UNITED STATES DEPARTMENT OF INTERIOR

GEOLOGICAL SURVEY

# USER MANUAL FOR MINERAL SIMULATION PROGRAM

BY

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# INTRODUCTION

The use of simulation in resource assessment allows the analysis of a series of what-if scenerios. The user brings to the simulator judgements of the number of undiscovered deposits of various types in an area. The present program was developed from the program described by Drew et. al.(1986). The number of deposits of a type may be given as either a probability distribution or a fixed number The simulator then selects a number according to the given to the giver distribution. For each simulated deposit, the program selects a size and grade according to probability distributions approximating the sizes and grades of deposits of that type in its library. The current models in the library are by and large from the model book (Cox and Singer, 1986). After the number and grades and size of the deposit type or types have been selected, the simulator calculates the amounts and kinds of metals contained in the postulated deposits. This process is repeated many times.

After the simulations have been completed, the program calculates the distribution of contained metal that corresponds to the initial judgements of the numbers and types of deposits in the area. The distribution is given in an 'at least' form e.g. 25% of the simulations had at least 10 tonnes of gold in Hot Springs gold/silver type deposits. Besides the results for individual deposit types, a total is calculated for each kind of metal for all deposit types. areawide totals, also, are presented in the form of 'at least' distribution for each metal.

An overview of the proceedures for running an assessment simulation.

The entire operation involves the running of 3 programs, MFIT, EDITMK3, and MARK3. The program MFIT reads the data library giving the ore tonnages and grades of the deposits of a particular type. It calculates and displays the mean ore tonnage, the mean grade, the mean contained metal, and the parameters of the approximating lognormal distributions. It also creates tables from which one can, by LOTUS, graph and compare the various empirical distributions with the approximating lognormal distributions.

The program EDITMK3 is a technical program transparent to the user.

The program MARK3 performs the simulations after certain parameters, computed in MFIT, are entered. MARK3 produces the distribuiton of the contained metal for each model used and the total if more than one model is used.

## LOGNORMAL APPROXIMATIONS

The distribution of the ore tonnage and grade for a given deposit type are approximated by a bivariate lognormal distribution i. e. it is assumed that the logs of the tonnage and grade are individually normal and jointly bivariate normal. The parameters for the log of the tonnage are mt and st, for the log of the grade are mg and sg, and the correlation is r. The parameters are chosen so that the median and mean of the individual lognormal distributions are equal to the median and mean of the data for tonnage and grade. The correlation, r, is chosen so that the mean of the product of the two lognormals is equal to the mean metal in the data.

Within a deposit type, all deposits do not necessarily contain all metals possible for that type. Therefore, the lognormal distribution of the grade is conditional upon the metal being present. MARK3 provides for the situation in which there is a positive probability that the grade of a particular metal is zero. The mean and median of the non-zero grades that are used for calculating the parameters of the approximating lognormal are the median and mean of the non-zero values of the grade.

In approximating the data by probability distributions, the dependency between grade and tonnage is taken into account, but in the case of several metals, no account is taken of the dependencies between the various grades. Also, no account is taken of the dependency between the tonnage of the deposit and the probability that a particular metal is present, nor how the presence of one metal affects the probability of the presence of another. For these reasons, the output is more reliable when examining one metal at a time and less reliable when suites of metals are considered jointly.

## USING THE MARK3 PROGRAMS IN THE PRIME ENVIRONMENT

AFTER GAINING ACCESS TO THE BRANCH OF RESOURCE ANALYSIS PRIME SYSTEM, A REGISTERED USER SHOULD COPY TO THE FOLLOWING FILES.

```
COPY <BORA>LOREW>(MARK3.SEG
                  EDITMK3.SEG
                  MFIT.SEG
                  ADDCOL.SEG
                  CONVCL.SEG
                  EXPLED.MK3
                  NORMAL.TBL)
```

USERS MAY HAVE A COPY OF THIS USER MANUAL BY ENTERING THE PRIME SPOOL COMMAND:

```
SPOOL <BORA>LOREW>MK3MANUAL
```

# SESSION EXAMPLE

THROUGHOUT THIS MANUAL, SAMPLE SESSIONS ILLUSTRATE THE DIALOGUE BETWEEN THE USER AND PROGRAMS ASSOCIATED WITH THE MARKS MODEL SIMULATION PROGRAM. EXAMPLES ARE SHOWN AS A GUIDE TO THE USER IN PREPARING DATA FOR THE NEXT PROGRAM. USER INPUT IS ALWAYS PROMPTED BY AN 'ENTER...', AND ENDED BY PRESSING THE CARRIAGE RETURN (C/R) KEY. SUPPLEMENT INFORMATION FROM THE AUTHORS IS IN BRACKETS [ ]. 'GVARSB:' IS USED DURING THIS SESSION AS A PROMPT AT USER LEVEL FROM PRIME TO EXECUTE A PROGRAM OR TO ENTER A SYSTEM COMMAND.

TO HAVE A BETTER UNDERSTANDING OF HOW THESE PROGRAMS WORK, A MULTIPLE MODEL RUN WAS USED, (MODEL 13 AND MODEL 52).

THE DISTRIBUTION OF THE NUMBER OF DEPOSITS IS ENTERED THROUGH THE EDITOR, AND OTHERS PARAMETERS ARE ENTERED IN RESPONSE TO PROMPTS ON THE SCREEN DURING THE INTERACTIVE RUN.

[MODEL 13 DATA (SECEX13)]

| [MINES/DEPOSITS] | [TONS] | [PB] | [ZN] |
|---|---|---|---|
| BALM | 21000000. | 0.5 | 9.0 |
| BARC | 9000000. | 3.53 | 1.51 |
| BIGS | 101000000. | 1.01 | 2.45 |
| BLAC | 86000000. | 2.07 | 0.50 |
| BROK | 72000000. | 4.26 | 2.32 |
| BROK | 13000000. | 11.3 | 9.3 |
| CIRQ | 30000000. | 2.2 | 7.6 |
| COTT | 730000. | 0.0 | 5.0 |
| DUGA | 13000000. | 1.6 | 11.6 |
| DUNC | 9000000. | 2.7 | 2.9 |
| DY | 15000000. | 5.6 | 7.1 |
| ELUR | 27000000. | 5.0 | 8.3 |
| FARC | 58000000. | 3.41 | 5.72 |
| FX | 16000000. | 0.53 | 2.6 |
| GRUM | 55000000. | 4.23 | 6.69 |
| HB | 65000000. | 0.77 | 4.1 |
| HILT | 37000000. | 7.7 | 9.5 |
| HOME | 15000000. | 2.5 | 4.0 |
| HOWA | 270000000. | 1.46 | 3.64 |
| JERS | 77000000. | 1.65 | 3.49 |
| KING | 26000000. | 5.1 | 5.5 |
| LADY | 59000000. | 6.7 | 18.1 |
| MACM | 91000000. | 5.0 | 10.0 |
| MATT | 59000000. | 6.1 | 4.6 |
| MCAR | 240000000. | 4.1 | 9.2 |
| MEGG | 60000000. | 1.3 | 10.0 |
| MEL | 48000000. | 2.05 | 5.5 |
| MINE | 24000000. | 2.18 | 4.73 |
| MOUN | 89000000. | 7.1 | 6.1 |
| NAVA | 90000000. | 2.3 | 10.0 |
| RAJP | 30000000. | 1.70 | 6.14 |
| RAMM | 30000000. | 9.0 | 19.0 |
| RAMP | 61000000. | 1.57 | 13.48 |
| REDC | 77000000. | 5.0 | 17.1 |
| REEV | 56000000. | 0.96 | 3.42 |
| ROSH | 11000000. | 2.0 | 8.0 |
| SILV | 18000000. | 2.8 | 7.4 |
| SQUI | 18000000. | 0.38 | 4.4 |
| SULL | 160000000. | 0.10 | 5.9 |
| SWIM | 43000000. | 5.5 | 4.7 |
| TOM | 17000000. | 4.55 | 6.4 |
| TYNA | 12000000. | 4.9 | 4.5 |

[ABOVE DATA IS READ IN THE FOLLOWING FORMAT]

(A24,1X,F12.2,F9.2,F12.2,4X,F9.2)

```
[MFIT IS DESIGNED TO PRODUCE GRAPHABLE DATA TO
COMPARE THE DATA TO A LOGNORMAL DISTRIBUTION.]


GVARSB:
SEG MFIT

 ENTER NAME OF INPUT FILE, 60 CHAR. MAX
SEDEX13

 ENTER FILE NAME TO CONTAIN MARK3 INPUT DATA:
DATA13

 ENTER NUMBER OF METALS IN INPUT FILE:
2

 OPTION 1 CALCS. TONNAGE, PRODUCES: MEDIAN ORE TONNAGE
                                    MEAN ORE TONNAGE

        2       PERCENT,            MEDIAN METAL GRADE
                                    MEAN METAL GRADE

        3 (TONNAGE*PERCENT/100)     MEAN METAL TONNAGE

        4     ENDS PROGRAM

 ENTER 1 OR 2 OR 3 FOR MFIT OPTION
         OR ENTER 4 TO END:
1

 ENTER NAME OF OUTPUT FILE, 60 CHAR. MAX
MF13.ONE




 OPTION 1 CALCS. TONNAGE, PRODUCES: MEDIAN ORE TONNAGE
                                    MEAN ORE TONNAGE

        2       PERCENT,            MEDIAN METAL GRADE
                                    MEAN METAL GRADE

        3 (TONNAGE*PERCENT/100)     MEAN METAL TONNAGE

        4     ENDS PROGRAM

 ENTER 1 OR 2 OR 3 FOR MFIT OPTION
         OR ENTER 4 TO END:
2

 ENTER NAME OF OUTPUT FILE, 60 CHAR. MAX
MF13.TWO
```

```
 OPTION 1 CALCS. TONNAGE, PRODUCES: MEDIAN ORE TONNAGE
                                    MEAN ORE TONNAGE

        2       PERCENT,            MEDIAN METAL GRADE
                                    MEAN METAL GRADE

        3 (TONNAGE*PERCENT/100)     MEAN METAL TONNAGE

        4     ENDS PROGRAM

 ENTER 1 OR 2 OR 3 FOR MFIT OPTION
         OR ENTER 4 TO END:
3

 ENTER NAME OF OUTPUT FILE, 60 CHAR. MAX
MF13.THREE




 OPTION 1 CALCS. TONNAGE, PRODUCES: MEDIAN ORE TONNAGE
                                    MEAN ORE TONNAGE

        2       PERCENT,            MEDIAN METAL GRADE
                                    MEAN METAL GRADE

        3 (TONNAGE*PERCENT/100)     MEAN METAL TONNAGE

        4     ENDS PROGRAM

 ENTER 1 OR 2 OR 3 FOR MFIT OPTION
         OR ENTER 4 TO END:
4
**** STOP

GVARSE:
```

[MFIT OUTPUT FILE (DATA13). SUMMARY AT THE END OF OPTION 3 CONTAINS DATA TO BE ENTERED AT TERMINAL FOR MARKS.]

21000000.
9000000.
101000000.
36000000.
72000000.
180000000.
30000000.
730000.
1300000.
9000000.
15000000.
27000000.
58000000.
1600000.
35000000.
6500000.
37000000.
1500000.
270000000.
7700000.
2600000.
6900000.
910000.
590000.
2400000000.
60000000.
4800000.
2400000.
89000000.
90000000.
30000000.
30000000.
61000000.
77000000.
580000.
11000000.
18000000.
1800000.
160000000.
4300000.
17000000.
12000000.

OPTION= 1 / TONS

| [MEDIAN ORE TONS] | [MEAN ORE TONS] | | |
|---|---|---|---|
| 1.750000E+07 | 4.515305E+07 | 42 | 42 |
| 16.6777 | 1.3768 | | |

PROBABILITY OF OCCURENCE= 1.00

[PARAMETERS OF A LOGNORMAL DISTRIBUTION HAVING SAME MEAN AND MEDIAN AS THE ORE DATA]

21000000.
9000000.
101000000.
86000000.
72000000.
180000000.
30000000.
730000.
1300000.
9000000.
15000000.
27000000.
58000000.
16000000.
35000000.
65000000.
37000000.
15000000.
270000000.
77000000.
26000000.
89000000.
91000000.
590300.
240000000.
60000000.
48000000.
24000000.
89000000.
90000000.
30000000.
30000000.
61000000.
77000000.
58000000.
110000000.
120000000.
18000000.
160000000.
43000000.
170000000.
12000000.

OPTION= 1 / TONS

1.750000E+07 4.515300E+07 42 42
16.6777 1.37635
PROBABILITY OF OCCURENCE 1.00

0.50
3.53
1.01
2.67
4.26
11.30
2.20
6.00
1.60
2.70
5.60
5.60
3.41
0.58
4.23
0.77
7.70
2.50
1.46
1.65
5.10
6.70
5.00
6.10
4.10
1.30
2.05
2.10
7.10
2.30
1.70
9.00
1.57
5.00
0.96
2.00
2.80
0.38
6.10
3.00
4.55
4.50

OPTION= 2 / METAL= 1

[MEDIAN METAL GRADE] [MEAN METAL GRADE]

| | | | |
|---|---|---|---|
| 3.10500 | 3.66660 | 42 | 42 |
| 1.13301 | 0.57665 | | |

PROBABILITY OF OCCURENCE 1.00

[PARAMETERS OF A LOGNORMAL DISTRIBUTION HAVING SAME MEDIAN AND MEAN AS METAL DATA]

9.00
1.51
2.45
0.56
2.32
9.30
7.80
5.00
11.60
2.90
7.10
8.30
5.72
2.60
6.69
4.10
9.50
4.00
3.64
3.49
5.60
15.10
10.00
4.60
9.20
10.00
5.60
4.75
6.10
10.00
6.14
19.00
13.40
17.10
3.42
8.00
7.40
4.40
5.90
4.70
6.40
4.50

OPTION= 2 / METAL= 2

6.00000 6.96300 42 42
1.79176 0.545642
PROBABILITY OF OCCURENCE 1.00

[PARAMETERS OF A LOGNORMAL DISTRIBUTION HAVING SAME MEDIAN AND MEAN AS METAL DATA]

0.50
3.53
1.01
2.67
4.26
11.30
2.20
6.00
1.60
2.70
5.60
5.60
3.41
0.58
4.23
0.77
7.70
2.50
1.46
1.65
5.10
6.70
5.00
6.10
4.10
1.30
2.05
2.15
7.10
2.30
1.70
9.00
1.57
5.00
0.98
2.00
2.60
0.38
6.10
3.80
4.55
4.90

OPTION= 3 / METAL= 1

[MEDIAN METAL GRADE] [MEAN METAL GRADE]
592150. 1.92839eE+06 42 42
13.2915 1.53624
PROBABILITY OF OCCURENCE 1.00

[PARAMETERS OF A LOGNORMAL DISTRIBUTION HAVING SAME MEDIAN AND MEAN AS METAL DATA]

9.00
1.51
2.45
0.56
2.32
9.80
7.80
5.00
11.60
2.90
7.10
8.30
5.72
2.60
6.69
4.10
9.50
4.00
3.64
3.49
5.60
18.10
10.00
4.60
9.20
10.00
5.60
4.75
6.10
10.00
6.14
14.00
13.40
17.10
3.42
8.00
7.40
4.40
5.90
4.70
6.40
4.50

OPTION= 3 / METAL= 2

1.210000E+06 3.273401E+06 42 42
14.0061 1.41082
PROBABILITY OF OCCURENCE 1.00

[PARAMETERS OF A LOGNORMAL DISTRIBUTION HAVING SAME MEDIAN AND MEAN AS METAL DATA]

OPTION / METAL SUMMARY

| MEDIAN | MEAN |
|---|---|
| OPTION= 1 / TONS | |
| 1.750000E+07 | 4.515305E+07 |
| OPTION= 1 / TONS | |
| 1.750000E+07 | 4.515305E+07 |
| OPTION= 2 / METAL= 1 | |
| 3.10500 | 3.66656 |
| OPTION= 2 / METAL= 2 | |
| 6.00000 | 5.96308 |
| OPTION= 3 / METAL= 1 | |
| 592150. | 1.928696E+06 |
| OPTION= 3 / METAL= 2 | |
| 1.210000E+06 | 3.273401E+06 |

*** COMPLETED ***

[OUTPUT FILE (MF13.ONE) CREATED BY MFIT (OPTION 1)]

[TO COMPARE THE EMPIRICAL AND LOGNORMAL DISTRIBUTIONS GRAPH COLUMN 2 ON THE X-AXIS AND COLUMNS 3 AND 4 ON THE Y-AXIS. FOR A REFINED VERSION OF THE THEORETICAL DISTRIBUTION GRAPH COLUMN 5 ON THE X-AXIS AND COLUMN 6 ON THE Y-AXIS.]

| DATA | SORTED DATA | EMPIRICAL DISTRIBUTION | THEORETICAL DISTRIBUTION | THEORETICAL DISTRIBUTION 101 POINTS | PROBABILITY |
|---|---|---|---|---|---|
| 21000000.00 | 590000.00 | 0.023 | 0.007 | 590000.00 | 0.007 |
| 9000000.00 | 730000.00 | 0.047 | 0.011 | 3284098.99 | 0.112 |
| 101000000.00 | 910000.00 | 0.070 | 0.016 | 5978197.99 | 0.218 |
| 86000000.00 | 1300000.00 | 0.093 | 0.029 | 8672298.00 | 0.305 |
| 72000000.00 | 1500000.00 | 0.116 | 0.037 | 11366396.00 | 0.377 |
| 180000000.00 | 1600000.00 | 0.140 | 0.041 | 14060496.00 | 0.437 |
| 30000000.00 | 1800000.00 | 0.163 | 0.049 | 16754596.00 | 0.487 |
| 730000.00 | 2400000.00 | 0.186 | 0.075 | 19448692.00 | 0.530 |
| 1300000.00 | 2600000.00 | 0.209 | 0.083 | 22142792.00 | 0.568 |
| 9000000.00 | 4300000.00 | 0.233 | 0.154 | 24836892.00 | 0.600 |
| 15000000.00 | 4799999.99 | 0.256 | 0.174 | 27530992.00 | 0.629 |
| 27000000.00 | 5800000.00 | 0.279 | 0.211 | 30225092.00 | 0.654 |
| 58000000.00 | 6500000.00 | 0.302 | 0.236 | 32919192.00 | 0.677 |
| 1600000.00 | 7700000.00 | 0.326 | 0.275 | 35613288.00 | 0.697 |
| 35000000.00 | 8900000.00 | 0.349 | 0.312 | 38307384.00 | 0.715 |
| 6500000.00 | 9000000.00 | 0.372 | 0.315 | 41001488.00 | 0.732 |
| 37000000.00 | 9000000.00 | 0.395 | 0.315 | 43695584.00 | 0.747 |
| 1500000.00 | 11000000.00 | 0.419 | 0.368 | 46389688.00 | 0.760 |
| 270000000.00 | 12000000.00 | 0.442 | 0.392 | 49083784.00 | 0.773 |
| 7700000.00 | 15000000.00 | 0.465 | 0.455 | 51777888.00 | 0.784 |
| 2600000.00 | 17000000.00 | 0.488 | 0.492 | 54471984.00 | 0.795 |
| 8900000.00 | 18000000.00 | 0.512 | 0.506 | 57166088.00 | 0.805 |
| 910000.00 | 21000000.00 | 0.535 | 0.553 | 59860184.00 | 0.814 |
| 590000.00 | 27000000.00 | 0.558 | 0.623 | 62554288.00 | 0.822 |
| 240000000.00 | 30000000.00 | 0.581 | 0.652 | 65248384.00 | 0.830 |
| 60000000.00 | 30000000.00 | 0.605 | 0.652 | 67942496.00 | 0.838 |
| 4799999.99 | 30000000.00 | 0.628 | 0.652 | 70636576.00 | 0.844 |
| 2400000.00 | 35000000.00 | 0.651 | 0.693 | 73330672.00 | 0.851 |
| 89000000.00 | 37000000.00 | 0.674 | 0.707 | 76024768.00 | 0.857 |
| 90000000.00 | 58000000.00 | 0.698 | 0.806 | 78718880.00 | 0.862 |
| 30000000.00 | 60000000.00 | 0.721 | 0.814 | 81412976.00 | 0.868 |
| 30000000.00 | 61000000.00 | 0.744 | 0.818 | 84107072.00 | 0.873 |
| 61000000.00 | 72000000.00 | 0.767 | 0.848 | 86801168.00 | 0.877 |
| 77000000.00 | 77000000.00 | 0.791 | 0.859 | 89495280.00 | 0.882 |
| 5800000.00 | 86000000.00 | 0.814 | 0.876 | 92189376.00 | 0.886 |
| 11000000.00 | 89000000.00 | 0.837 | 0.881 | 94883472.00 | 0.890 |
| 18000000.00 | 90000000.00 | 0.860 | 0.883 | 97577568.00 | 0.894 |
| 1600000.00 | 101000000.00 | 0.884 | 0.898 | 100271680.00 | 0.897 |
| 160000000.00 | 160000000.00 | 0.907 | 0.946 | 102965776.00 | 0.901 |
| 4300000.00 | 180000000.00 | 0.930 | 0.955 | 105659872.00 | 0.904 |
| 17000000.00 | 240000000.00 | 0.953 | 0.971 | 108353968.00 | 0.907 |
| 12000000.00 | 270000000.00 | 0.977 | 0.976 | 111048080.00 | 0.910 |

| | |
|---|---|
| 113742176.00 | 0.913 |
| 116436272.00 | 0.915 |
| 119130368.00 | 0.918 |
| 121824480.00 | 0.920 |
| 124518576.00 | 0.923 |
| 127212672.00 | 0.925 |
| 129906768.00 | 0.927 |
| 132600880.00 | 0.929 |
| 135294976.00 | 0.931 |
| 137989056.00 | 0.933 |
| 140683136.00 | 0.935 |
| 143377248.00 | 0.936 |
| 146071360.00 | 0.938 |
| 148765440.00 | 0.940 |
| 151459552.00 | 0.941 |
| 154153664.00 | 0.943 |
| 156847744.00 | 0.944 |
| 159541856.00 | 0.946 |
| 162235936.00 | 0.947 |
| 164930048.00 | 0.948 |
| 167624160.00 | 0.949 |
| 170318240.00 | 0.951 |
| 173012352.00 | 0.952 |
| 175706464.00 | 0.953 |
| 178400544.00 | 0.954 |
| 181094656.00 | 0.955 |
| 183788736.00 | 0.956 |
| 186482848.00 | 0.957 |
| 189176960.00 | 0.958 |
| 191871040.00 | 0.959 |
| 194565152.00 | 0.960 |
| 197259264.00 | 0.960 |
| 199953344.00 | 0.961 |
| 202647488.00 | 0.962 |
| 205341536.00 | 0.963 |
| 208035648.00 | 0.964 |
| 210729760.00 | 0.964 |
| 213423840.00 | 0.965 |
| 216117952.00 | 0.966 |
| 218812064.00 | 0.966 |
| 221506144.00 | 0.967 |
| 224200256.00 | 0.968 |
| 226894336.00 | 0.968 |
| 229588448.00 | 0.969 |
| 232282560.00 | 0.970 |
| 234976640.00 | 0.970 |
| 237670752.00 | 0.971 |
| 240364864.00 | 0.971 |
| 243058944.00 | 0.972 |
| 245753056.00 | 0.972 |
| 248447136.00 | 0.973 |
| 251141248.00 | 0.973 |
| 253835360.00 | 0.974 |
| 256529440.00 | 0.974 |
| 259223552.00 | 0.975 |
| 261917664.00 | 0.975 |
| 264611744.00 | 0.975 |
| 267305856.00 | 0.976 |
| 270000000.00 | 0.976 |

[OUTPUT FILE (MF13.TWO) CREATED BY MFIT (OPTION 2)]

[TO COMPARE THE EMPIRICAL AND LOGNORMAL DISTRIBUTIONS GRAPH COLUMN 2 ON THE X-AXIS AND COLUMNS 3 AND 4 ON THE Y-AXIS. FOR A REFINED VERSION OF THE THEORETICAL DISTRIBUTION GRAPH COLUMN 5 ON THE X-AXIS AND COLUMN 6 ON THE Y-AXIS.]

| DATA | SORTED DATA | EMPIRICAL DISTRIBUTION | THEORETICAL DISTRIBUTION | THEORETICAL DISTRIBUTION 101 POINTS | PROBABILITY |
|---|---|---|---|---|---|
| 9.00 | 0.56 | 0.023 | 0.000 | 0.56 | 0.000 |
| 1.51 | 1.51 | 0.047 | 0.006 | 0.74 | 0.000 |
| 2.45 | 2.32 | 0.070 | 0.041 | 0.93 | 0.000 |
| 0.56 | 2.45 | 0.093 | 0.050 | 1.11 | 0.001 |
| 2.32 | 2.60 | 0.116 | 0.063 | 1.30 | 0.003 |
| 9.80 | 2.90 | 0.140 | 0.091 | 1.48 | 0.005 |
| 7.80 | 3.42 | 0.163 | 0.151 | 1.67 | 0.009 |
| 5.00 | 3.49 | 0.186 | 0.160 | 1.85 | 0.016 |
| 11.60 | 3.64 | 0.209 | 0.180 | 2.04 | 0.024 |
| 2.90 | 4.00 | 0.233 | 0.229 | 2.22 | 0.034 |
| 7.10 | 4.10 | 0.256 | 0.243 | 2.40 | 0.047 |
| 8.30 | 4.40 | 0.279 | 0.285 | 2.59 | 0.062 |
| 5.72 | 4.50 | 0.302 | 0.299 | 2.77 | 0.079 |
| 2.60 | 4.60 | 0.326 | 0.313 | 2.96 | 0.097 |
| 6.69 | 4.70 | 0.349 | 0.327 | 3.14 | 0.118 |
| 4.10 | 4.73 | 0.372 | 0.331 | 3.33 | 0.140 |
| 9.50 | 5.00 | 0.395 | 0.369 | 3.51 | 0.163 |
| 4.00 | 5.60 | 0.419 | 0.450 | 3.69 | 0.187 |
| 3.64 | 5.60 | 0.442 | 0.450 | 3.88 | 0.212 |
| 3.49 | 5.72 | 0.465 | 0.465 | 4.06 | 0.238 |
| 5.60 | 5.90 | 0.488 | 0.488 | 4.25 | 0.263 |
| 18.10 | 6.10 | 0.512 | 0.512 | 4.43 | 0.289 |
| 10.00 | 6.14 | 0.535 | 0.517 | 4.62 | 0.315 |
| 4.60 | 6.40 | 0.558 | 0.547 | 4.80 | 0.341 |
| 9.20 | 6.69 | 0.581 | 0.579 | 4.99 | 0.367 |
| 10.00 | 7.10 | 0.605 | 0.621 | 5.17 | 0.392 |
| 5.60 | 7.40 | 0.628 | 0.650 | 5.35 | 0.417 |
| 4.73 | 7.80 | 0.651 | 0.685 | 5.54 | 0.442 |
| 6.10 | 8.00 | 0.674 | 0.701 | 5.72 | 0.465 |
| 10.00 | 8.30 | 0.698 | 0.724 | 5.91 | 0.489 |
| 6.14 | 9.00 | 0.721 | 0.771 | 6.09 | 0.511 |
| 19.00 | 9.20 | 0.744 | 0.783 | 6.28 | 0.533 |
| 13.48 | 9.50 | 0.767 | 0.800 | 6.46 | 0.554 |
| 17.10 | 9.80 | 0.791 | 0.816 | 6.65 | 0.574 |
| 3.42 | 10.00 | 0.814 | 0.825 | 6.83 | 0.594 |
| 8.00 | 10.00 | 0.837 | 0.825 | 7.01 | 0.613 |
| 7.40 | 10.00 | 0.860 | 0.825 | 7.20 | 0.631 |
| 4.40 | 11.60 | 0.884 | 0.886 | 7.38 | 0.648 |
| 5.90 | 13.48 | 0.907 | 0.931 | 7.57 | 0.665 |
| 4.70 | 17.10 | 0.930 | 0.972 | 7.75 | 0.681 |
| 6.40 | 18.10 | 0.953 | 0.978 | 7.94 | 0.696 |
| 4.50 | 19.00 | 0.977 | 0.982 | 8.12 | 0.710 |

| | |
|---|---|
| 8.30 | 0.724 |
| 8.49 | 0.738 |
| 8.67 | 0.750 |
| 8.86 | 0.762 |
| 9.04 | 0.774 |
| 9.23 | 0.785 |
| 9.41 | 0.795 |
| 9.60 | 0.805 |
| 9.78 | 0.815 |
| 9.96 | 0.824 |
| 10.15 | 0.832 |
| 10.33 | 0.840 |
| 10.52 | 0.848 |
| 10.70 | 0.855 |
| 10.89 | 0.862 |
| 11.07 | 0.869 |
| 11.26 | 0.875 |
| 11.44 | 0.881 |
| 11.62 | 0.887 |
| 11.81 | 0.893 |
| 11.99 | 0.898 |
| 12.18 | 0.903 |
| 12.36 | 0.907 |
| 12.55 | 0.912 |
| 12.73 | 0.916 |
| 12.91 | 0.920 |
| 13.10 | 0.924 |
| 13.28 | 0.927 |
| 13.47 | 0.931 |
| 13.65 | 0.934 |
| 13.84 | 0.937 |
| 14.02 | 0.940 |
| 14.21 | 0.943 |
| 14.39 | 0.945 |
| 14.57 | 0.948 |
| 14.76 | 0.950 |
| 14.94 | 0.953 |
| 15.13 | 0.955 |
| 15.31 | 0.957 |
| 15.50 | 0.959 |
| 15.68 | 0.961 |
| 15.87 | 0.962 |
| 16.05 | 0.964 |
| 16.23 | 0.966 |
| 16.42 | 0.967 |
| 16.60 | 0.969 |
| 16.79 | 0.970 |
| 16.97 | 0.971 |
| 17.16 | 0.973 |
| 17.34 | 0.974 |
| 17.52 | 0.975 |
| 17.71 | 0.976 |
| 17.89 | 0.977 |
| 18.08 | 0.978 |
| 18.26 | 0.979 |
| 18.45 | 0.980 |
| 18.63 | 0.981 |
| 18.82 | 0.982 |
| 19.00 | 0.982 |

[OUTPUT FILE (MF13.THREE) CREATED BY MFIT (OPTION 3)]

| DATA | SORTED DATA | EMPIRICAL DISTRIBUTION | THEORETICAL DISTRIBUTION | THEORETICAL DISTRIBUTION 101 POINTS | PROBABILITY | CORRESPONDING GRADES TO METAL IN COLUMN 1. |
|---|---|---|---|---|---|---|
| 1890000.00 | 27140.00 | 0.023 | 0.004 | 27140.00 | 0.004 | 9.00 |
| 135899.97 | 36500.00 | 0.047 | 0.007 | 247668.56 | 0.130 | 1.51 |
| 2474499.49 | 41599.99 | 0.070 | 0.008 | 468197.12 | 0.250 | 2.45 |
| 481599.94 | 60000.00 | 0.093 | 0.017 | 688725.62 | 0.345 | 0.56 |
| 1670400.00 | 79199.98 | 0.116 | 0.027 | 909254.25 | 0.420 | 2.32 |
| 17639996.00 | 91000.00 | 0.140 | 0.033 | 1129782.50 | 0.481 | 9.80 |
| 2340000.00 | 113519.98 | 0.163 | 0.047 | 1350311.25 | 0.531 | 7.80 |
| 36500.00 | 135899.97 | 0.186 | 0.061 | 1570839.75 | 0.573 | 5.00 |
| 150800.00 | 145600.00 | 0.209 | 0.067 | 1791368.49 | 0.609 | 11.60 |
| 261000.00 | 150800.00 | 0.233 | 0.070 | 2011896.74 | 0.641 | 2.90 |
| 1065000.00 | 198360.00 | 0.256 | 0.100 | 2232424.99 | 0.668 | 7.10 |
| 2240999.49 | 202099.97 | 0.279 | 0.102 | 2452953.99 | 0.692 | 8.30 |
| 3317599.99 | 261000.00 | 0.302 | 0.138 | 2673482.49 | 0.713 | 5.72 |
| 41599.99 | 266500.00 | 0.326 | 0.142 | 2894011.00 | 0.732 | 2.60 |
| 2341499.50 | 268729.94 | 0.349 | 0.143 | 3114539.49 | 0.748 | 6.69 |
| 266500.00 | 268800.00 | 0.372 | 0.143 | 3335067.49 | 0.764 | 4.10 |
| 3514999.99 | 481599.94 | 0.395 | 0.257 | 3555596.99 | 0.777 | 9.50 |
| 60000.00 | 540000.00 | 0.419 | 0.284 | 3776125.49 | 0.790 | 4.00 |
| 9827998.00 | 880000.00 | 0.442 | 0.411 | 3996653.49 | 0.801 | 3.64 |
| 268729.94 | 1065000.00 | 0.465 | 0.464 | 4217181.98 | 0.812 | 3.49 |
| 145600.00 | 1087999.75 | 0.488 | 0.470 | 4437709.99 | 0.821 | 5.60 |
| 1610899.74 | 1331999.75 | 0.512 | 0.527 | 4658238.99 | 0.830 | 18.10 |
| 91000.00 | 1610899.74 | 0.535 | 0.580 | 4878767.99 | 0.838 | 10.00 |
| 27140.00 | 1670400.00 | 0.558 | 0.590 | 5099295.99 | 0.846 | 4.60 |
| 22080000.00 | 1842000.00 | 0.581 | 0.617 | 5319824.99 | 0.853 | 9.20 |
| 6000000.00 | 1890000.00 | 0.605 | 0.624 | 5540354.99 | 0.859 | 10.00 |
| 268800.00 | 2240999.49 | 0.628 | 0.669 | 5760881.99 | 0.865 | 5.60 |
| 113519.98 | 2340000.00 | 0.651 | 0.680 | 5981410.98 | 0.871 | 4.73 |
| 5428999.99 | 2341499.50 | 0.674 | 0.680 | 6201938.99 | 0.876 | 6.10 |
| 9000000.00 | 2474499.49 | 0.698 | 0.694 | 6422467.98 | 0.881 | 10.00 |
| 1842000.00 | 3317599.99 | 0.721 | 0.762 | 6642994.99 | 0.886 | 6.14 |
| 5700000.00 | 3514999.99 | 0.744 | 0.775 | 6863523.99 | 0.890 | 19.00 |
| 8222798.98 | 5428999.99 | 0.767 | 0.856 | 7084053.99 | 0.895 | 13.48 |
| 13166998.00 | 5700000.00 | 0.791 | 0.864 | 7304581.98 | 0.898 | 17.10 |
| 198360.00 | 6000000.00 | 0.814 | 0.872 | 7525110.98 | 0.902 | 3.42 |
| 880000.00 | 8222798.98 | 0.837 | 0.913 | 7745638.99 | 0.906 | 8.00 |
| 1331999.75 | 9000000.00 | 0.860 | 0.922 | 7966166.99 | 0.909 | 7.40 |
| 79199.98 | 9439998.00 | 0.884 | 0.927 | 8186695.99 | 0.912 | 4.40 |
| 9439998.00 | 9827998.00 | 0.907 | 0.931 | 8407224.00 | 0.915 | 5.90 |
| 202099.97 | 13166998.00 | 0.930 | 0.954 | 8627752.00 | 0.918 | 4.70 |
| 1087999.75 | 17639996.00 | 0.953 | 0.971 | 8848280.00 | 0.920 | 6.40 |
| 540000.00 | 22080000.00 | 0.977 | 0.980 | 9068810.00 | 0.923 | 4.50 |

| | |
|---|---|
| 9289338.00 | 0.925 |
| 9509866.00 | 0.928 |
| 9730396.00 | 0.930 |
| 9950924.00 | 0.932 |
| 10171452.00 | 0.934 |
| 10391982.00 | 0.936 |
| 10612510.00 | 0.938 |
| 10833038.00 | 0.940 |
| 11053570.00 | 0.941 |
| 11274096.00 | 0.943 |
| 11494624.00 | 0.944 |
| 11715152.00 | 0.946 |
| 11935682.00 | 0.947 |
| 12156210.00 | 0.949 |
| 12376738.00 | 0.950 |
| 12597268.00 | 0.951 |
| 12817796.00 | 0.953 |
| 13038324.00 | 0.954 |
| 13258850.00 | 0.955 |
| 13479380.00 | 0.956 |
| 13699908.00 | 0.957 |
| 13920438.00 | 0.958 |
| 14140968.00 | 0.959 |
| 14361496.00 | 0.960 |
| 14582024.00 | 0.961 |
| 14802554.00 | 0.962 |
| 15023082.00 | 0.963 |
| 15243610.00 | 0.963 |
| 15464138.00 | 0.964 |
| 15684668.00 | 0.965 |
| 15905194.00 | 0.966 |
| 16125722.00 | 0.966 |
| 16346252.00 | 0.967 |
| 16566784.00 | 0.968 |
| 16787308.00 | 0.969 |
| 17007836.00 | 0.969 |
| 17228364.00 | 0.970 |
| 17448892.00 | 0.970 |
| 17669420.00 | 0.971 |
| 17889952.00 | 0.972 |
| 18110480.00 | 0.972 |
| 18331008.00 | 0.973 |
| 18551536.00 | 0.973 |
| 18772064.00 | 0.974 |
| 18992592.00 | 0.974 |
| 19213124.00 | 0.975 |
| 19433652.00 | 0.975 |
| 19654180.00 | 0.976 |
| 19874708.00 | 0.976 |
| 20095236.00 | 0.976 |
| 20315764.00 | 0.977 |
| 20536292.00 | 0.977 |
| 20756824.00 | 0.978 |
| 20977352.00 | 0.978 |
| 21197880.00 | 0.979 |
| 21418408.00 | 0.979 |
| 21638936.00 | 0.979 |
| 21859464.00 | 0.980 |
| 22080000.00 | 0.980 |

[MODEL 32 DATA (POLYVEIN52)]

| [MINES/DEPOSITS] | [TONS] | [AG] | [PB] | [ZN] |
|---|---|---|---|---|
| Hector-Calumet | 2455515.74 | 1216.11 | 7.42 | 6.17 |
| Elsa | 436738.90 | 2126.40 | 4.91 | 1.40 |
| Husky | 387093.12 | 1434.17 | 3.83 | 0.00 |
| Sadie-Ladue | 221652.84 | 1735.60 | 6.53 | 0.00 |
| Keno | 256658.97 | 1520.23 | 10.64 | 3.74 |
| Lucky Queer | 112064.29 | 3041.83 | 6.95 | 2.69 |
| Silver King | 178061.36 | 1841.48 | 7.98 | 0.89 |
| No Cash | 142995.04 | 1038.86 | 3.60 | 1.89 |
| Salkeno | 151557.05 | 932.57 | 5.22 | 2.69 |
| Bermingham | 165013.87 | 703.89 | 4.23 | 0.56 |
| Bellekeno | 16797.69 | 1902.66 | 12.06 | 1.85 |
| Ruby | 35308.35 | 866.40 | 3.02 | 1.25 |
| Comstock | 20740.61 | 1360.46 | 10.70 | 3.76 |
| Shamrock | 4568.40 | 6027.08 | 35.37 | 0.36 |
| Onek | 29970.04 | 627.77 | 8.06 | 8.86 |
| Dixie | 21656.32 | 692.23 | 3.80 | 5.14 |
| Black Cap | 6646.15 | 1498.63 | 3.17 | 0.33 |
| Townsite | 10646.43 | 564.00 | 4.26 | 1.97 |
| Miller (UN-Dragon) | 3518.47 | 516.00 | 2.23 | 0.74 |
| Mt. Keno | 1172.00 | 1714.29 | 3.66 | 0.00 |
| Yukeno | 308.44 | 5104.46 | 11.68 | 0.00 |
| Gambler | 223.17 | 6517.37 | 56.15 | 0.00 |
| Stone | 135.58 | 4320.34 | 30.28 | 0.00 |
| Caribou Hill | 78.89 | 6072.68 | 71.60 | 0.30 |
| Duncan | 13.19 | 25513.50 | 22.35 | 0.00 |
| Vanguard | 31.85 | 10207.54 | 51.75 | 0.51 |
| Flame & Moth | 366.32 | 699.77 | 1.39 | 0.72 |
| Lookout (Mt. Haldane) | 26.76 | 3218.05 | 53.60 | 0.00 |
| Croesus | 9.34 | 8191.88 | 0.00 | 0.00 |
| Silver Basin | 11.29 | 5750.74 | 41.07 | 0.00 |
| Coral-Wigwam | 6.80 | 8845.71 | 61.00 | 0.00 |
| Silver Spring | 224.07 | 232.80 | 2.10 | 0.70 |
| Klondike-Keno | 5.19 | 4278.17 | 49.63 | 0.00 |

```
GVARSB:
SEG MFIT

 ENTER NAME OF INPUT FILE, 60 CHAR. MAX
POLYVEIN52

 ENTER FILE NAME TO CONTAIN MARK3 INPUT DATA:
DATA52

 ENTER NUMBER OF METALS IN INPUT FILE:
3

 OPTION 1 CALCS. TONNAGE, PRODUCES: MEDIAN ORE TONNAGE
                                    MEAN ORE TONNAGE

         2        PERCENT,          MEDIAN METAL GRADE
                                    MEAN METAL GRADE

         3 (TONNAGE*PERCENT/100)    MEAN METAL TONNAGE

         4      ENDS PROGRAM

 ENTER 1 OR 2 OR 3 FOR MFIT OPTION
         OR ENTER 4 TO END:
1

 ENTER NAME OF OUTPUT FILE, 60 CHAR. MAX
MF52.ONE




 OPTION 1 CALCS. TONNAGE, PRODUCES: MEDIAN ORE TONNAGE
                                    MEAN ORE TONNAGE

         2        PERCENT,          MEDIAN METAL GRADE
                                    MEAN METAL GRADE

         3 (TONNAGE*PERCENT/100)    MEAN METAL TONNAGE

         4      ENDS PROGRAM

 ENTER 1 OR 2 OR 3 FOR MFIT OPTION
         OR ENTER 4 TO END:
2

 ENTER NAME OF OUTPUT FILE, 60 CHAR. MAX
MF52.TWO
```

```
 OPTION 1 CALCS. TONNAGE, PRODUCES: MEDIAN ORE TONNAGE
                                    MEAN ORE TONNAGE

         2        PERCENT,          MEDIAN METAL GRADE
                                    MEAN METAL GRADE

         3 (TONNAGE*PERCENT/100)    MEAN METAL TONNAGE

         4      ENDS PROGRAM

 ENTER 1 OR 2 OR 3 FOR MFIT OPTION
         OR ENTER 4 TO END:
3

 ENTER NAME OF OUTPUT FILE, 60 CHAR. MAX
MF52.THREE




 OPTION 1 CALCS. TONNAGE, PRODUCES: MEDIAN ORE TONNAGE
                                    MEAN ORE TONNAGE

         2        PERCENT,          MEDIAN METAL GRADE
                                    MEAN METAL GRADE

         3 (TONNAGE*PERCENT/100)    MEAN METAL TONNAGE

         4      ENDS PROGRAM

 ENTER 1 OR 2 OR 3 FOR MFIT OPTION
         OR ENTER 4 TO END:
4
**** STOP

GVARSB:
```

[MFIT OUTPUT FILE (DATA13). SUMMARY AT THE END OF OPTION 3
CONTAINS DATA TO BE ENTERED AT TERMINAL FOR MARK3.]

2455515.
436787.
387093.
221653.
256659.
112064.
178061.
142995.
151557.
165014.
16798.
35309.
20741.
4566.
29970.
21656.
8640.
16540.
8518.
1172.
308.
123.
136.
79.
13.
32.
366.
27.
9.
11.
7.
224.
5.

OPTION= 1 / TONS

| [MEDIAN ORE TONS] | [MEAN ORE TONS] | | |
|---|---|---|---|
| 8640.15 | 141608. | 33 | 33 |
| 9.06487 | 2.36472 | | |
| PROBABILITY OF OCCURENCE | | 1.00 | |

2455515.
436787.
387093.
221553.
256559.
112064.
173061.
142995.
151557.
165014.
16798.
35309.
20741.
4566.
24970.
21656.
7646.
16346.
8518.
1172.
308.
223.
136.
79.
13.
32.
366.
27.
9.
11.
7.
224.
5.

OPTION= 1 / TONS

3646.15 141608. 33 33
9.06487 2.35472
PROBABILITY OF OCCURENCE 1.00

2495515.
436787.
367093.
221653.
256659.
112064.
178061.
142995.
151557.
165014.
16796.
35309.
20741.
4568.
29970.
21656.
9646.
16546.
8518.
1172.
308.
223.
136.
79.
13.
32.
368.
27.
9.
11.
7.
224.
5.

OPTION= 1 / TONS

8646.15 141608. 33 33
9.06487 2.35472
PROBABILITY OF OCCURENCE 1.00

1216.11
2126.40
1434.17
1785.60
1520.23
3041.83
1641.48
1058.56
932.57
703.89
1902.86
906.40
1360.46
6027.08
527.77
692.23
1498.63
564.00
516.00
1714.29
5104.46
3517.37
4320.34
6072.68
25518.50
10207.54
679.77
3218.06
6191.36
5750.74
8945.71
232.80
4278.17

OPTION= 2 / METAL= 1

| [MEDIAN METAL GRADE] | [MEAN METAL GRADE] | | |
|---|---|---|---|
| 1785.60 | 3647.54 | 33 | 33 |
| 7.48751 | 1.19524 | | |
| PROBABILITY OF OCCURENCE | | 1.00 | |

7.42
4.91
3.83
6.53
10.64
6.95
7.98
3.60
5.22
4.23
12.06
3.02
10.70
35.37
6.06
3.60
3.17
4.20
2.23
5.66
11.08
56.15
30.28
71.60
22.35
51.75
1.39
53.60
0.00
41.07
61.00
2.10
49.63

OPTION= 2 / METAL= 2

| | | | |
|---|---|---|---|
| 7.70000 | 18.7394 | 32 | 33 |
| 2.04122 | 1.33372 | | |
| PROBABILITY OF OCCURENCE | | 0.97 | |

6.17
1.40
0.00
0.00
3.74
2.69
0.89
1.89
2.69
0.58
1.85
1.25
3.70
0.36
3.86
5.14
0.33
1.97
0.74
0.00
0.00
0.00
0.00
0.30
0.00
0.51
0.72
0.00
0.00
0.00
0.00
0.70
0.00

OPTION= 2 / METAL= 3

1.400000 2.21619 21 33
0.335472 0.958453
PROBABILITY OF OCCURENCE 0.54

1216.11
2126.40
1434.17
1785.60
1520.23
3041.65
1841.48
1038.80
932.57
703.89
1902.86
366.40
1360.46
6027.04
627.77
592.23
1496.63
564.00
516.00
1714.29
5104.46
6517.37
4320.34
6072.68
25518.50
10207.54
699.77
3218.00
6191.88
5750.74
6645.71
232.80
4278.17

OPTION= 3 / METAL= 1

| [MEDIAN METAL GRADE] | [MEAN METAL GRADE] | | |
|---|---|---|---|
| 129574. | 1.974920E+06 | 33 | 33 |
| 11.7720 | 2.33411 | | |
| PROBABILITY OF OCCURENCE | | 1.00 | |

7.42
4.91
3.83
6.53
10.64
6.95
7.9c
3.6C
5.22
4.23
12.Cc
3.C2
10.7C
35.37
8.C6
3.8C
3.17
4.26
2.23
3.cc
11.Cc
56.15
30.28
71.6C
22.36
51.75
1.39
53.6C
0.CC
41.C7
61.CC
2.1C
49.63

OPTION= 3 / METAL= 2

770.299 9812.26 32 33
6.64678 2.25593
PROBABILITY OF OCCURENCE 0.47

0.17
1.40
0.00
0.00
3.74
2.69
0.89
1.89
2.69
0.56
1.35
1.25
3.70
0.30
8.80
5.14
0.33
1.97
0.74
0.00
0.00
0.00
0.00
0.30
0.00
0.51
0.72
0.00
0.00
0.00
0.00
0.70
0.00

OPTION= 3 / METAL= 3

779.647 8823.80 21 33
6.65910 2.20276
PROBABILITY OF OCCURENCE 0.64

OPTION / METAL SUMMARY

MEDIAN MEAN

OPTION= 1 / TONS
8646.15 141608.

OPTION= 1 / TONS
8646.15 141608.

OPTION= 1 / TONS
8646.15 141608.

OPTION= 2 / METAL= 1
1785.60 3647.54

OPTION= 2 / METAL= 2
7.7000 18.7394

OPTION= 2 / METAL= 3
1.4000 2.21619

OPTION= 3 / METAL= 1
129574. 1.97492E+06

OPTION= 3 / METAL= 2
770.299 9812.26

OPTION= 3 / METAL= 3
779.847 8823.80

*** COMPLETED ***

[OUTPUT FILE (MF52.ONE) CREATED BY MFIT (OPTION 1)]

| DATA | SORTED DATA | EMPIRICAL DISTRIBUTION | THEORETICAL DISTRIBUTION | THEORETICAL DISTRIBUTION 101 POINTS | PROBABILITY |
|---|---|---|---|---|---|
| 2455515.49 | 5.19 | 0.029 | 0.001 | 5.19 | 0.001 |
| 436786.87 | 6.80 | 0.059 | 0.001 | 24560.29 | 0.670 |
| 387093.12 | 9.34 | 0.088 | 0.002 | 49115.39 | 0.768 |
| 221652.84 | 11.29 | 0.118 | 0.002 | 73670.48 | 0.816 |
| 256658.97 | 13.19 | 0.147 | 0.003 | 98225.58 | 0.846 |
| 1120e4.30 | 26.7e | 0.17e | 0.007 | 122780.69 | 0.867 |
| 178061.37 | 31.85 | 0.206 | 0.009 | 147335.78 | 0.882 |
| 142995.03 | 78.89 | 0.235 | 0.024 | 171890.87 | 0.893 |
| 151557.06 | 135.5e | 0.265 | 0.039 | 196445.97 | 0.903 |
| 165013.e7 | 223.17 | 0.294 | 0.061 | 221001.06 | 0.910 |
| 16797.89 | 224.07 | 0.324 | 0.061 | 245556.19 | 0.916 |
| 35308.55 | 308.44 | 0.353 | 0.079 | 270111.25 | 0.921 |
| 20740.61 | 3e8.32 | 0.382 | 0.091 | 294666.37 | 0.925 |
| 456e.40 | 1172.08 | 0.412 | 0.199 | 319221.50 | 0.929 |
| 29970.04 | 4568.40 | 0.441 | 0.394 | 343776.56 | 0.932 |
| 21e56.32 | 8518.47 | 0.471 | 0.497 | 368331.62 | 0.935 |
| 8646.15 | 8e46.15 | 0.500 | 0.500 | 392886.75 | 0.937 |
| 16846.43 | 1e797.89 | 0.529 | 0.613 | 417441.81 | 0.939 |
| 8518.47 | 16846.43 | 0.559 | 0.e11 | 441996.94 | 0.941 |
| 1172.08 | 20740.61 | 0.588 | 0.e44 | 466552.12 | 0.942 |
| 308.44 | 21656.32 | 0.e1e | 0.851 | 491107.19 | 0.943 |
| 223.17 | 29970.04 | 0.647 | 0.700 | 515e62.25 | 0.945 |
| 135.58 | 35308.55 | 0.676 | 0.724 | 540217.37 | 0.946 |
| 78.e9 | 1120e4.30 | 0.70e | 0.859 | 5e4772.37 | 0.947 |
| 13.19 | 142995.03 | 0.735 | 0.880 | 589327.50 | 0.947 |
| 31.85 | 151557.0e | 0.765 | 0.884 | 613882.75 | 0.948 |
| 368.32 | 165013.87 | 0.794 | 0.e91 | 638437.75 | 0.949 |
| 26.76 | 178e61.37 | 0.824 | 0.89e | ee2992.87 | 0.949 |
| 9.34 | 221652.84 | 0.853 | 0.910 | 6e7547.87 | 0.949 |
| 11.29 | 25e658.97 | 0.e82 | 0.91e | 712103.00 | 0.950 |
| e.80 | 387093.12 | 0.912 | 0.93e | 736e58.12 | 0.950 |
| 224.07 | 43e786.87 | 0.941 | 0.940 | 7e1213.12 | 0.950 |
| 5.19 | 2455515.49 | 0.971 | 0.927 | 7e57e8.37 | 0.950 |
| | | | | 810323.37 | 0.950 |
| | | | | 834878.50 | 0.951 |
| | | | | 859433.50 | 0.951 |
| | | | | 8e3986.e2 | 0.951 |
| | | | | 908543.75 | 0.951 |
| | | | | 933099.00 | 0.950 |
| | | | | 957654.12 | 0.950 |
| | | | | 9e2e09.12 | 0.950 |
| | | | | 1006764.25 | 0.950 |
| | | | | 1031319.37 | 0.950 |
| | | | | 1055874.25 | 0.950 |
| | | | | 1080429.49 | 0.950 |
| | | | | 1104984.50 | 0.949 |
| | | | | 1129539.74 | 0.949 |
| | | | | 1154094.75 | 0.949 |

| | |
|---|---|
| 1178649.75 | 0.949 |
| 1203204.75 | 0.948 |
| 1227760.24 | 0.948 |
| 1252315.24 | 0.948 |
| 1276870.24 | 0.948 |
| 1301425.24 | 0.947 |
| 1325980.49 | 0.947 |
| 1350535.49 | 0.947 |
| 1375090.74 | 0.946 |
| 1399645.49 | 0.946 |
| 1424200.74 | 0.945 |
| 1448755.74 | 0.945 |
| 1473310.99 | 0.945 |
| 1497865.99 | 0.944 |
| 1522420.99 | 0.944 |
| 1546976.49 | 0.943 |
| 1571531.50 | 0.943 |
| 1596086.75 | 0.943 |
| 1620641.74 | 0.942 |
| 1645196.74 | 0.942 |
| 1669751.74 | 0.941 |
| 1694307.00 | 0.941 |
| 1718862.00 | 0.941 |
| 1743417.24 | 0.940 |
| 1767971.99 | 0.940 |
| 1792527.24 | 0.939 |
| 1817082.25 | 0.939 |
| 1841637.74 | 0.938 |
| 1866192.74 | 0.938 |
| 1890747.74 | 0.938 |
| 1915302.99 | 0.937 |
| 1939857.99 | 0.937 |
| 1964413.24 | 0.936 |
| 1988967.99 | 0.936 |
| 2013523.24 | 0.935 |
| 2038078.24 | 0.935 |
| 2062633.49 | 0.934 |
| 2087188.49 | 0.934 |
| 2111743.49 | 0.934 |
| 2136298.49 | 0.933 |
| 2160853.99 | 0.933 |
| 2185408.99 | 0.932 |
| 2209963.99 | 0.932 |
| 2234518.99 | 0.931 |
| 2259073.99 | 0.931 |
| 2283628.99 | 0.930 |
| 2308183.99 | 0.930 |
| 2332739.49 | 0.929 |
| 2357294.49 | 0.929 |
| 2381849.49 | 0.929 |
| 2406404.49 | 0.928 |
| 2430960.00 | 0.928 |
| 2455515.49 | 0.927 |

[OUTPUT FILE (MFS2.TWO) CREATED BY MFIT (OPTION 2)]

| DATA | SORTED DATA | EMPIRICAL DISTRIBUTION | THEORETICAL DISTRIBUTION | THEORETICAL DISTRIBUTION 101 POINTS | PROBABILITY |
|---|---|---|---|---|---|
| 6.17 | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 |
| 1.40 | 0.00 | 0.000 | 0.000 | 0.09 | 0.002 |
| 0.00 | 0.00 | 0.000 | 0.000 | 0.18 | 0.016 |
| 0.00 | 0.00 | 0.000 | 0.000 | 0.27 | 0.041 |
| 3.74 | 0.00 | 0.000 | 0.000 | 0.35 | 0.076 |
| 2.69 | 0.00 | 0.000 | 0.000 | 0.44 | 0.115 |
| 0.89 | 0.00 | 0.000 | 0.000 | 0.53 | 0.156 |
| 1.89 | 0.00 | 0.000 | 0.000 | 0.62 | 0.196 |
| 2.69 | 0.00 | 0.000 | 0.000 | 0.71 | 0.239 |
| 0.58 | 0.00 | 0.000 | 0.000 | 0.80 | 0.278 |
| 1.85 | 0.00 | 0.000 | 0.000 | 0.89 | 0.317 |
| 1.25 | 0.00 | 0.000 | 0.000 | 0.97 | 0.353 |
| 3.76 | 0.30 | 0.045 | 0.054 | 1.06 | 0.387 |
| 0.36 | 0.33 | 0.091 | 0.066 | 1.15 | 0.419 |
| 8.86 | 0.36 | 0.136 | 0.078 | 1.24 | 0.450 |
| 5.14 | 0.51 | 0.182 | 0.146 | 1.33 | 0.478 |
| 0.33 | 0.58 | 0.227 | 0.179 | 1.42 | 0.505 |
| 1.97 | 0.70 | 0.273 | 0.235 | 1.51 | 0.530 |
| 0.74 | 0.72 | 0.318 | 0.244 | 1.59 | 0.554 |
| 0.00 | 0.74 | 0.364 | 0.253 | 1.68 | 0.576 |
| 0.00 | 0.89 | 0.409 | 0.318 | 1.77 | 0.597 |
| 0.00 | 1.25 | 0.455 | 0.453 | 1.86 | 0.617 |
| 0.00 | 1.40 | 0.500 | 0.500 | 1.95 | 0.635 |
| 0.30 | 1.85 | 0.545 | 0.614 | 2.04 | 0.652 |
| 0.00 | 1.89 | 0.591 | 0.623 | 2.13 | 0.668 |
| 0.51 | 1.97 | 0.636 | 0.639 | 2.22 | 0.684 |
| 0.72 | 2.69 | 0.682 | 0.752 | 2.30 | 0.698 |
| 0.00 | 2.69 | 0.727 | 0.752 | 2.39 | 0.712 |
| 0.00 | 3.74 | 0.773 | 0.847 | 2.48 | 0.725 |
| 0.00 | 3.76 | 0.818 | 0.849 | 2.57 | 0.737 |
| 0.00 | 5.14 | 0.864 | 0.912 | 2.66 | 0.748 |
| 0.70 | 6.17 | 0.909 | 0.939 | 2.75 | 0.759 |
| 0.00 | 8.86 | 0.955 | 0.973 | 2.84 | 0.769 |
| | | | | 2.92 | 0.779 |
| | | | | 3.01 | 0.788 |
| | | | | 3.10 | 0.797 |
| | | | | 3.19 | 0.805 |
| | | | | 3.28 | 0.813 |
| | | | | 3.37 | 0.820 |
| | | | | 3.46 | 0.827 |
| | | | | 3.54 | 0.834 |
| | | | | 3.63 | 0.840 |
| | | | | 3.72 | 0.846 |
| | | | | 3.81 | 0.852 |
| | | | | 3.90 | 0.857 |
| | | | | 3.99 | 0.862 |
| | | | | 4.08 | 0.867 |
| | | | | 4.16 | 0.872 |

| | |
|---|---|
| 4.25 | 0.877 |
| 4.34 | 0.881 |
| 4.43 | 0.885 |
| 4.52 | 0.889 |
| 4.61 | 0.893 |
| 4.70 | 0.896 |
| 4.78 | 0.900 |
| 4.87 | 0.903 |
| 4.96 | 0.906 |
| 5.05 | 0.909 |
| 5.14 | 0.912 |
| 5.23 | 0.915 |
| 5.32 | 0.918 |
| 5.40 | 0.920 |
| 5.49 | 0.923 |
| 5.58 | 0.925 |
| 5.67 | 0.928 |
| 5.76 | 0.930 |
| 5.85 | 0.932 |
| 5.94 | 0.934 |
| 6.02 | 0.936 |
| 6.11 | 0.938 |
| 6.20 | 0.940 |
| 6.29 | 0.941 |
| 6.38 | 0.943 |
| 6.47 | 0.945 |
| 6.56 | 0.946 |
| 6.65 | 0.948 |
| 6.73 | 0.949 |
| 6.82 | 0.951 |
| 6.91 | 0.952 |
| 7.00 | 0.953 |
| 7.09 | 0.954 |
| 7.18 | 0.956 |
| 7.27 | 0.957 |
| 7.35 | 0.958 |
| 7.44 | 0.959 |
| 7.53 | 0.960 |
| 7.62 | 0.961 |
| 7.71 | 0.962 |
| 7.80 | 0.963 |
| 7.89 | 0.964 |
| 7.97 | 0.965 |
| 8.06 | 0.966 |
| 8.15 | 0.967 |
| 8.24 | 0.968 |
| 8.33 | 0.968 |
| 8.42 | 0.969 |
| 8.51 | 0.970 |
| 8.59 | 0.971 |
| 8.68 | 0.971 |
| 8.77 | 0.972 |
| 8.86 | 0.973 |

[OUTPUT FILE (MFS2.THREE) CREATED BY MFIT (OPTION 3)]

| DATA | SORTED DATA | EMPIRICAL DISTRIBUTION | THEORETICAL DISTRIBUTION | THEORETICAL DISTRIBUTION 101 POINTS | PROBABILITY | CORRESPONDING GRADES TO METAL IN COLUMN 1. |
|---|---|---|---|---|---|---|
| 151505.28 | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 6.17 |
| 6115.02 | 0.00 | 0.000 | 0.000 | 1515.05 | 0.618 | 1.40 |
| 0.00 | 0.00 | 0.000 | 0.000 | 3030.11 | 0.731 | 0.00 |
| 0.00 | 0.00 | 0.000 | 0.000 | 4545.16 | 0.788 | 0.00 |
| 9599.04 | 0.00 | 0.000 | 0.000 | 6060.21 | 0.824 | 3.74 |
| 3014.53 | 0.00 | 0.000 | 0.000 | 7575.26 | 0.848 | 2.69 |
| 1584.75 | 0.00 | 0.000 | 0.000 | 9090.31 | 0.867 | 0.89 |
| 2702.61 | 0.00 | 0.000 | 0.000 | 10605.37 | 0.881 | 1.89 |
| 4076.88 | 0.00 | 0.000 | 0.000 | 12120.42 | 0.892 | 2.69 |
| 957.08 | 0.00 | 0.000 | 0.000 | 13635.47 | 0.902 | 0.58 |
| 310.76 | 0.00 | 0.000 | 0.000 | 15150.53 | 0.909 | 1.85 |
| 441.36 | 0.00 | 0.000 | 0.000 | 16665.58 | 0.916 | 1.25 |
| 779.85 | 0.16 | 0.045 | 0.000 | 18180.63 | 0.921 | 3.76 |
| 16.45 | 0.24 | 0.091 | 0.000 | 19695.68 | 0.926 | 0.36 |
| 2655.35 | 1.57 | 0.136 | 0.002 | 21210.73 | 0.930 | 8.86 |
| 1113.13 | 2.65 | 0.182 | 0.005 | 22725.79 | 0.934 | 5.14 |
| 28.53 | 16.45 | 0.227 | 0.040 | 24240.84 | 0.937 | 0.33 |
| 331.87 | 28.53 | 0.273 | 0.067 | 25755.89 | 0.940 | 1.97 |
| 63.04 | 63.04 | 0.318 | 0.127 | 27270.95 | 0.943 | 0.74 |
| 0.00 | 310.76 | 0.364 | 0.338 | 28786.00 | 0.945 | 0.00 |
| 0.00 | 331.87 | 0.409 | 0.349 | 30301.05 | 0.947 | 0.00 |
| 0.00 | 441.36 | 0.455 | 0.398 | 31816.11 | 0.949 | 0.00 |
| 0.00 | 779.85 | 0.500 | 0.500 | 33331.16 | 0.951 | 0.00 |
| 0.24 | 957.08 | 0.545 | 0.537 | 34846.21 | 0.952 | 0.30 |
| 0.00 | 1113.13 | 0.591 | 0.564 | 36361.26 | 0.954 | 0.00 |
| 0.16 | 1584.75 | 0.636 | 0.626 | 37876.32 | 0.955 | 0.51 |
| 2.65 | 2655.35 | 0.682 | 0.711 | 39391.37 | 0.956 | 0.72 |
| 0.00 | 2702.61 | 0.727 | 0.713 | 40906.42 | 0.957 | 0.00 |
| 0.00 | 3014.53 | 0.773 | 0.730 | 42421.47 | 0.958 | 0.00 |
| 0.00 | 4076.88 | 0.818 | 0.773 | 43936.52 | 0.959 | 0.00 |
| 0.00 | 6115.02 | 0.864 | 0.825 | 45451.57 | 0.960 | 0.00 |
| 1.57 | 9599.04 | 0.909 | 0.872 | 46966.62 | 0.960 | 0.70 |
| 0.00 | 151505.28 | 0.955 | 0.958 | 48481.69 | 0.961 | 0.00 |
| | | | | 49996.73 | 0.961 | |
| | | | | 51511.79 | 0.962 | |
| | | | | 53026.84 | 0.962 | |
| | | | | 54541.89 | 0.963 | |
| | | | | 56056.95 | 0.963 | |
| | | | | 57572.00 | 0.964 | |
| | | | | 59087.05 | 0.964 | |
| | | | | 60602.10 | 0.964 | |
| | | | | 62117.16 | 0.965 | |
| | | | | 63632.21 | 0.965 | |
| | | | | 65147.26 | 0.965 | |
| | | | | 66662.31 | 0.965 | |
| | | | | 68177.36 | 0.965 | |
| | | | | 69692.42 | 0.966 | |
| | | | | 71207.47 | 0.966 | |

| | |
|---|---|
| 72722.52 | 0.966 |
| 74237.58 | 0.966 |
| 75752.64 | 0.966 |
| 77267.69 | 0.966 |
| 78782.73 | 0.966 |
| 80297.78 | 0.966 |
| 81812.84 | 0.966 |
| 83327.89 | 0.966 |
| 84842.94 | 0.966 |
| 86358.00 | 0.966 |
| 87873.05 | 0.966 |
| 89388.09 | 0.966 |
| 90903.14 | 0.966 |
| 92418.20 | 0.965 |
| 93933.25 | 0.965 |
| 95448.31 | 0.965 |
| 96963.37 | 0.965 |
| 98478.42 | 0.965 |
| 99993.47 | 0.965 |
| 101508.53 | 0.965 |
| 103023.58 | 0.965 |
| 104538.62 | 0.964 |
| 106053.67 | 0.964 |
| 107568.73 | 0.964 |
| 109083.78 | 0.964 |
| 110598.83 | 0.964 |
| 112113.89 | 0.964 |
| 113628.95 | 0.963 |
| 115144.00 | 0.963 |
| 116659.06 | 0.963 |
| 118174.11 | 0.963 |
| 119689.16 | 0.963 |
| 121204.20 | 0.962 |
| 122719.26 | 0.962 |
| 124234.31 | 0.962 |
| 125749.36 | 0.962 |
| 127264.42 | 0.962 |
| 128779.47 | 0.961 |
| 130294.51 | 0.961 |
| 131809.56 | 0.961 |
| 133324.62 | 0.961 |
| 134839.69 | 0.961 |
| 136354.72 | 0.960 |
| 137869.78 | 0.960 |
| 139384.84 | 0.960 |
| 140899.87 | 0.960 |
| 142414.94 | 0.959 |
| 143930.00 | 0.959 |
| 145445.03 | 0.959 |
| 146960.09 | 0.959 |
| 148475.16 | 0.958 |
| 149990.19 | 0.958 |
| 151505.28 | 0.958 |

```
GVARS>:
SEG EDITMK3


 This program is used to create, add-to, or change values in a file
 of region parameters.  This file of region parameters then can be
 used as input to the MAPK3 mineral resource modeling program.
 The set of parameters for a region consist of the following:
   1.  Region name.
   2.  Region size (i.e.area).
   3.  Region type (1 for SUBSTANTIATED or 2 for PROBABLE).
   4.  The model number (1-65) to use for the region.
   5.  The expected number of deposits in the region.
 The program provides the following options.
 press any key to continue...

 [C/R PRESSED]
```

```
   1.  Load an existing region parameter file.
   2.  List parameters for selected regions.
   3.  Enter region parameters.
   4.  Modify region parameters.
   5.  Exit program and save region parameters on a file.
 Enter desired option number (1-5):
3


 Enter region name (or CR to end input):
DEMO13
 Enter region size:
5000
 Enter region type (1 or 2):
1
 Enter model number:
13
 Enter number of expected deposits:
1
 Enter region name (or CR to end input):
DEMO52
 Enter region size:
5000
 Enter region type (1 or 2):
1
 Enter model number:
52
 Enter number of expected deposits:
1
 Enter region name (or CR to end input):

 [CR PRESSED]



   1.  Load an existing region parameter file.
   2.  List parameters for selected regions.
   3.  Enter region parameters.
   4.  Modify region parameters.
   5.  Exit program and save region parameters on a file.
 Enter desired option number (1-5):
5


 Enter name of file which is to contain the region parameters
 or CR to quit without saving the current region parameters.
SAMPLE1352
**** STOP

GVARS8:
```

```
[MARK3 IS CAPABLE OF RUNNING ON MULTIPLE MODELS
AS WELL AS AN INDIVIDUAL ONE.  FOR MULTIPLE
MODEL, MARK3 WILL PROCESS EACH MODEL SEPARATELY,
AND THEN PROCESS ALL MODELS TOGETHER AS A TOTAL.]

GVARS6:
SEG MARK3

 ENTER NAME OF INPUT FILE:
SAMPLE1352
 ENTER NAME OF OUTPUT RESULTS FILE:
MOD1352OUT
 ENTER NUMBER OF MODELS FOR THIS RUN:
2

                    DEMO13

 DEPOSIT MODEL TYPE USED TO EVALUATE THIS AREA IS 13
 ESTIMATE OF THE EXPECTED NUMBER OF SIGNIFICANT
 DEPOSITS OF THIS TYPE THAT EXIST IN THIS REGION IS  0.948
 YOU HAVE SELECTED THE "SEDIMENT-HOSTED EXHALTIVE     " MODEL
 TO EVALUATE THE DEMO13


 [MOST OF THE FOLLOWING KEYBOARD INPUT FOR MARK3 WAS
 CREATED FROM THE MFIT PROGRAM RUN EARLIER.  COMMENTS
 FOLLOW TO EXPLAIN WHERE VALUES WERE TAKEN FROM.]


 ENTER MEDIAN ORE TONNAGE:
17500000.                          [<-A]   [OPTION 1 / TONS]
 ENTER MEAN ORE TONNAGE:                       [A   B]
45153050.                          [<-B]      [C   D]


 IF GRADE IS PARTS PER MILLION, ENTER- PPM
 IF GRADE IS PER CENT,          ENTER- PC
PC

 ENTER MEDIAN METAL GRADE: ( < "0" HERE ENDS INPUT)

 [A NEGATIVE NUMBER INDICATES NO REMAINING METALS.]

3.100                              [<-A]   [OPTION 2 / METAL 1]
 ENTER MEAN METAL GRADE:                       [A   B]
3.667                              [<-B]      [C   D]

 ENTER MEAN METAL TONNAGE:                [OPTION 3 / METAL 1]
1928896.                           [<-E]      [A   B]
                                              [C   D]
```

```
 ENTER MEDIAN METAL GRADE: ( < "0" HERE ENDS INPUT)
6.0                                  [<-A]   [OPTION 2 / METAL 2]
 ENTER MEAN METAL GRADE:                        [A    B]
6.9631                               [<-B]      [C    D]

 ENTER MEAN METAL TONNAGE:                   [OPTION 3 / METAL 2]
3273401.                             [<-B]      [A    B]
                                                [C    D]

 ENTER MEDIAN METAL GRADE: ( < "0" HERE ENDS INPUT)
-111.

      MEAN                 ST.DEV.

XM( 1)    7.2430        SD( 1)    0.5980
XM( 2)    0.4921        SD( 2)    0.2503

         COR (1, 2)     0.1923


XM( 3)    0.7782        SD( 3)    0.2370

         COR (1, 3)     0.0537



 TO CONTROL PROBABILITY OF ZERO DEPOSITS,
 ENTER PROBABILITY BETWEEN 0. & 1.
 OR ENTER  -1. FOR DEFAULT.
-1.

 ENTER RANDOM NUMBER SEED (>0):
987


 [THIS WILL BE THE ENDING POINT OF THE LAST
 MODEL PROCESSED.  HERE, A MULTIPLE MODEL
 IS USED, SO IT CONTINUES.]
```

```
                    DEMO52

 DEPOSIT MODEL TYPE USED TO EVALUATE THIS AREA IS 52
 ESTIMATE OF THE EXPECTED NUMBER OF SIGNIFICANT
 DEPOSITS OF THIS TYPE THAT EXIST IN THIS REGION IS  2.2
 YOU HAVE SELECTED THE "POLYMETALIC VEIN-KENO HILL    " MODEL
 TO EVALUATE THE DEMO52



 ENTER MEDIAN ORE TONNAGE:
864e.15
 ENTER MEAN ORE TONNAGE:
141608.


 IF GRADE IS PARTS PER MILLION, ENTER- PPM
 IF GRADE IS PER CENT,          ENTER- PC
PC

 ENTER MEDIAN METAL GRADE: ( < "0" HERE ENDS INPUT)
.178560
 ENTER MEAN METAL GRADE:
.364754

 ENTER MEAN METAL TONNAGE:
197.4920


 ENTER MEDIAN METAL GRADE: ( < "J" HERE ENDS INPUT)
7.70
 ENTER MEAN METAL GRADE:
18.734

 ENTER MEAN METAL TONNAGE:
9612.26


 ENTER MEDIAN METAL GRADE: ( < "0" HERE ENDS INPUT)
1.40
 ENTER MEAN METAL GRADE:
2.216

 ENTER MEAN METAL TONNAGE:
8823.60
```

```
 ENTER MEDIAN METAL GRADE: ( < "0" HERE ENDS INPUT)
-111.

      MEAN                  ST.DEV.

XM( 1)    3.9368        SD( 1)    1.0270
XM( 2)   -0.7482        SD( 2)    0.5191

         COR (1, 2)   -0.3402


XM( 3)    0.6865        SD( 3)    0.5791

         COR (1, 3)   -0.3154


XM( 4)   0.1461        SD( 4)    0.4162

         COR (1, 4)    0.4562


 TO CONTROL PROBABILITY OF ZERO DEPOSITS,
 ENTER PROBABILITY BETWEEN 0. & 1.
 OR ENTER  -1. FOR DEFAULT.
-1.
**** STOP

GVARSB:
```

[MARK3 OUTPUT FILE (MOD1352OUT)]

OUTPUT FOR DATASET SAMPLE1352 WITH 999 ITERATIONS

***** MODEL 13 *****

SORTED SIMULATION RESULTS FOR ZINC

| ORDER | SMETAL | | | |
|---|---|---|---|---|
| 1 | 0.00000E-01 | 259 | 6.97454E+03 | |
| 500 | 8.87774E+04 | 732 | 1.50109E+05 | |
| 1000 | 2.29464E+05 | 1206 | 3.05122E+05 | |
| 1500 | 4.01125E+05 | 1680 | 4.77111E+05 | |
| 2000 | 6.36510E+05 | 2154 | 7.22702E+05 | |
| 2500 | 9.59469E+05 | 2629 | 1.06480E+06 | [ZINC] |
| 3000 | 1.45140E+06 | 3103 | 1.60432E+06 | |
| 3500 | 2.27670E+06 | 3577 | 2.41570E+06 | |
| 4000 | 3.70617E+06 | 4051 | 3.94207E+06 | |
| 4500 | 6.95172E+06 | 4525 | 7.29131E+06 | |
| 4999 | 2.66366E+08 | 4999 | 2.66366E+08 | |

EXPECTED MEAN ZINC METAL TONNAGE = 3.11315E+06 3.28257E+06

I= 0 KONT(I)= 258 XX(I)= 0.0500
I= 1 KONT(I)= 4741 XX(I)= 0.9500

[KONT(I) IS THE NUMBER OF SIMULATIONS THAT HAD I DEPOSITS.]

MEAN NUMBER OF DEPOSITS 0.948

SORTED SIMULATION RESULTS FOR LEAD

| ORDER | SMETAL | | | |
|---|---|---|---|---|
| 1 | 0.00000E-01 | 259 | 5.60654E+03 | |
| 500 | 4.00341E+04 | 732 | 7.05536E+04 | |
| 1000 | 1.09619E+05 | 1206 | 1.41133E+05 | |
| 1500 | 2.00937E+05 | 1680 | 2.46678E+05 | |
| 2000 | 3.28556E+05 | 2154 | 3.77002E+05 | |
| 2500 | 5.02626E+05 | 2629 | 5.59600E+05 | [LEAD] |
| 3000 | 7.67862E+05 | 3103 | 8.42706E+05 | |
| 3500 | 1.23762E+06 | 3577 | 1.31912E+06 | |
| 4000 | 2.02053E+06 | 4051 | 2.13125E+06 | |
| 4500 | 4.10744E+06 | 4525 | 4.29165E+06 | |
| 4999 | 1.52153E+08 | 4999 | 1.52153E+08 | |

EXPECTED MEAN LEAD METAL TONNAGE = 1.83057E+06 1.93019E+06

I= 0 KONT(I)= 258 XX(I)= 0.0500
I= 1 KONT(I)= 4741 XX(I)= 0.9500

MEAN NUMBER OF DEPOSITS 0.948

SORTED SIMULATION RESULTS FOR ORE

| ORDER | SMETAL | | |
|---|---|---|---|
| 1 | 0.00000E-01 | 259 | 2.12760E+05 |
| 500 | 1.89547E+06 | 732 | 3.00779E+06 |
| 1000 | 4.33403E+06 | 1206 | 5.51939E+06 |
| 1500 | 7.46828E+06 | 1680 | 8.57203E+06 |
| 2000 | 1.10161E+07 | 2154 | 1.21977E+07 |
| 2500 | 1.57607E+07 | 2629 | 1.75859E+07 |
| 3000 | 2.37112E+07 | 3103 | 2.58344E+07 |
| 3500 | 3.54794E+07 | 3577 | 3.81033E+07 |
| 4000 | 5.30253E+07 | 4051 | 5.69539E+07 |
| 4500 | 9.97323E+07 | 4525 | 1.03466E+08 |
| 4999 | 2.00695E+09 | 4999 | 2.00695E+09 |

[ORE]

EXPECTED MEAN ORE METAL TONNAGE = 4.29210E+07 4.52567E+07

I= 0 KONT(I)= 258 XX(I)= 0.050

I= 1 KONT(I)= 4741 XX(I)= 0.950

MEAN NUMBER OF DEPOSITS 0.943

***** MODEL 52 *****

SORTED SIMULATION RESULTS FOR ZINC

| ORDER | SMETAL | | |
|---|---|---|---|
| 1 | 0.000000E-01 | 254 | 5.56747E-05 |
| 500 | 1.6697CE+00 | 727 | 4.59950E+00 |
| 1000 | 1.1056E3E+01 | 1202 | 1.90110E+01 |
| 1500 | 3.5246E3E+01 | 1677 | 5.05267E+01 |
| 2000 | 8.6660756+01 | 2151 | 1.08019E+02 |
| 2500 | 1.92424E+02 | 2626 | 2.51589E+02 |
| 3000 | 4.1017CE+02 | 3101 | 4.82638E+02 |
| 3500 | 9.09235E+02 | 3575 | 1.02935E+03 |
| 4000 | 2.21744E+03 | 4050 | 2.47320E+03 |
| 4500 | 7.71627E+03 | 4525 | 8.23680E+03 |
| 4999 | 7.71414E+06 | 4999 | 7.71414E+06 |

[ZINC]

EXPECTED MEAN ZINC METAL TONNAGE = 8.58156E+03 9.03903E+03

| | | | | | |
|---|---|---|---|---|---|
| I= | 0 | KONT(I)= | 511 | XX(I)= | 0.0500 |
| I= | 1 | KONT(I)= | 7978 | XX(I)= | 0.6500 |
| I= | 2 | KONT(I)= | 1509 | XX(I)= | 0.3000 |

MEAN NUMBER OF DEPOSITS 2.200

SORTED SIMULATION RESULTS FOR SILVER

| ORDER | SMETAL | | |
|---|---|---|---|
| 1 | 0.000000E-01 | 254 | 4.76471E-03 |
| 500 | 5.57108E-01 | 727 | 1.38446E+00 |
| 1000 | 2.67751E+00 | 1202 | 3.01101CE+00 |
| 1500 | 5.8335543E+00 | 1677 | 7.54916E+00 |
| 2000 | 1.22464E+01 | 2151 | 1.46757E+01 |
| 2500 | 2.2159CE+01 | 2626 | 2.59226E+01 |
| 3000 | 3.96955E+01 | 3101 | 4.49402E+01 |
| 3500 | 7.37199E+01 | 3575 | 8.15314E+01 |
| 4000 | 1.498366E+02 | 4050 | 1.61865E+02 |
| 4500 | 3.9511CE+02 | 4525 | 4.10891E+02 |
| 4999 | 7.97967E+04 | 4999 | 7.97967E+04 |

[SILVER]

EXPECTED MEAN SILVER METAL TONNAGE = 2.30926E+02 2.43232E+02

| | | | | | |
|---|---|---|---|---|---|
| I= | 0 | KONT(I)= | 511 | XX(I)= | 0.0500 |
| I= | 1 | KONT(I)= | 7978 | XX(I)= | 0.6500 |
| I= | 2 | KONT(I)= | 1509 | XX(I)= | 0.3000 |

MEAN NUMBER OF DEPOSITS 2.200

SORTED SIMULATION RESULTS FOR LEAD

| ORDER | SMETAL | | |
|---|---|---|---|
| 1 | 0.000000E-01 | 254 | 1.406277E-01 |
| 500 | 2.28413E+01 | 727 | 5.238836E+01 |
| 1000 | 1.148578E+02 | 1202 | 1.063210E+02 |
| 1500 | 2.70912E+02 | 1677 | 3.026446E+02 |
| 2000 | 5.31943E+02 | 2151 | 6.026157E+02 |
| 2500 | 9.828622E+02 | 2626 | 1.146307E+03 |
| 3000 | 1.75315E+03 | 3101 | 1.991105E+03 |
| 3500 | 3.21597E+03 | 3575 | 3.499506E+03 |
| 4000 | 6.378609E+03 | 4050 | 6.956596E+03 |
| 4500 | 1.709607E+04 | 4525 | 1.794226E+04 |
| 4999 | 1.814604E+06 | 4999 | 1.814604E+06 |

[LEAD]

EXPECTED MEAN LEAD METAL TONNAGE = 1.06729E+04 1.12419E+04

| | | | | | |
|---|---|---|---|---|---|
| I= | 0 | KONT(I)= | 511 | XX(I)= | 0.0500 |
| I= | 1 | KONT(I)= | 7978 | XX(I)= | 0.6500 |
| I= | 2 | KONT(I)= | 1509 | XX(I)= | 0.3000 |

MEAN NUMBER OF DEPOSITS 2.200

SORTED SIMULATION RESULTS FOR ORE

| ORDER | SMETAL | | |
|---|---|---|---|
| 1 | 0.000000E-01 | 254 | 4.270268E+00 |
| 500 | 2.836062E+02 | 727 | 6.443538E+02 |
| 1000 | 1.206770E+03 | 1202 | 1.904996E+03 |
| 1500 | 3.293222E+03 | 1677 | 4.356368E+03 |
| 2000 | 6.791172E+03 | 2151 | 8.064448E+03 |
| 2500 | 1.250106E+04 | 2626 | 1.479516E+04 |
| 3000 | 2.344022E+04 | 3101 | 2.640696E+04 |
| 3500 | 4.569021E+04 | 3576 | 5.078226E+04 |
| 4000 | 9.571933E+04 | 4050 | 1.062585E+05 |
| 4500 | 2.350634E+05 | 4525 | 2.546595E+05 |
| 4999 | 6.825044E+07 | 4999 | 6.825044E+07 |

[ORE]

EXPECTED MEAN ORE METAL TONNAGE = 1.74732E+05 1.84047E+05

| | | | | | |
|---|---|---|---|---|---|
| I= | 0 | KONT(I)= | 511 | XX(I)= | 0.0500 |
| I= | 1 | KONT(I)= | 7978 | XX(I)= | 0.6500 |
| I= | 2 | KONT(I)= | 1509 | XX(I)= | 0.3000 |

MEAN NUMBER OF DEPOSITS 2.200

***** TOTAL TONNAGE *****

SORTED SIMULATION RESULTS FOR ZINC

| ORDER | SMETAL | | |
|---|---|---|---|
| 1 | 0.00000E-01 | 11 | 3.53920E-01 |
| 500 | 9.47660E+04 | 509 | 9.64640E+04 |
| 1000 | 2.35530E+05 | 1000 | 2.37310E+05 |
| 1500 | 4.00170E+05 | 1507 | 4.11590E+05 |
| 2000 | 6.40980E+05 | 2006 | 6.42580E+05 |
| 2500 | 9.64450E+05 | 2505 | 9.66750E+05 |
| 3000 | 1.45960E+06 | 3004 | 1.46410E+06 |
| 3500 | 2.26780E+06 | 3503 | 2.29250E+06 |
| 4000 | 3.71760E+06 | 4002 | 3.71350E+06 |
| 4500 | 6.95600E+06 | 4501 | 6.96490E+06 |
| 4999 | 2.66370E+08 | 4999 | 2.66370E+08 |

[ZINC]

EXPECTED MEAN ZINC METAL TONNAGE = 3.12171E+06 3.12796E+06

| | | | | | |
|---|---|---|---|---|---|
| I= | 0 | KONT(I)= | 511 | XX(I)= | 0.0500 |
| I= | 1 | KONT(I)= | 7978 | XX(I)= | 0.6500 |
| I= | 2 | KONT(I)= | 1509 | XX(I)= | 0.3000 |

MEAN NUMBER OF DEPOSITS 1.251

SORTED SIMULATION RESULTS FOR SILVER

| ORDER | SMETAL | | |
|---|---|---|---|
| 1 | 0.00000E-01 | 254 | 4.76470E-03 |
| 500 | 5.57110E-01 | 727 | 1.36450E+00 |
| 1000 | 2.67750E+00 | 1202 | 3.61620E+00 |
| 1500 | 5.83350E+00 | 1677 | 7.54920E+00 |
| 2000 | 1.22460E+01 | 2151 | 1.46760E+01 |
| 2500 | 2.21590E+01 | 2626 | 2.59230E+01 |
| 3000 | 3.96950E+01 | 3101 | 4.49410E+01 |
| 3500 | 7.37200E+01 | 3575 | 8.15310E+01 |
| 4000 | 1.49890E+02 | 4050 | 1.61590E+02 |
| 4500 | 3.95120E+02 | 4525 | 4.16590E+02 |
| 4999 | 7.97970E+04 | 4999 | 7.97970E+04 |

[SILVER]

EXPECTED MEAN SILVER METAL TONNAGE = 2.30923E+02 2.43253E+02

| | | | | | |
|---|---|---|---|---|---|
| I= | 0 | KONT(I)= | 511 | XX(I)= | 0.0500 |
| I= | 1 | KONT(I)= | 7978 | XX(I)= | 0.6500 |
| I= | 2 | KONT(I)= | 1509 | XX(I)= | 0.3000 |

MEAN NUMBER OF DEPOSITS 1.251

SORTED SIMULATION RESULTS FOR LEAD

| ORDER | SMETAL | | |
|---|---|---|---|
| 1 | 0.00000E-01 | 11 | 5.17386E+00 |
| 500 | 4.73130E+04 | 509 | 4.84086E+04 |
| 1000 | 1.15550E+05 | 1006 | 1.16600E+05 |
| 1500 | 2.11610E+05 | 1507 | 2.13480E+05 |
| 2000 | 3.39850E+05 | 2006 | 3.41580E+05 |
| 2500 | 5.14270E+05 | 2505 | 5.15490E+05 |
| 3000 | 7.81870E+05 | 3004 | 7.82870E+05 |
| 3500 | 1.25060E+06 | 3503 | 1.25250E+06 |
| 4000 | 2.03510E+06 | 4002 | 2.03770E+06 |
| 4500 | 4.13700E+06 | 4501 | 4.14450E+06 |
| 4999 | 1.52150E+08 | 4999 | 1.52150E+08 |

[LEAD]

EXPECTED MEAN LEAD METAL TONNAGE = 1.84123E+06 1.84492E+06

| | | | | | |
|---|---|---|---|---|---|
| I= | 0 | KONT(I)= | 511 | XX(I)= | 0.0500 |
| I= | 1 | KONT(I)= | 7978 | XX(I)= | 0.6500 |
| I= | 2 | KONT(I)= | 1509 | XX(I)= | 0.3000 |

MEAN NUMBER OF DEPOSITS 1.251

SORTED SIMULATION RESULTS FOR ORE

| ORDER | SMETAL | | |
|---|---|---|---|
| 1 | 0.00000E-01 | 11 | 2.86620E+01 |
| 500 | 2.01040E+06 | 509 | 2.06510E+06 |
| 1000 | 4.45310E+06 | 1006 | 4.47670E+06 |
| 1500 | 7.61050E+06 | 1507 | 7.65730E+06 |
| 2000 | 1.11140E+07 | 2006 | 1.11510E+07 |
| 2500 | 1.58820E+07 | 2505 | 1.59390E+07 |
| 3000 | 2.39290E+07 | 3004 | 2.39920E+07 |
| 3500 | 3.57770E+07 | 3503 | 3.58350E+07 |
| 4000 | 5.40130E+07 | 4002 | 5.40530E+07 |
| 4500 | 1.00050E+08 | 4501 | 1.00090E+08 |
| 4999 | 2.00700E+09 | 4999 | 2.00700E+09 |

[ORE]

EXPECTED MEAN ORE METAL TONNAGE = 4.30954E+07 4.31818E+07

| | | | | | |
|---|---|---|---|---|---|
| I= | 0 | KONT(I)= | 511 | XX(I)= | 0.0500 |
| I= | 1 | KONT(I)= | 7978 | XX(I)= | 0.6500 |
| I= | 2 | KONT(I)= | 1509 | XX(I)= | 0.3000 |

MEAN NUMBER OF DEPOSITS 1.251

[ADDCOL IS CURRENTLY UPDATED TO PROCESS 9 METALS:]

GOLD
TUNGSTEN
ZINC
SILVER
LEAD
TIN
THORIUM
RARE EARTH OXIDE
ORE

[USING THE PRIME EDITOR, APPEND THE SMALLER METAL DATA FILES IN THE ABOVE ORDER. IF DATA ISN'T AVAILABLE FOR A GIVEN METAL, 11 LINES OF 0.0'S MUST BE APPENDED IN ITS POSITION.]

[EACH MODEL MUST BE DONE SEPARATELY]

[ADDCOL INPUT FILE FOR MODEL 13]

```
   1    0.0
 500    0.0
1000    0.0
1500    0.0
2000    0.0
2500    0.0                    [GOLD]
3000    0.0
3500    0.0
4000    0.0
4500    0.0
4999    0.0
   1    0.0
 500    0.0
1000    0.0
1500    0.0
2000    0.0
2500    0.0                    [TUNGSTEN]
3000    0.0
3500    0.0
4000    0.0
4500    0.0
4999    0.0
   1    0.000000E-01
 500    8.87774E+04
1000    2.29464E+05
1500    4.01123E+05
2000    6.30510E+05
2500    9.59469E+05            [ZINC]
3000    1.45140E+06
3500    2.27670E+06
4000    3.70617E+06
4500    6.95172E+06
4999    2.66366E+08
```

```
   1    0.0
 500    0.0
1000    0.0
1500    0.0
2000    0.0
2500    0.0                    [SILVER]
3000    0.0
3500    0.0
4000    0.0
4500    0.0
4999    0.0
   1    0.000000E-01
 500    4.003412+04
1000    1.096192+05
1500    2.009372+05
2000    3.283562+05
2500    5.026262+05            [LEAD]
3000    7.678622+05
3500    1.237622+06
4000    2.020532+06
4500    4.167442+06
4999    1.521532+08
   1    0.0
 500    0.0
1000    0.0
1500    0.0
2000    0.0
2500    0.0                    [TIN]
3000    0.0
3500    0.0
4000    0.0
4500    0.0
4999    0.0
   1    0.0
 500    0.0
1000    0.0
1500    0.0
2000    0.0
2500    0.0                    [THORIUM]
3000    0.0
3500    0.0
4000    0.0
4500    0.0
4999    0.0
```

| | | |
|---|---|---|
| 1 | 0.0 | |
| 500 | 0.0 | |
| 1000 | 0.0 | |
| 1500 | 0.0 | |
| 2000 | 0.0 | |
| 2500 | 0.0 | [RARE EARTH OXIDE] |
| 3000 | 0.0 | |
| 3500 | 0.0 | |
| 4000 | 0.0 | |
| 4500 | 0.0 | |
| 4999 | 0.0 | |

| | | |
|---|---|---|
| 1 | 0.00000E-01 | |
| 500 | 1.89547E+06 | |
| 1000 | 4.33403E+06 | |
| 1500 | 7.48826E+06 | |
| 2000 | 1.10161E+07 | |
| 2500 | 1.57667E+07 | [ORE] |
| 3000 | 2.37112E+07 | |
| 3500 | 3.54794E+07 | |
| 4000 | 5.30256E+07 | |
| 4500 | 9.97323E+07 | |
| 4999 | 2.00695E+09 | |

[ADCOL INPUT FILE FOR MODEL 52]

```
   1    0.0
 500    0.0
1000    0.0
1500    0.0
2000    0.0
2500    0.0                    [GOLD]
3000    0.0
3500    0.0
4000    0.0
4500    0.0
4999    0.0
   1    0.0
 500    0.0
1000    0.0
1500    0.0
2000    0.0
2500    0.0                    [TUNGSTEN]
3000    0.0
3500    0.0
4000    0.0
4500    0.0
4999    0.0
   1    0.000000E-01
 500    1.6c970E+00
1000    1.105c5E+01
1500    3.52483E+01
2000    8.66675E+01
2500    1.92424E+02            [ZINC]
3000    4.10176E+02
3500    9.09235E+02
4000    2.21744E+03
4500    7.71627E+03
4999    7.71414E+06
   1    0.000000E-01
 500    5.5710cE-01
1000    2.67751E+00
1500    5.83354E+00
2000    1.22464E+01
2500    2.21590E+01            [SILVER]
3000    3.96955E+01
3500    7.37199E+01
4000    1.49886E+02
4500    3.95116E+02
4999    7.979o7E+04
```

| | | |
|---|---|---|
| 1 | 0.000000E-01 | |
| 500 | 2.2e413E+01 | |
| 1000 | 1.14857E+02 | |
| 1500 | 2.70912E+02 | |
| 2000 | 5.31943E+02 | |
| 2500 | 9.82822E+02 | [LEAD] |
| 3000 | 1.75315E+03 | |
| 3500 | 3.21597E+03 | |
| 4000 | 6.37809E+03 | |
| 4500 | 1.70967E+04 | |
| 4999 | 1.814e4E+0e | |
| 1 | 0.0 | |
| 500 | 0.0 | |
| 1000 | 0.0 | |
| 1500 | 0.0 | |
| 2000 | 0.0 | |
| 2500 | 0.0 | [TIN] |
| 3000 | 0.0 | |
| 3500 | 0.0 | |
| 4000 | 0.0 | |
| 4500 | 0.0 | |
| 4999 | 0.0 | |
| 1 | 0.0 | |
| 500 | 0.0 | |
| 1000 | 0.0 | |
| 1500 | 0.0 | |
| 2000 | 0.0 | |
| 2500 | 0.0 | [THORIUM] |
| 3000 | 0.0 | |
| 3500 | 0.0 | |
| 4000 | 0.0 | |
| 4500 | 0.0 | |
| 4999 | 0.0 | |
| 1 | 0.0 | |
| 500 | 0.0 | |
| 1000 | 0.0 | |
| 1500 | 0.0 | |
| 2000 | 0.0 | |
| 2500 | 0.0 | [RARE EARTH OXIDE] |
| 3000 | 0.0 | |
| 3500 | 0.0 | |
| 4000 | 0.0 | |
| 4500 | 0.0 | |
| 4999 | 0.0 | |
| 1 | 0.000000E-01 | |
| 500 | 2.83oo2E+02 | |
| 1000 | 1.2e770E+03 | |
| 1500 | 3.29322E+03 | |
| 2000 | 6.79117E+03 | |
| 2500 | 1.25010E+04 | [OPE] |
| 3000 | 2.34402E+04 | |
| 3500 | 4.5e901E+04 | |
| 4000 | 9.57193E+04 | |
| 4500 | 2.35834E+05 | |
| 4999 | 6.82584E+07 | |

[ADDCOL MUST BE RUN SEPARATELY FOR EACH MODEL]

```
GVARSB:
SEG ADDCOL
 ENTER INPUT FILE NAME:
DATA13

 ENTER OUTPUT FILE NAME:
AC13OUT
**** STOP
```

[ADDCOL OUTPUT OF DATA13]

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 |
| 500 | 0.0000E+00 | 0.0000E+00 | 0.8878E+05 | 0.0000E+00 | 0.4003E+05 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1895E+07 |
| 1000 | 0.0000E+00 | 0.0000E+00 | 0.2295E+06 | 0.0000E+00 | 0.1096E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.4335E+07 |
| 1500 | 0.0000E+00 | 0.0000E+00 | 0.4011E+06 | 0.0000E+00 | 0.2009E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.7488E+07 |
| 2000 | 0.0000E+00 | 0.0000E+00 | 0.6305E+06 | 0.0000E+00 | 0.3286E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1102E+08 |
| 2500 | 0.0000E+00 | 0.0000E+00 | 0.9595E+06 | 0.0000E+00 | 0.5026E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1577E+08 |
| 3000 | 0.0000E+00 | 0.0000E+00 | 0.1451E+07 | 0.0000E+00 | 0.7679E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2371E+08 |
| 3500 | 0.0000E+00 | 0.0000E+00 | 0.2277E+07 | 0.0000E+00 | 0.1238E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.3548E+08 |
| 4000 | 0.0000E+00 | 0.0000E+00 | 0.3706E+07 | 0.0000E+00 | 0.2021E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.5363E+08 |
| 4500 | 0.0000E+00 | 0.0000E+00 | 0.6952E+07 | 0.0000E+00 | 0.4107E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.9973E+08 |
| 4999 | 0.0000E+00 | 0.0000E+00 | 0.2664E+09 | 0.0000E+00 | 0.1522E+09 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2007E+10 |

```
GVARSB:
SEG ADDCOL
 ENTER INPUT FILE NAME:
DATA52

 ENTER OUTPUT FILE NAME:
AC52OUT
**** STOP
```

[ADDCOL OUTPUT OF DATA52]

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 |
| 500 | 0.0000E+00 | 0.0000E+00 | 0.1670E+01 | 0.5571E+00 | 0.2264E+02 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2837E+03 |
| 1000 | 0.0000E+00 | 0.0000E+00 | 0.1106E+02 | 0.2678E+01 | 0.1149E+03 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1268E+04 |
| 1500 | 0.0000E+00 | 0.0000E+00 | 0.3525E+02 | 0.5834E+01 | 0.2709E+03 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.3293E+04 |
| 2000 | 0.0000E+00 | 0.0000E+00 | 0.8667E+02 | 0.1225E+02 | 0.5319E+03 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.6791E+04 |
| 2500 | 0.0000E+00 | 0.0000E+00 | 0.1924E+03 | 0.2216E+02 | 0.9828E+03 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1250E+05 |
| 3000 | 0.0000E+00 | 0.0000E+00 | 0.4102E+03 | 0.3970E+02 | 0.1753E+04 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2344E+05 |
| 3500 | 0.0000E+00 | 0.0000E+00 | 0.9092E+03 | 0.7372E+02 | 0.3216E+04 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.4589E+05 |
| 4000 | 0.0000E+00 | 0.0000E+00 | 0.2217E+04 | 0.1499E+03 | 0.6378E+04 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.9572E+05 |
| 4500 | 0.0000E+00 | 0.0000E+00 | 0.7716E+04 | 0.3951E+03 | 0.1710E+05 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2358E+06 |
| 4999 | 0.0000E+00 | 0.0000E+00 | 0.7714E+07 | 0.7980E+05 | 0.1815E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.6826E+08 |

[CONVOL INPUT FILE (CVIN1352)]

| [MDL] | [ODR] | [GOLD] | [TUNGSTEN] | [ZINC] | [SILVER] | [LEAD] | [TIN] | [THORIUM] | [REO] | [CRE] |
|---|---|---|---|---|---|---|---|---|---|---|
| 13 | 1 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 |
| 13 | 500 | 0.0000E+00 | 0.0000E+00 | 0.8878E+05 | 0.0000E+00 | 0.4003E+05 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1595E+07 |
| 13 | 1000 | 0.0000E+00 | 0.0000E+00 | 0.2295E+06 | 0.0000E+00 | 0.1096E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.4335E+07 |
| 13 | 1500 | 0.0000E+00 | 0.0000E+00 | 0.4011E+06 | 0.0000E+00 | 0.2009E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.7468E+07 |
| 13 | 2000 | 0.0000E+00 | 0.0000E+00 | 0.6365E+06 | 0.0000E+00 | 0.3286E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1102E+08 |
| 13 | 2500 | 0.0000E+00 | 0.0000E+00 | 0.9595E+06 | 0.0000E+00 | 0.5026E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1577E+08 |
| 13 | 3000 | 0.0000E+00 | 0.0000E+00 | 0.1451E+07 | 0.0000E+00 | 0.7679E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2371E+08 |
| 13 | 3500 | 0.0000E+00 | 0.0000E+00 | 0.2277E+07 | 0.0000E+00 | 0.1238E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.3548E+08 |
| 13 | 4000 | 0.0000E+00 | 0.0000E+00 | 0.3706E+07 | 0.0000E+00 | 0.2021E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.5363E+08 |
| 13 | 4500 | 0.0000E+00 | 0.0000E+00 | 0.6952E+07 | 0.0000E+00 | 0.4107E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.9973E+08 |
| 13 | 4999 | 0.0000E+00 | 0.0000E+00 | 0.2664E+09 | 0.0000E+00 | 0.1522E+09 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2007E+10 |
| 52 | 1 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 |
| 52 | 500 | 0.0000E+00 | 0.0000E+00 | 0.1670E+01 | 0.5571E+00 | 0.2284E+02 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2837E+03 |
| 52 | 1000 | 0.0000E+00 | 0.0000E+00 | 0.1106E+02 | 0.2678E+01 | 0.1149E+03 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1288E+04 |
| 52 | 1500 | 0.0000E+00 | 0.0000E+00 | 0.3525E+02 | 0.5834E+01 | 0.2709E+03 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.3293E+04 |
| 52 | 2000 | 0.0000E+00 | 0.0000E+00 | 0.8667E+02 | 0.1225E+02 | 0.5319E+03 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.6791E+04 |
| 52 | 2500 | 0.0000E+00 | 0.0000E+00 | 0.1924E+03 | 0.2216E+02 | 0.9828E+03 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1250E+05 |
| 52 | 3000 | 0.0000E+00 | 0.0000E+00 | 0.4102E+03 | 0.3970E+02 | 0.1753E+04 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2344E+05 |
| 52 | 3500 | 0.0000E+00 | 0.0000E+00 | 0.9092E+03 | 0.7372E+02 | 0.3216E+04 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.4589E+05 |
| 52 | 4000 | 0.0000E+00 | 0.0000E+00 | 0.2217E+04 | 0.1499E+03 | 0.6378E+04 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.9572E+05 |
| 52 | 4500 | 0.0000E+00 | 0.0000E+00 | 0.7716E+04 | 0.3951E+03 | 0.1710E+05 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2358E+06 |
| 52 | 4999 | 0.0000E+00 | 0.0000E+00 | 0.7714E+07 | 0.7980E+05 | 0.1815E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.6820E+08 |
| 13 | 0.00E-00 | 0.00E-00 | 3.11E+06 | 0.00E-00 | 1.63E+06 | 0.00E-00 | 0.00E-00 | 0.00E-00 | 4.29E+07 | |
| 52 | 0.00E-00 | 0.00E-00 | 8.58E+03 | 2.31E+02 | 1.67E+04 | 0.00E-00 | 0.00E-00 | 0.00E-00 | 1.75E+05 | |

[GOLD] [TUNGSTEN] [ZINC] [SILVER] [LEAD] [TIN] [THORIUM] [REO] [CRE]

[CONVOL REQUIRES THE FOLLOWING INPUT FILE FORMAT:]

METAL DATA - (I2,2X,F4.0,9(3X,E10.4))

METAL MEAN TONNAGE - (I2,9(1X,E8.2))

[THE ABOVE EXAMPLE SHOWS THE USER HAS ADDED THE MODEL NUMBER TO THE DESIGNATED ADDCOL OUTPUT FILES AND APPENDED. OUTPUT DATA WILL BE SLIGHTLY DIFFERENT IF ADDCOL DOES A CALCULATION ON METAL DATA FOR SHORT TONS.

ALSO NEEDED IS A SINGLE RECORD FOR EACH MODEL MEAN TONNAGE FOR EACH ORDERED METAL WHICH IS ALSO TAKEN FROM THE MARK3 OUTPUT AS THE METAL DATA.]

```
GVARSB:
SEG CONVOL
 ENTER INPUT FILE NAME:
CVIN1352

 ENTER OUTPUT FILE NAME:
CVOUT1352

 ENTER RANDOM NUMBER SEED, > 0:
937
**** STOP

GVARSB:
```

[CONVOL OUTPUT FILE (CVOUT1352)]

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0000E+00 | 0.0000E+00 | 0.7150E+02 | 0.0000E+00 | 0.9764E+02 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2382E+04 |
| 50 | 0.0000E+00 | 0.0000E+00 | 0.8764E+04 | 0.5125E-01 | 0.7306E+04 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2540E+06 |
| 100 | 0.0000E+00 | 0.0000E+00 | 0.1652E+05 | 0.1031E+00 | 0.1170E+05 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.4951E+06 |
| 150 | 0.0000E+00 | 0.0000E+00 | 0.2862E+05 | 0.1427E+00 | 0.1590E+05 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.6778E+06 |
| 200 | 0.0000E+00 | 0.0000E+00 | 0.4000E+05 | 0.2071E+00 | 0.2086E+05 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.8932E+06 |
| 250 | 0.0000E+00 | 0.0000E+00 | 0.4867E+05 | 0.2548E+00 | 0.2572E+05 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1113E+07 |
| 300 | 0.0000E+00 | 0.0000E+00 | 0.5980E+05 | 0.3185E+00 | 0.2982E+05 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1312E+07 |
| 350 | 0.0000E+00 | 0.0000E+00 | 0.6918E+05 | 0.3707E+00 | 0.3606E+05 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1499E+07 |
| 400 | 0.0000E+00 | 0.0000E+00 | 0.7967E+05 | 0.4296E+00 | 0.4179E+05 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1709E+07 |
| 450 | 0.0000E+00 | 0.0000E+00 | 0.8768E+05 | 0.4806E+00 | 0.4943E+05 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1890E+07 |
| 500 | 0.0000E+00 | 0.0000E+00 | 0.9847E+05 | 0.5401E+00 | 0.5586E+05 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2157E+07 |
| 550 | 0.0000E+00 | 0.0000E+00 | 0.1139E+06 | 0.6786E+00 | 0.6419E+05 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2401E+07 |
| 600 | 0.0000E+00 | 0.0000E+00 | 0.1242E+06 | 0.7883E+00 | 0.7098E+05 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2648E+07 |
| 650 | 0.0000E+00 | 0.0000E+00 | 0.1368E+06 | 0.1030E+01 | 0.7742E+05 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2927E+07 |
| 700 | 0.0000E+00 | 0.0000E+00 | 0.1484E+06 | 0.1263E+01 | 0.8421E+05 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.3222E+07 |
| 750 | 0.0000E+00 | 0.0000E+00 | 0.1612E+06 | 0.1535E+01 | 0.9097E+05 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.3497E+07 |
| 800 | 0.0000E+00 | 0.0000E+00 | 0.1760E+06 | 0.1891E+01 | 0.9823E+05 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.3716E+07 |
| 850 | 0.0000E+00 | 0.0000E+00 | 0.1917E+06 | 0.1878E+01 | 0.1053E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.3948E+07 |
| 900 | 0.0000E+00 | 0.0000E+00 | 0.2066E+06 | 0.2091E+01 | 0.1134E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.4185E+07 |
| 950 | 0.0000E+00 | 0.0000E+00 | 0.2230E+06 | 0.2280E+01 | 0.1221E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.4412E+07 |
| 1000 | 0.0000E+00 | 0.0000E+00 | 0.2385E+06 | 0.2572E+01 | 0.1310E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.4785E+07 |
| 1050 | 0.0000E+00 | 0.0000E+00 | 0.2533E+06 | 0.2839E+01 | 0.1410E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.5051E+07 |
| 1100 | 0.0000E+00 | 0.0000E+00 | 0.2719E+06 | 0.3152E+01 | 0.1496E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.5371E+07 |
| 1150 | 0.0000E+00 | 0.0000E+00 | 0.2913E+06 | 0.3445E+01 | 0.1566E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.5714E+07 |
| 1200 | 0.0000E+00 | 0.0000E+00 | 0.3060E+06 | 0.3763E+01 | 0.1653E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.6057E+07 |
| 1250 | 0.0000E+00 | 0.0000E+00 | 0.3243E+06 | 0.4007E+01 | 0.1741E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.6465E+07 |
| 1300 | 0.0000E+00 | 0.0000E+00 | 0.3445E+06 | 0.4325E+01 | 0.1827E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.6740E+07 |
| 1350 | 0.0000E+00 | 0.0000E+00 | 0.3612E+06 | 0.4627E+01 | 0.1924E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.7069E+07 |
| 1400 | 0.0000E+00 | 0.0000E+00 | 0.3796E+06 | 0.4933E+01 | 0.2032E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.7347E+07 |
| 1450 | 0.0000E+00 | 0.0000E+00 | 0.3969E+06 | 0.5265E+01 | 0.2133E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.7675E+07 |
| 1500 | 0.0000E+00 | 0.0000E+00 | 0.4128E+06 | 0.5603E+01 | 0.2240E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.8000E+07 |
| 1550 | 0.0000E+00 | 0.0000E+00 | 0.4365E+06 | 0.6029E+01 | 0.2370E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.8435E+07 |
| 1600 | 0.0000E+00 | 0.0000E+00 | 0.4611E+06 | 0.6706E+01 | 0.2484E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.8836E+07 |
| 1650 | 0.0000E+00 | 0.0000E+00 | 0.4816E+06 | 0.7429E+01 | 0.2625E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.9145E+07 |
| 1700 | 0.0000E+00 | 0.0000E+00 | 0.5020E+06 | 0.7939E+01 | 0.2773E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.9476E+07 |
| 1750 | 0.0000E+00 | 0.0000E+00 | 0.5230E+06 | 0.8608E+01 | 0.2907E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.9816E+07 |
| 1800 | 0.0000E+00 | 0.0000E+00 | 0.5460E+06 | 0.9400E+01 | 0.3029E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1009E+08 |
| 1850 | 0.0000E+00 | 0.0000E+00 | 0.5732E+06 | 0.1006E+02 | 0.3144E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1047E+08 |
| 1900 | 0.0000E+00 | 0.0000E+00 | 0.5941E+06 | 0.1062E+02 | 0.3250E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1084E+08 |
| 1950 | 0.0000E+00 | 0.0000E+00 | 0.6163E+06 | 0.1126E+02 | 0.3355E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1122E+08 |
| 2000 | 0.0000E+00 | 0.0000E+00 | 0.6470E+06 | 0.1190E+02 | 0.3487E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1163E+08 |
| 2050 | 0.0000E+00 | 0.0000E+00 | 0.6751E+06 | 0.1300E+02 | 0.3706E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1205E+08 |
| 2100 | 0.0000E+00 | 0.0000E+00 | 0.7113E+06 | 0.1389E+02 | 0.3839E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1263E+08 |
| 2150 | 0.0000E+00 | 0.0000E+00 | 0.7413E+06 | 0.1476E+02 | 0.4002E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1309E+08 |
| 2200 | 0.0000E+00 | 0.0000E+00 | 0.7661E+06 | 0.1555E+02 | 0.4250E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1345E+08 |
| 2250 | 0.0000E+00 | 0.0000E+00 | 0.8010E+06 | 0.1672E+02 | 0.4439E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1389E+08 |
| 2300 | 0.0000E+00 | 0.0000E+00 | 0.8280E+06 | 0.1772E+02 | 0.4612E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1435E+08 |
| 2350 | 0.0000E+00 | 0.0000E+00 | 0.8660E+06 | 0.1882E+02 | 0.4792E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1468E+08 |
| 2400 | 0.0000E+00 | 0.0000E+00 | 0.8934E+06 | 0.1984E+02 | 0.4947E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1521E+08 |
| 2450 | 0.0000E+00 | 0.0000E+00 | 0.9182E+06 | 0.2075E+02 | 0.5156E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1570E+08 |
| 2500 | 0.0000E+00 | 0.0000E+00 | 0.9538E+06 | 0.2186E+02 | 0.5428E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1633E+08 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2550 | 0.0000E+00 | 0.0000E+00 | 0.9992E+06 | 0.2341E+02 | 0.5720E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1701E+08 |
| 2600 | 0.0000E+00 | 0.0000E+00 | 0.1052E+07 | 0.2500E+02 | 0.5974E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1781E+08 |
| 2650 | 0.0000E+00 | 0.0000E+00 | 0.1100E+07 | 0.2638E+02 | 0.6289E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1843E+08 |
| 2700 | 0.0000E+00 | 0.0000E+00 | 0.1149E+07 | 0.2861E+02 | 0.6514E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1911E+08 |
| 2750 | 0.0000E+00 | 0.0000E+00 | 0.1201E+07 | 0.2990E+02 | 0.6675E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1985E+08 |
| 2800 | 0.0000E+00 | 0.0000E+00 | 0.1252E+07 | 0.3180E+02 | 0.6958E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2056E+08 |
| 2850 | 0.0000E+00 | 0.0000E+00 | 0.1296E+07 | 0.3309E+02 | 0.7219E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2132E+08 |
| 2900 | 0.0000E+00 | 0.0000E+00 | 0.1338E+07 | 0.3498E+02 | 0.7524E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2218E+08 |
| 2950 | 0.0000E+00 | 0.0000E+00 | 0.1381E+07 | 0.3743E+02 | 0.7862E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2284E+08 |
| 3000 | 0.0000E+00 | 0.0000E+00 | 0.1415E+07 | 0.3896E+02 | 0.8382E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2373E+08 |
| 3050 | 0.0000E+00 | 0.0000E+00 | 0.1475E+07 | 0.4130E+02 | 0.8832E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2462E+08 |
| 3100 | 0.0000E+00 | 0.0000E+00 | 0.1553E+07 | 0.4447E+02 | 0.9262E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2564E+08 |
| 3150 | 0.0000E+00 | 0.0000E+00 | 0.1632E+07 | 0.4702E+02 | 0.9762E+06 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2685E+08 |
| 3200 | 0.0000E+00 | 0.0000E+00 | 0.1695E+07 | 0.5052E+02 | 0.1033E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2801E+08 |
| 3250 | 0.0000E+00 | 0.0000E+00 | 0.1779E+07 | 0.5437E+02 | 0.1077E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2927E+08 |
| 3300 | 0.0000E+00 | 0.0000E+00 | 0.1853E+07 | 0.5721E+02 | 0.1131E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.3066E+08 |
| 3350 | 0.0000E+00 | 0.0000E+00 | 0.1924E+07 | 0.6094E+02 | 0.1176E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.3168E+08 |
| 3400 | 0.0000E+00 | 0.0000E+00 | 0.2015E+07 | 0.6496E+02 | 0.1220E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.3265E+08 |
| 3450 | 0.0000E+00 | 0.0000E+00 | 0.2099E+07 | 0.6736E+02 | 0.1284E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.3383E+08 |
| 3500 | 0.0000E+00 | 0.0000E+00 | 0.2196E+07 | 0.7077E+02 | 0.1347E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.3490E+08 |
| 3550 | 0.0000E+00 | 0.0000E+00 | 0.2286E+07 | 0.7400E+02 | 0.1434E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.3618E+08 |
| 3600 | 0.0000E+00 | 0.0000E+00 | 0.2439E+07 | 0.8127E+02 | 0.1509E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.3804E+08 |
| 3650 | 0.0000E+00 | 0.0000E+00 | 0.2568E+07 | 0.9029E+02 | 0.1585E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.3994E+08 |
| 3700 | 0.0000E+00 | 0.0000E+00 | 0.2711E+07 | 0.9846E+02 | 0.1646E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.4218E+08 |
| 3750 | 0.0000E+00 | 0.0000E+00 | 0.2875E+07 | 0.1054E+03 | 0.1723E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.4407E+08 |
| 3800 | 0.0000E+00 | 0.0000E+00 | 0.3024E+07 | 0.1131E+03 | 0.1806E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.4602E+08 |
| 3850 | 0.0000E+00 | 0.0000E+00 | 0.3173E+07 | 0.1209E+03 | 0.1866E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.4796E+08 |
| 3900 | 0.0000E+00 | 0.0000E+00 | 0.3326E+07 | 0.1272E+03 | 0.1959E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.4976E+08 |
| 3950 | 0.0000E+00 | 0.0000E+00 | 0.3460E+07 | 0.1358E+03 | 0.2030E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.5126E+08 |
| 4000 | 0.0000E+00 | 0.0000E+00 | 0.3613E+07 | 0.1430E+03 | 0.2249E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.5303E+08 |
| 4050 | 0.0000E+00 | 0.0000E+00 | 0.3777E+07 | 0.1519E+03 | 0.2471E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.5712E+08 |
| 4100 | 0.0000E+00 | 0.0000E+00 | 0.4050E+07 | 0.1807E+03 | 0.2710E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.6122E+08 |
| 4150 | 0.0000E+00 | 0.0000E+00 | 0.4489E+07 | 0.2027E+03 | 0.2893E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.6558E+08 |
| 4200 | 0.0000E+00 | 0.0000E+00 | 0.4791E+07 | 0.2325E+03 | 0.3127E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.7132E+08 |
| 4250 | 0.0000E+00 | 0.0000E+00 | 0.5095E+07 | 0.2516E+03 | 0.3287E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.7664E+08 |
| 4300 | 0.0000E+00 | 0.0000E+00 | 0.5388E+07 | 0.2812E+03 | 0.3471E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.8035E+08 |
| 4350 | 0.0000E+00 | 0.0000E+00 | 0.5708E+07 | 0.3008E+03 | 0.3642E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.8471E+08 |
| 4400 | 0.0000E+00 | 0.0000E+00 | 0.6060E+07 | 0.3345E+03 | 0.3350E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.8939E+08 |
| 4450 | 0.0000E+00 | 0.0000E+00 | 0.6411E+07 | 0.3609E+03 | 0.4067E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.9333E+08 |
| 4500 | 0.0000E+00 | 0.0000E+00 | 0.6730E+07 | 0.3852E+03 | 0.4908E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.9702E+08 |
| 4550 | 0.0000E+00 | 0.0000E+00 | 0.7531E+07 | 0.5333E+03 | 0.6306E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1094E+09 |
| 4600 | 0.0000E+00 | 0.0000E+00 | 0.9942E+07 | 0.7922E+03 | 0.7430E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1365E+09 |
| 4650 | 0.0000E+00 | 0.0000E+00 | 0.1274E+08 | 0.1114E+04 | 0.8521E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1636E+09 |
| 4700 | 0.0000E+00 | 0.0000E+00 | 0.1563E+08 | 0.1426E+04 | 0.1030E+08 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.1889E+09 |
| 4750 | 0.0000E+00 | 0.0000E+00 | 0.1746E+08 | 0.1607E+04 | 0.1157E+08 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2198E+09 |
| 4800 | 0.0000E+00 | 0.0000E+00 | 0.1975E+08 | 0.2028E+04 | 0.1267E+08 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2481E+09 |
| 4850 | 0.0000E+00 | 0.0000E+00 | 0.2236E+08 | 0.2272E+04 | 0.1392E+08 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.2713E+09 |
| 4900 | 0.0000E+00 | 0.0000E+00 | 0.2449E+08 | 0.2585E+04 | 0.1528E+08 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.3004E+09 |
| 4950 | 0.0000E+00 | 0.0000E+00 | 0.2670E+08 | 0.2948E+04 | 0.1657E+08 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.3273E+09 |
| 4999 | 0.0000E+00 | 0.0000E+00 | 0.2895E+08 | 0.3216E+04 | 0.1796E+08 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.3524E+09 |
| | | | | | | | | | |
| MEAN | 0.0000E+00 | 0.0000E+00 | 0.3011E+07 | 0.2199E+03 | 0.1920E+07 | 0.0000E+00 | 0.0000E+00 | 0.0000E+00 | 0.4221E+08 |

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