NSAVG
DOCUMENTATION

ZONGE Data Processing
NSAMT Data Averaging Program
version 1.2x

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August, 1993

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NSAVG Program Documentation

OVERVIEW

NSAVG averages GDP NSAMT (AMT) data. Several files may be created, including a log file (.LOG-file), listing file (.NL-file), average data files (.AVG- and .AD-file), plot file (.Z-file), and vector files (.Xnn-files).

INPUT FILES

NSAVG 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 NSAMT data, one record contains data measured by two channels, one that measured an E-field component and a second that measured an orthogonal H-field component, such as Ex and Hy components. The SHRED program uses the GDP data block entries for Rx and Station, 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 document-ation 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 NSAVG, 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 NSAVG.

OUTPUT FILES

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

The listing file (.NL-file) presents raw and 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 NSAVG 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. NSAVG includes sections for Resistivity and Impedance Phase data in the .Z-file.

The average file (.AD-file) includes averaged E- and H-field component data, organized by station and sorted by frequency. This format is expected for input to older versions of the AMTRED and AMTPLT programs, in addition to some ZONGE modeling programs.

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 versions of the AMTRED and AMTPLT programs, in addition to several utility routines and some ZONGE modeling programs. The format is also suitable for use by spreadsheet, database, and plot programs.

Log-log plots of Resistivity, E- or H-field Magnitude versus Frequency, 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 NSAMT survey locations are entered by the GDP operator in a specific manner. First, the Station numbers are entered explicitly for each channel, and the Rx value indicates the location of the magnetic coil.

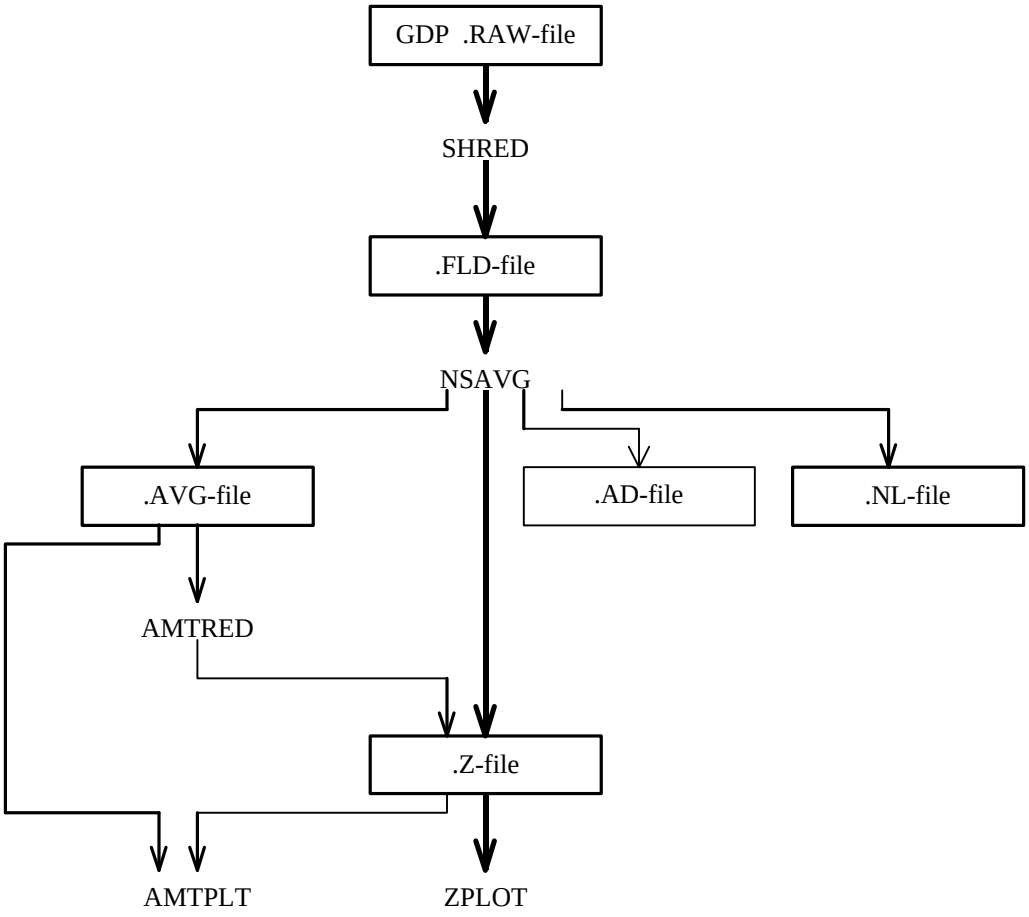
The SHRED /R- command-line argument provides an alternative interpretation. When the /R- argument is used, Rx is expected to provide a reference station location, and the Station numbers are used as offsets to the Rx value. The .FLD-file will include calculated station locations for each E-field channel.

NSAMT DATA PROCESSING FLOW

August, 1993

Program names are CAPITALIZED
File types are boxed

Thick lines ━━ show standard GDP data processing.



Other files read or written:

.MDE-file | .LOG-file | .Xnn-file

NSAVG Usage

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

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

Several variable parameters called "MODES" influence the operation of NSAVG. 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 NSAVG.

NSAVG MODE DISPLAY

```
PROCESSING MODES USED:
+==============+=========+=========+=========+=========+=========+=========+
|CONTROL MODES |AutoRun  |ListFile |AvgFile  |PlotFile |Rho1,2,Av|         |
|   mode names | AUTO    | LFILE   | DFILE   | ZFILE   | ZRHO    |         |
|  mode values +    NO   +    YES  +    YES  +   All   +   RHOA  +         +
+==============+=========+=========+=========+=========+=========+=========+
| DATA LIMITS  |HarmLimit|Out_Limit|CC LimLo |CC LimHi |LowLimit |HiLimit  |
|   mode names |HARMONIC | OUTLIER | CLIMIT  | CREJECT | PHASELO | PHASEHI |
|  mode values +   NONE  +   NONE  +   0.800 +   1.000 +   NONE  +   NONE  +
+==============+=========+=========+=========+=========+=========+=========+
| PLOT LIMITS  |DataType |MAG_Axis_Limits    |FREQ_Axis_Limits   |         |
|   mode names | PLOT    | VMIN    | VMAX    | FMIN    | FMAX    |         |
|  mode values +   NONE  +   AUTO  +   AUTO  +   AUTO  +   AUTO  +         +
+==============+=========+=========+=========+=========+=========+=========+
|  PLOT MODES  |Spline   |NumStns  |LblSort  |ErrorBar |Preview  |PhaseRef |
|   mode names | SPLINE  | NUMC    | LMAG    |ERRORBARS| VIEW    |PHASEREF |
|  mode values +  LINEAR +    7   +   READ  +    YES  +   NONE  +    NO   +
+==============+=========+=========+=========+=========+=========+=========+
```

NSAVG ERROR MESSAGES

If errors or inconsistencies (primarily within the .FLD-file) arise within the program, NSAVG 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.

NSAVG DATA FILTER SELECTIONS

The nature of AMT data normally requires the acquisition of many data blocks, some of which are too noisy to be used as part of averaged data. Several modes provide numeric limitations that allow NSAVG to reject noisy data. Modes CLIMIT, CREJECT, PHASELO, PHASEHI and OUTLIER should be used as needed so that the raw data file does not need to be manually edited.

NSAVG OUTPUT SELECTIONS

NSAVG may write a "listing" (.NL-file), average data (.AVG- and .AD-files), a plot data (.Z-file), log-log plots with error bars (.Xnn-files), or a screen display of the station curves as they are created (see mode "VIEW"). An .AVG-, .AD-, and .Z-file are automatically created by NSAVG with the default values for the mode variables "DFILE" and "ZFILE". Mode "LFILE" may be used to select a listing .NL-file.

Log-log plots with error bars may be generated with NSAVG by setting the "PLOT" mode variable to one of six optional values:

"PLOT= RHO1"	plots log-Resistivity1 versus log-Frequency
"PLOT= RHO2"	plots log-Resistivity2 versus log-Frequency
"PLOT= RHOA"	plots log-ResistivityA versus log-Frequency
"PLOT= EMAG"	plots log-E-field Magnitude versus log-Frequency
"PLOT= HMAG1"	plots log-H-field1 Magnitude versus log-Frequency
"PLOT= HMAG2"	plots log-H-field2 Magnitude versus log-Frequency

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

The .Z-file written by NSAVG contains Resistivity and Impedance-Phase values. The Y-values in an NSAVG .Z-file are restricted to log-base-2 of Frequency values.

NSAVG Sample Run

Input files:	SAMAMT.FLD	SAMAMT.MDE	raw data and mode files
Output files:	SAMAMT.LOG	SAMAMT.NL	log and listing files
	SAMAMT.AVG	SAMAMT.AD	average data files
	SAMAMT.Z	SAMAMT.Xnn	XYZ and plot files

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

```
C: > NSAVG SAMAMT                *** Start program, specify data file ***

ZONGE ENGINEERING: 3322 E. Fort Lowell, Tucson AZ 85716, USA
NSAVG 1.20: Natural Source AMT FIELD DATA average program
   MS-DOS version implemented 01 August, 1993.

MODE COMPANY =Zonge Engineering          *** entries from SAMAMT.MDE ***
MODE CLIENT  =Zonge Engineering
MODE PROJECT =NSAMT Testing
MODE JOBNUMB =123
MODE JOBDATE =July 1992

(Type MENU for assistance with MODEs.)

MODE Change ]name?, name= value] : CLIMIT = .5  *** Set data filters ***
MODE Change ]name?, name= value] : PHASELO= 100
MODE Change ]name?, name= value] : PHASEHI= 1200
MODE Change ]name?, name= value] : OUTLIER= 3.
MODE Change ]name?, name= value] : PLOT   = RHOA   *** Request plots ***
MODE Change ]name?, name= value] : <RETURN>             *** Continue ***

Files used: "SAMAMT.FLD", and "SAMAMT.MDE"
NOTE:  25 lines rejected by Mode CLIMIT.
NOTE:   4 lines rejected by Mode PHASELO.
NOTE:   3 lines rejected by Mode PHASEHI.
Station "     9.0" (ExHy), line  292,  21 freqs:  Data DONE
NOTE:  18 lines rejected by Mode CLIMIT.
NOTE:  26 lines rejected by Mode PHASELO.
Station "     9.0" (EyHx), line  647,  22 freqs:  Data DONE

File: "SAMAMT.X01"      8604 bytes, ready for rasterizing.

Combine .Z-file data . . .
File "SAMAMT.AVG" contains averaged data for   2 stations.
File "SAMAMT.AD" contains averaged data for   2 stations.

Files ready for rasterizing:
 SAMAMT.X01

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.

NSAVG MODE LIST

(v 1.2x)

PROCESSING MODE DEFAULT VALUES:

CONTROL MODES	AutoRun	ListFile	AvgFile	PlotFile	Rho1,2,Av	
mode names	AUTO	LFILE	DFILE	ZFILE	ZRHO	
mode values	NO	YES	YES	All	RHOA	
DATA LIMITS	HarmLimit	Out_Limit	CC LimLo	CC LimHi	LowLimit	HiLimit
mode names	HARMONIC	OUTLIER	CLIMIT	CREJECT	PHASELO	PHASEHI
mode values	NONE	NONE	0.800	1.000	NONE	NONE
PLOT LIMITS	DataType	MAG_Axis_Limits		FREQ_Axis_Limits		
mode names	PLOT	VMIN	VMAX	FMIN	FMAX	
mode values	NONE	AUTO	AUTO	AUTO	AUTO	
PLOT MODES	Spline	NumStns	LblSort	ErrorBar	Preview	PhaseRef
mode names	SPLINE	NUMC	LMAG	ERRORBARS	VIEW	PHASEREF
mode values	LINEAR	7	READ	YES	NONE	NO

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.

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

LFILE
A summary listing of the data file may be written to an .NL-file suitable for printing..

Values: LFILE= No (None), or Yes (NLfile).
Default: LFILE= Yes

DFILE
The averaged component data may be written to a data file for use by additional programs. Magnitude, Phase, percent variation for Magnitude and standard deviation for Phase are included. Mode DFILE specifies whether to write .AVG- and .AD-files.

Values: DFILE= No (None), or Yes (AVGfile).
Default: DFILE= Yes

ZFILE
Resistivity and Impedance-Phase data may be written to a .Z-file for direct use by plot programs. Mode ZFILE specifies which component pair to include in the .Z-file. Mode ZRHO specifies writing the RHO-1, RHO-2, or RHO-A resistivity values.

Values: ZFILE= No (None), Yes, ExHy, EyHx, or E-Hz.
Default: ZFILE= ExHy

ZRHO
The RHO-1, RHO-2, or RHO-Average resistivity values may be included in a .Z-file when mode ZFILE is specified. Mode ZRHO specifies which resistivity values to include.

Values: ZRHO= RHO1, RHO2 or RHOA
Default: ZRHO= RHOA

HARMONIC
Limit the maximum harmonic to be processed by setting mode HARMONIC.

Natural Source AMT data includes even and odd harmonics from 1 to 7. A single frequency may have a unique fundamental frequency, or it may have two or three possible fundamental frequencies. For example, 4Hz is the first harmonic of 4Hz, the second harmonic of 2Hz, and the fourth harmonic of 1Hz.

Multiple harmonic possibilities include an odd harmonic of the lowest fundamental frequency, and additional even harmonics of higher fundamental frequencies. Mode HARMONIC is used to specify an odd harmonic, and all data acquired at frequencies of a higher odd harmonic will not be included in data listings or averaged data.

Values that are even integers will be entered as the next lower integer, and any integer other than 1,3,5 or 7 will be set to 7 (displayed in the mode list as NONE).

Values: HARMONIC= NONE, 1, 3, 5, 7, or 9.
Default: HARMONIC= NONE

OUTLIER
Averaged data may be restricted to measurements within a specified range around the median value. The RHOA (average of RHO1 and RHO2) values are examined to determine the median (middle value of the list of sorted RHOA values), then mode OUTLIER specifies extreme acceptable values. Data outside these limits are skipped and all data for those measurement are omitted from all averaged values. Mode OUTLIER is expressed as a multiplier: OUTLIER=2.0 specifies limits of X*2 and X*1/2, where X is the median value.

Values: OUTLIER= NONE,
or Outlier limit: 0.00 to 100.
Default: OUTLIER= NONE

CLIMIT
Correlation Coefficient MINIMUM limit. See also mode CREJECT.

Limit the averaged data to measurements with Correlation Coefficient (Coherency) values greater or equal to the value of mode CLIMIT. The average flag will be automatically set to zero for data with Coherency values below the mode value.

Values: CLIMIT= NONE,
or Coherency limit: 0.000 to 1.000.
Default: CLIMIT= 0.800

CREJECT
Correlation Coefficient MAXIMUM limit. See also mode CLIMIT. Use this mode to reject coherent data from strong local signals.

Limit the averaged data to measurements with Correlation Coefficient (Coherency) values less than or equal to the value of mode CREJECT. The average flag will be automatically set to zero for data with Coherency values above the mode value.

Values: CREJECT= NONE,
or Coherency limit: 0.000 to 1.000.
Default: CREJECT= 1.000

PHASELO
Limit the averaged data to measurements with phase values greater than a value specified by mode PHASELO. The average flag will be automatically set to zero for data with phase values less than the mode value.

Values: PHASELO= NONE,
or low phase limit, milliradians.
Default: PHASELO= NONE

PHASEHI
Limit the averaged data to measurements with phase values less than a value specified by mode PHASEHI. The average flag will be automatically set to zero for data with phase values greater than the mode value.

Values: PHASEHI= NONE,
or high phase limit, milliradians.
Default: PHASEHI= NONE

PLOT
Log-log plots of data for each station may be plotted to a raster file. Mode PLOT specifies which data to plot. RHO1, RHO2, RHOA, EMAG, HMAG1 or HMAG2 plots are available.

Mode NUMCURVES: number of curves per plot.
Mode ERRORBARS: include error bars.
Mode VIEW: enables plot preview on screen.

Values: PLOT= NONE, RHO1, RHO2, RHOA, EMAG, HMAG1 or HMAG2.
Default: PLOT= NONE

VMIN
The low magnitude value determines the bottom border of plots. If not specified, the program will fit the limits to the data for the FIRST station.

Plot limits are presently restricted to decade boundaries. The value specified will be shifted to the next lower decade.
Related modes: VMAX, FMIN, FRQLO, FMAX, FRQHI.

Values: VMIN= AUTO or low magnitude limit
Default: VMIN= AUTO

VMAX
The high magnitude value determines the top border of plots. If not specified, the program will fit the limits to the data for the FIRST station.

Plot limits are presently restricted to decade boundaries. The value specified will be shifted to the next higher decade.
Related modes: VMIN, FMIN, FRQLO, FMAX, FRQHI.

Values: VMAX= AUTO or high magnitude limit
Default: VMAX= AUTO

FMIN
The low frequency value determines the left border of plots. Valid values are AUTO and FRQLO. For AUTO, the program will fit the limits to the data for the FIRST station of each plot. For FRQLO, the mode FRQLO value will be used.

Plot limits are presently restricted to decade (log2) boundaries.
Related modes: VMIN, VMAX, FRQLO, FMAX, FRQHI.

Values: FMIN= AUTO, or FRQLO.
Default: FMIN= AUTO

FMAX
The high frequency value determines the right border of plots. Valid values are AUTO and FRQLO. For AUTO, the program will fit the limits to the data for the FIRST station of each plot. For FRQHI, the mode FRQHI value will be used.

Plot limits are presently restricted to decade (log2) boundaries.
Related modes: VMIN, VMAX, FRQHI, FMIN, FRQLO.

Values: FMAX= AUTO, or FRQHI.
Default: FMAX= AUTO

SPLINE
Stations will be drawn with a spline curve when mode SPLINE= Yes and they will be drawn with linear segments between frequencies when mode SPLINE= No.

Values: SPLINE= Linear (No), or Spline (Yes).
Default: SPLINE= Linear

NUMCURVES
Log-log plots may include several curves per plot, as specified by mode NUMCURVES.

Mode PLOT specifies which data to plot.
Mode VIEW enables plot preview on screen.

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

LMAG
If mode LMAG= READ then stations will be listed in the order as read from the raw data file. If mode LMAG= HIMAG then the stations will be listed in the order of the high frequency magnitudes.

Values: LMAG= READ, HIMAG
Default: LMAG= READ

ERRORBAR
Error bars are available for averaged mag and resistivity data only.

The variation (sigma) is displayed as a percentage (coefficient of variation) in the .NL-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= No

PHASEREF
Mode PHASEREF enables "Phase Reference". Any phase value provides a list of possible, valid values, each differing by 2.*pi. The set of values can be described by V + N * PI, where V is the phase value, and N is any positive or negative integer. "Phase Reference" attempts to reduce this ambiguity.

During averaging, phase values will be reduced as close to zero as possible by adding or subtracting by 2.*pi. The results are averaged.

Phase values will be displayed and written to data files by using the low frequency value at each station as an initial reference. The value at the next higher frequency is adjusted by 2.*pi so that the closest value to the reference is selected. This value then becomes the reference value for adjusting the value at the next higher frequency.

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

Appendix B ... SAMPLE FILES

Sample .LOG-file

```
NSAVG 1.20, Processed: 30 Jul 93

GLOBAL MODE LIST:
+=============================================+==============+==============+
|  COMPANY                                    |  JOBNUMB     |  TXLEN       |
| Zonge Engineering                           | 123          |              |
|  CLIENT                                     |  JOBDATE     |  TXBRG       |
| Zonge Engineering                           | July 1992    |              |
|  PROJECT                                    |  JOBLINE     |  TXDIS       |
| NSAMT Testing                               |              |              |
+==============+==============+==============+==============+              |
|  BRGBACK     |  RXBRG       |  BRGLINE     |  FRQLO       |  RX2TX       |
|              |              |              |   NONE       |              |
|  STNLO       |  STNDELT     |  STNHI       |  FRQHI       |  TXCX        |
|   NONE       |      1.0     |   NONE       |   NONE       |              |
|  LBLFRST     |  LBLDELT     |  PLTREV      |  UNITS       |  TXCY        |
|  STNLO       |      1.0     |    NO        |  METERS      |              |
+==============+==============+==============+==============+==============+

PROCESSING MODES USED:
+==============+=========+=========+=========+=========+=========+=========+
|CONTROL MODES |AutoRun  |ListFile |AvgFile  |PlotFile |Rho1,2,Av|         |
|   mode names | AUTO    | LFILE   | DFILE   | ZFILE   | ZRHO    |         |
|  mode values +    NO   +    YES  +    YES  +   All   +   RHOA  +         +
+==============+=========+=========+=========+=========+=========+=========+
| DATA LIMITS  |HarmLimit|Out_Limit|CC LimLo |CC LimHi |LowLimit |HiLimit  |
|   mode names |HARMONIC | OUTLIER | CLIMIT  | CREJECT | PHASELO | PHASEHI |
|  mode values +   NONE  +    3.00 +   0.500 +   1.000 +    100. +   1200. +
+==============+=========+=========+=========+=========+=========+=========+
| PLOT LIMITS  |DataType |MAG_Axis_Limits    |FREQ_Axis_Limits   |         |
|   mode names | PLOT    | VMIN    | VMAX    | FMIN    | FMAX    |         |
|  mode values +   RHO1  +   AUTO  +   AUTO  +   AUTO  +   AUTO  +         +
+==============+=========+=========+=========+=========+=========+=========+
|  PLOT MODES  |Spline   |NumStns  |LblSort  |ErrorBar |Preview  |PhaseRef |
|   mode names | SPLINE  | NUMC    | LMAG    |ERRORBARS| VIEW    |PHASEREF |
|  mode values +  LINEAR +    7   +   READ  +    YES  +   NONE  +    NO   +
+==============+=========+=========+=========+=========+=========+=========+

Files used: "SAMAMT.FLD", and "SAMAMT.MDE"
NOTE:  25 lines rejected by Mode CLIMIT.
NOTE:   4 lines rejected by Mode PHASELO.
NOTE:   3 lines rejected by Mode PHASEHI.
Station "     9.0" (ExHy), line  292,  21 freqs:  Data DONE
NOTE:  18 lines rejected by Mode CLIMIT.
NOTE:  26 lines rejected by Mode PHASELO.
Station "     9.0" (EyHx), line  647,  22 freqs:  Data DONE

Combine .Z-file data . . .
File "SAMAMT.AVG" contains averaged data for   2 stations.
File "SAMAMT.AD" contains averaged data for   2 stations.

Files ready for rasterizing:
 SAMAMT.X01

Log file "SAMAMT.LOG" closed.

*** end-of-file ***
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Sample .NL-file (partial: first station only)

```
 PROJECT: NSAMT Testing                                                File: "SAMAMT.FLD  "           GDP_AMT 0524
 LINE:              STATION:      9.0   A-Sp:  200.0 meters NSAVG 1.20: 30 Jul 93    ARITHMETIC AVERAGE
 FIELD DATA    Pair:"ExHy"  =E-FIELD== ====H-FIELD=======   COIL   =====1===RHO===2==  CCOEFF =PHASE=
   Blk  Stks Samp Burst Good   (uV)  g    (pT)    (pT)  g            (o-m)     (o-m)          (mR) pi A
 f=    896 Hz =
   184    15  256    1    15 52.215   8  0.678   0.000   8     75      28.0      39.2   0.844  -2326 0 0
   185    15  256    1    15 32.430   8  0.434   0.000   8     75      21.1      45.8   0.678  -2384 0 0
   186    15  256    1    13 19.250   8  0.417   0.000   8     75       3.0      46.6   0.255    929 0 0
   187    15  256    1    15 68.287   8  0.843   0.000   8     75      33.4      40.2   0.911    916 0 1
   188    15  256    1    13 32.503   8  0.491   0.000   8     75      18.2      32.8   0.744    598 0 1
   191    15  256    1    15 248.22   8  2.993   0.000   8     75      38.1      38.7   0.993    830 0 1
   192    15  256    1    14 1007.3   8 12.384   0.000   8     75      36.8      37.1   0.996    812 0 1
   193    13  256    1    12 28.805   8  0.431   0.000   8     75      11.8      53.0   0.471    763 0 0
   194    15  256    1    15 183.40   8  2.376   0.000   8     75      32.4      34.1   0.974    833 0 1
   196    15  256    1    13 88.191   8  1.191   0.000   8     75      29.1      32.2   0.951    865 0 1
   197    15  256    1    14 334.77   8  3.990   0.000   8     75      39.1      39.5   0.995    839 0 1
   198    15  256    1    14 53.466   8  0.799   0.000   8     75      22.9      27.3   0.916    788 0 1
   199    13  256    1    13 691.89   8  8.505   0.000   8     75      36.8      37.1   0.995    809 0 1
   200    15  256    1    13 77.359   8  1.090   0.000   8     75      25.5      31.0   0.905    903 0 1
   201    13  256    1    13 63.918   8  0.830   0.000   8     75      29.0      37.8   0.877    769 0 1
   202    15  256    1    14 79.335   8  1.025   0.000   8     75      31.9      35.1   0.953    868 0 1
   203    15  256    1    13 64.224   8  0.732   0.000   8     75      39.3      47.1   0.913    754 0 1
   204    15  256    1    14 17.226   8  0.409   0.000   8     75       4.0      24.4   0.406    664 0 0
   205    15  256    1    14 40.573   8  0.590   0.000   8     75      19.9      35.1   0.754    717 0 1
 f=    640 Hz =
   184    15  256    1    15 77.449   8  1.084   0.000   8     75      37.4      42.6   0.937  -2329 0 0
   185    15  256    1    15 40.726   8  0.587   0.000   8     75      30.7      46.1   0.816  -2229 0 0
   186    15  256    1    13 29.228   8  0.525   0.000   8     75      19.9      29.3   0.825    853 0 1
   187    15  256    1    15 117.54   8  1.673   0.000   8     75      37.4      39.8   0.970    809 0 1
   188    15  256    1    13 51.532   8  0.898   0.000   8     75      23.7      28.0   0.920    979 0 1
   191    15  256    1    15 306.85   8  4.133   0.000   8     75      42.8      43.3   0.993    823 0 1
   192    15  256    1    14 1136.6   8 16.028   0.000   8     75      39.3      39.3   0.999    805 0 1
   193    13  256    1    12 39.768   8  0.538   0.000   8     75      36.4      49.9   0.855    723 0 1
   194    15  256    1    15 262.60   8  3.718   0.000   8     75      38.7      39.3   0.993    818 0 1
   196    15  256    1    13 89.927   8  1.427   0.000   8     75      30.0      32.1   0.967    860 0 1
   197    15  256    1    14 183.88   8  2.368   0.000   8     75      46.2      48.0   0.981    846 0 1
   198    15  256    1    14 48.073   8  0.692   0.000   8     75      32.6      43.7   0.864    909 0 1
   199    13  256    1    13 604.36   8  8.249   0.000   8     75      41.8      42.1   0.997    797 0 1
   200    15  256    1    13 74.727   8  1.118   0.000   8     75      32.6      37.4   0.933    966 0 1
   201    13  256    1    13 62.783   8  0.988   0.000   8     75      29.2      34.1   0.927    871 0 1
   202    15  256    1    14 100.34   8  1.334   0.000   8     75      42.7      45.8   0.966    846 0 1
   203    15  256    1    13 82.284   8  1.134   0.000   8     75      39.4      42.9   0.958    789 0 1
   204    15  256    1    14 41.714   8  0.680   0.000   8     75      24.8      34.9   0.843    895 0 1
   205    15  256    1    14 33.937   8  0.527   0.000   8     75      28.0      37.6   0.863    852 0 1
 f=    448 Hz =
   206    15  256    1    15 173.28   9  3.132   0.000  10     75      33.8      34.5   0.990    882 0 1
   207    11  256    1     9 116.56   9  2.088   0.000  10     75      34.2      35.4   0.983    912 0 1
   208    15  256    1    15 119.74   9  2.182   0.000  10     75      33.1      34.1   0.986    915 0 1
   209    15  256    1    15 60.431   9  1.288   0.000  10     75      23.0      26.2   0.938    829 0 1
   210    15  256    1    15 98.889   9  1.971   0.000  10     75      27.5      28.7   0.978    894 0 1
   211    15  256    1    14 175.83   9  3.060   0.000  10     75      36.6      37.1   0.994    815 0 1
   212    15  256    1    15 89.276   9  1.561   0.000  10     75      35.2      37.8   0.965    939 0 1
   213    14  256    1    14 178.61   9  3.145   0.000  10     75      35.6      36.4   0.990    864 0 1
   214    15  256    1    15 100.44   9  1.871   0.000  10     75      31.3      33.0   0.974    810 0 1
   215    15  256    1    15 99.780   9  1.743   0.000  10     75      35.5      37.6   0.972    877 0 1
 f=    320 Hz =
   206    15  256    1    15 222.74   9  4.528   0.000  10     75      37.4      38.3   0.988    894 0 1
   207    11  256    1     9 159.73   9  3.070   0.000  10     75      41.4      43.2   0.978    927 0 1
   208    15  256    1    15 98.685   9  2.129   0.000  10     75      32.0      35.3   0.951    921 0 1
   209    15  256    1    15 70.256   9  1.578   0.000  10     75      28.4      33.8   0.916    808 0 1
   210    15  256    1    15 94.625   9  2.207   0.000  10     75      27.6      29.9   0.961    854 0 1
   211    15  256    1    14 179.99   9  3.795   0.000  10     75      34.8      35.5   0.989    874 0 1
   212    15  256    1    15 63.399   9  1.425   0.000  10     75      27.8      34.4   0.900    768 0 1
   213    14  256    1    14 149.12   9  3.335   0.000  10     75      29.4      33.2   0.942    896 0 1
   214    15  256    1    15 138.26   9  2.907   0.000  10     75      34.0      36.8   0.962    855 0 1
   215    15  256    1    15 110.18   9  2.336   0.000  10     75      33.6      36.0   0.967    977 0 1
 f=    224 Hz =
   216    15  256    1    15 83.128  11  2.106   0.000  10     75      34.2      35.4   0.984    921 0 1
   217    15  256    1    14 112.60  11  2.808   0.000  10     75      35.5      36.3   0.990    866 0 1
   218    15  256    1    14 91.313  11  2.281   0.000  10     75      35.1      36.4   0.982    917 0 1
   219    15  256    1    13 61.198  11  1.416   0.000  10     75      39.5      44.1   0.946    859 0 1
   220    15  256    1    15 177.05  11  4.345   0.000  10     75      36.8      37.3   0.993    928 0 1
   221    15  256    1    15 87.553  11  2.302   0.000  10     75      31.3      33.3   0.968    901 0 1
   222    13  256    1    13 95.844  11  2.460   0.000  10     75      33.2      34.6   0.980    905 0 1
   223    15  256    1    15 142.41  11  3.641   0.000  10     75      33.9      34.4   0.992    928 0 1
   224    15  256    1    15 242.75  11  6.033   0.000  10     75      36.0      36.3   0.996    926 0 1
   225    13  256    1    13 122.16  11  2.924   0.000  10     75      38.5      39.4   0.989    908 0 1
 f=    160 Hz =
   216    15  256    1    15 52.336  11  1.802   0.000  10     75      25.8      26.9   0.980    975 0 1
   217    15  256    1    14 49.096  11  1.673   0.000  10     75      26.0      27.9   0.965    904 0 1
   218    15  256    1    14 73.036  11  2.325   0.000  10     75      29.8      31.9   0.968    943 0 1
   219    15  256    1    13 59.689  11  2.005   0.000  10     75      26.6      28.8   0.962    918 0 1
   220    15  256    1    15 72.814  11  2.343   0.000  10     75      29.0      31.4   0.961    930 0 1
   221    15  256    1    15 72.610  11  2.315   0.000  10     75      30.2      31.3   0.982   1004 0 1
   222    13  256    1    13 59.158  11  1.947   0.000  10     75      27.9      29.8   0.968    941 0 1
   223    15  256    1    15 57.527  11  1.841   0.000  10     75      29.7      31.4   0.973    937 0 1
   224    15  256    1    15 96.171  11  3.153   0.000  10     75      28.5      29.6   0.981    905 0 1
   225    13  256    1    13 90.731  11  2.772   0.000  10     75      32.8      34.2   0.979    861 0 1

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Sample .NL-file (page two)

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f=    112 Hz =
   226    15  256   1    15 125.86  10  5.095   0.000   8     75      27.0      27.5   0.992    969 0 1
   227    15  256   1    15 46.980  10  1.844   0.000   8     75      28.6      29.3   0.989    967 0 1
   228    15  256   1    15 95.678  10  3.941   0.000   8     75      26.0      26.7   0.987    952 0 1
   229    15  256   1    15 59.966  10  2.272   0.000   8     75      30.7      31.5   0.987    939 0 1
   230    15  256   1    15 187.18  10  7.179   0.000   8     75      29.9      30.8   0.987    932 0 1
   231    15  256   1    14 51.837  10  2.051   0.000   8     75      28.1      29.0   0.985    918 0 1
   232    15  256   1    14 139.42  10  5.560   0.000   8     75      27.7      28.4   0.988    963 0 1
   233    15  256   1    15 61.380  10  2.378   0.000   8     75      29.5      30.0   0.990    942 0 1
   234    15  256   1    15 46.107  10  1.863   0.000   8     75      26.5      28.1   0.971    972 0 1
   235    15  256   1    15 114.41  10  4.830   0.000   8     75      24.9      25.2   0.993    982 0 1
   236    15  256   1    15 47.485  10  1.847   0.000   8     75      29.0      30.0   0.983    926 0 1
   237    15  256   1    15 128.15  10  5.072   0.000   8     75      28.2      28.8   0.991    937 0 1
   238    15  256   1    15 119.19  10  4.905   0.000   8     75      26.0      26.7   0.986    986 0 1
   239    15  256   1    14 61.816  10  2.533   0.000   8     75      26.3      26.9   0.988    967 0 1
   240    15  256   1    15 311.55  10 12.530   0.000   8     75      27.5      27.7   0.998    944 0 1
   241    15  256   1    14 118.94  10  4.438   0.000   8     75      31.5      32.6   0.984    964 0 1
   242    15  256   1    15 205.41  10  8.119   0.000   8     75      28.4      28.8   0.993    955 0 1
   243    15  256   1    15 75.711  10  2.846   0.000   8     75      31.4      31.8   0.993    923 0 1
   244    15  256   1    15 131.75  10  5.028   0.000   8     75      30.5      30.8   0.994    950 0 1
   245    15  256   1    15 110.24  10  3.861   0.000   8     75      36.0      36.8   0.990    956 0 1

f=     80 Hz =
   226    15  256   1    15 111.67  10  5.510   0.000   8     75      25.5      25.8   0.993    969 0 1
   227    15  256   1    15 38.783  10  1.913   0.000   8     75      25.1      26.3   0.977    904 0 1
   228    15  256   1    15 68.747  10  3.410   0.000   8     75      25.2      25.6   0.992    989 0 1
   229    15  256   1    15 30.817  10  1.398   0.000   8     75      29.4      31.4   0.968    917 0 1
   230    15  256   1    15 121.75  10  5.835   0.000   8     75      26.8      27.6   0.985    945 0 1
   231    15  256   1    14 26.398  10  1.334   0.000   8     75      24.0      25.0   0.978    922 0 1
   232    15  256   1    14 68.373  10  3.448   0.000   8     75      24.1      25.0   0.981    962 0 1
   233    15  256   1    15 37.034  10  1.796   0.000   8     75      26.0      27.2   0.977    960 0 1
   234    15  256   1    15 40.288  10  1.953   0.000   8     75      26.0      27.3   0.977    941 0 1
   235    15  256   1    15 92.924  10  4.865   0.000   8     75      22.7      22.9   0.997    926 0 1
   236    15  256   1    15 24.985  10  1.191   0.000   8     75      26.8      28.2   0.976    952 0 1
   237    15  256   1    15 98.288  10  4.746   0.000   8     75      26.6      27.0   0.992    961 0 1
   238    15  256   1    15 66.085  10  3.328   0.000   8     75      24.2      25.1   0.980    933 0 1
   239    15  256   1    14 36.738  10  1.823   0.000   8     75      24.5      26.3   0.966    940 0 1
   240    15  256   1    15 163.41  10  8.167   0.000   8     75      25.0      25.1   0.997    948 0 1
   241    15  256   1    14 71.053  10  3.468   0.000   8     75      25.9      26.6   0.988    966 0 1
   242    15  256   1    15 131.77  10  6.400   0.000   8     75      26.4      26.6   0.994    965 0 1
   243    15  256   1    15 52.227  10  2.424   0.000   8     75      28.8      29.2   0.993    977 0 1
   244    15  256   1    15 82.111  10  3.883   0.000   8     75      27.5      28.4   0.984    983 0 1
   245    15  256   1    15 109.28  10  4.995   0.000   8     75      29.7      30.2   0.992    953 0 1
f=     56 Hz =
   246    15  256   1    15 50.517   9  2.896   0.000   9     75      23.8      31.1   0.875    940 0 1
   247    15  256   1    15 53.939   9  3.546   0.000   9     75      19.3      22.1   0.935   1015 0 1
   248    15  256   1    14 62.510   9  3.945   0.000   9     75      18.0      27.9   0.805    793 0 1
   249    15  256   1    15 101.88   9  5.867   0.000   9     75      26.3      27.5   0.977    959 0 1
   250    15  256   1    15 66.235   9  4.015   0.000   9     75      23.4      25.2   0.963    890 0 1
   251    15  256   1    15 75.956   9  4.237   0.000   9     75      27.4      30.0   0.956    945 0 1
   252    15  256   1    15 54.950   9  3.665   0.000   9     75      17.8      22.7   0.885    978 0 1
   253    15  256   1    15 70.048   9  4.509   0.000   9     75      20.4      22.7   0.948    891 0 1
   254    15  256   1    14 52.144   9  3.657   0.000   9     75      14.3      23.0   0.788    997 0 1
 f=     40 Hz =
   246    15  256   1    15 31.068   9  2.409   0.000   9     75      20.4      21.2   0.979    980 0 1
   247    15  256   1    15 28.057   9  2.119   0.000   9     75      21.5      22.4   0.980    967 0 1
   248    15  256   1    14 36.657   9  2.826   0.000   9     75      20.3      21.8   0.964    984 0 1
   249    15  256   1    15 46.679   9  3.378   0.000   9     75      23.6      24.1   0.989    955 0 1
   250    15  256   1    15 30.393   9  2.340   0.000   9     75      20.5      21.7   0.974    965 0 1
   251    15  256   1    15 37.170   9  2.715   0.000   9     75      23.1      23.8   0.985    956 0 1
   252    15  256   1    15 39.408   9  3.414   0.000   9     75      16.5      16.9   0.988    946 0 1
   253    15  256   1    15 42.947   9  3.265   0.000   9     75      21.4      21.9   0.989    973 0 1
   254    15  256   1    14 23.870   9  1.822   0.000   9     75      20.0      23.0   0.934    925 0 1
   255    15  256   1    15 68.987   9  4.606   0.000   9     75      26.5      29.7   0.944    774 0 1
f=     28 Hz =
   256    15  256   1    14 59.099  11  4.918   0.000  10     75      24.4      27.3   0.945    733 0 1
   257    15  256   1    15 37.953  11  3.653   0.000  10     75      19.1      19.4   0.993    912 0 1
   258    15  256   1    15 67.682  11  6.426   0.000  10     75      19.8      19.8   0.999    926 0 1
   260    15  256   1    15 40.777  11  3.954   0.000  10     75      18.8      19.1   0.992    922 0 1
   261    15  256   1    15 17.039  11  1.721   0.000  10     75      17.2      17.9   0.981    946 0 1
   262    14  256   1    14 24.155  11  2.373   0.000  10     75      18.2      18.8   0.983    932 0 1
   263    15  256   1    14 42.952  11  4.066   0.000  10     75      19.9      20.0   0.998    924 0 1
   264    15  256   1    15 34.637  11  3.306   0.000  10     75      19.5      19.7   0.993    947 0 1
   265    13  256   1    13 36.218  11  3.586   0.000  10     75      18.1      18.4   0.992    915 0 1
 f=     20 Hz =
   256    15  256   1    14 37.275  11  3.949   0.000  10     75      20.3      24.5   0.909    721 0 1
   257    15  256   1    15 26.225  11  3.063   0.000  10     75      18.2      18.5   0.992    899 0 1
   258    15  256   1    15 33.369  11  3.891   0.000  10     75      18.3      18.5   0.996    895 0 1
   260    15  256   1    15 28.555  11  3.399   0.000  10     75      17.4      17.9   0.988    886 0 1
   261    15  256   1    15 14.808  11  1.771   0.000  10     75      17.2      17.7   0.985    894 0 1
   262    14  256   1    14 21.692  11  2.664   0.000  10     75      16.4      16.7   0.991    917 0 1
   263    15  256   1    14 22.860  11  2.753   0.000  10     75      17.0      17.5   0.986    917 0 1
   264    15  256   1    15 25.913  11  3.129   0.000  10     75      17.0      17.3   0.994    875 0 1
   265    13  256   1    13 17.826  11  2.135   0.000  10     75      17.2      17.6   0.990    857 0 1
f=     14 Hz =
   266    15  256   1    14 25.805  12  3.453   0.000  10     75      18.4      21.6   0.925    650 0 1
   267    15  256   1    15 12.764  12  1.832   0.000  10     75      17.1      17.5   0.988    803 0 1
   268    15  256   1    14 16.033  12  2.404   0.000  10     75      15.6      16.2   0.984    808 0 1
   269    15  256   1    15 28.817  12  3.900   0.000  10     75      17.8      21.4   0.911    669 0 1
   270    15  256   1    14 25.985  12  3.560   0.000  10     75      17.3      21.0   0.907    791 0 1
   273    15  256   1    15 21.688  12  2.989   0.000  10     75      17.9      19.8   0.950    753 0 1
   274    15  256   1    15 20.470  12  3.003   0.000  10     75      16.4      16.8   0.990    794 0 1
   277    15  256   1    15 30.885  12  3.133   0.000  10     75      26.2      46.0   0.755    601 0 1
   278    15  256   1    15 19.835  12  2.906   0.000  10     75      16.5      16.8   0.993    801 0 1
   279    15  256   1    15 27.357  12  3.812   0.000  10     75      17.3      19.5   0.941    662 0 1
   280    15  256   1    14 18.701  12  2.384   0.000  10     75      14.8      32.6   0.675    483 0 1
   281    15  256   1    15 20.731  12  3.097   0.000  10     75      15.8      16.2   0.988    789 0 1
   282    15  256   1    15 19.672  12  2.817   0.000  10     75      16.6      18.3   0.952    813 0 1
   285    15  256   1    15 19.438  12  2.912   0.000  10     75      14.6      17.3   0.920    747 0 1
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Sample .NL-file (page three)

```
f=      10 Hz =
   266     15  256   1    14 18.263  12  2.907   0.000  10     75      18.4      21.1   0.934    605 0 1
   267     15  256   1    15 11.689  12  1.957   0.000  10     75      17.4      18.3   0.975    793 0 1
   268     15  256   1    14 11.694  12  2.177   0.000  10     75      14.1      14.8   0.978    741 0 1
   269     15  256   1    15 19.820  12  3.271   0.000  10     75      16.0      21.0   0.874    606 0 1
   270     15  256   1    14 15.959  12  2.658   0.000  10     75      15.7      20.7   0.869    726 0 1
   273     15  256   1    15  9.236  12  1.484   0.000  10     75      16.1      23.3   0.831    551 0 1
   274     15  256   1    15 11.419  12  2.108   0.000  10     75      14.3      15.1   0.975    706 0 1
   277     15  256   1    15 15.168  12  2.660   0.000  10     75      14.4      18.3   0.888    536 0 1
   278     15  256   1    15 13.810  12  2.393   0.000  10     75      16.3      17.0   0.979    716 0 1
   279     15  256   1    15 17.885  12  3.218   0.000  10     75      14.7      16.2   0.954    663 0 1
   280     15  256   1    14 16.653  12  1.793   0.000  10     75      34.9      53.3   0.809    612 0 1
   281     15  256   1    15 14.411  12  2.487   0.000  10     75      16.3      17.3   0.972    629 0 1
   282     15  256   1    15 12.517  12  2.076   0.000  10     75      16.6      19.9   0.912    680 0 1
   285     15  256   1    15 12.861  12  2.464   0.000  10     75      12.3      15.1   0.899    755 0 1
f=       7 Hz =
   286     15  256   1    14 18.072   9  3.926   0.000  10     75      14.0      16.3   0.927    614 0 1
   287     15  256   1    15  9.372   9  2.275   0.000  10     75       8.9      16.5   0.735    622 0 1
   288     15  256   1    15  7.704   9  1.304   0.000  10     75      18.8      33.0   0.755    762 0 1
   289     15  256   1    15 19.029   9  3.671   0.000  10     75      18.0      20.5   0.938    738 0 1
   290     15  256   1    15 12.407   9  2.626   0.000  10     75      14.4      17.7   0.900    556 0 1
   291     15  256   1    15 15.324   9  3.332   0.000  10     75      14.3      16.0   0.946    700 0 1
   292     15  256   1    14 14.218   9  2.671   0.000  10     75      17.4      23.5   0.861    606 0 1
   293     15  256   1    14 11.626   9  2.289   0.000  10     75      13.5      25.2   0.730    800 0 1
   294     15  256   1    15 12.799   9  2.649   0.000  10     75      15.7      17.7   0.942    537 0 1
   295     15  256   1    13 16.878   9  3.445   0.000  10     75      16.5      17.8   0.966    640 0 1
   296     15  256   1    14 16.022   9  2.959   0.000  10     75      19.7      22.3   0.941    605 0 1
   297     15  256   1    15 14.930   9  3.203   0.000  10     75      13.7      17.6   0.882    724 0 1
   298     15  256   1    12 12.813   9  2.763   0.000  10     75      12.1      19.5   0.790    691 0 1
   299     15  256   1    15 18.514   9  3.560   0.000  10     75      18.3      20.4   0.948    612 0 1
   300     15  256   1    15 14.329   9  2.823   0.000  10     75      17.6      19.3   0.956    628 0 1
   301     15  256   1    15 16.038   9  3.316   0.000  10     75      15.9      17.6   0.949    658 0 1
   303     13  256   1    13 11.382   9  2.259   0.000  10     75      17.0      19.4   0.935    717 0 1
   304     15  256   1    14 17.667   9  3.506   0.000  10     75      17.5      18.8   0.968    668 0 1
   305     15  256   1    14 13.361   9  2.550   0.000  10     75      16.5      23.3   0.843    675 0 1
f=       5 Hz =
   286     15  256   1    14 13.725   9  3.106   0.000  10     75      18.8      20.2   0.965    685 0 1
   287     15  256   1    15 10.287   9  2.623   0.000  10     75      14.6      16.2   0.952    610 0 1
   288     15  256   1    15  6.745   9  1.499   0.000  10     75      17.1      23.9   0.847    704 0 1
   289     15  256   1    15  7.427   9  2.284   0.000  10     75       8.5      13.1   0.804    765 0 1
   290     15  256   1    15  7.832   9  1.866   0.000  10     75      14.1      21.9   0.803    669 0 1
   291     15  256   1    15  9.880   9  2.252   0.000  10     75      16.8      22.0   0.875    560 0 1
   292     15  256   1    14 10.861   9  2.514   0.000  10     75      17.3      20.2   0.926    640 0 1
   293     15  256   1    14  7.681   9  1.967   0.000  10     75      13.2      17.6   0.866    696 0 1
   294     15  256   1    15  8.419   9  1.806   0.000  10     75      20.7      22.7   0.955    668 0 1
   295     15  256   1    13  7.422   9  1.865   0.000  10     75      14.2      17.7   0.897    677 0 1
   296     15  256   1    14  6.615   9  1.477   0.000  10     75      17.8      22.6   0.888    643 0 1
   297     15  256   1    15 10.842   9  2.732   0.000  10     75      14.1      17.7   0.892    682 0 1
   298     15  256   1    12  7.150   9  2.048   0.000  10     75      10.8      13.8   0.883    655 0 1
   299     15  256   1    15  9.877   9  2.364   0.000  10     75      16.2      18.9   0.926    735 0 1
   300     15  256   1    15 12.927   9  2.773   0.000  10     75      20.9      22.6   0.963    695 0 1
   301     15  256   1    15  6.728   9  1.776   0.000  10     75      12.0      17.1   0.837    686 0 1
   303     13  256   1    13  7.869   9  1.935   0.000  10     75      16.0      17.1   0.965    764 0 1
   304     15  256   1    14  8.611   9  1.882   0.000  10     75      19.4      22.5   0.928    682 0 1
   305     15  256   1    14  8.515   9  2.030   0.000  10     75      15.0      20.6   0.853    655 0 1
 f=     3.5 Hz =
   306     15  256   1    15 11.099  11  2.305   0.000  10     75      27.2      40.3   0.822    737 0 1
   308     15  256   1    13 11.256  11  3.119   0.000  10     75      15.7      22.1   0.842    585 0 1
   309     15  256   1    13  9.626  11  2.521   0.000  10     75      19.9      21.8   0.956    647 0 1
   312     15  256   1    14  7.476  11  1.963   0.000  10     75      19.5      22.0   0.943    752 0 1
   316     13  256   1    11 23.138  11  4.951   0.000  10     75      28.3      34.4   0.906    677 0 1
   317     15  256   1    14 10.802  11  2.707   0.000  10     75      19.3      26.8   0.850    711 0 1
   318     15  256   1    14  7.629  11  1.949   0.000  10     75      19.2      25.0   0.875    845 0 1
   319     15  256   1    13 14.175  11  3.578   0.000  10     75      20.6      24.4   0.920    571 0 1
   321     13  256   1    12 13.047  11  3.345   0.000  10     75      20.9      22.6   0.963    776 0 1
   323     15  256   1    13 11.297  11  2.631   0.000  10     75      24.3      28.5   0.924    679 0 1
f=     2.5 Hz =
   306     15  256   1    15  9.642  11  2.518   0.000  10     75      25.6      33.6   0.873    777 0 1
   308     15  256   1    13 10.049  11  2.736   0.000  10     75      24.3      30.0   0.899    676 0 1
   309     15  256   1    13  8.542  11  2.332   0.000  10     75      24.0      30.1   0.893    705 0 1
   312     15  256   1    14  6.271  11  1.770   0.000  10     75      20.8      30.2   0.830    755 0 1
   316     13  256   1    11 15.668  11  3.619   0.000  10     75      31.5      44.7   0.839    722 0 1
   317     15  256   1    14  7.392  11  2.187   0.000  10     75      18.3      28.5   0.802    648 0 1
   318     15  256   1    14  7.273  11  1.672   0.000  10     75      30.3      47.2   0.802    765 0 1
   319     15  256   1    13 11.135  11  3.331   0.000  10     75      20.2      24.7   0.906    853 0 1
   321     13  256   1    12  7.525  11  2.051   0.000  10     75      22.6      32.1   0.840    641 0 1
   323     15  256   1    13  8.943  11  2.356   0.000  10     75      24.7      33.7   0.856    681 0 1
 f=    1.75 Hz =
   329     15  256   1    13 10.021   9  3.291   0.000   9     75      14.3      49.0   0.541    879 0 1
   338     15  256   1    13 13.105   9  3.174   0.000   9     75      29.1      81.6   0.597    911 0 1
   343     15  256   1    14 11.433   9  2.978   0.000   9     75      34.5      51.3   0.820    750 0 1
   344     15  256   1    13 10.874   9  3.007   0.000   9     75      21.0      66.3   0.564    894 0 1
   346     15  256   1    15 10.251   9  3.631   0.000   9     75      12.9      40.2   0.567    427 0 1
   348     15  256   1    13 15.195   9  3.632   0.000   9     75      42.3      59.2   0.845   1053 0 1
   349     15  256   1    11 16.476   9  4.646   0.000   9     75      30.9      41.8   0.860    666 0 1
   351     15  256   1    10 11.647   9  3.378   0.000   9     75      19.0      60.7   0.560    595 0 1
   353     15  256   1    12 10.734   9  3.112   0.000   9     75      18.4      62.9   0.540    388 0 1
   354     15  256   1    12 12.249   9  2.799   0.000   9     75      38.9      77.0   0.711    965 0 1
 f=    1.25 Hz =
   329     15  256   1    13  8.826   9  3.250   0.000   9     75      24.5      35.5   0.831   1167 0 1
   338     15  256   1    13  9.553   9  2.976   0.000   9     75      30.6      55.6   0.741    749 0 1
   343     15  256   1    14  7.477   9  2.251   0.000   9     75      35.6      54.7   0.807    704 0 1
   344     15  256   1    13 11.627   9  3.650   0.000   9     75      28.6      57.6   0.704    813 0 1
   346     15  256   1    15 10.408   9  3.880   0.000   9     75      24.2      34.2   0.842    919 0 1
   348     15  256   1    13  6.855   9  2.966   0.000   9     75      16.5      27.6   0.774   1049 0 1
   349     15  256   1    11 10.241   9  3.529   0.000   9     75      25.0      45.5   0.741   1130 0 1
   351     15  256   1    10  9.129   9  2.948   0.000   9     75      29.0      50.7   0.757   1035 0 1
   353     15  256   1    12  8.555   9  3.078   0.000   9     75      23.1      41.4   0.746    778 0 1
   354     15  256   1    12 12.270   9  3.257   0.000   9     75      43.2      74.6   0.761   1134 0 1
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Sample .NL-file (page four)

```
f=  0.875 Hz =
   365     15  256   1     14  7.856  11  3.967   0.000   8      75       11.3      44.4   0.504    828 0 1
   366     15  256   1     13 10.386  11  3.506   0.000   8      75       15.0     167.5   0.299    657 0 0
   367     15  256   1     12 10.570  11  4.394   0.000   8      75       16.8      65.0   0.509    895 0 1
   368     15  256   1     12 11.389  11  3.354   0.000   8      75       32.2     134.9   0.488    853 0 0
   369     11  256   1      9  9.291  11  3.184   0.000   8      75       26.6      89.1   0.546    827 0 1
   370     12  256   1      9  8.303  11  3.602   0.000   8      75       12.6      73.2   0.415   1515 0 0
   371      8  256   1      8  5.999  11  3.025   0.000   8      75        3.8     131.9   0.170    517 0 0
   372      7  256   1      6 14.649  11  2.592   0.000   8      75      113.0     294.8   0.619   1230 0 0
   373      1  256   1      1 18.931  11  6.468   0.000   8      75       49.0      49.0   1.000   1980 0 0
   374     15  256   1     13 15.668  11  4.208   0.000   8      75       18.8     334.4   0.237   1033 0 0
   375     15  256   1     12 10.489  11  3.295   0.000   8      75       18.4     182.7   0.317   1073 0 0
   377     15  256   1     12 11.163  11  4.987   0.000   8      75        4.6     180.1   0.159    742 0 0
   378     15  256   1     11 10.203  11  3.069   0.000   8      75       28.7     139.1   0.454    959 0 0
   379     15  256   1     14  8.352  11  3.816   0.000   8      75       12.4      60.2   0.455    713 0 0
f=  0.625 Hz =
   365     15  256   1     14  5.614  11  3.795   0.000   8      75        4.9      62.2   0.282   1328 0 0
   366     15  256   1     13  4.974  11  1.865   0.000   8      75       10.3     315.5   0.180    739 0 0
   367     15  256   1     12  7.927  11  3.683   0.000   8      75       17.6      77.9   0.476    665 0 0
   368     15  256   1     12  6.496  11  3.687   0.000   8      75       11.0      56.2   0.442    970 0 0
   369     11  256   1      9  6.715  11  3.510   0.000   8      75        7.1     121.5   0.241   1484 0 0
   370     12  256   1      9  5.229  11  2.678   0.000   8      75        7.1     130.1   0.234     86 0 0
   371      8  256   1      8  7.875  11  2.724   0.000   8      75       30.2     148.1   0.452    954 0 0
   372      7  256   1      6  5.056  11  2.370   0.000   8      75       13.9      95.0   0.383   1104 0 0
   373      1  256   1      1  8.091  11  3.464   0.000   8      75       43.6      43.6   1.000   1989 0 0
   374     15  256   1     13  6.920  11  3.466   0.000   8      75        7.0     144.5   0.221   1044 0 0
   375     15  256   1     12  5.952  11  3.677   0.000   8      75        5.2      84.3   0.249   1066 0 0
   377     15  256   1     12  4.797  11  4.009   0.000   8      75        3.6      36.4   0.315    788 0 0
   378     15  256   1     11  4.290  11  2.547   0.000   8      75        4.4     117.7   0.193   -489 0 0
   379     15  256   1     14  6.560  11  3.281   0.000   8      75        8.8     116.3   0.275    592 0 0
0
PROJECT: NSAMT Testing                                    File: "SAMAMT.FLD  "          GDP AMT 0524
 LINE:              STATION:      9.0   A-Sp:  200.0 meters NSAVG 1.20: 30 Jul 93    ARITHMETIC AVERAGE

 STATISTICS    Pair:"ExHy"  =E-FIELD== ====H-FIELD==== =RHO-AVG=-===RHO-1=-===RHO-2==          =PHASE=
   Hz                       (C-var)    (C-var) (C-var)   (C-var)   (C-var)   (C-var)          (sigma)
   896                        133.1      130.1     0.0      16.4      22.9      13.2            82.
   640                        147.5      145.9     0.0      17.9      22.1      15.8            63.
   448                         33.8       30.7     0.0      12.1      13.1      11.3            44.
   320                         39.3       36.0     0.0      11.5      13.8       9.8            60.
   224                         44.3       44.1     0.0       7.5       6.9       8.4            25.
   160                         23.1       21.0     0.0       7.2       7.5       7.1            39.
   112                         58.5       59.5     0.0       8.9       8.9       8.8            19.
    80                         53.6       54.0     0.0       7.1       7.0       7.4            23.
    56                         29.7       21.5     0.0      21.0      23.6      20.8            87.
    40                         33.1       28.0     0.0      13.1      12.4      14.1            62.
    28                         39.1       36.1     0.0      12.3      10.6      14.0            66.
    20                         28.0       24.7     0.0       9.5       6.4      12.6            60.
    14                         23.1       18.8     0.0      27.1      16.1      38.2            99.
    10                         21.2       21.5     0.0      39.7      31.7      46.7            78.
     7                         21.6       21.9     0.0      16.0      16.7      20.2            69.
     5                         23.2       20.7     0.0      17.5      20.8      16.2            48.
   3.5                         37.2       31.0     0.0      20.2      18.2      23.0            85.
   2.5                         29.1       25.6     0.0      19.1      17.2      21.2            66.
  1.75                         17.6       15.6     0.0      23.4      39.9      23.4           228.
  1.25                         18.0       14.3     0.0      27.5      26.3      28.9           177.
 0.875                         14.7       15.9     0.0      35.6      42.4      33.8            39.

 AVERAGE DATA  Pair:"ExHy" <=E-FIELD== ====H-FIELD==== =RHO-AVG=-===RHO-1=-===RHO-2==          =PHASE=
   Hz              (uV)      (nV/M)       (pT)     (pT)     (o-m)     (o-m)     (o-m)          (mR)
   896           216.67     1083.4      2.703    0.000    33.471    30.869    36.073            807
   640           192.13     960.63      2.708    0.000    36.849    34.442    39.255            849
   448           121.28     606.42      2.204    0.000    33.342    32.607    34.077            874
   320           128.70     643.49      2.731    0.000    34.130    32.627    35.632            877
   224           121.60     608.00      3.032    0.000    36.075    35.401    36.749            906
   160           68.317     341.58      2.218    0.000    29.475    28.638    30.312            932
   112           111.95     559.77      4.410    0.000    29.026    28.687    29.364            952
    80           73.637     368.18      3.594    0.000    26.423    26.002    26.844            951
    56           69.781     348.90      4.181    0.000    24.762    22.244    27.281            916
    40           38.524     192.62      2.889    0.000    22.005    21.371    22.640            943
    28           40.057     200.28      3.778    0.000    19.739    19.430    20.049            906
    20           25.391     126.96      2.973    0.000    18.066    17.678    18.454            873
    14           22.013     110.06      3.015    0.000    19.401    17.313    21.489            726
    10           14.385     71.923      2.404    0.000    18.893    16.968    20.819            666
     7           14.341     71.707      2.901    0.000    17.948    15.782    20.114            661
     5            8.917     44.583      2.147    0.000    17.531    15.667    19.395            677
   3.5           11.955     59.773      2.907    0.000    24.141    21.501    26.782            698
   2.5            9.244     46.220      2.457    0.000    28.846    24.228    33.463            722
  1.75           12.198     60.993      3.365    0.000    42.560    26.137    58.983            753
  1.25            9.494     47.471      3.178    0.000    37.885    28.031    47.740            948
 0.875            9.239     46.194      3.848    0.000    42.208    18.227    66.190            850
1

*** end of sample station ***
```

Sample .RAW-file (partial: five blocks from each fundamental frequency)
/* Transferred from a GDP

*** NOTE: The complete data file consists of blocks acquired at each fundamental frequency from 128 Hz down to .125 Hz, with from 10 to 30 data blocks acquired per frequency. ***

```
0182
AMT 0524 92-06-16 19:02:35 12.4v VEC
OPER 7718 TX ID    1 A-SP    200
JOB  9123 LINE        1 N  SPREAD  1 CL 0.800 HANN Outlier 200 Cross
1 LoPass  Notch+60,3-5,9  S/N 1102 Passed 0.99478
2 LoPass  Notch+60,3-5,9  S/N 1089 Passed 0.99245
3 LoPass  Notch+60,3-5,9  S/N 1086 Passed 0.99615
4 LoPass  Notch+60,3-5,9  S/N 1108 Passed 0.99931
5 LoPass  Notch+60,3-5,9  S/N 1103 Passed 0.99670
6 LoPass  Notch+60,3-5,9  S/N 1092 Passed 0.99409
7 LoPass  Notch+60,3-5,9  S/N 1104 Passed 0.99478
8 LoPass  Notch+60,3-5,9  S/N 1106 Passed 0.99945

0184
AMT 0524 92-06-16 19:06:50 12.3v VEC
Tx        1 Rx        9 N 60, 5
  128 Hz    15 Stacks  1 Bursts  256 Samples      1      2
1 Ex      9  77.449u   0.937  37.39  206O     15   -8.04   744  0
2 Hy      75 1.0838u -2329.3  42.56  206O     15   -0.45  75.4K 0
3 Ey      9  116.04u   0.955  42.29  226O     15   12.34   989  0
4 Hx      17 1.5416u   917.1  46.32  216O     15    0.21  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
 640 77.449u 1.0838u 37.39  42.56  -2329.3   0.937
 896 52.215u 0.6778u 27.95  39.24  -2325.7   0.844
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
 640 116.04u 1.5416u 42.29  46.32    917.1   0.955
 896 46.394u 0.6753u 16.60  41.77    596.0   0.630

0185
AMT 0524 92-06-16 19:07:03 12.3v VEC
Tx        1 Rx        9 N 60, 5
  128 Hz    15 Stacks  1 Bursts  256 Samples      2      3
1 Ex      9  40.726u   0.816  30.68  206O     15   -8.04   744  0
2 Hy      75 0.5870u -2228.7  46.10  206O     15   -0.45  75.4K 0
3 Ey      9  68.901u   0.905  33.95  226O     15   12.34   989  0
4 Hx      17 0.9941u   688.8  41.48  216O     15    0.21  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
 640 40.726u 0.5870u 30.68  46.10  -2228.7   0.816
 896 32.430u 0.4344u 21.09  45.84  -2383.7   0.678
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
 640 68.901u 0.9941u 33.95  41.48    688.8   0.905
 896 26.106u 0.4671u 10.80  28.13    532.7   0.620

0186
AMT 0524 92-06-16 19:07:31 12.4v VEC
Tx        1 Rx        9 N 60, 5
  128 Hz    15 Stacks  1 Bursts  256 Samples      1      1
1 Ex      9  29.228u   0.825  19.94  206O     13   -8.04   744  0
2 Hy      75 0.5254u   853.4  29.31  206O     13   -0.45  75.4K 0
3 Ey      9  75.649u   0.948  35.11  226O     15   12.34   989  0
4 Hx      17 1.0989u   820.6  39.04  216O     15    0.21  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
 640 29.228u 0.5254u 19.94  29.31    853.4   0.825
 896 19.250u 0.4171u 3.034  46.57    928.8   0.255
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
 640 75.649u 1.0989u 35.11  39.04    820.6   0.948
 896 30.436u 0.5296u  9.24  36.75    792.4   0.502

0187
AMT 0524 92-06-16 19:07:55 12.4v VEC
Tx        1 Rx        9 N 60, 5
  128 Hz    15 Stacks  1 Bursts  256 Samples      2      2
1 Ex      9  117.54u   0.970  37.43  206O     15   -8.04   744  0
2 Hy      75 1.6727u   809.0  39.76  206O     15   -0.45  75.4K 0
3 Ey      9  120.33u   0.968  41.48  226O     15   12.34   989  0
4 Hx      17 1.6244u   749.1  44.30  216O     15    0.21  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
 640 117.54u 1.6727u 37.43  39.76    809.0   0.970
 896 68.287u 0.8430u 33.36  40.20    916.0   0.911
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
 640 120.33u 1.6244u 41.48  44.30    749.1   0.968
 896 73.269u 0.9283u 28.13  42.97    668.8   0.809

continued ...
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0206
AMT 0524 92-06-16 19:15:52 12.4v VEC
Tx        1 Rx        9 N 60, 5
   64 Hz    15 Stacks  1 Bursts  256 Samples      1      1
1 Ex      9  222.74u   0.988  37.36  216O     15    8.14   744  0
2 Hy      75 4.5280u   894.0  38.26  226O     15   -0.38  75.4K 0
3 Ey      9  349.25u   0.992  43.86  236O     15   12.41   989  0
4 Hx      17 6.5648u   885.0  44.59  216O     15   -1.03  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
 320 222.74u 4.5280u 37.36  38.26    894.0   0.988
 448 173.28u 3.1320u 33.82  34.51    882.2   0.990
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
 320 349.25u 6.5648u 43.86  44.59    885.0   0.992
 448 316.95u 5.1087u 42.67  43.25    841.9   0.993

0207
AMT 0524 92-06-16 19:16:02 12.4v VEC
Tx        1 Rx        9 N 60, 5
   64 Hz    11 Stacks  1 Bursts  256 Samples      2      2
1 Ex      9  159.73u   0.978  41.37  216O      9    8.14   744  0
2 Hy      75 3.0701u   926.7  43.24  226O      9   -0.38  75.4K 0
3 Ey      9  258.42u   0.987  42.76  236O     11   12.41   989  0
4 Hx      17 4.9072u   890.8  43.91  216O     11   -1.03  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
 320 159.73u 3.0701u 41.37  43.24    926.7   0.978
 448 116.56u 2.0883u 34.20  35.36    911.7   0.983
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
 320 258.42u 4.9072u 42.76  43.91    890.8   0.987
 448 139.37u 2.4379u 35.65  37.31    797.7   0.977

0208
AMT 0524 92-06-16 19:16:15 12.4v VEC
Tx        1 Rx        9 N 60, 5
   64 Hz    15 Stacks  1 Bursts  256 Samples      3      3
1 Ex      9  98.685u   0.951  31.95  216O     15    8.14   744  0
2 Hy      75 2.1288u   921.2  35.29  226O     15   -0.38  75.4K 0
3 Ey      9  442.49u   0.997  41.18  236O     14   12.41   989  0
4 Hx      17 8.6075u   867.6  41.41  216O     14   -1.03  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
 320 98.685u 2.1288u 31.95  35.29    921.2   0.951
 448 119.74u 2.1820u 33.14  34.09    914.5   0.986
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
 320 442.49u 8.6075u 41.18  41.41    867.6   0.997
 448 395.98u 6.4480u 41.97  42.21    834.5   0.997

0209
AMT 0524 92-06-16 19:16:27 12.4v VEC
Tx        1 Rx        9 N 60, 5
   64 Hz    15 Stacks  1 Bursts  256 Samples      4      4
1 Ex      9  70.256u   0.916  28.35  216O     15    8.14   744  0
2 Hy      75 1.5783u   808.3  33.81  226O     15   -0.38  75.4K 0
3 Ey      9  294.54u   0.979  39.33  236O     15   12.41   989  0
4 Hx      17 5.8073u   864.0  41.07  216O     15   -1.03  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
 320 70.256u 1.5783u 28.35  33.81    808.3   0.916
 448 60.431u 1.2877u 23.05  26.21    828.6   0.938
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
 320 294.54u 5.8073u 39.33  41.07    864.0   0.979
 448 352.73u 5.8147u 40.89  41.25    854.4   0.996

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0216
AMT 0524 92-06-16 19:18:30 12.3v VEC
   32 Hz    15 Stacks  1 Bursts  256 Samples      1      1
1 Ex      9  52.336u   0.980  25.82  236O     15    8.04   744  0
2 Hy      75 1.8021u   974.8  26.90  226O     15    0.48  75.4K 0
3 Ey      9  161.98u   0.988  31.59  216O     15   13.27   989  0
4 Hx      17 5.0630u   948.9  32.39  206O     15    1.20  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
 160 52.336u 1.8021u 25.82  26.90    974.8   0.980
 224 83.128u 2.1056u 34.23  35.36    921.4   0.984
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
 160 161.98u 5.0630u 31.59  32.39    948.9   0.988
 224 349.15u 8.2304u 40.11  40.23    918.0   0.999

0217
AMT 0524 92-06-16 19:18:42 12.3v VEC
Tx        1 Rx        9 N 60, 5
   32 Hz    15 Stacks  1 Bursts  256 Samples      2      2
1 Ex      9  49.096u   0.965  25.98  236O     14    8.04   744  0
2 Hy      75 1.6725u   904.4  27.91  226O     14    0.48  75.4K 0
3 Ey      9  198.59u   0.994  34.55  216O     15   13.27   989  0
4 Hx      17 5.9530u   947.3  35.00  206O     15    1.20  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
 160 49.096u 1.6725u 25.98  27.91    904.4   0.965
 224 112.60u 2.8082u 35.51  36.27    866.4   0.990
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
 160 198.59u 5.9530u 34.55  35.00    947.3   0.994
 224 240.92u 5.6452u 40.32  41.00    903.4   0.992

0218
AMT 0524 92-06-16 19:18:55 12.3v VEC
Tx        1 Rx        9 N 60, 5
   32 Hz    15 Stacks  1 Bursts  256 Samples      3      3
1 Ex      9  73.036u   0.968  29.84  236O     14    8.04   744  0
2 Hy      75 2.3253u   943.4  31.85  226O     14    0.48  75.4K 0
3 Ey      9  179.23u   0.993  34.82  216O     14   13.27   989  0
4 Hx      17 5.3507u   949.7  35.31  206O     14    1.20  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
 160 73.036u 2.3253u 29.84  31.85    943.4   0.968
 224 91.313u 2.2811u 35.12  36.43    917.1   0.982
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
 160 179.23u 5.3507u 34.82  35.31    949.7   0.993
 224 262.30u 6.0527u 41.71  42.13    886.8   0.995

0219
AMT 0524 92-06-16 19:19:08 12.3v VEC
Tx        1 Rx        9 N 60, 5
   32 Hz    15 Stacks  1 Bursts  256 Samples      4      4
1 Ex      9  59.689u   0.962  26.63  236O     13    8.04   744  0
2 Hy      75 2.0052u   917.7  28.79  226O     13    0.48  75.4K 0
3 Ey      9  155.47u   0.991  35.74  216O     14   13.27   989  0
4 Hx      17 4.5759u   935.6  36.41  206O     14    1.20  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
 160 59.689u 2.0052u 26.63  28.79    917.7   0.962
 224 61.198u 1.4157u 39.45  44.11    858.8   0.946
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
 160 155.47u 4.5759u 35.74  36.41    935.6   0.991
 224 239.04u 5.5471u 41.15  41.75    928.1   0.993

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0226
AMT 0524 92-06-16 19:21:37 12.3v VEC
Tx        1 Rx        9 N 60, 5
1 Ex      9  111.67u   0.993  25.50  226O     15    8.14   744  0
2 Hy      75 5.5103u   969.2  25.84  206O     15   -0.24  75.4K 0
3 Ey      9  143.80u   0.931  24.87  205O     14   13.10   989  0
4 Hx      17 6.9539u   977.2  28.72  203O     14   -0.14  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
  80 111.67u 5.5103u 25.50  25.84    969.2   0.993
 112 125.86u 5.0953u 27.02  27.46    969.3   0.992
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
  80 143.80u 6.9539u 24.87  28.72    977.2   0.931
 112 231.08u 8.4490u 33.27  33.52    954.9   0.996

0227
AMT 0524 92-06-16 19:21:50 12.3v VEC
Tx        1 Rx        9 N 60, 5
   16 Hz    15 Stacks  1 Bursts  256 Samples      2      2
1 Ex      9  38.783u   0.977  25.10  226O     15    8.14   744  0
2 Hy      75 1.9127u   903.5  26.30  206O     15   -0.24  75.4K 0
3 Ey      9  81.477u   0.833  20.93  205O     13   13.10   989  0
4 Hx      17 4.0644u  1004.1  30.14  203O     13   -0.14  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
  80 38.783u 1.9127u 25.10  26.30    903.5   0.977
 112 46.980u 1.8444u 28.64  29.29    966.8   0.989
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
  80 81.477u 4.0644u 20.93  30.14   1004.1   0.833
 112 181.07u 6.5236u 34.27  34.52    916.6   0.996

0228
AMT 0524 92-06-16 19:22:03 12.3v VEC
Tx        1 Rx        9 N 60, 5
   16 Hz    15 Stacks  1 Bursts  256 Samples      3      3
1 Ex      9  68.747u   0.992  25.21  226O     15    8.14   744  0
2 Hy      75 3.4095u   988.5  25.61  206O     15   -0.24  75.4K 0
3 Ey      9  207.60u   0.971  29.10  205O     15   13.10   989  0
4 Hx      17  9.482u  1007.7  30.84  203O     15   -0.14  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
  80 68.747u 3.4095u 25.21  25.61    988.5   0.992
 112 95.678u 3.9407u 25.97  26.67    952.1   0.987
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
  80 207.60u  9.482u 29.10  30.84   1007.7   0.971
 112 361.77u 13.103u 33.83  34.24    914.3   0.994

0230
AMT 0524 92-06-16 19:22:28 12.3v VEC
Tx        1 Rx        9 N 60, 5
   16 Hz    15 Stacks  1 Bursts  256 Samples      5      4
1 Ex      9  121.75u   0.985  26.79  226O     15    8.14   744  0
2 Hy      75 5.8348u   945.1  27.64  206O     15   -0.24  75.4K 0
3 Ey      9  157.62u   0.934  29.69  205O     14   13.10   989  0
4 Hx      17 6.9898u   945.3  34.01  203O     14   -0.14  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
  80 121.75u 5.8348u 26.79  27.64    945.1   0.985
 112 187.18u 7.1787u 29.94  30.76    931.8   0.987
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
  80 157.62u 6.9898u 29.69  34.01    945.3   0.934
 112 335.60u 12.221u 33.43  33.91    957.2   0.993

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0246
AMT 0524 92-06-16 19:27:36 12.4v VEC
Tx        1 Rx        9 N 60, 5
    8 Hz    15 Stacks  1 Bursts  256 Samples      1      1
1 Ex      9  31.068u   0.979  20.36  216O     15    7.94   744  0
2 Hy     75 2.4088u   980.4  21.24  216O     15   -0.10  75.4K 0
3 Ey      9  45.546u   0.966  20.30  216O     15   13.20   989  0
4 Hx     17 3.5134u   973.8  21.74  206O     15    0.00  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
  40 31.068u 2.4088u 20.36  21.24    980.4   0.979
  56 50.517u 2.8959u 23.76  31.07    939.7   0.875
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
  40 45.546u 3.5134u 20.30  21.74    973.8   0.966
  56 93.999u 10.204u 1.504  38.15    986.1   0.199

0247
AMT 0524 92-06-16 19:27:49 12.4v VEC
Tx        1 Rx        9 N 60, 5
    8 Hz    15 Stacks  1 Bursts  256 Samples      2      2
1 Ex      9  28.057u   0.980  21.47  216O     15    7.94   744  0
2 Hy     75 2.1191u   967.1  22.37  216O     15   -0.10  75.4K 0
3 Ey      9  47.111u   0.936  20.64  216O     15   13.20   989  0
4 Hx     17 3.5466u   974.8  23.57  206O     15    0.00  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
  40 28.057u 2.1191u 21.47  22.37    967.1   0.980
  56 53.939u 3.5455u 19.33  22.09   1014.8   0.935
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
  40 47.111u 3.5466u 20.64  23.57    974.8   0.936
  56 132.51u 8.9061u 3.822  102.2   1054.8   0.193

0249
AMT 0524 92-06-16 19:28:16 12.4v VEC
Tx        1 Rx        9 N 60, 5
    8 Hz    15 Stacks  1 Bursts  256 Samples      4      3
1 Ex      9  46.679u   0.989  23.60  216O     15    7.94   744  0
2 Hy     75 3.3782u   954.7  24.13  216O     15   -0.10  75.4K 0
3 Ey      9  110.68u   0.989  26.67  216O     15   13.20   989  0
4 Hx     17 7.5343u   940.1  27.28  206O     15    0.00  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
  40 46.679u 3.3782u 23.60  24.13    954.7   0.989
  56 101.88u 5.8667u 26.31  27.55    958.6   0.977
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
  40 110.68u 7.5343u 26.67  27.28    940.1   0.989
  56 225.43u 14.543u 14.30  32.18    946.1   0.667

0250
AMT 0524 92-06-16 19:28:17 12.4v VEC
Tx        1 Rx        9 N 60, 5
    8 Hz    15 Stacks  1 Bursts  256 Samples      5      4
1 Ex      9  30.393u   0.974  20.54  216O     15    7.94   744  0
2 Hy     75 2.3396u   964.8  21.66  216O     15   -0.10  75.4K 0
3 Ey      9  52.216u   0.972  23.30  216O     15   13.20   989  0
4 Hx     17 3.7702u   982.4  24.68  206O     15    0.00  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
  40 30.393u 2.3396u 20.54  21.66    964.8   0.974
  56 66.235u 4.0148u 23.41  25.23    890.0   0.963
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
  40 52.216u 3.7702u 23.30  24.68    982.4   0.972
  56 112.77u 7.5846u 0.971  401.2    865.3   0.049

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0256
AMT 0524 92-06-16 19:30:52 12.4v VEC
Tx        1 Rx        9 N 60, 5
    4 Hz    15 Stacks  1 Bursts  256 Samples      1      1
1 Ex      9  37.275u   0.909  20.26  236O     14    7.90   744  0
2 Hy     75 3.9491u   721.0  24.49  226O     14    0.10  75.4K 0
3 Ey      9  49.683u   0.953  17.17  216O     15   13.54   989  0
4 Hx     17 5.8519u   815.8  18.91  216O     15   -0.14  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
  20 37.275u 3.9491u 20.26  24.49    721.0   0.909
  28 59.099u 4.9179u 24.36  27.30    733.3   0.945
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
  20 49.683u 5.8519u 17.17  18.91    815.8   0.953
  28 66.979u 5.8656u 21.40  25.33    920.7   0.919

0257
AMT 0524 92-06-16 19:31:06 12.4v VEC
Tx        1 Rx        9 N 60, 5
    4 Hz    15 Stacks  1 Bursts  256 Samples      2      2
1 Ex      9  26.225u   0.992  18.18  236O     15    7.90   744  0
2 Hy     75 3.0630u   898.8  18.47  226O     15    0.10  75.4K 0
3 Ey      9  32.193u   0.974  19.28  216O     15   13.54   989  0
4 Hx     17 3.6182u   909.2  20.32  216O     15   -0.14  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
  20 26.225u 3.0630u 18.18  18.47    898.8   0.992
  28 37.953u 3.6529u 19.14  19.41    912.1   0.993
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
  20 32.193u 3.6182u 19.28  20.32    909.2   0.974
  28 59.688u 5.3552u 21.93  22.44    954.0   0.988

0258
AMT 0524 92-06-16 19:31:21 12.4v VEC
Tx        1 Rx        9 N 60, 5
    4 Hz    15 Stacks  1 Bursts  256 Samples      3      3
1 Ex      9  33.369u   0.996  18.31  236O     15    7.90   744  0
2 Hy     75 3.8915u   894.9  18.45  226O     15    0.10  75.4K 0
3 Ey      9  45.409u   0.977  18.50  216O     13   13.54   989  0
4 Hx     17 5.2169u   925.1  19.39  216O     13   -0.14  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
  20 33.369u 3.8915u 18.31  18.45    894.9   0.996
  28 67.682u 6.4258u 19.78  19.84    925.7   0.999
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
  20 45.409u 5.2169u 18.50  19.39    925.1   0.977
  28 93.658u 8.2344u 22.62  23.59    927.3   0.979

0260
AMT 0524 92-06-16 19:31:49 12.4v VEC
Tx        1 Rx        9 N 60, 5
    4 Hz    15 Stacks  1 Bursts  256 Samples      4      5
1 Ex      9  28.555u   0.988  17.43  236O     15    7.90   744  0
2 Hy     75 3.3989u   886.2  17.87  226O     15    0.10  75.4K 0
3 Ey      9  38.151u   0.942  14.88  216O     15   13.54   989  0
4 Hx     17 4.7990u   863.1  16.77  216O     15   -0.14  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
  20 28.555u 3.3989u 17.43  17.87    886.2   0.988
  28 40.777u 3.9541u 18.83  19.15    921.7   0.992
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
  20 38.151u 4.7990u 14.88  16.77    863.1   0.942
  28 51.855u 4.9552u 18.33  20.87    915.6   0.937

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0267
AMT 0524 92-06-16 19:34:54 12.3v VEC
Tx        1 Rx        9 N 60, 5
    2 Hz    15 Stacks  1 Bursts  256 Samples      2      2
1 Ex      9  11.689u   0.975  17.39  246O     15    7.94   744  0
2 Hy     75 1.9569u    793.1  18.30  226O     15    0.24  75.4K 0
3 Ey      9  19.602u   0.945  14.30  216O     15   13.58   989  0
4 Hx     17 3.5636u    718.8  16.01  216O     15    0.21  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
  10 11.689u 1.9569u 17.39  18.30    793.1   0.975
  14 12.764u 1.8324u 17.13  17.53    803.4   0.988
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
  10 19.602u 3.5636u 14.30  16.01    718.8   0.945
  14 38.534u 5.6941u 15.95  16.77    770.6   0.975

0268
AMT 0524 92-06-16 19:35:10 12.3v VEC
Tx        1 Rx        9 N 60, 5
    2 Hz    15 Stacks  1 Bursts  256 Samples      3      3
1 Ex      9  11.694u   0.978  14.11  246O     14    7.94   744  0
2 Hy     75 2.1767u    741.3  14.76  226O     14    0.24  75.4K 0
3 Ey      9  29.708u   0.964  15.05  216O     15   13.58   989  0
4 Hx     17 5.3159u    700.2  16.20  216O     15    0.21  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
  10 11.694u 2.1767u 14.11  14.76    741.3   0.978
  14 16.033u 2.4036u 15.63  16.16    808.2   0.984
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
  10 29.708u 5.3159u 15.05  16.20    700.2   0.964
  14 49.897u 7.1975u 16.94  17.39    790.3   0.987

0269
AMT 0524 92-06-16 19:35:27 12.3v VEC
Tx        1 Rx        9 N 60, 5
    2 Hz    15 Stacks  1 Bursts  256 Samples      4      4
1 Ex      9  19.820u   0.874  16.04  246O     15    7.94   744  0
2 Hy     75 3.2715u    606.4  21.00  226O     15    0.24  75.4K 0
3 Ey      9  21.885u   0.897  12.02  216O     15   13.58   989  0
4 Hx     17 4.2278u    727.6  14.93  216O     15    0.21  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
  10 19.820u 3.2715u 16.04  21.00    606.4   0.874
  14 28.817u 3.9001u 17.76  21.41    668.6   0.911
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
  10 21.885u 4.2278u 12.02  14.93    727.6   0.897
  14 47.018u 6.7815u 16.73  17.62    898.4   0.974

0270
AMT 0524 92-06-16 19:35:43 12.3v VEC
Tx        1 Rx        9 N 60, 5
    2 Hz    15 Stacks  1 Bursts  256 Samples      5      5
1 Ex      9  15.959u   0.869  15.67  246O     14    7.94   744  0
2 Hy     75 2.6577u    725.8  20.74  226O     14    0.24  75.4K 0
3 Ey      9  28.942u   0.959  12.54  216O     14   13.58   989  0
4 Hx     17 5.6600u    583.9  13.63  216O     14    0.21  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
  10 15.959u 2.6577u 15.67  20.74    725.8   0.869
  14 25.985u 3.5602u 17.26  20.97    791.4   0.907
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
  10 28.942u 5.6600u 12.54  13.63    583.9   0.959
  14 47.298u 6.9322u 16.14  17.13    788.1   0.971
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continued ...

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0286
AMT 0524 92-06-16 19:42:57 12.3v VEC
Tx        1 Rx        9 N 60, 5
    1 Hz    15 Stacks  1 Bursts  256 Samples      1      1
1 Ex      9  13.725u   0.965  18.84  216O     14    8.11   744  0
2 Hy     75 3.1058u    684.6  20.24  226O     14    0.38  75.4K 0
3 Ey      9  38.136u   0.935  18.26  206O     15   11.99   989  0
4 Hx     17 8.6278u    497.4  20.90  216O     15   -0.07  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
   5 13.725u 3.1058u 18.84  20.24    684.6   0.965
   7 18.072u 3.9260u 14.02  16.33    613.7   0.927
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
   5 38.136u 8.6278u 18.26  20.90    497.4   0.935
   7 62.828u 12.829u 16.18  18.14    555.7   0.944

0287
AMT 0524 92-06-16 19:43:18 12.3v VEC
Tx        1 Rx        9 N 60, 5
    1 Hz    15 Stacks  1 Bursts  256 Samples      2      2
1 Ex      9  10.287u   0.952  14.65  216O     15    8.11   744  0
2 Hy     75 2.6226u    610.3  16.16  226O     15    0.38  75.4K 0
3 Ey      9  27.937u   0.872  17.08  206O     14   11.99   989  0
4 Hx     17 6.3117u    444.7  22.47  216O     14   -0.07  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
   5 10.287u 2.6226u 14.65  16.16    610.3   0.952
   7  9.372u 2.2748u 8.911  16.49    622.2   0.735
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
   5 27.937u 6.3117u 17.08  22.47    444.7   0.872
   7 26.788u 5.5942u 13.80  19.44    608.8   0.842

0291
AMT 0524 92-06-16 19:45:18 12.3v VEC
Tx        1 Rx        9 N 60, 5
    1 Hz    15 Stacks  1 Bursts  256 Samples      6      3
1 Ex      9   9.880u   0.875  16.83  216O     15    8.11   744  0
2 Hy     75 2.2523u    560.2  22.00  226O     15    0.38  75.4K 0
3 Ey      9  28.509u   0.903  18.66  206O     12   11.99   989  0
4 Hx     17 6.2718u    436.1  22.88  216O     12   -0.07  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
   5  9.880u 2.2523u 16.83  22.00    560.2   0.875
   7 15.324u 3.3322u 14.29  15.97    699.8   0.946
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
   5 28.509u 6.2718u 18.66  22.88    436.1   0.903
   7 29.590u 6.0762u 14.57  19.69    464.6   0.860

0294
AMT 0524 92-06-16 19:46:38 12.3v VEC
Tx        1 Rx        9 N 60, 5
    1 Hz    15 Stacks  1 Bursts  256 Samples      9      4
1 Ex      9  8.4187u   0.955  20.74  216O     15    8.11   744  0
2 Hy     75 1.8065u    668.2  22.74  226O     15    0.38  75.4K 0
3 Ey      9  13.632u   0.852  13.40  206O     12   11.99   989  0
4 Hx     17 3.4368u    397.1  18.48  216O     12   -0.07  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
   5 8.4187u 1.8065u 20.74  22.74    668.2   0.955
   7 12.799u 2.6490u 15.71  17.70    537.2   0.942
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
   5 13.632u 3.4368u 13.40  18.48    397.1   0.852
   7 28.503u 4.9947u 20.29  26.67    608.3   0.872
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0308
AMT 0524 92-06-16 19:57:22 12.3v VEC
Tx        1 Rx        9 N 60, 5
 .500 Hz    15 Stacks  1 Bursts  256 Samples      2      2
1 Ex      9  10.049u   0.899  24.25  236O     13    7.83   744  0
2 Hy      75 2.7361u   676.1  30.00  226O     13    0.17  75.4K 0
3 Ey      9  28.677u   0.816  30.32  206O     14   14.58   989  0
4 Hx      17 6.6550u   169.4  45.49  226O     14   -0.07  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
2.50 10.049u 2.7361u 24.25  30.00    676.1   0.899
3.50 11.256u 3.1186u 15.67  22.10    584.6   0.842
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
2.50 28.677u 6.6550u 30.32  45.49    169.4   0.816
3.50 26.687u 5.3856u 26.64  46.18    156.6   0.760

0309
AMT 0524 92-06-16 19:57:50 12.3v VEC
Tx        1 Rx        9 N 60, 5
 .500 Hz    15 Stacks  1 Bursts  256 Samples      3      3
1 Ex      9  8.5419u   0.893  23.96  236O     13    7.83   744  0
2 Hy      75 2.3317u   705.2  30.06  226O     13    0.17  75.4K 0
3 Ey      9  21.086u   0.853  29.16  206O     13   14.58   989  0
4 Hx      17 5.1019u   136.3  40.03  226O     13   -0.07  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
2.50 8.5419u 2.3317u 23.96  30.06    705.2   0.893
3.50  9.626u 2.5215u 19.91  21.78    647.2   0.956
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
2.50 21.086u 5.1019u 29.16  40.03    136.3   0.853
3.50 24.272u 5.1538u 26.95  37.25    302.9   0.851

0316
AMT 0524 92-06-16 20:05:02 12.3v VEC
Tx        1 Rx        9 N 60, 5
 .500 Hz    13 Stacks  1 Bursts  256 Samples      1      1
1 Ex      9  15.668u   0.839  31.45  236O     11    7.83   744  0
2 Hy      75 3.6191u   722.2  44.67  226O     11    0.17  75.4K 0
3 Ey      9  36.348u   0.898  36.83  206O     11   14.58   989  0
4 Hx      17 8.0272u   101.3  45.65  226O     11   -0.07  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
2.50 15.668u 3.6191u 31.45  44.67    722.2   0.839
3.50 23.138u 4.9507u 28.28  34.43    676.7   0.906
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
2.50 36.348u 8.0272u 36.83  45.65    101.3   0.898
3.50 47.362u  9.998u 29.96  34.30    357.2   0.935

0317
AMT 0524 92-06-16 20:05:30 12.3v VEC
Tx        1 Rx        9 N 60, 5
 .500 Hz    15 Stacks  1 Bursts  256 Samples      2      2
1 Ex      9  7.3921u   0.802  18.32  236O     14    7.83   744  0
2 Hy      75 2.1871u   648.4  28.50  226O     14    0.17  75.4K 0
3 Ey      9  30.764u   0.860  32.20  206O     14   14.58   989  0
4 Hx      17 7.1104u   427.2  43.53  226O     14   -0.07  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
2.50 7.3921u 2.1871u 18.32  28.50    648.4   0.802
3.50 10.802u 2.7069u 19.34  26.75    710.5   0.850
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
2.50 30.764u 7.1104u 32.20  43.53    427.2   0.860
3.50 36.511u 8.7677u 20.51  29.92    188.3   0.828

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0329
AMT 0524 92-06-16 20:19:12 12.3v VEC
Tx        1 Rx        9 N 60, 5
 .250 Hz    15 Stacks  1 Bursts  256 Samples      1      3
2 Hy      75 3.2496u  1166.7  35.51  216O     13    0.10  75.4K 0
3 Ey      9  32.796u   0.830  50.13  206O     14   15.34   989  0
4 Hx      17 8.4424u    13.1  72.69  216O     14   -0.10  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
1.25 8.8258u 3.2496u 24.52  35.51   1166.7   0.831
1.75 10.021u 3.2913u 14.33  48.96    879.3   0.541
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
1.25 32.796u 8.4424u 50.13  72.69     13.1   0.830
1.75 24.326u 6.6476u 28.44  51.48    351.7   0.743

0344
AMT 0524 92-06-16 20:34:05 12.3v VEC
Tx        1 Rx        9 N 60, 5
 .250 Hz    15 Stacks  1 Bursts  256 Samples      3      6
1 Ex      9  11.627u   0.704  28.59  216O     13    8.04   744  0
2 Hy      75 3.6501u   812.9  57.62  216O     13    0.10  75.4K 0
3 Ey      9  57.531u   0.729  68.71  206O     14   15.34   989  0
4 Hx      17 11.852u   292.8  129.3  216O     14   -0.10  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
1.25 11.627u 3.6501u 28.59  57.62    812.9   0.704
1.75 10.874u 3.0073u 21.05  66.28    894.4   0.564
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
1.25 57.531u 11.852u 68.71  129.3    292.8   0.729
1.75 59.063u 10.235u 53.50  169.2    449.7   0.562

0346
AMT 0524 92-06-16 20:37:01 12.3v VEC
Tx        1 Rx        9 N 60, 5
 .250 Hz    15 Stacks  1 Bursts  256 Samples      4      8
1 Ex      9  10.408u   0.842  24.23  216O     15    8.04   744  0
2 Hy      75 3.8795u   919.0  34.21  216O     15    0.10  75.4K 0
3 Ey      9  41.735u   0.828  85.03  206O     13   15.34   989  0
4 Hx      17 8.2383u    62.0  123.9  216O     13   -0.10  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
1.25 10.408u 3.8795u 24.23  34.21    919.0   0.842
1.75 10.251u 3.6305u 12.91  40.17    427.2   0.567
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
1.25 41.735u 8.2383u 85.03  123.9     62.0   0.828
1.75 43.890u 10.407u 29.96  86.20    282.2   0.590

0348
AMT 0524 92-06-16 20:42:58 12.3v VEC
Tx        1 Rx        9 N 60, 5
 .250 Hz    15 Stacks  1 Bursts  256 Samples      1      1
1 Ex      9  6.8554u   0.774  16.55  216O     13    8.04   744  0
2 Hy      75 2.9660u  1049.2  27.60  216O     13    0.10  75.4K 0
3 Ey      9  42.418u   0.880  66.38  206O     15   15.34   989  0
4 Hx      17  9.768u    54.9  85.70  216O     15   -0.10  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
1.25 6.8554u 2.9660u 16.55  27.60   1049.2   0.774
1.75 15.195u 3.6317u 42.28  59.18   1052.9   0.845
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
1.25 42.418u  9.768u 66.38  85.70     54.9   0.880
1.75 51.577u 13.215u 39.73  47.67    205.8   0.913

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0365
Tx        1 Rx        9 N 60, 5
 .125 Hz    15 Stacks  1 Bursts  256 Samples      1      1
1 Ex      9  5.6139u   0.282  4.929  056O     14    7.73   744  0
2 Hy      75 3.7950u  1328.3  62.18  026O     14 -135.19  75.4K 0
3 Ey      9  46.694u   0.805  113.1  036O     14   16.96   989  0
4 Hx      17 11.142u   166.9  174.5  036O     14  399.49  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
.625 5.6139u 3.7950u 4.929  62.18   1328.3   0.282
.875 7.8556u 3.9673u 11.30  44.43    828.0   0.504
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
.625 46.694u 11.142u 113.1  174.5    166.9   0.805
.875 54.120u 12.140u 90.80  142.0    224.3   0.800

0366
AMT 0524 92-06-16 21:21:46 12.2v VEC
Tx        1 Rx        9 N 60, 5
 .125 Hz    15 Stacks  1 Bursts  256 Samples      2      2
1 Ex      9  4.9737u   0.180  10.26  056O     13    7.73   744  0
2 Hy      75 1.8652u   738.9  315.5  026O     13 -135.19  75.4K 0
3 Ey      9  28.419u   0.482  32.45  036O     12   16.96   989  0
4 Hx      17  9.799u  -163.5  139.5  036O     12  399.49  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
.625 4.9737u 1.8652u 10.26  315.5    738.9   0.180
.875 10.386u 3.5060u 15.01  167.5    656.6   0.299
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
.625 28.419u  9.799u 32.45  139.5   -163.5   0.482
.875 43.339u  9.565u 90.61  151.9   -166.3   0.772

0367
AMT 0524 92-06-16 21:23:02 12.2v VEC
Tx        1 Rx        9 N 60, 5
 .125 Hz    15 Stacks  1 Bursts  256 Samples      3      3
1 Ex      9  7.9272u   0.476  17.64  056O     12    7.73   744  0
2 Hy      75 3.6827u   665.0  77.91  026O     12 -135.19  75.4K 0
3 Ey      9  30.644u   0.739  58.06  036O     15   16.96   989  0
4 Hx      17  9.779u  -224.1  106.3  036O     15  399.49  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
.625 7.9272u 3.6827u 17.64  77.91    665.0   0.476
.875 10.570u 4.3940u 16.81  65.02    894.8   0.509
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
.625 30.644u  9.779u 58.06  106.3   -224.1   0.739
.875 42.673u 8.7367u 92.70  200.5     86.7   0.680

0368
AMT 0524 92-06-16 21:23:04 12.2v VEC
Tx        1 Rx        9 N 60, 5
 .125 Hz    15 Stacks  1 Bursts  256 Samples      4      4
1 Ex      9  6.4963u   0.442  10.99  056O     12    7.73   744  0
2 Hy      75 3.6867u   969.5  56.17  026O     12 -135.19  75.4K 0
3 Ey      9  38.073u   0.858  75.72  036O     10   16.96   989  0
4 Hx      17 11.466u    38.6  102.8  036O     10  399.49  75.1K 0
freq  ExMag   HyMag1 xyRho1 xyRho2   xyPhz    xyCC
.625 6.4963u 3.6867u 10.99  56.17    969.5   0.442
.875 11.389u 3.3538u 32.19  134.9    852.9   0.488
freq  EyMag   HxMag1 yxRho1 yxRho2   yxPhz    yxCC
.625 38.073u 11.466u 75.72  102.8     38.6   0.858
.875 40.488u 10.930u 70.30  87.46    -53.4   0.897

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

Sample .FLD-file (partial: three records for each frequency)

```
Reference ruler line                                                                                                  1         1         1
----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8----+----9----+----0----+----1----+----2----+---
/* SHRED v3.20: "SAMAMT.FLD"
H 1 0364   1 0 AMT 0524 92-06-16 21:18:45 12.2 VEC      7718    1    200  9214        9 N   1 0.010 HANN
D 1 0184   1 0 92-06-16 19:06:50 12.3   896    15     0           1        9     Ex 0        9  52.215e-6   0.844      27.95
D 1 0185   1 0 92-06-16 19:07:03 12.3   896    15     0           1        9     Ex 0        9  32.430e-6   0.678      21.09
D 1 0186   1 0 92-06-16 19:07:31 12.4   896    15     0           1        9     Ex 0        9  19.250e-6   0.255      3.034
D 1 0184   1 0 92-06-16 19:06:50 12.3   640    15     0           1        9     Ex 0        9  77.449e-6   0.937      37.39
D 1 0185   1 0 92-06-16 19:07:03 12.3   640    15     0           1        9     Ex 0        9  40.726e-6   0.816      30.68
D 1 0186   1 0 92-06-16 19:07:31 12.4   640    15     0           1        9     Ex 0        9  29.228e-6   0.825      19.94
D 1 0206   1 0 92-06-16 19:15:52 12.4   448    15     0           1        9     Ex 0        9  173.28e-6   0.990      33.82
D 1 0207   1 0 92-06-16 19:16:02 12.4   448    11     0           1        9     Ex 0        9  116.56e-6   0.983      34.20
D 1 0208   1 0 92-06-16 19:16:15 12.4   448    15     0           1        9     Ex 0        9  119.74e-6   0.986      33.14
D 1 0206   1 0 92-06-16 19:15:52 12.4   320    15     0           1        9     Ex 0        9  222.74e-6   0.988      37.36
D 1 0207   1 0 92-06-16 19:16:02 12.4   320    11     0           1        9     Ex 0        9  159.73e-6   0.978      41.37
D 1 0208   1 0 92-06-16 19:16:15 12.4   320    15     0           1        9     Ex 0        9  98.685e-6   0.951      31.95
D 1 0216   1 0 92-06-16 19:18:30 12.3   224    15     0           1        9     Ex 0        9  83.128e-6   0.984      34.23
D 1 0217   1 0 92-06-16 19:18:42 12.3   224    15     0           1        9     Ex 0        9  112.60e-6   0.990      35.51
D 1 0218   1 0 92-06-16 19:18:55 12.3   224    15     0           1        9     Ex 0        9  91.313e-6   0.982      35.12
D 1 0216   1 0 92-06-16 19:18:30 12.3   160    15     0           1        9     Ex 0        9  52.336e-6   0.980      25.82
D 1 0217   1 0 92-06-16 19:18:42 12.3   160    15     0           1        9     Ex 0        9  49.096e-6   0.965      25.98
D 1 0218   1 0 92-06-16 19:18:55 12.3   160    15     0           1        9     Ex 0        9  73.036e-6   0.968      29.84
D 1 0226   1 0 92-06-16 19:21:37 12.3   112    15     0           1        9     Ex 0        9  125.86e-6   0.992      27.02
D 1 0227   1 0 92-06-16 19:21:50 12.3   112    15     0           1        9     Ex 0        9  46.980e-6   0.989      28.64
D 1 0228   1 0 92-06-16 19:22:03 12.3   112    15     0           1        9     Ex 0        9  95.678e-6   0.987      25.97
D 1 0226   1 0 92-06-16 19:21:37 12.3    80    15     0           1        9     Ex 0        9  111.67e-6   0.993      25.50
D 1 0227   1 0 92-06-16 19:21:50 12.3    80    15     0           1        9     Ex 0        9  38.783e-6   0.977      25.10
D 1 0228   1 0 92-06-16 19:22:03 12.3    80    15     0           1        9     Ex 0        9  68.747e-6   0.992      25.21
D 1 0246   1 0 92-06-16 19:27:36 12.4    56    15     0           1        9     Ex 0        9  50.517e-6   0.875      23.76
D 1 0247   1 0 92-06-16 19:27:49 12.4    56    15     0           1        9     Ex 0        9  53.939e-6   0.935      19.33
D 1 0248   1 0 92-06-16 19:28:03 12.4    56    15     0           1        9     Ex 0        9  62.510e-6   0.805      18.05
D 1 0246   1 0 92-06-16 19:27:36 12.4    40    15     0           1        9     Ex 0        9  31.068e-6   0.979      20.36
D 1 0247   1 0 92-06-16 19:27:49 12.4    40    15     0           1        9     Ex 0        9  28.057e-6   0.980      21.47
D 1 0248   1 0 92-06-16 19:28:03 12.4    40    15     0           1        9     Ex 0        9  36.657e-6   0.964      20.28
D 1 0256   1 0 92-06-16 19:30:52 12.4    28    15     0           1        9     Ex 0        9  59.099e-6   0.945      24.36
D 1 0257   1 0 92-06-16 19:31:06 12.4    28    15     0           1        9     Ex 0        9  37.953e-6   0.993      19.14
D 1 0258   1 0 92-06-16 19:31:21 12.4    28    15     0           1        9     Ex 0        9  67.682e-6   0.999      19.78
D 1 0256   1 0 92-06-16 19:30:52 12.4    20    15     0           1        9     Ex 0        9  37.275e-6   0.909      20.26
D 1 0257   1 0 92-06-16 19:31:06 12.4    20    15     0           1        9     Ex 0        9  26.225e-6   0.992      18.18
D 1 0258   1 0 92-06-16 19:31:21 12.4    20    15     0           1        9     Ex 0        9  33.369e-6   0.996      18.31
D 1 0266   1 0 92-06-16 19:34:37 12.3    14    15     0           1        9     Ex 0        9  25.805e-6   0.925      18.44
D 1 0267   1 0 92-06-16 19:34:54 12.3    14    15     0           1        9     Ex 0        9  12.764e-6   0.988      17.13
D 1 0268   1 0 92-06-16 19:35:10 12.3    14    15     0           1        9     Ex 0        9  16.033e-6   0.984      15.63
D 1 0266   1 0 92-06-16 19:34:37 12.3    10    15     0           1        9     Ex 0        9  18.263e-6   0.934      18.44
D 1 0267   1 0 92-06-16 19:34:54 12.3    10    15     0           1        9     Ex 0        9  11.689e-6   0.975      17.39
D 1 0268   1 0 92-06-16 19:35:10 12.3    10    15     0           1        9     Ex 0        9  11.694e-6   0.978      14.11
D 1 0286   1 0 92-06-16 19:42:57 12.3     7    15     0           1        9     Ex 0        9  18.072e-6   0.927      14.02
D 1 0287   1 0 92-06-16 19:43:18 12.3     7    15     0           1        9     Ex 0        9   9.372e-6   0.735      8.911
D 1 0288   1 0 92-06-16 19:43:38 12.3     7    15     0           1        9     Ex 0        9  7.7042e-6   0.755      18.83
D 1 0286   1 0 92-06-16 19:42:57 12.3     5    15     0           1        9     Ex 0        9  13.725e-6   0.965      18.84
D 1 0287   1 0 92-06-16 19:43:18 12.3     5    15     0           1        9     Ex 0        9  10.287e-6   0.952      14.65
D 1 0288   1 0 92-06-16 19:43:38 12.3     5    15     0           1        9     Ex 0        9  6.7452e-6   0.847      17.14
D 1 0306   1 0 92-06-16 19:54:09 12.3  3.50    15     0           1        9     Ex 0        9  11.099e-6   0.822      27.22
D 1 0308   1 0 92-06-16 19:57:22 12.3  3.50    15     0           1        9     Ex 0        9  11.256e-6   0.842      15.67
D 1 0309   1 0 92-06-16 19:57:50 12.3  3.50    15     0           1        9     Ex 0        9   9.626e-6   0.956      19.91
D 1 0306   1 0 92-06-16 19:54:09 12.3  2.50    15     0           1        9     Ex 0        9   9.642e-6   0.873      25.59
D 1 0308   1 0 92-06-16 19:57:22 12.3  2.50    15     0           1        9     Ex 0        9  10.049e-6   0.899      24.25
D 1 0309   1 0 92-06-16 19:57:50 12.3  2.50    15     0           1        9     Ex 0        9  8.5419e-6   0.893      23.96
D 1 0329   1 0 92-06-16 20:19:12 12.3  1.75    15     0           1        9     Ex 0        9  10.021e-6   0.541      14.33
D 1 0338   1 0 92-06-16 20:28:57 12.3  1.75    15     0           1        9     Ex 0        9  13.105e-6   0.597      29.07
D 1 0343   1 0 92-06-16 20:33:21 12.3  1.75    15     0           1        9     Ex 0        9  11.433e-6   0.820      34.55
D 1 0329   1 0 92-06-16 20:19:12 12.3  1.25    15     0           1        9     Ex 0        9  8.8258e-6   0.831      24.52
D 1 0338   1 0 92-06-16 20:28:57 12.3  1.25    15     0           1        9     Ex 0        9   9.553e-6   0.741      30.56
D 1 0343   1 0 92-06-16 20:33:21 12.3  1.25    15     0           1        9     Ex 0        9  7.4773e-6   0.807      35.61
D 1 0365   1 0 92-06-16 21:20:30 12.2  .875    15     0           1        9     Ex 0        9  7.8556e-6   0.504      11.30
D 1 0366   1 0 92-06-16 21:21:46 12.2  .875    15     0           1        9     Ex 0        9  10.386e-6   0.299      15.01
D 1 0367   1 0 92-06-16 21:23:02 12.2  .875    15     0           1        9     Ex 0        9  10.570e-6   0.509      16.81
D 1 0365   1 0 92-06-16 21:20:30 12.2  .625    15     0           1        9     Ex 0        9  5.6139e-6   0.282      4.929
D 1 0366   1 0 92-06-16 21:21:46 12.2  .625    15     0           1        9     Ex 0        9  4.9737e-6   0.180      10.26
D 1 0367   1 0 92-06-16 21:23:02 12.2  .625    15     0           1        9     Ex 0        9  7.9272e-6   0.476      17.64

continued ...
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Sample .FLD-file (partial: three records for each frequency) (continued)

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

2060      15      -8.04    744       1  Hy 0       75  0.6778e-6 -2325.7      39.24    2060      15      -0.45   75.4e+3     1   1  256       0
2060      15      -8.04    744       1  Hy 0       75  0.4344e-6 -2383.7      45.84    2060      15      -0.45   75.4e+3     1   1  256       0
2060      13      -8.04    744       1  Hy 0       75  0.4171e-6   928.8       46.57    2060      13      -0.45   75.4e+3     1   1  256       0
2060      15      -8.04    744       1  Hy 0       75  1.0838e-6 -2329.3      42.56    2060      15      -0.45   75.4e+3     1   1  256       0
2060      15      -8.04    744       1  Hy 0       75  0.5870e-6 -2228.7      46.10    2060      15      -0.45   75.4e+3     1   1  256       0
2060      13      -8.04    744       1  Hy 0       75  0.5254e-6   853.4       29.31    2060      13      -0.45   75.4e+3     1   1  256       0
2160      15       8.14    744       1  Hy 0       75  3.1320e-6   882.2       34.51    2260      15      -0.38   75.4e+3     1   1  256       0
2160       9       8.14    744       1  Hy 0       75  2.0883e-6   911.7       35.36    2260       9      -0.38   75.4e+3     1   1  256       0
2160      15       8.14    744       1  Hy 0       75  2.1820e-6   914.5       34.09    2260      15      -0.38   75.4e+3     1   1  256       0
2160      15       8.14    744       1  Hy 0       75  4.5280e-6   894.0       38.26    2260      15      -0.38   75.4e+3     1   1  256       0
2160       9       8.14    744       1  Hy 0       75  3.0701e-6   926.7       43.24    2260       9      -0.38   75.4e+3     1   1  256       0
2160      15       8.14    744       1  Hy 0       75  2.1288e-6   921.2       35.29    2260      15      -0.38   75.4e+3     1   1  256       0
2360      15       8.04    744       1  Hy 0       75  2.1056e-6   921.4       35.36    2260      15       0.48   75.4e+3     1   1  256       0
2360      14       8.04    744       1  Hy 0       75  2.8082e-6   866.4       36.27    2260      14       0.48   75.4e+3     1   1  256       0
2360      14       8.04    744       1  Hy 0       75  2.2811e-6   917.1       36.43    2260      14       0.48   75.4e+3     1   1  256       0
2360      15       8.04    744       1  Hy 0       75  1.8021e-6   974.8       26.90    2260      15       0.48   75.4e+3     1   1  256       0
2360      14       8.04    744       1  Hy 0       75  1.6725e-6   904.4       27.91    2260      14       0.48   75.4e+3     1   1  256       0
2360      14       8.04    744       1  Hy 0       75  2.3253e-6   943.4       31.85    2260      14       0.48   75.4e+3     1   1  256       0
2260      15       8.14    744       1  Hy 0       75  5.0953e-6   969.3       27.46    2060      15      -0.24   75.4e+3     1   1  256       0
2260      15       8.14    744       1  Hy 0       75  1.8444e-6   966.8       29.29    2060      15      -0.24   75.4e+3     1   1  256       0
2260      15       8.14    744       1  Hy 0       75  3.9407e-6   952.1       26.67    2060      15      -0.24   75.4e+3     1   1  256       0
2260      15       8.14    744       1  Hy 0       75  5.5103e-6   969.2       25.84    2060      15      -0.24   75.4e+3     1   1  256       0
2260      15       8.14    744       1  Hy 0       75  1.9127e-6   903.5       26.30    2060      15      -0.24   75.4e+3     1   1  256       0
2260      15       8.14    744       1  Hy 0       75  3.4095e-6   988.5       25.61    2060      15      -0.24   75.4e+3     1   1  256       0
2160      15       7.94    744       1  Hy 0       75  2.8959e-6   939.7       31.07    2160      15      -0.10   75.4e+3     1   1  256       0
2160      15       7.94    744       1  Hy 0       75  3.5455e-6  1014.8       22.09    2160      15      -0.10   75.4e+3     1   1  256       0
2160      14       7.94    744       1  Hy 0       75  3.9446e-6   792.9       27.85    2160      14      -0.10   75.4e+3     1   1  256       0
2160      15       7.94    744       1  Hy 0       75  2.4088e-6   980.4       21.24    2160      15      -0.10   75.4e+3     1   1  256       0
2160      15       7.94    744       1  Hy 0       75  2.1191e-6   967.1       22.37    2160      15      -0.10   75.4e+3     1   1  256       0
2160      14       7.94    744       1  Hy 0       75  2.8259e-6   983.9       21.81    2160      14      -0.10   75.4e+3     1   1  256       0
2360      14       7.90    744       1  Hy 0       75  4.9179e-6   733.3       27.30    2260      14       0.10   75.4e+3     1   1  256       0
2360      15       7.90    744       1  Hy 0       75  3.6529e-6   912.1       19.41    2260      15       0.10   75.4e+3     1   1  256       0
2360      15       7.90    744       1  Hy 0       75  6.4258e-6   925.7       19.84    2260      15       0.10   75.4e+3     1   1  256       0
2360      14       7.90    744       1  Hy 0       75  3.9491e-6   721.0       24.49    2260      14       0.10   75.4e+3     1   1  256       0
2360      15       7.90    744       1  Hy 0       75  3.0630e-6   898.8       18.47    2260      15       0.10   75.4e+3     1   1  256       0
2360      15       7.90    744       1  Hy 0       75  3.8915e-6   894.9       18.45    2260      15       0.10   75.4e+3     1   1  256       0
2460      14       7.94    744       1  Hy 0       75  3.4533e-6   649.6       21.56    2260      14       0.24   75.4e+3     1   1  256       0
2460      15       7.94    744       1  Hy 0       75  1.8324e-6   803.4       17.53    2260      15       0.24   75.4e+3     1   1  256       0
2460      14       7.94    744       1  Hy 0       75  2.4036e-6   808.2       16.16    2260      14       0.24   75.4e+3     1   1  256       0
2460      14       7.94    744       1  Hy 0       75  2.9070e-6   605.4       21.12    2260      14       0.24   75.4e+3     1   1  256       0
2460      15       7.94    744       1  Hy 0       75  1.9569e-6   793.1       18.30    2260      15       0.24   75.4e+3     1   1  256       0
2460      14       7.94    744       1  Hy 0       75  2.1767e-6   741.3       14.76    2260      14       0.24   75.4e+3     1   1  256       0
2160      14       8.11    744       1  Hy 0       75  3.9260e-6   613.7       16.33    2260      14       0.38   75.4e+3     1   1  256       0
2160      15       8.11    744       1  Hy 0       75  2.2748e-6   622.2       16.49    2260      15       0.38   75.4e+3     1   1  256       0
2160      15       8.11    744       1  Hy 0       75  1.3040e-6   761.6       33.01    2260      15       0.38   75.4e+3     1   1  256       0
2160      14       8.11    744       1  Hy 0       75  3.1058e-6   684.6       20.24    2260      14       0.38   75.4e+3     1   1  256       0
2160      15       8.11    744       1  Hy 0       75  2.6226e-6   610.3       16.16    2260      15       0.38   75.4e+3     1   1  256       0
2160      15       8.11    744       1  Hy 0       75  1.4991e-6   703.6       23.91    2260      15       0.38   75.4e+3     1   1  256       0
2360      15       7.83    744       1  Hy 0       75  2.3053e-6   737.2       40.29    2260      15       0.17   75.4e+3     1   1  256       0
2360      13       7.83    744       1  Hy 0       75  3.1186e-6   584.6       22.10    2260      13       0.17   75.4e+3     1   1  256       0
2360      13       7.83    744       1  Hy 0       75  2.5215e-6   647.2       21.78    2260      13       0.17   75.4e+3     1   1  256       0
2360      15       7.83    744       1  Hy 0       75  2.5185e-6   776.8       33.58    2260      15       0.17   75.4e+3     1   1  256       0
2360      13       7.83    744       1  Hy 0       75  2.7361e-6   676.1       30.00    2260      13       0.17   75.4e+3     1   1  256       0
2360      13       7.83    744       1  Hy 0       75  2.3317e-6   705.2       30.06    2260      13       0.17   75.4e+3     1   1  256       0
2160      13       8.04    744       1  Hy 0       75  3.2913e-6   879.3       48.96    2160      13       0.10   75.4e+3     1   1  256       0
2160      13       8.04    744       1  Hy 0       75  3.1745e-6   911.0       81.58    2160      13       0.10   75.4e+3     1   1  256       0
2160      14       8.04    744       1  Hy 0       75  2.9779e-6   750.1       51.33    2160      14       0.10   75.4e+3     1   1  256       0
2160      13       8.04    744       1  Hy 0       75  3.2496e-6  1166.7       35.51    2160      13       0.10   75.4e+3     1   1  256       0
2160      13       8.04    744       1  Hy 0       75  2.9760e-6   748.5       55.61    2160      13       0.10   75.4e+3     1   1  256       0
2160      14       8.04    744       1  Hy 0       75  2.2508e-6   703.6       54.72    2160      14       0.10   75.4e+3     1   1  256       0
0560      14       7.73    744       1  Hy 0       75  3.9673e-6   828.0       44.43    0260      14    -135.19   75.4e+3     1   1  256       0
0560      13       7.73    744       1  Hy 0       75  3.5060e-6   656.6       167.5    0260      13    -135.19   75.4e+3     1   1  256       0
0560      12       7.73    744       1  Hy 0       75  4.3940e-6   894.8       65.02    0260      12    -135.19   75.4e+3     1   1  256       0
0560      14       7.73    744       1  Hy 0       75  3.7950e-6  1328.3       62.18    0260      14    -135.19   75.4e+3     1   1  256       0
0560      13       7.73    744       1  Hy 0       75  1.8652e-6   738.9       315.5    0260      13    -135.19   75.4e+3     1   1  256       0
0560      12       7.73    744       1  Hy 0       75  3.6827e-6   665.0       77.91    0260      12    -135.19   75.4e+3     1   1  256       0

*** end-of-file ***
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Sample .AVG-file

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

\ NSAVG 1.20: "SAMAMT.FLD", Dated 92-06-16, Processed 30 Jul 93
$ ASPACE= 200.0m
skp Station Freq  Comp    Emag       Hmag1      Hmag2       RHO1       RHO2       RHOA    Phase1  Phase2
\=][======][====][===][=========][=========][=========][=========][=========][=========][======][======]
 2      9.0   896 ExHy  1.0834e+3  2.7027e+0  0.0000e+0  3.0869e+1  3.6073e+1  3.3471e+1      *    807.2
 2      9.0   640 ExHy  9.6063e+2  2.7076e+0  0.0000e+0  3.4442e+1  3.9255e+1  3.6849e+1      *    849.5
 2      9.0   448 ExHy  6.0642e+2  2.2041e+0  0.0000e+0  3.2607e+1  3.4077e+1  3.3342e+1      *    873.6
 2      9.0   320 ExHy  6.4349e+2  2.7309e+0  0.0000e+0  3.2627e+1  3.5632e+1  3.4130e+1      *    877.4
 2      9.0   224 ExHy  6.0800e+2  3.0315e+0  0.0000e+0  3.5401e+1  3.6749e+1  3.6075e+1      *    906.0
 2      9.0   160 ExHy  3.4158e+2  2.2177e+0  0.0000e+0  2.8638e+1  3.0312e+1  2.9475e+1      *    931.8
 2      9.0   112 ExHy  5.5977e+2  4.4097e+0  0.0000e+0  2.8687e+1  2.9364e+1  2.9026e+1      *    952.2
 2      9.0    80 ExHy  3.6818e+2  3.5942e+0  0.0000e+0  2.6002e+1  2.6844e+1  2.6423e+1      *    950.7
 2      9.0    56 ExHy  3.4890e+2  4.1809e+0  0.0000e+0  2.2244e+1  2.7281e+1  2.4762e+1      *    915.7
 2      9.0    40 ExHy  1.9262e+2  2.8893e+0  0.0000e+0  2.1371e+1  2.2640e+1  2.2005e+1      *    942.6
 2      9.0    28 ExHy  2.0028e+2  3.7781e+0  0.0000e+0  1.9430e+1  2.0049e+1  1.9739e+1      *    906.3
 2      9.0    20 ExHy  1.2696e+2  2.9728e+0  0.0000e+0  1.7678e+1  1.8454e+1  1.8066e+1      *    873.3
 2      9.0    14 ExHy  1.1006e+2  3.0145e+0  0.0000e+0  1.7313e+1  2.1489e+1  1.9401e+1      *    726.0
 2      9.0    10 ExHy  7.1923e+1  2.4038e+0  0.0000e+0  1.6968e+1  2.0819e+1  1.8893e+1      *    665.7
 2      9.0     7 ExHy  7.1707e+1  2.9014e+0  0.0000e+0  1.5782e+1  2.0114e+1  1.7948e+1      *    660.6
 2      9.0     5 ExHy  4.4583e+1  2.1473e+0  0.0000e+0  1.5667e+1  1.9395e+1  1.7531e+1      *    677.3
 2      9.0   3.5 ExHy  5.9773e+1  2.9068e+0  0.0000e+0  2.1501e+1  2.6782e+1  2.4141e+1      *    698.0
 2      9.0   2.5 ExHy  4.6220e+1  2.4572e+0  0.0000e+0  2.4228e+1  3.3463e+1  2.8846e+1      *    722.4
 2      9.0  1.75 ExHy  6.0993e+1  3.3649e+0  0.0000e+0  2.6137e+1  5.8983e+1  4.2560e+1      *    752.8
 2      9.0  1.25 ExHy  4.7471e+1  3.1784e+0  0.0000e+0  2.8031e+1  4.7740e+1  3.7885e+1      *    947.6
 2      9.0  .875 ExHy  4.6194e+1  3.8484e+0  0.0000e+0  1.8227e+1  6.6190e+1  4.2208e+1      *    849.9
 2      9.0   896 EyHx  7.2488e+2  1.7745e+0  0.0000e+0  2.9111e+1  4.1078e+1  3.5095e+1      *    797.2
 2      9.0   640 EyHx  1.0810e+3  2.9565e+0  0.0000e+0  4.0120e+1  4.3202e+1  4.1661e+1      *    825.4
 2      9.0   448 EyHx  1.7999e+3  5.8964e+0  0.0000e+0  4.1157e+1  4.1827e+1  4.1492e+1      *    838.5
 2      9.0   320 EyHx  1.9322e+3  7.4448e+0  0.0000e+0  4.1424e+1  4.2358e+1  4.1891e+1      *    874.3
 2      9.0   224 EyHx  1.4780e+3  6.9748e+0  0.0000e+0  4.0014e+1  4.0368e+1  4.0191e+1      *    911.4
 2      9.0   160 EyHx  1.0503e+3  6.2890e+0  0.0000e+0  3.4548e+1  3.5195e+1  3.4871e+1      *    937.4
 2      9.0   112 EyHx  1.5332e+3  1.1146e+1  0.0000e+0  3.3899e+1  3.4378e+1  3.4139e+1      *    935.8
 2      9.0    80 EyHx  9.4014e+2  8.3650e+0  0.0000e+0  2.9149e+1  3.3325e+1  3.1237e+1      *    943.7
 2      9.0    56 EyHx  1.2254e+3  1.4346e+1  0.0000e+0  1.7037e+1  4.3973e+1  3.0505e+1      *    852.2
 2      9.0    40 EyHx  4.4640e+2  6.2551e+0  0.0000e+0  2.4146e+1  2.5809e+1  2.4977e+1      *    930.3
 2      9.0    28 EyHx  3.2596e+2  5.8985e+0  0.0000e+0  2.1027e+1  2.2543e+1  2.1785e+1      *    934.0
 2      9.0    20 EyHx  1.8256e+2  4.2161e+0  0.0000e+0  1.8372e+1  1.9830e+1  1.9101e+1      *    874.3
 2      9.0    14 EyHx  2.2278e+2  6.4082e+0  0.0000e+0  1.6695e+1  1.7758e+1  1.7227e+1      *    801.2
 2      9.0    10 EyHx  1.2354e+2  4.3730e+0  0.0000e+0  1.5206e+1  1.7426e+1  1.6316e+1      *    691.7
 2      9.0     7 EyHx  1.7231e+2  6.7166e+0  0.0000e+0  1.7137e+1  2.1098e+1  1.9118e+1      *    577.1
 2      9.0     5 EyHx  1.2714e+2  5.7996e+0  0.0000e+0  1.7084e+1  2.1662e+1  1.9373e+1      *    385.5
 2      9.0   3.5 EyHx  1.5217e+2  6.9028e+0  0.0000e+0  2.3223e+1  3.5004e+1  2.9114e+1      *    264.6
 2      9.0   2.5 EyHx  1.4037e+2  6.1503e+0  0.0000e+0  3.6801e+1  5.0572e+1  4.3687e+1      *    275.2
 2      9.0  1.75 EyHx  2.0270e+2  8.8640e+0  0.0000e+0  4.2950e+1  9.5927e+1  6.9438e+1      *    257.1
 2      9.0  1.25 EyHx  1.9541e+2  8.7846e+0  0.0000e+0  6.3619e+1  1.0063e+2  8.2122e+1      *    241.7
 2      9.0  .875 EyHx  2.2724e+2  1.1726e+1  0.0000e+0  6.7449e+1  1.1606e+2  9.1753e+1      *    268.2
 2      9.0  .625 EyHx  1.8580e+2  1.0657e+1  0.0000e+0  7.2140e+1  1.4633e+2  1.0923e+2      *    298.9
```

Sample .AVG-file (continued)

```
     1         1         1         1         1         1
+----1----+----2----+----3----+----4----+----5----+----6

 %Emag %Hmag1 %Hmag2  %RHO1  %RHO2  %RHOA  sPHZ1  sPHZ2
[=====][=====][=====][=====][=====][=====][=====][=====]
  133.1  130.1    0.0   22.9   13.2   16.4    0.1   81.8
  147.5  145.9    0.0   22.1   15.8   17.9    0.1   63.3
   33.8   30.7    0.0   13.1   11.3   12.1    0.0   44.2
   39.3   36.0    0.0   13.8    9.8   11.5    0.0   60.3
   44.3   44.1    0.0    6.9    8.4    7.5    0.0   24.8
   23.1   21.0    0.0    7.5    7.1    7.2    0.0   39.4
   58.5   59.5    0.0    8.9    8.8    8.9    0.0   19.4
   53.6   54.0    0.0    7.0    7.4    7.1    0.0   22.6
   29.7   21.5    0.0   23.6   20.8   21.0    0.1   86.5
   33.1   28.0    0.0   12.4   14.1   13.1    0.0   61.6
   39.1   36.1    0.0   10.6   14.0   12.3    0.0   66.0
   28.0   24.7    0.0    6.4   12.6    9.5    0.0   60.1
   23.1   18.8    0.0   16.1   38.2   27.1    0.1   99.2
   21.2   21.5    0.0   31.7   46.7   39.7    0.1   78.1
   21.6   21.9    0.0   16.7   20.2   16.0    0.1   68.8
   23.2   20.7    0.0   20.8   16.2   17.5    0.1   48.3
   37.2   31.0    0.0   18.2   23.0   20.2    0.1   84.7
   29.1   25.6    0.0   17.2   21.2   19.1    0.0   66.0
   17.6   15.6    0.0   39.9   23.4   23.4    0.1  227.9
   18.0   14.3    0.0   26.3   28.9   27.5    0.0  176.5
   14.7   15.9    0.0   42.4   33.8   35.6    0.0   38.9
   86.1   79.2    0.0   34.7   16.7   19.5    0.2  115.5
   71.9   71.4    0.0    9.9    8.7    8.6    0.0   59.5
   43.0   42.9    0.0    5.2    4.7    4.9    0.0   18.9
   38.5   37.4    0.0    5.4    4.9    5.1    0.0   30.3
   24.6   25.1    0.0    3.0    3.1    3.1    0.0   13.1
   35.6   35.5    0.0    5.4    5.4    5.4    0.0   21.4
   39.3   40.0    0.0    6.6    7.0    6.8    0.0   19.7
   45.1   43.0    0.0   13.2   11.3   10.7    0.1   49.5
    7.5   12.1    0.0   31.8   42.7   39.6    0.0  167.8
   53.9   52.1    0.0   16.5   18.6   17.5    0.0   87.6
   29.2   28.3    0.0    7.2    6.5    6.2    0.0   42.3
   31.3   32.5    0.0    9.8    9.8    9.6    0.0   44.0
   19.2   17.6    0.0    8.2    8.2    6.7    0.0   64.5
   23.3   23.7    0.0   19.4   21.6   20.0    0.0   56.9
   30.3   32.1    0.0   14.7   11.9   12.2    0.1   59.9
   24.5   22.9    0.0   14.8   15.9   14.7    0.0   87.6
   27.7   24.2    0.0   28.0   27.2   24.4    0.1   82.5
   25.2   24.9    0.0   26.1   31.0   28.7    0.0  169.2
   24.9   23.7    0.0   33.5   52.3   44.0    0.1  141.7
   23.8   21.3    0.0   23.8   18.8   19.3    0.1  116.8
   25.5   23.0    0.0   29.0   28.5   25.0    0.1  146.3
   24.3   21.6    0.0   31.4   36.5   30.8    0.1  173.5
```

Sample .AD-file

```
Reference ruler line
----+----1----+----2----+----3----+----4----+----5----+----6----+----7--
From NSAVG  1.20: "SAMAMT.FLD  " v4.0                      GDP AMT 0524
Client : Zonge Engineering
Project: NSAMT Testing
Line   :
Grid used : 1000 meter Universal Transverse Mercator grid, zone 12
Grid north:    North     Grid scale:      1.00 m  / grid unit.
 Tn   TX 1                        Xc           Yc           Zc
 Rn      9.0           200.m  AP1 Xc           Yc           Zc
  F17.7   896 Hz Em 1.0834e+03 Ep 8.0716e-01 Hm 2.7027e+00 Hp 0.0000e+00
  F17.5   640 Hz Em 9.6063e+02 Ep 8.4949e-01 Hm 2.7076e+00 Hp 0.0000e+00
  F16.7   448 Hz Em 6.0642e+02 Ep 8.7360e-01 Hm 2.2041e+00 Hp 0.0000e+00
  F16.5   320 Hz Em 6.4349e+02 Ep 8.7744e-01 Hm 2.7309e+00 Hp 0.0000e+00
  F15.7   224 Hz Em 6.0800e+02 Ep 9.0599e-01 Hm 3.0315e+00 Hp 0.0000e+00
  F15.5   160 Hz Em 3.4158e+02 Ep 9.3180e-01 Hm 2.2177e+00 Hp 0.0000e+00
  F14.7   112 Hz Em 5.5977e+02 Ep 9.5224e-01 Hm 4.4097e+00 Hp 0.0000e+00
  F14.5    80 Hz Em 3.6818e+02 Ep 9.5068e-01 Hm 3.5942e+00 Hp 0.0000e+00
  F13.7    56 Hz Em 3.4890e+02 Ep 9.1567e-01 Hm 4.1809e+00 Hp 0.0000e+00
  F13.5    40 Hz Em 1.9262e+02 Ep 9.4256e-01 Hm 2.8893e+00 Hp 0.0000e+00
  F12.7    28 Hz Em 2.0028e+02 Ep 9.0626e-01 Hm 3.7781e+00 Hp 0.0000e+00
  F12.5    20 Hz Em 1.2696e+02 Ep 8.7334e-01 Hm 2.9728e+00 Hp 0.0000e+00
  F11.7    14 Hz Em 1.1006e+02 Ep 7.2604e-01 Hm 3.0145e+00 Hp 0.0000e+00
  F11.5    10 Hz Em 7.1923e+01 Ep 6.6565e-01 Hm 2.4038e+00 Hp 0.0000e+00
  F10.7     7 Hz Em 7.1707e+01 Ep 6.6058e-01 Hm 2.9014e+00 Hp 0.0000e+00
  F10.5     5 Hz Em 4.4583e+01 Ep 6.7735e-01 Hm 2.1473e+00 Hp 0.0000e+00
  F 9.7   3.5 Hz Em 5.9773e+01 Ep 6.9797e-01 Hm 2.9068e+00 Hp 0.0000e+00
  F 9.5   2.5 Hz Em 4.6220e+01 Ep 7.2239e-01 Hm 2.4572e+00 Hp 0.0000e+00
  F 8.7  1.75 Hz Em 6.0993e+01 Ep 7.5285e-01 Hm 3.3649e+00 Hp 0.0000e+00
  F 8.5  1.25 Hz Em 4.7471e+01 Ep 9.4764e-01 Hm 3.1784e+00 Hp 0.0000e+00
  F 7.7 0.875 Hz Em 4.6194e+01 Ep 8.4993e-01 Hm 3.8484e+00 Hp 0.0000e+00
 Rn      9.0           200.m  AP1 Xc           Yc           Zc
  F17.7   896 Hz Em 7.2488e+02 Ep 7.9717e-01 Hm 1.7745e+00 Hp 0.0000e+00
  F17.5   640 Hz Em 1.0810e+03 Ep 8.2537e-01 Hm 2.9565e+00 Hp 0.0000e+00
  F16.7   448 Hz Em 1.7999e+03 Ep 8.3845e-01 Hm 5.8964e+00 Hp 0.0000e+00
  F16.5   320 Hz Em 1.9322e+03 Ep 8.7435e-01 Hm 7.4448e+00 Hp 0.0000e+00
  F15.7   224 Hz Em 1.4780e+03 Ep 9.1136e-01 Hm 6.9748e+00 Hp 0.0000e+00
  F15.5   160 Hz Em 1.0503e+03 Ep 9.3743e-01 Hm 6.2890e+00 Hp 0.0000e+00
  F14.7   112 Hz Em 1.5332e+03 Ep 9.3584e-01 Hm 1.1146e+01 Hp 0.0000e+00
  F14.5    80 Hz Em 9.4014e+02 Ep 9.4367e-01 Hm 8.3650e+00 Hp 0.0000e+00
  F13.7    56 Hz Em 1.2254e+03 Ep 8.5223e-01 Hm 1.4346e+01 Hp 0.0000e+00
  F13.5    40 Hz Em 4.4640e+02 Ep 9.3030e-01 Hm 6.2551e+00 Hp 0.0000e+00
  F12.7    28 Hz Em 3.2596e+02 Ep 9.3398e-01 Hm 5.8985e+00 Hp 0.0000e+00
  F12.5    20 Hz Em 1.8256e+02 Ep 8.7430e-01 Hm 4.2161e+00 Hp 0.0000e+00
  F11.7    14 Hz Em 2.2278e+02 Ep 8.0122e-01 Hm 6.4082e+00 Hp 0.0000e+00
  F11.5    10 Hz Em 1.2354e+02 Ep 6.9168e-01 Hm 4.3730e+00 Hp 0.0000e+00
  F10.7     7 Hz Em 1.7231e+02 Ep 5.7714e-01 Hm 6.7166e+00 Hp 0.0000e+00
  F10.5     5 Hz Em 1.2714e+02 Ep 3.8547e-01 Hm 5.7996e+00 Hp 0.0000e+00
  F 9.7   3.5 Hz Em 1.5217e+02 Ep 2.6463e-01 Hm 6.9028e+00 Hp 0.0000e+00
  F 9.5   2.5 Hz Em 1.4037e+02 Ep 2.7518e-01 Hm 6.1503e+00 Hp 0.0000e+00
  F 8.7  1.75 Hz Em 2.0270e+02 Ep 2.5707e-01 Hm 8.8640e+00 Hp 0.0000e+00
  F 8.5  1.25 Hz Em 1.9541e+02 Ep 2.4167e-01 Hm 8.7846e+00 Hp 0.0000e+00
  F 7.7 0.875 Hz Em 2.2724e+02 Ep 2.6818e-01 Hm 1.1726e+01 Hp 0.0000e+00
  F 7.5 0.625 Hz Em 1.8580e+02 Ep 2.9894e-01 Hm 1.0657e+01 Hp 0.0000e+00

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

Sample .Z-file

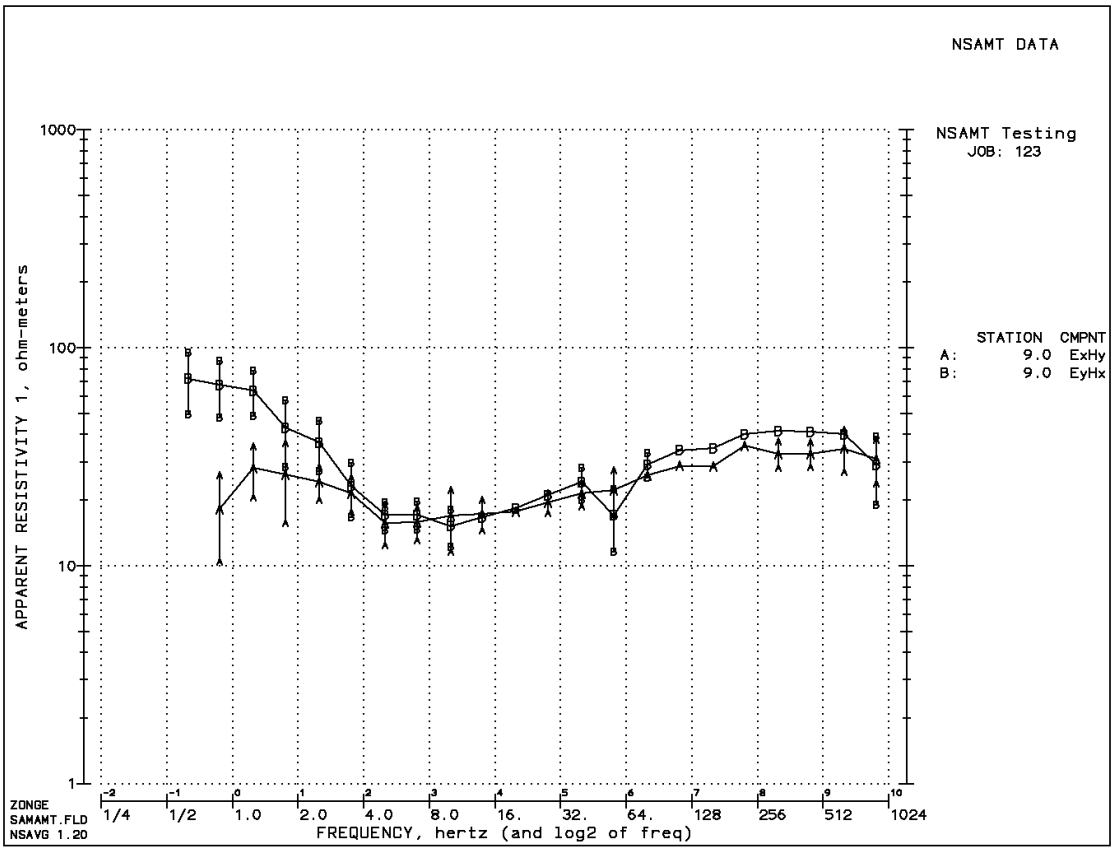
```
 NSAVG 1.20 Contour file.
/* 30 Jul 93
$ DATE= 92-06-16
$ ZPLOT: DATA= FLOG
 Cl Cn Ce Ns Nd Yl   Plot file  1
  1  5  0  3  1  1
 NSAMT SURVEY DATA
 RESISTIVITY average
  values in ohm-meters
  Components: ExHy
IIxxxxxxxxYYYYYYYYzzzzzzzzzzzz  AAA
 2    9.     18.81 3.34711e+01
 2    9.     18.32 3.68485e+01
 2    9.     17.81 3.33420e+01
 2    9.     17.32 3.41295e+01
 2    9.     16.81 3.60750e+01
 2    9.     16.32 2.94750e+01
 2    9.     15.81 2.90255e+01
 2    9.     15.32 2.64232e+01
 2    9.     14.81 2.47625e+01
 2    9.     14.32 2.20055e+01
 2    9.     13.81 1.97394e+01
 2    9.     13.32 1.80661e+01
 2    9.     12.81 1.94011e+01
 2    9.     12.32 1.88932e+01
 2    9.     11.81 1.79479e+01
 2    9.     11.32 1.75311e+01
 2    9.     10.81 2.41415e+01
 2    9.     10.32 2.88455e+01
 2    9.      9.81 4.25600e+01
 2    9.      9.32 3.78855e+01
 2    9.      8.81 4.22083e+01
 9999.0
 Cl Cn Ce Ns Nd Yl   Plot file  2
  0 10  3  3  0  1
 NSAMT SURVEY DATA
 IMPEDANCE PHASE
  values in milliradians
  Components: ExHy
IIxxxxxxxxYYYYYYYYzzzzzzzzzzzz  AAA
 2    9.     18.81 8.07157e+02
 2    9.     18.32 8.49494e+02
 2    9.     17.81 8.73600e+02
 2    9.     17.32 8.77440e+02
 2    9.     16.81 9.05990e+02
 2    9.     16.32 9.31800e+02
 2    9.     15.81 9.52240e+02
 2    9.     15.32 9.50680e+02
 2    9.     14.81 9.15670e+02
 2    9.     14.32 9.42560e+02
 2    9.     13.81 9.06256e+02
 2    9.     13.32 8.73344e+02
 2    9.     12.81 7.26036e+02
 2    9.     12.32 6.65650e+02
 2    9.     11.81 6.60584e+02
 2    9.     11.32 6.77347e+02
 2    9.     10.81 6.97970e+02
 2    9.     10.32 7.22390e+02
 2    9.      9.81 7.52850e+02
 2    9.      9.32 9.47640e+02
 2    9.      8.81 8.49933e+02
 9999.0

continued ...
```

```
 Cl Cn Ce Ns Nd Yl   Plot file  3
  1  5  0  3  1  1
 NSAMT SURVEY DATA
 RESISTIVITY average
  values in ohm-meters
  Components: EyHx
IIxxxxxxxxYYYYYYYYzzzzzzzzzzzz  AAA
 2    9.     18.81 3.50948e+01
 2    9.     18.32 4.16609e+01
 2    9.     17.81 4.14920e+01
 2    9.     17.32 4.18910e+01
 2    9.     16.81 4.01910e+01
 2    9.     16.32 3.48715e+01
 2    9.     15.81 3.41389e+01
 2    9.     15.32 3.12369e+01
 2    9.     14.81 3.05050e+01
 2    9.     14.32 2.49775e+01
 2    9.     13.81 2.17850e+01
 2    9.     13.32 1.91010e+01
 2    9.     12.81 1.72265e+01
 2    9.     12.32 1.63162e+01
 2    9.     11.81 1.91175e+01
 2    9.     11.32 1.93729e+01
 2    9.     10.81 2.91136e+01
 2    9.     10.32 4.36868e+01
 2    9.      9.81 6.94385e+01
 2    9.      9.32 8.21223e+01
 2    9.      8.81 9.17529e+01
 2    9.      8.32 1.09234e+02
 9999.0
 Cl Cn Ce Ns Nd Yl   Plot file  4
  0 10  3  3  0  1
 NSAMT SURVEY DATA
 IMPEDANCE PHASE
  values in milliradians
  Components: EyHx
IIxxxxxxxxYYYYYYYYzzzzzzzzzzzz  AAA
 2    9.     18.81 7.97173e+02
 2    9.     18.32 8.25374e+02
 2    9.     17.81 8.38450e+02
 2    9.     17.32 8.74350e+02
 2    9.     16.81 9.11360e+02
 2    9.     16.32 9.37430e+02
 2    9.     15.81 9.35839e+02
 2    9.     15.32 9.43667e+02
 2    9.     14.81 8.52233e+02
 2    9.     14.32 9.30300e+02
 2    9.     13.81 9.33980e+02
 2    9.     13.32 8.74300e+02
 2    9.     12.81 8.01220e+02
 2    9.     12.32 6.91685e+02
 2    9.     11.81 5.77142e+02
 2    9.     11.32 3.85467e+02
 2    9.     10.81 2.64629e+02
 2    9.     10.32 2.75179e+02
 2    9.      9.81 2.57070e+02
 2    9.      9.32 2.41670e+02
 2    9.      8.81 2.68175e+02
 2    9.      8.32 2.98940e+02
 9999.0

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

Sample .Xnn-file SAMAMT.X01



Appendix C ... FILE DOCUMENTATION

.NL-File DOCUMENTATION

AMT1208.NL File created by NSAVG

The .NL-file consists of a section listing each data block for one station, sorted by frequency and block number. The following sections include block-average statistics and average values. The section headers include the component pair being averaged (usually ExHy).

DATA BLOCK SUMMARY

```
 PROJECT:  Test Project                                    File: "AMT1208.FLD "          GDP AMT 0523
 LINE:  13,500 NW   STATION:      1.0   A-Sp:   328. feet  NSAVG 1.00: 18 Dec 91    ARITHMETIC AVERAGE
 FIELD DATA    Pair:"ExHy"  =E-FIELD== ====H-FIELD=======  COIL   =====1===RHO===2==  CCOEFF =PHASE=
   Blk  Stks Samp Burst Good   (uV)  g    (pT)    (pT)  g          (o-m)     (o-m)          (mR) pi A
 f=   7168 Hz =
    65     5   32  10     1  271.44 11   4.340   0.000  9     14       4.7      25.6   0.427    149 0 1
    69     5   32  10     1  185.77 11   5.431   0.000  9     14       1.7       6.2   0.525    842 0 1
 f=   5120 Hz =
    65     5   32  10     1  323.06 11   3.459   0.000  9     14      27.6      42.1   0.810   1008 0 1
    69     5   32  10     1  91.877 11   1.912   0.000  9     14       5.1      16.0   0.562   1011 0 1
 f=   3584 Hz =
    72     5   64  10     1  43.518 12   1.533   0.000  9     14       0.9      23.7   0.189  -1043 0 1
 f=   2560 Hz =
 |  72     5   64  10     1  36.480 12   1.023   0.000  9     14       6.2      15.9   0.624    230 0 1
 |  |      |    |   |     |      |   |      |       |   |      |        |         |       |      |  | |
+|==|======|====|===|=====|======================================+  |        |         |       |      |  | |
|+--|------|----|---|-----|- GDP data acquisition frequency |  |        |         |       |      |  | |
|   +------|----|---|-----|-.RAW-file data block number     |  |        |         |       |      |  | |
|          +----|---|-----|- GDP stacks acquired            |  |        |         |       |      |  | |
|               +---|-----|- GDP Sample count               |  |        |         |       |      |  | |
|                   +-----|- Bursts per sample              |  |        |         |       |      |  | |
|                         +- Good sample count              |  |        |         |       |      |  | |
+=============================================================+  |        |         |       |      |  | |
                              |   |      |       |   |      |      |         |         |       |      |  | |
      +=========================|===|======|=======|===|======|===+    |         |         |       |      |  | |
      | E-channel Magnitude, uV -+   |      |       |   |      |   |    |         |         |       |      |  | |
      | E-channel Gains -------------+      |       |   |      |   |    |         |         |       |      |  | |
      | H-channel Magnitude 1, uV ----------+       |   |      |   |    |         |         |       |      |  | |
      | H-channel Magnitude 2, uV ------------------+   |      |   |    |         |         |       |      |  | |
      | H-channel Gains --------------------------------+      |   |    |         |         |       |      |  | |
      | Magnetic Coil ID -------------------------------------+   |    |         |         |       |      |  | |
      +===========================================================+    |         |         |       |      |  | |
                                                                       |         |         |       |      |  | |
                          +============================================|=========|=========|=======|======|==|=|+
                          | GDP calculated Apparent Resistivity 1, Ωm -+         |         |       |      |  | ||
                          | GDP calculated Apparent Resistivity 2, Ωm ------------+         |       |      |  | ||
                          | Correlation Coefficient -------------------------------------+         |      |  | ||
                          | GDP calculated Impedance Phase, mR ---------------------------------+   |      | ||
                          | Inpedance Phase polarity flipped (0:no, 1:yes) ------------------------+ |      ||
                          | Average flag (0: no, 1: yes) ---------------------------------------------+      |
                          +=================================================================================+
```

BLOCK AVERAGE STATISTICS

```
PROJECT:  Test Project                                  File: "AMT1208.FLD "          GDP AMT 0523
LINE:  13,500 NW   STATION:      1.0   A-Sp:   328. feet   NSAVG 1.00: 18 Dec 91    ARITHMETIC AVERAGE

STATISTICS    Pair:"ExHy"  =E-FIELD== ====H-FIELD=======          =====1===RHO===2==         =PHASE=
  Hz                       (C-var)    (C-var) (C-var)             (C-var)   (C-var)          (sigma)
 7168                         26.5       15.8     0.0               65.3      86.1           490.
 5120                         78.8       40.7     0.0               97.5      63.3             2.
 3584                           *          *       *                 *         *              *
 2560                           *          *       *                 *         *              *
   |                            |          |       |                 |         |              |
+==|================================+      |       |                 |         |              |
|  +- GDP data acquisition frequency |      |       |                 |         |              |
+====================================+      |       |                 |         |              |
                                 |          |       |                 |         |              |
+================================|==========|=======|=================|=========|==============|====+
|     STANDARD DEVIATION    (σ) |          |       |                 |         |              |    |
|  COEFFICIENT OF VARIATION (%) |          |       |                 |         |              |    |
|     INSUFFICIENT DATA     (*) |          |       |                 |         |              |    |
| E-channel magnitude ---------σ+          |       |                 |         |              |    |
| H-channel magnitude --------------------σ+------σ+                 |         |              |    |
| Resistivity 1, 2 ------------------------------------------------σ+--------σ+              |    |
| Impedance Phase ------------------------------------------------------------------------% +    |
+=============================================================================================+
```

AVERAGE DATA SECTION

```
AVERAGE DATA  Pair:"ExHy"  =E-FIELD== ====H-FIELD=======          =====1===RHO===2==         =PHASE=
  Hz                          (uV)       (pT)    (pT)              (o-m)     (o-m)          (mR)
 7168                       228.60      4.885   0.000              3.187    15.892            495
 5120                       207.47      2.686   0.000             16.326    29.065           1009
 3584                       43.518      1.533   0.000              0.852    23.730          -1043
 2560                       36.480      1.023   0.000              6.208    15.930            230
   |                          |          |       |                 |         |              |
+==|================================+    |       |                 |         |              |
|  +- GDP data acquisition frequency |    |       |                 |         |              |
+====================================+    |       |                 |         |              |
                                 |          |       |                 |         |              |
+================================|==========|=======|====+            |         |              |
| Average E-field magnitude ---+           |       |    |            |         |              |
| Average H-field magnitude 1, pTesla/a --+|       |    |            |         |              |
| Average H-field magnitude 2, pTesla/a ----------+    |            |         |              |
+=====================================================+            |         |              |
                                                                   |         |              |
                                    +==============================|=========|==============|====+
                                    | Average Resistivity 1, Ωm ----+         |              |    |
                                    | Average Resistivity 2, Ωm --------------+              |    |
                                    | Average Impedance Phase, mR ----------------------------+    |
                                    +=============================================================+
```

Examples: .NL-file STATISTICS CALCULATIONS

```
+-----------------------------------------------------------------+
|NOTE: the following calculation examples use data from 8192 Hz   |
|      values at station 1.0 in the AMT1208.RAW file.             |
+-----------------------------------------------------------------+
```

Standard Deviation (σ) - general formula:

$$\sigma = \sqrt{\frac{A - (N * B)}{N - 1}}$$

where A = sum of values, squared
B = average value, squared
N = number of values

Standard Deviation for E-field (σ_e):

For 8192 Hz: E_1 = 965.50 μV / 183.m * 4.5a = 1.1724 mV/Km*a
E_2 = 962.48 / 183. * 4.5 = 1.1688
E_3 = 970.24 / 183. * 4.5 = 1.1782

$A = 1.1724^2 + 1.1688^2 + 1.1782^2 = 4.1288$
$B = [(1.1724 + 1.1688 + 1.1782) / 3]^2 = 1.3762$
$N = 3$

$$\sigma_e = \sqrt{\frac{4.1288 - 3 * 1.3762}{3 - 1}}$$

$\sigma_e = .00474 \approx .005$

Standard Deviation for H-Field (σ_h):

For 8192 Hz: H_1 = 1.5836 pT / 4.5a = .35191 pT/a
H_2 = 1.5697 / 4.5 = .34882
H_3 = 1.5922 / 4.5 = .35382

$A = .35191^2 + .34882^2 + .35382^2 = .37071$
$B = [(.35191 + .34882 + .35382) / 3]^2 = .12357$
$N = 3$

$$\sigma_h = \sqrt{\frac{.37071 - 3 * .12357}{3 - 1}}$$

$\sigma_h = .00252 \approx .003$

Coefficient of Variation (C-var) - general formula:

C-var = % variation in magnitudes at each frequency

$$= 100 * \frac{\sigma}{A}$$

where σ = standard deviation
A = arithmetic average

Coefficient of Variation for Impedance Phase (C-vare):

$\sigma_e = 0.0048$

$A = E = 1.1731$ mV/Km*a

$$C\text{-}var_e = 100 * \frac{0.0048}{1.1731} = 0.4092$$

$C\text{-}var_e \approx 0.4$

Examples: .NL-file AVERAGE CALCULATIONS

Average Magnitude values (MAG_{avg})
(RAW, E-, or H-field magnitude values)

$$MAG_{avg} = \frac{MAG_1 + MAG_2 + \ldots + MAG_n}{n}$$

$E_n = MAG_n$ / A-Spacing * TxCurr

For 8192 Hz: $MAG_1 = 965.50$ µV (block 402)
$MAG_2 = 962.48$ (block 403)
$MAG_3 = 970.24$ (block 404)

$E_1 = 965.50$ µV / 183.m * 4.5a = 1.1724 mV/Km*a
$E_2 = 962.48$ / 183. * 4.5 = 1.1688
$E_3 = 970.24$ / 183. * 4.5 = 1.1782

$$MAG_{avg} = \frac{1.1724 + 1.1688 + 1.1782}{3}$$

$MAG_{avg} = 1.1731$ mV/Km*a

Average Impedance Phase values (PHZ_{avg})
(Impedance Phase values)

$$PHZ_{avg} = \frac{PHZ_1 + PHZ_2 + \ldots + PHZ_{1n}}{n}$$

For 8192 Hz: $PHZ_1 = 1491.2$ mRad (block 402)
$PHZ_2 = 1493.4$ (block 403)
$PHZ_3 = 1488.4$ (block 404)

$$PHZ_{avg} = \frac{1491.2 + 1493.4 + 1488.4}{3}$$

$PHZ_{avg} = 1491.0$ mRad

Average RHO (RHO_p):
(RHO_n are from each data block)

$$RHO_p = \frac{RHO_1 + RHO_2 + \ldots + RHO_n}{n}$$

For 8192 Hz: $RHO_1 = 271.0$ Ωm (block 402)
$RHO_2 = 274.1$ (block 403)
$RHO_3 = 270.7$ (block 404)

$$RHO_p = \frac{271.0 + 274.1 + 270.7}{3}$$

$RHO_p = 271.9$ Ωm

NSAVG .NL-file data listings

Description of data listings from NSAVG 1.xx programs.

One NSAMT measurement is represented by one line (record) in a .FLD-file, the input file format for NSAVG. One measurement consists of data from a pair of GDP E- and H-field channels.

The following values are listed for each measurement: E-channel magnitude and gain, H-channel magnitude(s) and gain(s), coil channel, Resistivity(ies), Impedance Phase and polarity flag, and averaging flag.

Measurements are listed by frequency (high to low) and block number.

AVERAGED DATA LISTING

E- and H-field magnitudes are averaged and displayed,

The Impedance Phase values are averaged and displayed. When the "phase-referencing" mode has been selected in NSAVG, individual values will be adjusted by 2 pi so that each value is within +/- pi of the first value accumulated at one frequency.

The Apparent Resistivity values are averaged and displayed.

ADDITIONAL NOTES

Standard deviation values are calculated during the averaging of E- and H-field magnitudes, and Apparent Resistivity. They are displayed in the columns labeled "(sigma)". The coefficients of variation are calculated for Impedance Phase and displayed in the column labeled "(C-var)".

Standard Deviation for arithmetically averaged values:

A = sum of values-squared
B = average-value-squared
N = number of values
S = Sqrt[(A - N * B) / (N - 1)]

Coefficients of Variation:

S = standard deviation
A = arithmetic average
V = 100 * S / A

Note: An asterix (*) is used to indicate undefined values.

See HELPZ file on Phase Calculations Performed by AMTAVG and AMTRED (AMTPHASE.hep) for a discussion of the method used to adjust phase values to be as uniform as possible ("Phase Referencing"). This procedure is not used by default, but is available to be used for Impedance Phase calculations.

.AVG-file Format (v1.0) NSAMT Averaged Data File

The .AVG-file is defined by the order of data on each line. The first line is a list of column titles, with at least one space between each title. Lines of data values follow, one value for each title provided, in the same order, with at least one space between values. If no value is available, then an asterix (*) is used. Data may be aligned in columns. Comment lines may occur anywhere in the file, with the characters (/*) or (\) in the first column.

```
\ NSAVG 1.02: "SAMAMT.FLD", Dated 92-06-16, Processed 22 Dec 92
skp Station Freq  Comp    Emag       Hmag1      Hmag2       RHO1       RHO2       RHOA   Phase1  Phase2
\=][======][====][===][=========][=========][=========][=========][=========][=========][======][======]
 2      9.0   896 ExHy  1.0834e+3  2.7027e+0  0.0000e+0  3.0869e+1  3.6073e+1  3.3471e+1      *    807.2
 2      9.0   640 ExHy  9.6063e+2  2.7076e+0  0.0000e+0  3.4442e+1  3.9255e+1  3.6849e+1      *    849.5
 2      9.0   448 ExHy  6.0642e+2  2.2041e+0  0.0000e+0  3.2607e+1  3.4077e+1  3.3342e+1      *    873.6
 2      9.0   320 ExHy  6.4349e+2  2.7309e+0  0.0000e+0  3.2627e+1  3.5632e+1  3.4130e+1      *    877.4

 %Emag %Hmag1 %Hmag2  %RHO1  %RHO2  %RHOA  sPHZ1  sPHZ2
[=====][=====][=====][=====][=====][=====][=====][=====]
  133.1  130.1    0.0   22.9   13.2   16.4    0.1   81.8
  147.5  145.9    0.0   22.1   15.8   17.9    0.1   63.3
   33.8   30.7    0.0   13.1   11.3   12.1    0.0   44.2
   39.3   36.0    0.0   13.8    9.8   11.5    0.0   60.3
```

skp
skip flag

Station
Receiver Station location

Freq
Frequency at which data was measured (Hertz)

Comp
Components measured

Emag
E-field magnitude (nanoVolts/Meter)

Hmag1
H-field-1 magnitude (picoTesla)

Hmag2
H-field-2 magnitude (picoTesla)

RHO1
Cagniard Resistivity 1 (Ohm-Meters)

RHO2
Cagniard Resistivity 2 (Ohm-Meters)

RHOA
Cagniard Resistivity average (Ohm-Meters)

Phase1
Impedance phase 1 = (E-phase - H-phase) (milliRadians)

Phase2
Impedance phase 2 = (E-phase - H-phase) (milliRadians)

%Emag
Statistical variation of from averaged data block magnitude values.
100 * Standard Deviation / Average Emag (percent)

%Hmag1
Statistical variation of from averaged data block magnitude values.
100 * Standard Deviation / Average Hmag1 (percent)

%Hmag2
Statistical variation of from averaged data block magnitude values.
100 * Standard Deviation / Average Hmag2 (percent)

%RHO1
Statistical variation of from averaged data block resistivity values.
100 * Standard Deviation / Average RHO1 (percent)

%RHO2
Statistical variation of from averaged data block resistivity values.
100 * Standard Deviation / Average RHO2 (percent)

%RHOA
Statistical variation of from averaged data block resistivity values.
100 * Standard Deviation / Average RHOA (percent)

sPHZ1
Statistical variation of data blocks averaged for this data point.
Standard Deviation of Phase1 values (milliRadians)

sPHZ2
Statistical variation of data blocks averaged for this data point.
Standard Deviation of Phase2 values (milliRadians)

.AD-File Example

```
 1:From AMTAVG 7.20: "SAMCSAM.AD  " v4.0                          GDP AMT 0516
 2:/* Data for components ExHy
 3:/* 29 Jul 93
 4:Client : ZONGE ENGINEERING
 5:Project: Sample Data
 6:Line   : 1
 7:Grid used : 1000 meter Universal Transverse Mercator grid, zone 12
 8:Grid north:    North     Grid scale:      1.00 m  / grid unit.
 9: Tn   TX 1     East   5000 ft     Xc           Yc           Zc
10: Rn      0.0   East   183.0m  AP1 Xc           Yc           Zc
11:  F23.1  8192 Hz Em 1.1731E-03 Ep 1.4910E+00 Hm 3.5150E-07 Hp 7.2268E-01
12:  F22.1  4096 Hz Em 8.5835E-04 Ep 2.0870E+00 Hm 3.9003E-07 Hp 1.2447E+00
13:  F21.1  2048 Hz Em 6.7279E-04 Ep 2.4504E+00 Hm 4.4613E-07 Hp 1.5578E+00
14:  F20.1  1024 Hz Em 5.4680E-04 Ep 2.8091E+00 Hm 5.4905E-07 Hp 1.8841E+00
15:  F19.1   512 Hz Em 4.3143E-04 Ep 3.0870E+00 Hm 6.6498E-07 Hp 2.1707E+00
16:  F18.1   256 Hz Em 3.6102E-04 Ep-3.0655E+00 Hm 8.6567E-07 Hp 2.3613E+00
17:  F17.1   128 Hz Em 3.1513E-04 Ep-3.0565E+00 Hm 1.1202E-06 Hp 2.4738E+00
18:  F16.1    64 Hz Em 2.9184E-04 Ep-3.0730E+00 Hm 1.3978E-06 Hp 2.5199E+00
19:  F15.1    32 Hz Em 2.3443E-04 Ep 3.0153E+00 Hm 1.8517E-06 Hp 2.4889E+00
20:  F14.1    16 Hz Em 3.4135E-04 Ep 2.6973E+00 Hm 2.7474E-06 Hp 2.6163E+00
```

DOCUMENTATION OF VALUES BY LINE NUMBER:

LINE:	EXPLANATION:
1: `From AMTAVG 7.20`	Name and version number of program which generated this .AD-file
`"SAMCSAM.AD  "`	Name of .AD-file
`GDP AMT 0516`	GDP program name and version number used to collect data
4: `Client :`	Client label from Mode `CLIENT`
5: `Project:`	Project label from Mode `PROJECT`
6: `Line   :`	Line label from Mode `JOBLINE`
7: `Grid used :`	Plan map grid information; may also be a client-defined grid using any units
8: `Grid north:`	Grid parameter relating grid to true north
`Grid scale:`	Scaling factor for grid units, meters/unit
9: `Tn  TX 1`	Transmitter name `(TX 1)`
`East`	Transmitter orientation
`5000 ft`	Transmitter length (in feet if no unit designator)
`Xc, Yc, Zc`	Transmitter planmap coordinates for line
10: `Rn  0.0`	Receiver name (station #) `(0.0)`
`East`	`Receiver orientation`

183.0m	A-Spacing, in meters
AP1	1st letter: raw data averaging method A - arithmetic average S - square-mean-root 2nd letter: RHO, IP calculation method P - parametric C - component 3rd letter: skip flag for this station. A data processing method may or may not include a station based upon this flag 1 - use the station 0 - skip the station
Xc, Yc, Zc	Receiver planmap coordinates for station
11: F23.1	Frequency number (2**13 * 1 = 8192 Hz)
8192 Hz	Frequency, in hertz (frequencies below 1 Hz may be expressed in fractional form)
Em	Average E-field magnitude, volts/(km*amp)
Ep	Average E-field phase, radians
Hm	Average H-field magnitude, microTesla/amp
Hp	Average H-field phase, radians

.AD-file V4.0 FORMAT DOCUMENTATION

An .AD-file contains averaged CSAMT data for discrete and/or harmonic frequencies. The raw field data has been averaged, various plan map coordinates and parameters added, and transmitter data included. Files of this type are archived together with the raw data files (.RAW-file), and topographic data file (.TC-file). The .AD-file is used by programs that provide plot files, plots, and options for further processing.

A sequential file is used, with lines of up to 72 characters. Values that are not defined are left blank. The user (a person or program) is responsible for recognizing blank values as distinct from zero values. The file is to be read from top to bottom, with data for a transmitter applying to data for each receiver that follows, until data for another transmitter is read. In like fashion, data for a receiver dipole applies to all following data for frequencies, until data for another receiver is read.

Each file contains data for one survey line. Files may contain data for an entire area, if X,Y coordinates are used instead of a receiver label to define station location.

Compass directions are assumed to be given as bearings (not azimuth), in capital letters, to the nearest degree, referring to true north unless otherwise specified. A line is defined to have a "bearing" in the direction of increasing station numbers, at that end of the line. A back "bearing" refers to the opposite direction, at the other end of the line. The line has an "orientation" defined as the "bearing" that is referenced to north. Directions of the transmit and receive dipoles are expected to be "orientations". By convention, N 00 E is used for lines oriented North-South, and N 90 E is used for lines oriented East-West.

The .AD-file may use a "normal" or an "extended" format. Lines that begin with " Dipole" or " Data" contain "extended" format data. In a "normal" format file these lines are not included.

Extended format files lines beginning with " Dipole" specify the grid locations of the ends of the dipole. Coordinates given on the first line refer to the center of the dipole (Xc,Yc,Zc). At this time, the end point coordinates are copied from the center coordinates. A future capability may calculate the X,Y coordinates, using the dipole orientation, length, center X,Y coordinates, and orientation of grid north. The elevations of the end points will continue to be copied from the center elevation.

Users of this data file should ignore any lines that are not defined here. Each line begins with unique characters in specific columns. Zonge Engineering provides for comment lines when the first column character is a double quote "". Also, a line with a dollar sign '$' in the first column is expected to contain the name of a variable and a value to be assigned from within programs, in a manner similar to the fortran NAMELIST. Comment or Variable lines may appear as lines added at any point in the file.

```
 1:From AD-AD  1.40: "SAMCSAM.AD  "  (extended)               GDP AMT 0516
 2:Client : ZONGE ENGINEERING
 3:Project: Sample Data
 4:Line   : 1
 5:Grid used : 1000 meter Universal Transverse Mercator grid, zone 12
 6:Grid north:    North     Grid scale:      1.00 m  / grid unit.
 7: Tn   TX 1     East   5000 ft     Xc           Yc           Zc
 8:   Dipole                        X1           Y1           Z1
 9:   Dipole                        X2           Y2           Z2
10: Rn      0.0   East   183.0m  AP1 Xc           Yc           Zc
11:   Dipole                        X1           Y1           Z1
12:   Dipole                        X2           Y2           Z2
13:  F23.1  8192 Hz Em 1.1731E-03 Ep 1.4910E+00 Hm 3.5150E-07 Hp 7.2268E-01
14:   Data          Ra 2.7193E+02 Pd 7.6832E-01 --           --
15:  F22.1  4096 Hz Em 8.5835E-04 Ep 2.0870E+00 Hm 3.9003E-07 Hp 1.2447E+00
16:   Data          Ra 2.3648E+02 Pd 8.4230E-01 --           --
17:  F21.1  2048 Hz Em 6.7279E-04 Ep 2.4504E+00 Hm 4.4613E-07 Hp 1.5578E+00
18:   Data          Ra 2.2209E+02 Pd 8.9260E-01 --           --
19:  F20.1  1024 Hz Em 5.4680E-04 Ep 2.8091E+00 Hm 5.4905E-07 Hp 1.8841E+00
20:   Data          Ra 1.9371E+02 Pd 9.2500E-01 --           --
21:  F19.1   512 Hz Em 4.3143E-04 Ep 3.0870E+00 Hm 6.6498E-07 Hp 2.1708E+00
22:   Data          Ra 1.6442E+02 Pd 9.1620E-01 --           --
23:  F18.1   256 Hz Em 3.6102E-04 Ep-3.0655E+00 Hm 8.6567E-07 Hp 2.3613E+00
24:   Data          Ra 1.3588E+02 Pd-5.4268E+00 --           --
25:  F17.1   128 Hz Em 3.1513E-04 Ep-3.0565E+00 Hm 1.1202E-06 Hp 2.4738E+00
26:   Data          Ra 1.2365E+02 Pd-5.5303E+00 --           --
27:  F16.1    64 Hz Em 2.9184E-04 Ep-3.0730E+00 Hm 1.3978E-06 Hp 2.5199E+00
28:   Data          Ra 1.3622E+02 Pd-5.5929E+00 --           --
29:  F15.1    32 Hz Em 2.3443E-04 Ep 3.0153E+00 Hm 1.8517E-06 Hp 2.4889E+00
30:   Data          Ra 1.0018E+02 Pd 5.2640E-01 --           --
31:  F14.1    16 Hz Em 3.4135E-04 Ep 2.6973E+00 Hm 2.7474E-06 Hp 2.6163E+00
32:   Data          Ra 1.9296E+02 Pd 8.1000E-02 --           --
```

The first six lines should always occur, in the order specified, at the top of the file.

1: "From" specifies the program and version that created the file. The program name is up to six characters, four for version. The name of the file, when created, is specified in quotes, maximum of twelve characters. The file was written in extended format: in normal format the "(extended)" is omitted. The version of the GDP program is given at the end of the line.

2: Name of the client, in capital letters.

3: Name of the project, in upper and lower case letters. The maximum length of either "client" or "project" is 30 characters. This file allows the entire line to be used.

4: Name of the survey line, six characters, alphanumeric. The Zonge convention is to quote numerals of one or two digits when used to label the survey line.

5: Text describing the grid used for specifying coordinates. This could be a client-defined grid, using any units.

6: Grid parameters, including the relationship of the grid to true north, and the scale in feet-per-unit or meters-per-unit. FORMAT(15X,A6,15X,F10.0,A2)

A transmitter specified at the top of the file relates to data for receivers that follow. Any number of transmit dipoles may be included in the file, located before the receiver(s) related to them. Data for two transmitters located one immediately after another result in the first not being applied to any receiver, and the second applying to all receivers that follow.

7: Tn= transmitter name, dipole orientation, length (ft or m), and X,Y plan map coordinates and Z elevation for the center of the dipole, in the units specified in line 6.
FORMAT(4X,A10,1X,A6,F6.0,A2,7X,F10.0,3X,F10.0,3X,F10.0)

8: Extended format data for one end of the transmit dipole.

9: Extended format data for the other end of the dipole. FORMAT(36X,F10.0,3X,F10.0,3X,F10.0)

Receiver data is included immediately prior to the data values given for each frequency, in the same format as transmitter data.

10: Rn= receiver name, dipole orientation, length (ft or m), and dipole center X,Y,Z coordinates. The dipole length is followed by the raw data averaging method. The first character is "A" for Arithmetic or "S" for Square-Mean-Root. The next character is "P" for Parametric (RHO and IP parameters calculated for each block of field data, which are then averaged) or "C" for Component (average of E- and H-field mag and phz, from which RHO and IP parameters are calculated). The third character is "0" or "1", for use by programs that may or may not include the station for further processing. ("1": use the station, "0": skip it.).

11: Receiver end point coordinates, same format as transmitter.

12: Receiver end point coordinates, same format as transmitter.

Frequency data include component values. Extended format files may contain additional values, such as RHO and IP. Any number of " Data" lines may be included. One is currently defined.

13: Frequency number (The integer portion minus 10 is the exponent-of-two for the fundamental frequency. The decimal portion times 10 is the harmonic number. F23.1 = 2**13 * 1 = 8192Hz) (The GDP-12 uses frequency numbers, according to the thumbwheel setting that represents 1.Hz, typically 3 or 4) Frequency (Hz), E-field magnitude (V/(KM*A)) and phase (Rad), H-field magnitude (μTesla/Amp or KGamma/Amp) and phase (Rad) Frequencies below 1.Hz may be specified as a fraction, rather than a lengthy decimal value: 1/32, 1/64, 1/128 Hz.
FORMAT(3X,I2,A10,4X,E11.0,3X,E11.0,3X,E11.0,3X,E11.0)

14: Additional values for the previous frequency line. RHO in ohmmeters, IP in radians, and two undefined positions.

NOTES CONCERNING CALIBRATION DATA

GDP data has had system and coil calibrates removed by the instrument. Data magnitudes are divided by the normalized magnitude for the appropriate channel and frequency. Calibrate phase values are subtracted from data phase values.

.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: IIxxxxxxxxYYYYYYYYzzzzzzzzzzz  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
```