TDAVG
DOCUMENTATION

ZONGE Data Processing
TDIP Data Averaging Program
version 7.2x

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August, 1993

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TDAVG Program Documentation

OVERVIEW

TDAVG averages GDP TDIP raw data. Several files may be created, including a log file (.LOG-file), listing file (.TL-file), average data file (.AVG-file), plot file (.Z-file), and vector files (.Xnn-files).

INPUT FILES

TDAVG expects to read a Data file (.FLD-file) and optionally a Mode file (.MDE-file).

The data file is usually the result of using the SHRED program to read a GDP data dump file (.RAW-file), which writes a data file (.FLD-file). This file includes data records, each containing data for one measurement. For TDIP data, one record contains data measured by one channel. The SHRED program uses the GDP data block entries for Rx and N-Spacing, and includes updated values in each data record.

The records are sorted, so that the records that need to be averaged are grouped together. Refer to the SHRED program documentation for details of this procedure and for the formats of the input and output files.

An optional mode file includes entries that modify mode values defined by Zonge Data Processing (DATPRO) programs. A mode name is specified for several program variables that a user may modify. Each line in a mode file includes the program name, mode name, and value. While running TDAVG, help text and mode descriptions are available at the MODE prompt. An appendix to this manual summarizes the use of mode variables and includes a description of each mode defined by TDAVG.

OUTPUT FILES

The log file (.LOG-file) includes most of the information that was displayed to the user while running TDAVG. It is useful when reviewing the operation of the program.

The listing file (.TL-file) presents raw and/or averaged data for each station, organized for convenient review by the user. The file may be reviewed either on the screen or printed on paper. The user may be able to note problems with the data before spending time with further processing.

The plot file (.Z-file) written by TDAVG uses a format expected by Zonge DATPRO plot programs. It contains header information and columns of data, each line including X,Y location and Z value for one parameter, optionally followed by sections for additional parameters. TDAVG includes sections for Resistivity, Newmont Chargeability, Metal Factor, and Peak Voltage in the .Z-file for each component and frequency.

The average file (.AVG-file) includes a variety of location and parameter data in columnar format, for all pairs of components. The file is composed of sections, each of which has constant values for location and component pair. Undefined values are indicated by a "*". This format is expected of newer utility routines and some ZONGE modelling programs. The format is also suitable for use by spreadsheet, database, and plot programs.

Normally, the average file includes parameters for each measurement. Optionally, V/Vp values may be included for each window measured.

Log-log plots of Magnitude versus Window Time, including block-average error bars, are available on the computer screen. They may be printed on paper by using the FPLOT utility program to rasterize the plot files (.Xnn-files).

SURVEY LOCATION CONVENTIONS

Zonge DATPRO programs assume that survey locations for the Dipole-Dipole configuration are entered by the GDP operator in a specific manner. First, the N-Spacing for each channel is entered for each channel. Then, the Tx and Rx entries indicate the dipoles for the channel with the SMALLEST N-Spacing. Also, Dipoles extend between two adjacent stations with the LOWEST numbered station entered for each dipole.

Station numbers are assumed to increase towards the north or east, and decrease towards the south or west (negative values when the station is south or west of the zero coordinate). Therefore, the Tx and Rx entries reflect the south or west end of each dipole.

TDIP DATA PROCESSING FLOW
August, 1993

Program names are **CAPITALIZED**
File names are   Boxed

Bold lines —— show standard
GDP data processing flow.

GDP .RAW-file

SHRED

.FLD-file

TDAVG

.TL-file

.AVG-file

AVG-GDAT

.GDAT-file

.Z-file

ZPLOT   **GEOSOFT PROGRAMS**
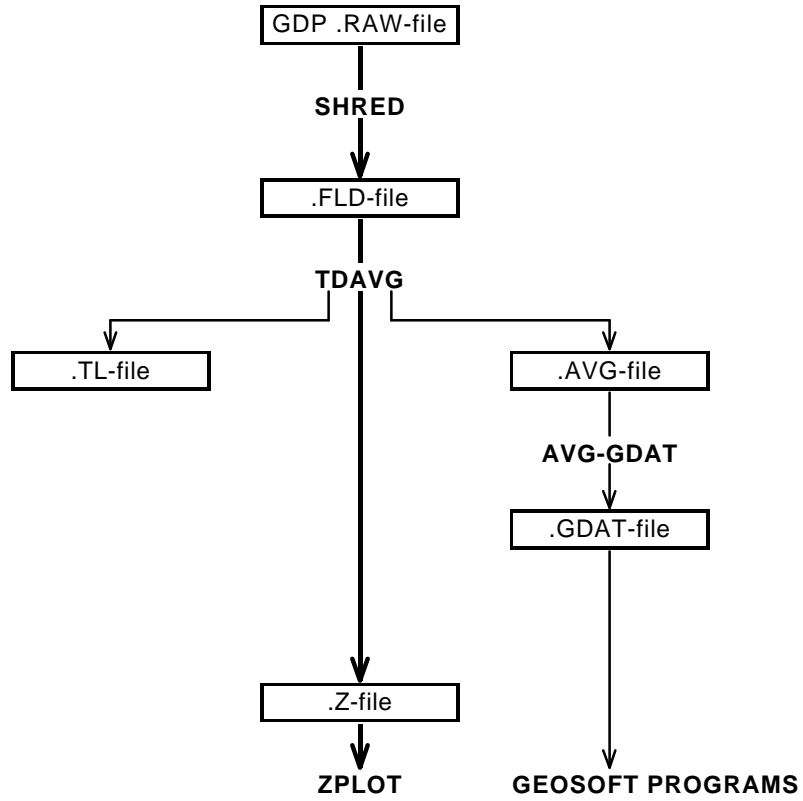
Other files read or written:

.MDE-file   .LOG-file   .Xnn-files

TDAVG Usage

The GENERAL DATA PROCESSING DOCUMENTATION includes many details that are common to data processing programs.

Start the averaging program by typing "TDAVG" <RETURN>. Respond to the prompt with the name of the .FLD-file. Command line execution also allows the user to type "TDAVG" followed by the .FLD-filename <RETURN> to automatically load the data file.

Several variable parameters called "MODES" influence the operation of TDAVG. A brief explanation of each mode, as well as its current value, can be listed within the program. An appendix to this manual summarizes the use of mode variables and includes a description of each mode defined by TDAVG.

TDAVG MODE DISPLAY

```
PROCESSING MODES USED:
+==============+=========+=========+=========+=========+=========+=========+
|CONTROL MODES |AutoRun  |Average  |         |         |GridOrgX |GridOrgY |
|   mode names | AUTO    | AVERAGE |         |         | GORX    | GORY    |
|   mode values|   NO    |   YES   |         |         |   NONE  |   NONE  |
+==============+=========+=========+=========+=========+=========+=========+
|OUTPUT FILES  |ListFile |AvgFile  |PlotFile |         |WinTimes |DebugInfo|
|   mode names | LFILE   | DFILE   | ZFILE   |         | WINDOWS |(not yet)|
|   mode values|   NONE  |   YES   |   YES   |         |   NO    |   NO    |
+==============+=========+=========+=========+=========+=========+=========+
|PLOT OPTIONS  |Log-Log  | #Curves |TimeCutOf| AxisEnds| ErrorBar| Preview |
|   mode names | PLOT    |NUMCURVES| TCUTOFF | PFIX    |ERRORBARS| VIEW    |
|   mode values|   NONE  |   10    |   0.ms  | TRIM    |   YES   |   NONE  |
+==============+=========+=========+=========+=========+=========+=========+
```
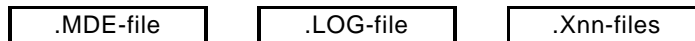

TDAVG ERROR MESSAGES

If errors or inconsistencies arise within the program, TDAVG may type a "NOTE" or an "ERROR" message. A "NOTE" message usually indicates some irregularity in the data file that is not fatal to program operation. Depending on the severity of the problem, an "ERROR" message may allow the program to continue to run or cause it to interrupt and wait for a response to a prompt to continue, restart the program, or to end. These messages are also included in a .LOG-file, which provides documentation of the program operation, which is especially useful when running several programs automatically from a batch file.

Note: a station whose data is split into different .FLD-files is processed as two separate stations.

TDAVG OUTPUT SELECTIONS

TDAVG may write a "listing" (.TL-file), average data (.AVG-file), a plot data (.Z-file), log-log plots with error bars, or a screen display of the station curves as they are created (see mode "VIEW").   .AVG- and .Z-files are automatically created by TDAVG with default values for the mode variables "DFILE" and "ZFILE". A .TL-file is NOT created with the default value for the mode variable "LFILE".

Log-log plots with error bars may be generated with TDAVG by setting the mode "PLOT= MAG".

Mode "NUMCURVES" sets the maximum number of curves per plot.

TDAVG Sample Run

Input files: SAMTDIP.FLD SAMTDIP.MDE
Output files: SAMTDIP.LOG SAMTDIP.TL   log and listing files
                     SAMTDIP.AVG   average data files
                     SAMTDIP.Z   SAMTDIP.Xnn   XYZ and plot files


```
*** Bold text: user input and comments ***

C:> TDAVG SAMTDIP                      *** Start program, specify data file


ZONGE ENGINEERING: 3322 E. Fort Lowell, Tucson AZ 85716, USA
TDAVG 7.20: TIME DOMAIN IP FIELD DATA AVERAGING PROGRAM.
   MS-DOS version implemented 01 August, 1993.


MODE   CLIENT=Zonge Engineering
MODE   PROJECT=Sample Data Set
MODE   JOBLINE=10


(Type MENU for assistance with MODEs.)


MODE Change [name?, name= value] : PLOT= Mag    *** Enable Plots
MODE Change [name?, name= value] : NUMC= 9      *** Max curves per plot
MODE Change [name?, name= value] : <RETURN>     *** Continue


Reading "SAMTDIP.FLD" . . .

  Blk Line a p    Xmit     Rcvr  N-Sp    Freq  Arr Stks Crnt    Rho   N-chg
  AVG             6.        2.     3.    .125 D-D       2.     96.8    3.4
  AVG             6.        1.     4.    .125 D-D       2.     86.5    2.2
  AVG             6.        0.     5.    .125 D-D       2.     88.2   -2.7
  AVG             6.       -1.     6.    .125 D-D       2.    173.3    3.
  AVG             6.       -2.     7.    .125 D-D       2.    271.4    3.3
  AVG             6.       -3.     8.    .125 D-D       2.    433.     2.8
  AVG             5.        2.     2.    .125 D-D       2.7   104.6    2.6
  AVG             5.        1.     3.    .125 D-D       2.7   69.      4.5
  AVG             5.        0.     4.    .125 D-D       2.7   64.5     0.5

File: "SAMTDIP.X01"    18278 bytes, ready for rasterizing.
  :
  :
  AVG             5.        9.     3.    .125 D-D       3.    219.6    5.2
  AVG             6.        8.     1.    .125 D-D       2.5   256.1    4.5
  AVG             6.        9.     2.    .125 D-D       2.5   352.5    5.8

File: "SAMTDIP.X06"    14021 bytes, ready for rasterizing.


Combining .Z-file data . . .
File "SAMTDIP.AVG" contains averaged data for  54 data sets.


Files ready for rasterizing:
 SAMTDIP.X01 thru SAMTDIP.X06


Log file "SAMTDIP.LOG" closed.

Data filename [quit]: <RETURN>                    *** No more files ***
Thank You !!
```

Appendix A ... MODE VARIABLES

Control of various aspects of many data processing programs is provided by names called "Modes". Each name refers to a specific program function. For example, the Mode name "AUTO" refers to the automatic mode of program operation, which the user may enable.

Mode changes are recognized when prompted by a program, when read from a Mode file, or when included in an input data file.

MODE PROMPTS, Manual entry

The first prompt after a data filename is requested is commonly a mode prompt. In the following example, user requests are in BOLD type, and the results are typical responses.

```
(Type MENU for assistance with MODEs.)

MODE Change [name?, name= value] : MENU

PROCESSING MODE MENU:   Review and changing of mode values.
Change value: type "NAME= value", where NAME is the variable
              name, followed by "= ", then the value to be
              assigned to the variable called NAME.
Description : type "NAME?" for description of value.
This menu   : type "MENU", or "M", to list this menu.
List globals: type "GLOBL" or "G", to list global mode values.
List values : type "LOCAL" or "L", to list local mode values.
Version info: type "VRSN", or "V", for program version info.
Back up     : type <CRTL><Z> to back up in program.
All done    : type <RETURN>.

MODE Change [name?, name= value] : LIST

    PROCESSING MODE LIST:    (Type MENU for assistance)
```

CONTROL MODES	AutoRun	LowFreq	InitGain	GridOrgX	GridOrgY
mode names	AUTO	FMIN	(not yet)	GORX	GORY
mode values	YES	1/16 Hz	NONE	NONE	NONE

```
MODE Change [name?, name= value] : AUTO?

AUTO mode will automatically delete existing output files (if
any), not prompt for MODE changes (if AUTO= YES is included in the
.MDE-file, and exit when completed.  Plots will be done as
specified by entries in the .MDE-file (MODE PLOT and VIEW).
Enter: AUTO= No, or Yes.

MODE Change [name?, name= value] : AUTO= yes

MODE Change [name?, name= value] : <RETURN>

(the program continues ...)
```

Display a definition of any Mode by typing the variable name and a question mark (as shown for Mode AUTO). Each program manual includes an appendix of mode definitions defined by that program.

Change the value of a Mode by typing the variable name, an equals sign, and a valid value. Press <RETURN> to indicate that the program should continue.

MODE CHANGE PRIORITIES

Mode changes may be manually entered, added to mode files or to input data files. Mode statements in files include the program name (optional), the Mode name, and the Mode value. Include a dollar sign ($) in the first column, a colon (:) after the program name (if any), and an equal sign after the Mode name such as:

```
$ ZPLOT: AUTO= yes
```

Modes will NOT be changed unless they are from a source with the same or higher priority as the entry to be replaced:

> 1: default mode values
> 2: Mode lines in input data files
> 3: Mode lines in Mode files (global or local)
> 4: Mode changes made at a MODE prompt

LOCAL MODE FILES

The program will read a Mode file (if it exists) with the same name as the data file and an extension of ".MDE" (like LINE10.MDE). Specify a different Mode file from the DOS prompt, by entering the program name, data file name, then Mode file name. Include the filename extension if not the same as the default. For example:

```
Start ZPLOT by:                         ZPLOT looks for files named:
C:>  ZPLOT   LINE10                      LINE10.Z    LINE10.MDE
C:>  ZPLOT   LINE10       PROJECT        LINE10.Z    PROJECT.MDE
C:>  ZPLOT   LINE10.ZZ    PROJECT.MOD    LINE10.ZZ   PROJECT.MOD
```

GLOBAL MODE FILES

Frequently used Mode statements may be included in a file named "DATPRO.MDE" and located in any subdirectory included on your PATH. Or, the environment variable DATMDE may specify any Mode file located anywhere on your computer. One of these files will be used automatically by the program, in addition to any local mode file. Your MS-DOS manuals describe environment variables and PATH.

DATA FILE MODE STATEMENTS

Mode statements may be included in an input data file (near the top of the file). Some programs will include Mode statements in output data files, for use by subsequent programs.

TDAVG MODE LIST
(v 7.2x)

PROCESSING MODE DEFAULT VALUES:

CONTROL MODES	AutoRun	Average			GridOrgX	GridOrgY
mode names	AUTO	AVERAGE			GORX	GORY
mode values	YES	YES			NONE	NONE
OUTPUT FILES	ListFile	AvgFile	PlotFile		WinTimes	DebugInfo
mode names	LFILE	DFILE	ZFILE		WINDOWS	(not yet)
mode values	NONE	YES	YES		NO	NO
PLOT OPTIONS	Log-Log	#Curves	TimeCutOf	AxisEnds	ErrorBar	Preview
mode names	PLOT	NUMCURVES	TCUTOFF	PFIX	ERRORBARS	VIEW
mode values	NONE	10	0.ms	TRIM	YES	NONE

When mode PFIX=SET the following modes are also displayed:

AXIS LIMITS	MAG_Axis_Limits		TIME_Axis_Limits		RHO_Axis_Limits	
mode names	VMIN	VMAX	TMIN	TMAX	RMIN	RMAX
mode values	NONE	NONE	NONE	NONE	NONE	NONE

COMPANY
Company name   (40 chr max)

Values: COMPANY= Name of survey company
Default: COMPANY= (blank)

CLIENT
Client name   (40 chr max)

Values: CLIENT= Company requesting the survey
Default: CLIENT= (blank)

PROJECT
Project name   (40 chr max)

Values: PROJECT= Name of the survey project.
Default: PROJECT= (blank)

JOBNUMBER
Company job number   (10 chr max)

Values: JOBNUMBER= Survey Job Number.
Default: JOBNUMBER= (blank)

JOBDATE
Survey date   (10 chr max)

Values: JOBDATE= Date of Survey.
Default: JOBDATE= (blank)

JOBLINE
Survey line number   (10 chr max)

Values: JOBLINE= Survey Line Number.
Default: JOBLINE= (blank)

BRGLINE
Line forward bearing   (10 chr max)

Values: BRGLINE= Line Bearing, to high stn.
Default: BRGLINE= (blank)

BRGBACK
Line back bearing   (10 chr max)

Values: BRGBACK= Back Bearing, to low stn.
Default: BRGBACK= (blank)

STNLOW
Low station number, plot limit

Values: STNLOW= X-axis low station limit.
Default: STNLOW= NONE

STNHIGH
High station number, plot limit

Values: STNHIGH= X-axis high station limit.
Default: STNHIGH= NONE

STNDELT
Station number increment, plot scale

Values: STNDELT= X-axis station increment.
Default: STNDELT= 1.0

LBLFRST
Low station number, axis label

Values: LBLFRST= X-axis low station label.
Default: LBLFRST= mode STNLOW value.

LBLDELT
Station number increment, axis label

Values: LBLDELT= X-axis station label increment.
Default: LBLDELT= 1.0

FRQLO
Low frequency, plot limit

Values: FRQLO= None, or low frequency limit, Hz.
Default: FRQLO= NONE

FRQHI
High frequency, plot limit

Values: FRQHI= None, or high frequency limit, Hz.
Default: FRQHI= NONE

TXLEN
CSAMT Transmitter length   (10 chr max)

Values: TXLEN= CSAMT Transmitter Length
Default: TXLEN= (blank)

TXBRG
CSAMT Transmitter bearing   (10 chr max)

Values: TXBRG= CSAMT Transmitter Bearing
Default: TXBRG= (blank)

TXDIS
CSAMT Transmitter distance from survey line
                                    (10 chr max)

Values: TXDIS= Distance from Rx Line to Tx
Default: TXDIS= (blank)

TXCX
CSAMT Transmitter center, X-coordinate
If units in feet or meters are not included, mode UNITS will be used.

Values: TXCX=
X-coordinate of center of Tx dipole. (10 chr max)
Default: TXCX= (blank)

TXCY
CSAMT Transmitter center, Y-coordinate
If units in feet or meters are not included, mode UNITS will be used.

Values: TXCY=
Y-coordinate of center of Tx dipole. (10 chr max)
Default: TXCY= (blank)

RX2TX
CSAMT Receiver to Transmitter direction

Values: RX2TX=
          Direction from Rx Line to Tx(10 chr max)
Default: RX2TX= (blank)

RXBRG
Receive dipole bearing, usually same as survey line orientation

Values: RXBRG=
          Receiver Dipole Bearing   (10 chr max)
Default: RXBRG= (blank)

COMWIRE
Communications wire type, used for decalibration of GDP-12 data

Values: COMWIRE= NONE,
          1WHITE, 2WHITE, or BLACK.
Default: COMWIRE= NONE

PLTREV
Plot X-axis reverse selection

Values: PLTREV= No, or Yes.
Default: PLTREV= NO

UNITS
Units for listed values, such as A-Spacing. Feet or meters.

Values: UNITS= Feet or Meters.
Default: UNITS= Meters

AUTO
AUTO mode will automatically delete existing output files (if any), not prompt for MODE changes (if AUTO= YES is included in the .MDE-file) and exit when completed. When plots are selected, the program will not pause after each plot.

Values: AUTO= No, or Yes.
Default: AUTO= No

AVERAGE
Mode AVERAGE selects whether to average multiple raw data blocks.
NO :   averaging is disabled.
YES: arithmetic averaging is enabled.

Values: AVERAGE= No, or Yes.
Default: AVERAGE= Yes

LFILE
LFILE specifies the content of the listing file.
NONE : no listing.
RAW : listing summary of raw data blocks.
AVG : listing summary of averaged data blocks.
BOTH : listing summary of raw and averaged data.

Values: LFILE= NONE, RAW, AVG, or BOTH.
Default: LFILE= NONE

DFILE
The averaged Apparent Resistivity, Newmont Chargeability, Metal Factor, and Peak Voltage data may be written to an .AVG-file for use by other programs. Mode DFILE specifies whether or not to write the data file.

Use DFILE=WIND to include both basic data and window V/Vp values in the .AVG-file. Otherwise only basic data is provided.

Values: DFILE= No, or Yes
Default: DFILE= Yes

ZFILE
The averaged Apparent Resistivity, Newmont Chargeability, Metal Factor, and Peak Voltage data may be written to data files for use by plot programs. Mode ZFILE specifies whether or not to write data files. Both a .Z-file and a .AVG-file will be written.

Values: ZFILE= No, Yes, or Windows.
Default: ZFILE= Yes

GORX
Grid coordinates used for Gradient and Schlumberger Arrays are expected to be specified in meters. Values may be larger than can be included in reports and data files.

Mode GridORiginX (GORX) specifies the X-Coordinate of an alternate origin. Grid Coordinates will be specified relative to the alternate origin. The smaller coordinate values may be better suited for files.

Values: GORX= Alternate GridOrigin, X-direction, meters.
Default: GORX= None

GORY
Grid coordinates used for Gradient and Schlumberger Arrays are expected to be specified in meters. Values may be larger than can be included in reports and data files.

Mode GridORiginY (GORY) specifies the Y-Coordinate of an alternate origin. Grid Coordinates will be specified relative to the alternate origin. The smaller coordinate values may be better suited for files.

Values: GORY= Alternate GridOrigin, Y-direction, meters.
Default: GORY= None

PLOT
PLOT mode specifies whether or not plots of Vwindow / Vp versus window will be produced.

Printed plots are available for:
PLOT= NONE   no plots
PLOT= MAG   log-TRANSIENT vs log-TIME
PLOT= RHO1   *(log-RESISTIVITY vs log-TIME)
PLOT= BOTH
 *(log-TRANSIENT *AND* log-RHO vs log-TIME)

* Resistivity curves are not now defined. These options are disabled.

See mode NUMCURVES to set the number of averaged data curves per plot.
See mode VIEW to enable plot preview on screen.

Values: PLOT= NONE or MAG.
Default: PLOT= NONE

NUMCURVES
Limit the maximum number of curves per plot by "NUMCURVES= n". A change in Array Type, Frequency, Window 1 Time, Duty Cycle, or Receiver Moment will also limit the data curves for one plot.

If NUMCURVES= 0, then the number of curves per plot is limited to curves for one station and one component.

See mode PLOT for specifying plots of log-TRANSIENT or log-RESISTIVITY vs log-TIME.
See modes VIEW and AVERAGE.

Values: NUMCURVES= 0 or N curves per plot,
                              up to 40.
Default: NUMCURVES= 10

TCUTOFF

TCUTOFF is the cutoff time, in milliseconds. A value that is greater than zero will be used to limit the curves on log-log plots (MAG and/or RHO vs TIME) and in .Z-files.

Values: TCUTOFF= value, positive number.
Default: TCUTOFF= 0.ms

PFIX

PFIX specifies the method by which the ends of the plot axes will be determined.

PFIX= AUTO allows the program to define the limits of the axes for each plot, so that all data for each set of curves will be plotted as large as will fit.

PFIX= TRIM acts as does AUTO. In addition, the range of the axes are limited to 5 decades below the max value.

PFIX= SET will allow the user to specify the minimum and/or maximum limits for the end(s) of any axes, and the values will be used for all plots. Ends that are not limited will auto adjust to include the curves. Curves will be clipped to fall within the axes. Limits will be checked to be sure the minimum is less than the maximum for ends defined manually and/or automatically.

See VMIN, VMAX, TMIN, TMAX, RMIN and RMAX descriptions.
The MODE listing will include these values if PFIX= SET.

Values: PFIX= AUTO, TRIM, or SET.
Default: PFIX= TRIM

ERRORBARS

Error bars are available for averaged magnitude data only.

Magnitude data is averaged arithmetically. The variation (sigma) is displayed as a percentage (coefficient of variation) in the .TL-file (data listing). Error bars greater than a minimum value (10%) are drawn between $\log(Avg) + \log(1 +/- Cvar/100)$. The same symbol used for the data curve is displayed over the error bar endpoints.

Values: ERRORBARS= No, or Yes.
Default: ERRORBARS= Yes

VIEW

A screen plot of station curves as they are created may be selected by mode VIEW. The plot will be scaled to fit on one screen.

Values: VIEW= None, or Screen.
Default: VIEW= None

VMIN

VMIN sets a minimum value for the voltage (transient) axis. The value is used as $10.^n$, n an integer.

Limits may be set at any time prompted by MODE Change: but they will be used and displayed only when PFIX= SET.

VMIN is expected to be within the range of -10 to 10. To remove a limiting value, specify "VMIN= NONE".

Values: VMIN= NONE, or integer exponent.
Default: VMIN= NONE

VMAX

VMAX sets a maximum value for the voltage (transient) axis. The value is used as $10.^n$, n an integer.

Limits may be set at any time prompted by MODE Change: but they will be used and displayed only when PFIX= SET.

VMAX is expected to be within the range of -10 to 10.
To remove a limiting value, specify "VMAX= NONE".

Values: VMAX= NONE, or integer exponent.
Default: VMAX= NONE

TMIN

TMIN sets a minimum value for the time (delay) axis. The value is used as $10.^n$, n an integer.

Limits may be set at any time prompted by MODE Change: but they will be used and displayed only when PFIX= SET.

TMIN is expected to be within the range of -10 to 10. To remove a limiting value, specify "TMIN= NONE".

Values: TMIN= NONE, or integer exponent.
Default: TMIN= NONE

TMAX

TMAX sets a maximum value for the time (delay) axis. The value is used as $10.^n$, n an integer.

Limits may be set at any time prompted by MODE Change: but they will be used and displayed only when PFIX= SET.

TMAX is expected to be within the range of -10 to 10.
To remove a limiting value, specify "TMAX= NONE".

Values: TMAX= NONE, or integer exponent.
Default: TMAX= NONE

RMIN

RESISTIVITY CURVES ARE NOT NOW DEFINED. This mode has no effect.
RMIN sets a minimum value for the apparent resistivity axis. The value is used as $10.^n$, n an integer.

Limits may be set at any time prompted by MODE Change: but they will be used and displayed only when PFIX= SET.

RMIN is expected to be within the range of -10 to 10.
To remove a limiting value, specify "RMIN= NONE".

Values: RMIN= NONE, or integer exponent.
Default: RMIN= NONE

RMAX

RESISTIVITY CURVES ARE NOT NOW DEFINED. This mode has no effect.
RMAX sets a maximum value for the apparent resistivity axis. The value is used as $10.^n$, n an integer.

Limits may be set at any time prompted by MODE Change: but they will be used and displayed only when PFIX= SET.

RMAX is expected to be within the range of -10 to 10.
To remove a limiting value, specify "RMAX= NONE".

Values: RMAX= NONE, or integer exponent.
Default: RMAX= NONE

WINDOWS

Mode WINDOWS will include a list of window centers for each frequency. The list will be included in the summary listing, either by itself or with the selected listing information.

Values: WINDOWS= No, or Yes.
Default: WINDOWS= No

DEBUG

DEBUG mode is not presently implemented.

Values: DEBUG= No, or Yes.
Default: DEBUG= No

Appendix B ... SAMPLE FILES

Sample .LOG-file

```
TDAVG 7.20, Processed: 04 Aug 93

GLOBAL MODE LIST:
+===============================================+==============+==============+
|  COMPANY                                      | JOBNUMB      | TXLEN        |
| Zonge Engineering                             | 000          |              |
|  CLIENT                                       | JOBDATE      | TXBRG        |
| Zonge Engineering                             | SEP 91       |              |
|  PROJECT                                      | JOBLINE      | TXDIS        |
| Sample Data Set                               | 10           |              |
+==============+==============+==============+==============+
|  BRGBACK     |  RXBRG       |  BRGLINE     | FRQLO        | RX2TX        |
| S 85 W       | N 85 E       | N 85 E       |  1/8 Hz      |              |
|  STNLO       |  STNDELT     |  STNHI       | FRQHI        | TXCX         |
|     -3.0     |       1.0    |      10.0    |  1/8 Hz      |              |
|  LBLFRST     |  LBLDELT     |  PLTREV      | UNITS        | TXCY         |
|  STNLO       |       1.0    |  NO          | METERS       |              |
+==============+==============+==============+==============+==============+

PROCESSING MODES USED:
+=============+=========+=========+=========+=========+=========+=========+
| CONTROL MODES|AutoRun  |Average  |         |         |GridOrgX |GridOrgY |
|  mode names |AUTO     |AVERAGE  |         |         |GORX     |GORY     |
|  mode values|    YES  |    YES  |         |         |   NONE  |   NONE  |
+=============+=========+=========+=========+=========+=========+=========+
| OUTPUT FILES|ListFile |AvgFile  |PlotFile |         |WinTimes |DebugInfo|
|  mode names |LFILE    |DFILE    |ZFILE    |         |WINDOWS  |(not yet)|
|  mode values|  NONE   |   YES   |   YES   |         |   NO    |   NO    |
+=============+=========+=========+=========+=========+=========+=========+
| PLOT OPTIONS|Log-Log  |#Curves  |TimeCutOf|AxisEnds |ErrorBar |Preview  |
|  mode names |PLOT     |NUMCURVES|TCUTOFF  |PFIX     |ERRORBARS|VIEW     |
|  mode values|  MAG    |    9    |   0.ms  |  TRIM   |   YES   |  NONE   |
+=============+=========+=========+=========+=========+=========+=========+

Reading "SAMTDIP.FLD" . . .

  Blk Line a p   Xmit    Rcvr  N-Sp    Freq  Arr Stks Crnt   Rho    N-chg
  AVG             6.     2.     3.     .125 D-D     2.   96.8    3.4
  AVG             6.     1.     4.     .125 D-D     2.   86.5    2.2
  AVG             6.     0.     5.     .125 D-D     2.   88.2   -2.7
  AVG             6.    -1.     6.     .125 D-D     2.  173.3    3.
  AVG             6.    -2.     7.     .125 D-D     2.  271.4    3.3
  AVG             6.    -3.     8.     .125 D-D     2.  433.     2.8
  AVG             5.     2.     2.     .125 D-D     2.7 104.6    2.6
  AVG             5.     1.     3.     .125 D-D     2.7  69.     4.5
  AVG             5.     0.     4.     .125 D-D     2.7  64.5    0.5
  AVG             5.    -1.     5.     .125 D-D     2.7 121.4    4.9
  AVG             5.    -2.     6.     .125 D-D     2.7 186.     5.2
  AVG             5.    -3.     7.     .125 D-D     2.7 292.7    5.3
       ...

  AVG             3.     5.     1.     .125 D-D     2.  117.8    0.9
  AVG             3.     6.     2.     .125 D-D     2.   77.5    2.7
  AVG             3.     7.     3.     .125 D-D     2.   90.7    5.6
  AVG             3.     8.     4.     .125 D-D     2.  116.     5.
  AVG             3.     9.     5.     .125 D-D     2.  126.5    5.8
  AVG             4.     6.     1.     .125 D-D     3.5 103.4    1.7
  AVG             4.     7.     2.     .125 D-D     3.5 116.1    3.4
  AVG             4.     8.     3.     .125 D-D     3.5 152.     5.2
  AVG             4.     9.     4.     .125 D-D     3.5 174.2    7.7
  AVG             5.     7.     1.     .125 D-D     3.  122.2    2.4
  AVG             5.     8.     2.     .125 D-D     3.  174.4    4.5
  AVG             5.     9.     3.     .125 D-D     3.  219.6    5.2
  AVG             6.     8.     1.     .125 D-D     2.5 256.1    4.5
  AVG             6.     9.     2.     .125 D-D     2.5 352.5    5.8
File "SAMTDIP.AVG" contains averaged data for  54 data sets.

Files ready for rasterizing:
 SAMTDIP.X01 thru SAMTDIP.X06

Log file "SAMTDIP.LOG" closed.
```

Sample .TL-file (partial: only data for Tx= 6., Rx= 2., NSp= 3.)

From TDAVG 7.20 using input file "SAMTDIP.FLD"

```
  Blk Line a p   Xmit     Rcvr   N-Sp    Freq  Arr Stks Crnt   Rho    N-chg
0019 0003 1 0    6.        2.      3.    .125 D-D   16  2.0   96.8    4.3       1
Peak Voltage (Vp)    : 5.1344m volts
Apparent Resistivity :    96.8  o-m     Newmont Chargeability:  4.3000m ms

Wn   TIME 10*mV/Vp                       Wn    TIME 10*mV/Vp
 1  132.30  31.000                        8  1167.4  1.0000
 2  280.17  4.0000                        9  1315.2  2.0000
 3  428.03  3.0000                       10  1463.1  2.0000
 4  575.90  4.0000                       11  1611.0  2.0000
 5  723.76  3.0000                       12  1758.8  2.0000
 6  871.63  2.0000                       13  1906.7  1.0000
 7  1019.5  3.0000


  Blk Line a p   Xmit     Rcvr   N-Sp    Freq  Arr Stks Crnt   Rho    N-chg
0020 0004 1 0    6.        2.      3.    .125 D-D   16  2.0   96.8    3.3       2
Peak Voltage (Vp)    : 5.1357m volts
Apparent Resistivity :    96.8  o-m     Newmont Chargeability:  3.3000m ms

Wn   TIME 10*mV/Vp                       Wn    TIME 10*mV/Vp
 1  132.30  32.000                        8  1167.4  1.0000
 2  280.17  4.0000                        9  1315.2  1.0000
 3  428.03  3.0000                       10  1463.1  1.0000
 4  575.90  3.0000                       11  1611.0  1.0000
 5  723.76  2.0000
 6  871.63  2.0000                       13  1906.7  1.0000
 7  1019.5  1.0000


  Blk Line a p   Xmit     Rcvr   N-Sp    Freq  Arr Stks Crnt   Rho    N-chg
0021 0005 1 0    6.        2.      3.    .125 D-D   16  2.0   96.9    2.5       3
Peak Voltage (Vp)    : 5.1399m volts
Apparent Resistivity :    96.9  o-m     Newmont Chargeability:  2.5000m ms

Wn   TIME 10*mV/Vp                       Wn    TIME 10*mV/Vp
 1  132.30  33.000                        8  1167.4  2.0000
 2  280.17  4.0000                        9  1315.2  1.0000
 3  428.03  3.0000                       10  1463.1  1.0000
 4  575.90  2.0000                       11  1611.0  2.0000
 5  723.76  1.0000                       12  1758.8  2.0000
 6  871.63  1.0000                       13  1906.7  2.0000
 7  1019.5  2.0000


  Blk Line a p   Xmit     Rcvr   N-Sp    Freq  Arr Stks Crnt   Rho    N-chg
AVG              6.        2.      3.    .125 D-D       2.    96.8    3.4
Peak Voltage (Vp)    : 5.1367m volts   Metal Factor          :  34.771
Apparent Resistivity :    96.8  o-m     Newmont Chargeability:  3.3667m ms
Coeff. of Variation  :     0.           Coeff. of Variation  :     27.

Wn   TIME 10*mV/Vp Variation            Wn    TIME 10*mV/Vp Variation
 1  132.30  32.000      3.               8  1167.4  1.3333      43.
 2  280.17  4.0000      0.               9  1315.2  1.3333      43.
 3  428.03  3.0000      0.              10  1463.1  1.3333      43.
 4  575.90  3.0000     33.              11  1611.0  1.6667      35.
 5  723.76  2.0000     50.              12  1758.8  2.0000       0.
 6  871.63  1.6667     35.              13  1906.7  1.3333      43.
 7  1019.5  2.0000     50.
1

*** end-of-sample ***
```

Sample .RAW-file (partial: only data for Tx= 6., Rx= 2., NSp= 3.)

```
/* Transferred from a GDP

0254
TDIP0515 91-09-20 11:01:15 12.2v D-D
OPER    1 TX ID    1 A-SP   200.0
JOB 90999 LINE    10.0 W  SPREAD  1
1 DiffAmp   Notch 50,3-5,9   S/N   60
2 DiffAmp   Notch 60,3-50,3  S/N  213
3 DiffAmp   Notch 60,3-50,3  S/N  217
4 DiffAmp   Notch 60,3-50,3  S/N  218
5 DiffAmp   Notch 50,3-5,9   S/N   63
6 DiffAmp   Notch 50,3-5,9   S/N   30
7 DiffAmp   Notch 50,3-5,9   S/N  249
8 DiffAmp   Notch 60,3-50,3  S/N  172


0255
TDIP0515 91-09-20 11:09:56 12.1v D-D
Tx       6 Rx       2 N OUT
.125  Hz    16 Cyc Tx Curr  2.00
1 ON    3.0    5.1344m      4.3  96.78  16O   1.43    -.14  4.18K
2 ON    4.0    2.2920m      1.0  86.41  26O   1.96   12.68  4.14K
3 ON    5.0    1.3386m     -.7  88.32  36O   4.34  -22.97  17.5K
4 ON    6.0    1.6423m      3.8  173.4  36O   5.85  -14.94  26.6K
5 ON    7.0    1.7124m      3.2  271.1  26O   9.01   17.19  15.7K
6 ON    8.0    1.9182m      4.7  433.9  26O  10.80   12.97  6.23K
Windows
  1    2    3    4    5    6    7    8
  31   32   28   37   31   45
   4    1    0    5    5    8
   3    0   -1    2    1    3
   4    1    1    6    6   10
   3    0    0    3    3    5
   2   -1   -2   -1   -3   -4
   3    1    0    4    5    5
   1   -1   -4   -2   -5   -8
   2    0   -2    1    0   -2
   2    0   -3    0   -1   -1
   2    0   -2    0   -2   -1
   2    0   -3    0    0    0
   1    0   -2    0    0   -1


0256
TDIP0515 91-09-20 11:12:18 12.1v D-D
Tx       6 Rx       2 N OUT
.125  Hz    16 Cyc Tx Curr  2.00
1 ON    3.0    5.1357m      3.3  96.81  16O    .72    -.14  4.18K
2 ON    4.0    2.2928m      3.1  86.44  26O   2.11   12.68  4.14K
3 ON    5.0    1.3327m     -4.1  87.92  36O   3.01  -22.97  17.5K
4 ON    6.0    1.6383m      1.7  172.9  36O   4.53  -14.94  26.6K
5 ON    7.0    1.7111m      1.9  270.9  26O   7.13   17.19  15.7K
6 ON    8.0    1.9066m      1.7  431.3  26O   8.33   12.97  6.23K
Windows
  1    2    3    4    5    6    7    8
  32   35   28   37   33   43
   4    3   -2    3    2    3
   3    2   -5    0   -1   -2
   3    2   -3    2    2    3
   2    2   -3    1    0    2
   2    3   -1    3    5    5
   1    1   -4   -1   -1   -3
   1    1   -3    0    0   -3
   1    1   -4   -1    0   -2
   1    1   -2    0    1   -1
   1    1   -3    1    3    0
   0    0   -6   -3   -2   -8
   1    1   -3    0    1   -2
```

continued ...

Sample .RAW-file (partial: page 2)

```
0257
TDIP0515 91-09-20 11:15:14 12.1v D-D
Tx       6 Rx       2 N OUT
.125  Hz    16 Cyc Tx Curr  2.00
1 ON   3.0    5.1399m    2.5  96.88  16O   1.54    -.14  4.18K
2 ON   4.0    2.2948m    2.6  86.51  26O   2.76   12.68  4.14K
3 ON   5.0    1.3379m   -3.3  88.27  36O   5.81  -22.97  17.5K
4 ON   6.0    1.6439m    3.4  173.5  36O   8.51  -14.94  26.6K
5 ON   7.0    1.7189m    4.7  272.2  26O  12.13   17.19  15.7K
6 ON   8.0    1.9187m    2.0  434.0  26O  15.25   12.97  6.23K
Windows
   1    2    3    4    5    6    7    8
   33   36   30   41   40   50
    4    4   -1    7    9   10
    3    4    1    9   11   13
    2    2   -2    4    4    3
    1    1   -3    1    3   -1
    1    1   -2    1    3    0
    2    2   -1    3    4    2
    2    3   -1    3    4    3
    1    4   -1    3    6    5
    1    3   -4    2    4    0
    2    4   -1    5    8    7
    2    4   -1    4    6    7
    2    3    0    5    7    7


0258
TDIP0515 91-09-20 11:24:22 12.1v D-D
Tx       5 Rx       2 N OUT
.125  Hz    16 Cyc Tx Curr  2.70
1 ON   2.0   18.709m    2.7  104.5  05O    .60    -.28  4.18K
2 ON   3.0    4.9398m    4.9  68.97  16O   1.64   12.40  4.14K
3 ON   4.0    2.3091m    -.5  64.48  26O   4.06  -20.44  17.5K
4 ON   5.0    2.4827m    4.6  121.3  26O   6.83  -15.36  26.6K
5 ON   6.0    2.3778m    4.6  185.9  26O  10.51   17.34  15.7K
6 ON   7.0    2.4936m    4.8  292.5  26O  13.97   13.81  6.23K
Windows
   1    2    3    4    5    6    7    8
   31   38   35   42   39   49
    4    5    3    6    9    8
    3    4    0    3    5    3
    2    3    0    2    1    0
    2    4    0    3    4    5
    1    4    0    4    4    5
    1    4    0    5    5    6
    1    3    0    4    4    5
    0    2   -1    1    0    0
    0    1    0    0   -2   -2
    0    2    2    3    2    4
    0    1    0    1    0    0
    0    2    2    4    5    7
```

continued ...

Sample .RAW-file   (partial: page 3)

```
0259
TDIP0515 91-09-20 11:26:44 12.1v D-D
Tx      5 Rx       2 N OUT
.125  Hz     16 Cyc Tx Curr  2.70
1 ON   2.0    18.710m     2.6  104.5  05O    .15    -.28  4.18K
2 ON   3.0    4.9390m     4.8  68.96  16O   1.41   12.40  4.14K
3 ON   4.0    2.3099m     1.9  64.50  26O   2.26  -20.44  17.5K
4 ON   5.0    2.4830m     6.2  121.3  26O   3.66  -15.36  26.6K
5 ON   6.0    2.3791m     8.0  186.0  26O   5.66   17.34  15.7K
6 ON   7.0    2.4985m     6.1  293.0  26O   7.19   13.81  6.23K
Windows
  1     2    3    4    5    6     7     8
  31    38   35   43   43   51
   4    7    5    9   14   15
   3    5    3    7   10    9
   2    4    1    5    7    5
   2    4    2    6    8    7
   2    3    2    5    6    5
   1    3    0    2    3    1
   1    3    2    5    6    5
   1    2    1    3    4    2
   1    2    1    3    3    3
   1    1    0    2    2    1
   0    1   -1    1    1    1
   0    1    0    2    3    3


0260
TDIP0515 91-09-20 11:29:32 12.1v D-D
Tx      5 Rx       2 N OUT
.125  Hz     16 Cyc Tx Curr  2.70
1 ON   2.0    18.743m     2.5  104.7  05O    .19    -.28  4.18K
2 ON   3.0    4.9447m     3.7  69.04  16O   1.08   12.40  4.14K
3 ON   4.0    2.3095m      .1  64.49  26O   2.73  -20.44  17.5K
4 ON   5.0    2.4873m     3.8  121.6  26O   4.17  -15.36  26.6K
5 ON   6.0    2.3780m     3.1  185.9  26O   6.43   17.34  15.7K
6 ON   7.0    2.4936m     5.0  292.5  26O   8.80   13.81  6.23K
Windows
  1     2    3    4    5    6     7     8
  31    37   32   41   39   48
   3    5    2    6    7    9
   2    4    1    4    4    8
   2    3    0    2    2    0
   2    3    0    2    3    2
   1    2    0    3    3    5
   1    2    0    3    0    7
   1    1    0    0    0   -1
   1    2    1    1    2    4
   1    1    0    0    0    0
   1    1    0    0    0   -2
   1    1    1    1    2    1
   0    1    0    0    1    0
```

*** end-of-sample ***

Sample .FLD-file (partial: only data for Tx= 6., Rx= 2., NSp= 3.)
(columns 1-129 are followed by remaining columns)

```
Reference ruler line                                                          1         1         1         1
----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8----+----9----+----0----+----1----+----2----+----3--

/* SHRED v3.20: "SAMTDIP.FLD"
H 1 0018   1 0 TDIP0515 91-09-21 11:01:15 12.2 D-D        1   1  200.0 90999      10.0 W   1
D 1 0019   1 0 91-09-21 11:09:56 12.1  .125    16  2.00         6        2    ON 0      3.0 5.1344e-3     4.3       96.78      16O
D 1 0020   1 0 91-09-21 11:12:18 12.1  .125    16  2.00         6        2    ON 0      3.0 5.1357e-3     3.3       96.81      16O
D 1 0021   1 0 91-09-21 11:15:14 12.1  .125    16  2.00         6        2    ON 0      3.0 5.1399e-3     2.5       96.88      16O
H 1 0018   2 1 TDIP0515 91-09-21 11:01:15 12.2 D-D        1   1  200.0 90999      10.0 W   1
D 1 0019   2 1 91-09-21 11:09:56 12.1  .125    16  2.00         6        1    ON 0      4.0 2.2920e-3     1.0       86.41      26O
D 1 0020   2 1 91-09-21 11:12:18 12.1  .125    16  2.00         6        1    ON 0      4.0 2.2928e-3     3.1       86.44      26O
D 1 0021   2 1 91-09-21 11:15:14 12.1  .125    16  2.00         6        1    ON 0      4.0 2.2948e-3     2.6       86.51      26O
H 1 0018   3 2 TDIP0515 91-09-21 11:01:15 12.2 D-D        1   1  200.0 90999      10.0 W   1
D 1 0019   3 2 91-09-21 11:09:56 12.1  .125    16  2.00         6        0    ON 0      5.0 1.3386e-3     -.7       88.32      36O
D 1 0020   3 2 91-09-21 11:12:18 12.1  .125    16  2.00         6        0    ON 0      5.0 1.3327e-3    -4.1       87.92      36O
D 1 0021   3 2 91-09-21 11:15:14 12.1  .125    16  2.00         6        0    ON 0      5.0 1.3379e-3    -3.3       88.27      36O
H 1 0018   4 3 TDIP0515 91-09-21 11:01:15 12.2 D-D        1   1  200.0 90999      10.0 W   1
D 1 0019   4 3 91-09-21 11:09:56 12.1  .125    16  2.00         6       -1    ON 0      6.0 1.6423e-3     3.8       173.4      36O
D 1 0020   4 3 91-09-21 11:12:18 12.1  .125    16  2.00         6       -1    ON 0      6.0 1.6383e-3     1.7       172.9      36O
D 1 0021   4 3 91-09-21 11:15:14 12.1  .125    16  2.00         6       -1    ON 0      6.0 1.6439e-3     3.4       173.5      36O
H 1 0018   5 4 TDIP0515 91-09-21 11:01:15 12.2 D-D        1   1  200.0 90999      10.0 W   1
D 1 0019   5 4 91-09-21 11:09:56 12.1  .125    16  2.00         6       -2    ON 0      7.0 1.7124e-3     3.2       271.1      26O
D 1 0020   5 4 91-09-21 11:12:18 12.1  .125    16  2.00         6       -2    ON 0      7.0 1.7111e-3     1.9       270.9      26O
D 1 0021   5 4 91-09-21 11:15:14 12.1  .125    16  2.00         6       -2    ON 0      7.0 1.7189e-3     4.7       272.2      26O
H 1 0018   6 5 TDIP0515 91-09-21 11:01:15 12.2 D-D        1   1  200.0 90999      10.0 W   1
D 1 0019   6 5 91-09-21 11:09:56 12.1  .125    16  2.00         6       -3    ON 0      8.0 1.9182e-3     4.7       433.9      26O
D 1 0020   6 5 91-09-21 11:12:18 12.1  .125    16  2.00         6       -3    ON 0      8.0 1.9066e-3     1.7       431.3      26O
D 1 0021   6 5 91-09-21 11:15:14 12.1  .125    16  2.00         6       -3    ON 0      8.0 1.9187e-3     2.0       434.0      26O


      1         1         1         1         1         1         2         2         2         2         2         2         2         2
---+----4----+----5----+----6----+----7----+----8----+----9----+----0----+----1----+----2----+----3----+----4----+----5----+----6----+----7-


      1.43       -.14   4.18e+3     1      31      4      3      4      3      2      3      1      2      2      2      2      1
       .72       -.14   4.18e+3     1      32      4      3      3      2      2      1      1      1      1      1      0      1
      1.54       -.14   4.18e+3     1      33      4      3      2      1      1      2      2      1      1      2      2      2

      1.96      12.68   4.14e+3     1      32      1      0      1      0     -1      1     -1      0      0      0      0      0
      2.11      12.68   4.14e+3     1      35      3      2      2      2      3      1      1      1      1      1      0      1
      2.76      12.68   4.14e+3     1      36      4      4      2      1      1      2      3      4      3      4      4      3

      4.34     -22.97   17.5e+3     1      28      0     -1      1      0     -2      0     -4     -2     -3     -2     -3     -2
      3.01     -22.97   17.5e+3     1      28     -2     -5     -3     -3     -1     -4     -3     -4     -2     -3     -6     -3
      5.81     -22.97   17.5e+3     1      30     -1      1     -2     -3     -2     -1     -1     -1     -4     -1     -1      0

      5.85     -14.94   26.6e+3     1      37      5      2      6      3     -1      4     -2      1      0      0      0      0
      4.53     -14.94   26.6e+3     1      37      3      0      2      1      3     -1      0     -1      0      1     -3      0
      8.51     -14.94   26.6e+3     1      41      7      9      4      1      1      3      3      3      2      5      4      5

      9.01      17.19   15.7e+3     1      31      5      1      6      3     -3      5     -5      0     -1     -2      0      0
      7.13      17.19   15.7e+3     1      33      2     -1      2      0      5     -1      0      0      1      3     -2      1
     12.13      17.19   15.7e+3     1      40      9     11      4      3      3      4      4      6      4      8      6      7

     10.80      12.97   6.23e+3     1      45      8      3     10      5     -4      5     -8     -2     -1     -1      0     -1
      8.33      12.97   6.23e+3     1      43      3     -2      3      2      5     -3     -3     -2     -1      0     -8     -2
     15.25      12.97   6.23e+3     1      50     10     13      3     -1      0      2      3      5      0      7      7      7

*** end-of-sample ***
```

Sample .AVG-file

```
\ TDAVG 7.20: "SAMTDIP.FLD", Dated 91-09-21, Processed 04 Aug 93
$ ASPACE= 200.0m
skp    Tx      Rx     PltPt   NSp  Freq  Amps   Time App.Resist. Nwmnt-Chg MetalFactor  Vp;V/Vp    %V/Vp
\=][=======][=======][=======][====][====][====][=====][=========][=========][=========][=========][=====]
 2     6.      2.      4.5     3.  .1250  2.    0.000  9.6824e+1  3.3667e+0  3.4771e+1  5.1367e+0    0.0
 2     6.      1.      4.      4.  .1250  2.    0.000  8.6452e+1  2.2333e+0  2.5833e+1  2.2932e+0    0.0
 2     6.      0.      3.5     5.  .1250  2.    0.000  8.8167e+1 -2.7000e+0 -3.0624e+1  1.3364e+0    0.0
 2     6.     -1.      3.      6.  .1250  2.    0.000  1.7327e+2  2.9667e+0  1.7121e+1  1.6415e+0    0.0
 2     6.     -2.      2.5     7.  .1250  2.    0.000  2.7141e+2  3.2667e+0  1.2036e+1  1.7141e+0    0.0
 2     6.     -3.      2.      8.  .1250  2.    0.000  4.3305e+2  2.8000e+0  6.4658e+0  1.9145e+0    0.0
 2     5.      2.      4.      2.  .1250  2.7   0.000  1.0456e+2  2.6000e+0  2.4867e+1  1.8721e+1    0.0
 2     5.      1.      3.5     3.  .1250  2.7   0.000  6.8992e+1  4.4667e+0  6.4742e+1  4.9412e+0    0.0
 2     5.      0.      3.      4.  .1250  2.7   0.000  6.4493e+1  5.0000e-1  7.7527e+0  2.3095e+0    0.0
 2     5.     -1.      2.5     5.  .1250  2.7   0.000  1.2141e+2  4.8667e+0  4.0085e+1  2.4843e+0    0.0
 2     5.     -2.      2.      6.  .1250  2.7   0.000  1.8596e+2  5.2333e+0  2.8142e+1  2.3783e+0    0.0
 2     5.     -3.      1.5     7.  .1250  2.7   0.000  2.9266e+2  5.3000e+0  1.8110e+1  2.4952e+0    0.0
 2     4.      2.      3.5     1.  .1250  3.2   0.000  1.3231e+2  9.0000e-1  6.8024e+0  1.1231e+2    0.0
 2     4.      1.      3.      2.  .1250  3.2   0.000  8.8287e+1  4.0500e+0  4.5873e+1  1.8735e+1    0.0
 2     4.      0.      2.5     3.  .1250  3.2   0.000  8.3799e+1  3.6000e+0  4.2960e+1  7.1131e+0    0.0
 2     4.     -1.      2.      4.  .1250  3.2   0.000  1.6307e+2  6.4000e+0  3.9247e+1  6.9209e+0    0.0
 2     4.     -2.      1.5     5.  .1250  3.2   0.000  2.5402e+2  8.5500e+0  3.3658e+1  6.1607e+0    0.0
 2     4.     -3.      1.      6.  .1250  3.2   0.000  4.0892e+2  9.8500e+0  2.4088e+1  6.1983e+0    0.0
 2     3.      1.      2.5     1.  .1250  1.1   0.000  8.5595e+1  1.8000e+0  2.1029e+1  2.4975e+1    0.0
 2     3.      0.      2.      2.  .1250  1.1   0.000  8.6933e+1  2.8000e+0  3.2209e+1  6.3414e+0    0.0
 2     3.     -1.      1.5     3.  .1250  1.1   0.000  1.8815e+2  6.0333e+0  3.2067e+1  5.4899e+0    0.0
 2     3.     -2.      1.      4.  .1250  1.1   0.000  3.1411e+2  8.7000e+0  2.7698e+1  4.5826e+0    0.0
 2     3.     -3.      0.5     5.  .1250  1.1   0.000  5.3767e+2  1.1200e+1  2.0831e+1  4.4824e+0    0.0
 2     2.      0.      1.5     1.  .1250  1.    0.000  1.3197e+2  5.0000e-1  3.7887e+0  3.5007e+1    0.0
 2     2.     -1.      1.      2.  .1250  1.    0.000  3.4164e+2  2.6000e+0  7.6104e+0  2.2655e+1    0.0
 2     2.     -2.      0.5     3.  .1250  1.    0.000  6.1267e+2  6.2000e+0  1.0120e+1  1.6251e+1    0.0
 2     2.     -3.      0.      4.  .1250  1.    0.000  1.1443e+3  6.1000e+0  5.3307e+0  1.5177e+1    0.0
 2     1.     -1.      0.5     1.  .1250  4.    0.000  1.3384e+2  8.0000e-1  5.9772e+0  1.4201e+2    0.0
 2     1.     -2.      0.      2.  .1250  4.    0.000  2.8349e+2  3.5500e+0  1.2523e+1  7.5197e+1    0.0
 2     1.     -3.     -0.5     3.  .1250  4.    0.000  6.1619e+2  5.4500e+0  8.8446e+0  6.5380e+1    0.0
 2     1.      5.      3.5     3.  .1250  4.    0.000  6.7332e+1  3.3000e+0  4.9011e+1  7.1442e+0    0.0
 2     1.      6.      4.      4.  .1250  4.    0.000  8.3286e+1  1.3667e+0  1.6409e+1  4.4185e+0    0.0
 2     1.      7.      4.5     5.  .1250  4.    0.000  1.1556e+2  2.7333e+0  2.3652e+1  3.5033e+0    0.0
 2     1.      8.      5.      6.  .1250  4.    0.000  1.5100e+2  3.9736e-8  2.6316e-7  2.8610e+0    0.0
 2     1.      9.      5.5     7.  .1250  4.    0.000  1.6812e+2  2.0667e+0  1.2293e+1  2.1235e+0    0.0
 2     2.      5.      4.      2.  .1250  1.7   0.000  1.1169e+2  2.4667e+0  2.2085e+1  1.2591e+1    0.0
 2     2.      6.      4.5     3.  .1250  1.7   0.000  1.0089e+2  2.6667e+0  2.6430e+1  4.5497e+0    0.0
 2     2.      7.      5.      4.  .1250  1.7   0.000  1.3521e+2  4.6000e+0  3.4021e+1  3.0486e+0    0.0
 2     2.      8.      5.5     5.  .1250  1.7   0.000  1.7708e+2  2.8667e+0  1.6189e+1  2.2815e+0    0.0
 2     2.      9.      6.      6.  .1250  1.7   0.000  1.9822e+2  3.4667e+0  1.7489e+1  1.5961e+0    0.0
 2     3.      5.      4.5     1.  .1250  2.    0.000  1.1779e+2  9.3333e-1  7.9234e+0  6.2492e+1    0.0
 2     3.      6.      5.      2.  .1250  2.    0.000  7.7457e+1  2.7333e+0  3.5289e+1  1.0273e+1    0.0
 2     3.      7.      5.5     3.  .1250  2.    0.000  9.0691e+1  5.5667e+0  6.1380e+1  4.8113e+0    0.0
 2     3.      8.      6.      4.  .1250  2.    0.000  1.1605e+2  4.9667e+0  4.2798e+1  3.0783e+0    0.0
 2     3.      9.      6.5     5.  .1250  2.    0.000  1.2646e+2  5.8333e+0  4.6129e+1  1.9168e+0    0.0
 2     4.      6.      5.5     1.  .1250  3.5   0.000  1.0335e+2  1.6667e+0  1.6126e+1  9.5951e+1    0.0
 2     4.      7.      6.      2.  .1250  3.5   0.000  1.1610e+2  3.4333e+0  2.9571e+1  2.6948e+1    0.0
 2     4.      8.      6.5     3.  .1250  3.5   0.000  1.5197e+2  5.2333e+0  3.4437e+1  1.4109e+1    0.0
 2     4.      9.      7.      4.  .1250  3.5   0.000  1.7425e+2  7.6667e+0  4.3999e+1  8.0886e+0    0.0
 2     5.      7.      6.5     1.  .1250  3.    0.000  1.2215e+2  2.4000e+0  1.9648e+1  9.7204e+1    0.0
 2     5.      8.      7.      2.  .1250  3.    0.000  1.7436e+2  4.4667e+0  2.5618e+1  3.4688e+1    0.0
 2     5.      9.      7.5     3.  .1250  3.    0.000  2.1955e+2  5.2333e+0  2.3837e+1  1.7471e+1    0.0
 2     6.      8.      7.5     1.  .1250  2.5   0.000  2.5605e+2  4.5000e+0  1.7575e+1  1.6980e+2    0.0
 2     6.      9.      8.      2.  .1250  2.5   0.000  3.5249e+2  5.8000e+0  1.6454e+1  5.8438e+1    0.0

*** end-of-file ***
```

Sample .Z-file

```
 TDAVG 7.20 Contour file.
/* 04 Aug 93
$ DATE= 91-09-21
$ ASPACE= 200.0m
$ ZPLOT: DATA= N-SP
 Cl Cn Ce Ns Nd Yl   Plot file  1        Cl Cn Ce Ns Nd Yl   Plot file  2
  1 10  0  3  1  0                         0  5  1  3  1  0
 TIME DOMAIN IP SURVEY DATA               TIME DOMAIN IP SURVEY DATA
 Apparent RESISTIVITY                     Newmont CHARGEABILITY
     values in ohm-meters                     values in milliseconds

IIxxxxxxxxYYYYYYYzzzzzzzzzzzz  AAA       IIxxxxxxxxYYYYYYYzzzzzzzzzzzz  AAA
 2    4.5     3.    9.68239E+01           2    4.5     3.    3.36667E+00
 2    4.      4.    8.64516E+01           2    4.      4.    2.23333E+00
 2    3.5     5.    8.81669E+01           2    3.5     5.   -2.70000E+00
 2    3.      6.    1.73273E+02           2    3.      6.    2.96667E+00
 2    2.5     7.    2.71409E+02           2    2.5     7.    3.26667E+00
 2    2.      8.    4.33050E+02           2    2.      8.    2.80000E+00
 2    4.      2.    1.04556E+02           2    4.      2.    2.60000E+00
 2    3.5     3.    6.89917E+01           2    3.5     3.    4.46667E+00
 2    3.      4.    6.44934E+01           2    3.      4.    5.00000E-01
 2    2.5     5.    1.21407E+02           2    2.5     5.    4.86667E+00
 2    2.      6.    1.85961E+02           2    2.      6.    5.23333E+00
 2    1.5     7.    2.92656E+02           2    1.5     7.    5.30000E+00
 2    3.5     1.    1.32306E+02           2    3.5     1.    9.00000E-01
 2    3.      2.    8.82866E+01           2    3.      2.    4.05000E+00
 2    2.5     3.    8.37992E+01           2    2.5     3.    3.60000E+00
 2    2.      4.    1.63071E+02           2    2.      4.    6.40000E+00
 2    1.5     5.    2.54025E+02           2    1.5     5.    8.55000E+00
 2    1.      6.    4.08923E+02           2    1.      6.    9.85000E+00
 2    2.5     1.    8.55953E+01           2    2.5     1.    1.80000E+00
 2    2.      2.    8.69332E+01           2    2.      2.    2.80000E+00
 2    1.5     3.    1.88148E+02           2    1.5     3.    6.03333E+00
 2    1.      4.    3.14107E+02           2    1.      4.    8.70000E+00
 2    0.5     5.    5.37672E+02           2    0.5     5.    1.12000E+01
 2    1.5     1.    1.31971E+02           2    1.5     1.    5.00000E-01
 2    1.      2.    3.41637E+02           2    1.      2.    2.60000E+00
 2    0.5     3.    6.12667E+02           2    0.5     3.    6.20000E+00
 2    0.      4.    1.14432E+03           2    0.      4.    6.10000E+00
 2    0.5     1.    1.33841E+02           2    0.5     1.    8.00000E-01
 2    0.      2.    2.83488E+02           2    0.      2.    3.55000E+00
 2   -0.5     3.    6.16192E+02           2   -0.5     3.    5.45000E+00
 2    3.5     3.    6.73325E+01           2    3.5     3.    3.30000E+00
 2    4.      4.    8.32861E+01           2    4.      4.    1.36667E+00
 2    4.5     5.    1.15562E+02           2    4.5     5.    2.73333E+00
 2    5.      6.    1.50998E+02           2    5.      6.    3.97364E-08
 2    5.5     7.    1.68116E+02           2    5.5     7.    2.06667E+00
 2    4.      2.    1.11690E+02           2    4.      2.    2.46667E+00
 2    4.5     3.    1.00895E+02           2    4.5     3.    2.66667E+00
 2    5.      4.    1.35211E+02           2    5.      4.    4.60000E+00
 2    5.5     5.    1.77078E+02           2    5.5     5.    2.86667E+00
 2    6.      6.    1.98216E+02           2    6.      6.    3.46667E+00
 2    4.5     1.    1.17794E+02           2    4.5     1.    9.33333E-01
 2    5.      2.    7.74566E+01           2    5.      2.    2.73333E+00
 2    5.5     3.    9.06915E+01           2    5.5     3.    5.56667E+00
 2    6.      4.    1.16048E+02           2    6.      4.    4.96667E+00
 2    6.5     5.    1.26458E+02           2    6.5     5.    5.83333E+00
 2    5.5     1.    1.03351E+02           2    5.5     1.    1.66667E+00
 2    6.      2.    1.16103E+02           2    6.      2.    3.43333E+00
 2    6.5     3.    1.51971E+02           2    6.5     3.    5.23333E+00
 2    7.      4.    1.74247E+02           2    7.      4.    7.66667E+00
 2    6.5     1.    1.22150E+02           2    6.5     1.    2.40000E+00
 2    7.      2.    1.74359E+02           2    7.      2.    4.46667E+00
 2    7.5     3.    2.19551E+02           2    7.5     3.    5.23333E+00
 2    7.5     1.    2.56052E+02           2    7.5     1.    4.50000E+00
 2    8.      2.    3.52493E+02           2    8.      2.    5.80000E+00
 9999.0                                   9999.0
```

```
Cl Cn Ce Ns Nd Yl   Plot file  3          Cl Cn Ce Ns Nd Yl   Plot file  4
 0  2  2  3  1  0                           0 10  2  1  1  0
TIME DOMAIN IP SURVEY DATA                 TIME DOMAIN IP SURVEY DATA
METAL FACTOR                               PEAK VOLTAGE Vp
   using Newmont Chargeability                values in millivolts.
   and Apparent Resistivity.
IIxxxxxxxxYYYYYYYYzzzzzzzzzzzz  AAA        IIxxxxxxxxYYYYYYYYzzzzzzzzzzzz  AAA
2    4.5    3.    3.47710E+01             2    4.5    3.    5.13667E+00
2    4.     4.    2.58333E+01             2    4.     4.    2.29320E+00
2    3.5    5.   -3.06237E+01             2    3.5    5.    1.33640E+00
2    3.     6.    1.71214E+01             2    3.     6.    1.64150E+00
2    2.5    7.    1.20359E+01             2    2.5    7.    1.71413E+00
2    2.     8.    6.46577E+00             2    2.     8.    1.91450E+00
2    4.     2.    2.48671E+01             2    4.     2.    1.87207E+01
2    3.5    3.    6.47421E+01             2    3.5    3.    4.94117E+00
2    3.     4.    7.75273E+00             2    3.     4.    2.30950E+00
2    2.5    5.    4.00854E+01             2    2.5    5.    2.48433E+00
2    2.     6.    2.81421E+01             2    2.     6.    2.37830E+00
2    1.5    7.    1.81100E+01             2    1.5    7.    2.49523E+00
2    3.5    1.    6.80240E+00             2    3.5    1.    1.12305E+02
2    3.     2.    4.58733E+01             2    3.     2.    1.87350E+01
2    2.5    3.    4.29598E+01             2    2.5    3.    7.11310E+00
2    2.     4.    3.92467E+01             2    2.     4.    6.92095E+00
2    1.5    5.    3.36582E+01             2    1.5    5.    6.16065E+00
2    1.     6.    2.40877E+01             2    1.     6.    6.19830E+00
2    2.5    1.    2.10292E+01             2    2.5    1.    2.49753E+01
2    2.     2.    3.22086E+01             2    2.     2.    6.34143E+00
2    1.5    3.    3.20669E+01             2    1.5    3.    5.48987E+00
2    1.     4.    2.76976E+01             2    1.     4.    4.58257E+00
2    0.5    5.    2.08306E+01             2    0.5    5.    4.48240E+00
2    1.5    1.    3.78870E+00             2    1.5    1.    3.50065E+01
2    1.     2.    7.61042E+00             2    1.     2.    2.26555E+01
2    0.5    3.    1.01197E+01             2    0.5    3.    1.62515E+01
2    0.     4.    5.33068E+00             2    0.     4.    1.51770E+01
2    0.5    1.    5.97723E+00             2    0.5    1.    1.42010E+02
2    0.     2.    1.25226E+01             2    0.     2.    7.51975E+01
2   -0.5    3.    8.84465E+00             2   -0.5    3.    6.53800E+01
2    3.5    3.    4.90105E+01             2    3.5    3.    7.14420E+00
2    4.     4.    1.64093E+01             2    4.     4.    4.41847E+00
2    4.5    5.    2.36525E+01             2    4.5    5.    3.50330E+00
2    5.     6.    2.63158E-07             2    5.     6.    2.86097E+00
2    5.5    7.    1.22931E+01             2    5.5    7.    2.12353E+00
2    4.     2.    2.20850E+01             2    4.     2.    1.25913E+01
2    4.5    3.    2.64302E+01             2    4.5    3.    4.54973E+00
2    5.     4.    3.40209E+01             2    5.     4.    3.04860E+00
2    5.5    5.    1.61887E+01             2    5.5    5.    2.28147E+00
2    6.     6.    1.74893E+01             2    6.     6.    1.59613E+00
2    4.5    1.    7.92344E+00             2    4.5    1.    6.24917E+01
2    5.     2.    3.52886E+01             2    5.     2.    1.02730E+01
2    5.5    3.    6.13803E+01             2    5.5    3.    4.81133E+00
2    6.     4.    4.27984E+01             2    6.     4.    3.07827E+00
2    6.5    5.    4.61287E+01             2    6.5    5.    1.91680E+00
2    5.5    1.    1.61264E+01             2    5.5    1.    9.59510E+01
2    6.     2.    2.95714E+01             2    6.     2.    2.69477E+01
2    6.5    3.    3.44365E+01             2    6.5    3.    1.41090E+01
2    7.     4.    4.39989E+01             2    7.     4.    8.08857E+00
2    6.5    1.    1.96479E+01             2    6.5    1.    9.72040E+01
2    7.     2.    2.56176E+01             2    7.     2.    3.46877E+01
2    7.5    3.    2.38365E+01             2    7.5    3.    1.74713E+01
2    7.5    1.    1.75745E+01             2    7.5    1.    1.69800E+02
2    8.     2.    1.64542E+01             2    8.     2.    5.84385E+01
9999.0                                    9999.0
```

*** continued next column ***   *** end of file ***

Sample .Xnn-file   SAMTDIP.X01and .X02 (two of six plots)
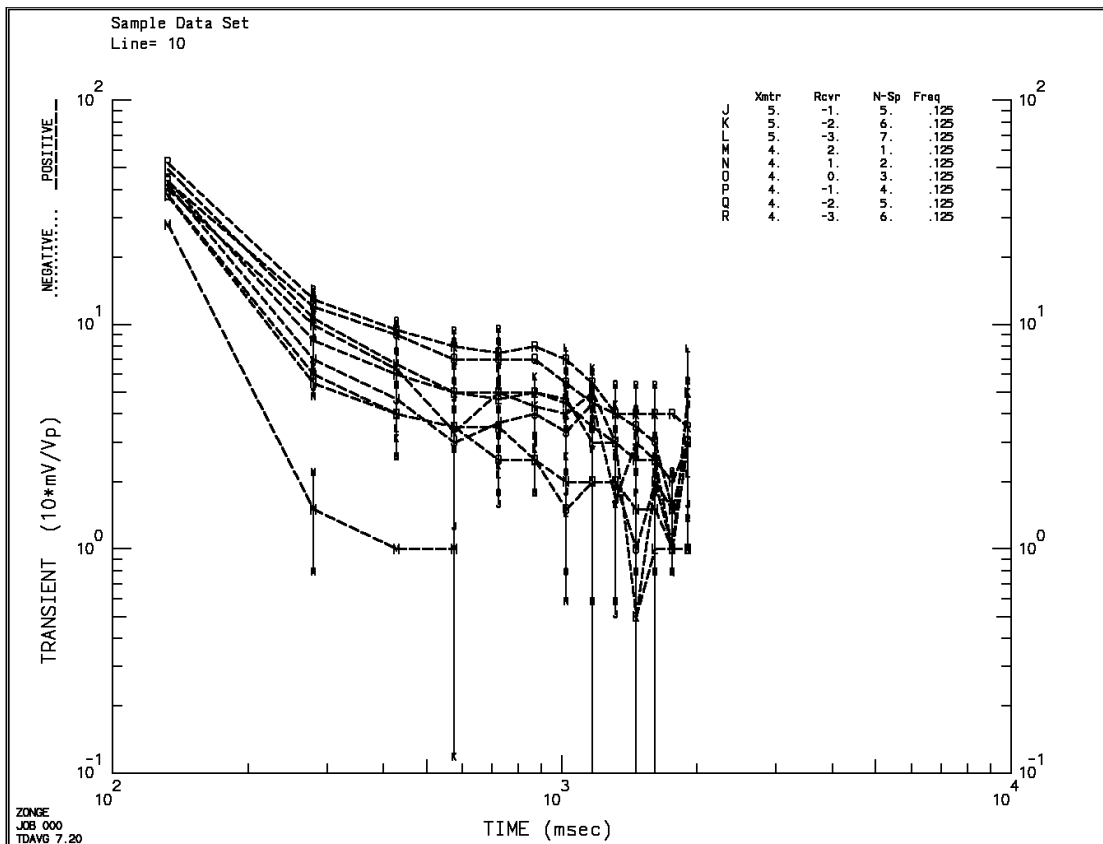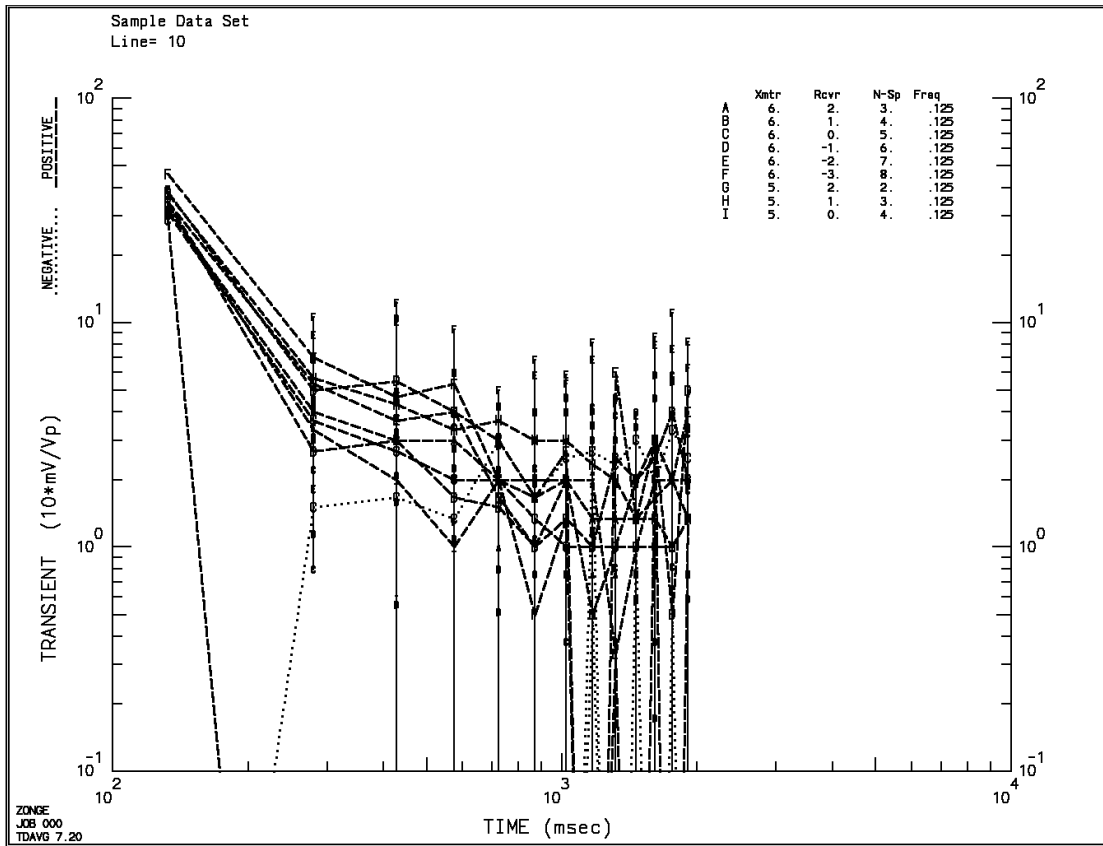
Appendix C ... FILE DOCUMENTATION

.AVG-File Format Documentation

```
\ TDAVG 7.20: "SAMTDIP.FLD", Dated 91-09-21, Processed 04 Aug 93 $ ASPACE= 200.0m
skp     Tx      Rx      PltPt   NSp  Freq Amps   Time  App.Resist. Nwmnt-Chg MetalFactor   Vp;V/Vp    %V/Vp
\=][=======][=======][=======][====][====][====][=====][=========][=========][=========][=========][=====]
 2      6.      2.      4.5     3.   .1250 2.    0.000  9.6824e+1   3.3667e+0   3.4771e+1   5.1367e+0    0.0
 2      6.      1.      4.      4.   .1250 2.    0.000  8.6452e+1   2.2333e+0   2.5833e+1   2.2932e+0    0.0
 2      6.      0.      3.5     5.   .1250 2.    0.000  8.8167e+1  -2.7000e+0  -3.0624e+1   1.3364e+0    0.0
 2      6.     -1.      3.      6.   .1250 2.    0.000  1.7327e+2   2.9667e+0   1.7121e+1   1.6415e+0    0.0
 2      6.     -2.      2.5     7.   .1250 2.    0.000  2.7141e+2   3.2667e+0   1.2036e+1   1.7141e+0    0.0
 2      6.     -3.      2.      8.   .1250 2.    0.000  4.3305e+2   2.8000e+0   6.4658e+0   1.9145e+0    0.0
 2      5.      2.      4.      2.   .1250 2.7   0.000  1.0456e+2   2.6000e+0   2.4867e+1   1.8721e+1    0.0
 2      5.      1.      3.5     3.   .1250 2.7   0.000  6.8992e+1   4.4667e+0   6.4742e+1   4.9412e+0    0.0
 2      5.      0.      3.      4.   .1250 2.7   0.000  6.4493e+1   5.0000e-1   7.7527e+0   2.3095e+0    0.0
 2      5.     -1.      2.5     5.   .1250 2.7   0.000  1.2141e+2   4.8667e+0   4.0085e+1   2.4843e+0    0.0
 2      5.     -2.      2.      6.   .1250 2.7   0.000  1.8596e+2   5.2333e+0   2.8142e+1   2.3783e+0    0.0
 2      5.     -3.      1.5     7.   .1250 2.7   0.000  2.9266e+2   5.3000e+0   1.8110e+1   2.4952e+0    0.0
```

skp
skip flag

Tx
Transmitter Dipole, station number of lowest numbered end.

Rx
Receiver Dipole, station number of lowest numbered end.

PltPt
Plot Point, station number at the midpoint between Tx and Rx.

NSp
N-Spacing, relationship between Tx and Rx, plotted as Y-Coordinate.

Freq
Frequency at which data was measured.

Amps
Average SquareWave Current, in amps

Time
For lines containing Primary voltage, Time is zero.
For lines containing V/Vp, Time is included in milliseconds.

Resistivity
Calculated Resistivity value, in ohmmeters.

Nwmnt-Chg
Calculated Newmont Chargeability value, in milliseconds.

MetalFactor
Calculated Metal Factor value, unitless.

Vp;V/Vp
Primary Voltage, in millivolts, when Time is zero.
Window Voltage / Primary Voltage, 10*mV/Vp (milliunits times ten), when Time is not zero.

%V/Vp
Statistical variation of V/Vp from averaged data blocks.
Standard Deviation / Average V/Vp * 100, percent

.Z-file Format (v2.0) Plot File For All Data

```
 1: $ ZPLOT: DATA= FLOG
 2: /* 29 Jul 93
 3:  AMTAVG 7.20 Contour file.
 4:  Cl Cn Ce Ns Nd Yl   Plot file  1
 5:   1  5  0  3  1  1
 6:  CSAMT SURVEY DATA
 7:  CAGNIARD RESISTIVITY
 8:   values in ohm-meters
 9: IIxxxxxxxxYYYYYYYYzzzzzzzzzzzz  AAA
    2      0.0    22.00    2.719E+02
    2      0.0    21.00    2.365E+02
    2      0.0    20.00    2.221E+02
    2      0.0    19.00    1.937E+02
    2      0.0    18.00    1.644E+02
    :       :       :          :
99: 9999.00
```

DESCRIPTION OF VALUES IN SAMPLE FILE BY LINE NUMBER:

Line #   Explanation:

2: **$ ZPLOT: DATA= FLOG**   Mode line, Y-value data type (log Freq)

3: **AMTAVG 7.20**   Program name and version that generated this file.

4: **Cl**   Label for contour type: 0 = linear
                                             1 = logarithmic
                                             2 = pseudo-log
   Pseudo-log contours: positive and negative values contoured separately, using $\log_{10}(abs(value))$, plus a zero contour.

   Cn   Label for number of contours per interval.

   Ce   Label for exponent of the contour interval.
   The "interval" is an integer power of ten: 10^{Ce}

   Ns   Label for number of significant digits when posting values.
   Values: -1, 3, 4, 5. (-1 = free format for small values)

   Nd   Label for the number of digits after the decimal.

   Yl   Label for vertical axis: 0 = none
                                            1 = linear frequency (log spacing)
                                            2 = log frequency (linear spacing)
                                            3 = linear depth

5: **1**   Value of Cl: logarithmic contours
   5   Value of Cn: 5 contours per "interval"
   0   Value of Ce: interval = 10^0 = 1
   3   Value of Ns: use 3 significant digits for contouring
   1   Value of Nd: plot 1 digit after the decimal
   1   Value of Yl: linear frequency axis (log spacing of freqs)

6-8:   Data description for this Plot File. Two to six lines are available, NOT including the first column. Plot programs may plot these lines as title information.

9: Header line for the data that follows:

II - Command flag:

    0 = Skip this line of data.

    1 = Omit for contouring, but post the bracketed value.

    2 = Use for contouring and post the value (most common).

    3 = Label a point or station by plotting a symbol under the X-axis at the X-coordinate.

    4 = Use for contouring, post the symbol and not the value.

        Used for depth plots where values are interpolated for the bottom of the plot to improve the gridding.

    5 = Use to set plot limits, do not contour or post.

        Used for depth plots to set zero depth. Used to provide a margin around the data, as for plan maps.

xxxxxxxx - X-coordinate, usually station coordinate.

YYYYYYYY - Y-coordinate, not used for Flag = 3

zzzzzzzz - Value to be plotted at X-Y for Flags 1, 2, 4.

AAA - For Flag 1 or 2, ZPLOT posts any characters in the AAA column instead of the value in the **zzzzzzzz** column.

    For Flag 3, ZPLOT plots a symbol below the X-axis at the x-value, according to an integer in column **AAA**. A zero or positive integer refers to symbols in TABLE 1 of the PLOT Manual. A negative integer refers to topographic symbols in the CTOPO Manual.

99: **9999.0** - End-Of-Plot indicator.

Transient ElectroMagnetic data append profile plot data. Points at a single time (Y) for one frequency (f) and window (w) are connected from station to station by a profile line.

YYYYYYYY - Time in milliseconds for a particular window.

ffffffff - Frequency at which data was acquired.

wwww - Window number.

```
IIxxxxxxxxYYYYYYYYzzzzzzzzzzzz  AAA    ffffffffwwww
 2  100.00    0.121-9.10488E+02        *32* Hz W 1
 2  100.00    0.243-1.34988E+03        *32* Hz W 2
 2  100.00    0.364-3.91872E+02        *32* Hz W 3
```