

**RPAVG
DOCUMENTATION**

**ZONGE Data Processing
Resistivity-Phase Averaging Program
version 7.2x**

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RPAVG Program Documentation

OVERVIEW

RPAVG averages GDP RPIP raw data that includes measurements for one or more components. No plots are provided at this time. Several output files are created, including a log file (.LOG-file), listing file (.RL-file), plot file (.Z-file), and average files (.S- and .AVG-files).

RPAVG handles any component measured at any binary fundamental frequency provided by the GDP.

INPUT FILES

RPAVG 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 RPIP data, one record contains data measured by one channel. The SHRED program uses the GDP data block entries for Tx, Rx, and N-spacing, and includes updated values in each data record.

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

An optional mode file includes entries that modify mode values defined by Zonge Data Processing (DATPRO) programs. A mode name is specified for several program variables that a user may modify. Each line in a mode file includes the program name, mode name, and value. While running RPAVG, 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 RPAVG.

OUTPUT FILES

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

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

The plot file (.Z-file) written by RPAVG 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. RPAVG includes sections for Resistivity and Raw Phase for one component and frequency (specified by mode values). If data is acquired at three specific frequencies, 3-Pt DC Phase data are also included in the .Z-file.

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

SURVEY LOCATION CONVENTIONS

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

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

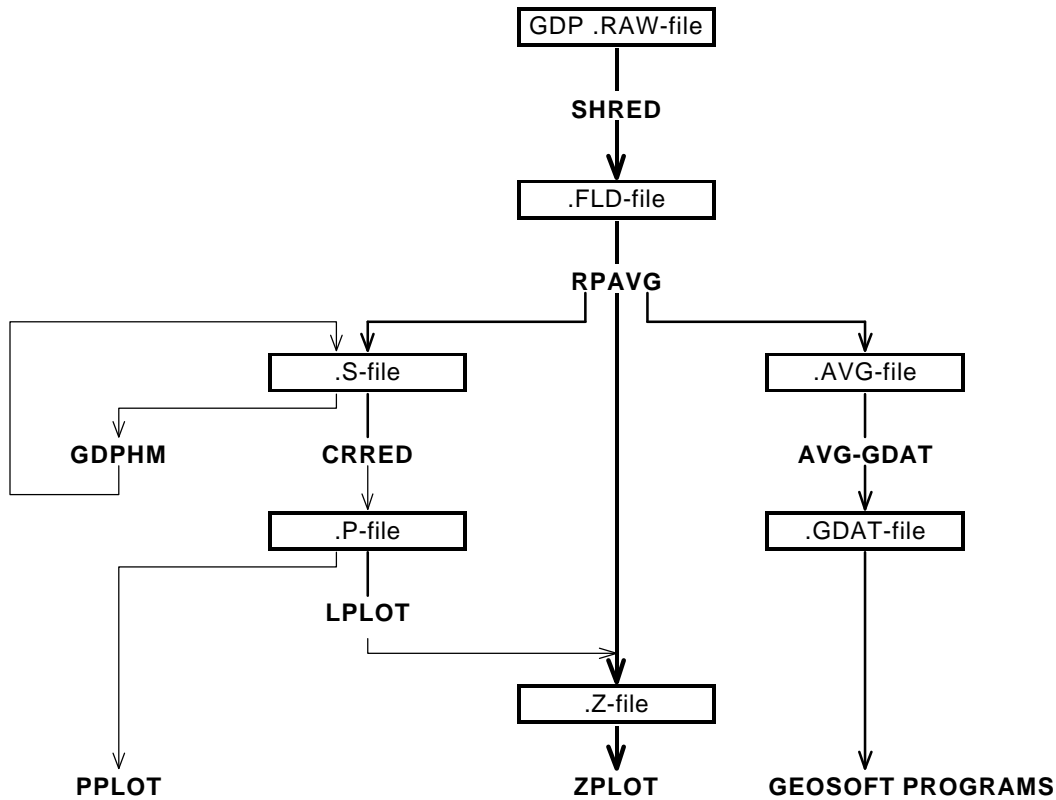
RPIP DATA PROCESSING FLOW

August, 1993

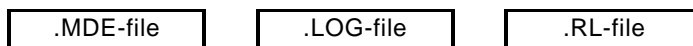
Program names are **CAPITALIZED**

File names are Boxed

Bold lines — show standard GDP data processing flow.



Other files read or written:



RPAVG Usage

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

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

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

RPAVG MODE DISPLAY

PROCESSING MODES USED:

RHO-PHZ MODES	AutoRun	ListFile	AvgFile	PlotFile	LowFreq	
mode names	AUTO	LFILE	DFILE	ZFILE	FMIN	
mode values	NO	NO	YES	YES	NONE	
GridOrg MODES	GridOrgX	GridOrgY		HiGain	HiSEM	
mode names	GORX	GORY		HIGAIN	HISEM	
mode values	NONE	NONE		NONE	NONE	

RPAVG ERROR MESSAGES

If errors or inconsistencies arise within the program, RPAVG 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.

RPAVG OUTPUT SELECTIONS

RPAVG may write a "listing" (.RL-file), average data (.S- and .AVG-files), or plot data (.Z-file). .S-, .AVG-, and .Z-files are automatically created by RPAVG with the default values for the mode variables "DFILE" and "ZFILE". An .RL-file is NOT Created with the default value for the mode variable "LFILE".

RPAVG Sample Run

Input files SAMRPIP.FLD, SAMRPIP.MDE
 Output files: SAMRPIP.LOG, SAMRPIP.RL log and listing files
 SAMRPIP.AVG average data file
 SAMRPIP.Z XYZ plot data file

*** NOTE: responses to prompts are in **bold** type; comments regarding program operation are enclosed in stars ***

C:> **RPAVG SAMRPIP**

ZONGE ENGINEERING: 3322 E. Fort Lowell, Tucson AZ 85716, USA
 RPAVG 7.20: AVERAGING PROGRAM FOR RESISTIVITY/PHASE DATA
 MS-DOS version implemented 01 August, 1993.

MODE CLIENT=ZONGE ENGINEERING
 MODE COMPANY=Zonge Engineering
 MODE PROJECT=Test Data
 MODE JOBNUMB=9000
 MODE JOBDATE=Aug 90
 MODE JOBLINE=2

(Type MENU for assistance with MODEs.)

MODE Change [name?, name= value] : **LFILE= Yes** ***** Listing file *****
 MODE Change [name?, name= value] : **HISEM= 50.** ***** SEM limit *****
 MODE Change [name?, name= value] : **<RETURN>** ***** Continue *****

Reading "SAMRPIP.FLD" . . .

Tx:	11.0,	Rx:	15.0,	N-Sp:	3.0	DONE:	line	1 to	15
Tx:	11.0,	Rx:	16.0,	N-Sp:	4.0	DONE:	line	16 to	29
Tx:	11.0,	Rx:	17.0,	N-Sp:	5.0	DONE:	line	30 to	43
Tx:	11.0,	Rx:	18.0,	N-Sp:	6.0	DONE:	line	44 to	57
Tx:	11.0,	Rx:	19.0,	N-Sp:	7.0	DONE:	line	58 to	71
Tx:	11.0,	Rx:	20.0,	N-Sp:	8.0	DONE:	line	72 to	85
Tx:	12.0,	Rx:	15.0,	N-Sp:	2.0	DONE:	line	86 to	98
Tx:	12.0,	Rx:	16.0,	N-Sp:	3.0	DONE:	line	99 to	111
Tx:	12.0,	Rx:	17.0,	N-Sp:	4.0	DONE:	line	112 to	124
Tx:	12.0,	Rx:	18.0,	N-Sp:	5.0	DONE:	line	125 to	137

:
:
:

Tx:	12.0,	Rx:	10.0,	N-Sp:	1.0	DONE:	line	603 to	615
Tx:	12.0,	Rx:	9.0,	N-Sp:	2.0	DONE:	line	616 to	628
Tx:	12.0,	Rx:	8.0,	N-Sp:	3.0	DONE:	line	629 to	641
Tx:	12.0,	Rx:	7.0,	N-Sp:	4.0	DONE:	line	642 to	654
Tx:	11.0,	Rx:	9.0,	N-Sp:	1.0	DONE:	line	655 to	665
Tx:	11.0,	Rx:	8.0,	N-Sp:	2.0	DONE:	line	666 to	676
Tx:	11.0,	Rx:	7.0,	N-Sp:	3.0	DONE:	line	677 to	687

Input file closed, lines read: 687

Combining .Z-file data . . .

File "SAMRPIP.AVG" contains averaged data for 60 stations.

Log file "SAMRPIP.LOG" closed.

Data filename [quit]: **<RETURN>**

***** No more files *****

Thank You !!

Appendix A ... MODE VARIABLES

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

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

MODE PROMPTS, Manual entry

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

(Type MENU for assistance with MODEs.)

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

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

RPAVG MODE LIST
(v 7.2x)

PROCESSING MODE DEFAULT VALUES:

RHO-PHZ MODES mode names mode values	AutoRun AUTO NO	ListFile LFILE NO	AvgFile DFILE YES	PlotFile ZFILE YES	LowFreq FMIN NONE	
GridOrg MODES mode names mode values	GridOrgX GORX NONE	GridOrgY GORY NONE		HiGain HIGAIN NONE	HiSEM HISEM NONE	

COMPANY

Company name (40 chr max)

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

CLIENT

Client name (40 chr max)

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

PROJECT

Project name (40 chr max)

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

JOBNUMBER

Company job number (10 chr max)

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

JOBDATE

Survey date (10 chr max)

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

JOBLINE

Survey line number (10 chr max)

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

BRGLINE

Line forward bearing (10 chr max)

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

BRGBACK

Line back bearing (10 chr max)

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

STNLOW

Low station number, plot limit

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

STNHIGH

High station number, plot limit

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

STNDELT

Station number increment, plot scale

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

LBLFRST

Low station number, axis label

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

LBLDELT

Station number increment, axis label

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

FRQLO

Low frequency, plot limit

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

FRQHI

High frequency, plot limit

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

Default: FRQHI= NONE

TXLEN

CSAMT Transmitter length (10 chr max)

Values: TXLEN= CSAMT Transmitter Length

Default: TXLEN= (blank)

TXBRG

CSAMT Transmitter bearing (10 chr max)

Values: TXBRG= CSAMT Transmitter Bearing

Default: TXBRG= (blank)

TXDIS

CSAMT Transmitter distance from survey line
(10 chr max)

Values: TXDIS= Distance from Rx Line to Tx

Default: TXDIS= (blank)

TXCX

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

Values: TXCX=

X-coordinate of center of Tx dipole.(10 chr max)

Default: TXCX= (blank)

TXCY

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

Values: TXCY=

Y-coordinate of center of Tx dipole.(10 chr max)

Default: TXCY= (blank)

RX2TX

CSAMT Receiver to Transmitter direction

Values: RX2TX=

Direction from Rx Line to Tx(10 chr max)

Default: RX2TX= (blank)

RXBRG

Receive dipole bearing, usually same as survey line
orientation

Values: RXBRG=

Receiver Dipole Bearing (10 chr max)

Default: RXBRG= (blank)

COMWIRE

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

Values: COMWIRE= NONE,

1WHITE, 2WHITE, or BLACK.

Default: COMWIRE= NONE

PLTREV

Plot X-axis reverse selection

Values: PLTREV= No, or Yes.

Default: PLTREV= NO

UNITS

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

Values: UNITS= Feet or Meters.

Default: UNITS= Meters

AUTO

AUTO mode will automatically delete existing
output files (if any), not prompt for MODE changes
(if AUTO= YES is included in the .MDE-file), and
exit when done. Output files will be according to
default values or as specified by MODE entries in the
.MDE-file.

Values: AUTO= No, or Yes.

Default: AUTO= No

SFILE

Averaged data may be written to an .S-file for
processing by additional programs. This file will not
be useful for gradient data.

Values: SFILE= No, or Yes.

Default: SFILE= Yes

LFILE

A summary of raw and averaged data suitable for
listing is available with mode LFILE. An .RL-file
will be written.

Values: LFILE= No, or Yes.

Default: LFILE= No

ZFILE

Averaged data may be written to a .Z-file for plotting
of RPIP or gradient data.

RPIP data: the data file will only contain data for the
frequency specified by mode FMIN.

GRADIENT data: very small Rho values indicate
that the Rx dipole does not lie between the Tx

endpoints. This probably indicates that the coordinates in the data file are not consistent with the coordinates of the Tx endpoints included in the .RAW-file.

Values: ZFILE= No, or Yes.

Default: ZFILE= Yes

FMIN

Mode FMIN specifies a reference frequency. The default is the value of mode FRQLO. Values may be entered by binary frequency in Hertz.

RPIP data: resistivity values will be calculated at the reference frequency. A .Z-file will only contain data at this frequency.

GRADIENT data will be processed only at the reference frequency.

Values: FMIN= binary frequency (Hz)
(fraction or numeric)

Default: FMIN= mode FRQLO

GORX

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

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

Values: GORX= Alternate GridOrigin,
X-direction, meters.

Default: GORX= NONE

GORY

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

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

Values: GORY= Alternate GridOrigin,
Y-direction, meters.

Default: GORY= NONE

HIGAIN

Data blocks whose sum of the three gain stages is greater than mode HIGAIN will be skipped without requiring editing the data file.

Values: HIGAIN= NONE,
or maximum acceptable gain 2^n.

Default: HIGAIN= NONE

HISEM

Data blocks whose SEM is greater than mode HISEM will be skipped without requiring editing the data file.

Values: HISEM= NONE,
or maximum acceptable SEM.

Default: HISEM= NONE

Appendix B ... SAMPLE FILES

Sample .LOG-file

RPAVG 7.20, Processed: 02 Aug 93

GLOBAL MODE LIST:

COMPANY Zonge Engineering		JOBNUMB 9000		TXLEN
CLIENT ZONGE ENGINEERING		JOBDATE Aug 90		TXBRG
PROJECT Test Data		JOBLINE 2		TXDIS
BRGBACK N 90 E	RXBRG East	BRGLINE S 90 W	FRQLO 1/8 Hz	RX2TX
STNLO 7.0	STNDELTA 1.0	STNHI 21.0	FRQHI 8.0 Hz	TXCX
LBLFRST	LBLDELTA 1.0	PLTREV NO	UNITS FEET	TXCY
STNLO				

PROCESSING MODES USED:

RHO-PHZ MODES mode names mode values	AutoRun AUTO NO	ListFile LFILE YES	AvgFile DFILE YES	PlotFile ZFILE YES	LowFreq FMIN 1	
GridOrg MODES mode names mode values	GridOrgX GORX NONE	GridOrgY GORY NONE		HiGain HIGAIN NONE	HiSEM HISEM 50.000	

Reading "SAMRPIP.FLD"

```

Tx: 11.0, Rx: 15.0, N-Sp: 3.0  DONE: line 1 to 15
Tx: 11.0, Rx: 16.0, N-Sp: 4.0  DONE: line 16 to 29
Tx: 11.0, Rx: 17.0, N-Sp: 5.0  DONE: line 30 to 43
Tx: 11.0, Rx: 18.0, N-Sp: 6.0  DONE: line 44 to 57
Tx: 11.0, Rx: 19.0, N-Sp: 7.0  DONE: line 58 to 71
Tx: 11.0, Rx: 20.0, N-Sp: 8.0  DONE: line 72 to 85
Tx: 12.0, Rx: 15.0, N-Sp: 2.0  DONE: line 86 to 98
Tx: 12.0, Rx: 16.0, N-Sp: 3.0  DONE: line 99 to 111
Tx: 12.0, Rx: 17.0, N-Sp: 4.0  DONE: line 112 to 124
Tx: 12.0, Rx: 18.0, N-Sp: 5.0  DONE: line 125 to 137
Tx: 12.0, Rx: 19.0, N-Sp: 6.0  DONE: line 138 to 150
Tx: 12.0, Rx: 20.0, N-Sp: 7.0  DONE: line 151 to 163
. . .
Tx: 14.0, Rx: 12.0, N-Sp: 1.0  DONE: line 499 to 507
Tx: 14.0, Rx: 11.0, N-Sp: 2.0  DONE: line 508 to 516
Tx: 14.0, Rx: 10.0, N-Sp: 3.0  DONE: line 517 to 525
Tx: 14.0, Rx: 9.0, N-Sp: 4.0  DONE: line 526 to 534
Tx: 14.0, Rx: 8.0, N-Sp: 5.0  DONE: line 535 to 543
Tx: 14.0, Rx: 7.0, N-Sp: 6.0  DONE: line 544 to 552
Tx: 13.0, Rx: 11.0, N-Sp: 1.0  DONE: line 553 to 562
Tx: 13.0, Rx: 10.0, N-Sp: 2.0  DONE: line 563 to 572
Tx: 13.0, Rx: 9.0, N-Sp: 3.0  DONE: line 573 to 582
Tx: 13.0, Rx: 8.0, N-Sp: 4.0  DONE: line 583 to 592
Tx: 13.0, Rx: 7.0, N-Sp: 5.0  DONE: line 593 to 602
Tx: 12.0, Rx: 10.0, N-Sp: 1.0  DONE: line 603 to 615
Tx: 12.0, Rx: 9.0, N-Sp: 2.0  DONE: line 616 to 628
Tx: 12.0, Rx: 8.0, N-Sp: 3.0  DONE: line 629 to 641
Tx: 12.0, Rx: 7.0, N-Sp: 4.0  DONE: line 642 to 654
Tx: 11.0, Rx: 9.0, N-Sp: 1.0  DONE: line 655 to 665
Tx: 11.0, Rx: 8.0, N-Sp: 2.0  DONE: line 666 to 676
Tx: 11.0, Rx: 7.0, N-Sp: 3.0  DONE: line 677 to 687
Input file closed, lines read: 687

```

Combining .Z-file data . . .
File "SAMRPIP.AVG" contains averaged data for 60 stations.
Log file "SAMRPIP.LOG" closed.

*** end-of-file ***

GDP DATA PROCESSING MANUAL

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

LINE: 2 Test Data RPAVG 7.20
 Tx: 11.0 Rx: 15.0 Current: 1.54 amps
 N-Spacing: 3.0 A-Spacing: 600. feet

#	blk	a	STKS	AMPS	MAG	PHZ	RHO
Frequency 8 Hz							
1	506	1	1024	1.54	190.98u	236.8	3.36
2	507	1	1024	1.54	191.24u	249.1	3.36
3	508	1	1024	1.54	191.05u	199.8	3.36
4	509	1	1024	1.54	189.38u	234.5	3.33

#	blk	a	STKS	AMPS	MAG	PHZ	RHO
Frequency 1 Hz							
1	502	1	128	1.54	230.88u	40.4	4.06
2	503	1	128	1.54	228.56u	27.1	4.02
3	504	1	128	1.54	229.44u	16.8	4.04
4	505	1	128	1.54	229.41u	18.9	4.04

#	blk	a	STKS	AMPS	MAG	PHZ	RHO
Frequency 0.125 Hz							
1	498	1	32	1.55	234.51u	1.2	4.11
2	499	1	32	1.54	231.97u	19.0	4.07
3	500	1	32	1.54	233.51u	-10.2	4.10
4	501	1	32	1.54	231.84u	14.1	4.07
5	510	1	32	1.54	232.18u	8.0	4.09

AVERAGED VALUES =====

LINE: 2 Test Data RPAVG 7.20
 Tx: 11.0 Rx: 15.0 Current: 1.54 amps
 N-Spacing: 3.0 A-Spacing: 600. feet

Frequency	AMPS	MAG	PHZ	RHO
8	1.54	190.66u	230.1	
1	1.54	229.57u	25.8	4.04
0.125	1.54	232.80u	6.4	

Reference frequency: 1 Hz

LOW 3PT DC Phase=
 HI 3PT DC Phase=
 4PT DC Phase=
 RAW PFE=
 minimum SEM= 5.28 mr
 maximum SEM= 15.14 mr

1

*** sample for first data point only ***

Sample .RAW-file (partial: first setup only)

/* Transferred from a GDP

0497

```

RPIP0516 90-08-30 14:45:58 12.4v D-D
OPER 7718 TX ID 520 A-SP 182.9
JOB 9009 LINE 12.0 N SPREAD 1
1 LoPass Notch 60,3-5,9 S/N 4 Passed
2 LoPass Notch 60,3-5,9 S/N 134 Passed
3 LoPass Notch 60,3-5,9 S/N 135 Passed
4 LoPass Notch 60,3-5,9 S/N 137 Passed
5 LoPass Notch 60,3-5,9 S/N 202 Passed
6 LoPass Notch 60,3-5,9 S/N 129 Passed
7 LoPass Notch 60,3-5,9 S/N 136 Passed

```

0498

```

RPIP0516 90-08-30 15:08:24 12.3v D-D
Tx 11 Rx 15 N 60, 5
.125 Hz 32 Cyc Tx Curr 1.55
1 ON 3 234.51u 1.2 4.107 0460 9.89 -34.95 683
2 ON 4 115.99u 3.9 4.063 0360 17.07 -51.72 864
3 ON 5 75.354u 15.5 4.619 0360 57.17 18.18 1.29K
4 ON 6 74.879u 6.4 7.344 0360 69.94 35.23 853

```

0499

```

RPIP0516 90-08-30 15:13:07 12.3v D-D
Tx 11 Rx 15 N 60, 5
.125 Hz 32 Cyc Tx Curr 1.54
1 ON 3 231.97u 19.0 4.069 0460 15.14 -34.95 683
2 ON 4 114.00u 14.1 3.999 0360 14.96 -51.72 864
3 ON 5 73.317u 26.4 4.501 0360 64.25 18.18 1.29K
4 ON 6 72.435u 86.1 7.116 0360 61.05 35.23 853

```

0500

```

RPIP0516 90-08-30 15:19:10 12.3v D-D
Tx 11 Rx 15 N 60, 5
.125 Hz 32 Cyc Tx Curr 1.54
1 ON 3 233.51u -10.2 4.100 0460 8.07 -34.95 683
2 ON 4 115.78u -8.2 4.066 0360 11.53 -51.72 864
3 ON 5 75.910u -24.3 4.665 0360 26.09 18.18 1.29K
4 ON 6 74.281u -26.4 7.304 0360 47.12 35.23 853

```

0501

```

RPIP0516 90-08-30 15:23:53 12.3v D-D
Tx 11 Rx 15 N 60, 5
.125 Hz 32 Cyc Tx Curr 1.54
1 ON 3 231.84u 14.1 4.074 0460 11.47 -34.95 683
2 ON 4 114.94u 8.0 4.039 0360 20.73 -51.72 864
3 ON 5 73.424u 58.5 4.515 0360 56.26 18.18 1.29K
4 ON 6 73.228u 25.8 7.205 0360 75.53 35.23 853

```

0502

```

RPIP0516 90-08-30 15:27:36 12.3v D-D
Tx 11 Rx 15 N 60, 5
1 Hz 128 Cyc Tx Curr 1.54
1 ON 3 230.88u 40.4 4.064 0460 2.16 -33.40 683
2 ON 4 114.51u 56.7 4.031 0360 2.80 -49.05 864
3 ON 5 75.325u 106.5 4.640 0360 4.45 18.74 1.29K
4 ON 6 72.587u 103.6 7.154 0360 5.60 34.39 853

```

0503

```

RPIP0516 90-08-30 15:30:03 12.3v D-D
Tx 11 Rx 15 N 60, 5
1 Hz 128 Cyc Tx Curr 1.54
1 ON 3 228.56u 27.1 4.024 0460 4.79 -33.40 683
2 ON 4 111.19u 36.1 3.915 0360 9.20 -49.05 864
3 ON 5 71.548u 79.0 4.409 0360 11.91 18.74 1.29K
4 ON 6 67.941u 75.1 6.699 0360 14.14 34.39 853

```

continued next page ...

GDP DATA PROCESSING MANUAL

Sample .RAW-file (partial: page 2)

```

0504
RPIP0516 90-08-30 15:32:25 12.3v D-D
Tx      11 Rx      15 N 60, 5
  1 Hz      128 Cyc Tx Curr 1.54
1 ON    3      229.44u    16.8  4.041  0460  1.20  -33.40  683
2 ON    4      112.20u    18.7  3.953  0360  2.05  -49.05  864
3 ON    5       72.117u    47.2  4.446  0360  3.77   18.74  1.29K
4 ON    6       71.182u    65.8  7.021  0360  6.42   34.39  853

0505
RPIP0516 90-08-30 15:35:10 12.3v D-D
Tx      11 Rx      15 N 60, 5
  1 Hz      128 Cyc Tx Curr 1.54
1 ON    3      229.41u    18.9  4.043  0460  1.27  -33.40  683
2 ON    4      111.64u    27.6  3.935  0360  2.43  -49.05  864
3 ON    5       71.714u    25.2  4.423  0360  4.20   18.74  1.29K
4 ON    6       68.964u    55.4  6.806  0360  7.21   34.39  853

0506
RPIP0516 90-08-30 15:41:06 12.3v D-D
Tx      11 Rx      15 N 60, 5
  8 Hz     1024 Cyc Tx Curr 1.54
1 ON    3      190.98u    236.8  3.357  0460  1.59  -32.98  683
2 ON    4       78.987u    537.0  2.777  0560  6.18  -47.92  864
3 ON    5       43.378u   1134.7  2.669  0460 14.13   18.60  1.29K
4 ON    6       32.666u   1302.5  3.216  0560 13.18   32.98  853

0507
RPIP0516 90-08-30 15:43:40 12.3v D-D
Tx      11 Rx      15 N 60, 5
  8 Hz     1024 Cyc Tx Curr 1.54
1 ON    3      191.24u    249.1  3.362  0460  1.62  -32.98  683
2 ON    4       78.717u    559.1  2.767  0560  4.42  -47.92  864
3 ON    5       41.546u   1081.8  2.556  0460  9.94   18.60  1.29K
4 ON    6       33.690u   1139.2  3.316  0560 11.50   32.98  853

0508
RPIP0516 90-08-30 15:46:14 12.3v D-D
Tx      11 Rx      15 N 60, 5
  8 Hz     1024 Cyc Tx Curr 1.54
1 ON    3      191.05u    199.8  3.359  0460  1.37  -32.98  683
2 ON    4       78.313u    483.9  2.754  0560  3.91  -47.92  864
3 ON    5       43.329u    945.6  2.667  0460  9.90   18.60  1.29K
4 ON    6       37.191u    986.8  3.662  0560  9.69   32.98  853

0509
RPIP0516 90-08-30 15:49:03 12.3v D-D
Tx      11 Rx      15 N 60, 5
  8 Hz     1024 Cyc Tx Curr 1.54
1 ON    3      189.38u    234.5  3.331  0460  1.64  -32.98  683
2 ON    4       76.384u    592.9  2.687  0560  4.55  -47.92  864
3 ON    5       40.747u   1026.7  2.508  0460 13.22   18.60  1.29K
4 ON    6       25.845u   1446.4  2.546  0560 12.93   32.98  853

0510
RPIP0516 90-08-30 15:58:27 12.3v D-D
Tx      11 Rx      15 N 60, 5
.125 Hz   32 Cyc Tx Curr 1.54
1 ON    3      232.18u     8.0  4.091  0460  5.28  -32.13  683
2 ON    4      119.07u    10.1  4.196  0460 18.81  -47.64  864
3 ON    5       74.746u    19.1  4.610  0260 18.43   18.46  1.29K
4 ON    6       73.594u    24.4  7.262  0260 40.01   31.85  853

```

*** end-of-file ***

GDP DATA PROCESSING MANUAL

Sample .FLD-file (partial: first two data points only)
 (columns 1-124 are followed by remaining columns)

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

```

/* SHRED v3.20: "SAMRPIP.FLD"
H 1 0497 1 0 RPIP0516 90-08-30 14:45:58 12.4 D-D 7718 520 182.9 9009 12.0 N 1
D 1 0506 1 0 90-08-30 15:41:06 12.3 8 1024 1.54 11 15 ON 0 3 190.98e-6 236.8 3.357
D 1 0507 1 0 90-08-30 15:43:40 12.3 8 1024 1.54 11 15 ON 0 3 191.24e-6 249.1 3.362
D 1 0508 1 0 90-08-30 15:46:14 12.3 8 1024 1.54 11 15 ON 0 3 191.05e-6 199.8 3.359
D 1 0509 1 0 90-08-30 15:49:03 12.3 8 1024 1.54 11 15 ON 0 3 189.38e-6 234.5 3.331
D 1 0502 1 0 90-08-30 15:27:36 12.3 1 128 1.54 11 15 ON 0 3 230.88e-6 40.4 4.064
D 1 0503 1 0 90-08-30 15:30:03 12.3 1 128 1.54 11 15 ON 0 3 228.56e-6 27.1 4.024
D 1 0504 1 0 90-08-30 15:32:25 12.3 1 128 1.54 11 15 ON 0 3 229.44e-6 16.8 4.041
D 1 0505 1 0 90-08-30 15:35:10 12.3 1 128 1.54 11 15 ON 0 3 229.41e-6 18.9 4.043
D 1 0498 1 0 90-08-30 15:08:24 12.3 .125 32 1.55 11 15 ON 0 3 234.51e-6 1.2 4.107
D 1 0499 1 0 90-08-30 15:13:07 12.3 .125 32 1.54 11 15 ON 0 3 231.97e-6 19.0 4.069
D 1 0500 1 0 90-08-30 15:19:10 12.3 .125 32 1.54 11 15 ON 0 3 233.51e-6 -10.2 4.100
D 1 0501 1 0 90-08-30 15:23:53 12.3 .125 32 1.54 11 15 ON 0 3 231.84e-6 14.1 4.074
D 1 0510 1 0 90-08-30 15:58:27 12.3 .125 32 1.54 11 15 ON 0 3 232.18e-6 8.0 4.091
H 1 0497 2 1 RPIP0516 90-08-30 14:45:58 12.4 D-D 7718 520 182.9 9009 12.0 N 1
D 1 0506 2 1 90-08-30 15:41:06 12.3 8 1024 1.54 11 16 ON 0 4 78.987e-6 537.0 2.777
D 1 0507 2 1 90-08-30 15:43:40 12.3 8 1024 1.54 11 16 ON 0 4 78.717e-6 559.1 2.767
D 1 0508 2 1 90-08-30 15:46:14 12.3 8 1024 1.54 11 16 ON 0 4 78.313e-6 483.9 2.754
D 1 0509 2 1 90-08-30 15:49:03 12.3 8 1024 1.54 11 16 ON 0 4 76.384e-6 592.9 2.687
D 1 0502 2 1 90-08-30 15:27:36 12.3 1 128 1.54 11 16 ON 0 4 114.51e-6 56.7 4.031
D 1 0503 2 1 90-08-30 15:30:03 12.3 1 128 1.54 11 16 ON 0 4 111.19e-6 36.1 3.915
D 1 0504 2 1 90-08-30 15:32:25 12.3 1 128 1.54 11 16 ON 0 4 112.20e-6 18.7 3.953
D 1 0505 2 1 90-08-30 15:35:10 12.3 1 128 1.54 11 16 ON 0 4 111.64e-6 27.6 3.935
D 1 0498 2 1 90-08-30 15:08:24 12.3 .125 32 1.55 11 16 ON 0 4 115.99e-6 3.9 4.063
D 1 0499 2 1 90-08-30 15:13:07 12.3 .125 32 1.54 11 16 ON 0 4 114.00e-6 14.1 3.999
D 1 0500 2 1 90-08-30 15:19:10 12.3 .125 32 1.54 11 16 ON 0 4 115.78e-6 -8.2 4.066
D 1 0501 2 1 90-08-30 15:23:53 12.3 .125 32 1.54 11 16 ON 0 4 114.94e-6 8.0 4.039
D 1 0510 2 1 90-08-30 15:58:27 12.3 .125 32 1.54 11 16 ON 0 4 119.07e-6 10.1 4.196
    
```

1 1 1 1
 - - - - - 4 - - - - - 5 - - - - - 6 - - - - -

```

0460 1.59 -32.98 683 1
0460 1.62 -32.98 683 1
0460 1.37 -32.98 683 1
0460 1.64 -32.98 683 1
0460 2.16 -33.40 683 1
0460 4.79 -33.40 683 1
0460 1.20 -33.40 683 1
0460 1.27 -33.40 683 1
0460 9.89 -34.95 683 1
0460 15.14 -34.95 683 1
0460 8.07 -34.95 683 1
0460 11.47 -34.95 683 1
0460 5.28 -32.13 683 1

0560 6.18 -47.92 864 1
0560 4.42 -47.92 864 1
0560 3.91 -47.92 864 1
0560 4.55 -47.92 864 1
0360 2.80 -49.05 864 1
0360 9.20 -49.05 864 1
0360 2.05 -49.05 864 1
0360 2.43 -49.05 864 1
0360 17.07 -51.72 864 1
0360 14.96 -51.72 864 1
0360 11.53 -51.72 864 1
0360 20.73 -51.72 864 1
0460 18.81 -47.64 864 1
    
```

*** end-of-file ***

Sample .S-file

"SAMRPIP.S", from RPAVG 7.20
 Rx: 15. Tx: 11. NSP: 3.0
 0 0 0 3 3 4.0 182.9
 SEM 1.2000E-03 4.7900E-03
 0.125 1.0144E+00-6.5124E-03
 1.000 1.0000E+00-2.5806E-02
 8.000 8.0890E-01-1.8944E-01
 Rx: 16. Tx: 11. NSP: 4.0
 0 0 0 3 3 4.0 182.9
 SEM 2.0500E-03 9.2000E-03
 0.125 1.0324E+00-5.7608E-03
 1.000 1.0000E+00-3.4789E-02
 8.000 5.9526E-01-3.5943E-01
 Rx: 17. Tx: 11. NSP: 5.0
 0 0 0 3 3 4.5 182.9
 SEM 3.7700E-03 1.1910E-02
 0.125 1.0386E+00 2.7005E-03
 1.000 1.0000E+00-6.4564E-02
 8.000 2.9128E-01-5.0451E-01
 Rx: 18. Tx: 11. NSP: 6.0
 0 0 0 3 3 6.9 182.9
 SEM 5.6000E-03 1.4140E-02
 0.125 1.0567E+00 1.0567E-03
 1.000 1.0000E+00-7.5116E-02
 8.000 1.5942E-01-4.3395E-01
 Rx: 15. Tx: 12. NSP: 2.0
 0 0 0 3 3 3.6 182.9
 SEM 4.5000E-04 8.2000E-04
 0.125 1.0105E+00-3.9207E-03
 1.000 1.0000E+00-6.2251E-03
 8.000 9.0516E-01-9.1245E-02
 Rx: 16. Tx: 12. NSP: 3.0
 0 0 0 3 3 3.6 182.9
 SEM 1.0600E-03 1.3200E-03
 0.125 1.0172E+00-2.0141E-03
 1.000 1.0000E+00-1.2151E-02
 8.000 7.9081E-01-1.9227E-01
 Rx: 17. Tx: 12. NSP: 4.0
 0 0 0 3 3 4.0 182.9
 SEM 1.2430E-02 1.5410E-02
 0.125 1.0225E+00-7.8480E-03
 1.000 1.0000E+00-1.0500E-02
 8.000 5.6190E-01-4.7855E-01
 Rx: 18. Tx: 12. NSP: 5.0
 0 0 0 3 3 5.5 182.9
 SEM 9.1600E-03 1.5820E-02
 0.125 1.0390E+00 2.0887E-02
 1.000 1.0000E+00-4.4680E-02
 8.000 2.0800E-01-4.8662E-01
 Rx: 19. Tx: 12. NSP: 6.0
 0 0 0 3 3 7.8 182.9
 SEM 2.3250E-02 3.2300E-02
 0.125 1.0359E+00-9.3207E-02
 1.000 1.0000E+00-3.6566E-02
 8.000 2.2126E-01-5.0535E-01
 Rx: 15. Tx: 13. NSP: 1.0
 0 0 0 3 3 8.5 182.9
 SEM 1.0000E-05 1.0000E-05
 0.125 1.0032E+00-1.1036E-03
 1.000 1.0000E+00-2.5000E-03
 8.000 9.6809E-01-2.4433E-02
 Rx: 16. Tx: 13. NSP: 2.0
 0 0 0 3 3 8.3 182.9
 SEM 4.0000E-05 4.0000E-05
 0.125 1.0084E+00-2.1177E-03
 1.000 1.0000E+00-5.7667E-03
 8.000 9.0072E-01-7.2847E-02

continued next column ...

Rx: 17. Tx: 13. NSP: 3.0
 0 0 0 3 3 7.5 182.9
 SEM 1.1000E-04 1.3000E-04
 0.125 1.0206E+00-4.5589E-03
 1.000 1.0000E+00-1.4268E-02
 8.000 7.4166E-01-2.3241E-01
 Rx: 18. Tx: 13. NSP: 4.0
 0 0 0 3 3 9.7 182.9
 SEM 2.2000E-04 2.4000E-04
 0.125 1.0401E+00-4.8540E-03
 1.000 1.0000E+00-2.7407E-02
 8.000 4.2310E-01-4.4904E-01
 Rx: 19. Tx: 13. NSP: 5.0
 0 0 0 3 3 13.3 182.9
 SEM 4.1000E-04 5.2000E-04
 0.125 1.0566E+00-7.5370E-03
 1.000 1.0000E+00-3.9821E-02
 8.000 2.5561E-01-4.7858E-01
 Rx: 20. Tx: 13. NSP: 6.0
 0 0 0 3 3 13.5 182.9
 SEM 1.0000E-03 2.0000E-03
 0.125 1.0699E+00-7.3466E-03
 1.000 1.0000E+00-5.3083E-02
 8.000 2.1029E-01-4.7800E-01
 Rx: 16. Tx: 14. NSP: 1.0
 0 0 0 3 3 6.8 182.9
 SEM 1.0000E-05 2.0000E-05
 0.125 1.0029E+00-1.6297E-03
 1.000 1.0000E+00-2.8667E-03
 8.000 9.6152E-01-2.4652E-02
 Rx: 17. Tx: 14. NSP: 2.0
 0 0 0 3 3 5.9 182.9
 SEM 7.0000E-05 1.0000E-04
 0.125 1.0106E+00-2.1223E-03
 1.000 1.0000E+00-7.3001E-03
 8.000 8.6638E-01-8.6111E-02
 Rx: 18. Tx: 14. NSP: 3.0
 0 0 0 3 3 6.5 182.9
 SEM 2.1000E-04 5.4000E-04
 0.125 1.0278E+00-1.7986E-03
 1.000 1.0000E+00-1.6902E-02
 8.000 6.4394E-01-2.7441E-01
 Rx: 19. Tx: 14. NSP: 4.0
 0 0 0 3 3 9.0 182.9
 SEM 2.3100E-03 2.3800E-03
 0.125 1.0417E+00-1.8778E-02
 1.000 1.0000E+00-2.2104E-02
 8.000 4.5074E-01-4.0416E-01
 Rx: 20. Tx: 14. NSP: 5.0
 0 0 0 3 3 9.2 182.9
 SEM 2.8100E-03 6.1100E-03
 0.125 1.0600E+00-2.7294E-03
 1.000 1.0000E+00-2.2104E-02
 8.000 3.2322E-01-4.4856E-01
 Rx: 17. Tx: 15. NSP: 1.0
 0 0 0 3 3 3.7 182.9
 SEM 1.0000E-05 1.0000E-05
 0.125 1.0067E+00-3.0955E-03
 1.000 1.0000E+00-3.9000E-03
 8.000 9.6004E-01-2.6119E-02
 Rx: 18. Tx: 15. NSP: 2.0
 0 0 0 3 3 2.5 182.9
 SEM 7.0000E-05 8.0000E-05
 0.125 1.0195E+00-3.2879E-03
 1.000 1.0000E+00-1.2251E-02
 8.000 7.9159E-01-1.7588E-01

continued next column ...

Rx: 19. Tx: 15. NSP: 3.0
 0 0 0 3 3 3.5 182.9
 SEM 4.1000E-04 4.7000E-04
 0.125 1.0309E+00-1.3970E-02
 1.000 1.0000E+00-2.0103E-02
 8.000 6.4171E-01-3.0279E-01
 Rx: 20. Tx: 15. NSP: 4.0
 0 0 0 3 3 3.7 182.9
 SEM 7.4000E-04 1.1700E-03
 0.125 1.0369E+00-2.2453E-02
 1.000 1.0000E+00-2.4305E-02
 8.000 5.0996E-01-3.8918E-01
 Rx: 18. Tx: 16. NSP: 1.0
 0 0 0 3 3 2.3 182.9
 SEM 2.0000E-05 3.0000E-05
 0.125 1.0072E+00-1.6450E-03
 1.000 1.0000E+00-4.0000E-03
 8.000 9.0402E-01-7.7164E-02
 Rx: 19. Tx: 16. NSP: 2.0
 0 0 0 3 3 3.1 182.9
 SEM 1.5000E-04 2.3000E-04
 0.125 1.0184E+00-1.9690E-03
 1.000 1.0000E+00-1.0700E-02
 8.000 7.4219E-01-2.2991E-01
 Rx: 20. Tx: 16. NSP: 3.0
 0 0 0 3 3 3.4 182.9
 SEM 5.1000E-04 5.2000E-04
 0.125 1.0290E+00-4.0476E-03
 1.000 1.0000E+00-1.9903E-02
 8.000 5.8053E-01-3.5159E-01
 Rx: 12. Tx: 16. NSP: 3.0
 0 0 0 3 3 3.7 182.9
 SEM 1.5200E-03 2.4900E-03
 0.125 1.1184E+00 5.7783E-04
 1.000 1.0000E+00-1.1125E-02
 8.000 7.6899E-01-2.2724E-01
 Rx: 11. Tx: 16. NSP: 4.0
 0 0 0 3 3 4.0 182.9
 SEM 1.4900E-03 6.1800E-03
 0.125 1.1319E+00-1.2093E-02
 1.000 1.0000E+00-2.2779E-02
 8.000 6.1770E-01-3.8392E-01
 Rx: 10. Tx: 16. NSP: 5.0
 0 0 0 3 3 4.8 182.9
 SEM 3.2600E-03 9.2400E-03
 0.125 1.1473E+00-3.9272E-02
 1.000 1.0000E+00-2.5581E-02
 8.000 3.9634E-01-4.9709E-01
 Rx: 9. Tx: 16. NSP: 6.0
 0 0 0 3 3 6.5 182.9
 SEM 6.6700E-03 1.1960E-02
 0.125 1.1693E+00-3.8855E-02
 1.000 1.0000E+00-4.8237E-02
 8.000 2.7487E-01-5.0825E-01
 Rx: 12. Tx: 15. NSP: 2.0
 0 0 0 3 3 3.7 182.9
 SEM 6.8000E-04 1.2400E-03
 0.125 1.0050E+00-7.6130E-03
 1.000 1.0000E+00-4.3750E-03
 8.000 8.9835E-01-8.9501E-02
 Rx: 11. Tx: 15. NSP: 3.0
 0 0 0 3 3 4.0 182.9
 SEM 5.6000E-04 1.1700E-03
 0.125 1.0135E+00-4.3076E-03
 1.000 1.0000E+00-1.1275E-02
 8.000 8.1120E-01-1.7194E-01

continued next page ...

Sample .S-file (page 2)

```

Rx: 10. Tx: 15. NSP: 4.0
0 0 0 3 3 4.8 182.9
SEM 1.8800E-03 2.9700E-03
0.125 1.0212E+00-6.5101E-03
1.000 1.0000E+00-1.9653E-02
8.000 6.5878E-01-3.2727E-01
Rx: 9. Tx: 15. NSP: 5.0
0 0 0 3 3 6.1 182.9
SEM 2.2100E-03 4.6700E-03
0.125 1.0427E+00-4.4053E-03
1.000 1.0000E+00-4.6208E-02
8.000 4.6573E-01-4.3576E-01
Rx: 8. Tx: 15. NSP: 6.0
0 0 0 3 3 5.5 182.9
SEM 2.9300E-03 4.3100E-03
0.125 1.0556E+00-5.6476E-03
1.000 1.0000E+00-4.1950E-02
8.000 3.4481E-01-4.7987E-01
Rx: 12. Tx: 14. NSP: 1.0
0 0 0 3 3 15.8 182.9
SEM 1.0000E-05 3.0000E-05
0.125 1.0061E+00-2.2805E-03
1.000 1.0000E+00-3.7334E-03
8.000 9.7726E-01-1.8864E-02
Rx: 11. Tx: 14. NSP: 2.0
0 0 0 3 3 16.3 182.9
SEM 3.0000E-05 6.0000E-05
0.125 1.0096E+00-3.0961E-03
1.000 1.0000E+00-6.2001E-03
8.000 9.4295E-01-5.2482E-02
Rx: 10. Tx: 14. NSP: 3.0
0 0 0 3 3 14.7 182.9
SEM 1.0000E-04 1.2000E-04
0.125 1.0185E+00-4.5154E-03
1.000 1.0000E+00-1.2467E-02
8.000 8.5144E-01-1.3671E-01
Rx: 9. Tx: 14. NSP: 4.0
0 0 0 3 3 18.1 182.9
SEM 1.6000E-04 2.1000E-04
0.125 1.0274E+00-4.9660E-03
1.000 1.0000E+00-1.8936E-02
8.000 7.5361E-01-2.1695E-01
Rx: 8. Tx: 14. NSP: 5.0
0 0 0 3 3 15.8 182.9
SEM 3.4000E-04 3.5000E-04
0.125 1.0399E+00-7.5914E-03
1.000 1.0000E+00-2.7807E-02
8.000 6.3953E-01-2.9598E-01
Rx: 7. Tx: 14. NSP: 6.0
0 0 0 3 3 13.6 182.9
SEM 4.3000E-04 5.0000E-04
0.125 1.0474E+00-7.3322E-03
1.000 1.0000E+00-3.4313E-02
8.000 5.2505E-01-3.7503E-01
Rx: 11. Tx: 13. NSP: 1.0
0 0 0 3 3 37.6 182.9
SEM 1.0000E-05 1.0000E-05
0.125 1.0037E+00-2.0408E-03
1.000 1.0000E+00-3.0667E-03
8.000 9.8686E-01-9.9348E-03
Rx: 10. Tx: 13. NSP: 2.0
0 0 0 3 3 27.3 182.9
SEM 2.0000E-05 3.0000E-05
0.125 1.0078E+00-3.0233E-03
1.000 1.0000E+00-5.8334E-03
8.000 9.5078E-01-4.4148E-02

Rx: 9. Tx: 13. NSP: 3.0
0 0 0 3 3 27.8 182.9
SEM 6.0000E-05 7.0000E-05
0.125 1.0119E+00-2.6985E-03
1.000 1.0000E+00-8.7002E-03
8.000 8.8457E-01-1.0418E-01
Rx: 8. Tx: 13. NSP: 4.0
0 0 0 3 3 22.0 182.9
SEM 1.6000E-04 2.0000E-04
0.125 1.0206E+00-4.5246E-03
1.000 1.0000E+00-1.5101E-02
8.000 7.8726E-01-1.8974E-01
Rx: 7. Tx: 13. NSP: 5.0
0 0 0 3 3 18.5 182.9
SEM 2.7000E-04 2.8000E-04
0.125 1.0339E+00-6.8235E-03
1.000 1.0000E+00-2.1803E-02
8.000 6.6485E-01-2.7737E-01
Rx: 10. Tx: 12. NSP: 1.0
0 0 0 3 3 17.7 182.9
SEM 1.5000E-04 2.9000E-04
0.125 1.0100E+00-2.4997E-03
1.000 1.0000E+00-4.5750E-03
8.000 9.7627E-01-1.2692E-02
Rx: 9. Tx: 12. NSP: 2.0
0 0 0 3 3 17.9 182.9
SEM 3.5000E-04 3.9000E-04
0.125 1.0083E+00-2.1174E-03
1.000 1.0000E+00-3.0750E-03
8.000 9.5394E-01-3.5957E-02
Rx: 8. Tx: 12. NSP: 3.0
0 0 0 3 3 12.7 182.9
SEM 1.0400E-03 1.1800E-03
0.125 1.0155E+00-5.1031E-03
1.000 1.0000E+00-8.4002E-03
8.000 8.9318E-01-9.7970E-02
Rx: 7. Tx: 12. NSP: 4.0
0 0 0 3 3 9.8 182.9
SEM 1.8300E-03 8.3400E-03
0.125 1.0241E+00-7.5273E-03
1.000 1.0000E+00-9.6003E-03
8.000 8.0640E-01-1.7344E-01
Rx: 9. Tx: 11. NSP: 1.0
0 0 0 3 3 21.7 182.9
SEM 1.1000E-04 2.1000E-04
0.125 1.0060E+00-2.1126E-03
1.000 1.0000E+00-4.2250E-03
8.000 9.8430E-01-1.3043E-02
Rx: 8. Tx: 11. NSP: 2.0
0 0 0 3 3 15.6 182.9
SEM 4.3000E-04 7.4000E-04
0.125 1.0067E+00-2.9698E-03
1.000 1.0000E+00-6.3251E-03
8.000 9.5768E-01-3.8424E-02
Rx: 7. Tx: 11. NSP: 3.0
0 0 0 3 3 11.2 182.9
SEM 1.5700E-03 3.5600E-03
0.125 1.0107E+00-1.2028E-02
1.000 1.0000E+00-1.7577E-02
8.000 8.9892E-01-1.0019E-01

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GDP DATA PROCESSING MANUAL

Sample .AVG-file

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\ RPAVG 7.20: "SAMRPIP.FLD", Dated 90-08-30 , Processed 02 Aug 93
$ ASPACE= 600.ft
skip Tx Rx PltPt NSp Freq Cmp Amps Resistivity Phase Real Imag %Rho sPhz
\=|=====|=====|=====|=====|=====|=====|=====|=====|=====|=====|=====|=====|=====|=====|
2 11.00 15.00 13.50 3.0 0.000 Ex 1.54 4.0378e+0 * 1.0000e+0 0.0000e+0 0.4 *
2 11.00 15.00 13.50 3.0 1.250 Ex 1.54 4.0880e+0 -6.4 1.0144e+0 -6.5124e-3 0.5 11.4
2 11.00 15.00 13.50 3.0 1.000 Ex 1.54 4.0365e+0 -25.8 1.0000e+0 -2.5806e-2 0.4 10.7
2 11.00 15.00 13.50 3.0 8.000 Ex 1.54 3.3523e+0 -230.1 8.0890e-1 -1.8944e-1 0.5 21.2
2 11.00 16.00 14.00 4.0 0.000 Ex 1.54 3.9544e+0 * 1.0000e+0 0.0000e+0 1.8 *
2 11.00 16.00 14.00 4.0 1.250 Ex 1.54 4.0723e+0 -5.6 1.0324e+0 -5.7608e-3 1.6 8.5
2 11.00 16.00 14.00 4.0 1.000 Ex 1.54 3.9520e+0 -34.8 1.0000e+0 -3.4789e-2 1.3 16.3
2 11.00 16.00 14.00 4.0 8.000 Ex 1.54 2.7464e+0 -543.2 5.9526e-1 -3.5943e-1 1.5 45.7
2 11.00 17.00 14.50 5.0 0.000 Ex 1.54 4.4817e+0 * 1.0000e+0 0.0000e+0 0.8 *
2 11.00 17.00 14.50 5.0 1.250 Ex 1.54 4.6356e+0 2.6 1.0386e+0 2.7005e-3 1.1 30.7
2 11.00 17.00 14.50 5.0 1.000 Ex 1.54 4.4724e+0 -64.5 1.0000e+0 -6.4564e-2 2.5 35.7
2 11.00 17.00 14.50 5.0 8.000 Ex 1.54 2.6000e+0 -1047.2 2.9128e-1 -5.0451e-1 3.1 80.8
2 11.00 18.00 15.00 6.0 0.000 Ex 1.54 6.9284e+0 * 1.0000e+0 0.0000e+0 0.4 *
2 11.00 18.00 15.00 6.0 1.250 Ex 1.54 7.2801e+0 1.0 1.0567e+0 1.0567e-3 0.7 35.9
2 11.00 18.00 15.00 6.0 1.000 Ex 1.54 6.9090e+0 -75.0 1.0000e+0 -7.5116e-2 3.0 20.7
2 11.00 18.00 15.00 6.0 8.000 Ex 1.54 3.1851e+0 -1218.7 1.5942e-1 -4.3395e-1 14.7 199.1
2 11.00 19.00 15.50 7.0 0.000 Ex 1.54 9.0705e+0 * 1.0000e+0 0.0000e+0 * *
2 11.00 19.00 15.50 7.0 1.250 Ex 1.54 9.5944e+0 -51.6 1.0583e+0 -5.4655e-2 * *
2 11.00 19.00 15.50 7.0 1.000 Ex 1.54 9.0623e+0 -42.7 1.0000e+0 -4.2676e-2 2.2 47.2
2 11.00 19.00 15.50 7.0 8.000 Ex 1.54 3.3161e+0 -1455.0 4.2317e-2 -3.6381e-1 17.3 93.4
2 11.00 20.00 16.00 8.0 0.000 Ex 1.54 9.5377e+0 * 1.0000e+0 0.0000e+0 * *
2 11.00 20.00 16.00 8.0 1.000 Ex 1.54 9.3504e+0 -198.5 1.0000e+0 -2.0111e-1 4.6 127.0
2 11.00 20.00 16.00 8.0 8.000 Ex 1.54 4.3570e+0 -1067.9 2.2908e-1 -4.1645e-1 12.8 203.6
2 12.00 15.00 14.00 2.0 0.000 Ex 1.54 3.6257e+0 * 1.0000e+0 0.0000e+0 0.4 *
2 12.00 15.00 14.00 2.0 1.250 Ex 1.54 3.6636e+0 -3.9 1.0105e+0 -3.9207e-3 0.4 11.7
2 12.00 15.00 14.00 2.0 1.000 Ex 1.54 3.6257e+0 -6.2 1.0000e+0 -6.2251e-3 0.1 1.6
2 12.00 15.00 14.00 2.0 8.000 Ex 1.54 3.2984e+0 -100.5 9.0516e-1 -9.1245e-2 0.3 2.0
2 12.00 16.00 14.50 3.0 0.000 Ex 1.54 3.6492e+0 * 1.0000e+0 0.0000e+0 1.2 *
2 12.00 16.00 14.50 3.0 1.250 Ex 1.54 3.7114e+0 -2.0 1.0172e+0 -2.0141e-3 1.2 19.8
2 12.00 16.00 14.50 3.0 1.000 Ex 1.54 3.6490e+0 -12.2 1.0000e+0 -1.2151e-2 0.4 2.5
2 12.00 16.00 14.50 3.0 8.000 Ex 1.54 2.9695e+0 -238.5 7.9081e-1 -1.9227e-1 1.4 14.5
2 12.00 17.00 15.00 4.0 0.000 Ex 1.54 4.0112e+0 * 1.0000e+0 0.0000e+0 2.5 *
2 12.00 17.00 15.00 4.0 1.250 Ex 1.54 4.1012e+0 -7.7 1.0225e+0 -7.8480e-3 2.4 53.8
2 12.00 17.00 15.00 4.0 1.000 Ex 1.54 4.0110e+0 -10.5 1.0000e+0 -1.0500e-2 1.1 37.8
2 12.00 17.00 15.00 4.0 8.000 Ex 1.54 2.9602e+0 -705.5 5.6190e-1 -4.7855e-1 3.2 32.1
2 12.00 18.00 15.50 5.0 0.000 Ex 1.54 5.5427e+0 * 1.0000e+0 0.0000e+0 0.3 *
2 12.00 18.00 15.50 5.0 1.250 Ex 1.54 5.7486e+0 20.1 1.0390e+0 2.0887e-2 0.3 19.4
2 12.00 18.00 15.50 5.0 1.000 Ex 1.54 5.5372e+0 -44.7 1.0000e+0 -4.4680e-2 1.9 41.8
2 12.00 18.00 15.50 5.0 8.000 Ex 1.54 2.9274e+0 -1166.9 2.0800e-1 -4.8662e-1 9.2 197.6
2 12.00 19.00 16.00 6.0 0.000 Ex 1.54 7.7891e+0 * 1.0000e+0 0.0000e+0 3.3 *
2 12.00 19.00 16.00 6.0 1.250 Ex 1.54 8.0907e+0 -89.7 1.0359e+0 -9.3207e-2 3.3 311.7
2 12.00 19.00 16.00 6.0 1.000 Ex 1.54 7.7839e+0 -36.5 1.0000e+0 -3.6566e-2 1.8 58.3
2 12.00 19.00 16.00 6.0 8.000 Ex 1.54 4.2912e+0 -1158.1 2.2126e-1 -5.0535e-1 12.4 192.2
2 12.00 20.00 16.50 7.0 0.000 Ex 1.54 7.8506e+0 * 1.0000e+0 0.0000e+0 4.5 *
2 12.00 20.00 16.50 7.0 1.000 Ex 1.54 7.8336e+0 -66.0 1.0000e+0 -6.6046e-2 4.5 268.2
2 12.00 20.00 16.50 7.0 8.000 Ex 1.54 5.2933e+0 -774.8 4.8391e-1 -4.7373e-1 16.3 251.3
2 13.00 15.00 14.50 1.0 0.000 Ex 7.87 8.5088e+0 * 1.0000e+0 0.0000e+0 0.0 *
2 13.00 15.00 14.50 1.0 1.250 Ex 7.86 8.5415e+0 -1.1 1.0032e+0 -1.1036e-3 0.0 0.1
2 13.00 15.00 14.50 1.0 1.000 Ex 7.87 8.5067e+0 -2.5 1.0000e+0 -2.5000e-3 0.0 0.1
2 13.00 15.00 14.50 1.0 8.000 Ex 7.86 8.2449e+0 -25.2 9.6809e-1 -2.4433e-2 0.0 0.3
2 13.00 16.00 15.00 2.0 0.000 Ex 7.87 8.3391e+0 * 1.0000e+0 0.0000e+0 0.0 *
2 13.00 16.00 15.00 2.0 1.250 Ex 7.86 8.4162e+0 -2.1 1.0084e+0 -2.1177e-3 0.0 0.2
2 13.00 16.00 15.00 2.0 1.000 Ex 7.87 8.3390e+0 -5.8 1.0000e+0 -5.7667e-3 0.0 0.2
2 13.00 16.00 15.00 2.0 8.000 Ex 7.86 7.5419e+0 -80.7 9.0072e-1 -7.2847e-2 0.0 1.1
2 13.00 17.00 15.50 3.0 0.000 Ex 7.87 7.4597e+0 * 1.0000e+0 0.0000e+0 0.0 *
2 13.00 17.00 15.50 3.0 1.250 Ex 7.86 7.6187e+0 -4.5 1.0206e+0 -4.5589e-3 0.0 3.3
2 13.00 17.00 15.50 3.0 1.000 Ex 7.87 7.4590e+0 -14.3 1.0000e+0 -1.4268e-2 0.0 0.4
2 13.00 17.00 15.50 3.0 8.000 Ex 7.86 5.8016e+0 -303.7 7.4166e-1 -2.3241e-1 0.1 1.3
2 13.00 18.00 16.00 4.0 0.000 Ex 7.87 9.7007e+0 * 1.0000e+0 0.0000e+0 0.0 *
2 13.00 18.00 16.00 4.0 1.250 Ex 7.86 1.0091e+1 -4.7 1.0401e+0 -4.8540e-3 0.0 1.4
2 13.00 18.00 16.00 4.0 1.000 Ex 7.87 9.6971e+0 -27.4 1.0000e+0 -2.7407e-2 0.0 1.4
2 13.00 18.00 16.00 4.0 8.000 Ex 7.86 5.9856e+0 -815.1 4.2310e-1 -4.4904e-1 0.4 4.4
2 13.00 19.00 16.50 5.0 0.000 Ex 7.87 1.3306e+1 * 1.0000e+0 0.0000e+0 0.2 *
2 13.00 19.00 16.50 5.0 1.250 Ex 7.86 1.4049e+1 -7.1 1.0566e+0 -7.5370e-3 0.2 15.7
2 13.00 19.00 16.50 5.0 1.000 Ex 7.87 1.3296e+1 -39.8 1.0000e+0 -3.9821e-2 0.0 2.4
2 13.00 19.00 16.50 5.0 8.000 Ex 7.86 7.2141e+0 -1080.2 2.5561e-1 -4.7858e-1 0.8 5.8
2 13.00 20.00 17.00 6.0 0.000 Ex 7.87 1.3452e+1 * 1.0000e+0 0.0000e+0 0.9 *
2 13.00 20.00 17.00 6.0 1.250 Ex 7.86 1.4364e+1 -6.9 1.0699e+0 -7.3466e-3 0.9 45.9
2 13.00 20.00 17.00 6.0 1.000 Ex 7.87 1.3433e+1 -53.0 1.0000e+0 -5.3083e-2 0.1 6.7
2 13.00 20.00 17.00 6.0 8.000 Ex 7.86 7.0110e+0 -1156.3 2.1029e-1 -4.7800e-1 1.2 18.8
2 14.00 16.00 15.50 1.0 0.000 Ex 8.35 6.8398e+0 * 1.0000e+0 0.0000e+0 0.1 *
2 14.00 16.00 15.50 1.0 1.250 Ex 8.34 6.8676e+0 -1.6 1.0029e+0 -1.6297e-3 0.1 0.1
2 14.00 16.00 15.50 1.0 1.000 Ex 8.35 6.8398e+0 -2.9 1.0000e+0 -2.8667e-3 0.0 0.2
2 14.00 16.00 15.50 1.0 8.000 Ex 8.35 6.5787e+0 -25.6 9.6152e-1 -2.4652e-2 0.0 0.1
2 14.00 17.00 16.00 2.0 0.000 Ex 8.35 5.8517e+0 * 1.0000e+0 0.0000e+0 0.0 *
2 14.00 17.00 16.00 2.0 1.250 Ex 8.34 5.9206e+0 -2.1 1.0106e+0 -2.1223e-3 0.0 0.4
2 14.00 17.00 16.00 2.0 1.000 Ex 8.35 5.8515e+0 -7.3 1.0000e+0 -7.3001e-3 0.0 0.4
2 14.00 17.00 16.00 2.0 8.000 Ex 8.35 5.0945e+0 -99.1 8.6638e-1 -8.6111e-2 0.0 0.4

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GDP DATA PROCESSING MANUAL

Sample .AVG-file (page 2)

2	14.00	18.00	16.50	3.0	0.000	Ex	8.35	6.5334e+0	*	1.0000e+0	0.0000e+0	0.1	*
2	14.00	18.00	16.50	3.0	.1250	Ex	8.34	6.7210e+0	-1.8	1.0278e+0	-1.7986e-3	0.1	1.0
2	14.00	18.00	16.50	3.0	1.000	Ex	8.35	6.5325e+0	-16.9	1.0000e+0	-1.6902e-2	0.1	0.8
2	14.00	18.00	16.50	3.0	8.000	Ex	8.35	4.5719e+0	-402.8	6.4394e-1	-2.7441e-1	0.1	2.7
2	14.00	19.00	17.00	4.0	0.000	Ex	8.35	9.0258e+0	*	1.0000e+0	0.0000e+0	0.3	*
2	14.00	19.00	17.00	4.0	.1250	Ex	8.34	9.4100e+0	-18.0	1.0417e+0	-1.8778e-2	0.3	7.1
2	14.00	19.00	17.00	4.0	1.000	Ex	8.35	9.0236e+0	-22.1	1.0000e+0	-2.2104e-2	0.2	1.9
2	14.00	19.00	17.00	4.0	8.000	Ex	8.35	5.4615e+0	-731.0	4.5074e-1	-4.0416e-1	0.2	7.3
2	14.00	20.00	17.50	5.0	0.000	Ex	8.35	9.2306e+0	*	1.0000e+0	0.0000e+0	0.2	*
2	14.00	20.00	17.50	5.0	.1250	Ex	8.34	9.7911e+0	-2.6	1.0600e+0	-2.7294e-3	0.2	13.4
2	14.00	20.00	17.50	5.0	1.000	Ex	8.35	9.2284e+0	-22.1	1.0000e+0	-2.2104e-2	0.3	17.0
2	14.00	20.00	17.50	5.0	8.000	Ex	8.35	5.1009e+0	-946.4	3.2322e-1	-4.4856e-1	0.2	12.1
2	15.00	17.00	16.50	1.0	0.000	Ex	14.88	3.7301e+0	*	1.0000e+0	0.0000e+0	0.0	*
2	15.00	17.00	16.50	1.0	.1250	Ex	14.9	3.7511e+0	-3.1	1.0067e+0	-3.0955e-3	0.1	0.0
2	15.00	17.00	16.50	1.0	1.000	Ex	14.88	3.7300e+0	-3.9	1.0000e+0	-3.9000e-3	0.0	0.0
2	15.00	17.00	16.50	1.0	8.000	Ex	14.88	3.5831e+0	-27.2	9.6004e-1	-2.6119e-2	0.0	0.1
2	15.00	18.00	17.00	2.0	0.000	Ex	14.88	2.5421e+0	*	1.0000e+0	0.0000e+0	0.0	*
2	15.00	18.00	17.00	2.0	.1250	Ex	14.9	2.5886e+0	-3.2	1.0195e+0	-3.2879e-3	0.1	1.6
2	15.00	18.00	17.00	2.0	1.000	Ex	14.88	2.5419e+0	-12.3	1.0000e+0	-1.2251e-2	0.0	0.2
2	15.00	18.00	17.00	2.0	8.000	Ex	14.88	2.0615e+0	-218.6	7.9159e-1	-1.7588e-1	0.0	2.2
2	15.00	19.00	17.50	3.0	0.000	Ex	14.88	3.4740e+0	*	1.0000e+0	0.0000e+0	0.2	*
2	15.00	19.00	17.50	3.0	.1250	Ex	14.9	3.5768e+0	-13.6	1.0309e+0	-1.3970e-2	0.1	8.1
2	15.00	19.00	17.50	3.0	1.000	Ex	14.88	3.4733e+0	-20.1	1.0000e+0	-2.0103e-2	0.0	0.7
2	15.00	19.00	17.50	3.0	8.000	Ex	14.88	2.4646e+0	-440.9	6.4171e-1	-3.0279e-1	0.0	7.5
2	15.00	20.00	18.00	4.0	0.000	Ex	14.88	3.6969e+0	*	1.0000e+0	0.0000e+0	0.4	*
2	15.00	20.00	18.00	4.0	.1250	Ex	14.9	3.8283e+0	-21.6	1.0369e+0	-2.2453e-2	0.3	13.6
2	15.00	20.00	18.00	4.0	1.000	Ex	14.88	3.6958e+0	-24.3	1.0000e+0	-2.4305e-2	0.0	0.6
2	15.00	20.00	18.00	4.0	8.000	Ex	14.88	2.3707e+0	-651.9	5.0996e-1	-3.8918e-1	0.4	17.5
2	16.00	18.00	17.50	1.0	0.000	Ex	14.82	2.3334e+0	*	1.0000e+0	0.0000e+0	0.0	*
2	16.00	18.00	17.50	1.0	.1250	Ex	14.8	2.3520e+0	-1.6	1.0072e+0	-1.6450e-3	0.0	0.1
2	16.00	18.00	17.50	1.0	1.000	Ex	14.82	2.3334e+0	-4.0	1.0000e+0	-4.0000e-3	0.0	0.1
2	16.00	18.00	17.50	1.0	8.000	Ex	14.82	2.1171e+0	-85.1	9.0402e-1	-7.7164e-2	0.0	0.1
2	16.00	19.00	18.00	2.0	0.000	Ex	14.82	3.0983e+0	*	1.0000e+0	0.0000e+0	0.1	*
2	16.00	19.00	18.00	2.0	.1250	Ex	14.8	3.1575e+0	-1.9	1.0184e+0	-1.9690e-3	0.1	1.4
2	16.00	19.00	18.00	2.0	1.000	Ex	14.82	3.0981e+0	-10.7	1.0000e+0	-1.0700e-2	0.0	0.6
2	16.00	19.00	18.00	2.0	8.000	Ex	14.82	2.4070e+0	-300.4	7.4219e-1	-2.2991e-1	0.0	0.1
2	16.00	20.00	18.50	3.0	0.000	Ex	14.82	3.4339e+0	*	1.0000e+0	0.0000e+0	0.1	*
2	16.00	20.00	18.50	3.0	.1250	Ex	14.8	3.5350e+0	-3.9	1.0290e+0	-4.0476e-3	0.1	0.7
2	16.00	20.00	18.50	3.0	1.000	Ex	14.82	3.4332e+0	-19.9	1.0000e+0	-1.9903e-2	0.0	1.3
2	16.00	20.00	18.50	3.0	8.000	Ex	14.82	2.3297e+0	-544.5	5.8053e-1	-3.5159e-1	0.1	0.6
2	16.00	12.00	14.50	3.0	0.000	Ex	14.85	3.7092e+0	*	1.0000e+0	0.0000e+0	0.2	*
2	16.00	12.00	14.50	3.0	.1250	Ex	16.29	3.7815e+0	0.5	1.1184e+0	5.7783e-4	9.8	37.5
2	16.00	12.00	14.50	3.0	1.000	Ex	14.85	3.7089e+0	-11.1	1.0000e+0	-1.1125e-2	0.1	2.2
2	16.00	12.00	14.50	3.0	8.000	Ex	14.86	2.9719e+0	-287.3	7.6899e-1	-2.2724e-1	0.0	2.1
2	16.00	11.00	14.00	4.0	0.000	Ex	14.85	3.9649e+0	*	1.0000e+0	0.0000e+0	0.1	*
2	16.00	11.00	14.00	4.0	.1250	Ex	16.29	4.0898e+0	-10.7	1.1319e+0	-1.2093e-2	9.8	7.8
2	16.00	11.00	14.00	4.0	1.000	Ex	14.85	3.9639e+0	-22.8	1.0000e+0	-2.2779e-2	0.4	11.0
2	16.00	11.00	14.00	4.0	8.000	Ex	14.86	2.8802e+0	-556.1	6.1770e-1	-3.8392e-1	0.2	6.5
2	16.00	10.00	13.50	5.0	0.000	Ex	14.85	4.8030e+0	*	1.0000e+0	0.0000e+0	0.8	*
2	16.00	10.00	13.50	5.0	.1250	Ex	16.29	5.0235e+0	-34.2	1.1473e+0	-3.9272e-2	10.3	102.3
2	16.00	10.00	13.50	5.0	1.000	Ex	14.85	4.8015e+0	-25.6	1.0000e+0	-2.5581e-2	0.8	28.5
2	16.00	10.00	13.50	5.0	8.000	Ex	14.86	3.0495e+0	-897.7	3.9634e-1	-4.9709e-1	0.2	11.3
2	16.00	9.00	13.00	6.0	0.000	Ex	14.85	6.4666e+0	*	1.0000e+0	0.0000e+0	1.1	*
2	16.00	9.00	13.00	6.0	.1250	Ex	16.29	6.8815e+0	-33.2	1.1693e+0	-3.8855e-2	9.6	65.5
2	16.00	9.00	13.00	6.0	1.000	Ex	14.85	6.4591e+0	-48.2	1.0000e+0	-4.8237e-2	1.2	40.9
2	16.00	9.00	13.00	6.0	8.000	Ex	14.86	3.7253e+0	-1075.0	2.7487e-1	-5.0825e-1	0.5	15.5
2	16.00	8.00	12.50	7.0	0.000	Ex	14.85	5.9456e+0	*	1.0000e+0	0.0000e+0	1.1	*
2	16.00	8.00	12.50	7.0	.1250	Ex	16.29	6.3351e+0	-42.4	1.1704e+0	-4.9637e-2	10.7	101.8
2	16.00	8.00	12.50	7.0	1.000	Ex	14.85	5.9385e+0	-48.8	1.0000e+0	-4.8864e-2	0.6	3.4
2	16.00	8.00	12.50	7.0	8.000	Ex	14.86	3.1725e+0	-1180.4	2.0366e-1	-4.9496e-1	0.4	18.5
2	16.00	7.00	12.00	8.0	0.000	Ex	14.85	5.1160e+0	*	1.0000e+0	0.0000e+0	0.3	*
2	16.00	7.00	12.00	8.0	.1250	Ex	16.29	5.4320e+0	-11.7	1.1684e+0	-1.3651e-2	10.0	8.5
2	16.00	7.00	12.00	8.0	1.000	Ex	14.85	5.1076e+0	-57.2	1.0000e+0	-5.7237e-2	0.8	8.8
2	16.00	7.00	12.00	8.0	8.000	Ex	14.86	2.5521e+0	-1447.1	6.1776e-2	-4.9700e-1	1.6	50.8
2	15.00	12.00	14.00	2.0	0.000	Ex	17.8	3.6636e+0	*	1.0000e+0	0.0000e+0	0.1	*
2	15.00	12.00	14.00	2.0	.1250	Ex	17.77	3.6872e+0	-7.6	1.0050e+0	-7.6130e-3	0.1	6.4
2	15.00	12.00	14.00	2.0	1.000	Ex	17.8	3.6636e+0	-4.4	1.0000e+0	-4.3750e-3	0.0	1.4
2	15.00	12.00	14.00	2.0	8.000	Ex	17.79	3.3087e+0	-99.3	8.9835e-1	-8.9501e-2	0.0	0.8
2	15.00	11.00	13.50	3.0	0.000	Ex	17.8	3.9533e+0	*	1.0000e+0	0.0000e+0	0.1	*
2	15.00	11.00	13.50	3.0	.1250	Ex	17.77	4.0120e+0	-4.3	1.0135e+0	-4.3076e-3	0.1	6.3
2	15.00	11.00	13.50	3.0	1.000	Ex	17.8	3.9531e+0	-11.3	1.0000e+0	-1.1275e-2	0.1	1.2
2	15.00	11.00	13.50	3.0	8.000	Ex	17.79	3.2790e+0	-208.9	8.1120e-1	-1.7194e-1	0.1	3.3
2	15.00	10.00	13.00	4.0	0.000	Ex	17.8	4.7564e+0	*	1.0000e+0	0.0000e+0	0.3	*
2	15.00	10.00	13.00	4.0	.1250	Ex	17.77	4.8622e+0	-6.4	1.0212e+0	-6.5101e-3	0.3	7.1
2	15.00	10.00	13.00	4.0	1.000	Ex	17.8	4.7555e+0	-19.6	1.0000e+0	-1.9653e-2	0.3	6.2
2	15.00	10.00	13.00	4.0	8.000	Ex	17.79	3.4987e+0	-461.1	6.5878e-1	-3.2727e-1	0.1	2.1
2	15.00	9.00	12.50	5.0	0.000	Ex	17.8	6.0747e+0	*	1.0000e+0	0.0000e+0	0.4	*
2	15.00	9.00	12.50	5.0	.1250	Ex	17.77	6.3294e+0	-4.2	1.0427e+0	-4.4053e-3	0.4	2.3
2	15.00	9.00	12.50	5.0	1.000	Ex	17.8	6.0682e+0	-46.2	1.0000e+0	-4.6208e-2	0.4	18.4
2	15.00	9.00	12.50	5.0	8.000	Ex	17.79	3.8677e+0	-752.2	4.6573e-1	-4.3576e-1	0.2	7.6
2	15.00	8.00	12.00	6.0	0.000	Ex	17.8	5.5390e+0	*	1.0000e+0	0.0000e+0	0.5	*
2	15.00	8.00	12.00	6.0	.1250	Ex	17.77	5.8450e+0	-5.4	1.0556e+0	-5.6476e-3	0.5	5.1
2	15.00	8.00	12.00	6.0	1.000	Ex	17.8	5.5341e+0	-41.9	1.0000e+0	-4.1950e-2	0.4	12.2
2	15.00	8.00	12.00	6.0	8.000	Ex	17.79	3.2685e+0	-947.7	3.4481e-1	-4.7987e-1	0.7	1.6
2	15.00	7.00	11.50	7.0	0.000	Ex	17.8	5.3998e+0	*	1.0000e+0	0.0000e+0	0.5	*
2	15.00	7.00	11.50	7.0	.1250	Ex	17.77	5.6484e+0	-10.4	1.0460e+0	-1.0879e-2	0.5	5.0
2	15.00	7.00	11.50	7.0	1.000	Ex	17.8	5.3960e+0	-37.5	1.0000e+0	-3.7493e-2	0.2	24.9
2	15.00	7.00	11.50	7.0	8.000	Ex	17.79	3.2385e+0	-883.8	3.8076e-1	-4.6417e-1	2.7	11.0

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2	14.00	12.00	13.50	1.0	0.000	Ex	11.88	1.5832e+1	*	1.0000e+0	0.0000e+0	0.0	*
2	14.00	12.00	13.50	1.0	.1250	Ex	11.89	1.5915e+1	-2.3	1.0061e+0	-2.2805e-3	0.1	0.2
2	14.00	12.00	13.50	1.0	1.000	Ex	11.88	1.5832e+1	-3.7	1.0000e+0	-3.7334e-3	0.1	0.1
2	14.00	12.00	13.50	1.0	8.000	Ex	11.87	1.5483e+1	-19.3	9.7726e-1	-1.8864e-2	0.0	0.0
2	14.00	11.00	13.00	2.0	0.000	Ex	11.88	1.6354e+1	*	1.0000e+0	0.0000e+0	0.0	*
2	14.00	11.00	13.00	2.0	.1250	Ex	11.89	1.6496e+1	-3.1	1.0096e+0	-3.0961e-3	0.0	0.7
2	14.00	11.00	13.00	2.0	1.000	Ex	11.88	1.6354e+1	-6.2	1.0000e+0	-6.2001e-3	0.1	0.2
2	14.00	11.00	13.00	2.0	8.000	Ex	11.87	1.5453e+1	-55.6	9.4295e-1	-5.2482e-2	0.0	0.1
2	14.00	10.00	12.50	3.0	0.000	Ex	11.88	1.4727e+1	*	1.0000e+0	0.0000e+0	0.0	*
2	14.00	10.00	12.50	3.0	.1250	Ex	11.89	1.4985e+1	-4.4	1.0185e+0	-4.5154e-3	0.1	1.1
2	14.00	10.00	12.50	3.0	1.000	Ex	11.88	1.4726e+1	-12.5	1.0000e+0	-1.2467e-2	0.1	0.2
2	14.00	10.00	12.50	3.0	8.000	Ex	11.87	1.2705e+1	-159.2	8.5144e-1	-1.3671e-1	0.0	1.1
2	14.00	9.00	12.00	4.0	0.000	Ex	11.88	1.8118e+1	*	1.0000e+0	0.0000e+0	0.1	*
2	14.00	9.00	12.00	4.0	.1250	Ex	11.89	1.8594e+1	-4.8	1.0274e+0	-4.9660e-3	0.1	1.5
2	14.00	9.00	12.00	4.0	1.000	Ex	11.88	1.8115e+1	-18.9	1.0000e+0	-1.8936e-2	0.1	0.1
2	14.00	9.00	12.00	4.0	8.000	Ex	11.87	1.4212e+1	-280.3	7.5361e-1	-2.1695e-1	0.0	2.7
2	14.00	8.00	11.50	5.0	0.000	Ex	11.88	1.5765e+1	*	1.0000e+0	0.0000e+0	0.1	*
2	14.00	8.00	11.50	5.0	.1250	Ex	11.89	1.6368e+1	-7.3	1.0399e+0	-7.5914e-3	0.2	1.6
2	14.00	8.00	11.50	5.0	1.000	Ex	11.88	1.5759e+1	-27.8	1.0000e+0	-2.7807e-2	0.1	1.6
2	14.00	8.00	11.50	5.0	8.000	Ex	11.87	1.1107e+1	-433.5	6.3953e-1	-2.9598e-1	0.1	3.0
2	14.00	7.00	11.00	6.0	0.000	Ex	11.88	1.3650e+1	*	1.0000e+0	0.0000e+0	0.1	*
2	14.00	7.00	11.00	6.0	.1250	Ex	11.89	1.4269e+1	-7.0	1.0474e+0	-7.3322e-3	0.2	4.8
2	14.00	7.00	11.00	6.0	1.000	Ex	11.88	1.3642e+1	-34.3	1.0000e+0	-3.4313e-2	0.1	1.1
2	14.00	7.00	11.00	6.0	8.000	Ex	11.87	8.8022e+0	-620.3	5.2505e-1	-3.7503e-1	0.1	8.8
2	13.00	11.00	12.50	1.0	0.000	Ex	9.9	3.7539e+1	*	1.0000e+0	0.0000e+0	0.0	*
2	13.00	11.00	12.50	1.0	.1250	Ex	9.89	3.7715e+1	-2.0	1.0037e+0	-2.0408e-3	0.0	0.3
2	13.00	11.00	12.50	1.0	1.000	Ex	9.9	3.7539e+1	-3.1	1.0000e+0	-3.0667e-3	0.0	0.1
2	13.00	11.00	12.50	1.0	8.000	Ex	9.9	3.7035e+1	-10.1	9.8686e-1	-9.9348e-3	0.0	0.1
2	13.00	10.00	12.00	2.0	0.000	Ex	9.9	2.7238e+1	*	1.0000e+0	0.0000e+0	0.0	*
2	13.00	10.00	12.00	2.0	.1250	Ex	9.89	2.7477e+1	-3.0	1.0078e+0	-3.0233e-3	0.0	0.1
2	13.00	10.00	12.00	2.0	1.000	Ex	9.9	2.7238e+1	-5.8	1.0000e+0	-5.8334e-3	0.0	0.2
2	13.00	10.00	12.00	2.0	8.000	Ex	9.9	2.5916e+1	-46.4	9.5078e-1	-4.4148e-2	0.0	0.2
2	13.00	9.00	11.50	3.0	0.000	Ex	9.9	2.7733e+1	*	1.0000e+0	0.0000e+0	0.0	*
2	13.00	9.00	11.50	3.0	.1250	Ex	9.89	2.8090e+1	-2.7	1.0119e+0	-2.6985e-3	0.0	0.2
2	13.00	9.00	11.50	3.0	1.000	Ex	9.9	2.7732e+1	-8.7	1.0000e+0	-8.7002e-3	0.0	0.4
2	13.00	9.00	11.50	3.0	8.000	Ex	9.9	2.4691e+1	-117.2	8.8457e-1	-1.0418e-1	0.0	1.2
2	13.00	8.00	11.00	4.0	0.000	Ex	9.9	2.1972e+1	*	1.0000e+0	0.0000e+0	0.0	*
2	13.00	8.00	11.00	4.0	.1250	Ex	9.89	2.2442e+1	-4.4	1.0206e+0	-4.5246e-3	0.0	1.4
2	13.00	8.00	11.00	4.0	1.000	Ex	9.9	2.1970e+1	-15.1	1.0000e+0	-1.5101e-2	0.0	1.1
2	13.00	8.00	11.00	4.0	8.000	Ex	9.9	1.7783e+1	-236.5	7.8726e-1	-1.8974e-1	0.0	1.4
2	13.00	7.00	10.50	5.0	0.000	Ex	9.9	1.8459e+1	*	1.0000e+0	0.0000e+0	0.1	*
2	13.00	7.00	10.50	5.0	.1250	Ex	9.89	1.9094e+1	-6.6	1.0339e+0	-6.8235e-3	0.0	1.2
2	13.00	7.00	10.50	5.0	1.000	Ex	9.9	1.8454e+1	-21.8	1.0000e+0	-2.1803e-2	0.0	1.4
2	13.00	7.00	10.50	5.0	8.000	Ex	9.9	1.3287e+1	-395.2	6.6485e-1	-2.7737e-1	0.0	5.9
2	12.00	10.00	11.50	1.0	0.000	Ex	1.55	1.7750e+1	*	1.0000e+0	0.0000e+0	0.0	*
2	12.00	10.00	11.50	1.0	.1250	Ex	1.55	1.7897e+1	-2.5	1.0100e+0	-2.4997e-3	0.0	0.6
2	12.00	10.00	11.50	1.0	1.000	Ex	1.55	1.7749e+1	-4.6	1.0000e+0	-4.5750e-3	0.4	0.3
2	12.00	10.00	11.50	1.0	8.000	Ex	1.53	1.7471e+1	-13.0	9.7627e-1	-1.2692e-2	0.4	1.2
2	12.00	9.00	11.00	2.0	0.000	Ex	1.55	1.7968e+1	*	1.0000e+0	0.0000e+0	0.1	*
2	12.00	9.00	11.00	2.0	.1250	Ex	1.55	1.8087e+1	-2.1	1.0083e+0	-2.1174e-3	0.1	1.9
2	12.00	9.00	11.00	2.0	1.000	Ex	1.55	1.7968e+1	-3.1	1.0000e+0	-3.0750e-3	0.4	0.9
2	12.00	9.00	11.00	2.0	8.000	Ex	1.53	1.7292e+1	-37.7	9.5394e-1	-3.5957e-2	0.4	3.7
2	12.00	8.00	10.50	3.0	0.000	Ex	1.55	1.2708e+1	*	1.0000e+0	0.0000e+0	0.1	*
2	12.00	8.00	10.50	3.0	.1250	Ex	1.55	1.2884e+1	-5.0	1.0155e+0	-5.1031e-3	0.1	3.3
2	12.00	8.00	10.50	3.0	1.000	Ex	1.55	1.2708e+1	-8.4	1.0000e+0	-8.4002e-3	0.2	1.7
2	12.00	8.00	10.50	3.0	8.000	Ex	1.53	1.1511e+1	-109.2	8.9318e-1	-9.7970e-2	1.2	10.7
2	12.00	7.00	10.00	4.0	0.000	Ex	1.55	9.7876e+0	*	1.0000e+0	0.0000e+0	0.2	*
2	12.00	7.00	10.00	4.0	.1250	Ex	1.55	1.0007e+1	-7.3	1.0241e+0	-7.5273e-3	0.2	8.3
2	12.00	7.00	10.00	4.0	1.000	Ex	1.55	9.7872e+0	-9.6	1.0000e+0	-9.6003e-3	0.6	10.7
2	12.00	7.00	10.00	4.0	8.000	Ex	1.53	8.1383e+0	-211.9	8.0640e-1	-1.7344e-1	2.2	30.7
2	11.00	9.00	10.50	1.0	0.000	Ex	1.53	2.1697e+1	*	1.0000e+0	0.0000e+0	0.0	*
2	11.00	9.00	10.50	1.0	.1250	Ex	1.53	2.1828e+1	-2.1	1.0060e+0	-2.1126e-3	0.0	0.5
2	11.00	9.00	10.50	1.0	1.000	Ex	1.53	2.1697e+1	-4.2	1.0000e+0	-4.2250e-3	0.0	0.7
2	11.00	9.00	10.50	1.0	8.000	Ex	1.53	2.1358e+1	-13.3	9.8430e-1	-1.3043e-2	0.0	0.5
2	11.00	8.00	10.00	2.0	0.000	Ex	1.53	1.5630e+1	*	1.0000e+0	0.0000e+0	0.1	*
2	11.00	8.00	10.00	2.0	.1250	Ex	1.53	1.5734e+1	-2.9	1.0067e+0	-2.9698e-3	0.1	7.4
2	11.00	8.00	10.00	2.0	1.000	Ex	1.53	1.5629e+1	-6.3	1.0000e+0	-6.3251e-3	0.1	2.7
2	11.00	8.00	10.00	2.0	8.000	Ex	1.53	1.4980e+1	-40.1	9.5768e-1	-3.8424e-2	0.0	1.3
2	11.00	7.00	9.50	3.0	0.000	Ex	1.53	1.1212e+1	*	1.0000e+0	0.0000e+0	0.2	*
2	11.00	7.00	9.50	3.0	.1250	Ex	1.53	1.1329e+1	-11.9	1.0107e+0	-1.2028e-2	0.2	15.3
2	11.00	7.00	9.50	3.0	1.000	Ex	1.53	1.1210e+1	-17.6	1.0000e+0	-1.7577e-2	0.3	16.1
2	11.00	7.00	9.50	3.0	8.000	Ex	1.53	1.0138e+1	-111.0	8.9892e-1	-1.0019e-1	0.1	2.1

*** end-of-file ***

Sample .Z-file

```

RPAVG 7.20 Contour file.
/* 02 Aug 93
$ DATE= 90-09-01
$ ASPACE= 600.ft
$ ZPLOT: DATA= N-SP
Cl Cn Ce Ns Nd Yl   Plot file 1           Cl Cn Ce Ns Nd Yl   Plot file 2
1  5  0  3  0  0           0 20  2  3  1  0
RP-IP SURVEY DATA      RP-IP SURVEY DATA
Apparent RESISTIVITY    Raw PHASE Angle
values in ohm-meters    values in milliradians
1.000 Hz                1.000 Hz
IIxxxxxxxxxYYYYYYYzzzzzzzzzzzz AAA      IIxxxxxxxxxYYYYYYYzzzzzzzzzzzz AAA
2  13.500  3.000  4.0378E+00
2  14.000  4.000  3.9544E+00
2  14.500  5.000  4.4817E+00
2  15.000  6.000  6.9284E+00
2  14.000  2.000  3.6257E+00
2  14.500  3.000  3.6492E+00
2  15.000  4.000  4.0112E+00
2  15.500  5.000  5.5427E+00
2  16.000  6.000  7.7891E+00
2  14.500  1.000  8.5140E+00
2  15.000  2.000  8.3462E+00
2  15.500  3.000  7.4661E+00
2  16.000  4.000  9.7090E+00
2  16.500  5.000  1.3317E+01
2  17.000  6.000  1.3463E+01
2  15.500  1.000  6.8480E+00
2  16.000  2.000  5.8587E+00
2  16.500  3.000  6.5413E+00
2  17.000  4.000  9.0366E+00
2  17.500  5.000  9.2417E+00
2  16.500  1.000  3.7301E+00
2  17.000  2.000  2.5421E+00
2  17.500  3.000  3.4740E+00
2  18.000  4.000  3.6969E+00
2  17.500  1.000  2.3358E+00
2  18.000  2.000  3.1014E+00
2  18.500  3.000  3.4374E+00
2  14.500  3.000  3.7142E+00
2  14.000  4.000  3.9702E+00
2  13.500  5.000  4.8095E+00
2  13.000  6.000  6.4753E+00
2  14.000  2.000  3.6678E+00
2  13.500  3.000  3.9578E+00
2  13.000  4.000  4.7618E+00
2  12.500  5.000  6.0815E+00
2  12.000  6.000  5.5452E+00
2  13.500  1.000  1.5827E+01
2  13.000  2.000  1.6349E+01
2  12.500  3.000  1.4723E+01
2  12.000  4.000  1.8113E+01
2  11.500  5.000  1.5761E+01
2  11.000  6.000  1.3646E+01
2  12.500  1.000  3.7577E+01
2  12.000  2.000  2.7266E+01
2  11.500  3.000  2.7761E+01
2  11.000  4.000  2.1994E+01
2  10.500  5.000  1.8477E+01
2  11.500  1.000  1.7721E+01
2  11.000  2.000  1.7939E+01
2  10.500  3.000  1.2687E+01
2  10.000  4.000  9.7718E+00
2  10.500  1.000  2.1697E+01
2  10.000  2.000  1.5630E+01
2   9.500  3.000  1.1212E+01
9999.0

```

continued next column ...

*** end-of-file ***

Appendix C ... FILE DOCUMENTATION

.RL-File DOCUMENTATION

The RPAVG data processing program may write a .RL-file listing file containing information and data as requested from the program.

This file is used to review the data and the order it was processed by the program.

SAMRPIP.RL File created by RPAVG

The .RL-file consists of a section listing each data block for one station, sorted by frequency and block number. The following section includes block average values.

DATA BLOCK SUMMARY

LINE: 2		Test Data				RPAVG 7.20	
Tx:	11.0	Rx:	15.0	Current:	1.54 amps		
	N-Spacing:	3.0	A-Spacing:	600. feet			
#	blk	a	STKS	AMPS	MAG	PHZ	RHO
			Frequency	8 Hz			
1	506	1	1024	1.54	190.98u	236.8	3.36
2	507	1	1024	1.54	191.24u	249.1	3.36
3	508	1	1024	1.54	191.05u	199.8	3.36
4	509	1	1024	1.54	189.38u	234.5	3.33
			Frequency	1 Hz			
1	502	1	128	1.54	230.88u	40.4	4.06
2	503	1	128	1.54	228.56u	27.1	4.02
3	504	1	128	1.54	229.44u	16.8	4.04
4	505	1	128	1.54	229.41u	18.9	4.04
			Frequency	0.125 Hz			
1	498	1	32	1.55	234.51u	1.2	4.11
2	499	1	32	1.54	231.97u	19.0	4.07
3	500	1	32	1.54	233.51u	-10.2	4.10
4	501	1	32	1.54	231.84u	14.1	4.07
5	510	1	32	1.54	232.18u	8.0	4.09

↑	↑	↑	↑	↑	↑	↑
GDP data acquisition frequency Count of data blocks per frequency .RAW-file data block number Average flag (0: no, 1: yes) GDP stacks acquired						

↑	↑	↑
Magnitude, volts Phase, milliradians Resistivity, ohm-meters		

AVERAGE DATA SECTION

```

AVERAGED VALUES ====

LINE: 2      Test Data                                RPAVG 7.20
Tx:   11.0   Rx:   15.0   Current:  1.54 amps
      N-Spacing: 3.0   A-Spacing:  600. feet

      Frequency  AMPS    MAG      PHZ    RHO
          8      1.54   190.66u  230.1
          1      1.54   229.57u  25.8    4.04
>    0.125      1.54   232.80u   6.4

> Reference frequency:    0.125 Hz.

      LOW 3PT DC Phase=
      HI 3PT DC Phase=
      4PT DC Phase=
      RAW PFE=
      minimum SEM=  5.28 mr
      maximum SEM= 15.14 mr
    
```

_____ GDP data acquisition frequency
 _____ Averaged Magnitude, volts
 _____ Averaged Phase, milliradians
 _____ Resistivity, ohm-meters
 _____ Data files contain values only at
 the Reference Frequency.

The following values are calculated when data is available for each of the specified frequencies. "Ref" is the Reference Frequency, in Hertz. For example, when Ref=0.125 Hz, LOW 3PT DC Phase is calculated when data is provided at 0.125, 0.250, and 0.500 Hz.

This sample file provides data related by 1*Ref, 8*Ref, and 16*Ref, which is not a frequency combination for which these values are presently defined.

```

LOW 3PT DC Phase @ f1=1*Ref, f2=2*Ref, f3=4*Ref
HI 3PT DC Phase @ f1=2*Ref, f2=4*Ref, f3=8*Ref
4PT DC Phase @ f1=1*Ref, f2=2*Ref, f3=4*Ref, f4=8*Ref
RAW PFE @ f1=1*Ref, f2=8*Ref
minimum SEM @ Ref
maximum SEM @ Ref
    
```

STANDARD CALCULATIONS

Apparent Resistivity (RHOa), in ohm-meters. (dipole-dipole array)

$$RHOa = \frac{MAG}{4/\pi} * \frac{1}{FPGAIN} * \frac{A-SP}{Tx Curr} * \pi * NSP * (NSP + 1) * (NSP + 2)$$

where MAG = raw Fourier magnitude, in volts. 4/pi corrects frequency-domain values from the Fourier magnitude to the Square-Wave magnitude.

FPGAIN = field pre-amp gain (if one is used)
 GDP data does not include this value.

A-SP = A-Spacing in meters

Tx Curr = Transmitter current in amps

NSP = N-Spacing

The first two terms in the expression correct for the Fourier magnitude and the field preamplification. The product of these two terms is the actual square-wave voltage of the received waveform. The rest of the equation corrects for the transmitted current and the geometry of the electrodes.

NOTE: RHOa has been corrected to DC for decoupled data.

Standard Error of the Mean (SEM), in milliradians:

$$SEM = \frac{\left[\frac{\sum (x_i - \bar{x})^2}{n-1} \right]^{1/2}}{n^{1/2}}$$

where x_i = phase angle in milliradians

n = the number of blocks averaged

.AVG-file Format RPIP Averaged Data File

\ RPAVG 7.20: "SAMRPIP.FLD", Dated 90-08-30 , Processed 02 Aug 93

\$ ASPACE= 600.ft

skp	Tx	Rx	PltPt	NSp	Freq	Cmp	Amps	Resistivity	Phase	Real	Imag	%Rho	sPhz
2	11.00	15.00	13.50	3.0	0.000	Ex	1.54	4.0378e+0	*	1.0000e+0	0.0000e+0	0.4	*
2	11.00	15.00	13.50	3.0	.1250	Ex	1.54	4.0880e+0	-6.4	1.0144e+0	-6.5124e-3	0.5	11.4
2	11.00	15.00	13.50	3.0	1.000	Ex	1.54	4.0365e+0	-25.8	1.0000e+0	-2.5806e-2	0.4	10.7
2	11.00	15.00	13.50	3.0	8.000	Ex	1.54	3.3523e+0	-230.1	8.0890e-1	-1.8944e-1	0.5	21.2
2	11.00	16.00	14.00	4.0	0.000	Ex	1.54	3.9544e+0	*	1.0000e+0	0.0000e+0	1.8	*
2	11.00	16.00	14.00	4.0	.1250	Ex	1.54	4.0723e+0	-5.6	1.0324e+0	-5.7608e-3	1.6	8.5
2	11.00	16.00	14.00	4.0	1.000	Ex	1.54	3.9520e+0	-34.8	1.0000e+0	-3.4789e-2	1.3	16.3
2	11.00	16.00	14.00	4.0	8.000	Ex	1.54	2.7464e+0	-543.2	5.9526e-1	-3.5943e-1	1.5	45.7
2	11.00	17.00	14.50	5.0	0.000	Ex	1.54	4.4817e+0	*	1.0000e+0	0.0000e+0	0.8	*
2	11.00	17.00	14.50	5.0	.1250	Ex	1.54	4.6356e+0	2.6	1.0386e+0	2.7005e-3	1.1	30.7
2	11.00	17.00	14.50	5.0	1.000	Ex	1.54	4.4724e+0	-64.5	1.0000e+0	-6.4564e-2	2.5	35.7
2	11.00	17.00	14.50	5.0	8.000	Ex	1.54	2.6000e+0	-1047.2	2.9128e-1	-5.0451e-1	3.1	80.8
2	11.00	18.00	15.00	6.0	0.000	Ex	1.54	6.9284e+0	*	1.0000e+0	0.0000e+0	0.4	*
2	11.00	18.00	15.00	6.0	.1250	Ex	1.54	7.2801e+0	1.0	1.0567e+0	1.0567e-3	0.7	35.9
2	11.00	18.00	15.00	6.0	1.000	Ex	1.54	6.9090e+0	-75.0	1.0000e+0	-7.5116e-2	3.0	20.7
2	11.00	18.00	15.00	6.0	8.000	Ex	1.54	3.1851e+0	-1218.7	1.5942e-1	-4.3395e-1	14.7	199.1

skp

skip flag

Tx

Transmitter Dipole, station number of lowest numbered end.

Rx

Receiver Dipole, station number of lowest numbered end.

PltPt

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

NSp

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

Freq

Frequency at which data was measured. If Frequency is zero, values are coupling corrected when possible.

Cmp

Component measured: Ex, Ey, Ez, Hx, Hy, Hz

Amps

Average SquareWave transmitter Current in amps, as entered into the GDP.

Resistivity

Average Fourier magnitude, divided by the SquareWave Current |v/a|. The GDP displays the Fourier magnitude values and SquareWave current. The .AVG-file values are the same. When the

Frequency is zero, the calculated Resistivity and 3-point Decoupled Phase values are included in the Resistivity and Phase columns. The Frequency for which these values are calculated is noted in the header.

Phase

Average Phase angle, in milliradians. When the Frequency is zero, the calculated Resistivity and 3-point Decoupled Phase values are included in the Magnitude and Phase columns. The Frequency for which these values are calculated is noted in the header.

Real

X-component of Rectangular coordinates, converted from Polar Mag/Phase, and normalized to 1.0 at the Reference Frequency.

Imag

Y-component of Rectangular coordinates, converted from Polar Mag/Phase, and normalized by the Real component normalization factor.

%Mag

Statistical variation of the data averaged for this data point.
Standard Deviation / Average Normalized Magnitude * 100, percent.

sPhz

Statistical variation of the data averaged for this data point.
Standard Deviation of Phase values, milliradians.

.S-file Format (v2.0) CR / RPIP Averaged Data File

```

1: "936L50S.S", from CRAVG 5.00
2: Rx:  2.0 Tx:  4.0 NSP: 1.0
3: 1 0 4 18 18      82.7 588.0
4: SEM  0.0000E+00 0.0000E+00
5:  1.4219  0.0693  171.
6:  0.0747  0.2285  15.7
7:  0.0426  0.4133  4.80
8: -0.0026  1.4776  0.375
9:  2.955   -0.306   0.719
10:  0.125  1.0000E 00  5.7426E-03
    0.375  9.9734E-01  1.1810E-02
    0.625  9.9471E-01  1.7281E-02
    0.875  9.9243E-01  2.2393E-02
    1.125  9.8993E-01  2.6757E-02
    1.375  9.8754E-01  3.1019E-02
    1.000  9.9118E-01  2.4446E-02
    3.000  9.7520E-01  5.1194E-02
    5.000  9.6105E-01  7.4148E-02
    7.000  9.4681E-01  8.9063E-02
    9.000  9.3649E-01  1.0505E-01
   11.000 9.2290E-01  1.1720E-01
    8.000  9.4165E-01  9.7557E-02
   24.000 8.6712E-01  1.7926E-01
   40.000 8.0799E-01  2.3717E-01
   56.000 7.5174E-01  2.8224E-01
   72.000 6.9981E-01  3.1128E-01
   88.000 6.5208E-01  3.3569E-01

```

DESCRIPTION OF SAMPLE FILE VALUES, BY LINE NUMBER:

The .S-file is composed of a two line header, followed by blocks of data, each containing data for one pseudosection data point. Each block begins with a line indicating the specific point, several lines of parameters, followed by an array of data that includes frequency, real components, and imaginary components for a number of points that describe a curve. The data in this file are always raw, averaged, decalibrated field data normalized to the low frequency real component.

1. File header line generated by the averaging program.

NOTE: Header line 1 occurs only at the beginning of the file.

2. Rx and Tx indicate the receiver and transmitter dipoles that were used for this block. Dipoles extend between two adjacent stations with the lowest numbered station entered for each dipole.

The 2 in this file indicates that the receiver dipole was positioned between stations 2 and 3.

The 4 in this file indicates that the transmitter dipole was positioned between stations 4 and 5.

-3 would indicate that the dipole was positioned between stations -3 and -2.

N-SP = N-Spacing = the number of A-Spacings between transmitter and receiver dipoles.

3. 1 Comm wire flag (0 = white wire #2, 1 = black wire (W21C)
0 Times to pass the data curve through a harmonic filter
4 Levels of coupling coefficients
18 Harmonics to use when decoupling
18 Harmonics in data block array
82.7 Apparent Resistivity, RHO (ohmmeters)
588.0 A-Spacing (meters).
(Values included for LAB rock measurements are noted below)

RHO: dipole-dipole resistivity in ohmmeters =

$$\frac{\text{MAG}}{4/\pi} * \frac{C}{\text{FPGAIN}} * \frac{\text{ASPACING}}{\text{CRT}} * \pi * \text{NSP} * [\text{NSP} + 1] * [\text{NSP} + 2]$$

MAG = raw Fourier magnitude, in volts

4/pi corrects MAG from the Fourier magnitude to the Square-Wave magnitude

C = Communications-wire attenuation

This corrects for the voltage drop that occurs in the wire between the field preamp and the GDP

FPGAIN = field preamp gain

ASPACING = the A-spacing, in meters

CRT = Current, in amps

NSP = N-spacing

Comm-wire attenuation factors at 0.125 Hz (W21C wire)

The GDP is not concerned with these factors.

#Reels	Attenuation	#Reels	Attenuation
0	1.0000	5	1.2585
1	1.0505	6	1.3116
2	1.1025	7	1.3635
3	1.1542	8	1.4160
4	1.2070		

NOTE: RHO has been corrected to DC for decoupled data.

RHO: laboratory rock measurements in ohmmeters =

$$\frac{\text{MAG}}{4/\pi} * \frac{1}{\text{CRT}} * \frac{\text{AREA}}{\text{LENGTH}} * \frac{1 \text{ m}}{100 \text{ cm}}$$

MAG = raw Fourier magnitude, in volts

4/pi corrects MAG from the Fourier magnitude to the Square-Wave magnitude

CRT = Current, in microAmps

LENGTH = Length of rock sample, in cm

AREA = Area of rock sample, in cm*cm

NOTE: for laboratory rock measurements, RESISTOR, LENGTH, AREA, and CRT are included on this data line, following the A-spacing.

4. Minimum and maximum SEM values, respectively. SEM: Standard Error of the Mean for Channel 1 (receiver dipole), at the fundamental frequency, in radians (for frequencies of 1.0 Hz and below only)
- 5,6,7,8. Coupling coefficients, levels 1, 2, 3, 4, respectively. The number of levels varies according to the third value on line 4, as determined during manual decoupling. If the third number on line 4 is zero, the station has not been manually decoupled.
9. Hilbert response parameters: phase, slope 1, and slope 2.
10. The following lines are harmonic data with the 1st, 2nd and 3rd columns listing frequency, real and imaginary components, respectively. The number of lines varies according to the fourth value on line 4.

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