

Documentation for Computerization of Geothermal
Activity in New Mexico

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OPEN FILE REPORT 121

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INTRODUCTION

The purpose of the program SW.FOR,SE.FOR,NW.FOR, and NE.FOR is to continually update geothermal activity in New Mexico. This is done by plotting the approximate locations of areas leased by state and federal agencies and exact locations of test holes approved for drilling. For each plot, which covers two townships and three ranges, a print out tells the area leased or the hole drilled by township ,range, section and quadrant (1=NE, 2=NW, 3=SW, 4=SE); the leasee or driller and identification number given by each leasing agency, the date the lease became effective, and the expiration date.

Four computer programs are required because the state of New Mexico is divided by a principal meridian (east from west) and a base line (north from south). Therefore SW.FOR plots leases and drilling activity for points that have T?S and R?W and NE.FOR plots for points that have T?N and R?E.

DATA FILES

General Stuff

There are three types of data files: 1)federal leasing, 2)state leasing, and 3)drilling activity. each data file contains township, range, section, quadrant, leasee, lease number, lease date, and lease expiration date. All data files are set up the same way, however, anomalies in the type of data necessitate minor changes in data input.

DATA	FEDERAL	STATE	DRILLING
INPUT	SPACES	SPACES	SPACES
township	2-3	2-3	2-3
range	6-7	6-7	6-7
section	10-11	10-11	10-11
quadrant	15	15	15
leasee name	18-30	18-30	18-30
lease number	32-36	31-36	none
lease date	40-47	40-47	40-47
expiration	50-56	50-56	50-57

In federal leasing, the lease number is always a 5 digit number and must end on space 36. There is no known expiration date for federal leases therefore in these spaces always write UNKNOWN.

Lease numbers for state leasing are always a 6 digit number and must end on space 36.

There is no expiration date for drilling activity as it is a one time happening, therefore the well number is written in this space.

The simplest way to prepare the data for entering into the computer is to use a fortran Coding Form. The data should be grouped by area SE,SE,NE,NE according to township and range and then divided into state or federal leasing or drilling activity.

Example File Set Up

Information to be Plotted

drilling

- 1) T4S-R1W-S5-Q1 Gulf Oil 04-01-79 S-Tg-1-A.
- 2) T5S-R1W-S32-Q3 Gulf Oil 04-01-79 S-Tg-2-A.

state

- 3) T24S-R19W-S32-Q1+2 Amex Exp Gtr 263 07-19-79 07-19-84.
- 4) T24S-R20W-S36-Q1-4 Amex Exp Gtr 264 07-19-79 07-19-84.

federal

- 5) T20S-R1E-S30-Q1+4 Amex Exp 32997 07-01-79 UNKNOWN.

Procedure

1) Check to see if new areas will fit into already set up data files. Previously set up files are kept in the computer even when the data points are all deleted. A permanent file is kept in a notebook telling the areas and generation number of the

data files. If the new data does fit, put the new data at the end of the file and change the number of data points in that file (I will show how to do this later). If the old files will not do set up a new one. All the files are numbered consecutively for each new program (see Directory). A data file name should read SW13D.DAT, with D,S, or F after the number to show whether the data is drilling, state, or federal

B) Using data 1 and 2 set up a new file called SW33D.DAT.

100_____T4S_____T5S_____R1W`_____R2W_____R3W

200__2____5

300_____3_____3_____4_____3

400__4__1__5__1__Gulf Oil_____04-17-79__S-Tg-1-A

500__5__1__32__3__Gulf Oil_____04-17-79__S-Tg-2-A

comments

line	data	spaces
line100	T4S	5-8
	T5S	13-16
	R1W	21-24
	R2W	29-32
	R3W	37-40

line200	2	2-3
	5	8
line300	3	7-8
	3	15-16
	4	23-24
	3	31-32
line400	4	2-3
and	1	6-7
line500	5	10-11
	1	15
	Gulf Oil	18-36
	04-17-79	40-47
	S-Tg-1-A	50-57

In line 100 T goes 4 to 5 and R goes 1 to 3; if this were SW, T goes 4 to 5 but R goes 3 to 1; if this were NE, T goes 5 to 4 and R goes 3 to 1; if this were NW, T goes 5 to 4 and R goes 1 to 3.

The 2 in line 200 represents the number of data points and the 5 tells the plotter to use a star symbol in plotting drilling sites. If this were a leasing location file a 3 would replace 5 to tell the plotter to use a triangle symbol.

Line 300 represents R3, #3 to computer, T4, #3 to computer. The #3 to computer is involved in the spacing of the points (see program for details). In different programs the #3 changes from positive to negative.

	first #3	second #3
SW	3	3
NW	3	-3
NE	-3	-3
SE	-3	3

C) Using data 3 and 4 set up a new file called S05S.DAT.

100_____T23S_____T24S_____R18W_____R19W_____R20W

200__6_____3

300_____23_____3_____24_____3

400_24__19__32__1__Amax Exp_____GTR236_____07-19-79__07-19-84

500_24__19__32__2__Amax Exp_____GTR236_____07-19-79__07-19-84

D) Using data 5 set up a new file called SE6F.DAT

100_____T20S_____T21S_____R3E_____R2E_____R1E

200__2_____3

300_____1_____3_____21_____3

400_20____1____3____1__Amax Exp_____32997____07-01-79__UNKNOWN

500_20____1____30____4__Amax Exp_____32997____07-01-79__UNKNOWN

E) If leases have expired these need to be removed and the number of data points changed. This change occurs in line 200 spaces 2 and 3. ALWAYS keep the printouts from the previous run so you can mark how many points are added or deleted.

RUNNING A PROGRAM

A) EX_SW.FOR, SYS:PLTLIB/LJB (you type in)

B) How many data files? (computer)

_2 (you type in)

C) FILENAME: 1=(SW5S.DAT) (you type in ())

FILENAME: 2=(SW33D.DAT) (you type in ())

D) RENAME OUTPUT.PLTSWOUTFUT.2.1 (you type in)

Other execution orders are :

EX_SE.FOR, SYS:PLTLIB/LIB,

EX_NE.FOR, SYS:PLTLIB/LIB,

EX_NW.FOR, SYS:PLTLIB/LIB.

In line B after the computer asks "How many data files" you can put as many in as you want, however it is best to put in no more than 10-12 per execution. Also it is usually good to do all the federal, state or drilling as separate units so they can be plotted with the same color pen.

In line C the computer asks for "Filename i=____" a space should be skipped before typing a filename with one digit number in it, and no space should be skipped when the filename has a two digit number in it. Also only files from the same area can be run together. Example SW.FOR uses only SW1F.DAT, SW2D.DAT, not SE3S.DAT.

After each run the computer names the plot to be plotted OUTPUT.PLT with a generation number, and each time the program is run this plot will be deleted. So with each next run OUTPUT.PLT has to be renamed. It can be renamed according to the area with the generation number different each time (the first number after the name will increase but not the second). When you have completed an entire run you may have:

- 1) SWOUTPUT.1.1 federal leases,
- 2) SWOUTPUT.2.1 federal leases,
- 3) SWOUTPUT.3.1 drilling activity,
- 4) SWOUTPUT.4.1 state leases.

You may have to run the program twice for the same activity if there are too many files (line 1 and 2 for federal).

After all the programs are run and the files renamed fill in a card in the computer room telling the computer/plotter the name of the plot and what type and color of pen to use.

To get a copy of this documentation login Bureau-File, and the password, then type PRINT ABC.MEM into the computer. A printout will be under Bureau-File in the computer room.


```

00100 C
00200 C
00300 C
00400 C
00500 C
00600 C
00700 C
00800 C
00900 C
01000 C
01100 C
01200 C
01300 C
01400 C
01500 C
01600 C
01700 C
01800 C
01900 C
02000 C
02100 C
02200 C
02300 C
02400 C
02500 C
02600 C
02700 C
02800 C
02900 C
03000 C
03100 C
03200 C
03300 C
03400 C
03500 C
03600 C
03700 C
03800 C
03900 C
04000 C
04100 C
04200 C

```

NOTE: THIS PROGRAM, AS PRESENTED, ONLY PLOTS LOCATIONS IN SOUTH TOWNSHIPS AND WEST RANGES. MODIFICATIONS ARE REQUIRED IN LINES 0100 AND 0200 TO GENERALIZE ITS USEFULNESS. IN LINES 0100 AND 0200 THE CONSTANTS FROM WHICH RG AND TS (RESPECTIVELY) ARE SUBTRACTED ARE THE RANGE AND TOWNSHIP NUMBERS OF THE TOWNSHIP ON THE SOUTHWEST CORNER OF THE ORIGIN (FOR GRAPHING) LINES. WHEN USING NORTH TOWNSHIPS OR EAST RANGES THE MULTIPLIER, 4, IN LINES 0100 AND 0200 IS REPLACED BY, -4. THIS ALLOWS ANY COMBINATION OF NORTH/SOUTH TOWNSHIP AND EAST/WEST RANGE.

```

01500 DIMENSION NAME(30)
01600 DIMENSION LABL(5)
01700 DIMENSION OWNER(5)
01800 DIMENSION LDATE(2)
01900 DIMENSION EDATE(2)
02000 INTEGER TS, RG, SC, QD, RGS, RGM, TSS, TSM
02100 INTEGER PLS, SYM
02200 WRITE (5, 202)
02300 202 FORMAT (' HOW MANY DATA FILES?')
02400 READ (5, 201) NNUM
02500 201 FORMAT (I2)
02600 IF (NNUM.GT.30) NNUM=30
02700 DO 203 I=1, NNUM
02800 WRITE (5, 7) I
02900 7 FORMAT (' FILENAME: ', I3, ' = ', $)
03000 203 READ (5, 9) NAME (I)
03100 9 FORMAT (1A5)
03200 CALL INITAL (23)
03300 DO 700 IDAT=1, NNUM
03400 WRITE(5, 21) NAME(IDAT), NNUM
03500 21 FORMAT(///, 3X, 3A4, 3X, I2, /)
03600 OPEN(UNIT=22, ACCESS='SEGIN', FILE=NAME(IDAT))
03700 DATA NREAD, NPRINT/22, 3/
03800 CALL PLOT(1.0, 1.0, -3)

```

```

03900 C
04000 C
04100 C
04200 C
04300 C
04400 C
04500 C
04600 C
04700 C
04800 C
04900 C
05000 C
05100 C
05200 C
05300 C
05400 C
05500 C
05600 C
05700 C
05800 C
05900 C
06000 C
06100 C
06200 C
06300 C
06400 C
06500 C
06600 C
06700 C
06800 C
06900 C
07000 C
07100 C
07200 C
07300 C
07400 C

```

DRAW LINES FOR TOWNSHIP AND RANGE BOUNDARIES
MAXIMUM VALUE X DIRECTION 9 INCHES, Y DIRECTION 6 INCHES

```

04300 CALL PLOT(0.0, 0.0, 3)
04400 CALL PLOT(0.0, 6.0, 2)
04500 CALL PLOT(9.0, 6.0, 2)
04600 CALL PLOT(9.0, 0.0, 2)
04700 CALL PLOT(0.0, 0.0, 2)
04800 CALL PLOT(0.0, 3.0, 3)
04900 CALL PLOT(9.0, 3.0, 2)
05000 CALL PLOT(3.0, 0.0, 3)
05100 CALL PLOT(3.0, 6.0, 2)
05200 CALL PLOT(6.0, 6.0, 3)
05300 CALL PLOT(6.0, 0.0, 2)

```

```

05400 C
05500 C
05600 C
05700 C
05800 C
05900 C
06000 C
06100 C
06200 C
06300 C
06400 C
06500 C
06600 C
06700 C
06800 C
06900 C
07000 C
07100 C
07200 C
07300 C
07400 C

```

PLOT INTERSECTION OF SECTION LINES USING '+' SYMBOL
LOOP 1 RUNS ALONG THE X AXIS
LOOP 2 RUNS ALONG THE Y AXIS FOR EACH X VALUE

```

05900 CX=0.0
06000 DO 1 J=1, 19
06100 CALL PLOT(0.0, 0.0, 3)
06200 CY=6.0
06300 DO 2 K=1, 13
06400 CALL PLOT(CX, CY, 3)
06500 CALL MARKER(1)
06600 CY=CY-.5
06700 2 CONTINUE
06800 CX=CX+.5
06900 1 CONTINUE
07000 WRITE(5, 22) CX, CY
07100 22 FORMAT(///, 3X, F5.2, 3X, F5.2)

```

```

07200 C
07300 C
07400 C
07500 C
07600 C
07700 C
07800 C
07900 C
08000 C

```

WRITE TOWNSHIP AND RANGE NEXT TO APPROPRIATE BOXES

```

07500 READ (NREAD, 50) (LABL(I), I=1, 5)
07600 50 FORMAT(5(4X, A4))
07700 CALL SYMBOL(-1.0, 4.5, .21, LABL(1), 0.0, 4)
07800 CALL SYMBOL(-1.0, 1.5, .21, LABL(2), 0.0, 4)
07900 CALL SYMBOL(7.5, -0.5, .21, LABL(3), 0.0, 4)
08000 CALL SYMBOL(4.5, -0.5, .21, LABL(4), 0.0, 4)

```



```

16100      1OR.SC.EQ.1) Y2=5
16200      Y1=Y1+(Y2*.5)
16300      C
16400      C PART III: PORTION OF Y COORDINATE RESULTING FROM QUADRANT
16500      C LOCATION
16600      C
16700      IF (QD.EQ.1,DR.QD.EQ.2) Y3=.375
16800      IF (QD.EQ.3,DR.QD.EQ.4) Y3=.125
16900      Y1=Y1+Y3
17000      C
17100      C HAVE PLOTTER PLOT THE LEASE LOCATIONS USING A TRIANGLE (3)
17200      C SHAPE OR DRILLING LOCATIONS USING AN HOURGLASS (5) SHAPE
17300      C
17400      CALL PLOT(0.0,0.0,3)
17500      CALL PLOT(X1,Y1,3)
17600      CALL MARKER(SYM)
17700      4 CONTINUE
17800      C
17900      CALL RSTR(0)
18000      CALL RSTR(1)
18100      700 CONTINUE
18200      CALL PLOT(20.0,0.0,999)
18300      CALL RSTR(0)
18400      CALL RSTR(2)
18500      STOP
18600      END

```

```

NN      NN      WW      WW
NN      NN      WW      WW
NN      NN      WW      WW
NN      NN      WW      WW
NNNN    NN      WW      WW
NNNN    NN      WW      WW
NN      NN      WW      WW
NN      NN      WW      WW
NN      NNNN    WW      WW
NN      NNNN    WW      WW
NN      NN      WWWW    WWWW
NN      NN      WWWW    WWWW
NN      NN      WW      WW
NN      NN      WW      WW

```

```

FFFFFFFFFF  000000  RRRRRRRR
FFFFFFFFFF  000000  RRRRRRRR
FF          00      00  RR          RR
FF          00      00  RR          RR
FF          00      00  RR          RR
FF          00      00  RR          RR
FFFFFFFFFF  00      00  RRRRRRRR
FFFFFFFFFF  00      00  RRRRRRRR
FF          00      00  RR      RR
FF          00      00  RR      RR
FF          00      00  RR      RR
FF          00      00  RR      RR
FF          00      00  RR      RR
FF          000000  RR          RR
FF          000000  RR          RR

```

```

*START* User BUREAU-FILE Job NW Seq. 4957 Date 17-Jun-80 13:12:09
Monitor New Mexico Tech DECSYSTEM-20, TOPS- *START*
File: PS:<BUREAU-FILE>NW.FOR,1 Created: 7-Apr-78 21:10:03
Printed: 17-Jun-80 13:12:10
QUEUE switches: /COPIES:1
/SPACING:0 /LIMIT:56 /FORMS:SMWH18

```



```

08100 CALL SYMBOL(4.5,-0.5,.21,LABL(4),0.0,4)
08200 CALL SYMBOL(1.5,-0.5,.21,LABL(5),0.0,4)
08300
08400 C READ DATA ON LOCATION OF GEOTHERMAL LEASES, WHERE NUM=NUMBER
08500 C OF LEASES TO BE PLOTTED, TS= TOWNSHIP NUMBER, SC= SECTION
08600 C NUMBER, RG=RANGE NUMBER, QD= QUADRANT NUMBER, 1= NE, 2= NW,
08700 C 3= SW, 4= SE.
08800
08900 READ (22,3) NUM,SYM
09000 3 FORMAT(13,3X,I2)
09100 WRITE (NPRINT,10) NAME(IDAT), NUM
09200 WRITE(5,10) NAME(IDAT), NUM
09300 10 FORMAT (1H1,'NUMBER OF DATA POINTS PLOTTED FOR ',
09400 1A5,' = ',I5,'//')
09500 READ (NREAD,51) RGS,RGM,TSS,TSM
09600 WRITE(5,51)RGS,RGM,TSS,TSM
09700 51 FORMAT(4(3X,I5))
09800 WRITE (NPRINT,11)
09900 11 FORMAT (11X,'LOCATION',28X,'LEASEE',16X,'LEASE DATE',4X,
10000 1'EXPIRATION DATE')
10100 DO 4 I=1, NUM
10200 READ (NREAD,5) TS, RG, SC, QD, OWNER, LDATE, EDATE
10300 5 FORMAT(1X,I2,2X,I2,2X,I2,2X,I2,2X,5A4,2X,2A4,2X,2A4)
10400 WRITE (NPRINT,12) TS,RG,SC,QD,OWNER,LDATE,EDATE
10500 12 FORMAT (1X,'T',I2,'R',I2,'E',3X,'R',I2,'E',3X,'SEC',I3,3X,'QUAD',
10600 1I2,10X,5A4,10X,2A4,8X,2A4)
10700
10800 C FOLLOWING LINES SCALE TS, RG, SC, TO PLOTTING SCALE
10900 C CALCULATE X COORDINATE OF LEASE LOCATION
11000 C
11100 C PART I: PORTION OF X COORDINATE RESULTING FROM RANGE LOCATION
11200 C
11300 C
11400 C 100 X1=(RGS-RG)*(RGM)
11500 C
11600 C PART II: PORTION OF X COORDINATE RESULTING FROM SECTION
11700 C LOCATION
11800 C
11900 C IF (SC.EQ.6.OR.SC.EQ.7.OR.SC.EQ.18.OR.SC.EQ.19.OR.SC.
12000 6EQ.30.OR.SC.EQ.31) X2=0
12100 C IF (SC.EQ.5.OR.SC.EQ.8.OR.SC.EQ.17.OR.SC.EQ.20.OR.SC.
12200 5EQ.29.OR.SC.EQ.32) X2=1
12300 C IF (SC.EQ.4.OR.SC.EQ.9.OR.SC.EQ.16.OR.SC.EQ.21.OR.SC.
12400 4EQ.28.OR.SC.EQ.33) X2=2
12500 C IF (SC.EQ.3.OR.SC.EQ.10.OR.SC.EQ.15.OR.SC.EQ.22.OR.SC.
12600 3EQ.27.OR.SC.EQ.34) X2=3
12700 C IF (SC.EQ.2.OR.SC.EQ.11.OR.SC.EQ.14.OR.SC.EQ.23.OR.SC.
12800 2EQ.26.OR.SC.EQ.35) X2=4
12900 C IF (SC.EQ.1.OR.SC.EQ.12.OR.SC.EQ.13.OR.SC.EQ.24.OR.SC.
13000 1EQ.25.OR.SC.EQ.36) X2=5
13100 X1=X1+(X2*.5)
13200 C
13300 C PART III: PORTION OF X COORDINATE RESULTING FROM QUADRANT
13400 C LOCATION
13500 C
13600 C IF (QD.EQ.1.OR.QD.EQ.4) X3=.375
13700 C IF (QD.EQ.2.OR.QD.EQ.3) X3=.125
13800 X1=X1+X3
13900 C
14000 C NOW X1 IS THE COMPLETE X COORDINATE OF LEASE LOCATION
14100 C CALCULATE Y COORDINATE OF LEASE LOCATION
14200 C
14300 C PART I: PORTION OF Y COORDINATE RESULTING FROM RANGE LOCATION
14400 C
14500 C
14600 C 200 Y1=(TSS-TS)*(TSM)
14700 C
14800 C PART II: PORTION OF Y COORDINATE RESULTING FROM SECTION
14900 C LOCATION
15000 C
15100 C IF (SC.EQ.31.OR.SC.EQ.32.OR.SC.EQ.33.OR.SC.EQ.34.OR.SC.
15200 1EQ.35.OR.SC.EQ.36) Y2=0
15300 C IF (SC.EQ.30.OR.SC.EQ.29.OR.SC.EQ.28.OR.SC.EQ.27.OR.SC.
15400 1EQ.26.OR.SC.EQ.25) Y2=1
15500 C IF (SC.EQ.19.OR.SC.EQ.20.OR.SC.EQ.21.OR.SC.EQ.22.OR.SC.
15600 1EQ.23.OR.SC.EQ.24) Y2=2
15700 C IF (SC.EQ.18.OR.SC.EQ.17.OR.SC.EQ.16.OR.SC.EQ.15.OR.SC.
15800 1EQ.14.OR.SC.EQ.13) Y2=3
15900 C IF (SC.EQ.7.OR.SC.EQ.8.OR.SC.EQ.9.OR.SC.EQ.10.OR.SC.EQ.11.
16000 1OR.SC.EQ.12) Y2=4

```

```

16100      IF (SC.EQ.6.OR.SC.EQ.5.OR.SC.EQ.4.OR.SC.EQ.3.OR.SC.EQ.2,
16200      1OR.SC.EQ.1) Y2=5
16300      Y1=Y1+(Y2*.5)
16400
16500      C PART III: PORTION OF Y COORDINATE RESULTING FROM QUADRANT
16600      C LOCATION
16700
16800      IF (QD.EQ.1.OR.QD.EQ.2) Y3=,375
16900      IF (QD.EQ.3.OR.QD.EQ.4) Y3=,125
17000      Y1=Y1+Y3
17100
17200      C HAVE PLOTTER PLOT THE LEASE LOCATIONS USING A TRIANGLE SHAPE
17300      C
17400      CALL PLOT(0,0,0.0,3)
17500      CALL PLOT(X1,Y1,3)
17600      CALL MARKER(SYM)
17700      4 CONTINUE
17800
17900      C
18000      CALL RSTR(0)
18100      CALL RSTR(1)
18200      700 CONTINUE
18300      CALL PLOT(20.0,0.0,999)
18400      CALL RSTR(0)
18500      CALL RSTR(2)
18600      STOP
18700      END

```

```

SSSSSSSSSS EEEEEEEEEEE
SSSSSSSSSS EEEEEEEEEEE
SS          EE
SS          EE
SS          EE
SS          EE
SSSSSS      EEEEEEEEEEE
SSSSSS      EEEEEEEEEEE
          SS
          SS
          SS
          SS
SSSSSSSSSS EEEEEEEEEEE
SSSSSSSSSS EEEEEEEEEEE

```

```

FFFFFFFFFFFF 000000 RRRRRRRR
FFFFFFFFFFFF 000000 RRRRRRRR
FF           00      00 RR      RR
FF           00      00 RR      RR
FF           00      00 RR      RR
FF           00      00 RR      RR
FFFFFFFFFFFF 00      00 RRRRRRRR
FFFFFFFFFFFF 00      00 RRRRRRRR
FF           00      00 RR      RR
FF           00      00 RR      RR
FF           00      00 RR      RR
FF           00      00 RR      RR
FF           00      00 RR      RR
FF           000000 RR      RR
FF           000000 RR      RR

```

```

*START* User BUREAU-FILE Job SE Seq. 4958 Date 17-Jun-80 13:12:43
Monitor New Mexico Tech DECSYSTEM-20, TOPS= *START*
File: PS:<BUREAU-FILE>SE.FOP.1 Created: 9-Apr-78 07:18:14
Printed: 17-Jun-80 13:12:44
COPIES Switches: /COPIES:1
/SPACING:0 /LIMIT:56 /FORMS:SMWH18

```

```

00100 C NOTE: THIS PROGRAM, AS PRESENTED, ONLY PLOTS LOCATIONS IN
00200 C SOUTH TOWNSHIPS AND EAST RANGES. MODIFICATIONS ARE REQUIRED
00300 C IN LINES 0100 AND 0200 TO GENERALIZE ITS USEFULNESS.
00400 C IN LINES 0100 AND 0200 THE CONSTANTS FROM WHICH RG AND TS
00500 C (RESPECTIVELY) ARE SUBTRACTED ARE THE RANGE AND TOWNSHIP
00600 C NUMBERS OF THE TOWNSHIP ON THE SOUTHWEST CORNER OF THE ORIGIN
00700 C (FOR GRAPHING) LINES.
00800 C WHEN USING NORTH TOWNSHIPS OR EAST RANGES THE MULTIPLIER, 4,
00900 C IN LINES 0100 AND 0200 IS REPLACED BY, -4. THIS ALLOWS ANY
01000 C COMBINATION OF NORTH/SOUTH TOWNSHIP AND EAST/WEST RANGE.
01100 C
01200 C
01300 C

```

```

01400 DIMENSION NAME(30)
01500 DIMENSION LABL(5)
01600 DIMENSION OWNER(5)
01700 DIMENSION LDATE(2)
01800 DIMENSION EDATE(2)
01900 INTEGER TS, RG, SC, QD, RGS, RGM, TSS, TSM
02000 INTEGER PLS, SYM
02100 WRITE (5, 202)
02200 202 FORMAT (' HOW MANY DATA FILES?')
02300 READ (5, 201) NNUM
02400 201 FORMAT (I2)
02500 IF (NNUM.GT.30) NNUM=30
02600 DO 203 I=1, NNUM
02700 WRITE (5, 7) I
02800 7 FORMAT (' FILENAME: ', I3, ' = ', $)
02900 203 READ (5, 9) NAME (I)
03000 9 FORMAT (1A5)
03100 CALL INITAL(23)
03200 DO 700 IDAT=1, NNUM
03300 WRITE (5, 21) NAME(IDAT), NNUM
03400 21 FORMAT(///, 3X, 3A4, 3X, I2, /)
03500 OPEN(UNIT=22, ACCESS='SEGIN', FILE=NAME(IDAT))
03600 DATA NREAD, NPRINT/22, 3/
03700 CALL PLOT(1.0, 1.0, -3)
03800 C
03900 C
04000 C DRAW LINES FOR TOWNSHIP AND RANGE BOUNDARIES
04100 C MAXIMUM VALUE X DIRECTION 9 INCHES, Y DIRECTION 6 INCHES
04200 C
04300 CALL PLOT(0.0, 0.0, 3)
04400 CALL PLOT(0.0, 6.0, 2)
04500 CALL PLOT(9.0, 6.0, 2)
04600 CALL PLOT(9.0, 0.0, 2)
04700 CALL PLOT(0.0, 0.0, 2)
04800 CALL PLOT(0.0, 3.0, 3)
04900 CALL PLOT(9.0, 3.0, 2)
05000 CALL PLOT(3.0, 0.0, 3)
05100 CALL PLOT(3.0, 6.0, 2)
05200 CALL PLOT(6.0, 6.0, 3)
05300 CALL PLOT(6.0, 0.0, 2)
05400 C
05500 C PLOT INTERSECTIONS OF SECTION LINES USING '+' SYMBOL
05600 C LOOP 1 RUNS ALONG THE X AXIS
05700 C LOOP 2 RUNS ALONG THE Y AXIS FOR EACH X VALUE
05800 C
05900 CX=0.0
06000 DO 1 J=1, 19
06100 CALL PLOT(0.0, 0.0, 3)
06200 CY=6.0
06300 DO 2 K=1, 13
06400 CALL PLOT(CX, CY, 3)
06500 CALL MARKER(1)
06600 2 CONTINUE
06700 CX=CX+.5
06800 1 CONTINUE
06900 WRITE(5, 22) CX, CY
07000 22 FORMAT(///, 3X, F5.2, 3X, F5.2)
07100 C
07200 C WRITE TOWNSHIP AND RANGE NEXT TO APPROPRIATE BOXES
07300 C
07400 READ (NREAD, 50) (LABL(I), I=1, 5)
07500 50 FORMAT (5(4X, A4))
07600 CALL SYMBOL(-1.0, 4.5, .21, LABL(1), 0.0, 4)
07700 CALL SYMBOL(-1.0, 1.5, .21, LABL(2), 0.0, 4)
07800 CALL SYMBOL(7.5, -0.5, .21, LABL(3), 0.0, 4)
07900 CALL SYMBOL(4.5, -0.5, .21, LABL(4), 0.0, 4)
08000 CALL SYMBOL(1.5, -0.5, .21, LABL(5), 0.0, 4)

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08100 C
08200 C C READ DATA ON LOCATION OF GEOTHERMAL LEASES, WHERE NUM= NUMBER
08300 C C OF LEASES TO BE PLOTTED, TS= TOWNSHIP NUMBER, SC= SECTION
08400 C C NUMBER, RG= RANGE NUMBER, QD= QUADRANT NUMBER, 1= NE, 2= NW,
08500 C C 3= SW, 4= SE
08600 C
08700 C READ (22,3) NUM,SYM
08800 C 3 FORMAT(I3,3X,I2)
08900 C WRITE (NPRINT,10) NAME(IDAT), NUM
09000 C WRITE (5,10) NAME(IDAT), NUM
09100 C 10 FORMAT (1H1,"NUMBER OF DATA POINTS PLOTTED FOR ",
09200 C 1A5," = ",I5,////)
09300 C READ (NREAD,51) RGS,RGM,TSS,TSM
09400 C WRITE (5,51) RGS,RGM,TSS,TSM
09500 C 51 FORMAT(4(3X,15))
09600 C WRITE (NPRINT,11)
09700 C 11 FORMAT (11X,"LOCATION",28X,"LEASEE",16X,"LEASE DATE",4X,
09800 C 1"EXPIRATION DATE")
09900 C DO 4 I=1, NUM
10000 C READ (NREAD,5) TS, RG, SC, QD, OWNER, LDATE, EDATE
10100 C 5 FORMAT(1X,I2,2X,I2,2X,I2,2X,I2,2X,5A4,2X,2A4,2X,2A4)
10200 C WRITE (NPRINT,12)TS,RG,SC,QD,OWNER,LDATE,EDATE
10300 C 12 FORMAT (1X,"T",I2,"S",3X,"R",I2,"E",3X,"SEC",I3,3X,"QUAD",
10400 C 1I2,10X,5A4,10X,2A4,8X,2A4)
10500 C
10600 C C C FOLLOWING LINES SCALE TS, RG, SC, TO PLOTTING SCALE
10700 C C C CALCULATE X COORDINATE OF LEASE LOCATION
10800 C
10900 C C C PART I: PORTION OF X COORDINATE RESULTING FROM RANGE LOCATION
11000 C C C
11100 C C
11200 C 100 X1=(RGS-RG)*(RGM)
11300 C
11400 C C C PART II: PORTION OF X COORDINATE RESULTING FROM SECTION
11500 C C C LOCATION
11600 C
11700 C IF (SC.EQ.6.OR.SC.EQ.7.OR.SC.EQ.18.OR.SC.EQ.19.OR.SC.
11800 C 6EQ.30.OR.SC.EQ.31) X2=0
11900 C IF (SC.EQ.5.OR.SC.EQ.8.OR.SC.EQ.17.OR.SC.EQ.20.OR.SC.
12000 C 5EQ.29.OR.SC.EQ.32) X2=1
12100 C IF (SC.EQ.4.OR.SC.EQ.9.OR.SC.EQ.16.OR.SC.EQ.21.OR.SC.
12200 C 4EQ.28.OR.SC.EQ.33) X2=2
12300 C IF (SC.EQ.3.OR.SC.EQ.10.OR.SC.EQ.15.OR.SC.EQ.22.OR.SC.
12400 C 3EQ.27.OR.SC.EQ.34) X2=3
12500 C IF (SC.EQ.2.OR.SC.EQ.11.OR.SC.EQ.14.OR.SC.EQ.23.OR.SC.
12600 C 2EQ.26.OR.SC.EQ.35) X2=4
12700 C IF (SC.EQ.1.OR.SC.EQ.12.OR.SC.EQ.13.OR.SC.EQ.24.OR.SC.
12800 C 1EQ.25.OR.SC.EQ.36) X2=5
12900 C
13000 C C C PART III: PORTION OF X COORDINATE RESULTING FROM QUADRANT
13100 C C C LOCATION
13200 C
13300 C IF (QD.EQ.1.OR.QD.EQ.4) X3=.375
13400 C IF (QD.EQ.2.OR.QD.EQ.3) X3=.125
13500 C X1=X1+X3
13600 C
13700 C C C NOW X1 IS THE COMPLETE X COORDINATE OF LEASE LOCATION
13800 C C C CALCULATE Y COORDINATE OF LEASE LOCATION
13900 C X1=X1+(X2*.5)
14000 C
14100 C C C PART I: PORTION OF Y COORDINATE RESULTING FROM RANGE LOCATION
14200 C C C
14300 C C C
14400 C 200 Y1=(TSS-TS)*(TSM)
14500 C
14600 C C C PART II: PORTION OF Y COORDINATE RESULTING FROM SECTION
14700 C C C LOCATION
14800 C
14900 C IF (SC.EQ.31.OR.SC.EQ.32.OR.SC.EQ.33.OR.SC.EQ.34.OR.SC.
15000 C 1EQ.35.OR.SC.EQ.36) Y2=0
15100 C IF (SC.EQ.30.OR.SC.EQ.29.OR.SC.EQ.28.OR.SC.EQ.27.OR.SC.
15200 C 1EQ.26.OR.SC.EQ.25) Y2=1
15300 C IF (SC.EQ.19.OR.SC.EQ.20.OR.SC.EQ.21.OR.SC.EQ.22.OR.SC.
15400 C 1EQ.23.OR.SC.EQ.24) Y2=2
15500 C IF (SC.EQ.18.OR.SC.EQ.17.OR.SC.EQ.16.OR.SC.EQ.15.OR.SC.
15600 C 1EQ.14.OR.SC.EQ.13) Y2=3
15700 C IF (SC.EQ.7.OR.SC.EQ.8.OR.SC.EQ.9.OR.SC.EQ.10.OR.SC.EQ.11.
15800 C 1OR.SC.EQ.12) Y2=4
15900 C IF (SC.EQ.6.OR.SC.EQ.5.OR.SC.EQ.4.OR.SC.EQ.3.OR.SC.EQ.2.
16000 C 1OR.SC.EQ.1) Y2=5

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16100          Y1=Y1+(Y2*.5)
16200
16300 C PART III: PORTION OF Y COORDINATE RESULTING FROM QUADRANT
16400 C LOCATION
16500 C
16600          IF (QD.EQ.1.OR.QD.EQ.2) Y3=.375
16700          IF (QD.EQ.3.OR.QD.EQ.4) Y3=.125
16800          Y1=Y1+Y3
16900 C
17000 C HAVE PLOTTER PLOT THE LEASE LOCATIONS USING A TRIANGLE SHAPE
17100 C
17200          CALL PLOT(0.0,0.0,3)
17300          CALL PLOT(X1,Y1,3)
17400          CALL MARKER(SYM)
17500          4 CONTINUE
17600 C
17700          CALL RSTR(0)
17800          CALL RSTR(1)
17900          700 CONTINUE
18000          CALL PLOT(20.0,0.0,999)
18100          CALL RSTR(0)
18200          CALL RSTR(2)
18300          STOP
18400          END

```

```

NN      NN      EEEEEEEEEE
NN      NN      EEEFEEEEEE
NN      NN      EE
NN      NN      EE
NNNN    NN      EE
NNNN    NN      EE
N      NN      EEEEEEEEEE
N      NN      EEEEEEEEEE
NN      NNNN    EE
NN      NNNN    EE
NN      NN      EE
NN      NN      EE
NN      NN      EEEEEEEEEE
NN      NN      EEEEEEEEEE

```

```

FFFFFFFFFF      000000      RRRRRRRR
FFFFFFFFFF      000000      RRRRRRRR
FF              00          00      RR          RR
FF              00          00      RR          RR
FF              00          00      RR          RR
FF              00          00      RR          RR
FFFFFFFFFF      00          00      RRRRRRRR
FFFFFFFFFF      00          00      RRRRRRRR
FF              00          00      RR      RR
FF              00          00      RR      RR
FF              00          00      RR          RR
FF              00          00      RR          RR
FF              00          00      RR          RR
FF              00          00      RR          RR
FF              000000      RR          RR
FF              000000      RR          RR

```

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*START* User BUREAU-FILE Job NE Seq. 4959 Date 17-Jun-80 13:13:18
Monitor New Mexico Tech DECsystem-20, TOPS- *START*
File: PS:<BUREAU-FILE>NE.FOR.1 Created: 29-Mar-78 14:14:10
Printed: 17-Jun-80 13:13:19
Q NE Switches: /COPIES:1
/SPACING:0 /LIMIT:56 /FORMS:SMWH18

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00200 C NOTE: THIS PROGRAM, AS PRESENTED, ONLY PLOTS LOCATIONS IN
00300 C NORTH TOWNSHIPS AND EAST RANGES. MODIFICATIONS ARE REQUIRED
00400 C IN LINES 0100 AND 0200 TO GENERALIZE ITS USEFULNESS.
00500 C IN LINES 0100 AND 0200 THE CONSTANTS FROM WHICH RG AND TS
00600 C (RESPECTIVELY) ARE SUBTRACTED ARE THE RANGE AND
00700 C TOWNSHIP NUMBERS OF THE TOWNSHIP ON THE SOUTHWEST CORNER OF
00800 C THE ORIGIN (FOR GRAPHING) LINES.
00900 C WHEN USING NORTH TOWNSHIPS OR EAST RANGES THE MULTIPLIER, 4,
01000 C IN LINES 0100 AND 0200 IS REPLACED BY, -4. THIS ALLOWS ANY
01100 C COMBINATION OF NORTH/SOUTH TOWNSHIP AND EAST/WEST RANGE.
01200 C
01300 C
01400 C

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```

01500 DIMENSION NAME(30)
01600 DIMENSION LABL(5)
01700 DIMENSION OWNER(5)
01800 DIMENSION LDATE(2)
01900 DIMENSION EDATE(2)
02000 INTEGER TS, RG, SC, OD, RGS, RGM, TSS, TSM
02100 INTEGER PLS, SYM
02200 WRITE (5, 202)
02300 202 FORMAT (' HOW MANY DATA FILES?')
02400 READ (5, 201) NNUM
02500 201 FORMAT (I2)
02600 IF (NNUM.GT.30) NNUM=30
02700 DO 203 I=1, NNUM
02800 WRITE (5, 7) I
02900 7 FORMAT (' FILENAME: ', I3, ' = ', $)
03000 203 READ (5, 9) NAME (I)
03100 9 FORMAT (1A5)
03200 CALL INITAL (23)
03250 DO 700 IDAT=1, NNUM
03300 WRITE(5, 21) NAME(IDAT), NNUM
03400 21 FORMAT(///, 3X, 3A4, 3X, I2, /)
03500 OPEN(UNIT=22, ACCESS='SEQIN', FILE=NAME(IDAT))
03600 DATA NREAD, MPRINT/22, 3/
03700 CALL PLOT(1.0, 1.0, -3)
03800 C
03900 C DRAW LINES FOR TOWNSHIP AND RANGE BOUNDARIES
04000 C MAXIMUM VALUE X DIRECTION 9 INCHES, Y DIRECTION 6 INCHES
04100 C

```

```

04300 CALL PLOT(0.0, 0.0, 3)
04400 CALL PLOT(0.0, 6.0, 2)
04500 CALL PLOT(9.0, 6.0, 2)
04600 CALL PLOT(9.0, 0.0, 2)
04700 CALL PLOT(0.0, 0.0, 2)
04800 CALL PLOT(0.0, 3.0, 3)
04900 CALL PLOT(9.0, 3.0, 2)
05000 CALL PLOT(3.0, 0.0, 3)
05100 CALL PLOT(3.0, 6.0, 2)
05200 CALL PLOT(6.0, 6.0, 3)
05300 CALL PLOT(6.0, 0.0, 2)
05400 C

```

```

05500 C PLOT INTERSECTION OF SECTION LINES USING '+' SYMBOL
05600 C LOOP 1 RUNS ALONG THE X AXIS
05700 C LOOP 2 RUNS ALONG THE Y AXIS FOR EACH X VALUE
05800 C

```

```

05900 CX=0.0
06000 DO 1 J=1, 19
06100 CALL PLOT(0.0, 0.0, 3)
06200 CY=6.0
06300 DO 2 K=1, 13
06400 CALL PLOT(CX, CY, 3)
06500 CALL MARKER(1)
06600 CY=CY-.5
06700 2 CONTINUE
06800 CX=CX+.5
06900 1 CONTINUE
07000 WRITE(5, 22) CX, CY
07100 22 FORMAT(///, 3X, F5.2, 3X, F5.2)
07200 C

```

```

07300 C WRITE TOWNSHIP AND RANGE NEXT TO APPROPRIATE BOXES
07400 C

```

```

07500 READ (NREAD, 50) (LABL(I), I=1, 5)
07600 50 FORMAT(5(4X, A4))
07700 CALL SYMBOL(-1.0, 4.5, .21, LABL(1), 0.0, 4)
07800 CALL SYMBOL(-1.0, 1.5, .21, LABL(2), 0.0, 4)
07900 CALL SYMBOL(7.5, -0.5, .21, LABL(3), 0.0, 4)
08000 CALL SYMBOL(4.5, -0.5, .21, LABL(4), 0.0, 4)
08100 CALL SYMBOL(1.5, -0.5, .21, LABL(5), 0.0, 4)

```



```

16100          Y1=Y1+(Y2*.5)
16200
16300 C
16400 C PART III: PORTION OF Y COORDINATE RESULTING FROM QUADRANT
16500 C LOCATION
16600          IF (QD.EQ.1.OR.QD.EQ.2) Y3=.375
16700          IF (QD.EQ.3.OR.QD.EQ.4) Y3=.125
16800          Y1=Y1+Y3
16900 C
17000 C HAVE PLOTTER PLOT THE LEASE LOCATIONS USING A TRIANGLE (3)
17100 C SHAPE OR DRILLING LOCATIONS USING AN HOURGLASS (5) SHAPE
17200 C
17300          CALL PLOT(0.0,0.0,3)
17400          CALL PLOT(X1,Y1,3)
17500          CALL MARKER(SYM)
17600          4 CONTINUE
17700 C
17800          CALL RSTR(0)
17900          CALL RSTR(1)
18000          700 CONTINUE
18100          CALL PLOT(20.0,0.0,999)
18200          CALL RSTR(0)
18300          CALL RSTR(2)
18400          STOP
18500          END

```