Master

DOE/ID/ 12079-20
ESL 47

MT3D: A 3 Dimensional Magnetotelluric Modeling Program
(User's Guide and Documentation for Rev. 1)

by

Carleen Nutter

Philip E. Wannamaker

DISCLAIMER
This book was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

EARTH SCIENCE LABORATORY
UNIVERSITY OF UTAH RESEARCH INSTITUTE
420 Chipeta Way
Suite 120
Salt Lake City, Utah 84108

November, 1980

Prepared for the
Department of Energy
Division of Geothermal Energy
Under Contract DE-AC07-80ID12079

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

eb

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency Thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

NOTICE

This report was prepared to document work sponsored by the United States Government. Neither the United States nor its agent, the United States Department of Energy, nor any Federal employee, nor any of their contractors, subcontractors or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product or process disclosed, or represents that its use would not infringe privately owned rights.

NOTICE

Reference to a company or product name does not imply approval or recommendation of the product by the University of Utah Research Institute or the U.S. Department of Energy to the exclusion of others that may be suitable.

TABLE OF CONTENTS

ABSTRACT.....	1
INTRODUCTION.....	2
METHOD OF SOLUTION.....	2
PROGRAM ORGANIZATION.....	2
INPUT.....	3
MODELING NOTES.....	4
EXECUTION.....	4
OUTPUT.....	6
SYSTEM IMPLEMENTATION.....	9
REFERENCES.....	11
APPENDIX I - PRIMOS SUBROUTINES.....	12
Introduction.....	13
CLOS\$A.....	13
ERRPR\$.....	13
EXIT.....	14
OPEN\$A.....	15
SRCH\$\$.....	15
TNOU.....	18
TNOUA.....	18
UNIT\$A.....	18
APPENDIX II - FORTRAN IV EXTENSIONS.....	20
Introduction.....	21
List Directed READ statement.....	21
NOBIG / BIG.....	22
SAMPLE JOB.....	23

LIST OF FIGURES

1. Three-Dimensional Model 5

ABSTRACT

MT3D.REV1 is a non-interactive computer program written in FORTRAN to do 3-dimensional magnetotelluric modeling. A 3-D volume integral equation has been adapted to simulate the MT response of a 3D body in the earth. An integro-difference scheme has been incorporated to increase the accuracy.

This report is a user's guide for MT3D.REV1 on the University of Utah Research Institute's (UURI) PRIME 400 computer operating under PRIMOS IV, Rev. 17.

INTRODUCTION

MT3D is a non-interactive 3-dimensional magnetotelluric modeling program used for modeling one or a few small bodies in a half space with vertical symmetry planes. It was originally developed by G. W. Hohmann and Sam C. Ting on the University of Utah Computer Center's (UU/CC) UNIVAC 1108. Philip Wannamaker converted the program to the University of Utah Research Institute's (UURI) PRIME 400.

The scope of this report is the use of MT3D at UURI. The reader is directed to Hohmann (1975) and Hohmann and Ting (1978) for the theory. Some model studies using MT3D (1108 version) are described in Stodt and others (1979) and Ting and Hohmann (1979). Using the PRIME version is described by Wannamaker and others (1980).

METHOD OF SOLUTION

A 3D volume integral equation solution has been adapted to simulate the MT response of a 3D body in the earth. The body is replaced by polarization currents which depend on the difference between the conductivity of the body and that of the surrounding earth. The resulting volume integral equation is reduced to a matrix equation by the method of moments. After the matrix equation is solved for the polarization current, the electric and magnetic fields at the surface of the earth can be calculated using half-space dyadic Green's functions.

PROGRAM ORGANIZATION

The PRIME 400 is primarily an interactive timeshared system. MT3D is usually run on the PRIME as a phantom (background or batch) job because of the large amount of CPU time required to execute (typically measured in hours). All the necessary input to the program resides in user data files with specific names. The user starts the phantom job from a terminal, then logs out, noting the job number assigned to the phantom. The user can determine the status of the job by doing a STATUS ALL command from a terminal. If his phantom job number appears, the job is still active. Output from the phantom job is directed to several data files and a COMD file (output stream from the phantom job). When the

phantom job is finished, the user then examines these output files from a terminal for the results. Execution is accomplished through a phantom command file. The following sections describe the procedure in more detail.

The MT3D program is actually two programs; the phantom command file executes both successively. The first, MT3D-A, calculates the fields within the body. The second, MT3D-B, calculates the fields at the surface.

INPUT

The MT3D program requires three input files, INPT, GRDDT1, and GGRDT2. INPT is the only user-defined input file. GRDDT1 and GRDDT2 are stored in system disc files and their use is transparent to the user. They are accessible to any valid UFD or sub-UFD on the system. Input file INPT contains the model input parameters and receiver parameters. Files GRDDT1 and GRDDT2 are tables of Hankel transforms that relate electric or magnetic fields at one point to a current element at another. These files were created by an integration of the Hankel transforms using a Gaussian quadrature integration (Hohmann 1975).

File INPT is created, in the user-UFD, by the user with the editor. All values are in free format, all units are MKS. Only the body (in a half-space) is discretized. INPT contains the following:

1. NRHO1, NFREQ, NREC, NCEL, NPRNT

where NRHO1 = # of half-space resistivities
NFREQ = # of frequencies
NREC = # of surface receiver positions
NCEL = total # of cubic cells
representing the
inhomogeneity (body)
NPRNT = a print control flag with
1 for executing the program
2 for reading input, writing input
to printer and stopping - used
to check input variables

2. (RHO1(I), I=1, NRHO1)

where RHO1 = the array of half space
resistivities

3. (FREQ(I), I=1, NFREQ)

where FREQ = the array of frequencies

4. (XREC(I), YREC(I), I=1, NREC)

where XREC(I), YREC(I) = the coordinates of the
ith surface receiver(x,y)
in meters.

5. (XCO(I), YCO(I), ZCO(I), SIZE(I), RHO2R(I), RHO2I(I),
I=1, NCEL)

where XCO(I) = x-coordinate of center of cell i
YCO(I) = y-coordinate of center of cell i
ZCO(I) = z-coordinate of center of cell i
SIZE(I) = size of cell i (length of one side
of cubic cell)
RHO2R(I), RHO2I(I) = complex resistivity of
cell i

Figure 1 illustrates the input model used by the sample job at the end
of this document.

MODELING NOTES

When the body is modeled, there must be at least two planes of
symmetry. Also, to achieve accurate numerical results, cell size
should be no larger than the depth to the top of that cell (this makes
modeling shallow bodies difficult). Recommended cell size is also
related to the skin depth in the body; maximum cell size should be
limited to no more than 1/2 - 1/3 of the skin depth in the body. See
the references for more detail.

The program allows for a maximum of 10 half-space resistivities, 10
frequencies, 250 receiver positions, and 150 cells representing the
body. These limits are set in the DIMENSION statements of the program.
The arrays with the cell information (XCO, YCO, ZCO, SIZE, RHO2R, etc.)
must be DIMENSIONED 3*MAXCEL where MAXCEL is the maximum number of
cells allowed. For 150 cells, the size is 450.

EXECUTION

Execution is accomplished by creating a file (phantom command file)
with the editor containing the following commands:

```
WAIT DATEmdddy TIMEhhmmss
COMO PHANT -NTTY
TIME
MT3D-A
MT3D-B
TIME
COMO -TTY
COMO -END
LOGOUT
```

Figure 1. Three - Dimensional Model

This file also resides in the user's UFD or sub-UFD. The name of this file should, by convention, begin with the letters PH_. The WAIT command is a UURI PRIME system routine that delays execution of the phantom job. The lower-case characters in the WAIT command give the date and time for the MT3D program to begin execution to take advantage of the lower night rates. The TIME commands are optional. TIME outputs to the COMO file, PHANT, the amount of connect time, CPU time, and I/O time since login.

To start the phantom command file, type

PH name

where name is the arbitrary name of the phantom command file (beginning with the characters PH_).

OUTPUT

There are six output files generated including the COMO file PHANT. These files are described separately below. They are created in the UFD or sub-UFD to which the user is attached when the phantom is started.

1. PHANT - This is the COMO file from the phantom job. It contains system error messages, if any. Examine this file if the phantom job terminates abnormally. It also contains the time for execution if the optional TIME commands are in the phantom command file. Jobs that exceed 32,000 seconds of CPU time (approx. 8.9 hrs.) will have incorrect time values returned from the TIME command.
2. OUTPT1 - This file contains
 - receiver locations
 - cell locations
 - primary electric fields at the center of each cell for the first polarization
 - total scattering fields at the center of each cell for the first polarization
 - primary electric fields at the center of each cell for the second polarization
 - total scattering fields at the center of each cell for the second polarization (format is 3 cols. of complex numbers with col.1=EX, col.2=EY, col.3=EZ)
 - incident electric and magnetic fields at the surface of the earth for first and second polarization.
3. SCAT - This file contains the total scattering fields at the center of each cell (same as

in OUTPT1). This file is used as input for a module of MT3D.

4. **FIELDS** - This file contains, for each receiver location,
 - secondary horizontal electric fields (EXS1,EXS2,EYS1,EYS2)
 - secondary horizontal magnetic fields (HXS1,HXS2,HYS1,HYS2)
 - vertical magnetic fields at the earth's surface (HZS1,HZS2).
 This is a subset of OUTPT2.

5. **PLTFIL** - This file is primarily a convenient input file to user-generated plotting programs. It is also a subset of OUTPT2 and contains, for each receiver location,
 - receiver location
 - apparent resistivity and phase in original coordinates.
 - magnitude and phase of tipper elements in original direction, and the tipper itself
 - magnitude and phase of vertical admittance elements in original direction
 - strike estimation directions.
 The formats for reading this file along with the variable names (as appear in OUTPT2) are, for each receiver location,

```

X,Y                      (2F10.1)
RXYI,PXYI,RYXI,PYXI (2(1PE9.2,2X,F4.1))
KZXI,PKZX,KZYI,PKZY (2(1PE9.2,2X,F4.1))
TIPH                     (1PE9.2)
YZXI,PYZI,YZYI,PYZY (2(1PE9.2,2X,F4.1))
RK,RY,RZ,RP             (4F10.1)
(RZ=MAG(Z) STRIKE, RP=PHZ(Z) STRIKE
and RK=MAG(K) STRIKE, RY=MAG(Y) STRIKE)
  
```

6. **OUTPT2** - A page of output for each receiver location is generated. An explanation of the variable names printed on the output follows. The output file OUTPT2 from the SAMPLE JOB shows the page format.

SITE LOCATION	X,Y	= receiver site location
EX01-EX02-EY01-EY02		= incident electric fields at the surface for first (1) and second (2) polarizations.
HX01-HX02-HY01-HY02		= incident magnetic fields at the surface for first (1) and second (2) polarizations.
EXS1-EXS2-EYS1-EYS2		= secondary E fields
HXS1-HXS2-HYS1-HYS2		= secondary H fields

HZS1-HZS2	= secondary vertical H fields
EXT1-EXT2-EYT1-EYT2	= total E fields
HXT1-HXT2-HYT1-HYT2	= total H fields
ZXXI-ZXYI-ZYXI-ZYYI	= impedance elements in original coordinates.
RXYI-PXYI-RYXI-PYXI	= apparent resistivity and phase from off-diagonal impedance elements ZXYI and ZYXI, in original coords.
MAG(K) STRIKE	= incrementally rotate axes until $ K_{zy} $ is maximized
MAG(Y) STRIKE	= incrementally rotate axes until $ Y_{zx} $ is maximized
KZXI-KZYI	= tipper elements in original coords.
KZXM-PKZX-KZYM-PKZY	= magnitude and phase of tipper elements in original coords.
KZXMY-KZYM-TIPH	= tipper elements for MAG(K) strike direction and the tipper itself = $\sqrt{2} \sqrt{ K_{zx} ^2 + K_{zy} ^2}$
MKZXMK-PKZXMK-MKZYM-KPZYM	= magnitude and phase of tipper elements for MAG(K) strike direction
YZXI-YZYI	= vertical admittance elements in original coords.
YZXM-PYZX-YZYM-PYZY	= magnitude and phase of vertical admittance elements in original coords.
YZXMY-YZYM-TIPE	= vertical admittance elements for MAG(Y) strike direction and the "electric tipper" itself = $\sqrt{2} \sqrt{ Y_{zx} ^2 + Y_{zy} ^2}$
MYZXMY-PYZXMY-MYZYM-PYZYM	= magnitude and phase of vertical admittance elements for MAG(Y) strike direction
ZXXMK-ZXYMK-ZYXMK-ZYYMK	= impedance elements for MAG(K) strike
RXYMK-PXYMK-RYXMK-PYXMK	= apparent resistivity and phase from ZXYMK and ZYXMK for MAG(K) strike

ZXXMY-ZXYMY-ZYXMY-ZYYMY	= impedance elements for MAG(Y) strike
RXYMY-PXYMY-RYXMY-PYXMY	= app. res. and phases from ZXYMY and ZYXMY for MAG(Y) strike
MAG(Z) STRIKE	= axis obtained by maximizing $ Z_{xy} $
PHZ(Z) STRIKE	= axis obtained by maximizing $ \phi_{xy} $
ZXXMZ-ZXYMZ-ZYXMZ-ZYYMZ	= impedance elements for MAG(Z) strike
RXYMZ-PXYMZ-RYXMZ-PYXMZ	= app. res. and phases from ZXYMZ and ZYXMZ for MAG(Z) strike
ZXXPZ-ZXYPZ-ZYXPZ-ZYYPZ	= impedance elements for PHZ(Z) strike
RXYPZ-PXYPZ-RYXPZ-PYXPZ	= app. res. and phases from ZXYPZ and ZYXPZ for PHZ(Z) strike

NOTE: Tipper elements are defined by

$$HZS = [KZXI \cdot HXTI + KZYI \cdot HYTI].$$
 Vertical admittance elements
 are defined by

$$HZS = [YZXI \cdot EXTI + YZVI \cdot EYTI].$$

If we define these quantities in
 original coordinates, then we
 must consider total E and H fields
 in original coordinates.

SYSTEM IMPLEMENTATION

MT3D-A requires 15 segments of memory (1 segment = 64K words). One segment is for procedure, the other 14 segments are for data storage. (PRIME has virtual memory. No attempt was made to optimize paging.) MT3D-B requires two segments, one for procedure and one for data.

The programs open and close data files for reading and writing with subroutines OPNRED, OPNWRT, and CLOSEF. These, in turn, call PRIME system subroutines, OPEN\$A and CLOS\$A. These PRIME routines, and all others the programs reference, are described in Appendix II. A user installing the programs on another system should have access to equivalent routines.

All input is free format. Appendix II describes free format on PRIME computers (List Directed Read). The programs are compiled with the -BIG option to accommodate large arrays. This option is also described in Appendix II.

The programs make use of 9 logical units for I/O. These units are listed below.

Variable Name	Logical Unit	I/O File Name
IU1	8	GRDDT1
IU3	9	INPT
IU2	11	OUTPT1
IU4	12	GRDDT2
IU5	13	OUTPT2
IU7	14	SCAT
IU6	16	FIELDS
IU8	18	PLTFIL
IUDMY	1	COMO file PHANT (actually never used)
-	1	COMO file PHANT

REFERENCES

- Hohmann, G. W., 1975, Three-dimensional induced polarization and electromagnetic modeling: *Geophysics*, v. 40, p. 309-324.
- Hohmann, G. W., and Ting, S. C., 1978, Three dimensional magnetotelluric modeling: University of Utah Research Institute, Earth Science Laboratory report 7.
- Stodt, J. A., Hohmann, G. W., and Ting, S. C., 1979, The telluric-magnetotelluric method in two- and three-dimensional environments: Univ. of Utah, Geology and Geophysics Department report IDO/78-1701.a.6.2.1.
- Ting, S. C., and Hohmann, G. W., 1979, Integral equation modeling of three dimensional magnetotelluric response: Univ. of Utah, Geol. and Geophysics Dept. report ET27002-4.
- Wannamaker, P. E., Ward, S. H., Hohmann, G. W. and Sill, W. R., 1980, Magnetotelluric models of the Roosevelt Hot Springs KGRA, Utah: Univ. of Utah, Geol. and Geophysics Dept. report ET/27002-8.

APPENDIX I

PRIMOS SUBROUTINES

Introduction

The following subroutines are a part of the PRIMOS subroutine library. Additional information on the use of PRIMOS subroutines can be found in the PRIME system manual titled "PRIMOS Subroutines Reference Guide", PDR3621, dated March 1979. PRIME Computer Inc. has given permission to reproduce the descriptions that follow.

CLOS\$A

CLOS\$A is a logical function that closes the file open on unit. If the operation is successful, the function is .TRUE. and if unsuccessful, the function is .FALSE..

LOG = CLOS\$A(unit)

CALL CLOS\$A(unit)

unit

File unit.

unit is INTEGER*2.

ERRPR\$

ERRPR\$ interprets a return code and, if non-zero, prints a standard message associated with the error return code, code, followed by optional user text.

CALL ERRPR\$(key, code, text, txtlen, filnam, namlen)

key

An integer specifying the action to take subsequent to

printing the message. Possible values are:

K\$NRTN Exit to the system, never return to the calling program.

K\$SRTN Exit to the system, return to the calling program following an 'S' command.

K\$IRTN Return immediately to the calling program.

code An integer variable containing the return code from the routine that generated the error. If code is 0, ERRPR\$ always returns immediately to the calling program and prints nothing.

text A message to be printed following the standard error message. Text is omitted by specifying both text and txtlen as 0.

txtlen The length in characters of text.

filnam The name of the program or subsystem detecting or reporting the error. filnam is omitted by specifying both filnam and namlen as 0.

namlen The length in characters of filnam.

EXIT

The EXIT subroutine provides a way to return from a user program to PRIMOS; it prints 'OK,' (or 'OK:') at the

terminal and PRIMOS awaits a user command.

CALL EXIT

The user may open or close files or switch directories, and restart a FORTRAN program at the next statement by typing 'S' (i.e., START).

OPEN\$A

OPEN\$A is a logical function that opens a file of the given name on unit. If the operation is successful, the function value is .TRUE. and if the operation is unsuccessful, the function value is .FALSE..

LOG = OPEN\$A(opnkey+typkey,name,namlen,unit)

CALL OPEN\$A(opnkey+typkey,name,namlen,unit)

opnkey	A\$READ, open for reading (.NE. A\$WRIT or A\$RDWR); A\$WRIT, open for writing; A\$RDWR, open for reading and writing.
typkey	A\$SAMF, SAM file (.NE. A\$DAMF); A\$DAMF, DAM file.
name	File name (may be treename).
namlen	Length of name in characters.
unit	PRIMOS file unit.

All arguments are INTEGER*2 except name, whose type does not matter.

SRCH\$\$

SRCH\$\$ is used to open a file, close a file, delete a file, or check on the existence of a file.

CALL SRCH\$(action+ref+newfil, filnam, namlen, funit, type, code)

action

A subkey indicating the action to be performed. Possible values are:

K\$READ Open filnam for reading on funit.

K\$WRIT Open filnam for writing on funit.

K\$RDWT Open filnam for reading and writing on funit.

K\$CLOS Close file by filnam or by funit.

K\$DELE Delete file filnam.

K\$EXST Check on existence of filnam.

ref

A subkey modifying the action subkey as follows:

K\$IUFD Search for filnam in the current UFD (this is the default).

K\$ISEQ Perform the action specified by action on the file that is a segment directory entry in the directory open on file unit filnam.

K\$CACC Change the access mode of the file already open on funit to action. (K\$READ, K\$WRIT, K\$RDWR only).

K\$GETU Open filnam on an unused file-unit selected by PRIMOS. The unit number is returned in funit. When this key is used, SRCH\$ supplies a unit

number not currently in
use.

newfil

A subkey indicating the type of
file to create if filnam does
not exist. Possible values
are:

K\$NSAM New threaded (SAM) file
(this is the default).

K\$NDAM New directed (DAM)
file.

K\$NSGS New threaded (SAM)
segment directory.

K\$NSGD New directed (DAM)
segment directory.

It is not possible to
generate a new UFD with
SRCH\$\$; use CREA\$\$
instead.

filnam

Name of the file to be opened
(2 characters per word).
K\$CURR can be used to open the
current UFD (ACTION keys
K\$READ, K\$WRIT, or K\$RDWR
only). If ref is K\$ISEG,
filnam is a file unit from 1 to
62 (1 to 15 under PRIMOS II) on
which a segment directory is
already open.

namlen

The length in characters (1-32)
of filnam.

funit

The number (1-15 under PRIMOS
II) of the file unit to be
opened or closed, or returned
argument with K\$GETU key.

type

An integer variable that is set
to the type of the file opened.
type is set only on calls that
open a file -- it is unmodified
for other calls. Possible
values of type are:

- 0 SAM file.
- 1 DAN file.
- 2 SAM segment directory.
- 3 DAN segment directory.
- 4 UFD.

code An integer variable set to the
return code.

SRCH\$\$ is a complex subroutine that has multiple uses. The most common use is to open and close files.

TNOU

TNOU outputs count characters to the user terminal followed by the LINE FEED, CARRIAGE RETURN. buffer is expected to contain 2 characters per word.

CALL TNOU(buffer,count)

TNOUA

TNOUA outputs count characters to the user terminal, but is not followed by the LINE FEED, CARRIAGE RETURN.

CALL TNOUA(buffer,count)

UNIT\$A

UNIT\$A is a logical function which returns .TRUE. if the unit is open and .FALSE. if the unit is not open.

LOG = UNIT\$A(unit)

unit

PRIMOS file unit. (Mode is INTEGER*2.)

APPENDIX II

FORTRAN IV EXTENSIONS

Introduction

The following extensions are a part of PRIME's FORTRAN IV library. Additional information on the use of these extensions can be found in the PRIME system manual titled "The FORTRAN Programmers Guide", PDR3057, dated November 1977. PRIME Computer Inc. has given permission to reproduce the descriptions that follow.

List Directed READ statement

`READ(u,*,END=a[,ERR=b]) list`

Where `u` is the FORTRAN read unit and `*` is the symbol indicating that this is a free-format read. `a` and `b` are the statement numbers to which control is passed if an end of file or a read error is encountered.

List-directed READ frees the programmer from including format statements for READs from free-format devices such as the user terminal. The input data is converted according to the data type of items in the I/O list. Additionally, this feature provides a method to indicate in the input data that an item in the I/O list is to remain unchanged by the READ statement.

Delimiters: Values in list-directed input are separated by a blank, comma, or slash. A slash or comma may be preceded and followed by any number of blanks. An end of record is treated as a blank. A slash terminates a READ and leaves the remaining items in the I/O list unchanged. Two adjacent commas with no intervening characters except blanks will leave the corresponding item in the I/O list unchanged. A list-directed READ will read any number of records until a slash is encountered or until all items in the I/O list have been satisfied.

Numerical Input: If an item in the I/O list is a long or short integer variable or array element, the corresponding input field must contain a string of decimal digits optionally preceded by a + or - sign, as in:

-357 100514 +12387

If a real or double precision item is in the I/O list, the corresponding input field must contain a string of decimal digits with an optionally embedded decimal point. An exponent field may follow either an E or D format, as in:

51 -27.68 7.65E-14 863D2
 .503 +265.

The input field corresponding to a complex item must contain two real numbers (as described above), separated by a comma and enclosed in parenthesis, as in:

(1E2, -2.) (5.67E-6, 8.09)

Character String Input: A variable or array of any type can be set equal to a character string using list-directed READ. A character string must be enclosed in single quotation marks in the input data. Within a character string, a quotation mark is represented by two consecutive quotation marks. A character string, regardless of length, matches a single item in the I/O list whether it is a variable, array element, or whole array (represented by including the unsubscripted array name in the I/O list). If the character string is shorter than the list item, the rightmost characters of the list item are blank-filled. If the character string is longer than the list item, the rightmost characters of the character string are ignored.

NOBIG / BIG

-BIG (a parameter on the compilation statement)

BIG treats all dummy arrays as arrays that span segment boundaries. BIG forces the 64V mode and thus cannot be used in the 32R or 64R modes. If a dummy argument array may become associated with an array spanning a segment boundary (through a subroutine call or function reference), the compiler must be made aware of this by including BIG in the parameter list. The code generated will work whether or not the array actually spans segment boundary.

SAMPLE JOB

The following pages are copies of input and output files generated from a sample job execution.

In output file PHANT, the TIME command gives the amount of time used since LOGIN. The first time is the amount of connect time given in hours and minutes. The second time is the amount of CPU time in minutes and seconds. The third time is the I/O time in minutes and seconds.

See Figure 1 in section INPUT for a picture of the model used in this sample job.

USER: MT3D

PHANT

```
*****
*****
M  M M M M M M M M M M M M
M M M M M M M M M M M M
M M M M M M M M M M M M
M M M M M M M M M M M M
M M M M M M M M M M M M
M M M M M M M M M M M M
M M M M M M M M M M M M
M M M M M M M M M M M M
```

```
M M M M M M M M M M M M M M
M M M M M M M M M M M M M M
M M M M M M M M M M M M M M
M M M M M M M M M M M M M M
M M M M M M M M M M M M M M
M M M M M M M M M M M M M M
M M M M M M M M M M M M M M
```

```
*****
*****
LABEL: PRT007 -FORM NEWRIB -COPIES 1
```

SPOOLED: 10/21/80 14:57

STARTED: 10/21/80 16:00, CN: CEN BY: CEN

OK, TIME

0'00 0'02 0'00

OK, MT3D.A

1 1 10 8 1

100.000

0.010

0.000 0.000

500.000 0.000

1000.000 0.000

1500.000 0.000

2000.000 0.000

0.000 1000.000

500.000 1000.000

1000.000 1000.000

1500.000 1000.000

2000.000 1000.000

250.000 250.000 500.000 500.000 5.000 0.000

250.000 750.000 500.000 500.000 5.000 0.000

250.000 250.000 2000.000 500.000 5.000 0.000

250.000 750.000 2000.000 500.000 5.000 0.000

250.000 250.000 1500.000 500.000 5.000 0.000

250.000 750.000 1500.000 500.000 5.000 0.000

250.000 250.000 1000.000 500.000 5.000 0.000

250.000 750.000 1000.000 500.000 5.000 0.000

OK, MT3D.B

1 1 10 8 1

100.000

0.010

0.000 0.000

500.000 0.000

1000.000 0.000

1500.000 0.000

2000.000 0.000

0.000 1000.000

500.000 1000.000

1000.000 1000.000

1500.000 1000.000

2000.000 1000.000

250.000 250.000 500.000 500.000 5.000 0.000

250.000 750.000 500.000 500.000 5.000 0.000

250.000 250.000 2000.000 500.000 5.000 0.000

250.000 750.000 2000.000 500.000 5.000 0.000

250.000 250.000 1500.000 500.000 5.000 0.000

250.000 750.000 1500.000 500.000 5.000 0.000

250.000 250.000 1000.000 500.000 5.000 0.000

250.000 750.000 1000.000 500.000 5.000 0.000

OK, TIME

0'04 3'35 0'05

OK, COMD -TTY

OK, COMD -END

USER: MT3D

INPT


```
M  M M M M M  M M M M
M M M  M  M  M M  M
M M M  M  M  M M  M
M M M  M  M M  M  M
M  M  M  M  M M  M
M  M  M  M  M M  M
M  M  M  M M M  M
M  M  M  M M M M
```

```
M M M  M  M M M M M M M
M  M M  M M  M  M
M  M M M M  M  M
M  M M M M M M  M
M  M M M M  M  M
M  M M M M  M  M
M M M  M M  M
M M M  M M  M
```


LABEL: PRTOOB -FORM NEWRIB -COPIES 1

SPOOLED: 10/21/80 14:57

STARTED: 10/21/80 16:00, ON: CEN BY: CEN

1, 1, 10, 8, 1

100.

0. 01

0. 0, 0. 0

500. , 0.

1000. , 0.

1500. , 0.

2000. , 0.

0. , 1000.

500. , 1000.

1000. , 1000.

1500. , 1000.

2000. , 1000.

250. , 250. , 500. , 500. , 5. , 0.

250. , 750. , 500. , 500. , 5. , 0.

250. , 250. , 2000. , 500. , 5. , 0.

250. , 750. , 2000. , 500. , 5. , 0.

250. , 250. , 1500. , 500. , 5. , 0.

250. , 750. , 1500. , 500. , 5. , 0.

250. , 250. , 1000. , 500. , 5. , 0.

250. , 750. , 1000. , 500. , 5. , 0.

USER: MT3D

OUTPT1


```
M  M M M M M  M M M M
M M M  M  M  M M  M
M M M  M  M  M  M
M M M  M  M M  M
M  M  M  M  M M  M
M  M  M  M  M M  M
M  M  M  M  M M  M
M  M  M  M M M M M
```

```
MMM M  M M M M M M M M
M  M M  M  M  M M  M  M
M  M M  M  M  M M  M
M  M M  M  M  M M  M
M  M M  M  M  M M  M
M  M M  M  M  M M  M
MMM  MMM  M  M  M  MMM
```


LABEL: PRT009 -FORM NEWRIB -COPIES 1

SPOOLED: 10/21/80 14:57

STARTED: 10/21/80 16:01, ON: CEN BY: CEN

1NUMBER OF RECEIVERS ----- 10

RECEIVER POSITIONS (X,Y) -- BELOW

(	0.00	0.00	)	(	500.00	0.00	)	(	1000.00	0.00	)	(	1500.00	0.00	)	(	2000.00	0
(	0.00	1000.00	)	(	500.00	1000.00	)	(	1000.00	1000.00	)	(	1500.00	1000.00	)	(	2000.00	1000

NUMBER OF CELLS ----- 8

COORDINATES OF CELLS ----- (X,Y,Z)

SIZES

RESISTIVITIES

250.00	250.00	500.00	500.00	5.00E 00	0.00E-01
250.00	750.00	500.00	500.00	5.00E 00	0.00E-01
250.00	250.00	2000.00	500.00	5.00E 00	0.00E-01
250.00	750.00	2000.00	500.00	5.00E 00	0.00E-01
250.00	250.00	1500.00	500.00	5.00E 00	0.00E-01
250.00	750.00	1500.00	500.00	5.00E 00	0.00E-01
250.00	250.00	1000.00	500.00	5.00E 00	0.00E-01
250.00	750.00	1000.00	500.00	5.00E 00	0.00E-01

1	FREQ	RHD1	(SKIN DEPTH)
	0.010	100.000	0.503E 05

-9.869E-12	-9.675E-12	-1.054E-05	-1.033E-05	0.000E-01	0.000E-01
-9.869E-12	-9.675E-12	-1.054E-05	-1.033E-05	0.000E-01	0.000E-01
-9.855E-12	-9.101E-12	-1.053E-05	-9.720E-06	0.000E-01	0.000E-01
-9.855E-12	-9.101E-12	-1.053E-05	-9.720E-06	0.000E-01	0.000E-01
-9.861E-12	-9.290E-12	-1.053E-05	-9.923E-06	0.000E-01	0.000E-01
-9.861E-12	-9.290E-12	-1.053E-05	-9.923E-06	0.000E-01	0.000E-01
-9.866E-12	-9.482E-12	-1.054E-05	-1.013E-05	0.000E-01	0.000E-01
-9.866E-12	-9.482E-12	-1.054E-05	-1.013E-05	0.000E-01	0.000E-01

6.439E-08	6.356E-08	2.125E-06	2.183E-06	-1.809E-08	-5.858E-09
4.937E-07	4.801E-07	1.941E-06	1.951E-06	-3.504E-07	-2.946E-07
8.255E-08	7.575E-08	2.393E-06	2.109E-06	1.731E-07	1.745E-07
5.638E-07	5.237E-07	2.199E-06	1.982E-06	8.372E-07	8.281E-07
5.556E-08	5.226E-08	2.267E-06	2.094E-06	1.167E-07	1.418E-07
4.117E-07	3.895E-07	1.856E-06	1.730E-06	3.484E-07	4.305E-07
5.455E-08	5.212E-08	2.155E-06	2.099E-06	1.355E-08	4.480E-08
4.130E-07	3.937E-07	1.798E-06	1.737E-06	2.276E-09	1.045E-07

-1.054E-05	-1.033E-05	0.000E-01	0.000E-01	0.000E-01	0.000E-01
-1.054E-05	-1.033E-05	0.000E-01	0.000E-01	0.000E-01	0.000E-01
-1.053E-05	-9.720E-06	0.000E-01	0.000E-01	0.000E-01	0.000E-01
-1.053E-05	-9.720E-06	0.000E-01	0.000E-01	0.000E-01	0.000E-01
-1.053E-05	-9.923E-06	0.000E-01	0.000E-01	0.000E-01	0.000E-01
-1.053E-05	-9.923E-06	0.000E-01	0.000E-01	0.000E-01	0.000E-01
-1.054E-05	-1.013E-05	0.000E-01	0.000E-01	0.000E-01	0.000E-01
-1.054E-05	-1.013E-05	0.000E-01	0.000E-01	0.000E-01	0.000E-01

1.112E-06	1.123E-06	9.037E-08	8.772E-08	-1.833E-07	-1.547E-07
1.341E-06	1.349E-06	4.229E-07	4.109E-07	-2.941E-07	-2.606E-07
1.300E-06	1.169E-06	1.012E-07	9.408E-08	3.703E-07	3.685E-07
1.518E-06	1.368E-06	4.621E-07	4.296E-07	4.713E-07	4.642E-07
1.706E-06	9.658E-07	8.536E-08	8.070E-08	1.145E-07	1.565E-07
1.706E-06	1.201E-06	3.599E-07	3.407E-07	1.283E-07	1.717E-07

9. 971E-07	9. 639E-07	8. 636E-08	8. 231E-08	-1. 764E-08	3. 202E-08
1. 244E-06	1. 203E-06	3. 638E-07	3. 470E-07	-4. 253E-08	1. 036E-08

9. 870E-12	9. 870E-12	1. 054E-05	1. 054E-05	-5. 309E-03	0. 000E-01
4. 971E-09	0. 000E-01				

1. 054E-05	1. 054E-05	0. 000E-01	0. 000E-01	0. 000E-01	0. 000E-01
5. 309E-03	0. 000E-01				

USER: MT3D

SCAT


```
M  M M M M M  M M M M
M M M  M  M  M M M
M M M  M  M M M
M M M  M  M M M
M  M M  M  M M M
M  M M  M  M M M
M  M M  M  M M M
M  M M  M  M M M
```

```
MMM  MMM  MMM  MMMMM
M  M M M  M M M M
M  M M  M  M M M
MMM M  MMMMM M
M  M M  M M M
M  M M M M M M
MMM  MMM M  M M
```


LABEL: PRT010 -FORM NEWRIB -COPIES 1

SPOOLED: 10/21/80 14:57

STARTED: 10/21/80 16:01, ON: CEN BY: CEN

6. 438E-08	6. 356E-08	2. 125E-06	2. 183E-06	-1. 809E-08	-5. 858E-09
4. 937E-07	4. 801E-07	1. 941E-06	1. 951E-06	-3. 504E-07	-2. 946E-07
8. 255E-08	7. 573E-08	2. 393E-06	2. 109E-06	1. 731E-07	1. 745E-07
5. 638E-07	5. 237E-07	2. 199E-06	1. 982E-06	8. 372E-07	8. 281E-07
5. 556E-08	5. 226E-08	2. 267E-06	2. 094E-06	1. 167E-07	1. 418E-07
4. 117E-07	3. 895E-07	1. 856E-06	1. 730E-06	3. 484E-07	4. 305E-07
5. 455E-08	5. 212E-08	2. 155E-06	2. 099E-06	1. 355E-08	4. 480E-08
4. 130E-07	3. 937E-07	1. 798E-06	1. 737E-06	2. 276E-09	1. 045E-07
1. 112E-06	1. 123E-06	9. 037E-08	8. 772E-08	-1. 833E-07	-1. 547E-07
1. 341E-06	1. 349E-06	4. 229E-07	4. 109E-07	-2. 941E-07	-2. 606E-07
1. 300E-06	1. 169E-06	1. 012E-07	9. 408E-08	3. 703E-07	3. 685E-07
1. 518E-06	1. 368E-06	4. 621E-07	4. 296E-07	4. 713E-07	4. 642E-07
1. 036E-06	9. 658E-07	8. 536E-08	8. 070E-08	1. 145E-07	1. 565E-07
1. 286E-06	1. 201E-06	3. 599E-07	3. 407E-07	1. 283E-07	1. 717E-07
9. 971E-07	9. 639E-07	8. 636E-08	8. 231E-08	-1. 764E-08	3. 202E-08
1. 244E-06	1. 203E-06	3. 638E-07	3. 470E-07	-4. 253E-08	1. 036E-08

USER: MT3D

FIELDS


```
M  M M M M M  M M M M M
M M M  M  M  M M M
M M M  M  M  M M M
M M M  M  M M M M
M  M  M  M  M M M
M  M  M  M  M M M
M  M  M  M M M M M
```

```
M M M M M M M M M M M
M  M  M  M  M  M M M
M  M  M  M  M  M M
M M M M M M M M M
M  M  M  M  M  M M
M  M  M  M  M  M M
M  M M M M M M M M
```


LABEL: PRT012 -FORM NEWRIB -COPIES 1

SPOOLED: 10/21/80 14:57

STARTED: 10/21/80 16:01, ON: CEN BY: CEN

0.0	0.0						
-1.307E-11	-1.243E-11	-9.615E-06	-9.259E-06	-8.184E-06	-7.833E-06	-8.993E-12	-9.146E-12
-4.053E-05	-3.986E-05	-2.046E-12	-3.524E-12	-4.661E-12	-5.286E-12	1.358E-05	1.309E-05
-4.889E-12	-4.718E-12	-8.185E-12	-8.640E-12				
500.0	0.0						
-1.607E-11	-1.582E-11	-3.399E-06	-3.362E-06	-7.446E-06	-7.152E-06	-1.212E-11	-1.203E-11
-1.895E-05	-1.825E-05	-2.103E-12	-2.863E-12	-4.405E-12	-5.329E-12	9.839E-06	9.417E-06
-3.502E-05	-3.480E-05	-6.480E-12	-6.366E-12				
1000.0	0.0						
-1.298E-11	-1.288E-11	1.798E-06	1.781E-06	-4.745E-06	-4.567E-06	-2.252E-12	-1.917E-12
8.948E-06	9.554E-06	-2.018E-12	-2.700E-12	-3.467E-12	-4.604E-12	4.922E-06	4.599E-06
-3.383E-05	-3.322E-05	-3.979E-12	-3.524E-12				
1500.0	0.0						
-5.717E-12	-5.810E-12	1.661E-06	1.624E-06	-2.715E-06	-2.609E-06	-9.606E-13	-1.040E-12
1.551E-05	1.584E-05	-2.046E-12	-2.387E-12	-2.615E-12	-2.814E-12	3.167E-06	2.917E-06
-2.510E-05	-2.436E-05	-1.876E-12	-2.046E-12				
2000.0	0.0						
-5.540E-12	-5.446E-12	1.197E-06	1.159E-06	-1.602E-06	-1.538E-06	-6.602E-12	-6.334E-12
1.168E-05	1.182E-05	-1.023E-12	-1.421E-12	-1.478E-12	-2.103E-12	4.245E-06	3.995E-06
-1.841E-05	-1.773E-05	-1.080E-12	-1.023E-12				
0.0	1000.0						
-8.647E-12	-8.069E-12	-7.626E-06	-7.357E-06	-1.130E-06	-1.213E-06	-6.712E-12	-6.484E-12
-2.279E-05	-2.215E-05	-1.251E-12	-2.046E-12	-2.139E-12	-3.340E-12	1.681E-06	1.395E-06
-2.984E-12	-3.993E-12	2.320E-05	2.276E-05				
500.0	1000.0						
4.948E-06	4.784E-06	-2.151E-06	-2.116E-06	-6.141E-07	-6.537E-07	3.259E-06	3.172E-06
-1.229E-05	-1.167E-05	-7.641E-06	-7.550E-06	1.156E-05	1.153E-05	1.650E-06	1.360E-06
-1.961E-05	-1.932E-05	1.675E-05	1.639E-05				
1000.0	1000.0						
3.875E-06	3.749E-06	1.072E-06	1.061E-06	-1.173E-06	-1.134E-06	1.989E-06	1.940E-06
3.685E-06	4.162E-06	-7.060E-06	-6.971E-06	1.238E-05	1.230E-05	7.419E-07	5.022E-07
-2.222E-05	-2.168E-05	9.501E-06	9.220E-06				
1500.0	1000.0						
2.113E-06	2.036E-06	1.044E-06	1.019E-06	-1.072E-06	-1.031E-06	1.086E-06	1.052E-06
8.165E-06	8.460E-06	-5.285E-06	-5.191E-06	9.600E-06	9.481E-06	1.542E-06	1.336E-06
-1.865E-05	-1.804E-05	5.752E-06	5.543E-06				
2000.0	1000.0						
1.195E-06	1.147E-06	8.282E-07	8.005E-07	-8.272E-07	-7.951E-07	6.297E-07	6.069E-07
6.098E-06	6.251E-06	-3.612E-06	-3.521E-06	6.748E-06	6.602E-06	3.444E-06	3.227E-06
-1.486E-05	-1.428E-05	3.652E-06	3.501E-06				

PLTFIL

1. 本表由本局统一印制，凡属本局管辖的事业单位均须填报。

```

M      M  MMMMM  MMM  MMMM
MM MM  M      M      M M  M
M M M  M      M      M M  M
M M M  M      MM      M  M
M      M      M      M  M
M      M      M      M  M
M      M      MMM  MMMM

```

```

MMMM  M          MMMMM MMMMM  MMM  M
M      M  M      M      M      M      M
M      M  M      M      M      M      M
MMMM  M  M      M      MMMMM      M  M
M      M  M      M      M      M      M
M      M  M      M      M      M      M
M      MMMMM  M      M      MMM  MMMMM

```

[illegible]

SPOOLED: 10/21/80 14:58
STARTED: 10/21/80 16:02, ON: CEN BY: CEN

0.0	0.0		
1.13E 00	54.0	5.74E 00	48.5
1.27E-09	43.6	2.24E-09	46.4
2.57E-09			
7.48E-06	7.6	1.89E-06	5.0
210.0	14.0	180.0	0.0
500.0	0.0		
4.60E 01	45.0	9.44E 00	47.4
9.27E-03	44.6	1.70E-09	44.2
9.27E-03			
1.90E-05	3.0	1.07E 01	2.8
90.0	90.0	90.0	90.0
1000.0	0.0		
1.37E 02	44.9	3.13E 01	46.0
8.95E-03	44.6	9.97E-10	41.2
8.95E-03			
1.27E-06	5.3	5.69E 00	1.4
90.0	90.0	90.0	90.0
1500.0	0.0		
1.33E 02	44.9	5.62E 01	45.6
6.61E-03	44.3	5.20E-10	47.1
6.61E-03			
4.18E-07	1.7	3.14E 00	1.2
90.0	90.0	90.0	90.0
2000.0	0.0		
1.23E 02	44.9	7.28E 01	45.3
4.83E-03	44.1	2.79E-10	43.1
4.83E-03			
1.20E-06	2.3	2.01E 00	1.3
90.0	90.0	90.0	90.0
0.0	1000.0		
8.41E 00	47.5	7.83E 01	44.5
9.32E-10	52.8	6.12E-03	44.4
6.12E-03			
7.51E 00	3.1	6.33E-06	5.6
180.0	0.0	180.0	0.0
500.0	1000.0		
6.35E 01	45.1	8.78E 01	44.7
5.18E-03	44.6	4.42E-03	44.5
6.81E-03			
3.35E 00	1.3	3.61E 00	1.1
130.0	133.0	140.0	143.0
1000.0	1000.0		
1.21E 02	44.9	7.93E 01	45.1
5.86E-03	44.4	2.50E-03	44.3
6.37E-03			
1.29E 00	1.2	2.86E 00	1.1
113.0	114.0	124.0	127.0
1500.0	1000.0		
1.20E 02	44.9	8.13E 01	45.2
4.90E-03	44.2	1.51E-03	44.1
5.12E-03			
6.80E-01	1.3	2.08E 00	1.2
107.0	108.0	118.0	119.0
2000.0	1000.0		
1.6E 02	44.9	8.54E 01	45.2
89E-03	43.9	9.55E-04	43.9

4.00E-03
3.99E-01 1.4 1.54E 00 1.3
104.0 104.0 114.0 114.0

USER: MT3D

OUTPT2


```
M  M MMMMM  MMM  MMMM
MM MM  M  M  M M  M
M M M  M  M  M  M
M M M  M  MM  M  M
M  M  M  M  M  M  M
M  M  M  M  M  M  M
M  M  M  MMM  MMMM
```

```
MMM  M  M MMMMM MMMM  MMMMM  MMM
M  M M  M  M  M  M  M  M  M  M
M  M M  M  M  M  M  M  M  M
M  M M  M  M  M  MMMM  M  M
M  M M  M  M  M  M  M  M
M  M M  M  M  M  M  M  M
MMM  MMM  M  M  M  MMMMM
```


LABEL: PRT014 -FORM NEWRIB -COPIES 1

SPOOLED: 10/21/80 14:58

STARTED: 10/21/80 16:02, ON: CEN BY: CEN

PAGE 0001

NO. OF SITES = 10

FREQ = 1.0E-02 HZ

HALF-SPACE RES. = 1.0E 02 OHM-M

SITE LOCATION	X =	0.0	Y =	0.0			
EX01-EX02-EY01-EY02	0.00E-01	0.00E-01	1.05E-05	1.05E-05	1.05E-05	1.05E-05	0.00E-01 0.00E-01
HX01-HX02-HY01-HY02	-5.31E-03	2.72E-08	0.00E-01	0.00E-01	0.00E-01	0.00E-01	5.31E-03-2.72E-08
EXS1-EXS2-EYS1-EYS2	-1.31E-11	-1.24E-11	-9.62E-06	-9.26E-06	-8.18E-06	-7.83E-06	-8.99E-12-9.15E-12
HXS1-HXS2-HYS1-HYS2	-4.05E-05	-3.99E-05	-2.05E-12	-3.52E-12	-4.66E-12	-5.29E-12	1.36E-05 1.31E-05
HZS1-HZS2	-4.89E-12	-4.72E-12	-8.19E-12	-8.64E-12			
EXT1-EXT2-EYT1-EYT2	-1.31E-11	-1.24E-11	9.33E-07	1.29E-06	2.36E-06	2.71E-06	-8.99E-12-9.15E-12
HXT1-HXT2-HYT1-HYT2	-5.35E-03	-3.98E-05	-2.05E-12	-3.52E-12	-4.66E-12	-5.29E-12	5.32E-03 1.31E-05
ZXXI-ZXYI-ZYXI-ZYYI	2.46E-09	2.31E-09	1.76E-04	2.42E-04	-4.46E-04	-5.04E-04	-1.69E-09-1.71E-09
RXYI-PXYI-RYXI-PYXI	1.13E 00	54.0	5.74E 00	48.5			
MAG(K) STRIKE = 210.0			MAG(Y) STRIKE = 14.0				
KZXI-KZYI	9.20E-10	8.75E-10	-1.54E-09	-1.62E-09			
KZXM-PKZX-KZYM-PKZY	1.27E-09	43.6	2.24E-09	46.4			
KZXMY-KZMY-TIPH	-1.80E-09	-1.84E-09	-2.61E-11	5.19E-11	2.57E-09		
MKZXMK-PKZXMK-MKZYM-KZYM	2.57E-09	45.7	5.81E-11	63.3			
YZXI-YZYI	-7.42E-06	9.83E-07	-1.88E-06	1.63E-07			
YZXM-PYZX-YZYM-PYZY	7.48E-06	7.6	1.89E-06	5.0			
YZXMY-YZMY-TIPE	-7.65E-06	9.94E-07	-3.02E-08	-7.95E-08	7.72E-06		
MYZXMY-PYZXMY-MYZYMY-PYZYMY	7.71E-06	7.4	8.50E-08	69.2			
ZXXMK-ZXYMK-ZYXMK-ZYYMK	1.17E-04	1.14E-04	3.78E-04	4.39E-04	-2.43E-04	-3.07E-04	-1.17E-04-1.14E-04
RXYMK-PXYMK-RYXMK-PYXMK	4.25E 00	49.2	1.95E 00	51.6			
ZXXMY-ZXYMY-ZYXMY-ZYYMY	6.34E-05	6.16E-05	4.30E-04	4.89E-04	-1.92E-04	-2.57E-04	-6.34E-05-6.16E-05
RXYMY-PXYMY-RYXMY-PYXMY	5.37E 00	48.7	1.30E 00	53.3			
MAG(Z) STRIKE = 180.0			PHZ(Z) STRIKE = 0.0				
ZXXMZ-ZXYMZ-ZYXMZ-ZYYMZ	-3.66E-09	-3.63E-09	4.46E-04	5.04E-04	-1.76E-04	-2.42E-04	4.43E-09 4.22E-09
RXYMZ-PXYMZ-RYXMZ-PYXMZ	5.74E 00	48.5	1.13E 00	54.0			
ZXXPZ-ZXYPZ-ZYXPZ-ZYYPZ	-1.69E-09	-1.71E-09	4.46E-04	5.04E-04	-1.76E-04	-2.42E-04	2.46E-09 2.31E-09
RXPZ-PXPZ-RYXPZ-PYXPZ	5.74E 00	48.5	1.13E 00	54.0			

SITE LOCATION	X =	500.0	Y =	0.0			
EXD1-EXD2-EYD1-EYD2	0.00E-01	0.00E-01	1.05E-05	1.05E-05	1.05E-05	1.05E-05	0.00E-01 0.00E-01
HXD1-HXD2-HYD1-HYD2	-5.31E-03	2.72E-03	0.00E-01	0.00E-01	0.00E-01	0.00E-01	5.31E-03-2.72E-03
EXS1-EXS2-EYS1-EYS2	-1.61E-11	-1.58E-11	-3.40E-06	-3.36E-06	-7.45E-06	-7.15E-06	-1.21E-11-1.20E-11
HXS1-HXS2-HYS1-HYS2	-1.89E-05	-1.82E-05	-2.10E-12	-2.86E-12	-4.41E-12	-5.33E-12	9.84E-06 9.42E-06
HZS1-HZS2	-3.50E-05	-3.48E-05	-6.48E-12	-6.37E-12			
EXT1-EXT2-EYT1-EYT2	-1.61E-11	-1.58E-11	7.15E-06	7.19E-06	3.10E-06	3.40E-06	-1.21E-11-1.20E-11
HXT1-HXT2-HYT1-HYT2	-5.33E-03	-1.82E-05	-2.10E-12	-2.86E-12	-4.41E-12	-5.33E-12	5.32E-03 9.39E-06
ZXXI-ZXYI-ZYXI-ZYYI	3.03E-09	2.96E-09	1.35E-03	1.35E-03	-5.84E-04	-6.35E-04	-2.28E-09-2.26E-09
RXYI-PXYI-RYXI-PYXI	4.60E 01	45.0	9.44E 00	47.4			
MAG(K) STRIKE = 90.0	MAG(Y) STRIKE =	90.0					
KZXI-KZYI	6.60E-03	6.51E-03	-1.22E-09	-1.19E-09			
KZXM-PKZX-KZYM-PKZY	9.27E-03	44.6	1.70E-09	44.2			
KZXMY-KZMY-TIPH	6.60E-03	6.51E-03	-1.22E-09	-1.19E-09	9.27E-03		
MKZXMK-PKZXMK-MKZYM-PKZYM	9.27E-03	44.6	1.70E-09	44.2			
YZXI-YZYI	-1.90E-05	9.96E-07	-1.07E 01	5.18E-01			
YZXM-PYZX-YZYM-PYZY	1.90E-05	3.0	1.07E 01	2.8			
YZXMY-YZMY-TIPE	-1.07E 01	5.18E-01	-5.73E-05	2.69E-06	1.07E 01		
MYZXMY-PYZXMY-MYZMY-PYZMY	1.07E 01	2.8	5.74E-05	2.7			
ZXXMK-ZXYMK-ZYXMK-ZYYMK	3.03E-09	2.96E-09	1.35E-03	1.35E-03	-5.84E-04	-6.35E-04	-2.28E-09-2.26E-09
RXYMK-PXYMK-RYXMK-PYXMK	4.60E 01	45.0	9.44E 00	47.4			
ZXXMY-ZXYMY-ZYXMY-ZYYMY	-2.05E-09	-1.79E-09	1.35E-03	1.35E-03	-5.84E-04	-6.35E-04	2.79E-09 2.49E-09
RXYMY-PXYMY-RYXMY-PYXMY	4.60E 01	45.0	9.44E 00	47.4			
MAG(Z) STRIKE = 90.0	PHZ(Z) STRIKE =	90.0					
ZXXMZ-ZXYMZ-ZYXMZ-ZYYMZ	3.03E-09	2.96E-09	1.35E-03	1.35E-03	-5.84E-04	-6.35E-04	-2.28E-09-2.26E-09
RXYMZ-PXYMZ-RYXMZ-PYXMZ	4.60E 01	45.0	9.44E 00	47.4			
Z-ZXYPZ-ZYXPZ-ZYYPZ	-2.05E-09	-1.79E-09	1.35E-03	1.35E-03	-5.84E-04	-6.35E-04	2.79E-09 2.49E-09

RXYPZ-PXYPZ-RYXPZ-PYXPZ	4.60E 01 45.0	9.44E 00 47.4		
SITE LOCATION	X = 1000.0	Y = 0.0		
EX01-EX02-EY01-EY02	0.00E-01 0.00E-01	1.05E-05 1.05E-05	1.05E-05 1.05E-05	0.00E-01 0.00E-01
HX01-HX02-HY01-HY02	-5.31E-03 2.72E-08	0.00E-01 0.00E-01	0.00E-01 0.00E-01	5.31E-03-2.72E-08
EXS1-EXS2-EYS1-EYS2	-1.30E-11-1.29E-11	1.80E-06 1.78E-06	-4.74E-06-4.57E-06	-2.25E-12-1.92E-12
HXS1-HXS2-HYS1-HYS2	8.95E-06 9.55E-06	-2.02E-12-2.70E-12	-3.47E-12-4.60E-12	4.92E-06 4.60E-06
HZS1-HZS2	-3.38E-05-3.32E-05	-3.98E-12-3.52E-12		
EXT1-EXT2-EYT1-EYT2	-1.30E-11-1.29E-11	1.23E-05 1.23E-05	5.80E-06 5.98E-06	-2.25E-12-1.92E-12
HXT1-HXT2-HYT1-HYT2	-5.30E-03 9.58E-06	-2.02E-12-2.70E-12	-3.47E-12-4.60E-12	5.31E-03 4.57E-06
ZXXI-ZXYI-ZYXI-ZYYI	2.44E-09 2.43E-09	2.33E-03 2.32E-03	-1.09E-03-1.13E-03	-4.24E-10-3.61E-10
RXYI-PXYI-RYXI-PYXI	1.37E 02 44.9	3.13E 01 46.0		
MAG(K) STRIKE = 90.0	MAG(Y) STRIKE = 90.0			
KZXI-KZYI	6.37E-03 6.28E-03	-7.50E-10-6.57E-10		
KZXM-PKZX-KZYM-PKZY	8.95E-03 44.6	9.97E-10 41.2		
KZXMY-KZYMY-TIPH	6.37E-03 6.28E-03	-7.50E-10-6.57E-10	8.95E-03	
MKZXMK-PKZXMK-MKZYM-KPYMK	8.95E-03 44.6	9.97E-10 41.2		
YZXI-YZYI	-1.26E-06 1.18E-07	-5.69E 00 1.37E-01		
YZXM-PYZX-YZYM-PYZY	1.27E-06 5.3	5.69E 00 1.4		
YZXMY-YZYMY-TIPE	-5.69E 00 1.37E-01	-3.92E-05 8.60E-07	5.69E 00	
MYZXMY-PYZXMY-MYZYMY-PYZYMY	5.69E 00 1.4	3.92E-05 1.3		
ZXXMK-ZXYMK-ZYXMK-ZYYMK	2.44E-09 2.43E-09	2.33E-03 2.32E-03	-1.09E-03-1.13E-03	-4.24E-10-3.61E-10
RXYMK-PXYMK-RYXMK-PYXMK	1.37E 02 44.9	3.13E 01 46.0		
ZXXMY-ZXYMY-ZYXMY-ZYYMY	-5.76E-09-5.48E-09	2.33E-03 2.32E-03	-1.09E-03-1.13E-03	7.78E-09 7.55E-09
RXYMY-PXYMY-RYXMY-PYXMY	1.37E 02 44.9	3.13E 01 46.0		
MAG(Z) STRIKE = 90.0	PHZ(Z) STRIKE = 90.0			
ZXXMZ-ZXYMZ-ZYXMZ-ZYYMZ	2.44E-09 2.43E-09	2.33E-03 2.32E-03	-1.09E-03-1.13E-03	-4.24E-10-3.61E-10
RXYMZ-PXYMZ-RYXMZ-PYXMZ	1.37E 02 44.9	3.13E 01 46.0		
Z-ZXYPZ-ZYXPZ-ZYYPZ	-5.76E-09-5.48E-09	2.33E-03 2.32E-03	-1.09E-03-1.13E-03	7.78E-09 7.55E-09

ZXXPZ-ZXYPZ-ZYXPZ-ZYYPZ	-4.41E-09-4.14E-09	2.30E-03 2.29E-03	-1.48E-03-1.50E-03	5.31E-09 5.04E-09
RXYPZ-PXYPZ-RYXPZ-PYXPZ	1.33E 02 44.9	5.62E 01 45.6		
SITE LOCATION	X = 2000.0	Y = 0.0		
EX01-EX02-EY01-EY02	0.00E-01 0.00E-01	1.05E-05 1.05E-05	1.05E-05 1.05E-05	0.00E-01 0.00E-01
HX01-HX02-HY01-HY02	-5.31E-03 2.72E-08	0.00E-01 0.00E-01	0.00E-01 0.00E-01	5.31E-03-2.72E-08
EXS1-EXS2-EYS1-EYS2	-5.54E-12-5.45E-12	1.20E-06 1.16E-06	-1.60E-06-1.54E-06	-6.60E-12-6.33E-12
HXS1-HXS2-HYS1-HYS2	1.17E-05 1.18E-05	-1.02E-12-1.42E-12	-1.48E-12-2.10E-12	4.24E-06 4.00E-06
HZS1-HZS2	-1.84E-05-1.77E-05	-1.08E-12-1.02E-12		
EXT1-EXT2-EYT1-EYT2	-5.54E-12-5.45E-12	1.17E-05 1.17E-05	8.95E-06 9.01E-06	-6.60E-12-6.33E-12
HXT1-HXT2-HYT1-HYT2	-5.30E-03 1.18E-05	-1.02E-12-1.42E-12	-1.48E-12-2.10E-12	5.31E-03 3.97E-06
ZXXI-ZXYI-ZYXI-ZYYI	1.04E-09 1.03E-09	2.21E-03 2.20E-03	-1.69E-03-1.70E-03	-1.24E-09-1.19E-09
RXYI-PXYI-RYXI-PYXI	1.23E 02 44.9	7.28E 01 45.3		
MAG(K) STRIKE = 90.0	MAG(Y) STRIKE = 90.0			
KZXI-KZYI	3.47E-03 3.36E-03	-2.04E-10-1.91E-10		
KZXM-PKZX-KZYM-PKZY	4.83E-03 44.1	2.79E-10 43.1		
KZXMY-KZMY-TIPH	3.47E-03 3.36E-03	-2.04E-10-1.91E-10	4.83E-03	
MKZXMK-PKZXMK-MKZYM-KPZYM	4.83E-03 44.1	2.79E-10 43.1		
YZXI-YZYI	-1.20E-06 4.83E-08	-2.01E 00 4.50E-02		
YZXM-PYZX-YZYM-PYZY	1.20E-06 2.3	2.01E 00 1.3		
YZXMY-YZMY-TIPE	-2.01E 00 4.50E-02	-1.31E-05 2.72E-07	2.01E 00	
MYZXMY-PYZXMY-MYZMY-PYZMY	2.01E 00 1.3	1.31E-05 1.2		
ZXXMK-ZXYMK-ZYXMK-ZYYMK	1.04E-09 1.03E-09	2.21E-03 2.20E-03	-1.69E-03-1.70E-03	-1.24E-09-1.19E-09
RXYMK-PXYMK-RYXMK-PYXMK	1.23E 02 44.9	7.28E 01 45.3		
ZXXMY-ZXYMY-ZYXMY-ZYYMY	-2.47E-09-2.28E-09	2.21E-03 2.20E-03	-1.69E-03-1.70E-03	2.27E-09 2.12E-09
RXYMY-PXYMY-RYXMY-PYXMY	1.23E 02 44.9	7.28E 01 45.3		
MAG(Z) STRIKE = 90.0	PHZ(Z) STRIKE = 90.0			
ZXXMZ-ZXYMZ-ZYXMZ-ZYYMZ	1.04E-09 1.03E-09	2.21E-03 2.20E-03	-1.69E-03-1.70E-03	-1.24E-09-1.19E-09
RXXMZ-PXYMZ-RYXMZ-PYXMZ	1.23E 02 44.9	7.28E 01 45.3		

ZXXPZ-ZXYPZ-ZYXPZ-ZYYPZ	-2.47E-09-2.28E-09	2.21E-03 2.20E-03	-1.69E-03-1.70E-03	2.27E-09 2.12E-09
RXYPZ-PXYPZ-RYXPZ-PYXPZ	1.23E 02 44.9	7.28E 01 45.3		
SITE LOCATION	X = 0.0	Y = 1000.0		
EX01-EX02-EY01-EY02	0.00E-01 0.00E-01	1.05E-05 1.05E-05	1.05E-05 1.05E-05	0.00E-01 0.00E-01
HX01-HX02-HY01-HY02	-5.31E-03 2.72E-08	0.00E-01 0.00E-01	0.00E-01 0.00E-01	5.31E-03-2.72E-08
EXS1-EXS2-EYS1-EYS2	-8.65E-12-8.07E-12	-7.63E-06-7.36E-06	-1.13E-06-1.21E-06	-6.71E-12-6.48E-12
HXS1-HXS2-HYS1-HYS2	-2.28E-05-2.22E-05	-1.25E-12-2.05E-12	-2.14E-12-3.34E-12	1.68E-06 1.40E-06
HZS1-HZS2	-2.98E-12-3.99E-12	2.32E-05 2.28E-05		
EXT1-EXT2-EYT1-EYT2	-8.65E-12-8.07E-12	2.92E-06 3.19E-06	9.42E-06 9.34E-06	-6.71E-12-6.48E-12
HXT1-HXT2-HYT1-HYT2	-5.33E-03-2.21E-05	-1.25E-12-2.05E-12	-2.14E-12-3.34E-12	5.31E-03 1.37E-06
ZXXI-ZXYI-ZYXI-ZYYI	1.63E-09 1.51E-09	5.50E-04 6.01E-04	-1.77E-03-1.74E-03	-1.26E-09-1.22E-09
RXYI-PXYI-RYXI-PYXI	8.41E 00 47.5	7.83E 01 44.5		
MAG(K) STRIKE = 180.0	MAG(Y) STRIKE = 0.0			
KZXI-KZYI	5.64E-10 7.42E-10	4.37E-03 4.28E-03		
KZXM-PKZX-KZYM-PKZY	9.32E-10 52.8	6.12E-03 44.4		
KZXMY-KZYM-TIPH	4.37E-03 4.28E-03	3.05E-08 2.97E-08	6.12E-03	
MKZXMK-PKZXMK-MKZYM-PKZYM	6.12E-03 44.4	4.26E-08 44.3		
YZXI-YZYI	7.50E 00-4.02E-01	6.30E-06-6.16E-07		
YZXM-PYZX-YZYM-PYZY	7.51E 00 3.1	6.33E-06 5.6		
YZXMY-YZMY-TIPE	7.50E 00-4.02E-01	6.30E-06-6.16E-07	7.51E 00	
MYZXMY-PYZMY-MYZYM-PYZMY	7.51E 00 3.1	6.33E-06 5.6		
ZXXMK-ZXYMK-ZYXMK-ZYYMK	-1.02E-08-9.57E-09	1.77E-03 1.74E-03	-5.50E-04-6.01E-04	1.06E-08 9.85E-09
RXYMK-PXYMK-RYXMK-PYXMK	7.83E 01 44.5	8.41E 00 47.5		
ZXXMY-ZXYMY-ZYXMY-ZYYMY	-1.26E-09-1.22E-09	1.77E-03 1.74E-03	-5.50E-04-6.01E-04	1.63E-09 1.51E-09
RXYMY-PXYMY-RYXMY-PYXMY	7.83E 01 44.5	8.41E 00 47.5		
MAG(Z) STRIKE = 180.0	PHZ(Z) STRIKE = 0.0			
ZXXMZ-ZXYMZ-ZYXMZ-ZYYMZ	-1.02E-08-9.57E-09	1.77E-03 1.74E-03	-5.50E-04-6.01E-04	1.06E-08 9.85E-09

RXYMZ-PXYMZ-RYXMZ-PYXMZ	7.83E 01 44.5	8.41E 00 47.5		
ZXXPZ-ZXYPZ-ZYXPZ-ZYYPZ	-1.26E-09-1.22E-09	1.77E-03 1.74E-03	-5.50E-04-6.01E-04	1.63E-09 1.51E-09
RXYPZ-PXYPZ-RYXPZ-PYXPZ	7.83E 01 44.5	8.41E 00 47.5		
SITE LOCATION	X = 500.0	Y = 1000.0		
EX01-EX02-EY01-EY02	0.00E-01 0.00E-01	1.05E-05 1.05E-05	1.05E-05 1.05E-05	0.00E-01 0.00E-01
HX01-HX02-HY01-HY02	-5.31E-03 2.72E-08	0.00E-01 0.00E-01	0.00E-01 0.00E-01	5.31E-03-2.72E-08
EXS1-EXS2-EYS1-EYS2	4.95E-06 4.78E-06	-2.15E-06-2.12E-06	-6.14E-07-6.54E-07	3.26E-06 3.17E-06
HXS1-HXS2-HYS1-HYS2	-1.23E-05-1.17E-05	-7.64E-06-7.55E-06	1.16E-05 1.15E-05	1.65E-06 1.36E-06
HZS1-HZS2	-1.96E-05-1.93E-05	1.67E-05 1.64E-05		
EXT1-EXT2-EYT1-EYT2	4.95E-06 4.78E-06	8.40E-06 8.43E-06	9.93E-06 9.89E-06	3.26E-06 3.17E-06
HXT1-HXT2-HYT1-HYT2	-5.32E-03-1.16E-05	-7.64E-06-7.55E-06	1.16E-05 1.15E-05	5.31E-03 1.33E-06
ZXXI-ZXYI-ZYXI-ZYYI	-9.32E-04-8.90E-04	1.58E-03 1.58E-03	-1.87E-03-1.85E-03	6.14E-04 5.92E-04
RXYI-PXYI-RYXI-PYXI	6.35E 01 45.1	8.78E 01 44.7		
MAG(K) STRIKE = 130.0	MAG(Y) STRIKE = 133.0			
KZXI-KZYI	3.69E-03 3.64E-03	3.15E-03 3.10E-03		
KZXM-PKZX-KZYM-PKZY	5.18E-03 44.6	4.42E-03 44.5		
KZXMY-KZYM-TIPH	4.86E-03 4.78E-03	4.25E-05 3.45E-05	6.81E-03	
MKZXMK-PKZXMK-MKZYM-KZYM	6.81E-03 44.5	5.47E-05 39.1		
YZXI-YZYI	3.35E 00-7.39E-02	-3.60E 00 7.14E-02		
YZXM-PYZX-YZYM-PYZY	3.35E 00 1.3	3.61E 00 1.1		
YZXMY-YZYM-TIPE	-4.92E 00 1.03E-01	1.13E-02 5.38E-03	4.92E 00	
MYZXMY-PYZXMY-MYZYMY-PYZYMY	4.92E 00 1.2	1.25E-02 25.4		
ZXXMK-ZXYMK-ZYXMK-ZYYMK	-4.36E-04-4.10E-04	2.46E-03 2.43E-03	-9.90E-04-1.01E-03	1.18E-04 1.12E-04
RXYMK-PXYMK-RYXMK-PYXMK	1.51E 02 44.6	2.54E 01 45.6		
ZXXMY-ZXYMY-ZYXMY-ZYYMY	-3.57E-04-3.34E-04	2.49E-03 2.45E-03	-9.65E-04-9.89E-04	3.92E-05 3.63E-05
RXYMY-PXYMY-RYXMY-PYXMY	1.54E 02 44.6	2.42E 01 45.7		
MAG(Z) STRIKE = 140.0	PHZ(Z) STRIKE = 143.0			
ZXXZ-ZXYMZ-ZYXMZ-ZYYMZ	-1.67E-04-1.52E-04	2.51E-03 2.47E-03	-9.40E-04-9.66E-04	-1.51E-04-1.41E-04

RXYMZ-PXYMZ-RYXMZ-PYXMZ	1.57E 02 44.5	2.30E 01 45.8		
ZXXPZ-ZXYPZ-ZYXPZ-ZYYPZ	-8.50E-05-7.37E-05	2.51E-03 2.47E-03	-9.44E-04-9.70E-04	-2.33E-04-2.25E-04
RXYPZ-PXYPZ-RYXPZ-PYXPZ	1.57E 02 44.5	2.32E 01 45.8		

SITE LOCATION	X = 1000.0	Y = 1000.0		
EXD1-EXD2-EYD1-EYD2	0.00E-01 0.00E-01	1.05E-05 1.05E-05	1.05E-05 1.05E-05	0.00E-01 0.00E-01
HXD1-HXD2-HYD1-HYD2	-5.31E-03 2.72E-08	0.00E-01 0.00E-01	0.00E-01 0.00E-01	5.31E-03-2.72E-08
EXS1-EXS2-EYS1-EYS2	3.88E-06 3.75E-06	1.07E-06 1.06E-06	-1.17E-06-1.13E-06	1.99E-06 1.94E-06
HXS1-HXS2-HYS1-HYS2	3.68E-06 4.16E-06	-7.06E-06-6.97E-06	1.24E-05 1.23E-05	7.42E-07 5.02E-07
HZS1-HZS2	-2.22E-05-2.17E-05	9.50E-06 9.22E-06		
EXT1-EXT2-EYT1-EYT2	3.88E-06 3.75E-06	1.16E-05 1.16E-05	9.37E-06 9.41E-06	1.99E-06 1.94E-06
HXT1-HXT2-HYT1-HYT2	-5.31E-03 4.19E-06	-7.06E-06-6.97E-06	1.24E-05 1.23E-05	5.31E-03 4.75E-07
ZXXI-ZXYI-ZYXI-ZYYI	-7.30E-04-6.97E-04	2.19E-03 2.18E-03	-1.77E-03-1.77E-03	3.75E-04 3.61E-04
RXYI-PXYI-RYXI-PYXI	1.21E 02 44.9	7.93E 01 45.1		

MAG(K) STRIKE = 113.0

MAG(Y) STRIKE = 114.0

KZXI-KZYI	4.18E-03 4.10E-03	1.79E-03 1.75E-03		
KZXM-PKZX-KZYM-PKZY	5.86E-03 44.4	2.50E-03 44.3		
KZXMY-KZYMY-TIPH	4.55E-03 4.45E-03	1.25E-05 7.23E-06	6.37E-03	
MKZXMK-PKZXMK-MKZYM-KZYM	6.37E-03 44.4	1.44E-05 30.1		
YZXI-YZYI	1.29E 00-2.66E-02	-2.86E 00 5.39E-02		
YZXM-PYZX-YZYM-PYZY	1.29E 00 1.2	2.86E 00 1.1		
YZXMY-YZYMY-TIPE	-3.14E 00 6.01E-02	-1.51E-02 2.34E-03	3.14E 00	
MYZXMY-PYZXMY-MYZYMY-PYZYMY	3.14E 00 1.1	1.52E-02 8.8		
ZXXMK-ZXYMK-ZYXMK-ZYYMK	-4.09E-04-3.88E-04	2.52E-03 2.50E-03	-1.43E-03-1.46E-03	5.33E-05 5.17E-05
RXYMK-PXYMK-RYXMK-PYXMK	1.60E 02 44.8	5.29E 01 45.5		
ZXXMY-ZXYMY-ZYXMY-ZYYMY	-3.90E-04-3.70E-04	2.53E-03 2.51E-03	-1.43E-03-1.45E-03	3.47E-05 3.33E-05
RXYMY-PXYMY-RYXMY-PYXMY	1.61E 02 44.8	5.23E 01 45.5		

MAG(Z) STRIKE = 124.0

PHZ(Z) STRIKE = 127.0

ZXXMZ-ZXYMZ-ZYXMZ-ZYYMZ	-1.88E-04-1.76E-04	2.57E-03 2.55E-03	-1.39E-03-1.41E-03	-1.67E-04-1.60E-04
RXYMZ-PXYMZ-RYXMZ-PYXMZ	1.66E 02 44.8	4.96E 01 45.5		
ZXXPZ-ZXPZ-ZYXPZ-ZYYPZ	-1.27E-04-1.17E-04	2.57E-03 2.54E-03	-1.39E-03-1.41E-03	-2.29E-04-2.20E-04
RXYPZ-PXYPZ-RYXPZ-PYXPZ	1.65E 02 44.8	4.97E 01 45.5		

SITE LOCATION	X = 1500.0	Y = 1000.0		
EX01-EX02-EY01-EY02	0.00E-01 0.00E-01	1.05E-05 1.05E-05	1.05E-05 1.05E-05	0.00E-01 0.00E-01
HX01-HX02-HY01-HY02	-5.31E-03 2.72E-08	0.00E-01 0.00E-01	0.00E-01 0.00E-01	5.31E-03-2.72E-08
EXS1-EXS2-EYS1-EYS2	2.11E-06 2.04E-06	1.04E-06 1.02E-06	-1.07E-06-1.03E-06	1.09E-06 1.05E-06
HXS1-HXS2-HYS1-HYS2	8.17E-06 8.46E-06	-5.29E-06-5.19E-06	9.60E-06 9.48E-06	1.54E-06 1.34E-06
HZS1-HZS2	-1.86E-05-1.80E-05	5.75E-06 5.54E-06		
EXT1-EXT2-EYT1-EYT2	2.11E-06 2.04E-06	1.16E-05 1.16E-05	9.48E-06 9.52E-06	1.09E-06 1.05E-06
HXT1-HXT2-HYT1-HYT2	-5.30E-03 8.49E-06	-5.29E-06-5.19E-06	9.60E-06 9.48E-06	5.31E-03 1.31E-06
ZXXI-ZXYI-ZYXI-ZYYI	-3.98E-04-3.77E-04	2.18E-03 2.18E-03	-1.78E-03-1.80E-03	2.04E-04 1.95E-04
RXYI-PXYI-RYXI-PYXI	1.20E 02 44.9	8.13E 01 45.2		

MAG(K) STRIKE = 107.0

MAG(Y) STRIKE = 108.0

KZXI-KZYI	3.51E-03 3.41E-03	1.08E-03 1.05E-03		
KZXK-PKZX-KZYM-PKZY	4.90E-03 44.2	1.51E-03 44.1		
KZXMY-KZYMY-TIPH	3.68E-03 3.57E-03	9.34E-06 6.81E-06	5.12E-03	
MKZXMK-PKZXMK-MKZYM-KPYMK	5.12E-03 44.2	1.16E-05 36.1		
YZXI-YZYI	6.80E-01-1.53E-02	-2.08E 00 4.27E-02		
YZXM-PYZX-YZYM-PYZY	6.80E-01 1.3	2.08E 00 1.2		
YZXMY-YZYMY-TIPE	-2.19E 00 4.54E-02	-3.72E-03 1.34E-03	2.19E 00	
MYZXMY-PYZXMY-MYZYMY-PYZYMY	2.19E 00 1.2	3.95E-03 19.8		
ZXXMK-ZXYMK-ZYXM-KZYYMK	-2.35E-04-2.22E-04	2.32E-03 2.30E-03	-1.65E-03-1.67E-03	4.15E-05 3.96E-05
RXYMK-PXYMK-RYXM-KPYMK	1.35E 02 44.8	6.98E 01 45.3		
ZXXMY-ZXYMY-ZYXMY-ZYYMY	-2.23E-04-2.11E-04	2.32E-03 2.31E-03	-1.65E-03-1.67E-03	2.98E-05 2.85E-05
RXYMY-PXYMY-RYXMY-PYXMY	1.36E 02 44.8	6.95E 01 45.3		

MAG(L) STRIKE = 118.0

PHZ(Z) STRIKE = 119.0

ZXXMZ-ZXYMZ-ZYXNZ-ZYYMZ	-1.00E-04-9.36E-05	2.35E-03 2.33E-03	-1.62E-03-1.64E-03	-9.35E-05-8.87E-05
RXYMZ-PXYMZ-RYXNZ-PYXNZ	1.38E 02 44.8	6.76E 01 45.4		
ZXXPZ-ZXYPZ-ZYXPZ-ZYYPZ	-8.74E-05-8.17E-05	2.35E-03 2.33E-03	-1.62E-03-1.64E-03	-1.06E-04-1.01E-04
RXYPZ-PXYPZ-RYXPZ-PYXPZ	1.38E 02 44.8	6.76E 01 45.4		

SITE LOCATION	X = 2000.0	Y = 1000.0		
EX01-EX02-EY01-EY02	0.00E-01 0.00E-01	1.05E-05 1.05E-05	1.05E-05 1.05E-05	0.00E-01 0.00E-01
HX01-HX02-HY01-HY02	-5.31E-03 2.72E-08	0.00E-01 0.00E-01	0.00E-01 0.00E-01	5.31E-03-2.72E-08
EXS1-EXS2-EYS1-EYS2	1.20E-06 1.15E-06	8.28E-07 8.00E-07	-8.27E-07-7.95E-07	6.30E-07 6.07E-07
HXS1-HXS2-HYS1-HYS2	6.10E-06 6.25E-06	-3.61E-06-3.52E-06	6.75E-06 6.60E-06	3.44E-06 3.23E-06
HZS1-HZS2	-1.49E-05-1.43E-05	3.65E-06 3.50E-06		
EXT1-EXT2-EYT1-EYT2	1.20E-06 1.15E-06	1.14E-05 1.13E-05	9.72E-06 9.75E-06	6.30E-07 6.07E-07
HXT1-HXT2-HYT1-HYT2	-5.30E-03 6.28E-06	-3.61E-06-3.52E-06	6.75E-06 6.60E-06	5.31E-03 3.20E-06
ZXXI-ZXYI-ZYXI-ZYYI	-2.25E-04-2.11E-04	2.14E-03 2.13E-03	-1.83E-03-1.84E-03	1.19E-04 1.12E-04
RXYI-PXYI-RYXI-PYXI	1.16E 02 44.9	8.54E 01 45.2		
MAG(K) STRIKE = 104.0	MAG(Y) STRIKE = 104.0			
KZXI-KZYI	2.80E-03 2.70E-03	6.88E-04 6.62E-04		
KZXM-PKZX-KZYM-PKZY	3.89E-03 43.9	9.55E-04 43.9		
KZXM-KZYM-TIPH	2.88E-03 2.78E-03	-9.43E-06-9.91E-06	4.00E-03	
MKZXM-KZXM-KZYM-PKZYM	4.00E-03 43.9	1.37E-05 45.4		
YZXI-YZYI	3.99E-01-9.61E-03	-1.54E 00 3.45E-02		
YZXM-PYZX-YZYM-PYZY	3.99E-01 1.4	1.54E 00 1.3		
YZXM-YZYM-TIPE	-1.59E 00 3.58E-02	-1.34E-02 9.71E-04	1.59E 00	
MYZXM-PYZXM-MYZYM-PYZYM	1.59E 00 1.3	1.35E-02 4.1		
ZXXMK-ZXYMK-ZYXMK-ZYYMK	-1.32E-04-1.23E-04	2.21E-03 2.19E-03	-1.77E-03-1.78E-03	2.53E-05 2.39E-05
RXYMK-PXYMK-RYXMK-PYXMK	1.23E 02 44.8	7.99E 01 45.2		
ZXXMY-ZXYMY-ZYXMY-ZYYMY	-1.32E-04-1.23E-04	2.21E-03 2.19E-03	-1.77E-03-1.78E-03	2.53E-05 2.39E-05
RXYMY-PXYMY-RYXMY-PYXMY	1.23E 02 44.8	7.99E 01 45.2		

PAGE 0012

MAG(Z) STRIKE = 114.0

ZXXMZ-ZXYMZ-ZYXMZ-ZYYMZ

RXYMZ-PXYMZ-RYXMZ-PYXMZ

ZXXPZ-ZXYPZ-ZYXPZ-ZYYPZ

RXYPZ-PXYPZ-RYXPZ-PYXPZ

PHZ(Z) STRIKE = 114.0

-5.24E-05-4.87E-05 2.22E-03 2.21E-03 -1.75E-03-1.77E-03 -5.41E-05-5.08E-05

1.24E 02 44.8 7.87E 01 45.2

-5.24E-05-4.87E-05 2.22E-03 2.21E-03 -1.75E-03-1.77E-03 -5.41E-05-5.08E-05

1.24E 02 44.8 7.87E 01 45.2