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ptbase by CBI Systems, Ltd.

For the past five years I have encouraged every software developer with which I have had contact to provide surveyors and engineers with a simple Geographic Information System (GIS). In this issue we'll take a look at a GIS called ptbase (pronounced "point base"), which comes from CBI Systems, Ltd., an engineering and surveying firm that simply wanted to find a better way to manage their information.

What does GIS mean to the average survey firm? Most offices have years of file folders with hard copies of every survey they've ever done, plus preliminary and final maps of years of surveys. Would it not be wonderful if there was an easier way to access all of that information? One solution might be a huge wall map with pins for every point the company ever used or measured.

Aside from such a map, imagine a map of your county, state, the USA or even the whole world with which you could view any place in the world through a little window. The first order of business would be to put all of the control points you know about on your map. Suppose you have only your own local coordinates on the point on which you started a survey. You can see how there would be a lot of points at 10,000.00, 10,000.00.

One of the beautiful features of ptbase is that it provides a base map. You indicate approximately where the control point is on the map. Now you have local coordinates and map coordinate (both maintained by ptbase). All of the points you measured from this point are accurate, relatively. In the future you might also wish to add true global coordinates on the control point so you will have global coordinates on all the points for that job.

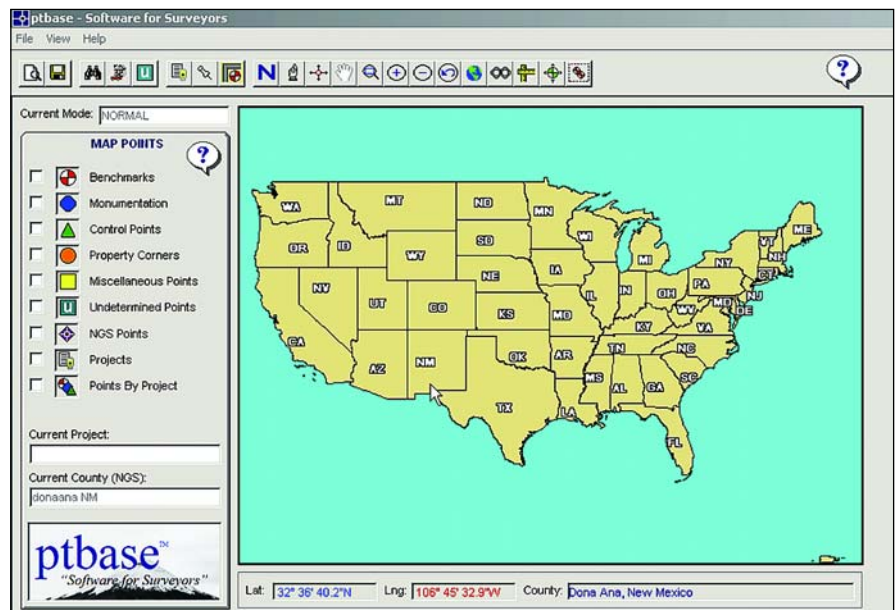


Figure 1

Base Map

ptbase uses TIGER files as a base map. Although TIGER files have had a bad reputation for accuracy in the past, and although the accuracy may not be the same in all areas even now, I punched in my address, and ptbase placed a symbol for my house right on the money (granted, my house is only one mile from an interstate highway, and Las Cruces is fairly rural). The structure ptbase uses is very functional. You can download as many states as you need from the TIGER files. If you work only in one state, you can get along with a minimal computer.

Figure 1 shows the opening screen. This is an index map from which you can pick your area with a mouse. Notice that my mouse cursor is in the lower part of NM. Notice also the three little panels below the map that display the Latitude, Longitude, and County in

which the cursor lays. The Menu bar contains:

File

- Save as a bitmap (Photograph)
- Import Points
- Export Points
- Import NGS Points
- Update NGS Datasheet
- Preview Map
- Backup
- Restore
- Exit

View

- Settings
- Preferences
- Legend
- Points Database
- Features (Wide Roads, Rivers/streams, Outline Text, Railroads, Airports, Hospitals, Schools, Churches, Cemeteries, Parks, Oil

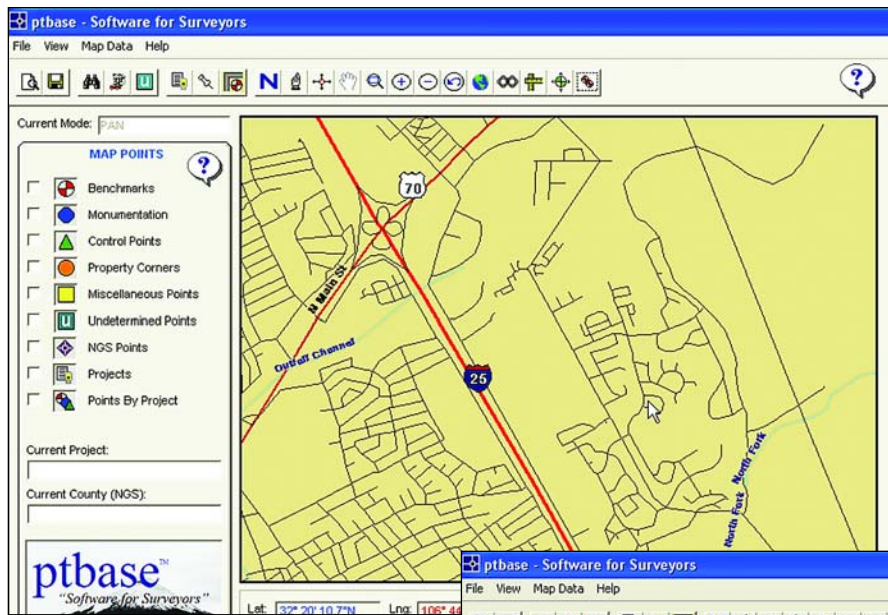


Figure 2

Fields, Mines, Powerlines/Pipelines, Major Roads, Side Streets)

Help

- User's Manual (pdf)
- About ptbase
- Enable ptbase

The Power Bar icons include: Preview Map, Save as Bitmap (photograph), Find Point, Find Address, View Undetermined Points, Add Project, Add Point, Add Point by Map click, Normal Mode, Select a Point, Re-center Map, Pan, Zoom (window), Zoom In, Zoom Out, Zoom Previous, Zoom All (Extents), Saved Views, Measure, Adjust point, and List Selected Points.

I'll have to admit, Adjust Point gave me heartburn when I first saw it. Why would anyone want to adjust an NGS "B" order point to a TIGER Map? Well, here's why: Adjust Point allows you to make an attractive map so that the NGS point is on the right side of the road but it does not alter the coordinates in the database, so that if you inverse between an Adjusted Point and another point, you will still get the correct inverse. In other words, ptbase keeps track of the True coordinates and the display coordinates.

Figure 2 shows a small amount of New Mexico which I loaded into the base map. I have windowed in where I live and those strengths and weaknesses I know best.

On the left of the Index Map, the current mode is displayed (PAN) and a list

NGS Coordinate Maintenance

If this program performed no other function, ptbase is worth the price. The time wasted in trying to get and make use of the latest NGS coordinates is eliminated. Even if you only have to look up one or two monuments a year, you will be glad you have ptbase in-house.

I particularly liked the way ptbase handles NGS points. Why pay for them in some other program when they are available for free on the Internet? The ptbase documentation gives very clear instructions on how to download not only the coordinates, but the entire data sheet into ptbase. NGS coordinates are available by

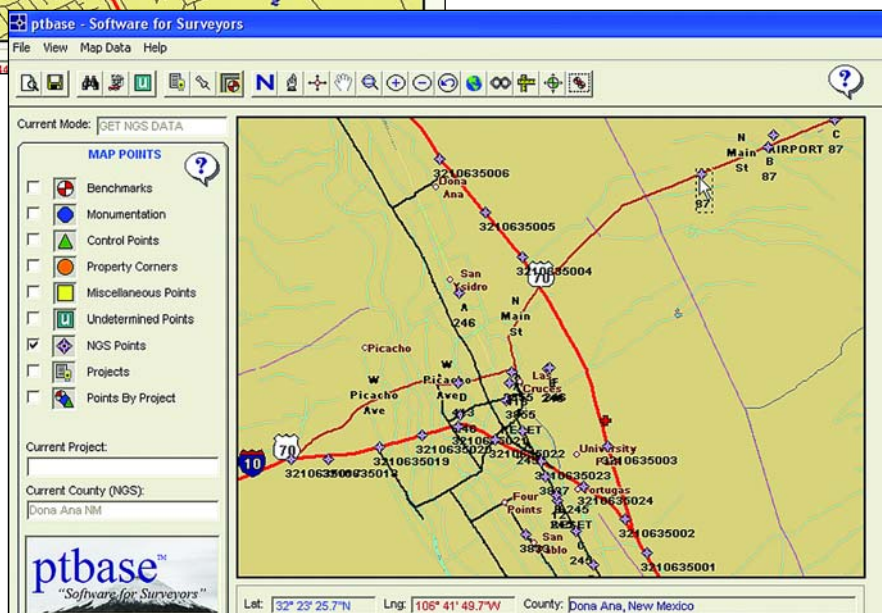


Figure 3

of different kinds of points that you can display or hide in your map. Under that, ptbase shows the current project and the current county.

Importing Data

In addition to allowing you to add points by Latitude/Longitude and State Plane Coordinates, ptbase also allows you to import your current data with a built-in import tool. Importing in ptbase works much like the importing process utilized by Corpscon. The ptbase importing tool requires the data to be in a comma-delimited text file, which can be easily created from an existing database or spreadsheet. Ptbase also allows for the importing of ESRI shape files via the PW import utility. PW import is an outside program and is provided as is.

county. That means that if you work in one or two counties, you do not need to have a giant computer to use this program. But the best part is that you can keep your ptbase database current by downloading the monthly updates from NGS. This is the first commercial program I have seen that would allow you to maintain an up to date set of NGS coordinates and fact sheets. The documentation is very easy to follow and gives you step-by-step instructions on where to go and what to do on the NGS website. This is an easy way to make sure that all your NGS coordinates are good.

Once you have loaded them into your map you can forget about all the stuff you had to go through to find them and then find the data sheets, etc. Figure 3 shows my little patch of Doña Ana



Figure 4

County with the NGS points displayed (NGS points are loaded in by county). Notice that the box next to NGS Points is checked. Notice the long names such as 3210635006. This is the naming convention of the NMDOT consisting of the latitude, longitude, minutes of longitude and sequential numbers going from South to North.

Notice the cursor is pointing to a particular monument which is then surrounded by a little box. By selecting that monument, **Figure 4** comes up, the complete data sheet for that monument. This is so much better than any other method I have ever used. Now you have complete control over the NGS monuments, but what about your personal control and property corners, and so forth?

Figure 5 shows a small area where I have some points. Notice the boxes checked on the left (color coded so they can be readily identified). The cursor is on a control point I call GLOP. You can tell it is selected by the little box around it. If you select that point, **Figure 6** comes up. Notice the wealth of information that comes up. Notice that it also indicates whether it was generated by a handheld GPS receiver (navigation position) or whether it has been adjusted. Latitude and longitude are in degrees, NAD83 State Plane Coordinates are given for NM Central. There is a tab

for a detailed data sheet, a tab for comments and even tabs for two digital photos.

You can pan, zoom, window, etc. and you can measure from any point (shown selected by the little box) to anywhere (distance and azimuth-distance automatically shifts to miles when greater than one mile. You can create bitmap images (pictures of the map) to send out to the field with the crew.

This edition uses the TIGER map. Future editions will allow alternative maps. CBI is also working on a handheld version so that the information can be carried into the field.

CBI Systems offers ptbase as a free 30 day demo available CD. In addition, ptbase Lite is available as a free download on the CBI Systems website (www.cbi-systems.com) for a limited time. This version differs from ptbase in that it does not include an interactive map but does include the database and the ability to view NGS datasheets.

At \$395.00 for the single license version (network versions are \$695 for up to 5 licenses and \$995 for up to 10 licenses), no one can afford to ignore this one. You'll probably save that amount the first time you use ptbase to look up information. *AS*

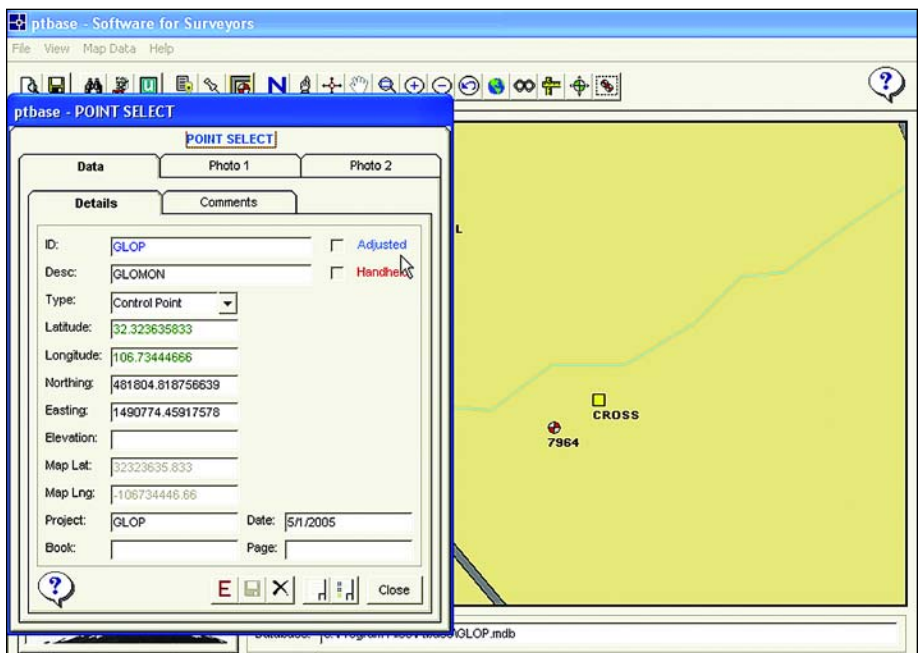
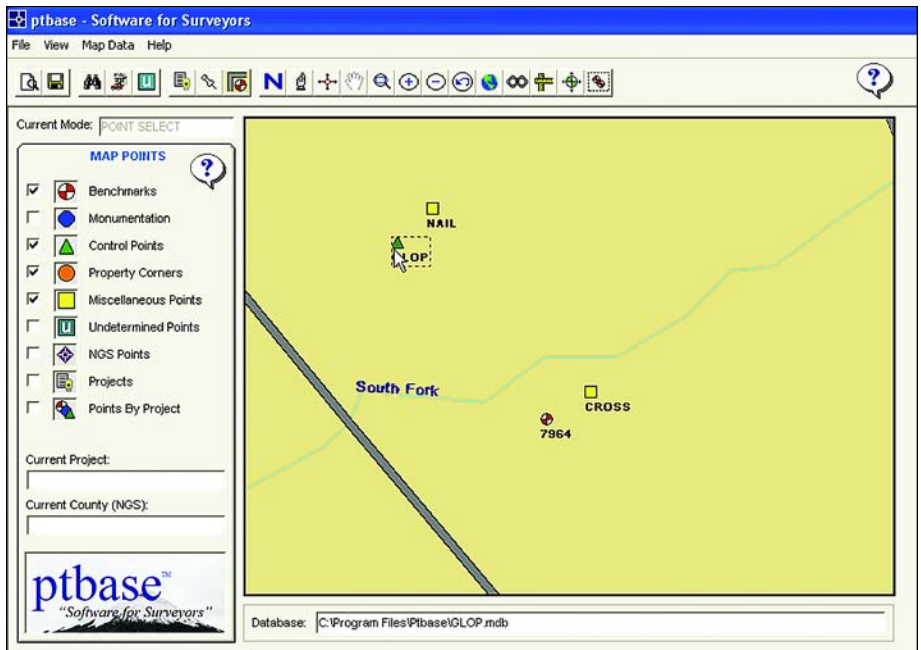


Figure 5 (top). Figure 6 (bottom)