Attachment 2

FEMS FORTRAN Program Codes (on FEMS CD in FEMS Code Directory), Model Input and Output Files for ISCST3 and TOXST for the Test Run, and Meteorological Data for the Test Run

The attached CD contains the FEMS code, meteorological files, emissions files, and base input files. To simplify review of the data, this attachment shows how FEMS works using a step-by-step description and explanation of each input and output file.

1. Running the PROGRAM.BAT batch file in MS-DOS begins FEMS and is attached below with a description of each subsequent batch or executable file. Attachment 3 shows the flow chart and sequence of following procedures in more detail, but this overview shows all of the input files and batch files excluding the FORTRAN code itself. FORTRAN programs should be reviewed in a FORTRAN compiler and are provided on the attached CD.

PROGRAM.BAT

WELCOME	- Launches WELCOME FORTRAN program
CHECKDATA	- Launches CHECKDATA FORTRAN program
CALL RANDOM.BAT	- Launches RANDOM.BAT batch file
AVG8	- Launches AV8 FORTRAN program
BUFFNEW	- Launches BUFFNEW FORTRAN program
AMBIENT	- Launches AMBIENT FORTRAN program
CALL IND.BAT	- Launches IND.BAT batch file
BYE	- Launches BYE FORTRAN program

2. The WELCOME FORTRAN program uses the data input for the test case as described in Section 6.0 to create the following input files used in subsequent analyses. The CHECKDATA FORTRAN program puts in additions for randomization and indoor subroutines as necessary after checking the data input.

DATA.DAT – Data Storage File

```
Data File for Use with Randomization
Sensitivity Data and Indoor Air Data
   1  Emission Rates Randomized
   1  Wind Speed Randomized
   1  Wind Direction Randomized
   0  Stability Non-Randomized
   0  Ambient Exposures Only
1.49  1.49/year dataset concentrations above threshold
   50 Receptor Ring Distance 1
  100 Receptor Ring Distance 2
  150 Receptor Ring Distance 3
  200 Receptor Ring Distance 4
  250 Receptor Ring Distance 5
  300 Receptor Ring Distance 6
  400 Receptor Ring Distance 7
  500 Receptor Ring Distance 8
  750 Receptor Ring Distance 9
 1000 Receptor Ring Distance 10

TEST CASE - 5,000 SIMULATIONS-KERN2001.DAT Name of Emissions File
   19 Number of Acres
    4 Averaging Time
    6 Number of Concentration Thresholds Analyzed
   25 Threshold #1
   50 Threshold #2
  100 Threshold #3
  250 Threshold #4
  500 Threshold #5
  750 Threshold #6
 5000 Number of Simulations
  100 X-Distance
  800 Y-Distance
```

YEAR1.DAT (ISCST3 Input File (1 Year of 5 Years Shown)

```
** BREEZE ISC SUITE v3.5.17 - C:\Random\YEAR1.DAT
** Trinity Consultants

CO STARTING
CO TITLEONE  RANDOMIZED TOXST MODELING YEAR 1987
CO MODELOPT  DFAULT  CONC  RURAL
CO AVERTIME  1
CO POLLUTID  OTHER
CO TERRHGTS  FLAT
CO FLAGPOLE  0.00
CO RUNORNOT  RUN
CO FINISHED

SO STARTING
SO ELEVUNIT  METERS
SO LOCATION  SOURCE1  AREA    -50  -400     0 Area Source –1/2 X –1/2 Y
SO SRCPARAM  SOURCE1  1.000000E-06  0   100   800     0     0 Area Source
SO HOUREMIS  YEAR1.EMM  SOURCE1  Link to Hourly Emissions File
SO SRCGROUP  ALL
SO FINISHED

RE STARTING
RE GRIDPOLR GRD STA 0
RE GRIDPOLR GRD ORIG  0  0
RE GRIDPOLR GRD DIST     50  100  150  200  250  300  400  500  750
RE GRIDPOLR GRD DIST   1000 Polar Receptor Grid (distance (DIST))
RE GRIDPOLR GRD DDIR  0  5  10  15  20  25  30  35  40  45  50  55  60
RE GRIDPOLR GRD DDIR  65  70  75  80  85  90  95  100  105  110  115  120
RE GRIDPOLR GRD DDIR  125  130  135  140  145  150  155  160  165  170
RE GRIDPOLR GRD DDIR  175  180  185  190  195  200  205  210  215  220
RE GRIDPOLR GRD DDIR  225  230  235  240  245  250  255  260  265  270
RE GRIDPOLR GRD DDIR  275  280  285  290  295  300  305  310  315  320
RE GRIDPOLR GRD DDIR  325  330  335  340  345  350  355
RE GRIDPOLR GRD END   Polar Receptor Grid (direction (DDIR))
RE FINISHED

ME STARTING
ME INPUTFIL  ISCST.MET  Link to Meteorological Data
ME ANEMHGHT  6.1  METERS
ME SURFDATA  93193  1987
ME UAIRDATA  23230  1987
ME STARTEND  1987  01  01  1  1987  12  31  24
ME FINISHED

OU STARTING
OU RECTABLE  1  FIRST
OU TOXXFILE  1  1.0E-06  1.TOX  25 Creates Binary TOXST File
OU PLOTFILE  1 ALL FIRST post.txt
OU FINISHED

** PROJECTN  0 104 7 -177 0 0.9996 500000 0
** OUTFILE  C:\Random\YEAR1.lst
** RAWFILE  C:\Random\YEAR1.RAW
** RAWFMT  2
```

RAND.INP (TOXST3 Input File (1 of 8 files))

```
RANDOM RUN FOR   19 ACRE FIELD Name of Run
6,   25.,   50.,  100.,  250.,  500.,  750. Thresholds
1, 1.
THRESHOLD  1
THRESHOLD  2
THRESHOLD  3
THRESHOLD  4
THRESHOLD  5
THRESHOLD  6
TEST CASE - 5,000 SI
 25, 1,  4, 1 Averaging Time
20, 0, 0, 0
25, 1987, 1988, 1989, 1990, 1991,1987, 1988, 1989, 1990, 1991,
1987, 1988, 1989, 1990,1991, 1987, 1988, 1989, 1990, 1991, 1987,
1988, 1989,1990, 1991 25 Year Datasets Run
YEAR1A.LST
SOURCE1
1, 1, 0.0001154, 1, 1 Probability of Source Turning On
1.00
 96 Number of Hours of Off-gassing emission rates
1.00
1.00
```

RANDOM.BAT – Main FEMS batch file, runs randomization subroutines of meteorological data and emissions files and runs the ISCST3 and TOXST programs

```
** HAVE 5 MIXING HEIGHT FILES READY
(MHT1.,MHT2.,MHT3.,MHT4.,MHT5.) **
** HAVE 5 SFC FILES READY
(SFC1.ORG,SFC2.ORG,SFC3.ORG,SFC4.ORG,SFC5.ORG) **
** RUN PCRAMMET INPUT FILE CREATION PROGRAM **
PCRINP Run PCRINP FORTRAN program
** RUN WIND SPEED RANDOMIZING PROGRAM **
DEL *.WS
DEL *.WSR
RANDWS Run Randomization of Wind Speed Program
** RUN PCRAMMET FOR ALL 200 YEARS OF DATA **
CALL RUNPCR Run RUNPCR batch file
** RUN WIND VECTOR RANDOMIZING PROGRAM **
DEL *.RAN
IS Run IS Non-Randomized Stability and Randomized Wind Direction
FORTRAN Program
** RUN RANDOMIZE PROGRAM TO RANDOMIZE MET DATA FOR INPUT INTO
TOXST
CALL RAN1.BAT Cut & reassemble the meteorological data into
separate chunks starting at different times of year to avoid
similar 5-year datasets duplication
** RUN ISCST3 (TOXST VERSION) FOR ALL 200 SIMULATION YEARS **
** CREATE FIVE BASE ISCST INPUT FILES (match 5 met years - e.g.,
87, 88) **
DEL *.lst
CALL RUNISC Run RUNISC batch file to run ISCST3
** RUN TOXST FOR ALL 200 YEARS **
DEL *.tst
DEL *.out
COPY RANDOM.TXX TOXST3.INP  Run 8 25-Year TOXX dataset in TOXST
TOXX
COPY RAND2.TXX TOXST3.INP
TOXX
COPY RAND3.TXX TOXST3.INP
TOXX
COPY RAND4.TXX TOXST3.INP
TOXX
COPY RAND5.TXX TOXST3.INP
TOXX
COPY RAND6.TXX TOXST3.INP
TOXX
COPY RAND7.TXX TOXST3.INP
TOXX
COPY RAND8.TXX TOXST3.INP
TOXX
```

Once this information is available to FEMS, it can process the emissions and meteorological data via Monte Carlo techniques or not depending on user preference, and then run ISCST3 to produce 200 TOXX 1-hour averaged output files to be used as input to TOXST.

3. The RANDOM.BAT batch file listed above is the main batch file in FEMS. It is responsible for randomizing the meteorological data and emissions data, pre-processing the meteorological data, converting the meteorological data into ISCST3 readable files that are not similar to each other to avoid bias, and runs the ISCST3 and TOXST programs. Some examples of the input files are shown below.

PCR1.INP (PCRAMMET Input File)

```
N                                       No/Dry/Wet Deposition calculations
A                                       Unform/Ascii output type
MHT1.                                   Mixing height data file
SFC1.WS                                 Hourly surface data file
SCRAM                                   Surface data format
30.000                                  Station latitude (decimal degrees)
110.000                                 Station longitude (decimal degrees)
 8                                      Station time zone
```

MET200.RAN – Meteorological Processed Data File for ISCST3

```
93193   1991  23230   1991
91 1 1 1 225.0000   1.3833 275.4 7  457.3  104.0
91 1 1 2   0.0000   0.0000 275.4 7  443.8  104.0
91 1 1 3   0.0000   0.0000 275.4 7  430.4  104.0
91 1 1 4   0.0000   0.0000 274.3 7  416.9  104.0
91 1 1 5 312.0000   1.2559 272.6 7  403.4  104.0
91 1 1 6 259.0000   1.5082 273.1 7  389.9  104.0
91 1 1 7 291.0000   1.8514 273.1 6   33.1  124.9
91 1 1 8   0.0000   0.0000 274.8 5   68.6  147.3
91 1 1 9 280.0000   1.6745 278.2 4  104.2  169.8
91 1 110   0.0000   0.0000 280.4 3  139.7  192.2
91 1 111   0.0000   0.0000 283.2 2  175.3  214.7
91 1 112   0.0000   0.0000 284.8 1  210.9  237.1
91 1 113  76.0000   1.4698 286.5 2  246.4  259.6
91 1 114 194.0000   2.0141 287.6 3  282.0  282.0
91 1 115 122.0000   2.3980 287.6 4  282.0  282.0
91 1 116   0.0000   0.0000 287.6 3  282.0  282.0
91 1 117   0.0000   0.0000 285.4 4  283.3  283.3
91 1 118   0.0000   0.0000 283.2 5  285.2  232.9
91 1 119 110.0000   1.5954 283.2 6  287.0  204.4
91 1 120   0.0000   0.0000 280.9 7  288.9  175.9
91 1 121 105.0000   1.8376 280.4 6  290.7  147.4
91 1 122 207.0000   1.6289 278.2 7  292.5  119.0
91 1 123 248.0000   1.7887 277.0 7  294.4   90.5
91 1 124   0.0000   0.0000 277.0 7  296.2   62.0

Yr M D H  WD      WS       TEMP  Stab Mixing Heights
```

The cubic parameterization file used for calculating the emissions distribution is shown below.

Kern 2001 Chemigation Intermittent Study
kern2001.dat

A	B	C	D
7.2899000	0.0646000	-0.0008000	0.0000071
6.7313000	0.0227000	-0.0003000	0.0000020
37.9804000	3.0994000	-0.0763000	0.0007000
10.6787000	0.3156000	-0.0061000	0.0000580
4.5603000	0.0421000	-0.0006000	0.0000049
2.8298000	0.0312000	-0.0004000	0.0000038
4.5604000	0.0258000	-0.0003000	0.0000025
3.2372000	0.0074000	-0.0000900	0.0000006
43.5780000	1.1799000	-0.0224000	0.0002000
14.6177000	0.1350000	-0.0018000	0.0000160
2.9982000	0.0277000	-0.0004000	0.0000032
2.8563000	0.0064000	-0.0000800	0.0000006
2.5777000	0.0061000	-0.0000700	0.0000005
1.5327000	0.0076000	-0.0000900	0.0000007
11.3085000	0.0680000	-0.0008000	0.0000066
20.9561000	0.1424000	-0.0018000	0.0000150
4.5278000	0.0388000	-0.0005000	0.0000042
4.2427000	0.0232000	-0.0003000	0.0000022
1.5502000	0.0126000	-0.0002000	0.0000013
2.0066000	0.0081000	-0.0001000	0.0000007
3.5312000	0.0260000	-0.0003000	0.0000028
6.7122000	0.0836000	-0.0012000	0.0000110
5.3537000	0.0247000	-0.0003000	0.0000024
2.4580000	0.0220000	-0.0003000	0.0000024

YEAR5.EMM – Example of Hourly Emissions File

		Year	Month	Day	Hour	Source	Emission Rate (ug/m2/sec)	
SO	HOUREMIS	91	1	1	1	SOURCE1	0.00000407	
SO	HOUREMIS	91	1	1	2	SOURCE1	0.00000413	5
SO	HOUREMIS	91	1	1	3	SOURCE1	0.00000309	
SO	HOUREMIS	91	1	1	4	SOURCE1	0.00000290	
SO	HOUREMIS	91	1	1	5	SOURCE1	0.00000320	
SO	HOUREMIS	91	1	1	6	SOURCE1	0.00000304	6
SO	HOUREMIS	91	1	1	7	SOURCE1	0.00000224	
SO	HOUREMIS	91	1	1	8	SOURCE1	0.00000232	
SO	HOUREMIS	91	1	1	9	SOURCE1	0.00000239	
SO	HOUREMIS	91	1	1	10	SOURCE1	0.00000292	7
SO	HOUREMIS	91	1	1	11	SOURCE1	0.00001600	
SO	HOUREMIS	91	1	1	12	SOURCE1	0.00001521	
SO	HOUREMIS	91	1	1	13	SOURCE1	0.00001558	
SO	HOUREMIS	91	1	1	14	SOURCE1	0.00001546	8
SO	HOUREMIS	91	1	1	15	SOURCE1	0.00002337	
SO	HOUREMIS	91	1	1	16	SOURCE1	0.00002611	
SO	HOUREMIS	91	1	1	17	SOURCE1	0.00002074	
SO	HOUREMIS	91	1	1	18	SOURCE1	0.00002129	9
SO	HOUREMIS	91	1	1	19	SOURCE1	0.00000861	
SO	HOUREMIS	91	1	1	20	SOURCE1	0.00000685	
SO	HOUREMIS	91	1	1	21	SOURCE1	0.00000820	
SO	HOUREMIS	91	1	1	22	SOURCE1	0.00000676	10
SO	HOUREMIS	91	1	1	23	SOURCE1	0.00000244	
SO	HOUREMIS	91	1	1	24	SOURCE1	0.00000222	
SO	HOUREMIS	91	1	2	1	SOURCE1	0.00000235	

Attached below is an example of the TOXST output file converted from binary format to ASCII format so it can be read in a standard editor. This file shows all receptors for every hour of the run that have concentrations above the conservatively set background threshold level of 1 $\mu g/m^3$. The title shows the year, averaging time, number of receptors, number of hours, number of TOXX groups, number of receptor rings, number of radials, and finally background concentration threshold. Due to the large size of these output files, only this sample is provided.

RANDOMIZED TOXST MODELING YEAR 1990

1990	1	720	8760	1
10	72	1.00E-06		

HOUR	RECEPTOR	X	Y	CONC
1	1	0.00E+00	50	1.66E-03
1	2	0.00E+00	100	1.66E-03
1	3	0.00E+00	200	1.66E-03
1	4	0.00E+00	300	1.66E-03
1	11	4.357787	49.809734	1.70E-03
1	12	8.715574	99.619469	1.75E-03
1	13	17.431149	199.238937	1.83E-03
1	14	26.146723	298.858398	1.90E-03
1	21	8.682409	49.240387	1.75E-03
1	22	17.364819	98.480774	1.83E-03
1	23	34.729637	196.961548	1.97E-03
1	24	52.094456	295.442322	1.73E-03
1	31	12.940952	48.296291	1.79E-03
1	32	25.881905	96.592583	1.90E-03
1	33	51.763809	193.185165	1.82E-03
1	34	77.645714	289.77774	7.44E-04
1	41	17.101007	46.984631	1.83E-03
1	42	34.202015	93.969261	1.97E-03
1	43	68.40403	187.938522	1.03E-03
1	44	102.606049	281.907776	4.46E-04
1	51	21.130913	45.315388	1.86E-03
1	52	42.261826	90.630775	2.02E-03
1	53	84.523651	181.261551	8.06E-04
1	54	126.785484	271.892334	2.78E-04
1	61	25	43.30127	1.89E-03
1	62	50	86.602539	2.07E-03
1	63	100	173.205078	6.80E-04
1	64	150	259.807617	1.74E-04
1	71	28.678822	40.957603	1.92E-03
1	72	57.357643	81.915207	1.36E-03
1	73	114.715286	163.830414	5.98E-04
1	74	172.072937	245.745605	1.10E-04
1	81	32.139381	38.302223	1.95E-03
1	82	64.278763	76.604446	1.13E-03
1	83	128.557526	153.208893	5.39E-04
1	84	192.836288	229.813324	7.43E-05
1	91	35.355339	35.355339	1.97E-03
1	92	70.710678	70.710678	9.89E-04
1	93	141.421356	141.421356	4.95E-04
1	94	212.132034	212.132034	5.88E-05
1	101	38.302223	32.139381	2.00E-03

4. Once TOXST is finished processing 200 TOXX files from ISCST3, FEMS averages the 200 files by AVG8 FORTRAN program (AVG8 stands for the 8 25-year files stored in the batch files. All 200 files could not be stored so it was decided to divide up the results into 25-year increments). The averaged data is the placed in the file BUFF.TST, a portion of which is shown below.[1] Then the BUFFNEW FORTRAN program determines the distance to the threshold from the edge of the field. The AMBIENT FORTRAN program produces the ambient exposure output files while the IND.BAT batch files processes indoor exposure analysis if necessary. Finally all of the data output is produced using the BYE FORTRAN program that outputs the data averaged for all 200 TOXST output files as BUFF.TST and the results of the analysis in the BUFF.OUT file.

BUFFNEW.FOR code is shown below which transforms the unadjusted BUFF.TST data into a usable format to accurately calculate buffer zones.

```
READ(5,'(T58,6F10.2)') T1,T2,T3,T4,T5,T6

    TT(6,NR)=T6
    TT(5,NR)=T6+T5
    TT(4,NR)=T6+T5+T4
    TT(3,NR)=T6+T5+T4+T3
    TT(2,NR)=T6+T5+T4+T3+T2
    TT(1,NR)=T6+T5+T4+T3+T2+T1
```

[1] Note: The BUFFNEW FORTRAN program adjusts the number of exceedances/year for a threshold range to account for the TOXST output. For example, if the thresholds being run are 100, 200, 300, 400, 500, and 600, the 400 ug/m^3, the number of exceedances listed is actually the 400-500 range for the 400 ug/m^3 level. Therefore, columns with higher thresholds must be added to determine the proper number of exceedances for greater than 400 ug/m^3. See plots below.

Unadjusted BUFF.TST File from TOXST Output and AVG8 FORTRAN Program

X	Y	<= 25 ug/m3	25-50 ug/m3	50-100 ug/m3	100-250 ug/m3	250-500 ug/m3	500-750 ug/m3
0	50	2.4	4.41	4.79	2.39	1.31	1.71
0	100	2.4	4.41	4.79	2.39	1.31	1.71
0	150	2.41	4.41	4.79	2.38	1.32	1.7
0	200	2.41	4.43	4.79	2.39	1.32	1.68
0	250	2.42	4.44	4.77	2.39	1.32	1.66
0	300	2.45	4.47	4.74	2.39	1.31	1.62
0	400	2.07	2.23	1.61	0.72	0.29	0.38
0	500	0.25	0.17	0.14	0.04	0.01	0.01
0	750	0.09	0.06	0.03	0.01	0	0
0	1000	0.07	0.03	0.02	0	0	0
4.36	49.81	2.4	4.41	4.79	2.38	1.31	1.75
8.72	99.62	2.4	4.42	4.76	2.37	1.31	1.77
13.07	149.43	2.41	4.43	4.74	2.37	1.31	1.78
17.43	199.24	2.43	4.45	4.69	2.36	1.31	1.78
21.79	249.05	2.48	4.48	4.61	2.35	1.31	1.76
26.15	298.86	2.57	4.51	4.51	2.34	1.29	1.7
34.86	398.48	3.31	3.4	2.57	1.03	0.38	0.4
43.58	498.1	0.21	0.14	0.12	0.04	0.01	0.01
65.37	747.15	0.08	0.06	0.04	0.01	0	0
87.16	996.19	0.06	0.04	0.02	0	0	0
8.68	49.24	2.4	4.42	4.77	2.37	1.31	1.77
17.36	98.48	2.42	4.43	4.71	2.36	1.3	1.81
26.05	147.72	2.51	4.43	4.58	2.35	1.3	1.81
34.73	196.96	2.62	4.37	4.43	2.31	1.26	1.77
43.41	246.2	2.86	4.11	4.09	2.2	1.2	1.66
52.09	295.44	2.34	2.97	2.82	1.87	0.88	0.97
69.46	393.92	0.97	0.6	0.66	0.26	0.06	0.04
86.82	492.4	0.21	0.15	0.13	0.04	0.01	0
130.24	738.61	0.09	0.06	0.04	0	0	0
173.65	984.81	0.06	0.03	0.01	0	0	0
12.94	48.3	2.41	4.42	4.75	2.37	1.31	1.79
25.88	96.59	2.51	4.42	4.59	2.35	1.29	1.82
38.82	144.89	2.7	4.29	4.32	2.27	1.24	1.76
51.76	193.19	2.19	3.02	2.95	1.88	0.95	1.13
64.7	241.48	2.65	2.33	2.54	1.52	0.46	0.33
77.65	289.78	2.39	1.94	2.33	1.01	0.24	0.13
103.53	386.37	0.71	0.55	0.51	0.13	0.03	0.01
129.41	482.96	0.23	0.17	0.13	0.03	0	0
194.11	724.44	0.09	0.06	0.03	0	0	0
258.82	965.93	0.06	0.03	0.01	0	0	0

Adjusted BUFF.TST File Showing Number of Exceedances BUFFNEW FORTRAN Program Uses to Calculate Buffer Zones

X	Y	<= 25 ug/m3	<= 50 ug/m3	<= 100 ug/m3	<= 250 ug/m3	<= 500 ug/m3	<= 750 ug/m3
0	50	2.4	6.81	11.6	13.99	15.3	17.01
0	100	2.4	6.81	11.6	13.99	15.3	17.01
0	150	2.41	6.82	11.61	13.99	15.31	17.01
0	200	2.41	6.84	11.63	14.02	15.34	17.02
0	250	2.42	6.86	11.63	14.02	15.34	17
0	300	2.45	6.92	11.66	14.05	15.36	16.98
0	400	2.07	4.3	5.91	6.63	6.92	7.3
0	500	0.25	0.42	0.56	0.6	0.61	0.62
0	750	0.09	0.15	0.18	0.19	0.19	0.19
0	1000	0.07	0.1	0.12	0.12	0.12	0.12
4.36	49.81	2.4	6.81	11.6	13.98	15.29	17.04
8.72	99.62	2.4	6.82	11.58	13.95	15.26	17.03
13.07	149.43	2.41	6.84	11.58	13.95	15.26	17.04
17.43	199.24	2.43	6.88	11.57	13.93	15.24	17.02
21.79	249.05	2.48	6.96	11.57	13.92	15.23	16.99
26.15	298.86	2.57	7.08	11.59	13.93	15.22	16.92
34.86	398.48	3.31	6.71	9.28	10.31	10.69	11.09
43.58	498.1	0.21	0.35	0.47	0.51	0.52	0.53
65.37	747.15	0.08	0.14	0.18	0.19	0.19	0.19
87.16	996.19	0.06	0.1	0.12	0.12	0.12	0.12
8.68	49.24	2.4	6.82	11.59	13.96	15.27	17.04
17.36	98.48	2.42	6.85	11.56	13.92	15.22	17.03
26.05	147.72	2.51	6.94	11.52	13.87	15.17	16.98
34.73	196.96	2.62	6.99	11.42	13.73	14.99	16.76
43.41	246.2	2.86	6.97	11.06	13.26	14.46	16.12
52.09	295.44	2.34	5.31	8.13	10	10.88	11.85
69.46	393.92	0.97	1.57	2.23	2.49	2.55	2.59
86.82	492.4	0.21	0.36	0.49	0.53	0.54	0.54
130.24	738.61	0.09	0.15	0.19	0.19	0.19	0.19
173.65	984.81	0.06	0.09	0.1	0.1	0.1	0.1
12.94	48.3	2.41	6.83	11.58	13.95	15.26	17.05
25.88	96.59	2.51	6.93	11.52	13.87	15.16	16.98
38.82	144.89	2.7	6.99	11.31	13.58	14.82	16.58
51.76	193.19	2.19	5.21	8.16	10.04	10.99	12.12
64.7	241.48	2.65	4.98	7.52	9.04	9.5	9.83
77.65	289.78	2.39	4.33	6.66	7.67	7.91	8.04
103.53	386.37	0.71	1.26	1.77	1.9	1.93	1.94
129.41	482.96	0.23	0.4	0.53	0.56	0.56	0.56
194.11	724.44	0.09	0.15	0.18	0.18	0.18	0.18
258.82	965.93	0.06	0.09	0.1	0.1	0.1	0.1