

ACU/Total Station Level Run Cheat Sheet

- 1). Set up the ACU/Total Station and hit **Survey** and then select **Station Setup**.
- 2). Enter the station name, I would start with the letter A and then go down the alphabet for each additional setup. The ACU will tell you that the point does not exist, hit **Continue**.
- 3). You then need to enter the backsight number and staff height. You will have to enter an azimuth to the backsight...use any azimuth you like, it doesn't matter. Measure and record the shot.
- 4). After the backsight has been measured you are ready to shoot the foresight. Click on **Survey** and then **Measure Topo**. Enter in the number and staff height in for the foresight, measure and record the shot.
- 5). You are now done with the first turn of your level run. Keep repeating steps 2-4 until you take your final foresight into your closing benchmark.
- 6). Download the project into TGO as you normally do. There may not be any points showing up on the screen because there probably were no real coordinates used during this level run. If you check out the points report you will find the points listed, but they have no coordinate values.
- 7). A new comma delimited Export routine needs to be created to output the data we need. Go to the **Export** dialog box and select the **Custom** tab. Click on **New format**, the **Define ASCII Export Format** box should be open. Enter in a name for your new export format. At the **Export from** option, **Point information** is the default. Open the drop down menu and select **Terrestrial observation data**. Down in the Format body area do a right click and move the mouse down to **Fields**. A list of names will show up, select **Inst Point Name**. That now shows up in the Format Body. Put a comma in right after the brackets. Now go back and keep selecting and putting comma's after the brackets until you have the Format body looking like **[Inst Point Name],[Target Point Name],[Vertical Angle],[Raw Slope Dist],[Target Height]**. You don't need anything after the last bracket. Hit **OK**, the new level run format is now created. Creating this export only needs to be done this one time.
- 8). Now back at the main **Export** dialog box select your new level run export routine by highlighting it and clicking on **OK**. Fill in the new file name and hit **Save**. You now have a comma delimited file that is ready for Roy Graff's new level run program **MnLevel**. Download <\\mo2ksarcims\data\surveys\SFUG - Tips & Useful Info\Procedure Sheets\ACU Level Run\MnLevel090.exe> (or the latest version MnLevelxxx.exe) and run it to install the program.

9). Here is an example of the text file created by the TGO export:

```
A,13,91ø03'15",227.831,5.050
A,TP COLD,92ø34'01",34.142,5.120
B,TP COLD,92ø33'52",34.139,5.120
B,TP STOR,91ø42'20",58.972,5.120
C,TP STOR,91ø42'18",58.968,5.120
C,17,89ø56'27",303.669,5.370
```

This shows the first setup was at point A, the backsight was point 13. The vertical angle, slope distance and staff height follow for this shot on point 13. The next line shows the foresight to turn point TP COLD for set up A. This continues on for all the setups in your level run. So the first line for any setup is the backsight, and the last line for each occupied setup is the foresight. You can take side shots between the BS and FS, just make sure they are taken in between the BS and FS. You can also edit and correct any mistakes here before you load this into MnLevel.

10). Open up **MnLevel** and select your TGO exported file, you can drag and drop the file on the MnLevel shortcut if you like. The program will use your original file name with the extension **.adj** for the file output name; you can change it if you like. Enter in the **Beginning Elevation** and **Ending Elevation**. Make sure the English/Metric units are correct and hit **Adjust**. You will get an error message if your backsights and foresights don't stay balanced within 33 feet, just hit **OK** to continue. Here is output from the example TGO export file:

```
Mn/DOT Level Run Report (Version 0.9.0) English Units                                03/09/2005

Input Level File:
  C:\Documents and Settings\wikldan\Desktop\oaklevel.txt

Output Adjustment File:
  C:\Documents and Settings\wikldan\Desktop\oaklevel.adj

MARK NAME  BS-HD  BS-VD  BS-SH  HI-RAW  FS-HD  FS-VD  FS-SH  ELEV-RAW  ADJUST  ELEV-ADJ
-----  -----  -----  -----  -----  -----  -----  -----  -----  -----  -----
13                                               1026.557  0.000  1026.557

 @A          227.792 -4.192  5.050  1035.799  34.108 -1.529  5.120

TP COLD                                               1029.149 -0.015  1029.135

 @B          34.105 -1.527  5.120  1035.797  58.946 -1.755  5.120

TP STOR                                               1028.922 -0.020  1028.902

 @C          58.942 -1.755  5.120  1035.796  303.669 +0.314  5.370

17                                               1030.740 -0.040  1030.700

+-----+
| ** This level run DOES NOT MEET third order specifications. |
| The level run length is 717.562'. |
| The allowed closing error is 0.019'. |
| ** The actual closing error is -0.040'. |
| ** 2 turns exceed the maximum BS - FS differential of 33'. |
| ** The total level run exceeds the maximum BS - FS differential of 33'. |
+-----+
```

When you print out the adjustment report in TextPad, you will have to use the Landscape format.