

Product Review

By Thomas A. Liuzzo, RLS

What's in Your Toolbox?

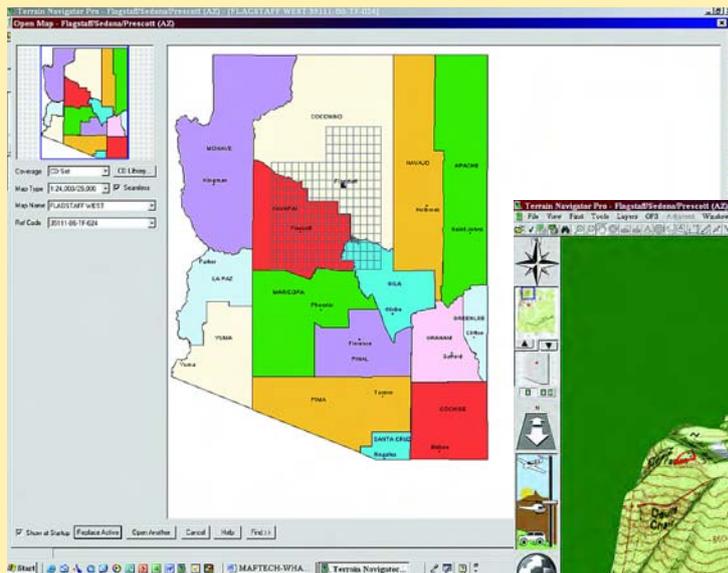


Figure 1 Index screen that is viewed upon opening, showing the contents of the CD, in this case the State of Arizona.

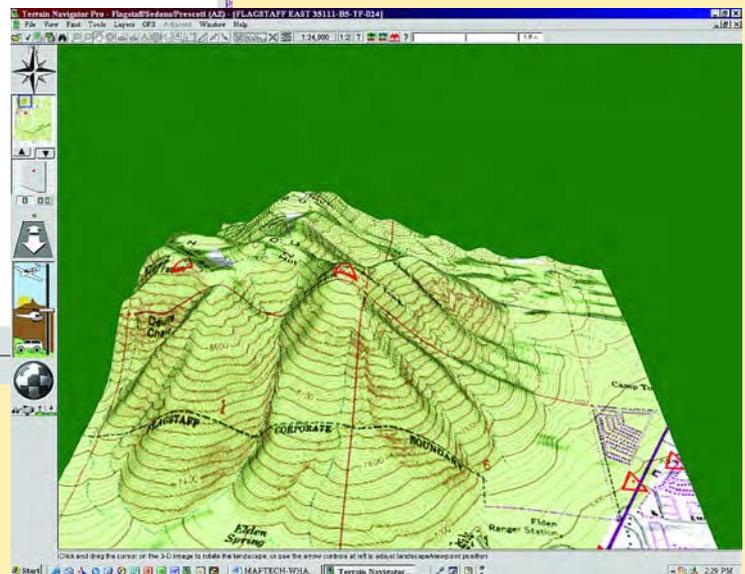


Figure 2 A 3D view of Glassford Hill in Prescott Valley, Arizona. This feature allows you to pick your route before you even get out of your vehicle.

When RTK GPS was introduced in the mid-90s, it created obvious divisions in the survey community. Today, many who first resisted these advancements are now receptive to them. Technology is like drafting in a NASCAR race—if you don't catch it, it will blow right by.

With the continued evolution of survey-grade GPS technology, many of us began to differentiate between conventional and GPS surveying in order to justify to our chief financial officers that GPS was worth the additional expense. Justification was often twofold: first, you could charge an

additional fee for a GPS unit to allow it to pay for itself; second, you could accomplish the same amount of work as a crew with conventional equipment, but in half the time.

Your toolbox may contain everything from a simple plumb bob and steel tape to a costly and complex GPS unit. One item I have found that is a must is an inexpensive handheld GPS unit, the kind you simply turn on and use to navigate your way down the road. It's a handy tool when hunting terrain for NGS monuments and section corners.

Like many of you, I always liked to keep a copy of the relevant USGS Quadrangle in my project file. For those frustrating times when a copy

was not available, I was usually able to track one down at an engineering supply or a camping store. Of course, it was only a matter of time before they could be viewed on a laptop, Palm Pilot, and now even on cell phones.

I have tried several different sources for digital base maps, and I am pleased to say that once I found Maptech's Terrain Navigator Pro (TNP), I stopped my search. There is no other product on the market that makes utilizing a digital USGS quad map so easy. Once you purchase the region in which you work, there is no more problem of not having the right quad map in your file (**Figure 1**).

continued on page 44

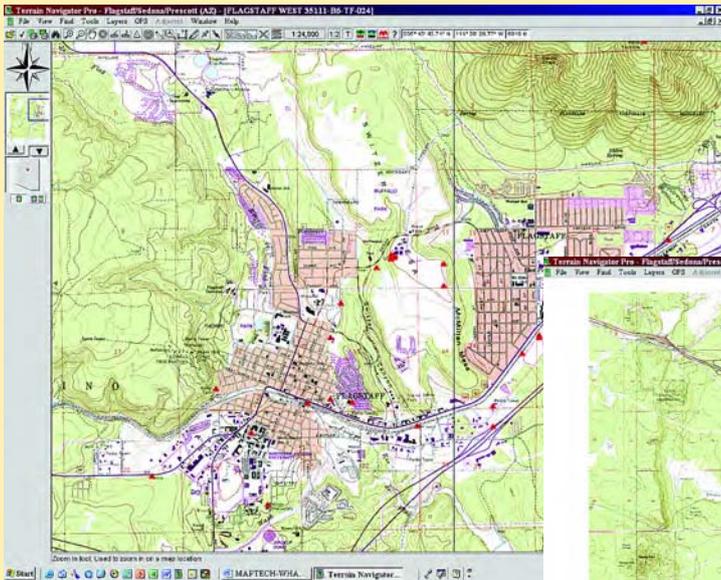
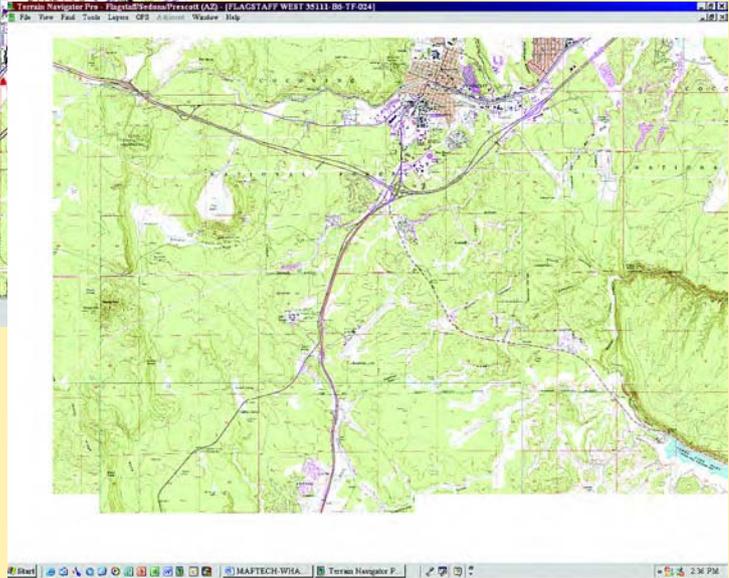


Figure 3 Downtown Flagstaff, Arizona. Red Triangles represent NGS control points. These triangles are supplied as part of TNP.

Figure 4 Same detail of the NGS stations in the Flagstaff area, showing the 1:100000-scale map covering 450 square miles.



Toolbox continued from page 42

Seeing is Believing

Over the past seven years that I have been using TNP, I have become aware of the common threads that unite the survey community across the country. Research is one such thread. The Maptech website contains many quotes from users across the country whose key use of TNP was for research before they developed a survey quote or took on a project.

Navigation is another common thread. Whether on a laptop or a Palm Pilot, many users have relied on TNP to reach their goals using the point of least resistance. TNP's 3D toggle provides the ability to see the degree of difficulty of a proposed route. Sometimes it is better and faster to walk a longer distance on easy terrain rather than climb the highest mountain as you travel in a straight line (**Figure 2**).

How many times have you come across a mark for which you did not

get the data sheet? Utilizing TNP for NGS research prior to GPS network planning is one of my most critical functions. With the NGS markers built into TNP software, you can retrieve a datasheet in the field with no Internet connection to search the NGS website (www.ngs.noaa.gov).

ability to just turn on the laptop saves the time of inputting the marks into a handheld GPS unit. I use the track logs in real-time positioning to detail site access for our clients. After the data is compiled, I can print a detailed map show our tracks to and from their site (**Figure 5**).

Technology is like drafting in a NASCAR race—if you don't catch it, it will blow right by.

We utilize the distance feature to check between HARN points to ensure our observation times correspond to the “one minute for each kilometer” test for static GPS observations (**Figures 3, 4**).

We utilize the Public Land Information to search for Section Corners that show as identified in the last NGS survey. Utilizing a Rhino 120 tied into our laptop, we get real-time positioning updates as we drive along to each search position. Having the

map image or copy it to the clipboard aids in presentations.

I can track directly to Cell Tower and Radio Facilities for FAA Elevation Certificates. Once there, I can perform a static GPS observation correlated to a CORS or most often we find a HARN nearby. Any information we gain autonomously can be post processed upon returning to the office. Although the USGS accuracy is not what is required for an FAA 1A

continued on page 46

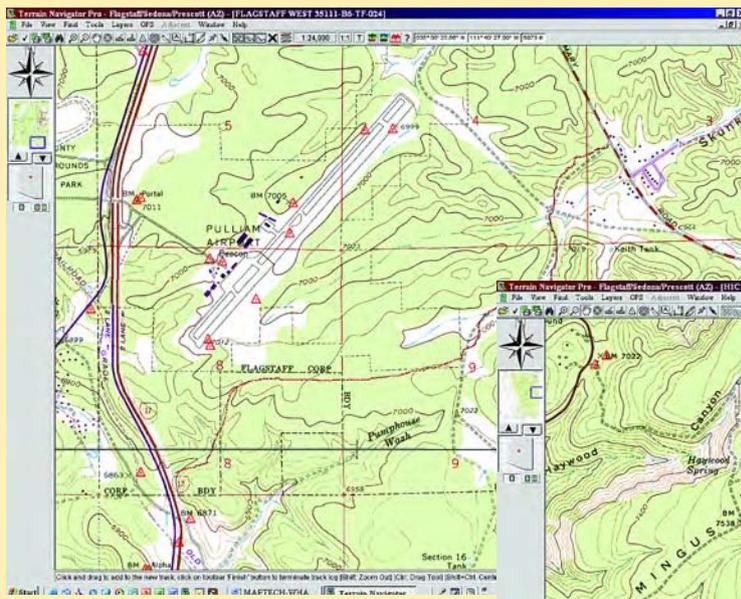


Figure 5 As historically shown on the USGS Quads, various landmarks and crosses depict PLSS information. A simple click displays the latitude and longitude.

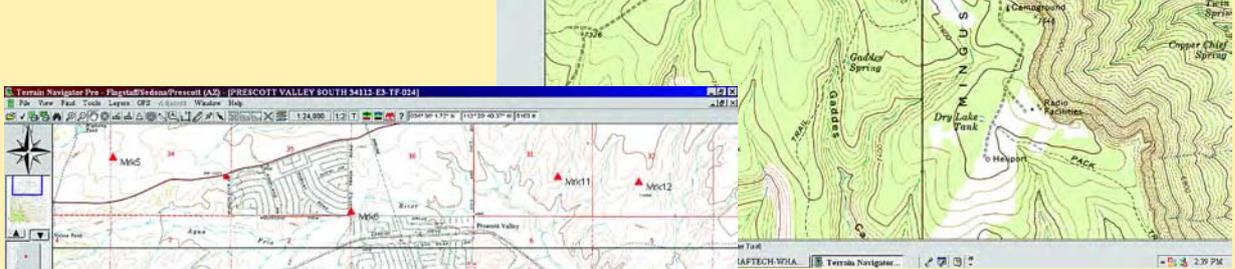


Figure 6 Radio facilities on Mingus Mountain in Central Arizona detailing the facility and NGS points denoted by the red triangles.

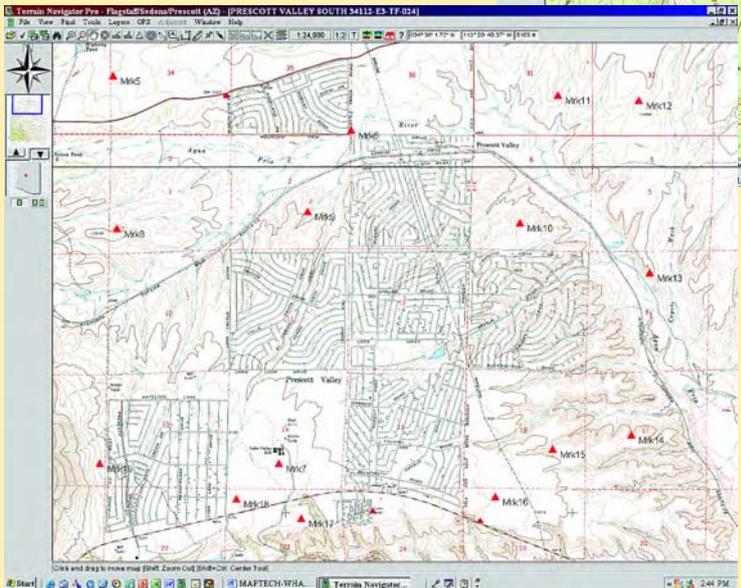


Figure 7 NGS points (smaller triangles) and densified control (larger triangles). This view would be on two different quads if not for the seamless view feature.

Toolbox continued from page 44

certification, the post-processed results can be compared to the quad for an approximate check that your results are in the ballpark. If you are lucky enough to be near an existing NGS monument, this data again can be retrieved off TNP and you can perform an additional static observation as a check (Figures 6 and 7).

What Does the Future Hold?

For those of use that have used Maptech Terrain Navigator Pro, what could make this tool better? My personal wish list includes: the ability to edit

more than one “mark” at any one time; the ability to differentiate when listing “marks” from the standard NGS “marks” provided and the ones I import with my custom import program; the ability to click on an area when in pan mode and getting the option for latitude and longitude or for the location such as the Section Township and Range.

These are just some of *my* desires; what about yours? How will the advancements in GIS aid us as surveyors while using this product? I encourage you to log onto www.maptech.com and click on the Terrain Navigator Pro link. Here you will find the opportunity to exchange

ideas about the product. As this link grows, patches for the new ideas will be made available to existing users that will allow you to communicate directly with technicians and other users in a chat room. The goal from this will be what Maptech hopes to be a nationwide database for all of us who use TNP and want to share in its advancement. 

Thomas A. Liuzzo, RLS, is the Vice President of RST Land Surveying, Inc., a partner in Vertical Mapping Resource, both firms based in Arizona. He is also Executive Committee Member for the Arizona Professional Land Surveyors.