PHOENIX GEOPHYSICS LTD.

MTU TIME SERIES TO ASCII UTILITY - TSTOASC

PROGRAM DESCRIPTION

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1. INTRODUCTION

The TSTOASC program inputs a time series (.TSn) file from an MT site and outputs the time series data in an Ascii comma separated values (.CSV) file which can be read by a wide variety of programs, including spreadsheet programs. Each scan in the output is tagged with a time expressed in seconds. The values in the output time series are expressed in field units, V/m (electric channels) or T (magnetic channels), or optionally in terms of volts at the receiver input.

The user is optionally prompted for start and end times which can select a subset of the input data, with a resolution of 1 s or one record. The start time is also used as the reference time, and each scan in the time series is tagged with a time in seconds relative to the reference time. If user input of start and end times is not requested, the program automatically generates start and end times. These are derived from parameters in the .TBL file associated with the specified .TSn file and the date/time of the data in the .TSn file. The automatic start and end times select at most a 24 hour subset of the time series.

The programs counts saturations and bad records, and prints a count of each.

The TSTOASC program accesses its input files using the MTUTSFIL package. This package will automatically concatenate contiguous input time series files provided that they are appropriately named. It is compatible with both 16 and 32 byte headers, and will accept .TS2, .TS3, .TS4, and .TS5 files as well as .TSH and .TSL files.

TSTOASC is a Windows 95 character mode application.

2. RUNNING TSTOASC

2.1 Command line

The TSTOASC program can be run using the following command line. Order of the parameters is significant. Fields in italics are to be filled in with actual values determined by the user. Parentheses [] indicate optional parameters.

```
TSTOASC mtufile [csvfile] [-options]
```

where

`mtufile` is the path, name, and extension of the MTU time series file. The associated .TBL file must also be present in the same directory.

`csvfile` is the path, name, and extension of the output file. The default output file is `mtufile` with the extension replaced by .CSV.

`options` is a string of single letter options, case-independent:

F disables automatic file concatenation;
T disables automatic start/end time generation and prompts the user;
V causes the output to be expressed in V at the receiver input terminals instead of T and V/m.

After successful completion, the TSTOASC program will display the message “Complete - Code 0”. Other completion code values indicate an abnormal termination.

TSTOASC can also be run using drag and drop. Drop a .TSn file on the TSTOASC.EXE icon. The user will be prompted for input times, and automatic file concatenation will be enabled.

Note that if TSTOASC is executed from the command line with only one parameter (the input file name) the “T” option becomes the default (just as in drag-and-drop execution). If the start and end time prompt is not needed, add an options field “-” containing no options.

A description of the usage of the program can be obtained by running it without arguments.

2.2 Start and end time prompt

When the T option is used, TSTOASC prompts the user for start and end times. This is an example of the dialog. The user's responses are shown in `italics`.

The program displays a default start time. The user may accept it by keying <Enter>, or change it by keying in a date and time followed by <Enter>. The program will display the changed date and time, which may be changed again, until the finally user responds with <Enter>. This procedure is repeated for the end time. TSTOASC processes data up to, but not including, the end time.

```
2001/02/06 09:00:00 - key in start date and time or <Enter> to accept:
2001/02/06 12:00:00<Enter>
2001/02/06 12:00:00 - key in start date and time or <Enter> to accept:
2001/02/06 13:00:00<Enter>
2001/02/06 13:00:00 - key in start date and time or <Enter> to accept:
<Enter>
2001/02/06 23:59:00 - key in new end date and time or <Enter> to accept:
2001/02/06 13:12:00<Enter>
2001/02/06 13:12:00 - key in new end date and time or <Enter> to accept:
<Enter>
```

3. DETAILS

3.1 Start and end times

If the T option is not used, TSTOASC generates a start time from the time of day in the STIM parameter of the .TBL file, combined with the calendar date of the first record in the time series file (but if the time of the first record is 23:59:59, the following day’s date is used). The end time is generated from the ETIM parameter in the .TBL file. If ETIM has no date specified, the date is set such that ETIM is no more than 24 hours after STIM. In any case, unless the user keys in an end time, the end time used by TSTOASC is no more than 24 hours after its start time.

3.2 File concatenation

If the F option is *not* used, TSTOASC responds to the end of an input time series file by attempting to open a file that appears to be a continuation of the current file.

The last four characters of the current file name must be of the form *mddu*, where *m* is a hexadecimal digit, 1 to C, specifying a month; *dd* is a two digit date (01 - 31), and *u* is a uniqueness character, A - Z. TSTOASC first modifies the current file name by substituting the next possible value for *u*; if there is no such file, *u* is set to A and the next possible date is substituted for *mdd*; C31*u* (Dec-31) wraps around to 101A (Jan-01); 228*u* (Feb-28) can be followed by 229A (Feb-29) , or if there is no such file, by 301A (Mar-01).

3.3 Output file format

The first few lines of a typical output file are shown below. The fields are separated by commas and spaces.

The first lines of the file specify the file name of the input file (without path), the start date and time used by TSTOASC, the serial number of the receiver, the number of channels, the sample rate in Hz, and the field type (0 for volts at the receiver input, 1 for V/m and T).

Following this header information, the time series data is shown, one scan per line. The first field on the line is the time of the scan in s relative to the start time. The values of the time series for each of the channels follows. Exponential notation is used unless the V option was specified. The values shown are calculated based on the nominal gain of the receiver and sensors, and have not been corrected using any actual calibration data.

```
FILE,   ,   ,  Str,  B03-206A.TS4,
 UTC,   ,   ,  UTC,  2001/02/06 13:00:00,
SNUM,   ,   ,  Int,  1262,
NCHN,   ,   ,  Int,  2,
RATE,   ,   ,  Flt,  384,
FTYP,   ,   ,  Int,  1,
     0.000000,  2.11334e-005, -1.02997e-005,
     0.002604,  7.78198e-006, -2.67029e-006,
     0.005208,  7.24792e-006, -9.15527e-007,
          .
          .
          .
```

4. RELEASE NOTES

Version 1

- This is the first release and is experimental.

Version 2

- Corrects a bug. The program always output volts instead of field units, as if option “V” were selected.