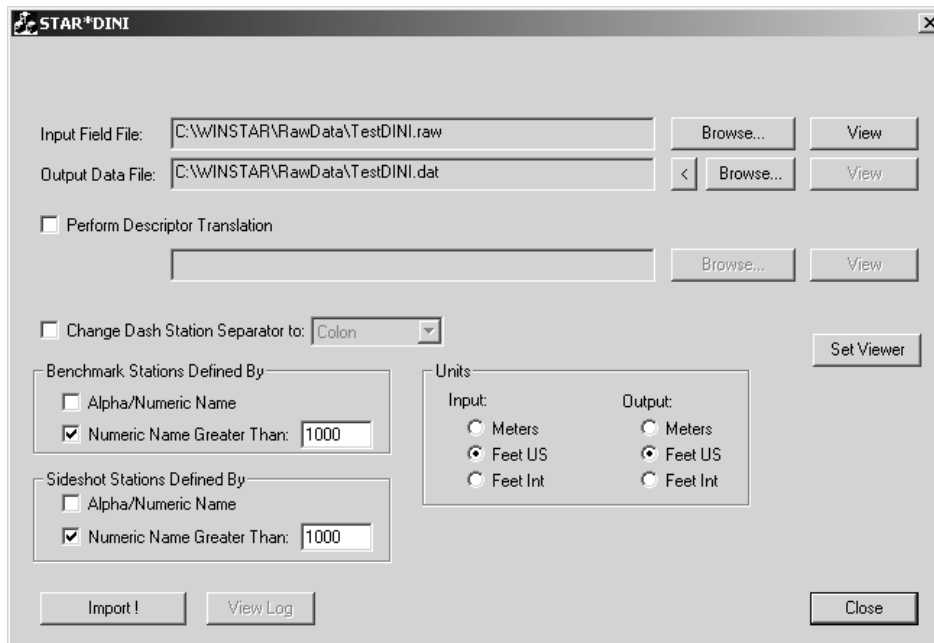# The STAR*DINI Conversion Utility

This utility program converts DINI raw files to data files compatible with the STAR*NET suite of programs. The program is named StarDINI.exe. We suggest you create a new "StarDINI" directory at some convenient location on your system and copy the program and sample raw field file there. (The actual name of the directory, however, is not important.) Then from that directory, drag a shortcut to your desktop and run the program by double-clicking the shortcut. A formal installation facility may be created for this program in the future.

Running the program is easy. First browse for the input raw field file to convert, then browse for an output data 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 written to 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. The Log file also shows a complete detail of all field BS/FS records used to construct the final data file when the conversion is successful.

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 StarNet program, you can set an editor of your choice by pressing the "Set Viewer" button and browsing for the editor program you prefer.

Setting Options

- Perform Descriptor Translation – You can optionally set up a descriptor library that will be used to translate codes in your raw data (codes from 1 to 5 characters long) into longer descriptors. The program by default assumes a descriptor library will have a "DES" extension. If you want translation performed, check the check box and then browse for a library you wish to use. Note that you can have several libraries and select a specific one for a conversion. See details about creating a descriptor library later in this manual.

- Change Dash Station Separator to – By default, the dash (i.e. 121-122) is used as 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.

- Units – The "Input" units setting allows you to set a default units for the raw data input. The raw data may be in a form called "REC-500" format (a fairly compressed format) or in a form called "M5" format (an expanded format containing more information). Every observation in the longer M5 format data contains its own units indicator, the shorter REC-500 doesn't. Also, one or both the formats might contain a single raw data line that also defines the units being used (Example: "Measurement units m"). Therefore the "Input" units setting on the dialog is only a default setting that is used when the raw data itself does not include some form of units definition.

  The Output "Units" setting is your preference for how the output data is to be created. For example, if the input is in feet and you want the output to be in meters, the program will do the conversion for you.

- Benchmark Stations Defined By – The converter utility must know which points in the raw data are the benchmarks. The utility "adds up" elevation differences and distances between benchmarks (or junctions).

  You can tell the utility to consider as a benchmark any station with an Alpha/Numeric name (i.e. BM135, HYDE, etc.), or any station with a purely numeric name larger than some value such as 1000 (i.e. station number 1001, 1002, etc.). Or you can set both criteria by checking both boxes (i.e. JOHN55 and 2345 will both be considered benchmarks). Note that certain DINI collector models allow numeric station numbers only, and other higher-end models allow both numeric and alpha/numeric station identifiers.

  Note that the first and last stations of a "survey line" are always considered benchmarks regardless of their station names. If you leave both boxes unchecked in the dialog, only one observation line will be created for the entire survey line (all data between the "Start-Line" and "End-Line" statements in the raw file). The "from" and "to" station names used for this output data line will be the first backsight name and the last foresight name found.

- Sideshot Stations Defined By – Sideshots (intermediate shots) will be included in the output data file when defined by one or both of the naming rules. If neither box is checked, sideshots will not be written to the resulting data file. To include all sideshots no matter what their station names or station numbers are, check both items and enter 0 (zero) for the "Numeric Name Greater Than" value.

Other General 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.

Since most surveyors use the windows-supplied Hyper-Terminal utility when downloading field files from the DINI to the computer, we recommend that you it create a "RAW" extension. We also recommend that if you have previously used "DAT" extensions for your raw field files, you rename these files using a "RAW" extension to eliminate possible confusion. (By default the "DAT" extension is used for STAR*NET data files.)

As mentioned earlier, DINI raw file may exist in two formats, both of which the StarDINI utility automatically supports. Below are short sections of data from each to illustrate their appearance:

The M5 format (longer and preferred as it contains more detail):

```
For M5|Adr    1|TO  Start-Line       BF    10|                    |                    |                    |
For M5|Adr    2|KD1    BM757   1          10|                    |                    |Z       850.47 ft  |
For M5|Adr    3|KD1    BM757   1      2   10|Rb      0.50 ft  |HD      234.42 ft  |                    |
For M5|Adr    4|KD1        1   0      2   10|Rf     12.10 ft  |HD      239.40 ft  |                    |
For M5|Adr    5|KD1        1   0          10|                    |                    |Z       838.87 ft  |
For M5|Adr    6|KD1        1   0      2   10|Rb      2.11 ft  |HD      143.77 ft  |                    |
For M5|Adr    7|KD1    AT360   1      2   10|Rf      7.51 ft  |HD      128.48 ft  |                    |
```

The REC-500 format (more compressed):

```
    5 Start-Line        BF    BH
    6    1000                 BH                          Z  100.0000
    7    1000    01:38:392 BH Rb     1.6998 HD      23.803
    8       1    01:43:302 BH Rf     1.0804 HD      30.183
    9       1    01:43:30  BH                        Z  100.6194
   10       1    01:43:482 BH Rb     1.0805 HD      30.214
   11       2    01:45:332 BH Rf     1.3975 HD       7.399
```

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 StarDINI 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 a 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, copy/paste to another file, or "Store as" another file.

How the Program Works

The STAR*DINI conversion program adds up elevation differences and distances through all turning point between benchmarks or junctions, and creates a single "L" line for each of these sections. (A junction is simply a station where another line intersects, where you want an elevation held, or a where you want an elevation computed.) Benchmarks and junctions are both referred to as just "benchmarks" in this manual. After you successfully run this conversion program, all that is required to prepare the resulting data file for STAR*NET-LEV use is to edit in one or more "E" lines to define the elevations you wish held.

As previously discussed, the program recognizes which stations are benchmarks based on how your options are set. Benchmarks may be denoted by the size of their station numbers or by the presence of alpha/numeric station names or by both methods. Some DINI models allow only numeric station numbers to be entered; other models allow numeric and alpha/numeric names.

Note that when denoting benchmark stations based on the size of station number, you must number all benchmarks stations with values larger than a predetermined value and intermediate turning points equal to or smaller than the value. If you have the "Station Incrementing" option on in the DINI collector, the turning point station number will be automatically incremented by the collector at each new instrument setup. Therefore be sure to choose benchmark station numbers large enough so that the incremented turning points never become larger than the benchmark station numbers. Alternately, you should consider turning the station incrementing mode off so that all intermediate turning point stations always remain at the value of 1. (See your DINI manual for setting options relating to automatic station incrementing.)

In the raw file, the "Code" item in an observation record may contain a number, or in the case of some DINI collectors, alpha/numeric characters. (See your DINI manual for details on entering these codes.) A zero means that no "Code" was entered. Any non-zero "Code" value existing in the raw data will be output as a descriptor in the resulting STAR*NET data file.

Raw Data is Processed One "Survey Line" at a Time

When the StarDINI utility reads through a raw field file, all lines in the file are ignored until the "Start-Line" data line is found – this represents the beginning of a survey line. Data lines are then continuously processed until an "End-Line" data line is found. At that point, if more data is present, the program continues looking for another "Start-Line" to see if another survey line exists. Sometimes a "Cont-Line" is seen in the raw data. This means that the survey line will be continued from the last occurrence of an "End-Line" statement.

If the utility successfully processes all raw data, the converted data is written to the STAR*NET data file. However, if the program finds an error, the run is terminated and no data is written. Check the "LOG" file for one or more error messages describing the problem. Edit your raw data file to correct the problem, and then reprocess.

Note that any "Measurement repeated" or "Station repeated" records in the raw file are handled by the program automatically. It is not necessary to edit the raw file to remove these records.

Setting Up a Descriptor Library (Optional)

If you use descriptor codes in your collected field file, these short codes are automatically used as descriptors in the data created for STAR*NET by the STAR*DINI program. However if you create an optional "Descriptor Library" file, any of these short descriptor codes found in the library will be translated into expanded text descriptors. Here's how to do this.

To create a descriptor translation file, use a text editor to create a file with a "DES" extension. This file may be located in any directory you feel convenient. Edit a list of your own descriptors into this file. Each line should contain a code followed by the text you want used as the expanded descriptor. The code may be from 1 to 5 characters long, and may be a number or text. The descriptor text may be up to 45 characters long. Separate the code from the descriptor by one or more spaces or tabs. Blank lines in the file as well as lines beginning with a # character will be ignored. Here's how a short descriptor library file might look:

```
#File John.des with John's Special Descriptors

101    Benchmark
102    Edge of Pavement
103    Fire Hydrant
104    Wood Stake
WS     Wood Stake
201    Oak 12" Diameter
205    Big Pine Tree
etc...
```

You may create one of more of these descriptor translation files.

More Details Coming at a Later Date

There are more currently undocumented options available in this utility program for defining which points are to be considered as benchmarks. We have more testing to do using these additional options and then documentation will be created and made available in the future.

Program License

This program is licensed for use on a single computer. Additional licenses must be purchased if it is to be installed on additional computers.

Program Version

To determine the version of this conversion utility program, click the program icon in the upper left-hand corner of the dialog (or right-click the program window bar) and select "About Dini."

Example Input File

The following short TestDINI.raw is file included on your diskette. This raw file is in the short REC-500 format. You can use this field file as input to test the STAR*DINI program using the options as shown in the example setup on the first page. Note that the data contains two sideshots. Also note that the automatic incrementing mode of the collector was off when the file was created since all turning point stations are numbered "1".

```
 64 Curva  ON/Refract  ON
 65 Start-Line       BFFB   101
 66    5090    0          101                                    Z  2174.002
 67    5090    0          101 Rb      2.384 HD        23.21
 68       1    0          101 Rf      1.126 HD        28.01
 69       1    0          101 Rf      1.127 HD        28.00
 70    5090    0          101 Rb      2.385 HD        23.27
 71       1    0          101                                    Z  2175.260
 72       1    0          101 Rb      2.086 HD        58.92
 73       1    0          101 Rf      1.498 HD        57.62
 74       1    0          101 Rf      1.498 HD        57.51
 75       1    0          101 Rb      2.087 HD        58.98
 76       1    0          101                                    Z  2175.848
 83       1    0          101 Rb      1.300 HD        11.07
 84    4990    0          101 Rf      1.272 HD        13.06
 85    4990    0          101 Rf      1.272 HD        13.07
 86       1    0          101 Rb      1.301 HD        11.06
 87    4990    0          101                                    Z  2175.877
 88    4990    0          101 Rb      1.234 HD        30.46
 89       1    0          101 Rf      2.257 HD        29.57
 90       1    0          101 Rf      2.258 HD        29.54
 91    4990    0          101 Rb      1.234 HD        30.50
 92       1    0          101                                    Z  2174.853
 93       1    0          101 Rb      0.605 HD        38.01
 94       1    0          101 Rf      3.248 HD        40.21
 95       1    0          101 Rf      3.248 HD        40.16
 96       1    0          101 Rb      0.605 HD        37.95
 97       1    0          101                                    Z  2172.210
 98       1    0          101 Rb      0.215 HD        30.59
 99    4985  109          101 Rf      2.595 HD        29.68
100    4985  109          101 Rf      2.595 HD        29.69
101       1    0          101 Rb      0.215 HD        30.61
102    4985  109          101                                    Z  2169.830
103    4985  109          101 Rb      0.387 HD        23.60
104       1    0          101 Rf      2.276 HD        26.94
105       1    0          101 Rf      2.276 HD        26.93
106    4985  109          101 Rb      0.387 HD        23.56
107       1    0          101                                    Z  2167.941
108       1    0          101 Rb      0.248 HD        43.66
109       1    0          101 Rf      3.023 HD        62.48
110       1    0          101 Rf      3.022 HD        62.69
111       1    0          101 Rb      0.248 HD        43.66
112       1    0          101                                    Z  2165.167
113 Intermediate sight.    101
114    4960    0          101 Rz      2.642 HD        22.80 Z  2165.547
115    4965    0          101 Rz      1.584 HD        24.52 Z  2166.605
116 End of interm. sight.  101
118       1    0          101 Rb      2.402 HD        71.48
119       1    0          101 Rf      1.847 HD        65.26
120       1    0          101 Rf      1.847 HD        65.32
121       1    0          101 Rb      2.403 HD        71.52
122       1    0          101                                    Z  2165.723
123       1    0          101 Rb      1.732 HD        15.05
124    5080    0          101 Rf      1.186 HD        18.43
125    5080    0          101 Rf      1.186 HD        18.42
126       1    0          101 Rb      1.732 HD        15.05
127    5080    0          101                                    Z  2166.269
128    5080    0   26     101 Sr   1138.71 Sv     1148.46 Z  2166.269
129 End-Line               101
```

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Example Output Files

This is a printout of the resulting "TestDINI.dat" file created by the example STAR*DINI run.

```
# STAR*Dini Version 2
# Copyright 2002 Starplus Software, Inc.

# Input Field File : C:\TEMP\TestDINI.raw
# Date Processed   : 03-14-2002 16:25:09

.Units  FeetUS
.Sep    -
.3D

#  Elevation Difference Records
#  Stations                        Diff    Dist  Descriptor
L  5090-4990                     1.87500   192
L  4990-4985                    -6.04650   198 '109
L  4985-4960                    -4.28300   117
L  4985-4965                    -3.22500   119
L  4985-5080                    -3.56200   327
```

To complete the preparation of this file for use by the STAR*NET program, you must edit in any fixed benchmark elevations as "E" records. For example, if stations 5090 and 5080 are to be benchmarks with fixed elevations, the file after editing might look like the following.

```
# STAR*Dini Version 2
# Copyright 2002 Starplus Software, Inc.

# Input Field File : C:\TEMP\TestDINI.raw
# Date Processed   : 03-14-2002 16:25:09

.Units  FeetUS
.Sep    -
.3D

E 5090  354.5662  !
E 5080  346.8440  !

#  Elevation Difference Records
#  Stations                        Diff    Dist  Descriptor
L  5090-4990                     1.87500   192
L  4990-4985                    -6.04650   198 '109
L  4985-4960                    -4.28300   117
L  4985-4965                    -3.22500   119
L  4985-5080                    -3.56200   327
```

This is a printout of the log file created by the example run. It can be reviewed to see all the observations and how the data file was created. If the STAR*DINI program stopped because an error was found in the raw data, this file should be reviewed to determine the reason. The last line of the log file will usually indicate what the problem was.

```
    STAR*Dini Version 2
    Copyright 2002 Starplus Software, Inc.

    Input Field File : C:\TEMP\TestDINI.raw
    Output Data File : C:\TEMP\TestDINI.dat
    Date Processed   : 03-14-2002 16:25:09


    Point                ID      E         D       Sum E      Sum D Desc
    5090              5090 B1  2.38400   23.210   0.00000     0.000
                         1 F1  1.12600   28.010
                         1 F2  1.12700   28.000   1.25800    51.245
                      5090 B2  1.12700   28.000
                         1 B1  2.08600   58.920
                         1 F1  1.49800   57.620
                         1 F2  1.49800   57.510   1.84650   167.760
                         1 B2  1.49800   57.510
                         1 B1  1.30000   11.070
                      4990 F1  1.27200   13.060
    4990              4990 F2  1.27200   13.070   1.87500   191.890
                         1 B2  1.27200   13.070


    Point                ID      E         D       Sum E      Sum D Desc
    4990              4990 B1  1.23400   30.460   0.00000     0.000
                         1 F1  2.25700   29.570
                         1 F2  2.25800   29.540  -1.02350    60.035
                      4990 B2  2.25800   29.540
                         1 B1  0.60500   38.010
                         1 F1  3.24800   40.210
                         1 F2  3.24800   40.160  -3.66650   138.200
                         1 B2  3.24800   40.160
                         1 B1  0.21500   30.590
                      4985 F1  2.59500   29.680                     109
    4985              4985 F2  2.59500   29.690  -6.04650   198.485 109
                         1 B2  2.59500   29.690


    Point                ID      E         D       Sum E      Sum D Desc
    4985              4985 B1  0.38700   23.600   0.00000     0.000 109
                         1 F1  2.27600   26.940
                         1 F2  2.27600   26.930  -1.88900    50.515
                      4985 B2  2.27600   26.930                     109
                         1 B1  0.24800   43.660
                         1 F1  3.02300   62.480
                         1 F2  3.02200   62.690  -4.66350   156.760
                         1 B2  3.02200   62.690
    4960              4960 S   2.64200   22.800  -4.28300   116.975
    4965              4965 S   1.58400   24.520  -3.22500   118.695
                         1 B1  2.40200   71.480
                         1 F1  1.84700   65.260
                         1 F2  1.84700   65.320  -4.10800   293.550
                         1 B2  1.84700   65.320
                         1 B1  1.73200   15.050
                      5080 F1  1.18600   18.430
    5080              5080 F2  1.18600   18.420  -3.56200   327.025
                         1 B2  1.18600   18.420

    Process completed with 0 errors and 0 warnings.
```

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