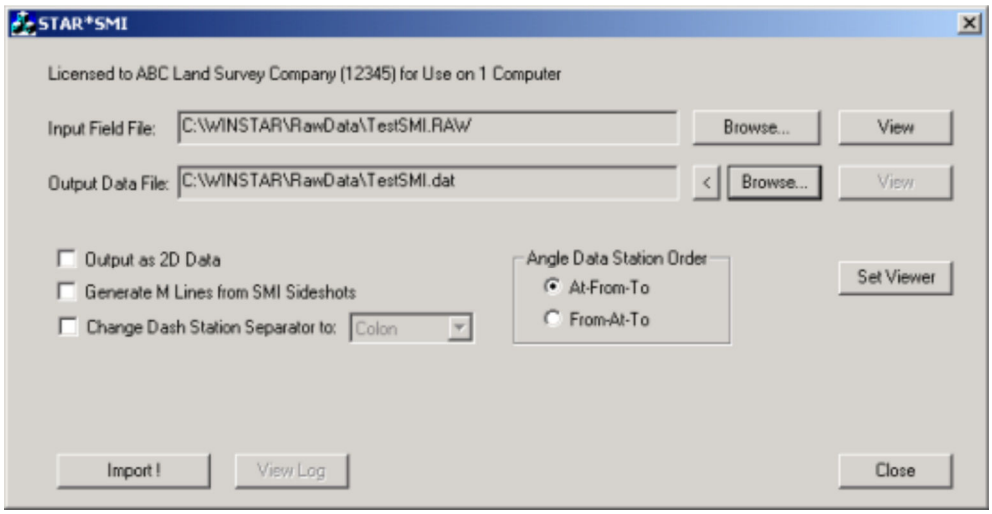
STAR*NET CONVERSION UTILTIES

STAR*SMI CONVERSION UTILITY

The STAR*SMI utility converts SMI raw collector field files to STAR*NET input data format.



Running the program is easy. First browse for the raw file to convert, then browse for an output file (a new or existing file), set desired options and press the “Import” button. If errors or warnings are found, they are listed in a Log file - review by pressing “View Log” button. When errors are found, data will not be created in the output file. In this case, review the errors listed in the Log File, edit the raw file to make necessary corrections and re-import.

When browsing for the output file, you can press one of two buttons. The standard “Browse” button opens the output file dialog in the same directory as the raw field file and offers the same file name as the raw field file, but with a “DAT” extension. Of course you can modify the offered name and path to whatever you wish. The smaller “<” button opens the output file dialog in the same directory already shown in the field to the left – useful when you’ve stored output in a different directory during the previous run, and you want to output to that directory again.

A “View” button, next to each of the input and output file fields, brings up an editor. So besides viewing a file, you can also edit it. By default, the editor assigned is Windows “Notepad”. But just as in the STAR*NET program, you can set an editor of your choice by pressing the “Set Viewer” button and browsing for the editor program you prefer.

Selecting Processing Options

- Output as 2D Data – By default, STAR*NET data it is created in a 3D output format. STAR*NET can handle 3D formatted data in both 2D and 3D adjustments. However if you have projects that are 2D and you prefer to have data immediately converted to a simple 2D format by reducing slope distances with zenith observations to horizontal distances, you can select this option.
- Generate M Lines from SMI Sideshots – This causes all SMI raw observations designated as sideshots to be converted to M Lines rather than SS lines. This assures that all sideshot observations will take part in the adjustment rather than being computed after the adjustment is completed. This may be OK for small jobs, but for large topo jobs you will probably want sideshots to remain as sideshots in STAR*NET data to keep the adjustable network small.
- Change Dash Station Separator to – By default we use the dash (i.e. 121-120-122) for station name separators. If some of your station names already contain dashes and you wish to keep them, this option allows you to change the separator to some other character.
- Angle Data Station Order – This is simply an output preference. Some surveyors prefer to see angular observations shown as At-From-To, others as From-At-To.

Other Notes

- The program assumes that raw field files have a “RAW” extension. If you have a field file with a different extension, choose “All Files (*.*)” from the “File of type” field in the file selection dialog and then select the file you wish to convert from the complete list.
- Stored Points found in the SMI field file are copied into the data file as comments. To use one of these points as a control point in the STAR*NET data, simply uncomment the data line and edit-in the appropriate fixity codes. Example:

```
C 25 10000.000 10000.000 500.000 ! ! !
```

  Note that the STAR*SMI utility does not add any fixed bearings or azimuths to the data file. So if any are required, they must be edited into the data file before running an adjustment.

- The output data file created by this routine can be moved (using Windows Explorer) into your project directory (if it is not already there) for use by the STAR*NET program. The entire data file can be added to the project using the “Input Data Files” dialog (see the STAR*NET manual), or by using a text editor, you can copy and paste parts of the file contents into a data file that already exists as part of your STAR*NET project.
- All fields and option settings shown on the STAR*SMI program dialog are stored in the registry when you close the program and are restored the next time you run the program.
- The “Log File” is an important file that is created during a run. It lists any errors and warnings produced during the run, and if the conversion run is successful, it contains a summary of all observations used to create the resulting data file. The log file is stored as a temporary file and is available only during the current session. To keep a permanent record of it, you can print it during the session, cut/paste to another file, or “Store as” another file.
- In the raw field file, blank lines and lines beginning with the “#” character are ignored. You can edit the raw file and prefix any line with a “#” character rather than deleting the line.
- The program also supports “.DATA ON” and “.DATA OFF” inline options just like in several other STAR*NET conversion utilities. To cause parts of the field file data to be ignored, insert a “.DATA OFF” line beginning at the place you want data to start being ignored and then a “.DATA ON” where you want data to be again used.
- Note that at the beginning of a STAR*NET data file created by this utility program, several inline option lines are created. For example:

```
.Order  AtFromTo
.Sep    -
.3D
```

  Some of these inline options define information such as linear or angular units shown in the SMI field file header data. Other inlines may indicate processing options set in this conversion program. These inline options always precede data they define making it possible to combine data files having different characteristics in a single project. With these inlines present, STAR*NET will properly interpret the data lines as they are being read.

How the “DAT” File is Created

Observations in the RAW file are shown as either “Traverse” or “Sideshot” records. These records may contain one or more sets of measurements that will be averaged to produce a single output line in the “DAT” file. By default, the SMI Traverse line generally creates an “M”, and the Sideshot line, an “SS” line. In STAR*NET data, sideshots (using the “SS” line) cannot be redundant. Therefore if your survey is of the type that most Sideshots are actually redundant measurements in your network (i.e. crossties, etc.) you can set the option on the dialog that causes all Sideshot data to be created as “M” lines instead. In addition, you can use the descriptor field to force an individual shot to be handled as an “M” line and to redefine the station name. See “Using the Descriptor “#” Code” section next in this manual.

It is your responsibility to edit the raw file to remove any known bad data. The STAR*SMI conversion program cannot create good STAR*NET data when the raw data contain errors. If you are using a text editor to directly edit the raw file, you can simply delete the bad data. Caution! Observation records in the SMI raw file are separated from each other by a blank line. Therefore be careful not to remove one of these blank line separators or errors will be created.

It is very important that point naming in your data is consistent! STAR*NET depends entirely on point names to determine which stations are connected to which. For example, when measuring to a “redundant” station, such as the closing point of a traverse or a cross-tie point, be sure to supply the actual station number for the redundant shot, not the next sequential number offered by the collector, and confirm the “Overwrite coordinates?” collector prompt. However, if you are using the SMI field COGO routines and do not wish to override the sequential point name offered by the collector, you can alternately use the “descriptor” field to define the “actual” point name as described in the next section.

Using the Descriptor Slash “#”Code to Control Naming of Redundant Points

By default, data lines designated as traverse lines in a SMI raw field file are created as “M” lines in the STAR*NET data file. Raw field file lines designated as sideshots are created as “SS” sideshot lines in the STAR*NET data file. Observations entered as M lines take part in a STAR*NET adjustment. But observations entered as SS lines do not take part in the adjustment - coordinates for these observations are computed after the adjustment has completed.

The information below discusses how you can enter special codes in the descriptor field to force redundant shots to be created as “M” lines and also be assigned a point number given by you, not the one stored with the observation in the collector. (Note that you can also force all sideshots to be created as “M” lines by checking the “Import Sideshot Data as M Lines” box, but this in itself does nothing to change point names to assure consistent naming of redundant points.)

While collecting data in the field, enter a slash “#” character as the first character of a descriptor to cause the following to occur:

- Enter a “#” character as the first character of a descriptor to force the converted data line to be an “M” line even though it may have been recorded as a sideshot while collecting data.
- If you attach a station name to the “#” character (i.e. no spaces after the “#” character), that name will be used as the target in the data line rather than the one shown in the raw data. This allows you to use the normal SMI name incrementing in your raw data if you wish, yet force a different name to be used in the STAR*NET data file. For example, during a series of sideshots, if you sight a redundant station that you want named AB905, enter “#AB905” as the descriptor. The output line will be created as an “M” line and the new name will be used in the converted data. Point names in STAR*NET may be alphanumeric and up to 15 characters.
- Any data appearing after the first space character in one of these special descriptor lines will be used as an actual descriptor.

Examples of descriptors in a SMI field file:

```
#            Causes "M" line to be used (original station name is still used)
#1234        Causes "M" line and station name "1234" to be used
#1234 POST   Causes "M" line, station name "1234" with "POST" descriptor
# POST       Causes "M" line with original name with "POST" descriptor
```

As mentioned above, when making redundant sideshots to control points or other points that already have coordinates in the SMI collector memory that should not be overwritten, some seasoned surveyors use a dummy point such as “999” over and over, letting SMI overwrite the point. But in the descriptor field, they specify the actual point name to be used in the STAR*NET data file as described in the examples above.

Sample Raw Field File

The following is the beginning of the sample SMITEST.RAW file included on your diskette. You can test the STAR*SMI utility using this file as input. Note the use of “#” in the descriptor of sideshot 180 which was used to change its name to ALVIN and force an “M” data line.

```
CM  Definitions:  SS: Side Shot; TR: Traverse; OC: Occupied Coordinates;
              PC: Point Coordinates; CM: Comment; OS: Occupied Station;
              TS = time stamp;  e = electronic; m = manual;

CM  TS WED 03/29/95 01:33:17P

PC  1001 5200.00000 5000.00000 200.0000
PC     1 5000.00000 5000.00000 227.2318

TR m HI:5.750  HR:5.250    MON WELL
1001  1     3     BAZ:179.57000           AR:79.05220  ZA:90.02070  SD:488.320

TR e HI:5.750  HR:5.250    SET CP
1     3     62    BAZ:359.22430           AR:183.19150 ZA:90.11050  SD:506.300
                                             183.19160

TR e HI:5.290  HR:5.250    SET CTN PKR
3     62    177   BAZ:2.41585             AR:236.30460 ZA:90.27030  SD:210.080
                                             236.30490

SS e HI:5.360  HR:5.250    FD HWY MON
62    177   178   BAZ:59.12460            AR:79.04190  ZA:89.24540  SD:220.440

SS e HI:5.360  HR:5.850    EP HWY 108
62    177   179   BAZ:59.12460            AR:82.28070  ZA:89.58160  SD:232.800

SS e HI:5.360  HR:6.500    #ALVIN IRON PIPE
62    177   180   BAZ:59.12460            AR:93.30420  ZA:89.59430  SD:211.180

SS e HI:5.360  HR:6.500    EP HWY 108
62    177   181   BAZ:59.12460            AR:108.47400 ZA:90.08370  SD:194.720

etc.......
```

Converted File in STAR*NET Format

This is the beginning of the converted data file in the STAR*NET format. Always carefully review this file and make any necessary editing changes before running an adjustment.

```
# STAR*SMI Version 7.2.2
# Copyright 2012 MicroSurvey Software Inc.

# Input Field File : C:\RawData\TestSMI.RAW
# Date Processed   : 06-06-2002 14:58:00

.Order  AtFromTo
.Sep    -
.3D

# C  1001                5200.00000    5000.00000   200.00000

.Delta  Off
M  1-1001-3           79-05-22.00    488.3200  90-02-07.00   5.750/5.250 'MON WELL
M  3-1-62            183-19-15.50    506.3000  90-11-05.00   5.750/5.250 'SET CP
M  62-3-177          236-30-47.50    210.0800  90-27-03.00   5.290/5.250 'SET CTN PKR
SS 177-62-178         79-04-19.00    220.4400  89-24-54.00   5.360/5.250 'FD HWY MON
SS 177-62-179         82-28-07.00    232.8000  89-58-16.00   5.360/5.850 'EP HWY 108
M  177-62-ALVIN       93-30-42.00    211.1800  89-59-43.00   5.360/6.500 'IRON PIPE
SS 177-62-181        108-47-40.00    194.7200  90-08-37.00   5.360/6.500 'EP HWY 108
SS 177-62-182        122-18-52.00    190.9800  90-17-00.00   5.360/6.500 'EP HWY 108
```

```
SS 177-62-183        138-12-53.00    201.3400  90-27-55.00   5.360/6.500 'EP HWY 108
SS 177-62-184        150-59-25.00    224.0200  90-35-32.00   5.360/6.500 'EP HWY 108
SS 177-62-185        161-06-19.00    255.3400  92-06-10.00   5.360/0.310 'EP HWY 108
SS 177-62-186        154-28-20.00    199.8600  90-27-56.00   5.360/6.500 'FE GR
SS 177-62-187        152-41-17.00    209.9400  90-30-45.00   5.360/6.500 'TB
SS 177-62-188        151-52-50.00    216.2000  90-38-22.00   5.360/6.500 'TOE
SS 177-62-189        139-24-44.00    189.2800  90-50-35.00   5.360/6.500 'TOP DI
SS 177-62-190        133-36-50.00    281.4400  91-26-44.00   5.360/6.500 'OUT FL 24”CMP
SS 177-62-191        140-43-51.00    196.1600  90-34-48.00   5.360/6.500 'TB
SS 177-62-192        141-12-31.00    181.1000  90-12-30.00   5.360/6.500 'PP TB
SS 177-62-193        141-10-52.00    177.2000  90-10-47.00   5.360/6.500 '3 RAIL FE
SS 177-62-194        137-16-25.00    180.3800  90-09-02.00   5.360/6.500 'TB
SS 177-62-195        136-09-15.00    190.7800  90-37-39.00   5.360/6.970 'TOE
SS 177-62-196        122-18-39.00    184.3200  90-19-35.00   5.360/6.970 'TOE
SS 177-62-197        107-52-32.00    188.7800  90-06-02.00   5.360/6.970 'TOE
SS 177-62-198         93-09-30.00    207.3800  89-59-34.00   5.360/6.670 'TOE
SS 177-62-199         82-24-55.00    225.9200  90-16-51.00   5.360/5.250 'TOE
SS 177-62-200         79-37-12.00    223.7200  90-52-17.00   5.360/0.310 'TB PP
SS 177-62-201         82-11-15.00    219.8200  89-47-06.00   5.360/5.250 'TB
SS 177-62-202         92-32-18.00    203.4200  89-56-19.00   5.360/5.250 'TB
SS 177-62-203        107-53-50.00    184.4400  90-10-23.00   5.360/5.250 'TB
SS 177-62-204        122-25-16.00    179.8600  90-18-32.00   5.360/5.250 'TB
SS 177-62-205        132-56-40.00    181.2400  90-29-14.00   5.360/5.250 'TB
SS 177-62-206        122-50-28.00    165.8200  90-13-32.00   5.360/5.250 'GR 3 R/FE
SS 177-62-207        107-28-20.00    170.0400  90-01-55.00   5.360/5.250 'GR 3 R/FE

etc...
```