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TDS Survey Pro 4.0

Writing about TDS Survey Pro 4.0 is like talking about an old friend. I have used TDS software at some of the companies I have worked for, and I've written articles on TDS software on both the HP 48 platform and the Pocket PC platforms when I reported on the TDS Recon. Old friends bring back fond memories of good times together. And, when the chips are down, you can rely on old friends, as you will read about in this review.

Prior to writing a product review, my job is to use the equipment and software on real jobs, under the pressure and conditions that most of us face day to day. Of course, this means there is some learning under pressure which also adds to the stress of the situation. When you are a "senior" member of the profession, some of your experience can reduce that stress in terms of general knowledge. But for those who are new to the profession, the experience can be something else entirely. With this background in mind, I'll report on just how TDS Survey Pro 4.0 was put to the test.

The road project we were working on began in July, during what was perhaps the hottest week of the summer. Because our regular total station had "electronically burped," giving us an error code and refusing to start again even after a battery change and cold booting, we started the project with a rented total station. As luck would have it, our regular party chief was on vacation. Since my "senior" eyes with their blended trifocals have given up a couple of seconds of accuracy when turning traverse station angles, I made the decision to have BJ,

our surveyor's assistant, run the gun. BJ had less than two days' experience using the total station that was now in the shop. I was to be the note keeper, as well as plug-in help on the rod and flagman for traffic.

The East Hills area of Pittsburgh was our destination for an existing conditions survey for intersection improvements of mostly traffic striping and traffic signals. Speeders, radio blasters, bus drivers playing "how close can we get to the surveyor without hitting him," and inattentive drivers were plentiful. Warning signs and cones were set up and a site investigation was conducted. After scoping out the area, we chose the traverse station points and set up the gun to let it acclimate itself to the ambient conditions. The Recon was connected to the gun via the cable, and the manuals were ready. The instrument was leveled and turned on.

The Recon comes with a stylus for tapping the screen, and there is a convenient stylus holder on the back. Most land surveyors keep some form of hand notes regardless of their data collection platform, which means that trusty .5 mm pencils are still in use. Although pencils are great for hand notes, they're extremely hard on touch screens. Thanks to the Recon designers, I can use my finger or fingernail to navigate the screens of Survey Pro 4.0. The stylus is supplied for use with smaller icons on the Pocket PC keyboard screen.



BJ turned on the Recon, tapped Start, Programs, then Survey Pro. This brings you to the menu where you create a new job or open an existing one. The file name I had entered in the office came up highlighted in blue, and BJ tapped Open. This brought us up to the main menu that has nine major choices on the horizontal buttons across the top (File, Job, Survey, Stakeout, Inverse, COGO, Curve, Roads and Adjust); and two choices via vertical buttons on the right side of the screen. Tapping File brings up the two side buttons labeled A-E and F-J (**Figure 1**). With these choices, you can do just about anything imaginable with your files-import, export, import control, save as, backup/restore and transfer. The *.JOB format is the default for export, but ASCII is an option as well as

LandXML and that permits you to interchange with most any data.

A recent job—a 127-acre “on the ground” topography that is now going into the construction phase—contains well over 25,000 points and counting! When there are three field crews in different areas of the site, some duplication of point numbers occurs in order to meet what are often unrealistic client-imposed deadlines. With the Confirm Point Replace dialog box in TDS Survey Pro 4.0, these situations are very easy to accommodate. The ability to define templates for importing and exporting files takes the hassle out of handling data from a variety of sources.

The next icon is the Job button with the A-E and F-J button icons. Under the A menu is the settings menu where the instrument you are using is configured (Figure 2). The measuring parameters and constants are also under the settings. There is a more direct way by using the Instrument icon (Figure 3) on the task bar at the bottom of the screen. Choosing the latter, BJ configured the settings to the rental instrument (Figure 4). Under the Job menu you can edit points, polylines, alignments, auto line work, manage layers, view job info, raw data and the DTM. Under the J menu is a RPN calculator.

Once you are acquainted with the software, tapping the question mark on the task bar brings up the list of menus for shortcuts to the routines you want to use. Tapping the Star icon is yet another way to navigate more quickly to other menus.

There are three ways to get your work done. Choose one or a combination of all three to suit your personal habits. This is a very versatile yet logically laid out program interface. Feedback from the field is evident here (including a battery level icon).

Saving the best for last, tap on the Square icon with two points and a line in between, and a graphical screen with your collected points appears. Zooms, find a point, layer manipulation and on/off display of items are located on the left side of the screen. Each time you go to one of the menu screens, the “i” in the blue circle changes to an “x” in a green circle. Tapping it takes you right back to the screen you came from. This is a welcome, time-saving, improvement over the “up and down the menus navigation” of the HP 48 platform.

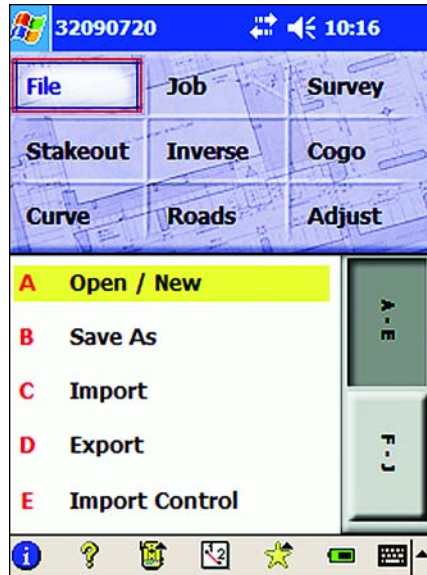


Figure 1

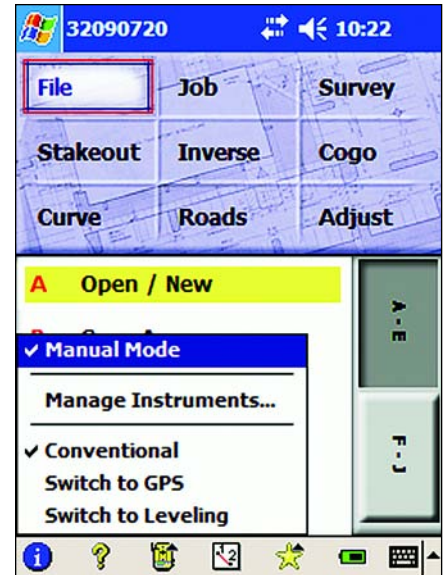


Figure 2

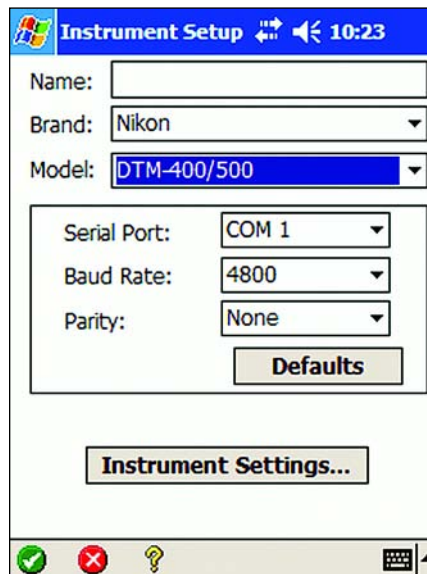


Figure 3

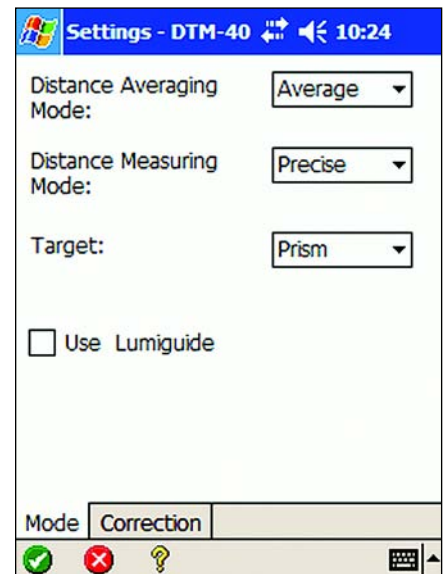


Figure 4

Tapping the Survey icon, with its four side buttons, accessed the menu we would use the most for our data collection. Instrument and backsight information is under the A menu. BJ input the setup data, set the backsight circle and tapped the check button. The moment of truth was at hand: communication with the instrument occurred and the backsight was checked. Another small but vital piece of information still needed to be checked. My standard procedure is always to use “0” prism offset in my own work. The system used by field crews I had worked with in the past was to use -30 mm prism offset. We set -30 in the gun prior to connecting the Recon to the instrument. Were we dou-

ble correcting? My calibrated, standardized steel tape was used to put the prism pole at 25 feet from the gun. The distance was shot and confirmed, and zero was the proper data collection setting (Figure 5).

Now we were ready for data collection to begin in earnest. BJ tapped the B menu, Traverse/Side Shot, bringing up an input screen with foresight point number, description and rod height (Figure 6). After input, you can press Backsight, Traverse or Side Shot to obtain the desired types of shots. The last shot I take from any setup is a backsight check. I really appreciate this simple blunder-eliminator option. After an hour of setup vibration from the

heavy traffic, our backsight was off by some fifteen seconds, and the gun was slightly out of level. The gun was re-leveled, the backsight reset (Figure 7), and we continued on. After another hour with the instrument, BJ commented, "This is really easy to use." Later he took over the crew, freeing me up to do more field investigation. He even took over the field book for me, another indication that the software is easy to use.

The following day I just stood back and observed. BJ literally took over with minimal input from me. When we broke for lunch, BJ was already comfortable with running the crew, the gun, the notes and the data collector. I left to recover more reference marks and set up the rest of the project.

We only had to refer to the manual a couple of times in order to do offset side shots to utility poles and traffic signage. The rest was just intuitive and menu-guided. We were impressed with the short learning curve!

Although we didn't use all of the software's new features on our road project, this latest version of Survey Pro is capable of much more. TDS says it has added 13 features and 12 function enhancements to Survey Pro 4.0 based on feedback from professional surveyors. It also helps that a number of people on the Survey Pro development team have actually worked as surveyors in the field. So they understand the surveying process and how surveyors work. As a result, even these small changes to Survey Pro's existing functions make the program feel more intuitive. At first, you may not notice, but as you go along, you're likely to find you're accomplishing more work in less time.

If you're using a robotic total station, a new Aim tab in the Remote Control menu, lets you tap on the screen to turn the instrument by distance or by angles (Figure 8) to re-acquire a lock on the prism. How far it turns depends on where you tap on the display. To turn by distance, you need to have at least one valid distance from the gun. To turn by angles, the software calculates a curve from the last shot distance and the turning distance entered. Also new is a drop-down list showing the current status of the total station including the EDM mode, link status and lock-and-track status.

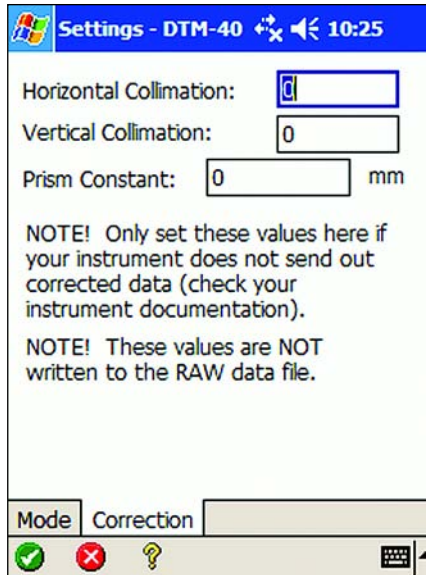


Figure 5

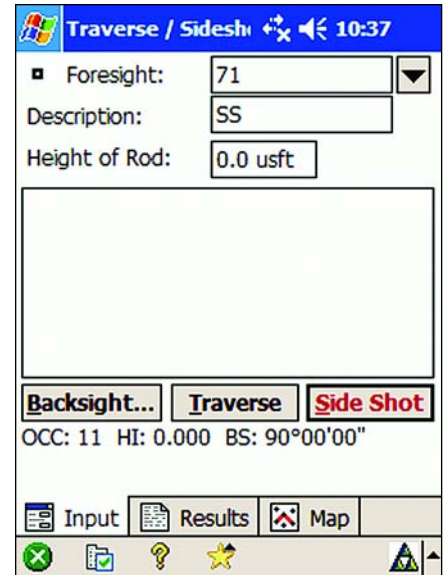


Figure 6

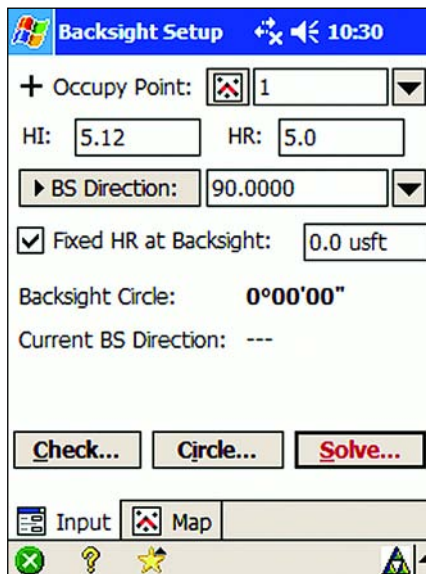


Figure 7

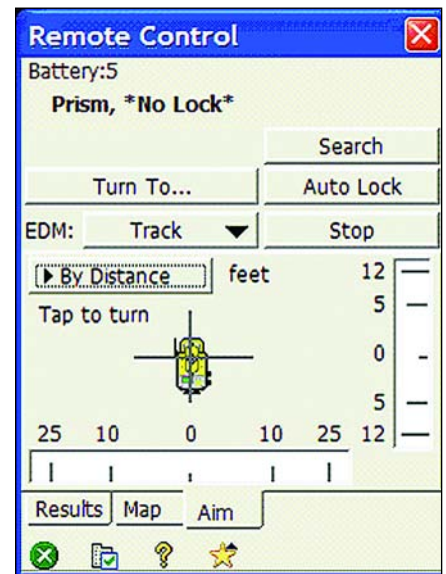


Figure 8

Global Positioning System (GPS) capabilities have been beefed up as well. Like other Windows-based programs, Survey Pro 4.0 now features a wizard to walk you through the GPS setup procedure (Figure 9), another potential blunder eliminator. You can still configure the system on your own if you want to.

You can also use your digital cell phone as a RTK modem. That's a big help in making sure your data is transmitted reliably, especially at locations with poor radio reception. With a pair of digital cell phones, you can replace the typical radio data link at the base and at the rover, again with greater reliability. At the base station, the phone is configured to automatically answer incoming

calls, and the phone at the RTK rover is set to dial the phone at the base station. Once the phone connection is established, the RTK rover configuration works as usual.

As I mentioned earlier, this latest version of Survey Pro shows that TDS has been listening to feedback from surveyors in the field. When you look at them individually, some of these features may not seem like a big deal, but they do make a difference under the pressure and conditions most of us face out on the job site every day.

One of the most useful of these new features is the Instrument Manager, which lets you pre-configure settings for total stations, GPS receivers, levels and

other equipment. Depending on the day or the job, you may be using several different instruments, but once you've entered the initial settings, all you have to do is choose your instrument from the Instruments and Modes list under the Settings menu (Figure 10), and Survey Pro is ready to work with it. If you need to switch instruments in the middle of a job, simply tap on the Instrument icon on the toolbar and select the new instrument. Plus, if you work in an office with multiple data collectors and several different instruments, you can configure an instrument once, confirm that it works correctly and then transfer the instrument profile to all of your data collectors. It's a real time saver, especially when your crews are working with an instrument they don't use very often (as we were on this job).

The Basemaps feature (Figure 11) lets you import a drawing or graphic as the background of a map. This provides another reference to help you identify landmarks, stay oriented and identify points that need to be staked. You can import basemaps in both GeoTIFF and DXF file formats, and you can pan and zoom using Survey Pro's standard map functions.

If you're running Survey Pro on a TDS Recon or Ranger, you can create a Quick Pick list with shortcuts for the functions and routines you use most often. From the Quick Pick Editor menu, choose from a list of functions organized by menu to create your personalized Quick Pick list. You can then put items in the order that works best for you, as well as add or remove functions at any time.

Previous versions of Survey Pro included Import Coordinate and Export Coordinate functions. In version 4.0, these functions are simply called Import and Export. The software supports the LandXML file format that's becoming an industry standard (Figure 12), allowing you to import and export points, alignments, polylines and parcels from your data collector. This eliminates a lot of repetitive or manual data input and the errors that can come with them.

Survey Pro imports alignments as alignments or as polylines; it imports parcels as polylines that you can place on a dedicated layer for parcels. If the name of an imported point conflicts with the name of an existing point, you can rename the imported point or overwrite the existing point.

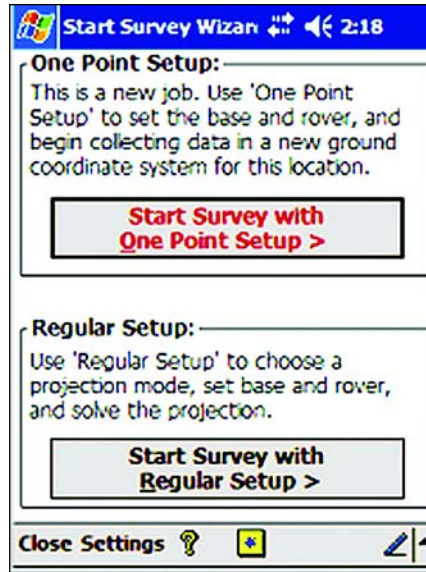


Figure 9

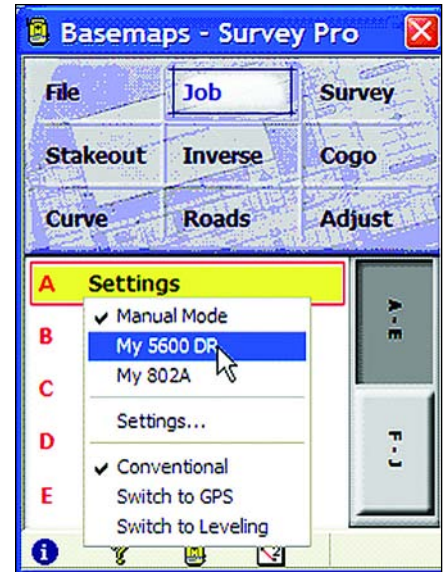


Figure 10



Figure 11

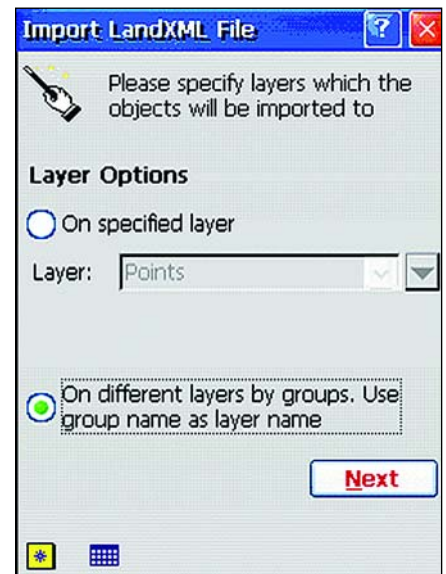


Figure 12

Survey Pro now also has an optional new Leveling module which gives you the structure and functionality to collect leveling data using digital levels, optical levels and total stations. Survey Pro stores complete raw data detailing each measurement and also stores 1-D points in the Job file. Leveling with Survey Pro puts all your survey data in one format, on one system. Though we didn't use it, that feature would make data management much easier. Survey Pro also provides an easy to understand and use graphical interface that can't be found in digital level software.

BJ asked me if there was any way we could persuade the boss to upgrade our HP48 platform to the Recon and Survey

Pro 4.0 rather than sending it back when I was done writing this article. To say he really liked it is an understatement. Unfortunately, our regular instrument was diagnosed with an expensive repair and may not be considered under warranty. So while we may have to buy a new total station this year, both the Recon and Survey Pro 4.0 are definitely in our capital budget for next year.

Think about it: on the road project where we tested Survey Pro 4.0, we had a new gun, a new data collector and software, plus a new instrument operator! And within a day and a half, we were working with normal productivity! That's a pretty good recommendation in my book. *A*