pasting into applications and an easy to use wizard for importing data from almost any source.

Total Station & Electronic Level Support

We currently support Leica, Topcon and Trimble total stations, and Leica, Sokkia and Zeiss levels, simply choose the instrument from the settings menu and check the comms parameters are compatible.
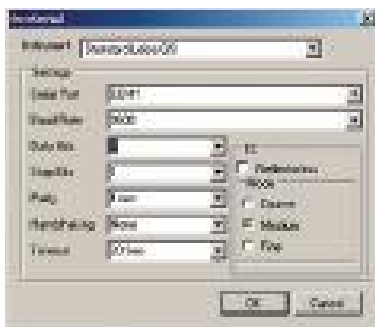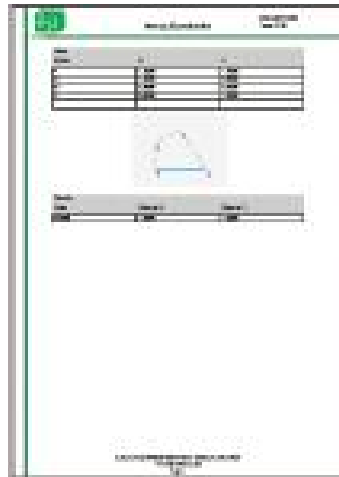

WGS84 to Cartesian Converter

A calculator to convert geographical coordinates to grid coordinates. /W command as a parallel line.

Print Reports

These all now follow a simple updated print dialogue with an option to preview All of the graphics on the screen they will be printed to the report.

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