

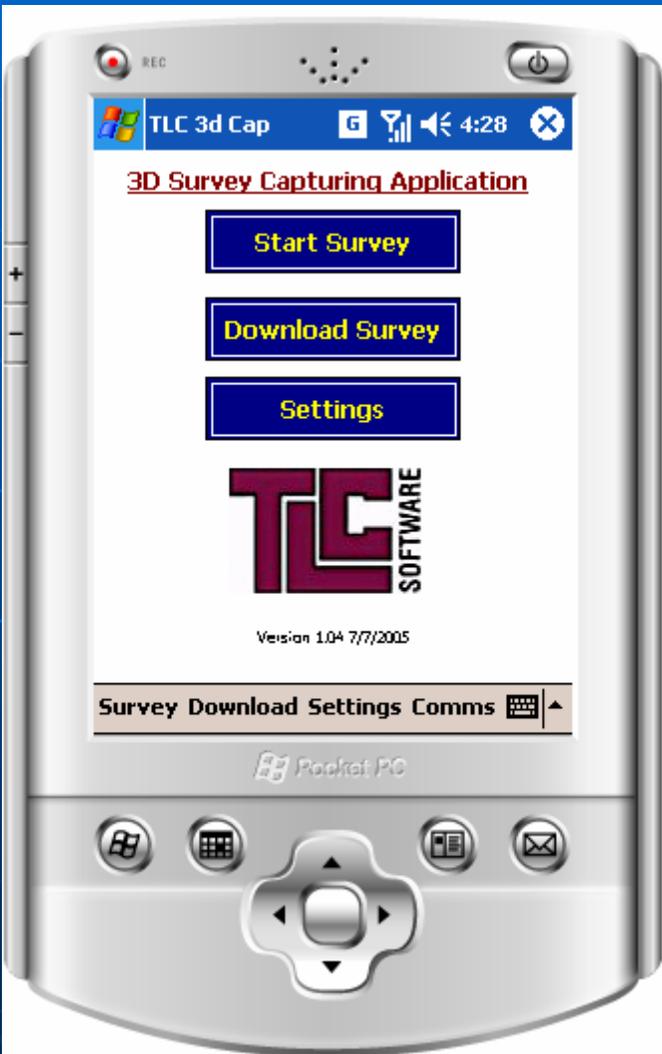
TLC 3D SURVEY CAPTURING SOFTWARE

Running on Pocket PC2003, Mobile 5 Devices
Windows CE Devices



TLC 3D CAP

Main Features



- Capture 3d Survey
 - Guide user throughout process
 - Collect all required information for 3d survey
- Interface to Winprof32
- Interface to a range of industry lasers
 - MDL Laser Ace 300, Quarryman II
 - Impulse 200, Autoscan
 - Laser Atlanta

Survey Modes...

- Three Methods are automated:
 - Profiling
 - Muck-pile survey
 - Bench Plan Survey

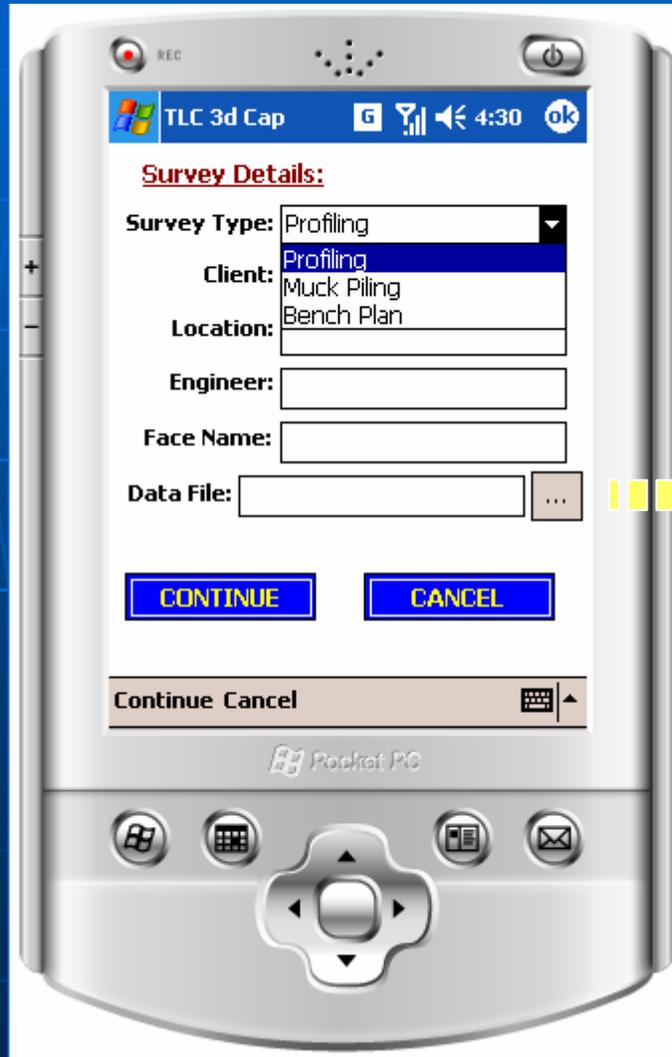
Generating a 3d Survey



- Need to select the type of measurement
- Define where the laser instrument is located
- Define the coordinate system using known sights (required for muckpile measurements)

Generating A Survey (cont...)

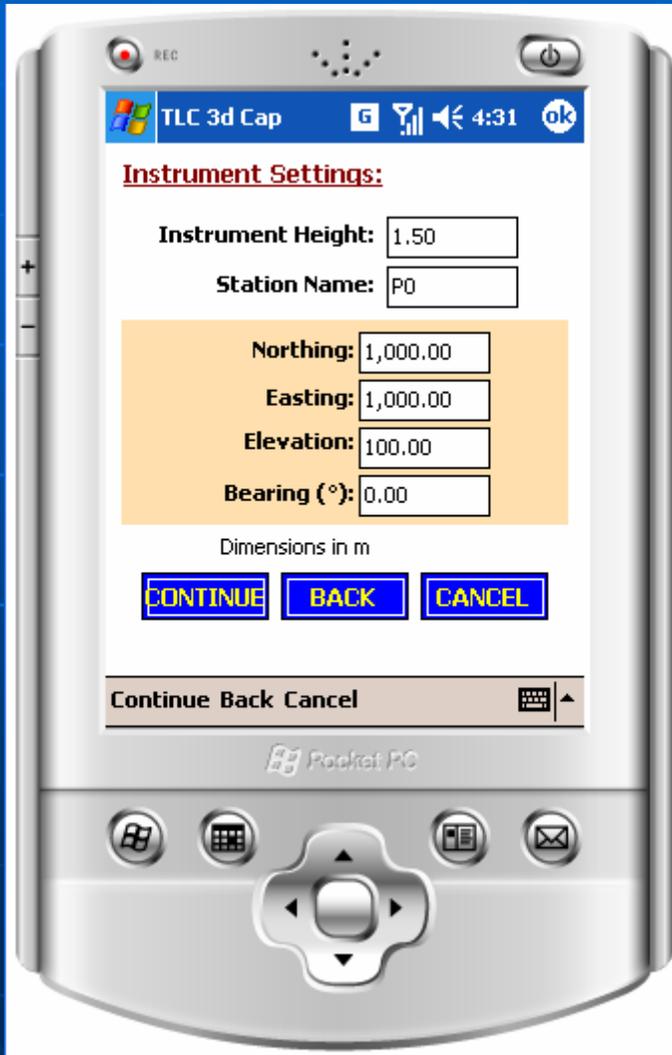
Define Survey Properties:



Select file to save readings:

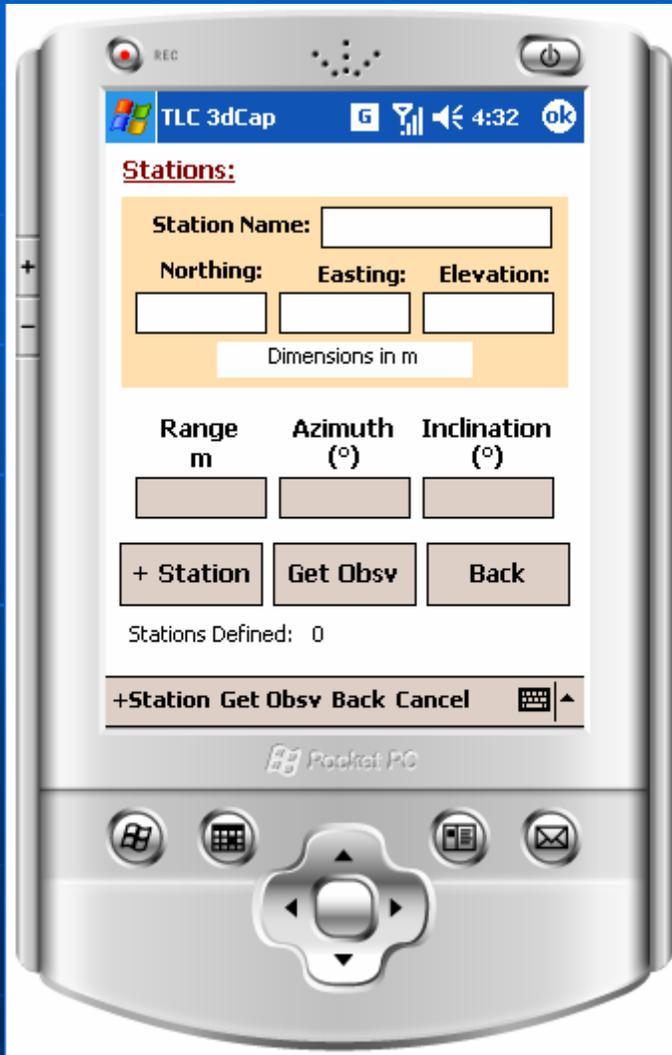


Generating A Survey (cont...)



- Define instrument settings:
 - Height
 - World coordinates (if available)
 - Name

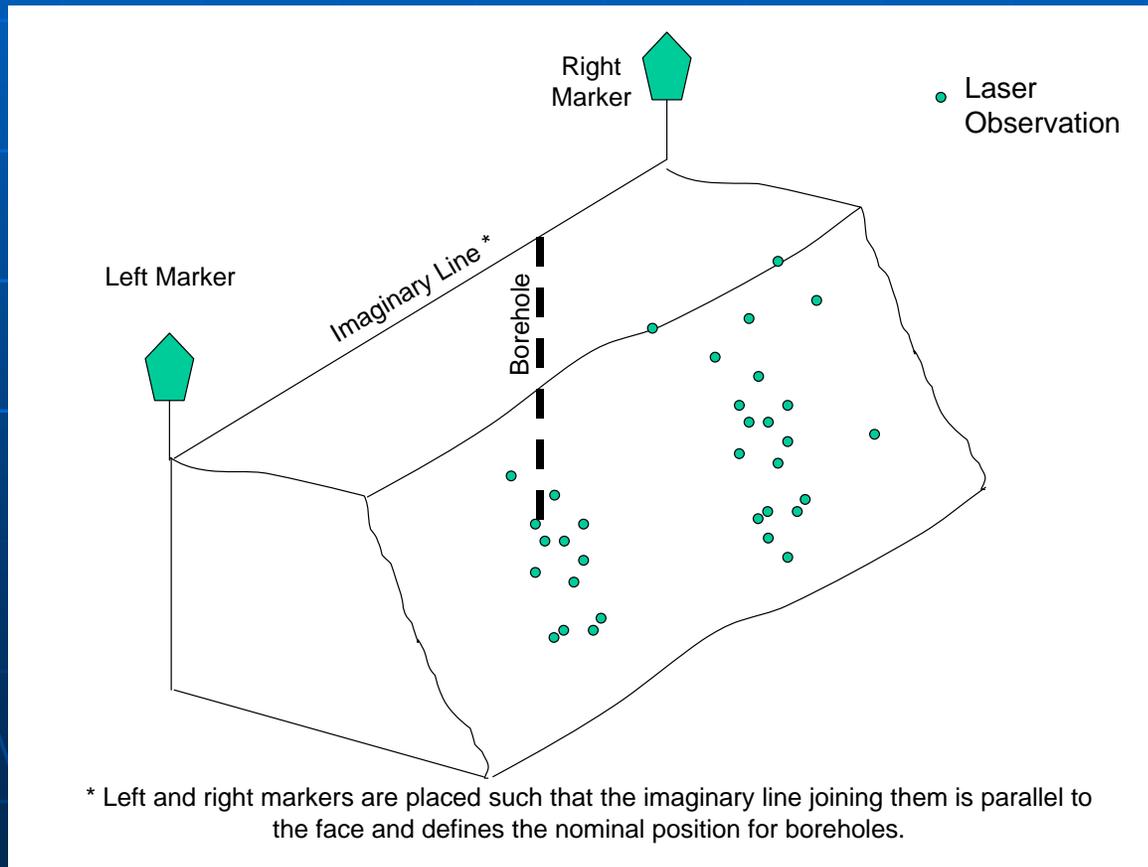
Generating A Survey (cont...)



- Define known stations (for world coordinate measurements)
- Up to 10 stations can be measured.
- For each station, the user can input:
 - World coordinates
 - Station ID

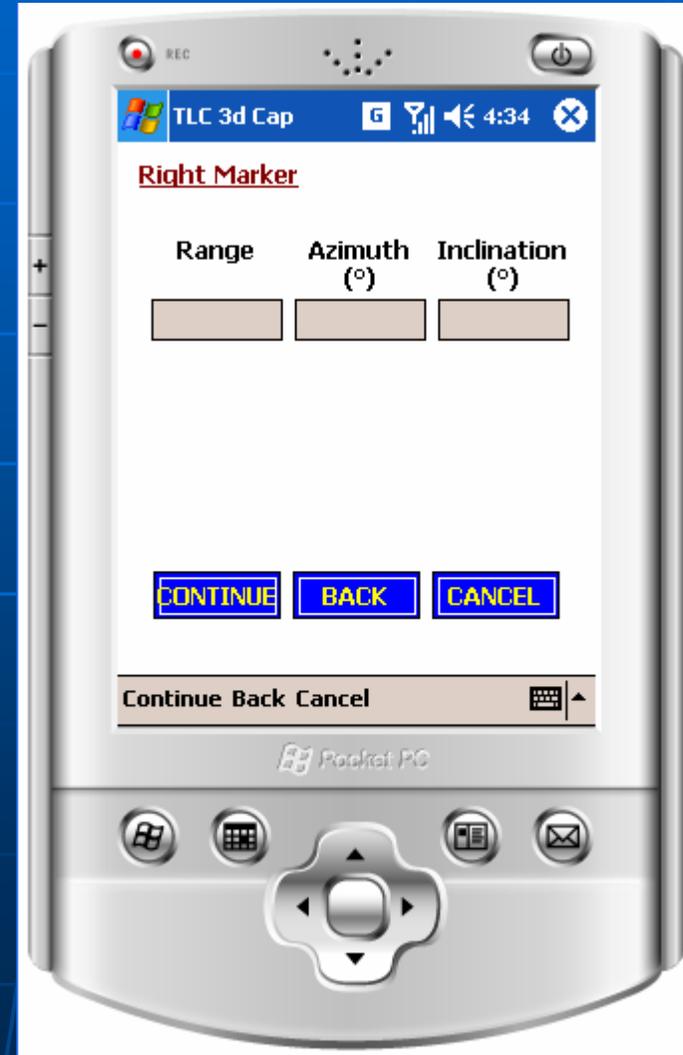
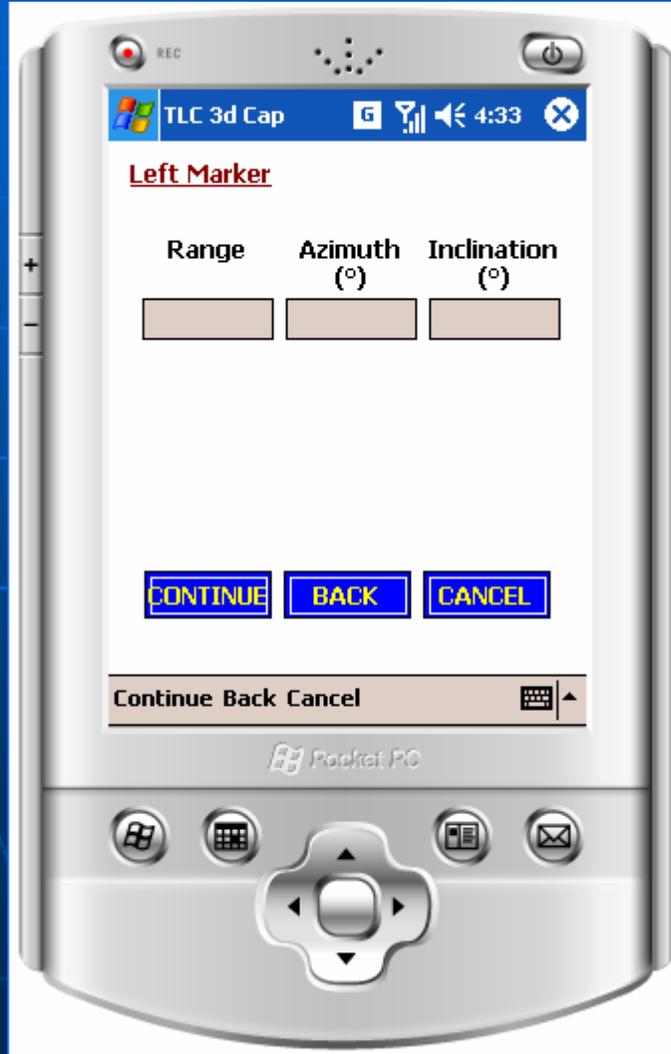
Generating A Survey (cont...)

- Profiling for the purposes of determining borehole positions requires that a reference line is defined as shown:



Generating A Survey (cont...)

- Identify survey face by entering reference markers:



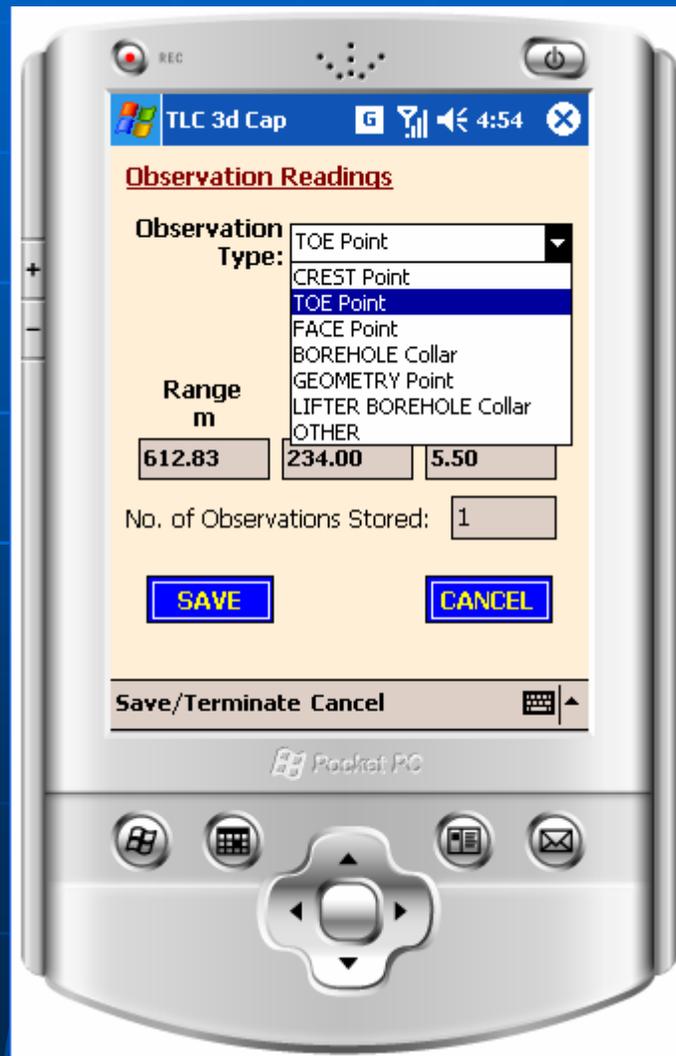
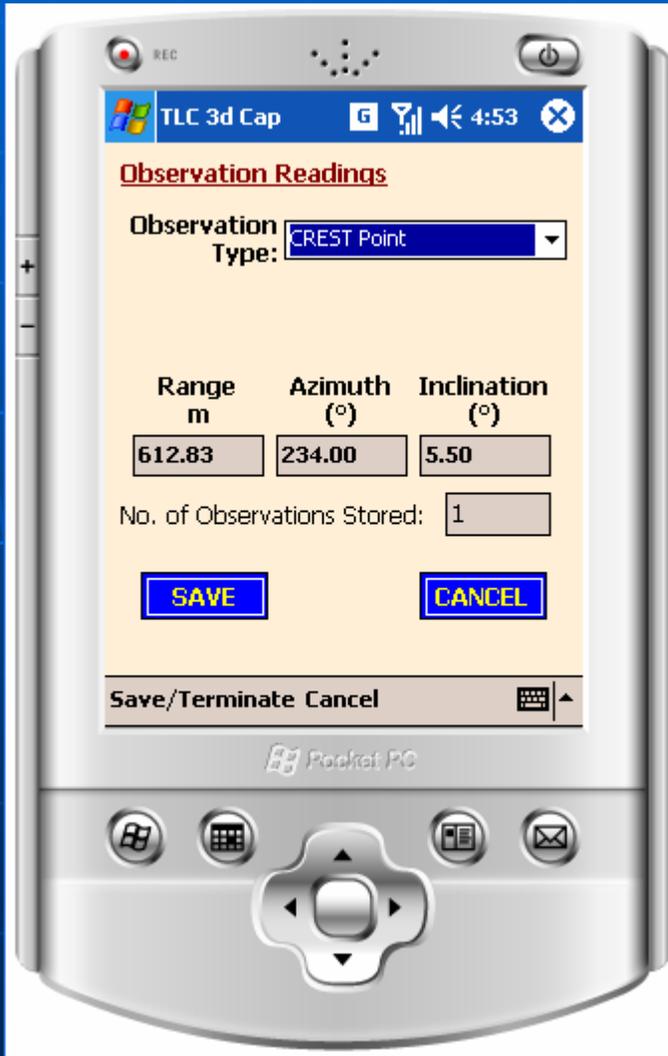
Generating A Survey (cont...)

- Survey face
- Correct tagging of observation:
 - Crest
 - Toe
 - Face
 - Borehole collar
 - Geometry
 - Lifter hole collar

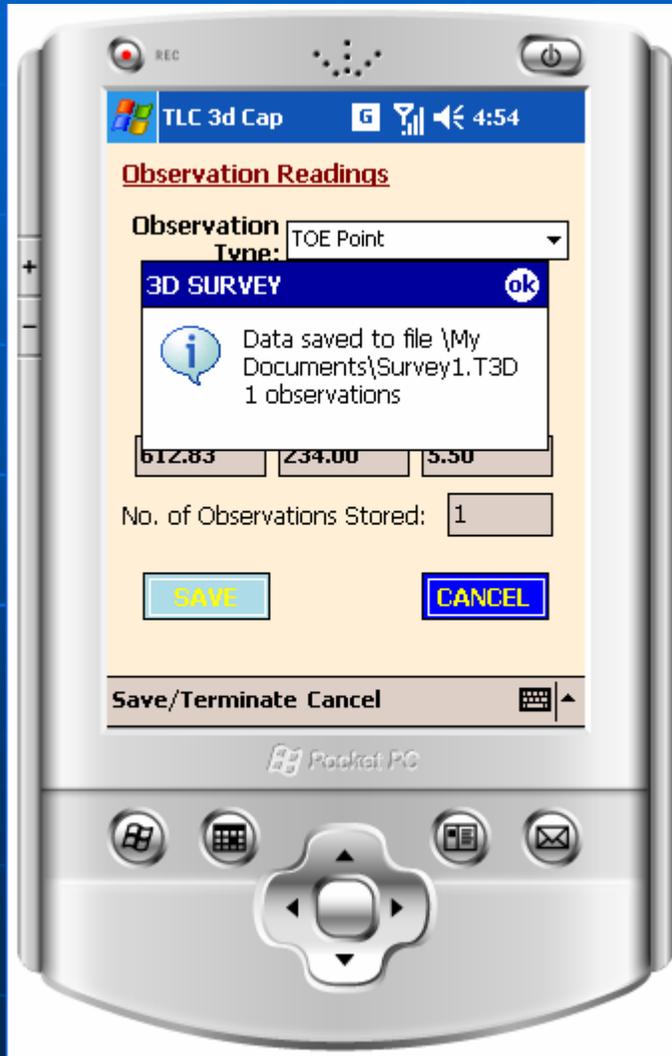
Generating A Survey (cont...)

Readings are automatically saved and tagged as shown:

Change type of reading as shown (only future readings are affected):



Generating A Survey (cont...)



- When survey is completed, press the SAVE button.
- The complete set of readings are stored in a text file which can be copied to a PC (using Active Sync) or downloaded directly to Winprof)

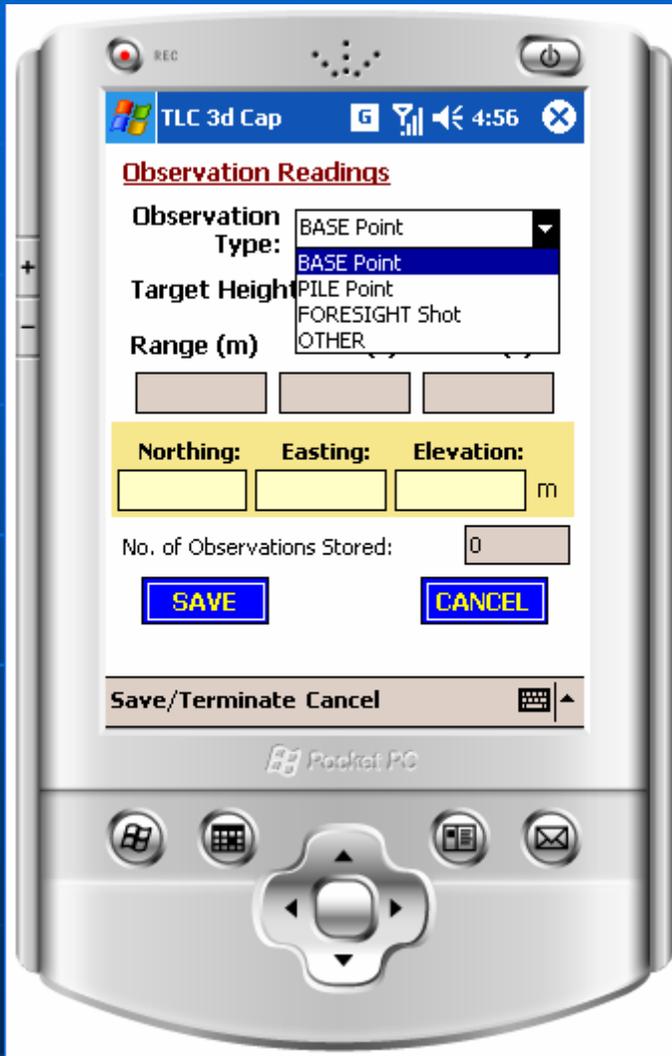
Profile Survey Generated File Example:

```
winp32newfile - Notepad
File Edit Format View Help
$FILESTART:newfile
TLCPSION3D V100
client
loc
eng
Profiling
"Jenoptics Laser"
1,1001,1002,103
09-15-1998
2
1,.05,332.3,-4.13,"s1",-123456,123456,987654.32
2,.04,332.4,-4.35,"bc",-123.45,654.32,.0123
.68,322.4,9.64,"LM"
.88,357.8,11.79,"RM"
.52,5.2,11.68,"CREST"
.52,5,11.59,"CREST"
.53,4.8,11.32,"CREST"
.6,.7,4.81,"CREST"
.6,.8,4.27,"TOE"
.6,.9,4.43,"TOE"
.55,4.1,11.02,"TOE"
.5,7.6,18.04,"TOE"
.47,9.5,21.04,"TOE"
.47,9.5,20.62,"BH0"
.47,9.5,20.83,"BH0"
.47,9.8,20.97,"BH0"
.47,9.8,21.11,"GEO0"
.46,9.9,21.58,"GEO0"
.46,10,21.34,"BH1"
.46,9.8,21.66,"BH1"
.46,10,21.53,"BH1"
.45,10.1,21.52,"LIFTER"
.46,9.9,21.48,"LIFTER"
.46,10.1,21.5,"FACE"
.62,334.9,1.78,"FACE"
.65,327.6,5.26,"FACE"
.65,345.5,11.42,"FACE"
.67,353.2,9.26,"FACE"
.67,359.9,9.67,"FACE"
.53,4.1,8.25,"FACE"
```

Muck Pile Survey

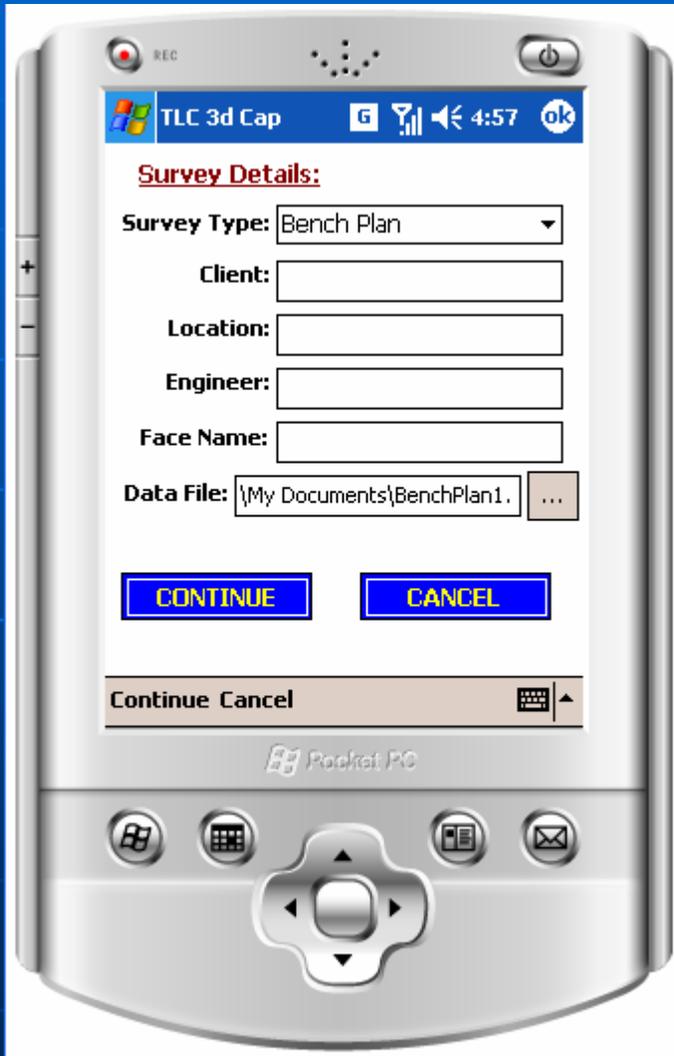
- A muck pile survey does not require that the user defines a reference line (hence no left or right markers are required)
- The muckpile is sometimes measured from different instrument locations and therefore it requires that the user locate back sights and fore sights

Muck Pile Survey



- Four different types of observations:
- BASE Points – determine the base of the pile
- PILE Points – readings on the pile
- FORESIGHT points – used to identify the next position for the instrument

Bench Plan Measurements



- This survey is used to capture the positions of the borehole collars for a particular bench
- The borehole collar coordinates are calculated from the laser measurements and converted to a local XYZ or to a world XYZ coordinate system.
- The readings are saved in a comma delimited file

Bench Plan (cont...)

The user can define a target height for each borehole:

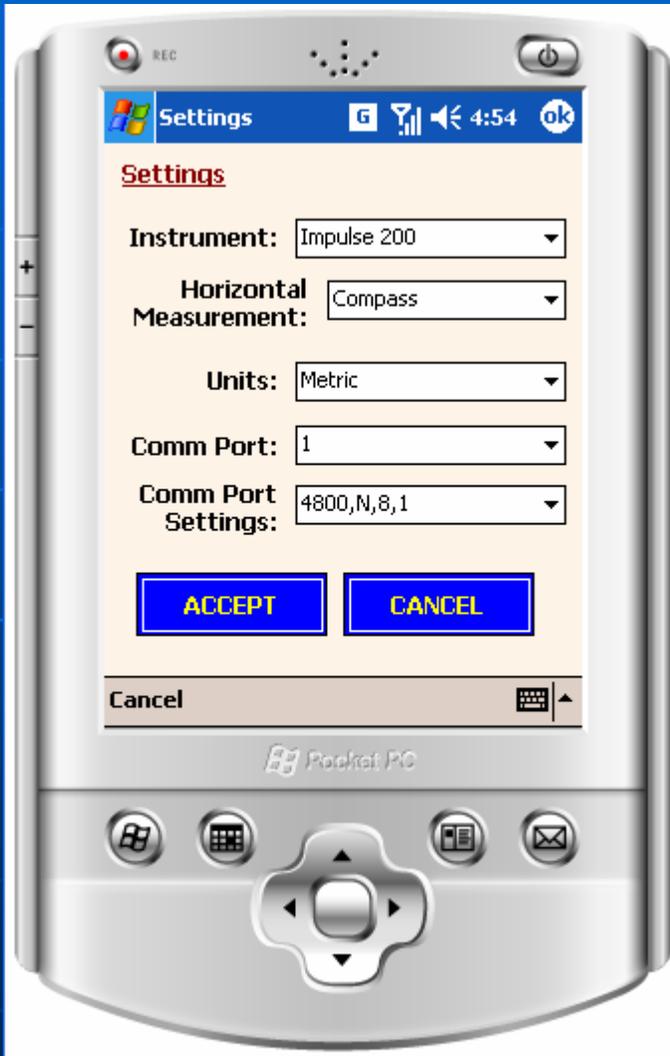
Example of file generated:



Microsoft Excel - BenchPlan1

	A	B	C	D	E	F	G	H	I
1	\$FILESTART:\Storage Card\BenchPlan1.CSV								
2	TLCFDA3D(V110)								
3	Client								
4	Location								
5	Engineer								
6	\Storage Card\BenchPlan1.CSV								
7	Survey Type Bench Plan								
8	Instrument Name								
9	Face Name								
10									
11	InstrumentHeight	Instr Northing	Instr Easting	Instr Elevation	Instr Bearing	Instrument Station Name			
12	1.25	1000	1000.00	100	90.00	p1			
13	Survey Date		6/13/2004 11:30						
14	Number of Reference Stations		0						
15	Range Distance	Horizontal Angle	Vertical Angle	Target Height	Northing	Easting	Elevation	Description	
16	654.50	340	5.67	0	387.99	1222.76	165.97	COLLAR	
17	654.50	340	5.67	0	387.99	1222.76	165.97	COLLAR	
18	612.83	234	5.50	0	1358.55	1493.51	160.02	COLLAR	
19	612.83	234	5.50	0	1358.55	1493.51	160.02	COLLAR	
20	544.50	124	5.33	0	1303.16	550.54	151.84	COLLAR	
21	654.50	340	5.67	0	387.99	1222.76	165.97	COLLAR	
22	654.50	340	5.67	0	387.99	1222.76	165.97	COLLAR	
23	612.83	234	5.50	0	1358.55	1493.51	160.02	COLLAR	
24	544.50	124	5.33	0	1303.16	550.54	151.84	COLLAR	
25	654.50	340	5.67	0	387.99	1222.76	165.97	COLLAR	
26	654.50	340	5.67	0	387.99	1222.76	165.97	COLLAR	
27	654.50	340	5.67	0	387.99	1222.76	165.97	COLLAR	
28	654.50	340	5.67	0	387.99	1222.76	165.97	COLLAR	
29	654.50	340	5.67	0	387.99	1222.76	165.97	COLLAR	
30	654.50	340	5.67	0	387.99	1222.76	165.97	COLLAR	
31	654.50	340	5.67	0	387.99	1222.76	165.97	COLLAR	
32	654.50	340	5.67	0	387.99	1222.76	165.97	COLLAR	
33	654.50	340	5.67	0	387.99	1222.76	165.97	COLLAR	

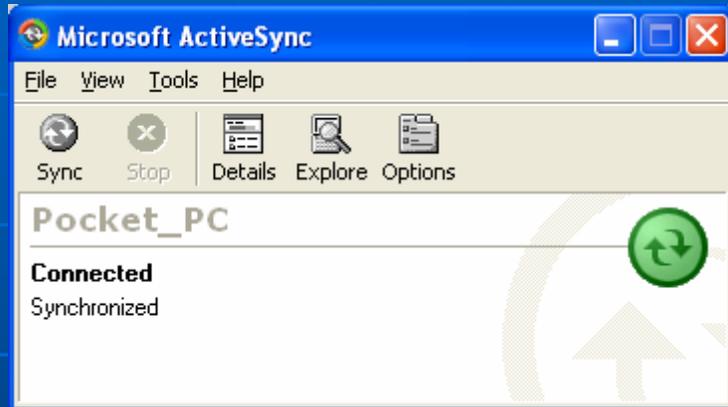
TLC3dCAP Settings:



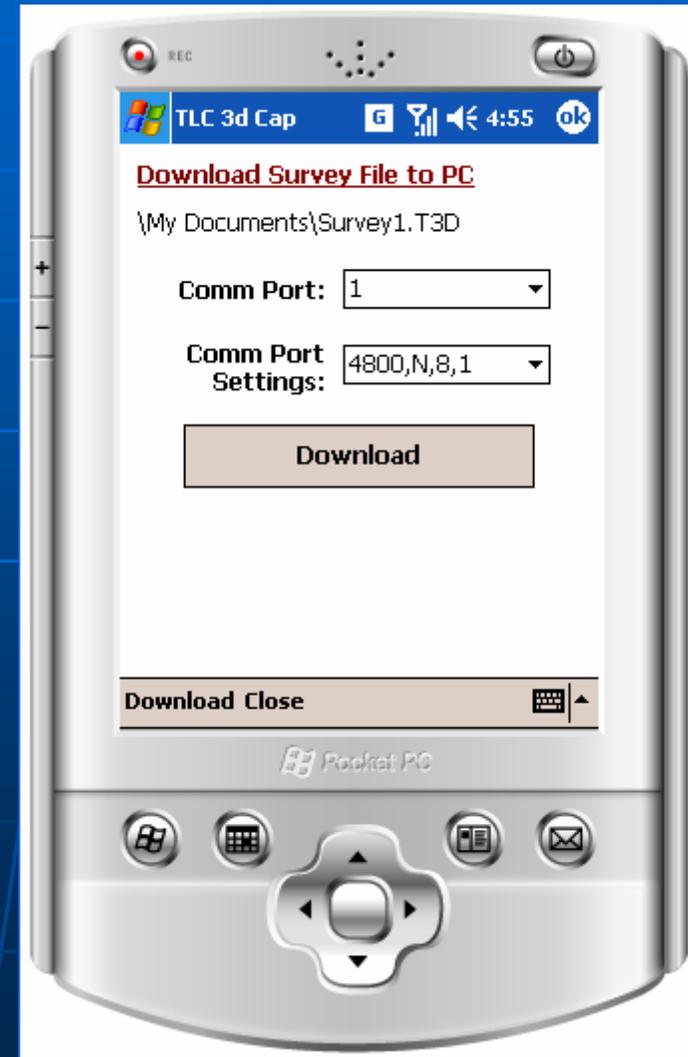
- Settings available:
- Instrument used
- Method of calculating horizontal angle (compass or encoder)
- System of units
- Communication settings:
 - Cable serial interface
 - Bluetooth serial port interface

Interface to Winprof/Winpile

- Data file transfer from PDA to PC
 - Using ActiveSync and Windows Explorer

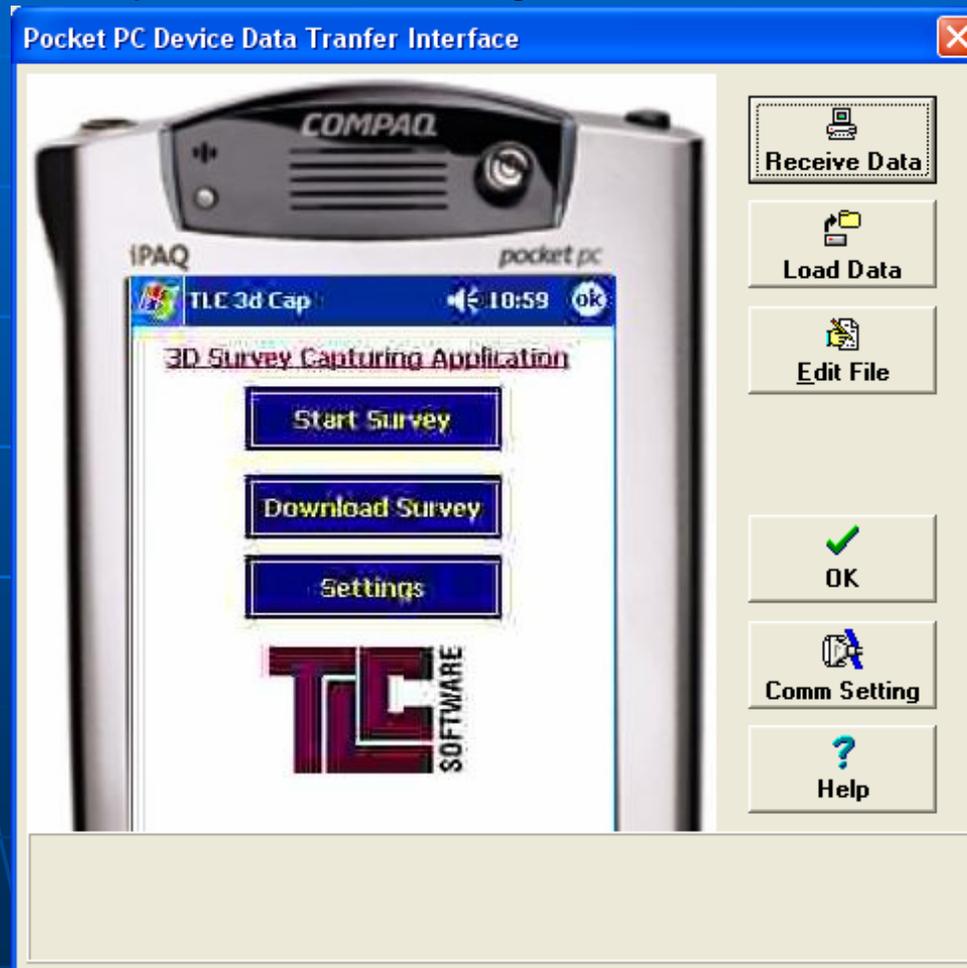


- Via rs-232 download



Interface to Winprof/Winpile (cont)

- Load data file on Winprof for 3D analysis



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