

NSAVG
DOCUMENTATION

ZONGE Data Processing
NSAMT Data Averaging Program
version 1.2x

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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 FPLOTT 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.

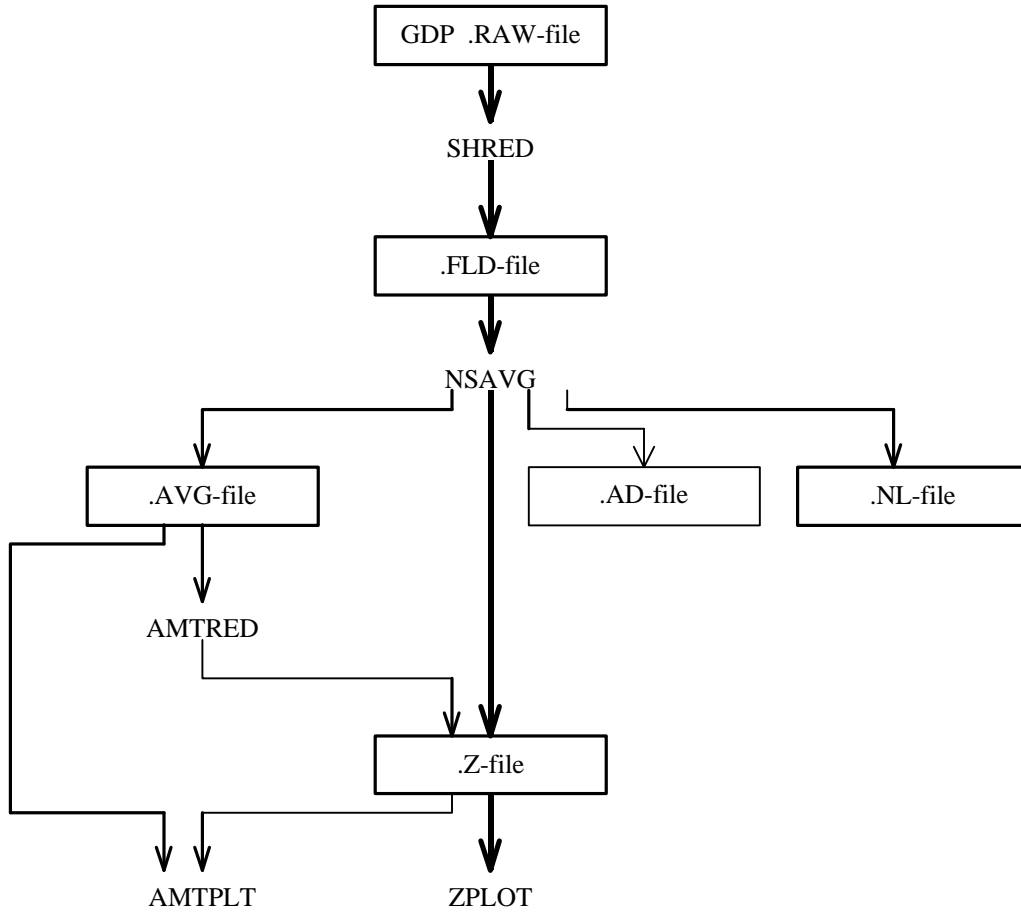
NSAMT DATA PROCESSING FLOW

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 <CTRL><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:

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

COMPANY

Company name (40 chr max)

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

BRGBACK

Line back bearing (10 chr max)

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

CLIENT

Client name (40 chr max)

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

STNLOW

Low station number, plot limit

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

PROJECT

Project name (40 chr max)

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

STNHIGH

High station number, plot limit

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

JOBNUMBER

Company job number (10 chr max)

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

STNDELTA

Station number increment, plot scale

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

JOBDATE

Survey date (10 chr max)

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

LBLFRST

Low station number, axis label

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

JOBLINE

Survey line number (10 chr max)

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

LBLDELTA

Station number increment, axis label

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

BRGLINE

Line forward bearing (10 chr max)

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

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 $\log(\text{Avg}) + \log(1 \pm \text{Cvar}/100)$. 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 $2 \cdot \pi$. The set of values can be described by $V + N \cdot \pi$, 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 $2 \cdot \pi$. 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 $2 \cdot \pi$ 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 Zonge Engineering		JOBNUMB 123		TXLEN
CLIENT Zonge Engineering		JOBDATE July 1992		TXBRG
PROJECT NSAMT Testing		JOBLINE		TXDIS
BRGBACK	RXBRG	BRGLINE	FRQLO NONE	RX2TX
STNLO NONE	STNDELT 1.0	STNHI NONE	FRQHI NONE	TXCX
LBLFRST	LBLDELT 1.0	PLTREV NO	UNITS METERS	TXCY

PROCESSING MODES USED:

CONTROL MODES mode names mode values	AutoRun AUTO NO	ListFile LFILE YES	AvgFile DFILE YES	PlotFile ZFILE All	Rho1,2,Av ZRHO RHOA	
DATA LIMITS mode names mode values	HarmLimit HARMONIC NONE	Out_Limit OUTLIER 3.00	CC LimLo CLIMIT 0.500	CC LimHi CREJECT 1.000	LowLimit PHASELO 100.	HiLimit PHASEHI 1200.
PLOT LIMITS mode names mode values	Data Type PLOT RHO1	MAG Axis Limits VMIN AUTO		FREQ Axis Limits FMIN AUTO		FMAX AUTO
PLOT MODES mode names mode values	Spline SPLINE LINEAR	NumStns NUMC 7	LblSort LMAG READ	ErrorBar ERRORBARS YES	Preview VIEW NONE	PhaseRef PHASEREF 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 ***

Sample .NL-file (page two)

f=	112	Hz	=	256	1	15	125.86	10	5.095	0.000	8	75	27.0	27.5	0.992	969	0	1
	226	15	256	1	15	46.980	10	1.844	0.000	8	75	28.6	29.3	0.989	967	0	1	
	227	15	256	1	15	95.678	10	3.941	0.000	8	75	26.0	26.7	0.987	952	0	1	
	228	15	256	1	15	59.966	10	2.272	0.000	8	75	30.7	31.5	0.987	932	0	1	
	229	15	256	1	15	187.18	10	7.179	0.000	8	75	29.9	30.8	0.987	932	0	1	
	230	15	256	1	14	51.837	10	2.051	0.000	8	75	28.1	29.0	0.985	918	0	1	
	231	15	256	1	14	139.42	10	5.560	0.000	8	75	27.7	28.4	0.988	963	0	1	
	232	15	256	1	15	61.380	10	2.378	0.000	8	75	29.5	30.0	0.990	942	0	1	
	233	15	256	1	15	46.107	10	1.863	0.000	8	75	26.5	28.1	0.971	972	0	1	
	234	15	256	1	15	114.41	10	4.830	0.000	8	75	24.9	25.2	0.993	982	0	1	
	235	15	256	1	15	47.485	10	1.847	0.000	8	75	29.0	30.0	0.983	926	0	1	
	236	15	256	1	15	128.15	10	5.072	0.000	8	75	28.2	28.8	0.991	937	0	1	
	237	15	256	1	15	119.19	10	4.905	0.000	8	75	26.0	26.7	0.988	986	0	1	
	238	15	256	1	14	61.816	10	2.533	0.000	8	75	26.3	26.9	0.988	967	0	1	
	239	15	256	1	15	311.55	10	12.530	0.000	8	75	27.5	27.7	0.993	944	0	1	
	240	15	256	1	14	118.94	10	4.438	0.000	8	75	31.5	32.6	0.984	964	0	1	
	241	15	256	1	15	205.41	10	8.119	0.000	8	75	28.4	28.8	0.993	955	0	1	
	242	15	256	1	15	75.711	10	2.846	0.000	8	75	31.4	31.8	0.993	923	0	1	
	243	15	256	1	15	131.75	10	5.028	0.000	8	75	30.5	30.8	0.994	950	0	1	
	244	15	256	1	15	110.24	10	3.861	0.000	8	75	36.0	36.8	0.990	956	0	1	
	245	15	256	1	15	111.67	10	5.510	0.000	8	75	25.5	25.8	0.993	969	0	1	
f=	80	Hz	=	256	1	15	38.783	10	1.913	0.000	8	75	25.1	26.3	0.977	904	0	1
	226	15	256	1	15	68.747	10	3.410	0.000	8	75	25.2	25.6	0.992	989	0	1	
	227	15	256	1	15	30.817	10	1.398	0.000	8	75	29.4	31.4	0.968	917	0	1	
	228	15	256	1	15	121.75	10	5.835	0.000	8	75	26.8	27.6	0.985	945	0	1	
	229	15	256	1	14	26.398	10	1.334	0.000	8	75	24.0	25.0	0.978	922	0	1	
	230	15	256	1	14	68.373	10	3.448	0.000	8	75	24.1	25.0	0.987	962	0	1	
	231	15	256	1	15	37.034	10	1.796	0.000	8	75	26.0	27.2	0.977	960	0	1	
	232	15	256	1	15	40.288	10	1.953	0.000	8	75	26.0	27.3	0.977	941	0	1	
	233	15	256	1	15	92.924	10	4.865	0.000	8	75	22.9	22.7	0.997	926	0	1	
	234	15	256	1	15	24.985	10	1.191	0.000	8	75	26.8	28.2	0.976	952	0	1	
	235	15	256	1	15	98.288	10	4.746	0.000	8	75	26.6	27.0	0.992	961	0	1	
	236	15	256	1	15	66.085	10	3.328	0.000	8	75	24.2	25.1	0.980	933	0	1	
	237	15	256	1	14	36.738	10	1.823	0.000	8	75	24.5	26.3	0.966	940	0	1	
	238	15	256	1	15	163.41	10	8.167	0.000	8	75	25.0	25.1	0.997	948	0	1	
	239	15	256	1	14	71.053	10	3.468	0.000	8	75	25.9	26.6	0.988	966	0	1	
	240	15	256	1	15	131.77	10	6.400	0.000	8	75	26.4	26.6	0.994	965	0	1	
	241	15	256	1	15	52.227	10	2.424	0.000	8	75	28.8	29.2	0.993	977	0	1	
	242	15	256	1	15	82.111	10	3.883	0.000	8	75	27.5	28.4	0.984	983	0	1	
	243	15	256	1	15	109.28	10	4.995	0.000	8	75	29.7	30.2	0.992	953	0	1	
	244	15	256	1	15	50.517	9	2.896	0.000	9	75	23.8	31.1	0.875	940	0	1	
f=	56	Hz	=	256	1	15	53.939	9	3.546	0.000	9	75	19.3	22.1	0.933	1015	0	1
	246	15	256	1	14	62.510	9	3.945	0.000	9	75	18.0	27.9	0.805	793	0	1	
	247	15	256	1	15	101.88	9	5.867	0.000	9	75	26.3	27.5	0.977	953	0	1	
	248	15	256	1	15	66.235	9	4.015	0.000	9	75	23.4	25.2	0.963	890	0	1	
	249	15	256	1	15	75.956	9	4.237	0.000	9	75	27.4	30.0	0.956	945	0	1	
	250	15	256	1	15	54.950	9	3.665	0.000	9	75	17.8	22.7	0.885	978	0	1	
	251	15	256	1	15	70.048	9	4.509	0.000	9	75	20.4	22.7	0.948	891	0	1	
	252	15	256	1	14	52.144	9	3.657	0.000	9	75	14.3	23.0	0.788	997	0	1	
	253	15	256	1	15	31.068	9	2.409	0.000	9	75	20.4	21.2	0.979	980	0	1	
f=	40	Hz	=	256	1	15	28.057	9	2.119	0.000	9	75	21.5	22.4	0.980	967	0	1
	246	15	256	1	14	36.657	9	2.826	0.000	9	75	20.3	21.8	0.964	984	0	1	
	247	15	256	1	15	46.679	9	3.378	0.000	9	75	23.6	24.1	0.989	955	0	1	
	248	15	256	1	15	30.393	9	2.340	0.000	9	75	20.5	21.7	0.974	965	0	1	
	249	15	256	1	15	37.170	9	2.715	0.000	9	75	23.1	23.8	0.988	956	0	1	
	250	15	256	1	15	39.408	9	3.414	0.000	9	75	16.5	16.9	0.985	946	0	1	
	251	15	256	1	15	42.947	9	3.265	0.000	9	75	21.4	21.9	0.989	973	0	1	
	252	15	256	1	14	23.870	9	1.822	0.000	9	75	20.0	23.0	0.934	925	0	1	
	253	15	256	1	15	68.987	9	4.606	0.000	9	75	26.5	29.7	0.944	774	0	1	
	254	15	256	1	14	59.099	11	4.918	0.000	10	75	24.4	27.3	0.945	733	0	1	
f=	28	Hz	=	256	1	15	37.953	11	3.653	0.000	10	75	19.1	19.4	0.993	912	0	1
	256	15	256	1	15	67.682	11	6.426	0.000	10	75	19.8	19.8	0.993	926	0	1	
	257	15	256	1	15	40.777	11	3.954	0.000	10	75	18.8	19.1	0.992	922	0	1	
	258	15	256	1	15	17.039	11	1.721	0.000	10	75	17.2	17.9	0.981	946	0	1	
	259	15	256	1	14	24.155	11	2.373	0.000	10	75	18.2	18.8	0.983	932	0	1	
	260	15	256	1	14	42.952	11	4.066	0.000	10	75	19.9	20.0	0.998	924	0	1	
	261	15	256	1	15	34.637	11	3.306	0.000	10	75	19.5	19.7	0.993	947	0	1	
	262	15	256	1	13	36.218	11	3.586	0.000	10	75	18.1	18.4	0.992	915	0	1	
	263	15	256	1	14	37.275	11	3.949	0.000	10	75	20.3	24.5	0.909	721	0	1	
f=	20	Hz	=	256	1	15	26.225	11	3.063	0.000	10	75	18.5	18.5	0.992	899	0	1
	256	15	256	1	15	33.369	11	3.891	0.000	10	75	18.3	18.5	0.996	895	0	1	
	257	15	256	1	15	28.555	11	3.399	0.000	10	75	17.4	17.9	0.988	886	0	1	
	258	15	256	1	15	14.808	11	1.771	0.000	10	75	17.2	17.7	0.985	894	0	1	
	259	15	256	1	14	21.692	11	2.664	0.000	10	75	16.4	16.7	0.991	917	0	1	
	260	15	256	1	14	22.860	11	2.753	0.000									

Sample .NL-file (page three)

f=	10	Hz	=	256	1	14	18	263	12	2	907	0.000	10	75	18.4	21.1	0.934	605	0	1
266	15	256	1	15	11	689	12	1	957	0.000	10	75	17.4	18.3	0.975	793	0	0	1	
267	15	256	1	14	11	694	12	2	177	0.000	10	75	14.1	14.8	0.978	741	0	0	1	
268	15	256	1	15	19	820	12	3	271	0.000	10	75	16.0	21.0	0.874	606	0	0	1	
269	15	256	1	14	15	959	12	2	658	0.000	10	75	15.7	20.7	0.869	726	0	0	1	
270	15	256	1	15	9	236	12	1	484	0.000	10	75	16.1	23.3	0.831	551	0	0	1	
273	15	256	1	15	11	419	12	2	108	0.000	10	75	14.3	15.1	0.975	706	0	0	1	
274	15	256	1	15	15	168	12	2	660	0.000	10	75	14.4	18.3	0.888	536	0	0	1	
277	15	256	1	15	13	810	12	2	393	0.000	10	75	16.3	17.0	0.979	716	0	0	1	
278	15	256	1	15	17	885	12	3	218	0.000	10	75	14.7	16.2	0.954	663	0	0	1	
279	15	256	1	14	16	653	12	1	793	0.000	10	75	34.9	53.3	0.809	612	0	0	1	
281	15	256	1	15	14	411	12	2	487	0.000	10	75	16.3	17.3	0.972	629	0	0	1	
282	15	256	1	15	12	517	12	2	076	0.000	10	75	16.6	19.9	0.912	680	0	0	1	
285	15	256	1	15	12	861	12	2	464	0.000	10	75	12.3	15.1	0.899	755	0	0	1	
f=	7	Hz	=	256	1	14	18	072	9	3	926	0.000	10	75	14.0	16.3	0.927	614	0	1
286	15	256	1	15	9	372	9	2	275	0.000	10	75	8.9	16.5	0.735	622	0	0	1	
287	15	256	1	15	7	704	9	1	304	0.000	10	75	18.8	33.0	0.755	762	0	0	1	
288	15	256	1	15	19	029	9	3	671	0.000	10	75	18.0	20.5	0.938	738	0	0	1	
289	15	256	1	15	12	407	9	2	626	0.000	10	75	14.4	17.7	0.900	556	0	0	1	
290	15	256	1	15	15	324	9	3	332	0.000	10	75	14.3	16.0	0.946	700	0	0	1	
291	15	256	1	14	14	218	9	2	671	0.000	10	75	17.4	23.5	0.861	606	0	0	1	
292	15	256	1	14	11	626	9	2	289	0.000	10	75	13.5	25.2	0.730	807	0	0	1	
293	15	256	1	15	12	799	9	2	649	0.000	10	75	15.7	17.7	0.942	537	0	0	1	
294	15	256	1	13	16	878	9	3	445	0.000	10	75	16.5	17.8	0.966	640	0	0	1	
296	15	256	1	14	16	022	9	2	959	0.000	10	75	19.7	22.3	0.941	605	0	0	1	
297	15	256	1	15	14	930	9	3	203	0.000	10	75	13.7	17.6	0.882	724	0	0	1	
298	15	256	1	12	12	813	9	2	763	0.000	10	75	12.1	19.5	0.790	691	0	0	1	
299	15	256	1	15	18	514	9	3	560	0.000	10	75	18.3	20.4	0.948	612	0	0	1	
300	15	256	1	15	14	329	9	2	823	0.000	10	75	17.6	19.3	0.956	628	0	0	1	
301	15	256	1	15	16	038	9	3	316	0.000	10	75	15.9	17.6	0.935	658	0	0	1	
303	15	256	1	13	11	382	9	2	259	0.000	10	75	17.0	19.4	0.945	717	0	0	1	
304	15	256	1	14	17	667	9	2	506	0.000	10	75	17.5	18.8	0.968	668	0	0	1	
305	15	256	1	14	13	361	9	2	550	0.000	10	75	16.5	23.3	0.843	675	0	0	1	
f=	5	Hz	=	256	1	14	13	725	9	3	106	0.000	10	75	18.8	20.2	0.965	685	0	1
286	15	256	1	15	10	287	9	2	623	0.000	10	75	14.6	16.2	0.952	610	0	0	1	
287	15	256	1	15	6	745	9	1	499	0.000	10	75	17.1	23.9	0.847	704	0	0	1	
288	15	256	1	15	7	427	9	2	284	0.000	10	75	8.5	13.1	0.804	765	0	0	1	
289	15	256	1	15	9	832	9	1	866	0.000	10	75	14.1	21.9	0.803	669	0	0	1	
290	15	256	1	15	9	880	9	2	252	0.000	10	75	16.8	22.0	0.875	560	0	0	1	
291	15	256	1	14	10	861	9	2	514	0.000	10	75	17.3	20.2	0.922	646	0	0	1	
292	15	256	1	14	7	681	9	1	967	0.000	10	75	13.2	17.6	0.866	696	0	0	1	
293	15	256	1	15	8	419	9	1	806	0.000	10	75	20.7	22.7	0.955	668	0	0	1	
294	15	256	1	13	7	422	9	1	865	0.000	10	75	14.2	17.7	0.897	677	0	0	1	
296	15	256	1	14	6	615	9	1	477	0.000	10	75	17.8	22.6	0.888	643	0	0	1	
297	15	256	1	15	10	842	9	2	732	0.000	10	75	14.1	17.7	0.892	682	0	0	1	
298	15	256	1	12	7	150	9	2	048	0.000	10	75	10.8	13.8	0.883	655	0	0	1	
299	15	256	1	15	9	877	9	2	364	0.000	10	75	16.2	18.9	0.926	735	0	0	1	
300	15	256	1	15	12	927	9	2	773	0.000	10	75	20.9	22.6	0.963	695	0	0	1	
301	15	256	1	15	6	728	9	1	776	0.000	10	75	12.0	17.1	0.837	686	0	0	1	
303	15	256	1	13	7	869	9	1	935	0.000	10	75	16.0	17.1	0.965	764	0	0	1	
304	15	256	1	14	8	611	9	1	882	0.000	10	75	19.4	22.5	0.928	682	0	0	1	
305	15	256	1	14	8	515	9	2	030	0.000	10	75	15.0	20.6	0.853	655	0	0	1	
f=	3.5	Hz	=	256	1	15	11	099	11	2	305	0.000	10	75	27.2	40.3	0.822	737	0	1
306	15	256	1	13	11	256	11	3	119	0.000	10	75	15.7	22.1	0.842	585	0	0	1	
308	15	256	1	13	9	626	11	2	521	0.000	10	75	19.9	21.8	0.956	647	0	0	1	
309	15	256	1	14	7	476	11	1	963	0.000	10	75	19.5	22.0	0.943	752	0	0	1	
312	15	256	1	11	23	138	11	4	951	0.000	10	75	28.3	34.4	0.906	677	0	0	1	
316	15	256	1	14	10	802	11	2	707	0.000	10	75	19.3	26.8	0.850	711	0	0	1	
317	15	256	1	14	7	629	11	1	949	0.000	10	75	19.2	25.0	0.875	845	0	0	1	
318	15	256	1	13	14	175	11	3	578	0.000	10	75	20.6	24.4	0.920	571	0	0	1	
319	15	256	1	12	13	047	11	3	345	0.000	10	75	20.9	22.6	0.963	776	0	0	1	
321	15	256	1	13	11	297	11	2	631	0.000	10	75	24.3	28.5	0.924	679	0	0	1	
323	15	256	1	15	9	642	11	2	518	0.000	10	75	25.6	33.6	0.873	777	0	0	1	
f=	2.5	Hz	=	256	1	13	10	049	11	2	736	0.000	10	75	24.3	30.0	0.899	676	0	1
306	15	256	1	13	8	542	11	2	332	0.000	10	75	24.0	30.1	0.893	705	0	0	1	
308	15	256	1	14	6	271	11	1	770	0.000	10	75	20.8	30.2	0.830	755	0	0	1	
309	15	256	1	11	15	668	11	3	619	0.000	10	75	31.5	44.7	0.839	722	0	0	1	
312	15	256	1	14	7	392	11	2	187	0.000	10	75	18.3	28.5	0.802	648	0	0	1	
316	15	256	1	14	7	273	11	1	672	0.000	10	75	30.3	47.2	0.802	765	0	0	1	
317	15	256	1	13	11	135	11	3	331	0.0										

GDP DATA PROCESSING MANUAL

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
```

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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 2060 15 -8.04 744 0
2 Hy 75 1.0838u -2329.3 42.56 2060 15 -0.45 75.4K 0
3 Ey 9 116.04u 0.955 42.29 2260 15 12.34 989 0
4 Hx 17 1.5416u 917.1 46.32 2160 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 2060 15 -8.04 744 0
2 Hy 75 0.5870u -2228.7 46.10 2060 15 -0.45 75.4K 0
3 Ey 9 68.901u 0.905 33.95 2260 15 12.34 989 0
4 Hx 17 0.9941u 688.8 41.48 2160 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 2060 13 -8.04 744 0
2 Hy 75 0.5254u 853.4 29.31 2060 13 -0.45 75.4K 0
3 Ey 9 75.649u 0.948 35.11 2260 15 12.34 989 0
4 Hx 17 1.0989u 820.6 39.04 2160 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 2060 15 -8.04 744 0
2 Hy 75 1.6727u 809.0 39.76 2060 15 -0.45 75.4K 0
3 Ey 9 120.33u 0.968 41.48 2260 15 12.34 989 0
4 Hx 17 1.6244u 749.1 44.30 2160 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 2160 15 8.14 744 0
2 Hy 75 4.5280u 894.0 38.26 2260 15 -0.38 75.4K 0
3 Ey 9 349.25u 0.992 43.86 2360 15 12.41 989 0
4 Hx 17 6.5648u 885.0 44.59 2160 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 2160 9 8.14 744 0
2 Hy 75 3.0701u 926.7 43.24 2260 9 -0.38 75.4K 0
3 Ey 9 258.42u 0.987 42.76 2360 11 12.41 989 0
4 Hx 17 4.9072u 890.8 43.91 2160 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 2160 15 8.14 744 0
2 Hy 75 2.1288u 921.2 35.29 2260 15 -0.38 75.4K 0
3 Ey 9 442.49u 0.997 41.18 2360 14 12.41 989 0
4 Hx 17 8.6075u 867.6 41.41 2160 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 2160 15 8.14 744 0
2 Hy 75 1.5783u 808.3 33.81 2260 15 -0.38 75.4K 0
3 Ey 9 294.54u 0.979 39.33 2360 15 12.41 989 0
4 Hx 17 5.8073u 864.0 41.07 2160 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
Tx 32 Hz 15 Stacks 1 Bursts 256 Samples 1 1
1 Ex 9 52.336u 0.980 25.82 2360 15 8.04 744 0
2 Hy 75 1.8021u 974.8 26.90 2260 15 0.48 75.4K 0
3 Ey 9 161.98u 0.988 31.59 2160 15 13.27 989 0
4 Hx 17 5.0630u 948.9 32.39 2060 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 32 Hz 15 Stacks 1 Bursts 256 Samples 2 2
1 Ex 9 49.096u 0.965 25.98 2360 14 8.04 744 0
2 Hy 75 1.6725u 904.4 27.91 2260 14 0.48 75.4K 0
3 Ey 9 198.59u 0.994 34.55 2160 15 13.27 989 0
4 Hx 17 5.9530u 947.3 35.00 2060 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 36.27 865.4 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
    
```

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0218
AMT 0524 92-06-16 19:18:55 12.3v VEC
Tx 32 Hz 15 Stacks 1 Bursts 256 Samples 3 3
1 Ex 9 73.036u 0.968 29.84 2360 14 8.04 744 0
2 Hy 75 2.3253u 943.4 31.85 2260 14 0.48 75.4K 0
3 Ey 9 179.23u 0.993 34.82 2160 14 13.27 989 0
4 Hx 17 5.3507u 949.7 35.31 2060 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 32 Hz 15 Stacks 1 Bursts 256 Samples 4 4
1 Ex 9 59.689u 0.962 26.63 2360 13 8.04 744 0
2 Hy 75 2.0052u 917.7 28.79 2260 13 0.48 75.4K 0
3 Ey 9 155.47u 0.991 35.74 2160 14 13.27 989 0
4 Hx 17 4.5759u 935.6 36.41 2060 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 16 Hz 15 Stacks 1 Bursts 256 Samples 2 2
1 Ex 9 111.67u 0.993 25.50 2260 15 8.14 744 0
2 Hy 75 5.5103u 969.2 25.84 2060 15 -0.24 75.4K 0
3 Ey 9 143.80u 0.931 24.87 2050 14 13.10 989 0
4 Hx 17 6.9539u 977.2 28.72 2030 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 16 Hz 15 Stacks 1 Bursts 256 Samples 2 2
1 Ex 9 38.783u 0.977 25.10 2260 15 8.14 744 0
2 Hy 75 1.9127u 903.5 26.30 2060 15 -0.24 75.4K 0
3 Ey 9 81.477u 0.833 20.93 2050 13 13.10 989 0
4 Hx 17 4.0644u 1004.1 30.14 2030 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 16 Hz 15 Stacks 1 Bursts 256 Samples 3 3
1 Ex 9 68.747u 0.992 25.21 2260 15 8.14 744 0
2 Hy 75 3.4095u 988.5 25.61 2060 15 -0.24 75.4K 0
3 Ey 9 207.60u 0.971 29.10 2050 15 13.10 989 0
4 Hx 17 9.482u 1007.7 30.84 2030 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
    
```

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0230
AMT 0524 92-06-16 19:22:28 12.3v VEC
Tx 16 Hz 15 Stacks 1 Bursts 256 Samples 5 4
1 Ex 9 121.75u 0.985 26.79 2260 15 8.14 744 0
2 Hy 75 5.8348u 945.1 27.64 2060 15 -0.24 75.4K 0
3 Ey 9 157.62u 0.934 29.69 2050 14 13.10 989 0
4 Hx 17 6.9898u 945.3 34.01 2030 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 2160 15 7.94 744 0
 2 Hy 75 2.4088u 980.4 21.24 2160 15 -0.10 75.4K 0
 3 Ey 9 45.546u 0.966 20.30 2160 15 13.20 989 0
 4 Hx 17 3.5134u 973.8 21.74 2060 15 0.00 75.1K 0
 freq ExMag HyMagl xyRhol 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 HxMagl yxRhol 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

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 2360 14 7.90 744 0
 2 Hy 75 3.9491u 721.0 24.49 2260 14 0.10 75.4K 0
 3 Ey 9 49.683u 0.953 17.17 2160 15 13.54 989 0
 4 Hx 17 5.8519u 815.8 18.91 2160 15 -0.14 75.1K 0
 freq ExMag HyMagl xyRhol 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 HxMagl yxRhol 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

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 2160 15 7.94 744 0
 2 Hy 75 2.1191u 967.1 22.37 2160 15 -0.10 75.4K 0
 3 Ey 9 47.111u 0.936 20.64 2160 15 13.20 989 0
 4 Hx 17 3.5466u 974.8 23.57 2060 15 0.00 75.1K 0
 freq ExMag HyMagl xyRhol 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 HxMagl yxRhol 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

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 2360 15 7.90 744 0
 2 Hy 75 3.0630u 898.8 18.47 2260 15 0.10 75.4K 0
 3 Ey 9 32.193u 0.974 19.28 2160 15 13.54 989 0
 4 Hx 17 3.6182u 909.2 20.32 2160 15 -0.14 75.1K 0
 freq ExMag HyMagl xyRhol 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 HxMagl yxRhol 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

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 2160 15 7.94 744 0
 2 Hy 75 3.3782u 954.7 24.13 2160 15 -0.10 75.4K 0
 3 Ey 9 110.68u 0.989 26.67 2160 15 13.20 989 0
 4 Hx 17 7.5343u 940.1 27.28 2060 15 0.00 75.1K 0
 freq ExMag HyMagl xyRhol 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 HxMagl yxRhol 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

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 2360 15 7.90 744 0
 2 Hy 75 3.8915u 894.9 18.45 2260 15 0.10 75.4K 0
 3 Ey 9 45.409u 0.977 18.50 2160 13 13.54 989 0
 4 Hx 17 5.2169u 925.1 19.39 2160 13 -0.14 75.1K 0
 freq ExMag HyMagl xyRhol 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 HxMagl yxRhol 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

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 2160 15 7.94 744 0
 2 Hy 75 2.3396u 964.8 21.66 2160 15 -0.10 75.4K 0
 3 Ey 9 52.216u 0.972 23.30 2160 15 13.20 989 0
 4 Hx 17 3.7702u 982.4 24.68 2060 15 0.00 75.1K 0
 freq ExMag HyMagl xyRhol 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 HxMagl yxRhol 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

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 2360 15 7.90 744 0
 2 Hy 75 3.3989u 886.2 17.87 2260 15 0.10 75.4K 0
 3 Ey 9 38.151u 0.942 14.88 2160 15 13.54 989 0
 4 Hx 17 4.7990u 863.1 16.77 2160 15 -0.14 75.1K 0
 freq ExMag HyMagl xyRhol 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 HxMagl yxRhol 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 2460 15 7.94 744 0
2 Hy    75 1.9569u 793.1 18.30 2260 15 0.24 75.4K 0
3 Ey    9 19.602u 0.945 14.30 2160 15 13.58 989 0
4 Hx    17 3.5636u 718.8 16.01 2160 15 0.21 75.1K 0
freq ExMag HyMagl xyRhol 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 HxMagl yxRhol 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
    
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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 2160 14 8.11 744 0
2 Hy    75 3.1058u 684.6 20.24 2260 14 0.38 75.4K 0
3 Ey    9 38.136u 0.935 18.26 2060 15 11.99 989 0
4 Hx    17 8.6278u 497.4 20.90 2160 15 -0.07 75.1K 0
freq ExMag HyMagl xyRhol 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 HxMagl yxRhol 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
    
```

```

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 2460 14 7.94 744 0
2 Hy    75 2.1767u 741.3 14.76 2260 14 0.24 75.4K 0
3 Ey    9 29.708u 0.964 15.05 2160 15 13.58 989 0
4 Hx    17 5.3159u 700.2 16.20 2160 15 0.21 75.1K 0
freq ExMag HyMagl xyRhol 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 HxMagl yxRhol 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
    
```

```

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 2160 15 8.11 744 0
2 Hy    75 2.6226u 610.3 16.16 2260 15 0.38 75.4K 0
3 Ey    9 27.937u 0.872 17.08 2060 14 11.99 989 0
4 Hx    17 6.3117u 444.7 22.47 2160 14 -0.07 75.1K 0
freq ExMag HyMagl xyRhol 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 HxMagl yxRhol 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
    
```

```

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 2460 15 7.94 744 0
2 Hy    75 3.2715u 606.4 21.00 2260 15 0.24 75.4K 0
3 Ey    9 21.885u 0.897 12.02 2160 15 13.58 989 0
4 Hx    17 4.2278u 727.6 14.93 2160 15 0.21 75.1K 0
freq ExMag HyMagl xyRhol 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 HxMagl yxRhol 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
    
```

```

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 2160 15 8.11 744 0
2 Hy    75 2.2523u 560.2 22.00 2260 15 0.38 75.4K 0
3 Ey    9 28.509u 0.903 18.66 2060 12 11.99 989 0
4 Hx    17 6.2718u 436.1 22.88 2160 12 -0.07 75.1K 0
freq ExMag HyMagl xyRhol 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 HxMagl yxRhol 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
    
```

```

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 2460 14 7.94 744 0
2 Hy    75 2.6577u 725.8 20.74 2260 14 0.24 75.4K 0
3 Ey    9 28.942u 0.959 12.54 2160 14 13.58 989 0
4 Hx    17 5.6600u 583.9 13.63 2160 14 0.21 75.1K 0
freq ExMag HyMagl xyRhol 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 HxMagl yxRhol 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
    
```

```

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 2160 15 8.11 744 0
2 Hy    75 1.8065u 668.2 22.74 2260 15 0.38 75.4K 0
3 Ey    9 13.632u 0.852 13.40 2060 12 11.99 989 0
4 Hx    17 3.4368u 397.1 18.48 2160 12 -0.07 75.1K 0
freq ExMag HyMagl xyRhol 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 HxMagl yxRhol 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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GDP DATA PROCESSING MANUAL

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 2360 13 7.83 744 0
 2 Hy 75 2.7361u 676.1 30.00 2260 13 0.17 75.4K 0
 3 Ey 9 28.677u 0.816 30.32 2060 14 14.58 989 0
 4 Hx 17 6.6550u 169.4 45.49 2260 14 -0.07 75.1K 0
 freq ExMag HyMag1 xyRhol 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 yxRhol 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

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 2160 13 0.10 75.4K 0
 3 Ey 9 32.796u 0.830 50.13 2060 14 15.34 989 0
 4 Hx 17 8.4424u 13.1 72.69 2160 14 -0.10 75.1K 0
 freq ExMag HyMag1 xyRhol 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 yxRhol 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

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 2360 13 7.83 744 0
 2 Hy 75 2.3317u 705.2 30.06 2260 13 0.17 75.4K 0
 3 Ey 9 21.086u 0.853 29.16 2060 13 14.58 989 0
 4 Hx 17 5.1019u 136.3 40.03 2260 13 -0.07 75.1K 0
 freq ExMag HyMag1 xyRhol 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 yxRhol 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

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 2160 13 8.04 744 0
 2 Hy 75 3.6501u 812.9 57.62 2160 13 0.10 75.4K 0
 3 Ey 9 57.531u 0.729 68.71 2060 14 15.34 989 0
 4 Hx 17 11.852u 292.8 129.3 2160 14 -0.10 75.1K 0
 freq ExMag HyMag1 xyRhol 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 yxRhol 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

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 2360 11 7.83 744 0
 2 Hy 75 3.6191u 722.2 44.67 2260 11 0.17 75.4K 0
 3 Ey 9 36.348u 0.898 36.83 2060 11 14.58 989 0
 4 Hx 17 8.0272u 101.3 45.65 2260 11 -0.07 75.1K 0
 freq ExMag HyMag1 xyRhol 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 yxRhol 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

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 2160 15 8.04 744 0
 2 Hy 75 3.8795u 919.0 34.21 2160 15 0.10 75.4K 0
 3 Ey 9 41.735u 0.828 85.03 2060 13 15.34 989 0
 4 Hx 17 8.2383u 62.0 123.9 2160 13 -0.10 75.1K 0
 freq ExMag HyMag1 xyRhol 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 yxRhol 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

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 2360 14 7.83 744 0
 2 Hy 75 2.1871u 648.4 28.50 2260 14 0.17 75.4K 0
 3 Ey 9 30.764u 0.860 32.20 2060 14 14.58 989 0
 4 Hx 17 7.1104u 427.2 43.53 2260 14 -0.07 75.1K 0
 freq ExMag HyMag1 xyRhol 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 yxRhol 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

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 2160 13 8.04 744 0
 2 Hy 75 2.9660u 1049.2 27.60 2160 13 0.10 75.4K 0
 3 Ey 9 42.418u 0.880 66.38 2060 15 15.34 989 0
 4 Hx 17 9.768u 54.9 85.70 2160 15 -0.10 75.1K 0
 freq ExMag HyMag1 xyRhol 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 yxRhol 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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GDP DATA PROCESSING MANUAL

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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 0560 14 7.73 744 0
2 Hy    75 3.7950u 1328.3 62.18 0260 14 -135.19 75.4K 0
3 Ey    9 46.694u 0.805 113.1 0360 14 16.96 989 0
4 Hx    17 11.142u 166.9 174.5 0360 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 0560 13 7.73 744 0
2 Hy    75 1.8652u 738.9 315.5 0260 13 -135.19 75.4K 0
3 Ey    9 28.419u 0.482 32.45 0360 12 16.96 989 0
4 Hx    17 9.799u -163.5 139.5 0360 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 0560 12 7.73 744 0
2 Hy    75 3.6827u 665.0 77.91 0260 12 -135.19 75.4K 0
3 Ey    9 30.644u 0.739 58.06 0360 15 16.96 989 0
4 Hx    17 9.779u -224.1 106.3 0360 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 0560 12 7.73 744 0
2 Hy    75 3.6867u 969.5 56.17 0260 12 -135.19 75.4K 0
3 Ey    9 38.073u 0.858 75.72 0360 10 16.96 989 0
4 Hx    17 11.466u 38.6 102.8 0360 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 ***

GDP DATA PROCESSING MANUAL

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

Reference ruler line	1	2	3	4	5	6	7	8	9	0	1	1	1
/* 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 ...

GDP DATA PROCESSING MANUAL

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

1	1	1	1	1	1	1	2	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 ***

GDP DATA PROCESSING MANUAL

Sample .AVG-file

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

GDP DATA PROCESSING MANUAL

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
IIxxxxxxxxxYYYYYYYzzzzzzzzzzzz 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
IIxxxxxxxxxYYYYYYYzzzzzzzzzzzz 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

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
IIxxxxxxxxxYYYYYYYzzzzzzzzzzzz 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

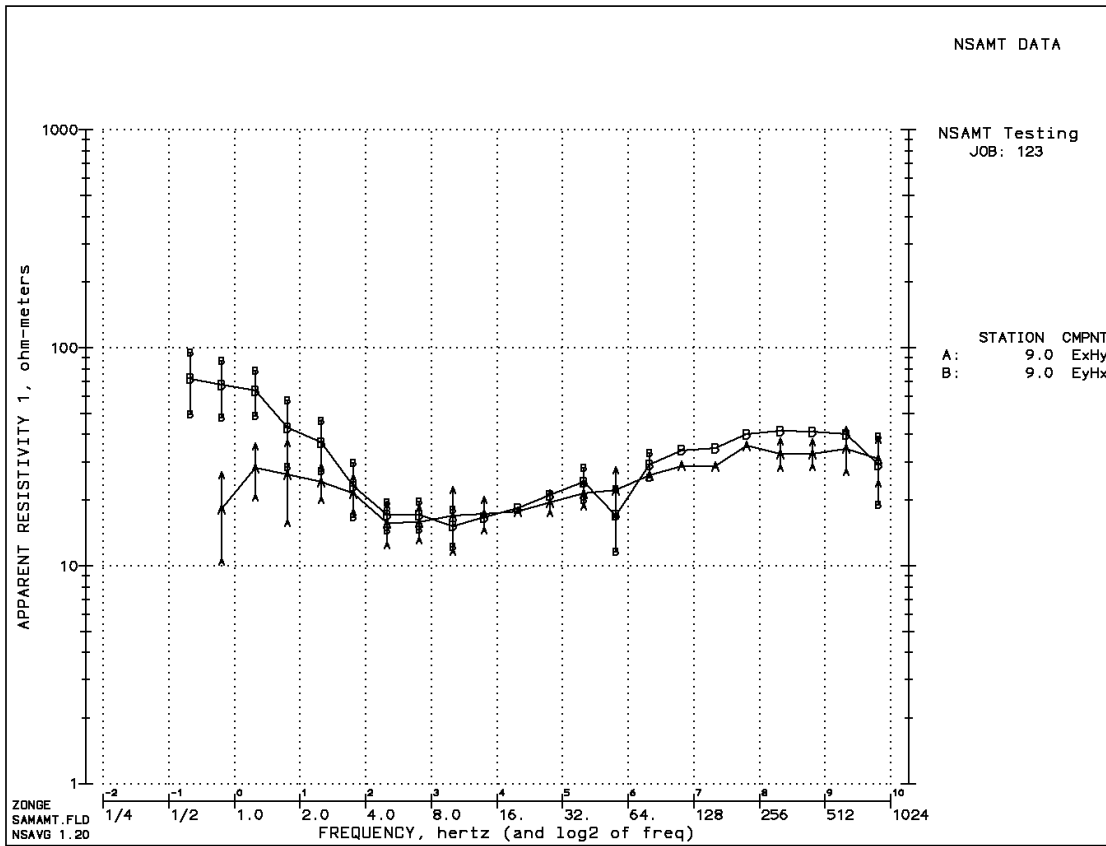
Cl Cn Ce Ns Nd Yl   Plot file 4
0 10 3 3 0 1
NSAMT SURVEY DATA
IMPEDANCE PHASE
values in milliradians
Components: EyHx
IIxxxxxxxxxYYYYYYYzzzzzzzzzzzz AAA
2 9. 18.81 7.97173e+02
2 9. 18.32 8.25374e+02
2 9. 17.81 8.38450e+02
2 9. 17.32 8.74350e+02
2 9. 16.81 9.11360e+02
2 9. 16.32 9.37430e+02
2 9. 15.81 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

```

continued ...

*** end of file ***

Sample .Xnn-file SAMAMT.X01



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: $E_1 = 965.50 \mu\text{V} / 183.\text{m} * 4.5\text{a} = 1.1724 \text{ mV/Km*a}$
 $E_2 = 962.48 / 183. * 4.5 = 1.1688$
 $E_3 = 970.24 / 183. * 4.5 = 1.1782$

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

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

$\sigma_e = .00474 \approx .005$

Standard Deviation for H-Field (σ_h):

For 8192 Hz: $H_1 = 1.5836 \text{ pT} / 4.5\text{a} = .35191 \text{ pT/a}$
 $H_2 = 1.5697 / 4.5 = .34882$
 $H_3 = 1.5922 / 4.5 = .35382$

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

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

$\sigma_h = .00252 \approx .003$

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

$$\begin{aligned} \text{C-var} &= \% \text{ variation in magnitudes at each frequency} \\ &= 100 * \frac{\sigma}{A} \end{aligned}$$

where σ = standard deviation
 A = arithmetic average

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

$$\begin{aligned} \sigma_e &= 0.0048 \\ A = E &= 1.1731 \text{ mV/Km*a} \\ \text{C-var}_e &= 100 * \frac{0.0048}{1.1731} = 0.4092 \\ \text{C-var}_e &\approx 0.4 \end{aligned}$$

Examples: .NL-file AVERAGE CALCULATIONS

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

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

$$E_n = MAG_n / A\text{-Spacing} * TxCurr$$

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

$E_1 = 965.50 \mu V / 183.m * 4.5a = 1.1724 \text{ mV/Km*a}$
 $E_2 = 962.48 / 183. * 4.5 = 1.1688$
 $E_3 = 970.24 / 183. * 4.5 = 1.1782$

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

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

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

$$\text{PHZ}_{\text{avg}} = \frac{\text{PHZ}_1 + \text{PHZ}_2 + \dots + \text{PHZ}_{1n}}{n}$$

For 8192 Hz: PHZ₁ = 1491.2 mRad (block 402)
 PHZ₂ = 1493.4 (block 403)
 PHZ₃ = 1488.4 (block 404)

$$\text{PHZ}_{\text{avg}} = \frac{1491.2 + 1493.4 + 1488.4}{3}$$

PHZ_{avg} = 1491.0 mRad

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

$$\text{RHO}_p = \frac{\text{RHO}_1 + \text{RHO}_2 + \dots + \text{RHO}_n}{n}$$

For 8192 Hz: RHO₁ = 271.0 Ωm (block 402)
 RHO₂ = 274.1 (block 403)
 RHO₃ = 270.7 (block 404)

$$\text{RHO}_p = \frac{271.0 + 274.1 + 270.7}{3}$$

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
- $S = \text{Sqrt}[(A - N * B) / (N - 1)]$

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 asterisk (*) 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		%Emag Statistical variation of from averaged data block magnitude values. 100 * Standard Deviation / Average Emag (percent)
Station Receiver Station location		%Hmag1 Statistical variation of from averaged data block magnitude values. 100 * Standard Deviation / Average Hmag1 (percent)
Freq Frequency at which data was measured (Hertz)		%Hmag2 Statistical variation of from averaged data block magnitude values. 100 * Standard Deviation / Average Hmag2 (percent)
Comp Components measured		%RHO1 Statistical variation of from averaged data block resistivity values. 100 * Standard Deviation / Average RHO1 (percent)
Emag E-field magnitude	(nanoVolts/Meter)	%RHO2 Statistical variation of from averaged data block resistivity values. 100 * Standard Deviation / Average RHO2 (percent)
Hmag1 H-field-1 magnitude	(picoTesla)	%RHOA Statistical variation of from averaged data block resistivity values. 100 * Standard Deviation / Average RHOA (percent)
Hmag2 H-field-2 magnitude	(picoTesla)	sPHZ1 Statistical variation of data blocks averaged for this data point. Standard Deviation of Phase1 values (milliRadians)
RHO1 Cagniard Resistivity 1	(Ohm-Meters)	sPHZ2 Statistical variation of data blocks averaged for this data point. Standard Deviation of Phase2 values (milliRadians)
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)		

.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:

<u>LINE:</u>	<u>EXPLANATION:</u>
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

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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.

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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. $F_{23.1} = 2^{*13} * 1 = 8192\text{Hz}$) (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 ($\mu\text{Tesla/Amp}$ 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.

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.

www - Window number.

II	xxxxxxxx	YYYYYYYY	zzzzzzzzzzzz	AAA	ffffffff	www
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