Appendix 8.8-2

Ammonia Emergency Release Modeling

(Note: Due to the relatively large size of the modeling files associated with the emergency release modeling, only a summary of results and sample input is provided as hardcopy for this appendix. A complete version of this modeling is being provided electronically.)

SLAB MODELING RESULTS: WORST-CASE SCENARIO, DISTANCE TO 75 PPM AMMONIA

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                    SESSION INFORMATION

          INPUT DATA FILE NAME :  cppwrst0.DTA
          OUTPUT LIST FILE NAME : cppwrst0.LST


          GRAPHICS DATA FILE NAME : cppwrst0.DAT
          GRAPHICS PLOT FILE NAME : cppwrst0.XZ




problem input

  idspl =         1
  ncalc =         1
  wms   =   .017031
  cps   =   2170.00
  tbp   =    239.72
  cmed0 =       .00
  dhe   =  1370840.
  cpsl  =   4294.00
  rhosl =    682.80
  spb   =   2132.52
  spc   =    -32.98
  ts    =    239.72
  qs    =       .32
  as    =    107.15
  tsd   =     3600.
  qtis  =       .00
  hs    =       .00
  tav   =   3600.00
  xffm  =     39.90
  zp(1) =      1.50
  zp(2) =       .00
  zp(3) =       .00
  zp(4) =       .00
  z0    =   .010000
  za    =     10.00
  ua    =      1.50
  ta    =    300.37
  rh    =     50.00
  stab  =      6.00


release gas properties

 molecular weight of source gas (kg)               - wms  =  1.7031E-02
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 vapor heat capacity, const. p.  (j/kg-k)          - cps  =  2.1700E+03
 temperature of source gas (k)                     - ts   =  2.3972E+02
 density of source gas (kg/m3)                     - rhos =  8.6582E-01
 boiling point temperature                         - tbp  =  2.3972E+02
 liquid mass fraction                              - cmed0=  0.0000E+00
 liquid heat capacity (j/kg-k)                     - cpsl =  4.2940E+03
 heat of vaporization (j/kg)                       - dhe  =  1.3708E+06
 liquid source density (kg/m3)                     - rhosl=  6.8280E+02
 saturation pressure constant                      - spa  =  1.0315E+01
 saturation pressure constant (k)                  - spb  =  2.1325E+03
 saturation pressure constant (k)                  - spc  = -3.2980E+01


spill characteristics

 spill type                                        - idspl=          1
 mass source rate (kg/s)                           - qs   =  3.1737E-01
 continuous source duration (s)                    - tsd  =  3.6000E+03
 continuous source mass (kg)                       - qtcs =  1.1425E+03
 instantaneous source mass (kg)                    - qtis =  0.0000E+00
 source area (m2)                                  - as   =  1.0715E+02
 vertical vapor velocity (m/s)                     - ws   =  3.4209E-03
 source half width (m)                             - bs   =  5.1757E+00
 source height (m)                                 - hs   =  0.0000E+00
 horizontal vapor velocity (m/s)                   - us   =  0.0000E+00


field parameters

 concentration averaging time (s)                  - tav  =  3.6000E+03
 mixing layer height (m)                           - hmx  =  2.6000E+02
 maximum downwind distrace (m)                     - xffm =  3.9900E+01
 concentration measurement height (m)              - zp(1)=  1.5000E+00
                                                   - zp(2)=  0.0000E+00
                                                   - zp(3)=  0.0000E+00
                                                   - zp(4)=  0.0000E+00


ambient meteorological properties

 molecular weight of ambient air (kg)             - wmae  =  2.8754E-02
 heat capacity of ambient air at const p. (j/kg-k)- cpaa  =  1.0158E+03
 density of ambient air (kg/m3)                   - rhoa  =  1.1666E+00
 ambient measurement height (m)                   - za    =  1.0000E+01
 ambient atmospheric pressure (pa=n/m2=j/m3)      - pa    =  1.0133E+05
 ambient wind speed (m/s)                         - ua    =  1.5000E+00
 ambient temperature (k)                          - ta    =  3.0037E+02
 relative humidity (percent)                      - rh    =  5.0000E+01
 ambient friction velocity (m/s)                  - uastr =  4.0547E-02
 atmospheric stability class value                - stab  =  6.0000E+00
 inverse monin-obukhov length (1/m)               - ala   =  8.4887E-02
 surface roughness height (m)                     - z0    =  1.0000E-02


additional parameters

 sub-step multiplier                              - ncalc =          1
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 number of calculational sub-steps                    - nssm  =           3
 acceleration of gravity (m/s2)                       - grav  =  9.8067E+00
 gas constant (j/mol- k)                              - rr    =  8.3143E+00
 von karman constant                                  - xk    =  4.1000E-01
1
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instantaneous spatially averaged cloud parameters

x	zc	h	bb	b	bbx	bx	cv	rho	t	u	ua
-5.18E+00	0.00E+00	0.00E+00	5.18E+00	4.66E+00	5.18E+00	5.18E+00	0.00E+00	1.17E+00	3.00E+02	0.00E+00	0.00E+00
-4.14E+00	0.00E+00	5.42E-01	5.22E+00	4.66E+00	5.69E+00	5.69E+00	2.47E-02	1.16E+00	2.99E+02	3.27E-01	3.39E-01
-3.11E+00	0.00E+00	7.12E-01	5.26E+00	4.66E+00	6.21E+00	6.21E+00	3.52E-02	1.16E+00	2.98E+02	3.45E-01	3.83E-01
-2.07E+00	0.00E+00	8.87E-01	5.31E+00	4.66E+00	6.73E+00	6.73E+00	4.21E-02	1.16E+00	2.97E+02	3.44E-01	4.20E-01
-1.04E+00	0.00E+00	1.10E+00	5.38E+00	4.66E+00	7.25E+00	7.25E+00	4.74E-02	1.16E+00	2.97E+02	3.25E-01	4.58E-01
-1.79E-07	0.00E+00	1.40E+00	5.49E+00	4.66E+00	7.76E+00	7.76E+00	5.12E-02	1.16E+00	2.97E+02	2.89E-01	5.06E-01
1.04E+00	0.00E+00	1.96E+00	5.70E+00	4.66E+00	8.28E+00	8.28E+00	5.27E-02	1.16E+00	2.96E+02	2.31E-01	5.81E-01
2.07E+00	0.00E+00	3.20E+00	6.62E+00	4.66E+00	8.80E+00	8.80E+00	4.64E-02	1.16E+00	2.97E+02	1.62E-01	7.07E-01
3.11E+00	0.00E+00	1.31E+00	7.60E+00	4.67E+00	9.32E+00	9.32E+00	1.30E-02	1.16E+00	2.99E+02	1.41E+00	6.52E-01
4.14E+00	0.00E+00	1.53E+00	7.72E+00	4.69E+00	9.83E+00	9.83E+00	1.31E-02	1.16E+00	2.99E+02	1.32E+00	6.61E-01
5.18E+00	0.00E+00	1.73E+00	7.82E+00	4.70E+00	1.04E+01	1.04E+01	1.34E-02	1.16E+00	2.99E+02	1.27E+00	6.72E-01
5.22E+00	1.48E-05	1.74E+00	7.83E+00	4.70E+00	1.04E+01	1.04E+01	1.33E-02	1.16E+00	2.99E+02	1.26E+00	6.73E-01
5.27E+00	6.45E-05	1.75E+00	7.83E+00	4.70E+00	1.04E+01	1.04E+01	1.33E-02	1.16E+00	2.99E+02	1.26E+00	6.73E-01
5.33E+00	1.58E-04	1.75E+00	7.84E+00	4.70E+00	1.05E+01	1.05E+01	1.32E-02	1.16E+00	2.99E+02	1.26E+00	6.74E-01
5.39E+00	3.07E-04	1.76E+00	7.84E+00	4.70E+00	1.06E+01	1.06E+01	1.32E-02	1.16E+00	2.99E+02	1.26E+00	6.74E-01
5.45E+00	5.23E-04	1.77E+00	7.84E+00	4.70E+00	1.06E+01	1.06E+01	1.31E-02	1.16E+00	2.99E+02	1.25E+00	6.75E-01
5.52E+00	8.23E-04	1.78E+00	7.85E+00	4.70E+00	1.07E+01	1.07E+01	1.31E-02	1.16E+00	2.99E+02	1.25E+00	6.75E-01
5.60E+00	1.23E-03	1.79E+00	7.85E+00	4.70E+00	1.08E+01	1.08E+01	1.30E-02	1.16E+00	2.99E+02	1.25E+00	6.76E-01
5.68E+00	1.75E-03	1.80E+00	7.86E+00	4.70E+00	1.09E+01	1.09E+01	1.29E-02	1.16E+00	2.99E+02	1.25E+00	6.77E-01
5.77E+00	2.43E-03	1.82E+00	7.87E+00	4.70E+00	1.09E+01	1.09E+01	1.28E-02	1.16E+00	2.99E+02	1.25E+00	6.78E-01
5.87E+00	3.30E-03	1.83E+00	7.87E+00	4.70E+00	1.10E+01	1.10E+01	1.28E-02	1.16E+00	2.99E+02	1.24E+00	6.78E-01
5.98E+00	4.38E-03	1.85E+00	7.88E+00	4.70E+00	1.12E+01	1.12E+01	1.27E-02	1.16E+00	2.99E+02	1.24E+00	6.79E-01
6.09E+00	5.73E-03	1.86E+00	7.89E+00	4.70E+00	1.13E+01	1.13E+01	1.26E-02	1.16E+00	2.99E+02	1.24E+00	6.80E-01
6.22E+00	7.40E-03	1.88E+00	7.90E+00	4.70E+00	1.14E+01	1.14E+01	1.25E-02	1.16E+00	2.99E+02	1.24E+00	6.82E-01
6.36E+00	9.45E-03	1.90E+00	7.91E+00	4.70E+00	1.15E+01	1.15E+01	1.24E-02	1.16E+00	2.99E+02	1.23E+00	6.83E-01
6.51E+00	1.20E-02	1.92E+00	7.92E+00	4.70E+00	1.17E+01	1.17E+01	1.23E-02	1.16E+00	2.99E+02	1.23E+00	6.84E-01
6.67E+00	1.50E-02	1.94E+00	7.93E+00	4.70E+00	1.18E+01	1.18E+01	1.21E-02	1.16E+00	2.99E+02	1.23E+00	6.85E-01
6.85E+00	1.87E-02	1.96E+00	7.94E+00	4.70E+00	1.20E+01	1.20E+01	1.20E-02	1.16E+00	3.00E+02	1.22E+00	6.87E-01
7.04E+00	2.32E-02	1.99E+00	7.96E+00	4.70E+00	1.22E+01	1.22E+01	1.19E-02	1.16E+00	3.00E+02	1.22E+00	6.89E-01
7.25E+00	2.86E-02	2.02E+00	7.97E+00	4.70E+00	1.24E+01	1.24E+01	1.17E-02	1.16E+00	3.00E+02	1.21E+00	6.90E-01
7.48E+00	3.50E-02	2.05E+00	7.99E+00	4.70E+00	1.27E+01	1.27E+01	1.16E-02	1.16E+00	3.00E+02	1.21E+00	6.92E-01
7.72E+00	4.28E-02	2.08E+00	8.01E+00	4.70E+00	1.29E+01	1.29E+01	1.14E-02	1.16E+00	3.00E+02	1.20E+00	6.95E-01
7.99E+00	5.21E-02	2.11E+00	8.03E+00	4.70E+00	1.32E+01	1.32E+01	1.13E-02	1.16E+00	3.00E+02	1.20E+00	6.97E-01
8.29E+00	6.31E-02	2.15E+00	8.05E+00	4.71E+00	1.35E+01	1.35E+01	1.11E-02	1.16E+00	3.00E+02	1.19E+00	6.99E-01
8.61E+00	7.63E-02	2.18E+00	8.07E+00	4.71E+00	1.38E+01	1.38E+01	1.10E-02	1.16E+00	3.00E+02	1.19E+00	7.02E-01
8.95E+00	9.20E-02	2.22E+00	8.09E+00	4.71E+00	1.41E+01	1.41E+01	1.08E-02	1.16E+00	3.00E+02	1.18E+00	7.04E-01
9.33E+00	1.11E-01	2.26E+00	8.12E+00	4.71E+00	1.45E+01	1.45E+01	1.06E-02	1.16E+00	3.00E+02	1.17E+00	7.07E-01
9.74E+00	1.33E-01	2.31E+00	8.15E+00	4.71E+00	1.49E+01	1.49E+01	1.04E-02	1.16E+00	3.00E+02	1.17E+00	7.10E-01
1.02E+01	1.59E-01	2.35E+00	8.18E+00	4.71E+00	1.54E+01	1.54E+01	1.02E-02	1.16E+00	3.00E+02	1.16E+00	7.13E-01
1.07E+01	1.90E-01	2.40E+00	8.21E+00	4.71E+00	1.59E+01	1.58E+01	1.00E-02	1.16E+00	3.00E+02	1.16E+00	7.17E-01
1.12E+01	2.26E-01	2.45E+00	8.24E+00	4.71E+00	1.64E+01	1.64E+01	9.85E-03	1.16E+00	3.00E+02	1.15E+00	7.20E-01
1.18E+01	2.70E-01	2.51E+00	8.28E+00	4.72E+00	1.70E+01	1.70E+01	9.65E-03	1.16E+00	3.00E+02	1.14E+00	7.24E-01
1.24E+01	3.20E-01	2.56E+00	8.32E+00	4.72E+00	1.76E+01	1.76E+01	9.44E-03	1.16E+00	3.00E+02	1.14E+00	7.28E-01
1.31E+01	3.80E-01	2.62E+00	8.36E+00	4.72E+00	1.83E+01	1.83E+01	9.24E-03	1.16E+00	3.00E+02	1.13E+00	7.32E-01
1.38E+01	4.50E-01	2.68E+00	8.41E+00	4.72E+00	1.90E+01	1.90E+01	9.03E-03	1.16E+00	3.00E+02	1.13E+00	7.36E-01
1.46E+01	5.33E-01	2.74E+00	8.45E+00	4.72E+00	1.98E+01	1.98E+01	8.82E-03	1.16E+00	3.00E+02	1.12E+00	7.41E-01
1.55E+01	6.29E-01	2.81E+00	8.50E+00	4.72E+00	2.07E+01	2.07E+01	8.61E-03	1.16E+00	3.00E+02	1.11E+00	7.45E-01
1.65E+01	7.42E-01	2.88E+00	8.56E+00	4.72E+00	2.16E+01	2.16E+01	8.40E-03	1.16E+00	3.00E+02	1.11E+00	7.50E-01
1.75E+01	8.75E-01	2.95E+00	8.62E+00	4.72E+00	2.27E+01	2.27E+01	8.19E-03	1.16E+00	3.00E+02	1.10E+00	7.55E-01
1.86E+01	1.03E+00	3.02E+00	8.68E+00	4.73E+00	2.38E+01	2.38E+01	7.97E-03	1.17E+00	3.00E+02	1.10E+00	7.60E-01
1.98E+01	1.21E+00	3.09E+00	8.74E+00	4.73E+00	2.50E+01	2.50E+01	7.76E-03	1.17E+00	3.00E+02	1.09E+00	7.65E-01
2.12E+01	1.42E+00	3.17E+00	8.81E+00	4.73E+00	2.64E+01	2.64E+01	7.55E-03	1.17E+00	3.00E+02	1.09E+00	7.70E-01
2.26E+01	1.67E+00	3.25E+00	8.89E+00	4.73E+00	2.78E+01	2.78E+01	7.33E-03	1.17E+00	3.00E+02	1.08E+00	7.78E-01
2.42E+01	1.95E+00	3.41E+00	8.96E+00	4.73E+00	2.94E+01	2.94E+01	6.90E-03	1.17E+00	3.00E+02	1.09E+00	8.02E-01
2.59E+01	2.26E+00	3.55E+00	9.03E+00	4.73E+00	3.11E+01	3.11E+01	6.53E-03	1.17E+00	3.00E+02	1.09E+00	8.27E-01
2.78E+01	2.61E+00	3.67E+00	9.11E+00	4.72E+00	3.30E+01	3.30E+01	6.21E-03	1.17E+00	3.00E+02	1.10E+00	8.52E-01
2.98E+01	3.00E+00	3.77E+00	9.19E+00	4.72E+00	3.50E+01	3.50E+01	5.92E-03	1.17E+00	3.00E+02	1.12E+00	8.79E-01
3.20E+01	3.44E+00	3.86E+00	9.27E+00	4.72E+00	3.72E+01	3.72E+01	5.67E-03	1.17E+00	3.00E+02	1.13E+00	9.06E-01
3.44E+01	3.93E+00	3.92E+00	9.35E+00	4.71E+00	3.96E+01	3.96E+01	5.44E-03	1.17E+00	3.00E+02	1.15E+00	9.35E-01
3.71E+01	4.48E+00	3.98E+00	9.43E+00	4.70E+00	4.22E+01	4.22E+01	5.23E-03	1.17E+00	3.00E+02	1.17E+00	9.64E-01
3.99E+01	5.09E+00	4.02E+00	9.51E+00	4.69E+00	4.51E+01	4.51E+01	5.04E-03	1.17E+00	3.00E+02	1.19E+00	9.95E-01

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x	cm	cmv	cmda	cmw	cmwv	wc	vg	ug	w	v	vx
-5.18E+00	0.00E+00	0.00E+00	9.88E-01	1.18E-02	1.18E-02	0.00E+00	0.00E+00	0.00E+00	8.64E-01	2.97E-02	0.00E+00
-4.14E+00	1.48E-02	1.48E-02	9.74E-01	1.16E-02	1.16E-02	0.00E+00	0.00E+00	0.00E+00	4.00E-02	6.60E-03	7.30E-02
-3.11E+00	2.12E-02	2.12E-02	9.67E-01	1.16E-02	1.16E-02	0.00E+00	0.00E+00	0.00E+00	3.42E-02	8.03E-03	7.91E-02
-2.07E+00	2.54E-02	2.54E-02	9.63E-01	1.15E-02	1.15E-02	0.00E+00	0.00E+00	0.00E+00	2.93E-02	1.05E-02	8.48E-02

-1.04E+00	2.86E-02	2.86E-02	9.60E-01	1.15E-02	1.15E-02	0.00E+00	0.00E+00	0.00E+00	2.56E-02	1.46E-02	9.12E-02
-1.79E-07	3.10E-02	3.10E-02	9.58E-01	1.15E-02	1.15E-02	0.00E+00	0.00E+00	0.00E+00	2.43E-02	2.14E-02	9.98E-02
1.04E+00	3.19E-02	3.19E-02	9.57E-01	1.14E-02	1.14E-02	0.00E+00	0.00E+00	0.00E+00	2.72E-02	3.26E-02	1.14E-01
2.07E+00	2.80E-02	2.80E-02	9.61E-01	1.15E-02	1.15E-02	0.00E+00	0.00E+00	0.00E+00	3.46E-02	4.97E-02	1.41E-01
3.11E+00	7.76E-03	7.76E-03	9.81E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	1.18E-01	6.73E-02	9.78E-02
4.14E+00	7.82E-03	7.82E-03	9.80E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	9.59E-02	5.92E-02	1.04E-01
5.18E+00	7.98E-03	7.98E-03	9.80E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	8.08E-02	5.33E-02	1.09E-01
5.22E+00	7.95E-03	7.95E-03	9.80E-01	1.17E-02	1.17E-02	8.10E-04	0.00E+00	0.00E+00	8.00E-02	5.28E-02	1.09E-01
5.27E+00	7.92E-03	7.92E-03	9.80E-01	1.17E-02	1.17E-02	1.69E-03	0.00E+00	0.00E+00	7.96E-02	5.27E-02	1.09E-01
5.33E+00	7.89E-03	7.89E-03	9.80E-01	1.17E-02	1.17E-02	2.63E-03	0.00E+00	0.00E+00	7.93E-02	5.25E-02	1.10E-01
5.39E+00	7.86E-03	7.86E-03	9.80E-01	1.17E-02	1.17E-02	3.66E-03	0.00E+00	0.00E+00	7.88E-02	5.23E-02	1.10E-01
5.45E+00	7.82E-03	7.82E-03	9.80E-01	1.17E-02	1.17E-02	4.76E-03	0.00E+00	0.00E+00	7.84E-02	5.21E-02	1.10E-01
5.52E+00	7.78E-03	7.78E-03	9.80E-01	1.17E-02	1.17E-02	5.96E-03	0.00E+00	0.00E+00	7.79E-02	5.19E-02	1.10E-01
5.60E+00	7.74E-03	7.74E-03	9.81E-01	1.17E-02	1.17E-02	7.24E-03	0.00E+00	0.00E+00	7.73E-02	5.17E-02	1.11E-01
5.68E+00	7.70E-03	7.70E-03	9.81E-01	1.17E-02	1.17E-02	8.63E-03	0.00E+00	0.00E+00	7.67E-02	5.15E-02	1.11E-01
5.77E+00	7.65E-03	7.65E-03	9.81E-01	1.17E-02	1.17E-02	1.01E-02	0.00E+00	0.00E+00	7.61E-02	5.12E-02	1.11E-01
5.87E+00	7.60E-03	7.60E-03	9.81E-01	1.17E-02	1.17E-02	1.17E-02	0.00E+00	0.00E+00	7.54E-02	5.09E-02	1.12E-01
5.98E+00	7.55E-03	7.55E-03	9.81E-01	1.17E-02	1.17E-02	1.35E-02	0.00E+00	0.00E+00	7.47E-02	5.06E-02	1.12E-01
6.09E+00	7.49E-03	7.49E-03	9.81E-01	1.17E-02	1.17E-02	1.53E-02	0.00E+00	0.00E+00	7.39E-02	5.03E-02	1.13E-01
6.22E+00	7.43E-03	7.43E-03	9.81E-01	1.17E-02	1.17E-02	1.73E-02	0.00E+00	0.00E+00	7.30E-02	5.00E-02	1.13E-01
6.36E+00	7.37E-03	7.37E-03	9.81E-01	1.17E-02	1.17E-02	1.95E-02	0.00E+00	0.00E+00	7.21E-02	4.96E-02	1.14E-01
6.51E+00	7.30E-03	7.30E-03	9.81E-01	1.17E-02	1.17E-02	2.18E-02	0.00E+00	0.00E+00	7.11E-02	4.93E-02	1.14E-01
6.67E+00	7.23E-03	7.23E-03	9.81E-01	1.17E-02	1.17E-02	2.42E-02	0.00E+00	0.00E+00	7.00E-02	4.89E-02	1.15E-01
6.85E+00	7.15E-03	7.15E-03	9.81E-01	1.17E-02	1.17E-02	2.69E-02	0.00E+00	0.00E+00	6.89E-02	4.85E-02	1.16E-01
7.04E+00	7.07E-03	7.07E-03	9.81E-01	1.17E-02	1.17E-02	2.97E-02	0.00E+00	0.00E+00	6.76E-02	4.80E-02	1.17E-01
7.25E+00	6.99E-03	6.99E-03	9.81E-01	1.17E-02	1.17E-02	3.27E-02	0.00E+00	0.00E+00	6.62E-02	4.74E-02	1.18E-01
7.48E+00	6.90E-03	6.90E-03	9.81E-01	1.17E-02	1.17E-02	3.60E-02	0.00E+00	0.00E+00	6.48E-02	4.68E-02	1.19E-01
7.72E+00	6.81E-03	6.81E-03	9.81E-01	1.17E-02	1.17E-02	3.94E-02	0.00E+00	0.00E+00	6.33E-02	4.62E-02	1.20E-01
7.99E+00	6.72E-03	6.72E-03	9.82E-01	1.17E-02	1.17E-02	4.31E-02	0.00E+00	0.00E+00	6.17E-02	4.56E-02	1.21E-01
8.29E+00	6.62E-03	6.62E-03	9.82E-01	1.17E-02	1.17E-02	4.71E-02	0.00E+00	0.00E+00	6.01E-02	4.49E-02	1.23E-01
8.61E+00	6.52E-03	6.52E-03	9.82E-01	1.17E-02	1.17E-02	5.13E-02	0.00E+00	0.00E+00	5.84E-02	4.43E-02	1.24E-01
8.95E+00	6.42E-03	6.42E-03	9.82E-01	1.17E-02	1.17E-02	5.57E-02	0.00E+00	0.00E+00	5.66E-02	4.36E-02	1.26E-01
9.33E+00	6.31E-03	6.31E-03	9.82E-01	1.17E-02	1.17E-02	6.05E-02	0.00E+00	0.00E+00	5.49E-02	4.29E-02	1.28E-01
9.74E+00	6.20E-03	6.20E-03	9.82E-01	1.17E-02	1.17E-02	6.56E-02	0.00E+00	0.00E+00	5.31E-02	4.22E-02	1.30E-01
1.02E+01	6.09E-03	6.09E-03	9.82E-01	1.18E-02	1.18E-02	7.10E-02	0.00E+00	0.00E+00	5.13E-02	4.14E-02	1.32E-01
1.07E+01	5.97E-03	5.97E-03	9.82E-01	1.18E-02	1.18E-02	7.67E-02	0.00E+00	0.00E+00	4.95E-02	4.07E-02	1.35E-01
1.12E+01	5.86E-03	5.86E-03	9.82E-01	1.18E-02	1.18E-02	8.28E-02	0.00E+00	0.00E+00	4.77E-02	3.99E-02	1.38E-01
1.18E+01	5.74E-03	5.74E-03	9.83E-01	1.18E-02	1.18E-02	8.92E-02	0.00E+00	0.00E+00	4.59E-02	3.91E-02	1.41E-01
1.24E+01	5.62E-03	5.62E-03	9.83E-01	1.18E-02	1.18E-02	9.60E-02	0.00E+00	0.00E+00	4.41E-02	3.83E-02	1.44E-01
1.31E+01	5.49E-03	5.49E-03	9.83E-01	1.18E-02	1.18E-02	1.03E-01	0.00E+00	0.00E+00	4.23E-02	3.75E-02	1.48E-01
1.38E+01	5.37E-03	5.37E-03	9.83E-01	1.18E-02	1.18E-02	1.11E-01	0.00E+00	0.00E+00	4.05E-02	3.67E-02	1.52E-01
1.46E+01	5.24E-03	5.24E-03	9.83E-01	1.18E-02	1.18E-02	1.19E-01	0.00E+00	0.00E+00	3.88E-02	3.59E-02	1.56E-01
1.55E+01	5.12E-03	5.12E-03	9.83E-01	1.18E-02	1.18E-02	1.28E-01	0.00E+00	0.00E+00	3.71E-02	3.51E-02	1.61E-01
1.65E+01	4.99E-03	4.99E-03	9.83E-01	1.18E-02	1.18E-02	1.37E-01	0.00E+00	0.00E+00	3.54E-02	3.43E-02	1.67E-01
1.75E+01	4.87E-03	4.87E-03	9.83E-01	1.18E-02	1.18E-02	1.46E-01	0.00E+00	0.00E+00	3.38E-02	3.35E-02	1.73E-01
1.86E+01	4.74E-03	4.74E-03	9.83E-01	1.18E-02	1.18E-02	1.56E-01	0.00E+00	0.00E+00	3.22E-02	3.27E-02	1.79E-01
1.98E+01	4.61E-03	4.61E-03	9.84E-01	1.18E-02	1.18E-02	1.67E-01	0.00E+00	0.00E+00	3.07E-02	3.20E-02	1.85E-01
2.12E+01	4.48E-03	4.48E-03	9.84E-01	1.18E-02	1.18E-02	1.78E-01	0.00E+00	0.00E+00	2.92E-02	3.12E-02	1.93E-01
2.26E+01	4.35E-03	4.35E-03	9.84E-01	1.18E-02	1.18E-02	1.89E-01	0.00E+00	0.00E+00	7.19E-02	3.04E-02	2.00E-01
2.42E+01	4.10E-03	4.10E-03	9.84E-01	1.18E-02	1.18E-02	1.95E-01	0.00E+00	0.00E+00	6.37E-02	2.91E-02	2.11E-01
2.59E+01	3.88E-03	3.88E-03	9.84E-01	1.18E-02	1.18E-02	2.02E-01	0.00E+00	0.00E+00	5.53E-02	2.80E-02	2.21E-01
2.78E+01	3.69E-03	3.69E-03	9.85E-01	1.18E-02	1.18E-02	2.10E-01	0.00E+00	0.00E+00	4.78E-02	2.72E-02	2.30E-01
2.98E+01	3.52E-03	3.52E-03	9.85E-01	1.18E-02	1.18E-02	2.18E-01	0.00E+00	0.00E+00	4.12E-02	2.65E-02	2.39E-01
3.20E+01	3.37E-03	3.37E-03	9.85E-01	1.18E-02	1.18E-02	2.28E-01	0.00E+00	0.00E+00	3.57E-02	2.60E-02	2.48E-01
3.44E+01	3.23E-03	3.23E-03	9.85E-01	1.18E-02	1.18E-02	2.38E-01	0.00E+00	0.00E+00	3.10E-02	2.56E-02	2.56E-01
3.71E+01	3.11E-03	3.11E-03	9.85E-01	1.18E-02	1.18E-02	2.48E-01	0.00E+00	0.00E+00	2.71E-02	2.54E-02	2.64E-01
3.99E+01	2.99E-03	2.99E-03	9.85E-01	1.18E-02	1.18E-02	2.60E-01	0.00E+00	0.00E+00	2.38E-02	2.52E-02	2.71E-01

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time averaged (tav = 3600. s) volume concentration: concentration contour parameters

c(x,y,z,t) = cc(x) * (erf(xa)-erf(xb)) * (erf(ya)-erf(yb)) * (exp(-za*za)+exp(-zb*zb))

```
   c(x,y,z,t) = concentration (volume fraction) at (x,y,z,t)
            x = downwind distance (m)
            y = crosswind horizontal distance (m)
            z = height (m)
            t = time (s)

          erf = error functon
           xa = (x-xc+bx)/(sr2*betax)
           xb = (x-xc-bx)/(sr2*betax)
           ya = (y+b)/(sr2*betac)
           yb = (y-b)/(sr2*betac)
          exp = exponential function
           za = (z-zc)/(sr2*sig)
           zb = (z+zc)/(sr2*sig)
          sr2 = sqrt(2.0)
```

x	cc(x)	b(x)	betac(x)	zc(x)	sig(x)	t	xc(t)	bx(t)	betax(t)
-5.18E+00	0.00E+00	4.66E+00	1.30E+00	0.00E+00	0.00E+00	8.09E+00	0.00E+00	5.18E+00	4.23E-02

-4.14E+00	4.78E-03	4.66E+00	1.36E+00	0.00E+00	3.13E-01	1.04E+01	5.18E-01	5.69E+00	4.65E-02
-3.11E+00	6.87E-03	4.66E+00	1.41E+00	0.00E+00	4.11E-01	1.27E+01	1.04E+00	6.21E+00	5.07E-02
-2.07E+00	8.31E-03	4.66E+00	1.48E+00	0.00E+00	5.12E-01	1.80E+01	1.55E+00	6.73E+00	5.49E-02
-1.04E+00	9.48E-03	4.66E+00	1.57E+00	0.00E+00	6.32E-01	2.34E+01	2.07E+00	7.25E+00	5.92E-02
-1.79E-07	1.05E-02	4.66E+00	1.71E+00	0.00E+00	8.06E-01	2.78E+01	2.59E+00	7.76E+00	6.34E-02
1.04E+00	1.12E-02	4.66E+00	1.93E+00	0.00E+00	1.13E+00	3.22E+01	3.11E+00	8.28E+00	6.76E-02
2.07E+00	1.15E-02	4.66E+00	2.75E+00	0.00E+00	1.85E+00	3.29E+01	3.62E+00	8.80E+00	7.19E-02
3.11E+00	3.70E-03	4.67E+00	3.50E+00	0.00E+00	7.56E-01	3.35E+01	4.14E+00	9.32E+00	7.61E-02
4.14E+00	3.77E-03	4.69E+00	3.59E+00	0.00E+00	8.85E-01	3.43E+01	4.66E+00	9.83E+00	8.03E-02
5.18E+00	3.89E-03	4.70E+00	3.67E+00	0.00E+00	9.97E-01	3.50E+01	5.18E+00	1.04E+01	8.45E-02
5.22E+00	3.88E-03	4.70E+00	3.67E+00	1.48E-05	1.00E+00	3.51E+01	5.22E+00	1.04E+01	8.49E-02
5.27E+00	3.87E-03	4.70E+00	3.67E+00	6.45E-05	1.01E+00	3.52E+01	5.27E+00	1.04E+01	8.53E-02
5.33E+00	3.85E-03	4.70E+00	3.68E+00	1.58E-04	1.01E+00	3.53E+01	5.33E+00	1.05E+01	8.57E-02
5.39E+00	3.84E-03	4.70E+00	3.68E+00	3.07E-04	1.02E+00	3.54E+01	5.39E+00	1.06E+01	8.63E-02
5.45E+00	3.83E-03	4.70E+00	3.68E+00	5.23E-04	1.02E+00	3.55E+01	5.45E+00	1.06E+01	8.68E-02
5.52E+00	3.81E-03	4.70E+00	3.69E+00	8.23E-04	1.03E+00	3.56E+01	5.52E+00	1.07E+01	8.73E-02
5.60E+00	3.79E-03	4.70E+00	3.69E+00	1.23E-03	1.03E+00	3.57E+01	5.60E+00	1.08E+01	8.80E-02
5.68E+00	3.78E-03	4.70E+00	3.70E+00	1.75E-03	1.04E+00	3.59E+01	5.68E+00	1.09E+01	8.86E-02
5.77E+00	3.76E-03	4.70E+00	3.70E+00	2.43E-03	1.05E+00	3.60E+01	5.77E+00	1.09E+01	8.94E-02
5.87E+00	3.74E-03	4.70E+00	3.71E+00	3.30E-03	1.06E+00	3.62E+01	5.87E+00	1.10E+01	9.02E-02
5.98E+00	3.72E-03	4.70E+00	3.72E+00	4.38E-03	1.06E+00	3.63E+01	5.98E+00	1.12E+01	9.10E-02
6.09E+00	3.70E-03	4.70E+00	3.72E+00	5.73E-03	1.07E+00	3.65E+01	6.09E+00	1.13E+01	9.20E-02
6.22E+00	3.68E-03	4.70E+00	3.73E+00	7.40E-03	1.08E+00	3.67E+01	6.22E+00	1.14E+01	9.30E-02
6.36E+00	3.66E-03	4.70E+00	3.74E+00	9.45E-03	1.09E+00	3.69E+01	6.36E+00	1.15E+01	9.41E-02
6.51E+00	3.63E-03	4.70E+00	3.75E+00	1.20E-02	1.10E+00	3.72E+01	6.51E+00	1.17E+01	9.54E-02
6.67E+00	3.61E-03	4.70E+00	3.76E+00	1.50E-02	1.11E+00	3.74E+01	6.67E+00	1.18E+01	9.67E-02
6.85E+00	3.59E-03	4.70E+00	3.77E+00	1.87E-02	1.12E+00	3.77E+01	6.85E+00	1.20E+01	9.82E-02
7.04E+00	3.56E-03	4.70E+00	3.78E+00	2.32E-02	1.13E+00	3.81E+01	7.04E+00	1.22E+01	9.97E-02
7.25E+00	3.54E-03	4.70E+00	3.79E+00	2.86E-02	1.15E+00	3.84E+01	7.25E+00	1.24E+01	1.01E-01
7.48E+00	3.51E-03	4.70E+00	3.81E+00	3.50E-02	1.16E+00	3.88E+01	7.48E+00	1.27E+01	1.03E-01
7.72E+00	3.49E-03	4.70E+00	3.82E+00	4.28E-02	1.17E+00	3.92E+01	7.72E+00	1.29E+01	1.05E-01
7.99E+00	3.46E-03	4.70E+00	3.84E+00	5.21E-02	1.19E+00	3.96E+01	7.99E+00	1.32E+01	1.08E-01
8.29E+00	3.44E-03	4.71E+00	3.86E+00	6.31E-02	1.20E+00	4.01E+01	8.29E+00	1.35E+01	1.10E-01
8.61E+00	3.42E-03	4.71E+00	3.88E+00	7.63E-02	1.22E+00	4.07E+01	8.61E+00	1.38E+01	1.13E-01
8.95E+00	3.40E-03	4.71E+00	3.90E+00	9.20E-02	1.23E+00	4.13E+01	8.95E+00	1.41E+01	1.15E-01
9.33E+00	3.38E-03	4.71E+00	3.92E+00	1.11E-01	1.24E+00	4.19E+01	9.33E+00	1.45E+01	1.18E-01
9.74E+00	3.37E-03	4.71E+00	3.95E+00	1.33E-01	1.26E+00	4.26E+01	9.74E+00	1.49E+01	1.22E-01
1.02E+01	3.36E-03	4.71E+00	3.97E+00	1.59E-01	1.27E+00	4.34E+01	1.02E+01	1.54E+01	1.25E-01
1.07E+01	3.35E-03	4.71E+00	4.00E+00	1.90E-01	1.28E+00	4.42E+01	1.07E+01	1.58E+01	1.29E-01
1.12E+01	3.35E-03	4.71E+00	4.03E+00	2.26E-01	1.29E+00	4.51E+01	1.12E+01	1.64E+01	1.34E-01
1.18E+01	3.36E-03	4.72E+00	4.06E+00	2.70E-01	1.29E+00	4.61E+01	1.18E+01	1.70E+01	1.38E-01
1.24E+01	3.37E-03	4.72E+00	4.10E+00	3.20E-01	1.29E+00	4.72E+01	1.24E+01	1.76E+01	1.44E-01
1.31E+01	3.40E-03	4.72E+00	4.14E+00	3.80E-01	1.29E+00	4.84E+01	1.31E+01	1.83E+01	1.49E-01
1.38E+01	3.43E-03	4.72E+00	4.18E+00	4.50E-01	1.29E+00	4.97E+01	1.38E+01	1.90E+01	1.55E-01
1.46E+01	3.49E-03	4.72E+00	4.23E+00	5.33E-01	1.28E+00	5.12E+01	1.46E+01	1.98E+01	1.62E-01
1.55E+01	3.57E-03	4.72E+00	4.27E+00	6.29E-01	1.26E+00	5.27E+01	1.55E+01	2.07E+01	1.69E-01
1.65E+01	3.67E-03	4.72E+00	4.33E+00	7.42E-01	1.23E+00	5.44E+01	1.65E+01	2.16E+01	1.77E-01
1.75E+01	3.81E-03	4.72E+00	4.38E+00	8.75E-01	1.20E+00	5.63E+01	1.75E+01	2.27E+01	1.85E-01
1.86E+01	4.00E-03	4.73E+00	4.45E+00	1.03E+00	1.15E+00	5.84E+01	1.86E+01	2.38E+01	1.94E-01
1.98E+01	4.26E-03	4.73E+00	4.51E+00	1.21E+00	1.09E+00	6.06E+01	1.98E+01	2.50E+01	2.04E-01
2.12E+01	4.62E-03	4.73E+00	4.58E+00	1.42E+00	1.01E+00	6.30E+01	2.12E+01	2.64E+01	2.15E-01
2.26E+01	5.01E-03	4.73E+00	4.66E+00	1.67E+00	9.38E-01	6.57E+01	2.26E+01	2.78E+01	2.27E-01
2.42E+01	4.78E-03	4.73E+00	4.74E+00	1.95E+00	9.84E-01	6.86E+01	2.42E+01	2.94E+01	2.40E-01
2.59E+01	4.59E-03	4.73E+00	4.83E+00	2.26E+00	1.02E+00	7.18E+01	2.59E+01	3.11E+01	2.54E-01
2.78E+01	4.43E-03	4.72E+00	4.93E+00	2.61E+00	1.06E+00	7.52E+01	2.78E+01	3.30E+01	2.69E-01
2.98E+01	4.29E-03	4.72E+00	5.03E+00	3.00E+00	1.09E+00	7.88E+01	2.98E+01	3.50E+01	2.86E-01
3.20E+01	4.18E-03	4.72E+00	5.13E+00	3.44E+00	1.11E+00	8.28E+01	3.20E+01	3.72E+01	3.04E-01
3.44E+01	4.09E-03	4.71E+00	5.25E+00	3.93E+00	1.13E+00	8.70E+01	3.44E+01	3.96E+01	3.24E-01
3.71E+01	4.01E-03	4.70E+00	5.37E+00	4.48E+00	1.15E+00	9.15E+01	3.71E+01	4.22E+01	3.45E-01
3.99E+01	3.95E-03	4.69E+00	5.51E+00	5.09E+00	1.16E+00	9.63E+01	3.99E+01	4.51E+01	3.68E-01

1

time averaged (tav = 3600. s) volume concentration: concentration in the z = 1.50 plane.

downwind distance x (m)	time of max conc (s)	cloud duration (s)	effective half width bbc (m)	average concentration (volume fraction) at (x,y,z) y/bbc= 0.0	y/bbc= 0.5	y/bbc= 1.0	y/bbc= 1.5	y/bbc= 2.0	y/bbc= 2.5
-5.18E+00	1.81E+03	3.60E+03	5.18E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
-4.14E+00	1.80E+03	3.60E+03	5.22E+00	3.84E-07	3.59E-07	1.31E-07	3.75E-09	3.95E-12	0.00E+00
-3.11E+00	1.80E+03	3.60E+03	5.26E+00	7.04E-05	6.51E-05	2.36E-05	7.73E-07	1.14E-09	0.00E+00
-2.07E+00	1.80E+03	3.60E+03	5.32E+00	9.05E-04	8.27E-04	2.98E-04	1.13E-05	2.41E-08	0.00E+00
-1.04E+00	1.80E+03	3.60E+03	5.40E+00	4.52E-03	4.05E-03	1.45E-03	6.53E-05	2.15E-07	0.00E+00
-1.79E-07	1.80E+03	3.60E+03	5.52E+00	1.47E-02	1.28E-02	4.54E-03	2.52E-04	1.38E-06	4.40E-10
1.04E+00	1.80E+03	3.60E+03	5.74E+00	3.64E-02	3.04E-02	1.07E-02	7.60E-04	7.78E-06	9.91E-09
2.07E+00	1.80E+03	3.60E+03	6.67E+00	5.96E-02	4.48E-02	1.53E-02	1.72E-03	5.33E-05	4.22E-07
3.11E+00	1.80E+03	3.60E+03	7.65E+00	3.35E-03	2.41E-03	8.07E-04	1.06E-04	4.89E-06	7.44E-08
4.14E+00	1.80E+03	3.60E+03	7.78E+00	5.76E-03	4.12E-03	1.38E-03	1.83E-04	8.64E-06	1.37E-07
5.18E+00	1.81E+03	3.60E+03	7.90E+00	7.95E-03	5.68E-03	1.90E-03	2.54E-04	1.22E-05	2.00E-07
5.22E+00	1.81E+03	3.60E+03	7.90E+00	8.04E-03	5.74E-03	1.92E-03	2.57E-04	1.24E-05	2.03E-07
5.27E+00	1.81E+03	3.60E+03	7.91E+00	8.08E-03	5.78E-03	1.93E-03	2.58E-04	1.25E-05	2.05E-07

5.33E+00	1.81E+03	3.60E+03	7.91E+00	8.13E-03	5.81E-03	1.94E-03	2.60E-04	1.26E-05	2.07E-07
5.39E+00	1.81E+03	3.60E+03	7.92E+00	8.19E-03	5.85E-03	1.95E-03	2.62E-04	1.27E-05	2.09E-07
5.45E+00	1.81E+03	3.60E+03	7.92E+00	8.24E-03	5.89E-03	1.97E-03	2.64E-04	1.28E-05	2.11E-07
5.52E+00	1.81E+03	3.60E+03	7.93E+00	8.30E-03	5.93E-03	1.98E-03	2.66E-04	1.29E-05	2.13E-07
5.60E+00	1.81E+03	3.60E+03	7.94E+00	8.36E-03	5.97E-03	1.99E-03	2.68E-04	1.30E-05	2.16E-07
5.68E+00	1.81E+03	3.60E+03	7.94E+00	8.43E-03	6.02E-03	2.01E-03	2.70E-04	1.31E-05	2.19E-07
5.77E+00	1.81E+03	3.60E+03	7.95E+00	8.50E-03	6.07E-03	2.03E-03	2.72E-04	1.33E-05	2.22E-07
5.87E+00	1.81E+03	3.60E+03	7.96E+00	8.57E-03	6.12E-03	2.04E-03	2.75E-04	1.34E-05	2.25E-07
5.98E+00	1.81E+03	3.60E+03	7.97E+00	8.65E-03	6.17E-03	2.06E-03	2.77E-04	1.35E-05	2.28E-07
6.09E+00	1.81E+03	3.60E+03	7.98E+00	8.72E-03	6.22E-03	2.08E-03	2.80E-04	1.37E-05	2.31E-07
6.22E+00	1.81E+03	3.60E+03	7.99E+00	8.80E-03	6.28E-03	2.10E-03	2.82E-04	1.39E-05	2.35E-07
6.36E+00	1.81E+03	3.60E+03	8.00E+00	8.88E-03	6.33E-03	2.11E-03	2.85E-04	1.40E-05	2.39E-07
6.51E+00	1.81E+03	3.60E+03	8.01E+00	8.97E-03	6.39E-03	2.13E-03	2.88E-04	1.42E-05	2.42E-07
6.67E+00	1.81E+03	3.60E+03	8.03E+00	9.05E-03	6.45E-03	2.15E-03	2.91E-04	1.44E-05	2.47E-07
6.85E+00	1.81E+03	3.60E+03	8.04E+00	9.14E-03	6.51E-03	2.17E-03	2.94E-04	1.46E-05	2.51E-07
7.04E+00	1.81E+03	3.60E+03	8.06E+00	9.23E-03	6.57E-03	2.19E-03	2.97E-04	1.48E-05	2.56E-07
7.25E+00	1.81E+03	3.60E+03	8.08E+00	9.32E-03	6.64E-03	2.21E-03	3.00E-04	1.50E-05	2.62E-07
7.48E+00	1.81E+03	3.60E+03	8.10E+00	9.42E-03	6.70E-03	2.23E-03	3.03E-04	1.52E-05	2.67E-07
7.72E+00	1.81E+03	3.60E+03	8.12E+00	9.51E-03	6.76E-03	2.25E-03	3.07E-04	1.54E-05	2.73E-07
7.99E+00	1.81E+03	3.60E+03	8.15E+00	9.60E-03	6.82E-03	2.27E-03	3.10E-04	1.57E-05	2.78E-07
8.29E+00	1.81E+03	3.60E+03	8.17E+00	9.68E-03	6.88E-03	2.29E-03	3.13E-04	1.59E-05	2.85E-07
8.61E+00	1.81E+03	3.60E+03	8.20E+00	9.76E-03	6.93E-03	2.31E-03	3.16E-04	1.61E-05	2.91E-07
8.95E+00	1.81E+03	3.60E+03	8.23E+00	9.83E-03	6.98E-03	2.32E-03	3.18E-04	1.63E-05	2.98E-07
9.33E+00	1.81E+03	3.60E+03	8.26E+00	9.90E-03	7.02E-03	2.34E-03	3.21E-04	1.65E-05	3.05E-07
9.74E+00	1.81E+03	3.60E+03	8.30E+00	9.96E-03	7.06E-03	2.35E-03	3.23E-04	1.68E-05	3.11E-07
1.02E+01	1.81E+03	3.60E+03	8.34E+00	1.00E-02	7.10E-03	2.36E-03	3.25E-04	1.70E-05	3.19E-07
1.07E+01	1.81E+03	3.60E+03	8.38E+00	1.01E-02	7.13E-03	2.37E-03	3.27E-04	1.72E-05	3.26E-07
1.12E+01	1.81E+03	3.60E+03	8.42E+00	1.01E-02	7.15E-03	2.38E-03	3.29E-04	1.74E-05	3.34E-07
1.18E+01	1.81E+03	3.60E+03	8.47E+00	1.01E-02	7.17E-03	2.38E-03	3.31E-04	1.76E-05	3.42E-07
1.24E+01	1.81E+03	3.60E+03	8.52E+00	1.02E-02	7.19E-03	2.39E-03	3.32E-04	1.78E-05	3.51E-07
1.31E+01	1.81E+03	3.60E+03	8.58E+00	1.02E-02	7.21E-03	2.39E-03	3.34E-04	1.81E-05	3.60E-07
1.38E+01	1.81E+03	3.60E+03	8.64E+00	1.02E-02	7.22E-03	2.39E-03	3.36E-04	1.83E-05	3.70E-07
1.46E+01	1.82E+03	3.60E+03	8.71E+00	1.03E-02	7.25E-03	2.40E-03	3.37E-04	1.86E-05	3.81E-07
1.55E+01	1.82E+03	3.60E+03	8.78E+00	1.04E-02	7.29E-03	2.41E-03	3.40E-04	1.89E-05	3.93E-07
1.65E+01	1.82E+03	3.60E+03	8.86E+00	1.05E-02	7.36E-03	2.44E-03	3.45E-04	1.93E-05	4.08E-07
1.75E+01	1.82E+03	3.60E+03	8.94E+00	1.07E-02	7.50E-03	2.48E-03	3.52E-04	1.99E-05	4.28E-07
1.86E+01	1.82E+03	3.60E+03	9.04E+00	1.10E-02	7.74E-03	2.56E-03	3.64E-04	2.08E-05	4.55E-07
1.98E+01	1.82E+03	3.60E+03	9.13E+00	1.16E-02	8.14E-03	2.69E-03	3.84E-04	2.21E-05	4.93E-07
2.12E+01	1.82E+03	3.60E+03	9.24E+00	1.24E-02	8.71E-03	2.88E-03	4.13E-04	2.40E-05	5.45E-07
2.26E+01	1.82E+03	3.60E+03	9.36E+00	1.30E-02	9.06E-03	2.99E-03	4.30E-04	2.53E-05	5.86E-07
2.42E+01	1.83E+03	3.60E+03	9.48E+00	1.11E-02	7.78E-03	2.56E-03	3.71E-04	2.21E-05	5.19E-07
2.59E+01	1.83E+03	3.60E+03	9.61E+00	8.83E-03	6.16E-03	2.03E-03	2.94E-04	1.77E-05	4.25E-07
2.78E+01	1.83E+03	3.60E+03	9.75E+00	6.35E-03	4.43E-03	1.46E-03	2.12E-04	1.29E-05	3.16E-07
2.98E+01	1.83E+03	3.60E+03	9.90E+00	4.03E-03	2.81E-03	9.23E-04	1.35E-04	8.29E-06	2.07E-07
3.20E+01	1.83E+03	3.60E+03	1.01E+01	2.17E-03	1.51E-03	4.96E-04	7.28E-05	4.52E-06	1.15E-07
3.44E+01	1.84E+03	3.60E+03	1.02E+01	9.44E-04	6.56E-04	2.15E-04	3.17E-05	1.99E-06	5.17E-08
3.71E+01	1.84E+03	3.60E+03	1.04E+01	3.10E-04	2.16E-04	7.07E-05	1.04E-05	6.64E-07	1.76E-08
3.99E+01	1.84E+03	3.60E+03	1.06E+01	7.10E-05	4.93E-05	1.62E-05	2.39E-06	1.54E-07	4.16E-09

1

time averaged (tav = 3600. s) volume concentration: maximum concentration (volume fraction) along centerline.

downwind distance x (m)	height z (m)	maximum concentration c(x,0,z)	time of max conc (s)	cloud duration (s)
-5.18E+00	0.00E+00	0.00E+00	1.81E+03	3.60E+03
-4.14E+00	0.00E+00	3.82E-02	1.80E+03	3.60E+03
-3.11E+00	0.00E+00	5.49E-02	1.80E+03	3.60E+03
-2.07E+00	0.00E+00	6.62E-02	1.80E+03	3.60E+03
-1.04E+00	0.00E+00	7.54E-02	1.80E+03	3.60E+03
-1.79E-07	0.00E+00	8.28E-02	1.80E+03	3.60E+03
1.04E+00	0.00E+00	8.77E-02	1.80E+03	3.60E+03
2.07E+00	0.00E+00	8.29E-02	1.80E+03	3.60E+03
3.11E+00	0.00E+00	2.40E-02	1.80E+03	3.60E+03
4.14E+00	0.00E+00	2.42E-02	1.80E+03	3.60E+03
5.18E+00	0.00E+00	2.47E-02	1.81E+03	3.60E+03
5.22E+00	0.00E+00	2.46E-02	1.81E+03	3.60E+03
5.27E+00	0.00E+00	2.45E-02	1.81E+03	3.60E+03
5.33E+00	0.00E+00	2.44E-02	1.81E+03	3.60E+03

5.39E+00	0.00E+00	2.43E-02	1.81E+03	3.60E+03
5.45E+00	0.00E+00	2.42E-02	1.81E+03	3.60E+03
5.52E+00	0.00E+00	2.41E-02	1.81E+03	3.60E+03
5.60E+00	0.00E+00	2.39E-02	1.81E+03	3.60E+03
5.68E+00	0.00E+00	2.38E-02	1.81E+03	3.60E+03
5.77E+00	0.00E+00	2.37E-02	1.81E+03	3.60E+03
5.87E+00	0.00E+00	2.35E-02	1.81E+03	3.60E+03
5.98E+00	0.00E+00	2.34E-02	1.81E+03	3.60E+03
6.09E+00	0.00E+00	2.32E-02	1.81E+03	3.60E+03
6.22E+00	0.00E+00	2.31E-02	1.81E+03	3.60E+03
6.36E+00	0.00E+00	2.29E-02	1.81E+03	3.60E+03
6.51E+00	0.00E+00	2.27E-02	1.81E+03	3.60E+03
6.67E+00	0.00E+00	2.25E-02	1.81E+03	3.60E+03
6.85E+00	0.00E+00	2.23E-02	1.81E+03	3.60E+03
7.04E+00	0.00E+00	2.21E-02	1.81E+03	3.60E+03
7.25E+00	0.00E+00	2.19E-02	1.81E+03	3.60E+03
7.48E+00	0.00E+00	2.17E-02	1.81E+03	3.60E+03
7.72E+00	0.00E+00	2.15E-02	1.81E+03	3.60E+03
7.99E+00	0.00E+00	2.13E-02	1.81E+03	3.60E+03
8.29E+00	0.00E+00	2.10E-02	1.81E+03	3.60E+03
8.61E+00	0.00E+00	2.08E-02	1.81E+03	3.60E+03
8.95E+00	0.00E+00	2.06E-02	1.81E+03	3.60E+03
9.33E+00	0.00E+00	2.04E-02	1.81E+03	3.60E+03
9.74E+00	0.00E+00	2.02E-02	1.81E+03	3.60E+03
1.02E+01	0.00E+00	2.00E-02	1.81E+03	3.60E+03
1.07E+01	0.00E+00	1.98E-02	1.81E+03	3.60E+03
1.12E+01	0.00E+00	1.96E-02	1.81E+03	3.60E+03
1.18E+01	0.00E+00	1.94E-02	1.81E+03	3.60E+03
1.24E+01	0.00E+00	1.91E-02	1.81E+03	3.60E+03
1.31E+01	0.00E+00	1.89E-02	1.81E+03	3.60E+03
1.38E+01	0.00E+00	1.86E-02	1.81E+03	3.60E+03
1.46E+01	0.00E+00	1.83E-02	1.82E+03	3.60E+03
1.55E+01	0.00E+00	1.78E-02	1.82E+03	3.60E+03
1.65E+01	0.00E+00	1.71E-02	1.82E+03	3.60E+03
1.75E+01	0.00E+00	1.61E-02	1.82E+03	3.60E+03
1.86E+01	0.00E+00	1.46E-02	1.82E+03	3.60E+03
1.98E+01	8.49E-01	1.28E-02	1.82E+03	3.60E+03
2.12E+01	1.36E+00	1.25E-02	1.82E+03	3.60E+03
2.26E+01	1.66E+00	1.31E-02	1.82E+03	3.60E+03
2.42E+01	1.94E+00	1.23E-02	1.83E+03	3.60E+03
2.59E+01	2.26E+00	1.16E-02	1.83E+03	3.60E+03
2.78E+01	2.61E+00	1.10E-02	1.83E+03	3.60E+03
2.98E+01	3.00E+00	1.04E-02	1.83E+03	3.60E+03
3.20E+01	3.44E+00	9.88E-03	1.83E+03	3.60E+03
3.44E+01	3.93E+00	9.41E-03	1.84E+03	3.60E+03
3.71E+01	4.48E+00	8.97E-03	1.84E+03	3.60E+03
3.99E+01	5.09E+00	8.55E-03	1.84E+03	3.60E+03

CPWRST0.DAT

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17.50,	13.42,	351.84450
17.50,	-13.42,	351.84450
17.50,	17.89,	19.88510
17.50,	-17.89,	19.88510
17.50,	22.36,	.42767
17.50,	-22.36,	.42767
18.62,	.00,	11022.03000
18.62,	4.52,	7736.24400
18.62,	-4.52,	7736.24400
18.62,	9.04,	2557.09800
18.62,	-9.04,	2557.09800
18.62,	13.55,	364.18580
18.62,	-13.55,	364.18580
18.62,	18.07,	20.78595
18.62,	-18.07,	20.78595
18.62,	22.59,	.45472
18.62,	-22.59,	.45472
19.85,	.00,	11603.80000
19.85,	4.57,	8136.19300
19.85,	-4.57,	8136.19300
19.85,	9.13,	2687.40900
19.85,	-9.13,	2687.40900
19.85,	13.70,	384.11330
19.85,	-13.70,	384.11330
19.85,	18.27,	22.14671
19.85,	-18.27,	22.14671
19.85,	22.84,	.49330
19.85,	-22.84,	.49330
21.18,	.00,	12441.61000
21.18,	4.62,	8714.49200
21.18,	-4.62,	8714.49200
21.18,	9.24,	2876.33200
21.18,	-9.24,	2876.33200
21.18,	13.86,	412.61510
21.18,	-13.86,	412.61510

21.18,	18.48,	24.03873
21.18,	-18.48,	24.03873
21.18,	23.11,	.54526
21.18,	-23.11,	.54526
22.63,	.00,	12953.98000
22.63,	4.68,	9063.70900
22.63,	-4.68,	9063.70900
22.63,	9.36,	2989.34900
22.63,	-9.36,	2989.34900
22.63,	14.04,	430.41750
22.63,	-14.04,	430.41750
22.63,	18.72,	25.34446
22.63,	-18.72,	25.34446
22.63,	23.40,	.58554
22.63,	-23.40,	.58554
24.21,	.00,	11130.58000
24.21,	4.74,	7779.59200
24.21,	-4.74,	7779.59200
24.21,	9.48,	2563.85700
24.21,	-9.48,	2563.85700
24.21,	14.22,	370.52710
24.21,	-14.22,	370.52710
24.21,	18.96,	22.05429
24.21,	-18.96,	22.05429
24.21,	23.71,	.51917
24.21,	-23.71,	.51917
25.93,	.00,	8827.10200
25.93,	4.81,	6163.04100
25.93,	-4.81,	6163.04100
25.93,	9.61,	2029.52000
25.93,	-9.61,	2029.52000
25.93,	14.42,	294.39390
25.93,	-14.42,	294.39390
25.93,	19.22,	17.71411
25.93,	-19.22,	17.71411
25.93,	24.03,	.42507
25.93,	-24.03,	.42507
27.80,	.00,	6347.70900
27.80,	4.88,	4427.25300
27.80,	-4.88,	4427.25300
27.80,	9.75,	1456.76300
27.80,	-9.75,	1456.76300
27.80,	14.63,	212.09360
27.80,	-14.63,	212.09360
27.80,	19.50,	12.90179
27.80,	-19.50,	12.90179
27.80,	24.38,	.31579
27.80,	-24.38,	.31579
29.83,	.00,	4027.32100
29.83,	4.95,	2805.93300
29.83,	-4.95,	2805.93300
29.83,	9.90,	922.53720
29.83,	-9.90,	922.53720
29.83,	14.85,	134.80790
29.83,	-14.85,	134.80790
29.83,	19.81,	8.29074
29.83,	-19.81,	8.29074

```
29.83,       24.76,        .20695
29.83,      -24.76,        .20695
32.04,         .00,    2170.12900
32.04,        5.03,    1510.41100
32.04,       -5.03,    1510.41100
32.04,       10.07,     496.19210
32.04,      -10.07,     496.19210
32.04,       15.10,      72.77146
32.04,      -15.10,      72.77146
32.04,       20.13,       4.52479
32.04,      -20.13,       4.52479
32.04,       25.17,        .11509
32.04,      -25.17,        .11509
34.44,         .00,     943.69470
34.44,        5.12,     656.13430
34.44,       -5.12,     656.13430
34.44,       10.24,     215.37270
34.44,      -10.24,     215.37270
34.44,       15.36,      31.70102
34.44,      -15.36,      31.70102
34.44,       20.48,       1.99296
34.44,      -20.48,       1.99296
34.44,       25.60,        .05171
34.44,      -25.60,        .05171
37.06,         .00,     310.45900
37.06,        5.21,     215.63780
37.06,       -5.21,     215.63780
37.06,       10.43,      70.72358
37.06,      -10.43,      70.72358
37.06,       15.64,      10.44705
37.06,      -15.64,      10.44705
37.06,       20.85,        .66403
37.06,      -20.85,        .66403
37.06,       26.07,        .01759
37.06,      -26.07,        .01759
39.90,         .00,      71.03161
39.90,        5.32,      49.28806
39.90,       -5.32,      49.28806
39.90,       10.63,      16.15187
39.90,      -10.63,      16.15187
39.90,       15.95,       2.39423
39.90,      -15.95,       2.39423
39.90,       21.27,        .15385
39.90,      -21.27,        .15385
39.90,       26.59,        .00416
39.90,      -26.59,        .00416
```

SLAB MODELING RESULTS: WORST-CASE SCENARIO, DISTANCE TO 150 PPM AMMONIA

```
                    SESSION INFORMATION

INPUT DATA FILE NAME :  cppwrst5.DTA
OUTPUT LIST FILE NAME : cppwrst5.LST


GRAPHICS DATA FILE NAME : cppwrst5.DAT
GRAPHICS PLOT FILE NAME : cppwrst5.XZ
```

```
problem input

  idspl =         1
  ncalc =         1
  wms   =   .017031
  cps   =   2170.00
  tbp   =    239.72
  cmed0 =       .00
  dhe   =  1370840.
  cpsl  =   4294.00
  rhosl =    682.80
  spb   =   2132.52
  spc   =    -32.98
  ts    =    239.72
  qs    =       .32
  as    =    107.15
  tsd   =     3600.
  qtis  =       .00
  hs    =       .00
  tav   =   3600.00
  xffm  =     38.60
  zp(1) =      1.50
  zp(2) =       .00
  zp(3) =       .00
  zp(4) =       .00
  z0    =   .010000
  za    =     10.00
  ua    =      1.50
  ta    =    300.37
  rh    =     50.00
  stab  =      6.00


release gas properties

 molecular weight of source gas (kg)               - wms  =  1.7031E-02
```

```
 vapor heat capacity, const. p.  (j/kg-k)          - cps  =  2.1700E+03
 temperature of source gas (k)                     - ts   =  2.3972E+02
 density of source gas (kg/m3)                     - rhos =  8.6582E-01
 boiling point temperature                         - tbp  =  2.3972E+02
 liquid mass fraction                              - cmed0=  0.0000E+00
 liquid heat capacity (j/kg-k)                     - cpsl =  4.2940E+03
 heat of vaporization (j/kg)                       - dhe  =  1.3708E+06
 liquid source density (kg/m3)                     - rhosl=  6.8280E+02
 saturation pressure constant                      - spa  =  1.0315E+01
 saturation pressure constant (k)                  - spb  =  2.1325E+03
 saturation pressure constant (k)                  - spc  = -3.2980E+01


spill characteristics

 spill type                                        - idspl=          1
 mass source rate (kg/s)                           - qs   =  3.1737E-01
 continuous source duration (s)                    - tsd  =  3.6000E+03
 continuous source mass (kg)                       - qtcs =  1.1425E+03
 instantaneous source mass (kg)                    - qtis =  0.0000E+00
 source area (m2)                                  - as   =  1.0715E+02
 vertical vapor velocity (m/s)                     - ws   =  3.4209E-03
 source half width (m)                             - bs   =  5.1757E+00
 source height (m)                                 - hs   =  0.0000E+00
 horizontal vapor velocity (m/s)                   - us   =  0.0000E+00


field parameters

 concentration averaging time (s)                  - tav  =  3.6000E+03
 mixing layer height (m)                           - hmx  =  2.6000E+02
 maximum downwind distrace (m)                     - xffm =  3.8600E+01
 concentration measurement height (m)              - zp(1)=  1.5000E+00
                                                   - zp(2)=  0.0000E+00
                                                   - zp(3)=  0.0000E+00
                                                   - zp(4)=  0.0000E+00


ambient meteorological properties

 molecular weight of ambient air (kg)             - wmae  =  2.8754E-02
 heat capacity of ambient air at const p. (j/kg-k)- cpaa  =  1.0158E+03
 density of ambient air (kg/m3)                   - rhoa  =  1.1666E+00
 ambient measurement height (m)                   - za    =  1.0000E+01
 ambient atmospheric pressure (pa=n/m2=j/m3)      - pa    =  1.0133E+05
 ambient wind speed (m/s)                         - ua    =  1.5000E+00
 ambient temperature (k)                          - ta    =  3.0037E+02
 relative humidity (percent)                      - rh    =  5.0000E+01
 ambient friction velocity (m/s)                  - uastr =  4.0547E-02
 atmospheric stability class value                - stab  =  6.0000E+00
 inverse monin-obukhov length (1/m)               - ala   =  8.4887E-02
 surface roughness height (m)                     - z0    =  1.0000E-02


additional parameters

 sub-step multiplier                              - ncalc =          1
```

```
 number of calculational sub-steps                    - nssm  =           3
 acceleration of gravity (m/s2)                       - grav  =  9.8067E+00
 gas constant (j/mol- k)                              - rr    =  8.3143E+00
 von karman constant                                  - xk    =  4.1000E-01
1
```

instantaneous spatially averaged cloud parameters

x	zc	h	bb	b	bbx	bx	cv	rho	t	u	ua
-5.18E+00	0.00E+00	0.00E+00	5.18E+00	4.66E+00	5.18E+00	5.18E+00	0.00E+00	1.17E+00	3.00E+02	0.00E+00	0.00E+00
-4.14E+00	0.00E+00	5.42E-01	5.22E+00	4.66E+00	5.69E+00	5.69E+00	2.47E-02	1.16E+00	2.99E+02	3.27E-01	3.39E-01
-3.11E+00	0.00E+00	7.12E-01	5.26E+00	4.66E+00	6.21E+00	6.21E+00	3.52E-02	1.16E+00	2.98E+02	3.45E-01	3.83E-01
-2.07E+00	0.00E+00	8.87E-01	5.31E+00	4.66E+00	6.73E+00	6.73E+00	4.21E-02	1.16E+00	2.97E+02	3.44E-01	4.20E-01
-1.04E+00	0.00E+00	1.10E+00	5.38E+00	4.66E+00	7.25E+00	7.25E+00	4.74E-02	1.16E+00	2.97E+02	3.25E-01	4.58E-01
-1.79E-07	0.00E+00	1.40E+00	5.49E+00	4.66E+00	7.76E+00	7.76E+00	5.12E-02	1.16E+00	2.97E+02	2.89E-01	5.06E-01
1.04E+00	0.00E+00	1.96E+00	5.70E+00	4.66E+00	8.28E+00	8.28E+00	5.27E-02	1.16E+00	2.96E+02	2.31E-01	5.81E-01
2.07E+00	0.00E+00	3.20E+00	6.62E+00	4.66E+00	8.80E+00	8.80E+00	4.64E-02	1.16E+00	2.97E+02	1.62E-01	7.07E-01
3.11E+00	0.00E+00	1.31E+00	7.60E+00	4.67E+00	9.32E+00	9.32E+00	1.30E-02	1.16E+00	2.99E+02	1.41E+00	6.52E-01
4.14E+00	0.00E+00	1.53E+00	7.72E+00	4.69E+00	9.83E+00	9.83E+00	1.31E-02	1.16E+00	2.99E+02	1.32E+00	6.61E-01
5.18E+00	0.00E+00	1.73E+00	7.82E+00	4.70E+00	1.04E+01	1.04E+01	1.34E-02	1.16E+00	2.99E+02	1.27E+00	6.72E-01
5.22E+00	1.46E-05	1.74E+00	7.83E+00	4.70E+00	1.04E+01	1.04E+01	1.33E-02	1.16E+00	2.99E+02	1.26E+00	6.73E-01
5.27E+00	6.33E-05	1.75E+00	7.83E+00	4.70E+00	1.04E+01	1.04E+01	1.33E-02	1.16E+00	2.99E+02	1.26E+00	6.73E-01
5.33E+00	1.55E-04	1.75E+00	7.83E+00	4.70E+00	1.05E+01	1.05E+01	1.32E-02	1.16E+00	2.99E+02	1.26E+00	6.74E-01
5.38E+00	3.01E-04	1.76E+00	7.84E+00	4.70E+00	1.06E+01	1.06E+01	1.32E-02	1.16E+00	2.99E+02	1.26E+00	6.74E-01
5.45E+00	5.12E-04	1.77E+00	7.84E+00	4.70E+00	1.06E+01	1.06E+01	1.31E-02	1.16E+00	2.99E+02	1.25E+00	6.75E-01
5.52E+00	8.06E-04	1.78E+00	7.85E+00	4.70E+00	1.07E+01	1.07E+01	1.31E-02	1.16E+00	2.99E+02	1.25E+00	6.75E-01
5.59E+00	1.20E-03	1.79E+00	7.85E+00	4.70E+00	1.08E+01	1.08E+01	1.30E-02	1.16E+00	2.99E+02	1.25E+00	6.76E-01
5.67E+00	1.71E-03	1.80E+00	7.86E+00	4.70E+00	1.08E+01	1.08E+01	1.29E-02	1.16E+00	2.99E+02	1.25E+00	6.77E-01
5.76E+00	2.37E-03	1.82E+00	7.87E+00	4.70E+00	1.09E+01	1.09E+01	1.29E-02	1.16E+00	2.99E+02	1.25E+00	6.78E-01
5.86E+00	3.21E-03	1.83E+00	7.87E+00	4.70E+00	1.10E+01	1.10E+01	1.28E-02	1.16E+00	2.99E+02	1.24E+00	6.78E-01
5.97E+00	4.27E-03	1.84E+00	7.88E+00	4.70E+00	1.11E+01	1.11E+01	1.27E-02	1.16E+00	2.99E+02	1.24E+00	6.79E-01
6.08E+00	5.58E-03	1.86E+00	7.89E+00	4.70E+00	1.13E+01	1.13E+01	1.26E-02	1.16E+00	2.99E+02	1.24E+00	6.80E-01
6.20E+00	7.19E-03	1.88E+00	7.90E+00	4.70E+00	1.14E+01	1.14E+01	1.25E-02	1.16E+00	2.99E+02	1.24E+00	6.81E-01
6.34E+00	9.18E-03	1.90E+00	7.91E+00	4.70E+00	1.15E+01	1.15E+01	1.24E-02	1.16E+00	2.99E+02	1.23E+00	6.83E-01
6.49E+00	1.16E-02	1.92E+00	7.92E+00	4.70E+00	1.17E+01	1.17E+01	1.23E-02	1.16E+00	2.99E+02	1.23E+00	6.84E-01
6.65E+00	1.46E-02	1.94E+00	7.93E+00	4.70E+00	1.18E+01	1.18E+01	1.22E-02	1.16E+00	2.99E+02	1.23E+00	6.85E-01
6.82E+00	1.81E-02	1.96E+00	7.94E+00	4.70E+00	1.20E+01	1.20E+01	1.20E-02	1.16E+00	3.00E+02	1.22E+00	6.87E-01
7.01E+00	2.24E-02	1.98E+00	7.95E+00	4.70E+00	1.22E+01	1.22E+01	1.19E-02	1.16E+00	3.00E+02	1.22E+00	6.88E-01
7.21E+00	2.76E-02	2.01E+00	7.97E+00	4.70E+00	1.24E+01	1.24E+01	1.18E-02	1.16E+00	3.00E+02	1.21E+00	6.90E-01
7.43E+00	3.38E-02	2.04E+00	7.99E+00	4.70E+00	1.26E+01	1.26E+01	1.16E-02	1.16E+00	3.00E+02	1.21E+00	6.92E-01
7.68E+00	4.13E-02	2.07E+00	8.00E+00	4.70E+00	1.29E+01	1.29E+01	1.15E-02	1.16E+00	3.00E+02	1.20E+00	6.94E-01
7.94E+00	5.01E-02	2.10E+00	8.02E+00	4.70E+00	1.31E+01	1.31E+01	1.13E-02	1.16E+00	3.00E+02	1.20E+00	6.96E-01
8.23E+00	6.07E-02	2.14E+00	8.04E+00	4.71E+00	1.34E+01	1.34E+01	1.12E-02	1.16E+00	3.00E+02	1.19E+00	6.99E-01
8.54E+00	7.34E-02	2.17E+00	8.06E+00	4.71E+00	1.37E+01	1.37E+01	1.10E-02	1.16E+00	3.00E+02	1.19E+00	7.01E-01
8.87E+00	8.83E-02	2.21E+00	8.09E+00	4.71E+00	1.41E+01	1.40E+01	1.08E-02	1.16E+00	3.00E+02	1.18E+00	7.04E-01
9.24E+00	1.06E-01	2.25E+00	8.11E+00	4.71E+00	1.44E+01	1.44E+01	1.06E-02	1.16E+00	3.00E+02	1.18E+00	7.07E-01
9.64E+00	1.27E-01	2.30E+00	8.14E+00	4.71E+00	1.48E+01	1.48E+01	1.05E-02	1.16E+00	3.00E+02	1.17E+00	7.10E-01
1.01E+01	1.52E-01	2.34E+00	8.17E+00	4.71E+00	1.53E+01	1.52E+01	1.03E-02	1.16E+00	3.00E+02	1.16E+00	7.13E-01
1.05E+01	1.81E-01	2.39E+00	8.20E+00	4.71E+00	1.57E+01	1.57E+01	1.01E-02	1.16E+00	3.00E+02	1.16E+00	7.16E-01
1.11E+01	2.16E-01	2.44E+00	8.23E+00	4.71E+00	1.62E+01	1.62E+01	9.90E-03	1.16E+00	3.00E+02	1.15E+00	7.19E-01
1.16E+01	2.57E-01	2.49E+00	8.27E+00	4.71E+00	1.68E+01	1.68E+01	9.70E-03	1.16E+00	3.00E+02	1.15E+00	7.23E-01
1.22E+01	3.05E-01	2.55E+00	8.31E+00	4.72E+00	1.74E+01	1.74E+01	9.50E-03	1.16E+00	3.00E+02	1.14E+00	7.27E-01
1.29E+01	3.61E-01	2.60E+00	8.35E+00	4.72E+00	1.81E+01	1.81E+01	9.30E-03	1.16E+00	3.00E+02	1.13E+00	7.31E-01
1.36E+01	4.28E-01	2.66E+00	8.39E+00	4.72E+00	1.88E+01	1.88E+01	9.09E-03	1.16E+00	3.00E+02	1.13E+00	7.35E-01
1.44E+01	5.05E-01	2.72E+00	8.44E+00	4.72E+00	1.95E+01	1.95E+01	8.89E-03	1.16E+00	3.00E+02	1.12E+00	7.39E-01
1.52E+01	5.96E-01	2.79E+00	8.49E+00	4.72E+00	2.04E+01	2.04E+01	8.68E-03	1.16E+00	3.00E+02	1.12E+00	7.44E-01
1.61E+01	7.03E-01	2.85E+00	8.54E+00	4.72E+00	2.13E+01	2.13E+01	8.47E-03	1.16E+00	3.00E+02	1.11E+00	7.48E-01
1.71E+01	8.28E-01	2.92E+00	8.60E+00	4.72E+00	2.23E+01	2.23E+01	8.26E-03	1.16E+00	3.00E+02	1.11E+00	7.53E-01
1.82E+01	9.73E-01	2.99E+00	8.66E+00	4.73E+00	2.34E+01	2.34E+01	8.05E-03	1.16E+00	3.00E+02	1.10E+00	7.58E-01
1.94E+01	1.14E+00	3.07E+00	8.72E+00	4.73E+00	2.46E+01	2.46E+01	7.84E-03	1.17E+00	3.00E+02	1.09E+00	7.63E-01
2.07E+01	1.34E+00	3.14E+00	8.79E+00	4.73E+00	2.59E+01	2.59E+01	7.62E-03	1.17E+00	3.00E+02	1.09E+00	7.68E-01
2.21E+01	1.57E+00	3.22E+00	8.86E+00	4.73E+00	2.73E+01	2.73E+01	7.41E-03	1.17E+00	3.00E+02	1.08E+00	7.73E-01
2.36E+01	1.83E+00	3.35E+00	8.93E+00	4.73E+00	2.88E+01	2.88E+01	7.06E-03	1.17E+00	3.00E+02	1.09E+00	7.93E-01
2.52E+01	2.13E+00	3.50E+00	9.00E+00	4.73E+00	3.04E+01	3.04E+01	6.67E-03	1.17E+00	3.00E+02	1.09E+00	8.17E-01
2.70E+01	2.46E+00	3.62E+00	9.08E+00	4.73E+00	3.22E+01	3.22E+01	6.33E-03	1.17E+00	3.00E+02	1.10E+00	8.42E-01
2.90E+01	2.83E+00	3.73E+00	9.16E+00	4.72E+00	3.41E+01	3.41E+01	6.04E-03	1.17E+00	3.00E+02	1.11E+00	8.68E-01
3.11E+01	3.25E+00	3.82E+00	9.24E+00	4.72E+00	3.63E+01	3.63E+01	5.77E-03	1.17E+00	3.00E+02	1.12E+00	8.94E-01
3.34E+01	3.71E+00	3.90E+00	9.32E+00	4.71E+00	3.86E+01	3.86E+01	5.54E-03	1.17E+00	3.00E+02	1.14E+00	9.22E-01
3.59E+01	4.23E+00	3.96E+00	9.39E+00	4.70E+00	4.11E+01	4.11E+01	5.32E-03	1.17E+00	3.00E+02	1.16E+00	9.51E-01
3.86E+01	4.81E+00	4.00E+00	9.48E+00	4.69E+00	4.38E+01	4.38E+01	5.12E-03	1.17E+00	3.00E+02	1.18E+00	9.81E-01

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x	cm	cmv	cmda	cmw	cmwv	wc	vg	ug	w	v	vx
-5.18E+00	0.00E+00	0.00E+00	9.88E-01	1.18E-02	1.18E-02	0.00E+00	0.00E+00	0.00E+00	8.64E-01	2.97E-02	0.00E+00
-4.14E+00	1.48E-02	1.48E-02	9.74E-01	1.16E-02	1.16E-02	0.00E+00	0.00E+00	0.00E+00	4.00E-02	6.60E-03	7.30E-02
-3.11E+00	2.12E-02	2.12E-02	9.67E-01	1.16E-02	1.16E-02	0.00E+00	0.00E+00	0.00E+00	3.42E-02	8.03E-03	7.91E-02
-2.07E+00	2.54E-02	2.54E-02	9.63E-01	1.15E-02	1.15E-02	0.00E+00	0.00E+00	0.00E+00	2.93E-02	1.05E-02	8.48E-02
-1.04E+00	2.86E-02	2.86E-02	9.60E-01	1.15E-02	1.15E-02	0.00E+00	0.00E+00	0.00E+00	2.56E-02	1.46E-02	9.12E-02

-1.79E-07	3.10E-02	3.10E-02	9.58E-01	1.15E-02	1.15E-02	0.00E+00	0.00E+00	0.00E+00	2.43E-02	2.14E-02	9.98E-02
1.04E+00	3.19E-02	3.19E-02	9.57E-01	1.14E-02	1.14E-02	0.00E+00	0.00E+00	0.00E+00	2.72E-02	3.26E-02	1.14E-01
2.07E+00	2.80E-02	2.80E-02	9.61E-01	1.15E-02	1.15E-02	0.00E+00	0.00E+00	0.00E+00	3.46E-02	4.97E-02	1.41E-01
3.11E+00	7.76E-03	7.76E-03	9.81E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	1.18E-01	6.73E-02	9.78E-02
4.14E+00	7.82E-03	7.82E-03	9.80E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	9.59E-02	5.92E-02	1.04E-01
5.18E+00	7.98E-03	7.98E-03	9.80E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	8.08E-02	5.33E-02	1.09E-01
5.22E+00	7.95E-03	7.95E-03	9.80E-01	1.17E-02	1.17E-02	8.03E-04	0.00E+00	0.00E+00	8.00E-02	5.28E-02	1.09E-01
5.27E+00	7.92E-03	7.92E-03	9.80E-01	1.17E-02	1.17E-02	1.67E-03	0.00E+00	0.00E+00	7.97E-02	5.27E-02	1.09E-01
5.33E+00	7.89E-03	7.89E-03	9.80E-01	1.17E-02	1.17E-02	2.61E-03	0.00E+00	0.00E+00	7.93E-02	5.25E-02	1.10E-01
5.38E+00	7.86E-03	7.86E-03	9.80E-01	1.17E-02	1.17E-02	3.62E-03	0.00E+00	0.00E+00	7.88E-02	5.23E-02	1.10E-01
5.45E+00	7.82E-03	7.82E-03	9.80E-01	1.17E-02	1.17E-02	4.71E-03	0.00E+00	0.00E+00	7.84E-02	5.21E-02	1.10E-01
5.52E+00	7.78E-03	7.78E-03	9.80E-01	1.17E-02	1.17E-02	5.89E-03	0.00E+00	0.00E+00	7.79E-02	5.19E-02	1.10E-01
5.59E+00	7.74E-03	7.74E-03	9.81E-01	1.17E-02	1.17E-02	7.16E-03	0.00E+00	0.00E+00	7.74E-02	5.17E-02	1.11E-01
5.67E+00	7.70E-03	7.70E-03	9.81E-01	1.17E-02	1.17E-02	8.53E-03	0.00E+00	0.00E+00	7.68E-02	5.15E-02	1.11E-01
5.76E+00	7.65E-03	7.65E-03	9.81E-01	1.17E-02	1.17E-02	1.00E-02	0.00E+00	0.00E+00	7.62E-02	5.12E-02	1.11E-01
5.86E+00	7.60E-03	7.60E-03	9.81E-01	1.17E-02	1.17E-02	1.16E-02	0.00E+00	0.00E+00	7.55E-02	5.10E-02	1.12E-01
5.97E+00	7.55E-03	7.55E-03	9.81E-01	1.17E-02	1.17E-02	1.33E-02	0.00E+00	0.00E+00	7.47E-02	5.07E-02	1.12E-01
6.08E+00	7.50E-03	7.50E-03	9.81E-01	1.17E-02	1.17E-02	1.51E-02	0.00E+00	0.00E+00	7.40E-02	5.04E-02	1.13E-01
6.20E+00	7.44E-03	7.44E-03	9.81E-01	1.17E-02	1.17E-02	1.71E-02	0.00E+00	0.00E+00	7.31E-02	5.00E-02	1.13E-01
6.34E+00	7.37E-03	7.37E-03	9.81E-01	1.17E-02	1.17E-02	1.92E-02	0.00E+00	0.00E+00	7.22E-02	4.97E-02	1.14E-01
6.49E+00	7.31E-03	7.31E-03	9.81E-01	1.17E-02	1.17E-02	2.15E-02	0.00E+00	0.00E+00	7.12E-02	4.93E-02	1.14E-01
6.65E+00	7.24E-03	7.24E-03	9.81E-01	1.17E-02	1.17E-02	2.39E-02	0.00E+00	0.00E+00	7.02E-02	4.89E-02	1.15E-01
6.82E+00	7.16E-03	7.16E-03	9.81E-01	1.17E-02	1.17E-02	2.65E-02	0.00E+00	0.00E+00	6.91E-02	4.85E-02	1.16E-01
7.01E+00	7.08E-03	7.08E-03	9.81E-01	1.17E-02	1.17E-02	2.93E-02	0.00E+00	0.00E+00	6.79E-02	4.81E-02	1.16E-01
7.21E+00	7.00E-03	7.00E-03	9.81E-01	1.17E-02	1.17E-02	3.22E-02	0.00E+00	0.00E+00	6.65E-02	4.75E-02	1.17E-01
7.43E+00	6.92E-03	6.92E-03	9.81E-01	1.17E-02	1.17E-02	3.54E-02	0.00E+00	0.00E+00	6.51E-02	4.69E-02	1.18E-01
7.68E+00	6.83E-03	6.83E-03	9.81E-01	1.17E-02	1.17E-02	3.88E-02	0.00E+00	0.00E+00	6.36E-02	4.64E-02	1.20E-01
7.94E+00	6.74E-03	6.74E-03	9.82E-01	1.17E-02	1.17E-02	4.24E-02	0.00E+00	0.00E+00	6.20E-02	4.57E-02	1.21E-01
8.23E+00	6.64E-03	6.64E-03	9.82E-01	1.17E-02	1.17E-02	4.62E-02	0.00E+00	0.00E+00	6.04E-02	4.51E-02	1.22E-01
8.54E+00	6.54E-03	6.54E-03	9.82E-01	1.17E-02	1.17E-02	5.04E-02	0.00E+00	0.00E+00	5.87E-02	4.44E-02	1.24E-01
8.87E+00	6.44E-03	6.44E-03	9.82E-01	1.17E-02	1.17E-02	5.47E-02	0.00E+00	0.00E+00	5.70E-02	4.38E-02	1.25E-01
9.24E+00	6.33E-03	6.33E-03	9.82E-01	1.17E-02	1.17E-02	5.94E-02	0.00E+00	0.00E+00	5.53E-02	4.31E-02	1.27E-01
9.64E+00	6.23E-03	6.23E-03	9.82E-01	1.17E-02	1.17E-02	6.43E-02	0.00E+00	0.00E+00	5.35E-02	4.23E-02	1.29E-01
1.01E+01	6.12E-03	6.12E-03	9.82E-01	1.17E-02	1.17E-02	6.96E-02	0.00E+00	0.00E+00	5.18E-02	4.16E-02	1.32E-01
1.05E+01	6.00E-03	6.00E-03	9.82E-01	1.18E-02	1.18E-02	7.52E-02	0.00E+00	0.00E+00	5.00E-02	4.09E-02	1.34E-01
1.11E+01	5.89E-03	5.89E-03	9.82E-01	1.18E-02	1.18E-02	8.11E-02	0.00E+00	0.00E+00	4.82E-02	4.01E-02	1.37E-01
1.16E+01	5.77E-03	5.77E-03	9.82E-01	1.18E-02	1.18E-02	8.74E-02	0.00E+00	0.00E+00	4.64E-02	3.93E-02	1.40E-01
1.22E+01	5.65E-03	5.65E-03	9.83E-01	1.18E-02	1.18E-02	9.40E-02	0.00E+00	0.00E+00	4.46E-02	3.85E-02	1.43E-01
1.29E+01	5.53E-03	5.53E-03	9.83E-01	1.18E-02	1.18E-02	1.01E-01	0.00E+00	0.00E+00	4.28E-02	3.78E-02	1.47E-01
1.36E+01	5.41E-03	5.41E-03	9.83E-01	1.18E-02	1.18E-02	1.09E-01	0.00E+00	0.00E+00	4.11E-02	3.70E-02	1.51E-01
1.44E+01	5.28E-03	5.28E-03	9.83E-01	1.18E-02	1.18E-02	1.16E-01	0.00E+00	0.00E+00	3.93E-02	3.62E-02	1.55E-01
1.52E+01	5.16E-03	5.16E-03	9.83E-01	1.18E-02	1.18E-02	1.25E-01	0.00E+00	0.00E+00	3.77E-02	3.54E-02	1.60E-01
1.61E+01	5.03E-03	5.03E-03	9.83E-01	1.18E-02	1.18E-02	1.33E-01	0.00E+00	0.00E+00	3.60E-02	3.46E-02	1.65E-01
1.71E+01	4.91E-03	4.91E-03	9.83E-01	1.18E-02	1.18E-02	1.43E-01	0.00E+00	0.00E+00	3.44E-02	3.38E-02	1.71E-01
1.82E+01	4.78E-03	4.78E-03	9.83E-01	1.18E-02	1.18E-02	1.53E-01	0.00E+00	0.00E+00	3.28E-02	3.30E-02	1.77E-01
1.94E+01	4.66E-03	4.66E-03	9.84E-01	1.18E-02	1.18E-02	1.63E-01	0.00E+00	0.00E+00	3.13E-02	3.22E-02	1.83E-01
2.07E+01	4.53E-03	4.53E-03	9.84E-01	1.18E-02	1.18E-02	1.74E-01	0.00E+00	0.00E+00	2.98E-02	3.15E-02	1.90E-01
2.21E+01	4.40E-03	4.40E-03	9.84E-01	1.18E-02	1.18E-02	1.85E-01	0.00E+00	0.00E+00	2.83E-02	3.07E-02	1.97E-01
2.36E+01	4.19E-03	4.19E-03	9.84E-01	1.18E-02	1.18E-02	1.93E-01	0.00E+00	0.00E+00	6.71E-02	2.96E-02	2.07E-01
2.52E+01	3.96E-03	3.96E-03	9.84E-01	1.18E-02	1.18E-02	1.99E-01	0.00E+00	0.00E+00	5.86E-02	2.84E-02	2.17E-01
2.70E+01	3.76E-03	3.76E-03	9.84E-01	1.18E-02	1.18E-02	2.07E-01	0.00E+00	0.00E+00	5.07E-02	2.75E-02	2.26E-01
2.90E+01	3.58E-03	3.58E-03	9.85E-01	1.18E-02	1.18E-02	2.15E-01	0.00E+00	0.00E+00	4.38E-02	2.68E-02	2.35E-01
3.11E+01	3.43E-03	3.43E-03	9.85E-01	1.18E-02	1.18E-02	2.24E-01	0.00E+00	0.00E+00	3.79E-02	2.62E-02	2.44E-01
3.34E+01	3.29E-03	3.29E-03	9.85E-01	1.18E-02	1.18E-02	2.33E-01	0.00E+00	0.00E+00	3.29E-02	2.57E-02	2.53E-01
3.59E+01	3.16E-03	3.16E-03	9.85E-01	1.18E-02	1.18E-02	2.44E-01	0.00E+00	0.00E+00	2.87E-02	2.55E-02	2.60E-01
3.86E+01	3.04E-03	3.04E-03	9.85E-01	1.18E-02	1.18E-02	2.55E-01	0.00E+00	0.00E+00	2.52E-02	2.53E-02	2.68E-01

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time averaged (tav = 3600. s) volume concentration: concentration contour parameters

c(x,y,z,t) = cc(x) * (erf(xa)-erf(xb)) * (erf(ya)-erf(yb)) * (exp(-za*za)+exp(-zb*zb))

```
   c(x,y,z,t) = concentration (volume fraction) at (x,y,z,t)
            x = downwind distance (m)
            y = crosswind horizontal distance (m)
            z = height (m)
            t = time (s)

          erf = error functon
           xa = (x-xc+bx)/(sr2*betax)
           xb = (x-xc-bx)/(sr2*betax)
           ya = (y+b)/(sr2*betac)
           yb = (y-b)/(sr2*betac)
          exp = exponential function
```

```
za = (z-zc)/(sr2*sig)
zb = (z+zc)/(sr2*sig)
sr2 = sqrt(2.0)
```

x	cc(x)	b(x)	betac(x)	zc(x)	sig(x)	t	xc(t)	bx(t)	betax(t)
-5.18E+00	0.00E+00	4.66E+00	1.30E+00	0.00E+00	0.00E+00	8.09E+00	0.00E+00	5.18E+00	4.23E-02
-4.14E+00	4.78E-03	4.66E+00	1.36E+00	0.00E+00	3.13E-01	1.04E+01	5.18E-01	5.69E+00	4.65E-02
-3.11E+00	6.87E-03	4.66E+00	1.41E+00	0.00E+00	4.11E-01	1.27E+01	1.04E+00	6.21E+00	5.07E-02
-2.07E+00	8.31E-03	4.66E+00	1.48E+00	0.00E+00	5.12E-01	1.80E+01	1.55E+00	6.73E+00	5.49E-02
-1.04E+00	9.48E-03	4.66E+00	1.57E+00	0.00E+00	6.32E-01	2.34E+01	2.07E+00	7.25E+00	5.92E-02
-1.79E-07	1.05E-02	4.66E+00	1.71E+00	0.00E+00	8.06E-01	2.78E+01	2.59E+00	7.76E+00	6.34E-02
1.04E+00	1.12E-02	4.66E+00	1.93E+00	0.00E+00	1.13E+00	3.22E+01	3.11E+00	8.28E+00	6.76E-02
2.07E+00	1.15E-02	4.66E+00	2.75E+00	0.00E+00	1.85E+00	3.29E+01	3.62E+00	8.80E+00	7.19E-02
3.11E+00	3.70E-03	4.67E+00	3.50E+00	0.00E+00	7.56E-01	3.35E+01	4.14E+00	9.32E+00	7.61E-02
4.14E+00	3.77E-03	4.69E+00	3.59E+00	0.00E+00	8.85E-01	3.43E+01	4.66E+00	9.83E+00	8.03E-02
5.18E+00	3.89E-03	4.70E+00	3.67E+00	0.00E+00	9.97E-01	3.50E+01	5.18E+00	1.04E+01	8.45E-02
5.22E+00	3.88E-03	4.70E+00	3.67E+00	1.46E-05	1.00E+00	3.51E+01	5.22E+00	1.04E+01	8.49E-02
5.27E+00	3.87E-03	4.70E+00	3.67E+00	6.33E-05	1.01E+00	3.52E+01	5.27E+00	1.04E+01	8.53E-02
5.33E+00	3.85E-03	4.70E+00	3.68E+00	1.55E-04	1.01E+00	3.53E+01	5.33E+00	1.05E+01	8.57E-02
5.38E+00	3.84E-03	4.70E+00	3.68E+00	3.01E-04	1.02E+00	3.54E+01	5.38E+00	1.06E+01	8.62E-02
5.45E+00	3.83E-03	4.70E+00	3.68E+00	5.12E-04	1.02E+00	3.55E+01	5.45E+00	1.06E+01	8.67E-02
5.52E+00	3.81E-03	4.70E+00	3.69E+00	8.06E-04	1.03E+00	3.56E+01	5.52E+00	1.07E+01	8.73E-02
5.59E+00	3.80E-03	4.70E+00	3.69E+00	1.20E-03	1.03E+00	3.57E+01	5.59E+00	1.08E+01	8.79E-02
5.67E+00	3.78E-03	4.70E+00	3.70E+00	1.71E-03	1.04E+00	3.58E+01	5.67E+00	1.08E+01	8.86E-02
5.76E+00	3.76E-03	4.70E+00	3.70E+00	2.37E-03	1.05E+00	3.60E+01	5.76E+00	1.09E+01	8.93E-02
5.86E+00	3.74E-03	4.70E+00	3.71E+00	3.21E-03	1.05E+00	3.61E+01	5.86E+00	1.10E+01	9.01E-02
5.97E+00	3.72E-03	4.70E+00	3.71E+00	4.27E-03	1.06E+00	3.63E+01	5.97E+00	1.11E+01	9.10E-02
6.08E+00	3.70E-03	4.70E+00	3.72E+00	5.58E-03	1.07E+00	3.65E+01	6.08E+00	1.13E+01	9.19E-02
6.20E+00	3.68E-03	4.70E+00	3.73E+00	7.19E-03	1.08E+00	3.67E+01	6.20E+00	1.14E+01	9.29E-02
6.34E+00	3.66E-03	4.70E+00	3.74E+00	9.18E-03	1.09E+00	3.69E+01	6.34E+00	1.15E+01	9.40E-02
6.49E+00	3.64E-03	4.70E+00	3.75E+00	1.16E-02	1.10E+00	3.72E+01	6.49E+00	1.17E+01	9.52E-02
6.65E+00	3.61E-03	4.70E+00	3.76E+00	1.46E-02	1.11E+00	3.74E+01	6.65E+00	1.18E+01	9.65E-02
6.82E+00	3.59E-03	4.70E+00	3.77E+00	1.81E-02	1.12E+00	3.77E+01	6.82E+00	1.20E+01	9.79E-02
7.01E+00	3.56E-03	4.70E+00	3.78E+00	2.24E-02	1.13E+00	3.80E+01	7.01E+00	1.22E+01	9.95E-02
7.21E+00	3.54E-03	4.70E+00	3.79E+00	2.76E-02	1.15E+00	3.83E+01	7.21E+00	1.24E+01	1.01E-01
7.43E+00	3.52E-03	4.70E+00	3.80E+00	3.38E-02	1.16E+00	3.87E+01	7.43E+00	1.26E+01	1.03E-01
7.68E+00	3.49E-03	4.70E+00	3.82E+00	4.13E-02	1.17E+00	3.91E+01	7.68E+00	1.29E+01	1.05E-01
7.94E+00	3.47E-03	4.70E+00	3.84E+00	5.01E-02	1.19E+00	3.95E+01	7.94E+00	1.31E+01	1.07E-01
8.23E+00	3.44E-03	4.71E+00	3.85E+00	6.07E-02	1.20E+00	4.00E+01	8.23E+00	1.34E+01	1.09E-01
8.54E+00	3.42E-03	4.71E+00	3.87E+00	7.34E-02	1.21E+00	4.05E+01	8.54E+00	1.37E+01	1.12E-01
8.87E+00	3.40E-03	4.71E+00	3.89E+00	8.83E-02	1.23E+00	4.11E+01	8.87E+00	1.40E+01	1.15E-01
9.24E+00	3.38E-03	4.71E+00	3.92E+00	1.06E-01	1.24E+00	4.17E+01	9.24E+00	1.44E+01	1.18E-01
9.64E+00	3.37E-03	4.71E+00	3.94E+00	1.27E-01	1.25E+00	4.24E+01	9.64E+00	1.48E+01	1.21E-01
1.01E+01	3.36E-03	4.71E+00	3.96E+00	1.52E-01	1.26E+00	4.32E+01	1.01E+01	1.52E+01	1.25E-01
1.05E+01	3.35E-03	4.71E+00	3.99E+00	1.81E-01	1.27E+00	4.40E+01	1.05E+01	1.57E+01	1.28E-01
1.11E+01	3.35E-03	4.71E+00	4.02E+00	2.16E-01	1.28E+00	4.49E+01	1.11E+01	1.62E+01	1.33E-01
1.16E+01	3.35E-03	4.71E+00	4.05E+00	2.57E-01	1.29E+00	4.58E+01	1.16E+01	1.68E+01	1.37E-01
1.22E+01	3.37E-03	4.72E+00	4.09E+00	3.05E-01	1.29E+00	4.69E+01	1.22E+01	1.74E+01	1.42E-01
1.29E+01	3.39E-03	4.72E+00	4.13E+00	3.61E-01	1.29E+00	4.80E+01	1.29E+01	1.81E+01	1.47E-01
1.36E+01	3.42E-03	4.72E+00	4.17E+00	4.28E-01	1.29E+00	4.93E+01	1.36E+01	1.88E+01	1.53E-01
1.44E+01	3.47E-03	4.72E+00	4.21E+00	5.05E-01	1.28E+00	5.07E+01	1.44E+01	1.95E+01	1.60E-01
1.52E+01	3.54E-03	4.72E+00	4.26E+00	5.96E-01	1.26E+00	5.22E+01	1.52E+01	2.04E+01	1.66E-01
1.61E+01	3.63E-03	4.72E+00	4.31E+00	7.03E-01	1.24E+00	5.39E+01	1.61E+01	2.13E+01	1.74E-01
1.71E+01	3.76E-03	4.72E+00	4.36E+00	8.28E-01	1.21E+00	5.57E+01	1.71E+01	2.23E+01	1.82E-01
1.82E+01	3.92E-03	4.73E+00	4.42E+00	9.73E-01	1.17E+00	5.76E+01	1.82E+01	2.34E+01	1.91E-01
1.94E+01	4.15E-03	4.73E+00	4.49E+00	1.14E+00	1.11E+00	5.98E+01	1.94E+01	2.46E+01	2.01E-01
2.07E+01	4.47E-03	4.73E+00	4.56E+00	1.34E+00	1.04E+00	6.21E+01	2.07E+01	2.59E+01	2.11E-01
2.21E+01	4.92E-03	4.73E+00	4.63E+00	1.57E+00	9.53E-01	6.47E+01	2.21E+01	2.73E+01	2.23E-01
2.36E+01	4.86E-03	4.73E+00	4.71E+00	1.83E+00	9.67E-01	6.75E+01	2.36E+01	2.88E+01	2.35E-01
2.52E+01	4.66E-03	4.73E+00	4.80E+00	2.13E+00	1.01E+00	7.05E+01	2.52E+01	3.04E+01	2.48E-01
2.70E+01	4.49E-03	4.73E+00	4.89E+00	2.46E+00	1.05E+00	7.38E+01	2.70E+01	3.22E+01	2.63E-01
2.90E+01	4.35E-03	4.72E+00	4.98E+00	2.83E+00	1.08E+00	7.73E+01	2.90E+01	3.41E+01	2.79E-01
3.11E+01	4.23E-03	4.72E+00	5.09E+00	3.25E+00	1.10E+00	8.11E+01	3.11E+01	3.63E+01	2.96E-01
3.34E+01	4.13E-03	4.71E+00	5.20E+00	3.71E+00	1.13E+00	8.51E+01	3.34E+01	3.86E+01	3.15E-01
3.59E+01	4.04E-03	4.70E+00	5.32E+00	4.23E+00	1.14E+00	8.95E+01	3.59E+01	4.11E+01	3.35E-01
3.86E+01	3.97E-03	4.69E+00	5.45E+00	4.81E+00	1.16E+00	9.41E+01	3.86E+01	4.38E+01	3.57E-01

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time averaged (tav = 3600. s) volume concentration: concentration in the z = 1.50 plane.

downwind distance x (m)	time of max conc (s)	cloud duration (s)	effective half width bbc (m)	average concentration (volume fraction) at (x,y,z) y/bbc= 0.0	y/bbc= 0.5	y/bbc= 1.0	y/bbc= 1.5	y/bbc= 2.0	y/bbc= 2.5
-5.18E+00	1.81E+03	3.60E+03	5.18E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
-4.14E+00	1.80E+03	3.60E+03	5.22E+00	3.84E-07	3.59E-07	1.31E-07	3.75E-09	3.95E-12	0.00E+00
-3.11E+00	1.80E+03	3.60E+03	5.26E+00	7.04E-05	6.51E-05	2.36E-05	7.73E-07	1.14E-09	0.00E+00
-2.07E+00	1.80E+03	3.60E+03	5.32E+00	9.05E-04	8.27E-04	2.98E-04	1.13E-05	2.41E-08	0.00E+00
-1.04E+00	1.80E+03	3.60E+03	5.40E+00	4.52E-03	4.05E-03	1.45E-03	6.53E-05	2.15E-07	0.00E+00
-1.79E-07	1.80E+03	3.60E+03	5.52E+00	1.47E-02	1.28E-02	4.54E-03	2.52E-04	1.38E-06	4.40E-10

1.04E+00	1.80E+03	3.60E+03	5.74E+00	3.64E-02	3.04E-02	1.07E-02	7.60E-04	7.78E-06	9.91E-09
2.07E+00	1.80E+03	3.60E+03	6.67E+00	5.96E-02	4.48E-02	1.53E-02	1.72E-03	5.33E-05	4.22E-07
3.11E+00	1.80E+03	3.60E+03	7.65E+00	3.35E-03	2.41E-03	8.07E-04	1.06E-04	4.89E-06	7.44E-08
4.14E+00	1.80E+03	3.60E+03	7.78E+00	5.76E-03	4.12E-03	1.38E-03	1.83E-04	8.64E-06	1.37E-07
5.18E+00	1.81E+03	3.60E+03	7.90E+00	7.95E-03	5.68E-03	1.90E-03	2.54E-04	1.22E-05	2.00E-07
5.22E+00	1.81E+03	3.60E+03	7.90E+00	8.04E-03	5.74E-03	1.92E-03	2.57E-04	1.24E-05	2.03E-07
5.27E+00	1.81E+03	3.60E+03	7.91E+00	8.08E-03	5.78E-03	1.93E-03	2.58E-04	1.25E-05	2.05E-07
5.33E+00	1.81E+03	3.60E+03	7.91E+00	8.13E-03	5.81E-03	1.94E-03	2.60E-04	1.26E-05	2.07E-07
5.38E+00	1.81E+03	3.60E+03	7.92E+00	8.18E-03	5.85E-03	1.95E-03	2.62E-04	1.27E-05	2.09E-07
5.45E+00	1.81E+03	3.60E+03	7.92E+00	8.24E-03	5.89E-03	1.97E-03	2.64E-04	1.28E-05	2.11E-07
5.52E+00	1.81E+03	3.60E+03	7.93E+00	8.30E-03	5.93E-03	1.98E-03	2.65E-04	1.29E-05	2.13E-07
5.59E+00	1.81E+03	3.60E+03	7.94E+00	8.36E-03	5.97E-03	1.99E-03	2.68E-04	1.30E-05	2.16E-07
5.67E+00	1.81E+03	3.60E+03	7.94E+00	8.43E-03	6.02E-03	2.01E-03	2.70E-04	1.31E-05	2.18E-07
5.76E+00	1.81E+03	3.60E+03	7.95E+00	8.49E-03	6.06E-03	2.02E-03	2.72E-04	1.32E-05	2.21E-07
5.86E+00	1.81E+03	3.60E+03	7.96E+00	8.56E-03	6.11E-03	2.04E-03	2.74E-04	1.34E-05	2.24E-07
5.97E+00	1.81E+03	3.60E+03	7.97E+00	8.64E-03	6.16E-03	2.06E-03	2.77E-04	1.35E-05	2.27E-07
6.08E+00	1.81E+03	3.60E+03	7.98E+00	8.71E-03	6.22E-03	2.08E-03	2.79E-04	1.37E-05	2.31E-07
6.20E+00	1.81E+03	3.60E+03	7.99E+00	8.79E-03	6.27E-03	2.09E-03	2.82E-04	1.38E-05	2.34E-07
6.34E+00	1.81E+03	3.60E+03	8.00E+00	8.87E-03	6.33E-03	2.11E-03	2.85E-04	1.40E-05	2.38E-07
6.49E+00	1.81E+03	3.60E+03	8.01E+00	8.96E-03	6.38E-03	2.13E-03	2.88E-04	1.42E-05	2.42E-07
6.65E+00	1.81E+03	3.60E+03	8.03E+00	9.04E-03	6.44E-03	2.15E-03	2.90E-04	1.44E-05	2.46E-07
6.82E+00	1.81E+03	3.60E+03	8.04E+00	9.12E-03	6.50E-03	2.17E-03	2.93E-04	1.46E-05	2.51E-07
7.01E+00	1.81E+03	3.60E+03	8.06E+00	9.21E-03	6.56E-03	2.19E-03	2.96E-04	1.47E-05	2.55E-07
7.21E+00	1.81E+03	3.60E+03	8.08E+00	9.31E-03	6.63E-03	2.21E-03	3.00E-04	1.50E-05	2.61E-07
7.43E+00	1.81E+03	3.60E+03	8.10E+00	9.40E-03	6.69E-03	2.23E-03	3.03E-04	1.52E-05	2.66E-07
7.68E+00	1.81E+03	3.60E+03	8.12E+00	9.49E-03	6.75E-03	2.25E-03	3.06E-04	1.54E-05	2.72E-07
7.94E+00	1.81E+03	3.60E+03	8.14E+00	9.58E-03	6.81E-03	2.27E-03	3.09E-04	1.56E-05	2.77E-07
8.23E+00	1.81E+03	3.60E+03	8.17E+00	9.66E-03	6.87E-03	2.29E-03	3.12E-04	1.58E-05	2.84E-07
8.54E+00	1.81E+03	3.60E+03	8.19E+00	9.74E-03	6.92E-03	2.30E-03	3.15E-04	1.61E-05	2.90E-07
8.87E+00	1.81E+03	3.60E+03	8.22E+00	9.82E-03	6.97E-03	2.32E-03	3.18E-04	1.63E-05	2.96E-07
9.24E+00	1.81E+03	3.60E+03	8.26E+00	9.89E-03	7.01E-03	2.33E-03	3.20E-04	1.65E-05	3.03E-07
9.64E+00	1.81E+03	3.60E+03	8.29E+00	9.95E-03	7.05E-03	2.35E-03	3.23E-04	1.67E-05	3.10E-07
1.01E+01	1.81E+03	3.60E+03	8.33E+00	1.00E-02	7.09E-03	2.36E-03	3.25E-04	1.69E-05	3.17E-07
1.05E+01	1.81E+03	3.60E+03	8.37E+00	1.01E-02	7.12E-03	2.37E-03	3.27E-04	1.71E-05	3.24E-07
1.11E+01	1.81E+03	3.60E+03	8.41E+00	1.01E-02	7.15E-03	2.37E-03	3.29E-04	1.74E-05	3.32E-07
1.16E+01	1.81E+03	3.60E+03	8.46E+00	1.01E-02	7.17E-03	2.38E-03	3.30E-04	1.76E-05	3.40E-07
1.22E+01	1.81E+03	3.60E+03	8.51E+00	1.02E-02	7.19E-03	2.39E-03	3.32E-04	1.78E-05	3.48E-07
1.29E+01	1.81E+03	3.60E+03	8.56E+00	1.02E-02	7.20E-03	2.39E-03	3.33E-04	1.80E-05	3.57E-07
1.36E+01	1.81E+03	3.60E+03	8.62E+00	1.02E-02	7.22E-03	2.39E-03	3.35E-04	1.82E-05	3.67E-07
1.44E+01	1.82E+03	3.60E+03	8.69E+00	1.03E-02	7.24E-03	2.40E-03	3.37E-04	1.85E-05	3.77E-07
1.52E+01	1.82E+03	3.60E+03	8.76E+00	1.03E-02	7.27E-03	2.41E-03	3.39E-04	1.88E-05	3.89E-07
1.61E+01	1.82E+03	3.60E+03	8.83E+00	1.04E-02	7.33E-03	2.43E-03	3.43E-04	1.91E-05	4.03E-07
1.71E+01	1.82E+03	3.60E+03	8.91E+00	1.06E-02	7.44E-03	2.46E-03	3.49E-04	1.97E-05	4.20E-07
1.82E+01	1.82E+03	3.60E+03	9.00E+00	1.09E-02	7.64E-03	2.52E-03	3.59E-04	2.04E-05	4.44E-07
1.94E+01	1.82E+03	3.60E+03	9.10E+00	1.14E-02	7.97E-03	2.63E-03	3.76E-04	2.16E-05	4.78E-07
2.07E+01	1.82E+03	3.60E+03	9.20E+00	1.21E-02	8.48E-03	2.80E-03	4.01E-04	2.33E-05	5.25E-07
2.21E+01	1.82E+03	3.60E+03	9.31E+00	1.30E-02	9.11E-03	3.00E-03	4.32E-04	2.53E-05	5.81E-07
2.36E+01	1.83E+03	3.60E+03	9.43E+00	1.19E-02	8.32E-03	2.74E-03	3.96E-04	2.35E-05	5.49E-07
2.52E+01	1.83E+03	3.60E+03	9.56E+00	9.77E-03	6.83E-03	2.25E-03	3.26E-04	1.95E-05	4.65E-07
2.70E+01	1.83E+03	3.60E+03	9.69E+00	7.35E-03	5.13E-03	1.69E-03	2.45E-04	1.49E-05	3.61E-07
2.90E+01	1.83E+03	3.60E+03	9.84E+00	4.94E-03	3.45E-03	1.13E-03	1.65E-04	1.01E-05	2.51E-07
3.11E+01	1.83E+03	3.60E+03	1.00E+01	2.88E-03	2.01E-03	6.60E-04	9.66E-05	5.98E-06	1.51E-07
3.34E+01	1.84E+03	3.60E+03	1.02E+01	1.39E-03	9.69E-04	3.18E-04	4.68E-05	2.93E-06	7.53E-08
3.59E+01	1.84E+03	3.60E+03	1.03E+01	5.27E-04	3.66E-04	1.20E-04	1.77E-05	1.12E-06	2.94E-08
3.86E+01	1.84E+03	3.60E+03	1.05E+01	1.45E-04	1.01E-04	3.30E-05	4.89E-06	3.12E-07	8.36E-09

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time averaged (tav = 3600. s) volume concentration: maximum concentration (volume fraction) along centerline.

downwind distance x (m)	height z (m)	maximum concentration c(x,0,z)	time of max conc (s)	cloud duration (s)
-5.18E+00	0.00E+00	0.00E+00	1.81E+03	3.60E+03
-4.14E+00	0.00E+00	3.82E-02	1.80E+03	3.60E+03
-3.11E+00	0.00E+00	5.49E-02	1.80E+03	3.60E+03
-2.07E+00	0.00E+00	6.62E-02	1.80E+03	3.60E+03
-1.04E+00	0.00E+00	7.54E-02	1.80E+03	3.60E+03
-1.79E-07	0.00E+00	8.28E-02	1.80E+03	3.60E+03
1.04E+00	0.00E+00	8.77E-02	1.80E+03	3.60E+03
2.07E+00	0.00E+00	8.29E-02	1.80E+03	3.60E+03
3.11E+00	0.00E+00	2.40E-02	1.80E+03	3.60E+03

4.14E+00	0.00E+00	2.42E-02	1.80E+03	3.60E+03
5.18E+00	0.00E+00	2.47E-02	1.81E+03	3.60E+03
5.22E+00	0.00E+00	2.46E-02	1.81E+03	3.60E+03
5.27E+00	0.00E+00	2.45E-02	1.81E+03	3.60E+03
5.33E+00	0.00E+00	2.44E-02	1.81E+03	3.60E+03
5.38E+00	0.00E+00	2.43E-02	1.81E+03	3.60E+03
5.45E+00	0.00E+00	2.42E-02	1.81E+03	3.60E+03
5.52E+00	0.00E+00	2.41E-02	1.81E+03	3.60E+03
5.59E+00	0.00E+00	2.40E-02	1.81E+03	3.60E+03
5.67E+00	0.00E+00	2.38E-02	1.81E+03	3.60E+03
5.76E+00	0.00E+00	2.37E-02	1.81E+03	3.60E+03
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 9.24,      -20.64,        .30268
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10.55,       -8.37,    2366.98400
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10.55,      -12.55,     326.92010
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11.62,      -21.15,        .34008
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12.22,       -4.25,    7186.01900
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12.22,       -8.51,    2385.40600
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12.22,      -12.76,     331.99190
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12.22,      -17.02,      17.77296
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12.22,      -21.27,        .34820
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12.88,       -8.56,    2389.29600
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12.88,      -12.85,     333.46060
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12.88,      -17.13,      17.98834
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13.60,       -8.62,    2393.18300
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13.60,      -21.56,        .36670
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14.37,       -8.69,    2398.56600
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14.37,      -21.72,        .37709
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16.14,       -8.83,    2426.33400
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16.14,      -13.25,     342.81600
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16.14,      -17.67,      19.13259
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16.14,      -22.08,        .40279
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17.14,       -4.46,    7439.02300
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17.14,       -8.91,    2461.05900
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17.14,      -13.37,     348.88400
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17.14,      -17.83,      19.65383
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17.14,      -22.29,        .42046
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19.40,        9.10,    2633.40300
19.40,       -9.10,    2633.40300
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19.40,      -13.65,     375.91510
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22.08,       -9.31,    3004.01200
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22.08,      -13.97,     431.92970
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22.08,      -23.29,        .58149
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23.59,      -18.87,      23.47168
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25.24,      -19.12,      19.51495
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27.03,       -4.85,    5126.94900
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27.03,       -9.69,    1687.53000
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27.03,      -14.54,     245.32990
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27.03,      -24.24,        .36079
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28.97,       -9.84,    1133.52800
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28.97,      -19.68,      10.12626
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31.09,      -24.99,        .15087
33.39,         .00,    1393.12400
33.39,        5.08,     969.04130
33.39,       -5.08,     969.04130
33.39,       10.16,     318.19500
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33.39,       15.25,      46.76334
33.39,      -15.25,      46.76334
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35.88,       20.69,       1.12090
35.88,      -20.69,       1.12090
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35.88,      -25.86,        .02942
38.60,         .00,     145.05580
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38.60,       10.54,      33.01088
38.60,      -10.54,      33.01088
38.60,       15.81,       4.88572
38.60,      -15.81,       4.88572
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38.60,      -26.35,        .00836
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SLAB MODELING RESULTS: ALTERNATIVE SCENARIO, DISTANCE TO 75 PPM AMMONIA

```
                    SESSION INFORMATION

              INPUT DATA FILE NAME :  ALTSMALL.DTA
              OUTPUT LIST FILE NAME : ALTSMALL.LST



              GRAPHICS DATA FILE NAME : ALTSMALL.DAT
              GRAPHICS PLOT FILE NAME : ALTSMALL.XZ




problem input

  idspl =         1
  ncalc =         1
  wms   =   .017031
  cps   =   2170.00
  tbp   =    240.00
  cmed0 =       .00

  dhe   =  1370840.
  cpsl  =   4294.00
  rhosl =    682.80
  spb   =   2132.52
  spc   =    -32.98
  ts    =    239.00
  qs    =       .01
  as    =      1.55
  tsd   =     3600.
  qtis  =       .00
  hs    =       .00
  tav   =   3600.00
  xffm  =     53.66
  zp(1) =      1.50
  zp(2) =       .00
  zp(3) =       .00
  zp(4) =       .00
  z0    =   .010000
  za    =     10.00
  ua    =      3.00
  ta    =    300.37
  rh    =     50.00
  stab  =      4.00


release gas properties

 molecular weight of source gas (kg)              - wms  =  1.7031E-02
 vapor heat capacity, const. p.  (j/kg-k)         - cps  =  2.1700E+03
 temperature of source gas (k)                    - ts   =  2.4000E+02
```

```
 density of source gas (kg/m3)                      - rhos =  8.6481E-01
 boiling point temperature                          - tbp  =  2.4000E+02
 liquid mass fraction                               - cmed0=  0.0000E+00
 liquid heat capacity (j/kg-k)                      - cpsl =  4.2940E+03

 heat of vaporization (j/kg)                        - dhe  =  1.3708E+06
 liquid source density (kg/m3)                      - rhosl=  6.8280E+02
 saturation pressure constant                       - spa  =  1.0301E+01
 saturation pressure constant (k)                   - spb  =  2.1325E+03
 saturation pressure constant (k)                   - spc  = -3.2980E+01


spill characteristics

 spill type                                         - idspl=          1
 mass source rate (kg/s)                            - qs   =  6.8494E-03
 continuous source duration (s)                     - tsd  =  3.6000E+03
 continuous source mass (kg)                        - qtcs =  2.4658E+01
 instantaneous source mass (kg)                     - qtis =  0.0000E+00
 source area (m2)                                   - as   =  1.5520E+00
 vertical vapor velocity (m/s)                      - ws   =  5.1031E-03
 source half width (m)                              - bs   =  6.2290E-01
 source height (m)                                  - hs   =  0.0000E+00
 horizontal vapor velocity (m/s)                    - us   =  0.0000E+00


field parameters

 concentration averaging time (s)                   - tav  =  3.6000E+03
 mixing layer height (m)                            - hmx  =  1.0400E+03
 maximum downwind distrace (m)                      - xffm =  5.3660E+01
 concentration measurement height (m)               - zp(1)=  1.5000E+00
                                                    - zp(2)=  0.0000E+00
                                                    - zp(3)=  0.0000E+00
                                                    - zp(4)=  0.0000E+00


ambient meteorological properties

 molecular weight of ambient air (kg)             - wmae  =  2.8754E-02
 heat capacity of ambient air at const p. (j/kg-k)- cpaa  =  1.0158E+03
 density of ambient air (kg/m3)                   - rhoa  =  1.1666E+00
 ambient measurement height (m)                   - za    =  1.0000E+01
 ambient atmospheric pressure (pa=n/m2=j/m3)      - pa    =  1.0133E+05
 ambient wind speed (m/s)                         - ua    =  3.0000E+00
 ambient temperature (k)                          - ta    =  3.0037E+02
 relative humidity (percent)                      - rh    =  5.0000E+01
 ambient friction velocity (m/s)                  - uastr =  1.7831E-01
 atmospheric stability class value                - stab  =  4.0000E+00
 inverse monin-obukhov length (1/m)               - ala   =  0.0000E+00
 surface roughness height (m)                     - z0    =  1.0000E-02


additional parameters

 sub-step multiplier                              - ncalc =          1
 number of calculational sub-steps                - nssm  =          3
```

```
 acceleration of gravity (m/s2)                    - grav  =  9.8067E+00
 gas constant (j/mol- k)                           - rr    =  8.3143E+00
 von karman constant                               - xk    =  4.1000E-01
1
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instantaneous spatially averaged cloud parameters

x	zc	h	bb	b	bbx	bx	cv	rho	t	u	ua
-6.23E-01	0.00E+00	0.00E+00	6.23E-01	5.61E-01	6.23E-01	6.23E-01	0.00E+00	1.17E+00	3.00E+02	0.00E+00	0.00E+00
-4.98E-01	0.00E+00	1.14E-01	6.32E-01	5.61E-01	6.85E-01	6.85E-01	1.02E-02	1.16E+00	3.00E+02	6.75E-01	6.79E-01
-3.74E-01	0.00E+00	1.62E-01	6.39E-01	5.61E-01	7.47E-01	7.47E-01	1.18E-02	1.16E+00	3.00E+02	8.11E-01	8.17E-01
-2.49E-01	0.00E+00	2.02E-01	6.46E-01	5.61E-01	8.10E-01	8.10E-01	1.26E-02	1.16E+00	2.99E+02	8.97E-01	9.05E-01
-1.25E-01	0.00E+00	2.38E-01	6.53E-01	5.61E-01	8.72E-01	8.72E-01	1.33E-02	1.16E+00	2.99E+02	9.60E-01	9.70E-01
-5.22E-08	0.00E+00	2.70E-01	6.60E-01	5.61E-01	9.34E-01	9.34E-01	1.37E-02	1.16E+00	2.99E+02	1.01E+00	1.02E+00
1.25E-01	0.00E+00	3.01E-01	6.67E-01	5.61E-01	9.97E-01	9.97E-01	1.40E-02	1.16E+00	2.99E+02	1.05E+00	1.07E+00
2.49E-01	0.00E+00	3.29E-01	6.74E-01	5.61E-01	1.06E+00	1.06E+00	1.43E-02	1.16E+00	2.99E+02	1.09E+00	1.10E+00
3.74E-01	0.00E+00	3.57E-01	6.81E-01	5.61E-01	1.12E+00	1.12E+00	1.45E-02	1.16E+00	2.99E+02	1.12E+00	1.14E+00
4.98E-01	0.00E+00	3.83E-01	6.89E-01	5.61E-01	1.18E+00	1.18E+00	1.47E-02	1.16E+00	2.99E+02	1.15E+00	1.17E+00
6.23E-01	0.00E+00	4.09E-01	6.96E-01	5.61E-01	1.25E+00	1.25E+00	1.48E-02	1.16E+00	2.99E+02	1.17E+00	1.19E+00
6.32E-01	7.35E-07	4.11E-01	6.96E-01	5.61E-01	1.25E+00	1.25E+00	1.47E-02	1.16E+00	2.99E+02	1.17E+00	1.20E+00
6.42E-01	3.36E-06	4.13E-01	6.97E-01	5.61E-01	1.27E+00	1.26E+00	1.46E-02	1.16E+00	2.99E+02	1.17E+00	1.20E+00
6.54E-01	8.65E-06	4.15E-01	6.98E-01	5.61E-01	1.28E+00	1.28E+00	1.45E-02	1.16E+00	2.99E+02	1.18E+00	1.20E+00
6.68E-01	1.76E-05	4.18E-01	6.98E-01	5.61E-01	1.29E+00	1.29E+00	1.44E-02	1.16E+00	2.99E+02	1.18E+00	1.20E+00
6.83E-01	3.17E-05	4.21E-01	6.99E-01	5.61E-01	1.31E+00	1.31E+00	1.42E-02	1.16E+00	2.99E+02	1.18E+00	1.21E+00
7.01E-01	5.25E-05	4.24E-01	7.00E-01	5.61E-01	1.32E+00	1.32E+00	1.40E-02	1.16E+00	2.99E+02	1.19E+00	1.21E+00
7.21E-01	8.24E-05	4.28E-01	7.01E-01	5.61E-01	1.34E+00	1.34E+00	1.38E-02	1.16E+00	2.99E+02	1.19E+00	1.21E+00
7.44E-01	1.24E-04	4.32E-01	7.03E-01	5.61E-01	1.37E+00	1.37E+00	1.36E-02	1.16E+00	2.99E+02	1.19E+00	1.22E+00
7.71E-01	1.82E-04	4.37E-01	7.04E-01	5.61E-01	1.39E+00	1.39E+00	1.34E-02	1.16E+00	2.99E+02	1.20E+00	1.22E+00
8.01E-01	2.60E-04	4.43E-01	7.06E-01	5.61E-01	1.42E+00	1.42E+00	1.31E-02	1.16E+00	2.99E+02	1.20E+00	1.23E+00
8.36E-01	3.63E-04	4.49E-01	7.08E-01	5.61E-01	1.46E+00	1.46E+00	1.28E-02	1.16E+00	2.99E+02	1.21E+00	1.23E+00
8.75E-01	5.01E-04	4.56E-01	7.10E-01	5.61E-01	1.50E+00	1.50E+00	1.25E-02	1.16E+00	2.99E+02	1.22E+00	1.24E+00
9.21E-01	6.80E-04	4.64E-01	7.13E-01	5.61E-01	1.54E+00	1.54E+00	1.22E-02	1.16E+00	3.00E+02	1.23E+00	1.25E+00
9.73E-01	9.13E-04	4.73E-01	7.16E-01	5.61E-01	1.60E+00	1.60E+00	1.18E-02	1.16E+00	3.00E+02	1.23E+00	1.26E+00
1.03E+00	1.21E-03	4.84E-01	7.19E-01	5.61E-01	1.66E+00	1.66E+00	1.14E-02	1.16E+00	3.00E+02	1.24E+00	1.27E+00
1.10E+00	1.59E-03	4.96E-01	7.23E-01	5.61E-01	1.72E+00	1.72E+00	1.10E-02	1.16E+00	3.00E+02	1.26E+00	1.28E+00
1.18E+00	2.08E-03	5.09E-01	7.28E-01	5.61E-01	1.80E+00	1.80E+00	1.05E-02	1.16E+00	3.00E+02	1.27E+00	1.29E+00
1.27E+00	2.68E-03	5.24E-01	7.33E-01	5.61E-01	1.89E+00	1.89E+00	1.01E-02	1.16E+00	3.00E+02	1.28E+00	1.30E+00
1.37E+00	3.44E-03	5.41E-01	7.38E-01	5.61E-01	1.99E+00	1.99E+00	9.57E-03	1.16E+00	3.00E+02	1.29E+00	1.31E+00
1.49E+00	4.37E-03	5.60E-01	7.45E-01	5.61E-01	2.11E+00	2.11E+00	9.05E-03	1.16E+00	3.00E+02	1.31E+00	1.33E+00
1.62E+00	5.52E-03	5.81E-01	7.53E-01	5.61E-01	2.24E+00	2.24E+00	8.52E-03	1.16E+00	3.00E+02	1.33E+00	1.34E+00
1.77E+00	6.91E-03	6.05E-01	7.61E-01	5.61E-01	2.40E+00	2.40E+00	7.98E-03	1.16E+00	3.00E+02	1.34E+00	1.36E+00
1.95E+00	8.60E-03	6.32E-01	7.71E-01	5.61E-01	2.57E+00	2.57E+00	7.44E-03	1.17E+00	3.00E+02	1.36E+00	1.38E+00
2.15E+00	1.06E-02	6.63E-01	7.83E-01	5.61E-01	2.77E+00	2.77E+00	6.89E-03	1.17E+00	3.00E+02	1.38E+00	1.40E+00
2.38E+00	1.30E-02	6.97E-01	7.96E-01	5.61E-01	3.00E+00	3.00E+00	6.35E-03	1.17E+00	3.00E+02	1.41E+00	1.42E+00
2.64E+00	1.59E-02	7.35E-01	8.11E-01	5.61E-01	3.27E+00	3.27E+00	5.82E-03	1.17E+00	3.00E+02	1.43E+00	1.44E+00
2.94E+00	1.92E-02	7.77E-01	8.28E-01	5.60E-01	3.57E+00	3.57E+00	5.30E-03	1.17E+00	3.00E+02	1.45E+00	1.47E+00
3.29E+00	2.31E-02	8.24E-01	8.47E-01	5.60E-01	3.91E+00	3.91E+00	4.79E-03	1.17E+00	3.00E+02	1.48E+00	1.49E+00
3.68E+00	2.76E-02	8.77E-01	8.70E-01	5.60E-01	4.31E+00	4.30E+00	4.31E-03	1.17E+00	3.00E+02	1.51E+00	1.52E+00
4.13E+00	3.28E-02	9.35E-01	8.95E-01	5.60E-01	4.76E+00	4.76E+00	3.86E-03	1.17E+00	3.00E+02	1.53E+00	1.55E+00
4.65E+00	3.87E-02	1.00E+00	9.24E-01	5.60E-01	5.27E+00	5.27E+00	3.43E-03	1.17E+00	3.00E+02	1.56E+00	1.57E+00
5.24E+00	4.53E-02	1.07E+00	9.58E-01	5.60E-01	5.86E+00	5.86E+00	3.03E-03	1.17E+00	3.00E+02	1.59E+00	1.60E+00
5.92E+00	5.28E-02	1.15E+00	9.96E-01	5.60E-01	6.54E+00	6.54E+00	2.66E-03	1.17E+00	3.00E+02	1.63E+00	1.63E+00
6.69E+00	6.11E-02	1.24E+00	1.04E+00	5.60E-01	7.31E+00	7.31E+00	2.32E-03	1.17E+00	3.00E+02	1.66E+00	1.67E+00
7.58E+00	7.03E-02	1.34E+00	1.09E+00	5.60E-01	8.20E+00	8.20E+00	2.01E-03	1.17E+00	3.00E+02	1.69E+00	1.70E+00
8.59E+00	8.05E-02	1.45E+00	1.15E+00	5.60E-01	9.21E+00	9.21E+00	1.73E-03	1.17E+00	3.00E+02	1.72E+00	1.73E+00
9.75E+00	9.16E-02	1.57E+00	1.21E+00	5.60E-01	1.04E+01	1.04E+01	1.48E-03	1.17E+00	3.00E+02	1.76E+00	1.77E+00
1.11E+01	1.04E-01	1.70E+00	1.29E+00	5.60E-01	1.17E+01	1.17E+01	1.26E-03	1.17E+00	3.00E+02	1.79E+00	1.80E+00
1.26E+01	1.17E-01	1.85E+00	1.37E+00	5.60E-01	1.32E+01	1.32E+01	1.06E-03	1.17E+00	3.00E+02	1.83E+00	1.84E+00
1.43E+01	1.30E-01	2.02E+00	1.47E+00	5.60E-01	1.50E+01	1.50E+01	8.94E-04	1.17E+00	3.00E+02	1.87E+00	1.88E+00
1.63E+01	1.45E-01	2.20E+00	1.58E+00	5.60E-01	1.69E+01	1.69E+01	7.47E-04	1.17E+00	3.00E+02	1.91E+00	1.91E+00
1.86E+01	1.61E-01	2.40E+00	1.71E+00	5.60E-01	1.92E+01	1.92E+01	6.20E-04	1.17E+00	3.00E+02	1.95E+00	1.95E+00
2.12E+01	1.77E-01	2.62E+00	1.86E+00	5.60E-01	2.18E+01	2.18E+01	5.13E-04	1.17E+00	3.00E+02	1.98E+00	1.99E+00
2.42E+01	1.95E-01	2.87E+00	2.02E+00	5.60E-01	2.48E+01	2.48E+01	4.21E-04	1.17E+00	3.00E+02	2.02E+00	2.03E+00
2.76E+01	2.13E-01	3.15E+00	2.22E+00	5.60E-01	2.82E+01	2.82E+01	3.45E-04	1.17E+00	3.00E+02	2.06E+00	2.07E+00
3.15E+01	2.31E-01	3.45E+00	2.43E+00	5.60E-01	3.21E+01	3.21E+01	2.81E-04	1.17E+00	3.00E+02	2.10E+00	2.11E+00
3.60E+01	2.51E-01	3.79E+00	2.68E+00	5.60E-01	3.66E+01	3.66E+01	2.27E-04	1.17E+00	3.00E+02	2.14E+00	2.15E+00
4.11E+01	2.70E-01	4.16E+00	2.97E+00	5.60E-01	4.17E+01	4.17E+01	1.84E-04	1.17E+00	3.00E+02	2.19E+00	2.19E+00
4.70E+01	2.91E-01	4.57E+00	3.30E+00	5.60E-01	4.76E+01	4.76E+01	1.48E-04	1.17E+00	3.00E+02	2.23E+00	2.23E+00
5.37E+01	3.11E-01	5.03E+00	3.67E+00	5.60E-01	5.43E+01	5.43E+01	1.18E-04	1.17E+00	3.00E+02	2.27E+00	2.27E+00

1

x	cm	cmv	cmda	cmw	cmwv	wc	vg	ug	w	v	vx
-6.23E-01	0.00E+00	0.00E+00	9.88E-01	1.18E-02	1.18E-02	0.00E+00	0.00E+00	0.00E+00	7.34E-01	9.76E-02	0.00E+00
-4.98E-01	6.08E-03	6.08E-03	9.82E-01	1.18E-02	1.18E-02	0.00E+00	0.00E+00	0.00E+00	2.72E-01	2.20E-02	2.01E-01
-3.74E-01	7.00E-03	7.00E-03	9.81E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	2.38E-01	2.65E-02	2.17E-01
-2.49E-01	7.53E-03	7.53E-03	9.81E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	2.20E-01	2.94E-02	2.25E-01
-1.25E-01	7.89E-03	7.89E-03	9.80E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	2.09E-01	3.15E-02	2.30E-01
-5.22E-08	8.16E-03	8.16E-03	9.80E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	2.01E-01	3.32E-02	2.34E-01

1.25E-01	8.37E-03	8.37E-03	9.80E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	1.95E-01	3.46E-02	2.37E-01
2.49E-01	8.53E-03	8.53E-03	9.80E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	1.90E-01	3.59E-02	2.39E-01
3.74E-01	8.65E-03	8.65E-03	9.80E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	1.85E-01	3.70E-02	2.41E-01
4.98E-01	8.75E-03	8.75E-03	9.80E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	1.82E-01	3.79E-02	2.42E-01
6.23E-01	8.84E-03	8.84E-03	9.79E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	1.78E-01	3.88E-02	2.44E-01
6.32E-01	8.78E-03	8.78E-03	9.80E-01	1.17E-02	1.17E-02	1.91E-04	0.00E+00	0.00E+00	1.78E-01	3.89E-02	2.44E-01
6.42E-01	8.71E-03	8.71E-03	9.80E-01	1.17E-02	1.17E-02	4.06E-04	0.00E+00	0.00E+00	1.78E-01	3.89E-02	2.44E-01
6.54E-01	8.64E-03	8.64E-03	9.80E-01	1.17E-02	1.17E-02	6.48E-04	0.00E+00	0.00E+00	1.77E-01	3.90E-02	2.44E-01
6.68E-01	8.56E-03	8.56E-03	9.80E-01	1.17E-02	1.17E-02	9.19E-04	0.00E+00	0.00E+00	1.77E-01	3.91E-02	2.44E-01
6.83E-01	8.47E-03	8.47E-03	9.80E-01	1.17E-02	1.17E-02	1.22E-03	0.00E+00	0.00E+00	1.77E-01	3.92E-02	2.44E-01
7.01E-01	8.36E-03	8.36E-03	9.80E-01	1.17E-02	1.17E-02	1.56E-03	0.00E+00	0.00E+00	1.76E-01	3.93E-02	2.44E-01
7.21E-01	8.25E-03	8.25E-03	9.80E-01	1.17E-02	1.17E-02	1.94E-03	0.00E+00	0.00E+00	1.76E-01	3.94E-02	2.45E-01
7.44E-01	8.12E-03	8.12E-03	9.80E-01	1.17E-02	1.17E-02	2.36E-03	0.00E+00	0.00E+00	1.75E-01	3.96E-02	2.45E-01
7.71E-01	7.98E-03	7.98E-03	9.80E-01	1.17E-02	1.17E-02	2.82E-03	0.00E+00	0.00E+00	1.75E-01	3.97E-02	2.45E-01
8.01E-01	7.82E-03	7.82E-03	9.80E-01	1.17E-02	1.17E-02	3.33E-03	0.00E+00	0.00E+00	1.74E-01	3.99E-02	2.45E-01
8.36E-01	7.65E-03	7.65E-03	9.81E-01	1.17E-02	1.17E-02	3.89E-03	0.00E+00	0.00E+00	1.73E-01	4.01E-02	2.46E-01
8.75E-01	7.46E-03	7.46E-03	9.81E-01	1.17E-02	1.17E-02	4.49E-03	0.00E+00	0.00E+00	1.72E-01	4.03E-02	2.46E-01
9.21E-01	7.25E-03	7.25E-03	9.81E-01	1.17E-02	1.17E-02	5.15E-03	0.00E+00	0.00E+00	1.72E-01	4.05E-02	2.46E-01
9.73E-01	7.03E-03	7.03E-03	9.81E-01	1.17E-02	1.17E-02	5.85E-03	0.00E+00	0.00E+00	1.71E-01	4.08E-02	2.47E-01
1.03E+00	6.79E-03	6.79E-03	9.81E-01	1.17E-02	1.17E-02	6.59E-03	0.00E+00	0.00E+00	1.70E-01	4.11E-02	2.47E-01
1.10E+00	6.54E-03	6.54E-03	9.82E-01	1.17E-02	1.17E-02	7.38E-03	0.00E+00	0.00E+00	1.69E-01	4.14E-02	2.47E-01
1.18E+00	6.27E-03	6.27E-03	9.82E-01	1.17E-02	1.17E-02	8.21E-03	0.00E+00	0.00E+00	1.67E-01	4.18E-02	2.48E-01
1.27E+00	5.99E-03	5.99E-03	9.82E-01	1.18E-02	1.18E-02	9.06E-03	0.00E+00	0.00E+00	1.66E-01	4.22E-02	2.49E-01
1.37E+00	5.69E-03	5.69E-03	9.83E-01	1.18E-02	1.18E-02	9.94E-03	0.00E+00	0.00E+00	1.65E-01	4.26E-02	2.49E-01
1.49E+00	5.38E-03	5.38E-03	9.83E-01	1.18E-02	1.18E-02	1.08E-02	0.00E+00	0.00E+00	1.64E-01	4.31E-02	2.50E-01
1.62E+00	5.07E-03	5.07E-03	9.83E-01	1.18E-02	1.18E-02	1.17E-02	0.00E+00	0.00E+00	1.62E-01	4.36E-02	2.50E-01
1.77E+00	4.74E-03	4.74E-03	9.83E-01	1.18E-02	1.18E-02	1.26E-02	0.00E+00	0.00E+00	1.61E-01	4.41E-02	2.51E-01
1.95E+00	4.42E-03	4.42E-03	9.84E-01	1.18E-02	1.18E-02	1.34E-02	0.00E+00	0.00E+00	1.59E-01	4.47E-02	2.52E-01
2.15E+00	4.09E-03	4.09E-03	9.84E-01	1.18E-02	1.18E-02	1.43E-02	0.00E+00	0.00E+00	1.57E-01	4.54E-02	2.53E-01
2.38E+00	3.77E-03	3.77E-03	9.84E-01	1.18E-02	1.18E-02	1.50E-02	0.00E+00	0.00E+00	1.55E-01	4.61E-02	2.53E-01
2.64E+00	3.45E-03	3.45E-03	9.85E-01	1.18E-02	1.18E-02	1.57E-02	0.00E+00	0.00E+00	1.54E-01	4.68E-02	2.54E-01
2.94E+00	3.14E-03	3.14E-03	9.85E-01	1.18E-02	1.18E-02	1.63E-02	0.00E+00	0.00E+00	1.52E-01	4.76E-02	2.55E-01
3.29E+00	2.84E-03	2.84E-03	9.85E-01	1.18E-02	1.18E-02	1.68E-02	0.00E+00	0.00E+00	1.50E-01	4.84E-02	2.56E-01
3.68E+00	2.56E-03	2.56E-03	9.86E-01	1.18E-02	1.18E-02	1.72E-02	0.00E+00	0.00E+00	1.47E-01	4.92E-02	2.56E-01
4.13E+00	2.29E-03	2.29E-03	9.86E-01	1.18E-02	1.18E-02	1.76E-02	0.00E+00	0.00E+00	1.45E-01	5.01E-02	2.57E-01
4.65E+00	2.03E-03	2.03E-03	9.86E-01	1.18E-02	1.18E-02	1.77E-02	0.00E+00	0.00E+00	1.43E-01	5.10E-02	2.58E-01
5.24E+00	1.79E-03	1.79E-03	9.86E-01	1.18E-02	1.18E-02	1.78E-02	0.00E+00	0.00E+00	1.41E-01	5.20E-02	2.59E-01
5.92E+00	1.57E-03	1.57E-03	9.87E-01	1.18E-02	1.18E-02	1.78E-02	0.00E+00	0.00E+00	1.39E-01	5.30E-02	2.59E-01
6.69E+00	1.37E-03	1.37E-03	9.87E-01	1.18E-02	1.18E-02	1.76E-02	0.00E+00	0.00E+00	1.37E-01	5.40E-02	2.60E-01
7.58E+00	1.19E-03	1.19E-03	9.87E-01	1.18E-02	1.18E-02	1.73E-02	0.00E+00	0.00E+00	1.34E-01	5.51E-02	2.61E-01
8.59E+00	1.02E-03	1.02E-03	9.87E-01	1.18E-02	1.18E-02	1.69E-02	0.00E+00	0.00E+00	1.32E-01	5.62E-02	2.62E-01
9.75E+00	8.77E-04	8.77E-04	9.87E-01	1.18E-02	1.18E-02	1.64E-02	0.00E+00	0.00E+00	1.30E-01	5.73E-02	2.62E-01
1.11E+01	7.46E-04	7.46E-04	9.87E-01	1.18E-02	1.18E-02	1.58E-02	0.00E+00	0.00E+00	1.28E-01	5.84E-02	2.63E-01
1.26E+01	6.30E-04	6.30E-04	9.88E-01	1.18E-02	1.18E-02	1.52E-02	0.00E+00	0.00E+00	1.26E-01	5.95E-02	2.64E-01
1.43E+01	5.30E-04	5.30E-04	9.88E-01	1.18E-02	1.18E-02	1.44E-02	0.00E+00	0.00E+00	1.24E-01	6.07E-02	2.64E-01
1.63E+01	4.43E-04	4.43E-04	9.88E-01	1.18E-02	1.18E-02	1.37E-02	0.00E+00	0.00E+00	1.22E-01	6.19E-02	2.65E-01
1.86E+01	3.68E-04	3.68E-04	9.88E-01	1.18E-02	1.18E-02	1.29E-02	0.00E+00	0.00E+00	1.20E-01	6.31E-02	2.65E-01
2.12E+01	3.04E-04	3.04E-04	9.88E-01	1.18E-02	1.18E-02	1.20E-02	0.00E+00	0.00E+00	1.18E-01	6.43E-02	2.66E-01
2.42E+01	2.50E-04	2.50E-04	9.88E-01	1.18E-02	1.18E-02	1.12E-02	0.00E+00	0.00E+00	1.16E-01	6.55E-02	2.66E-01
2.76E+01	2.04E-04	2.04E-04	9.88E-01	1.18E-02	1.18E-02	1.04E-02	0.00E+00	0.00E+00	1.14E-01	6.67E-02	2.67E-01
3.15E+01	1.66E-04	1.66E-04	9.88E-01	1.18E-02	1.18E-02	9.55E-03	0.00E+00	0.00E+00	1.12E-01	6.80E-02	2.67E-01
3.60E+01	1.35E-04	1.35E-04	9.88E-01	1.18E-02	1.18E-02	8.76E-03	0.00E+00	0.00E+00	1.11E-01	6.92E-02	2.68E-01
4.11E+01	1.09E-04	1.09E-04	9.88E-01	1.18E-02	1.18E-02	8.01E-03	0.00E+00	0.00E+00	1.09E-01	7.04E-02	2.68E-01
4.70E+01	8.74E-05	8.74E-05	9.88E-01	1.18E-02	1.18E-02	7.29E-03	0.00E+00	0.00E+00	1.07E-01	7.17E-02	2.69E-01
5.37E+01	7.01E-05	7.01E-05	9.88E-01	1.18E-02	1.18E-02	6.61E-03	0.00E+00	0.00E+00	1.05E-01	7.29E-02	2.69E-01

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time averaged (tav = 3600. s) volume concentration: concentration contour parameters

c(x,y,z,t) = cc(x) * (erf(xa)-erf(xb)) * (erf(ya)-erf(yb)) * (exp(-za*za)+exp(-zb*zb))

```
   c(x,y,z,t) = concentration (volume fraction) at (x,y,z,t)
            x = downwind distance (m)
            y = crosswind horizontal distance (m)
            z = height (m)
            t = time (s)

          erf = error functon
           xa = (x-xc+bx)/(sr2*betax)
           xb = (x-xc-bx)/(sr2*betax)
           ya = (y+b)/(sr2*betac)
           yb = (y-b)/(sr2*betac)
          exp = exponential function
           za = (z-zc)/(sr2*sig)
           zb = (z+zc)/(sr2*sig)
          sr2 = sqrt(2.0)
```

x	cc(x)	b(x)	betac(x)	zc(x)	sig(x)	t	xc(t)	bx(t)	betax(t)
-6.23E-01	0.00E+00	5.61E-01	1.57E-01	0.00E+00	0.00E+00	3.51E-01	0.00E+00	6.23E-01	5.09E-03
-4.98E-01	1.99E-03	5.61E-01	1.68E-01	0.00E+00	6.56E-02	4.17E-01	6.23E-02	6.85E-01	5.60E-03
-3.74E-01	2.32E-03	5.61E-01	1.78E-01	0.00E+00	9.37E-02	4.84E-01	1.25E-01	7.47E-01	6.10E-03

-2.49E-01	2.53E-03	5.61E-01	1.89E-01	0.00E+00	1.17E-01	5.59E-01	1.87E-01	8.10E-01	6.61E-03
-1.25E-01	2.69E-03	5.61E-01	1.99E-01	0.00E+00	1.37E-01	6.35E-01	2.49E-01	8.72E-01	7.12E-03
-5.22E-08	2.82E-03	5.61E-01	2.11E-01	0.00E+00	1.56E-01	7.20E-01	3.11E-01	9.34E-01	7.63E-03
1.25E-01	2.94E-03	5.61E-01	2.22E-01	0.00E+00	1.74E-01	8.04E-01	3.74E-01	9.97E-01	8.14E-03
2.49E-01	3.05E-03	5.61E-01	2.33E-01	0.00E+00	1.90E-01	8.98E-01	4.36E-01	1.06E+00	8.64E-03
3.74E-01	3.15E-03	5.61E-01	2.45E-01	0.00E+00	2.06E-01	9.91E-01	4.98E-01	1.12E+00	9.16E-03
4.98E-01	3.24E-03	5.61E-01	2.57E-01	0.00E+00	2.21E-01	1.09E+00	5.61E-01	1.18E+00	9.66E-03
6.23E-01	3.33E-03	5.61E-01	2.69E-01	0.00E+00	2.36E-01	1.20E+00	6.23E-01	1.25E+00	1.02E-02
6.32E-01	3.31E-03	5.61E-01	2.70E-01	7.35E-07	2.37E-01	1.21E+00	6.32E-01	1.25E+00	1.02E-02
6.42E-01	3.29E-03	5.61E-01	2.71E-01	3.36E-06	2.38E-01	1.23E+00	6.42E-01	1.26E+00	1.03E-02
6.54E-01	3.27E-03	5.61E-01	2.72E-01	8.65E-06	2.40E-01	1.25E+00	6.54E-01	1.28E+00	1.04E-02
6.68E-01	3.25E-03	5.61E-01	2.73E-01	1.76E-05	2.41E-01	1.27E+00	6.68E-01	1.29E+00	1.05E-02
6.83E-01	3.22E-03	5.61E-01	2.74E-01	3.17E-05	2.43E-01	1.30E+00	6.83E-01	1.31E+00	1.07E-02
7.01E-01	3.19E-03	5.61E-01	2.76E-01	5.25E-05	2.45E-01	1.33E+00	7.01E-01	1.32E+00	1.08E-02
7.21E-01	3.15E-03	5.61E-01	2.78E-01	8.24E-05	2.47E-01	1.36E+00	7.21E-01	1.34E+00	1.10E-02
7.44E-01	3.12E-03	5.61E-01	2.80E-01	1.24E-04	2.49E-01	1.40E+00	7.44E-01	1.37E+00	1.12E-02
7.71E-01	3.07E-03	5.61E-01	2.83E-01	1.82E-04	2.52E-01	1.44E+00	7.71E-01	1.39E+00	1.14E-02
8.01E-01	3.03E-03	5.61E-01	2.86E-01	2.60E-04	2.55E-01	1.50E+00	8.01E-01	1.42E+00	1.16E-02
8.36E-01	2.98E-03	5.61E-01	2.89E-01	3.63E-04	2.59E-01	1.55E+00	8.36E-01	1.46E+00	1.19E-02
8.75E-01	2.92E-03	5.61E-01	2.93E-01	5.01E-04	2.63E-01	1.62E+00	8.75E-01	1.50E+00	1.22E-02
9.21E-01	2.86E-03	5.61E-01	2.98E-01	6.80E-04	2.68E-01	1.69E+00	9.21E-01	1.54E+00	1.26E-02
9.73E-01	2.80E-03	5.61E-01	3.03E-01	9.13E-04	2.73E-01	1.78E+00	9.73E-01	1.60E+00	1.30E-02
1.03E+00	2.73E-03	5.61E-01	3.09E-01	1.21E-03	2.79E-01	1.87E+00	1.03E+00	1.66E+00	1.35E-02
1.10E+00	2.66E-03	5.61E-01	3.15E-01	1.59E-03	2.85E-01	1.98E+00	1.10E+00	1.72E+00	1.41E-02
1.18E+00	2.58E-03	5.61E-01	3.23E-01	2.08E-03	2.93E-01	2.11E+00	1.18E+00	1.80E+00	1.47E-02
1.27E+00	2.50E-03	5.61E-01	3.32E-01	2.68E-03	3.01E-01	2.25E+00	1.27E+00	1.89E+00	1.54E-02
1.37E+00	2.42E-03	5.61E-01	3.42E-01	3.44E-03	3.10E-01	2.41E+00	1.37E+00	1.99E+00	1.63E-02
1.49E+00	2.34E-03	5.61E-01	3.54E-01	4.37E-03	3.21E-01	2.59E+00	1.49E+00	2.11E+00	1.72E-02
1.62E+00	2.25E-03	5.61E-01	3.67E-01	5.52E-03	3.32E-01	2.79E+00	1.62E+00	2.24E+00	1.83E-02
1.77E+00	2.16E-03	5.61E-01	3.83E-01	6.91E-03	3.46E-01	3.02E+00	1.77E+00	2.40E+00	1.96E-02
1.95E+00	2.07E-03	5.61E-01	4.00E-01	8.60E-03	3.60E-01	3.28E+00	1.95E+00	2.57E+00	2.10E-02
2.15E+00	1.98E-03	5.61E-01	4.21E-01	1.06E-02	3.76E-01	3.57E+00	2.15E+00	2.77E+00	2.26E-02
2.38E+00	1.90E-03	5.61E-01	4.44E-01	1.30E-02	3.95E-01	3.90E+00	2.38E+00	3.00E+00	2.45E-02
2.64E+00	1.81E-03	5.61E-01	4.71E-01	1.59E-02	4.15E-01	4.27E+00	2.64E+00	3.27E+00	2.67E-02
2.94E+00	1.73E-03	5.60E-01	5.02E-01	1.92E-02	4.37E-01	4.69E+00	2.94E+00	3.57E+00	2.91E-02
3.29E+00	1.65E-03	5.60E-01	5.37E-01	2.31E-02	4.62E-01	5.16E+00	3.29E+00	3.91E+00	3.19E-02
3.68E+00	1.57E-03	5.60E-01	5.78E-01	2.76E-02	4.90E-01	5.68E+00	3.68E+00	4.30E+00	3.52E-02
4.13E+00	1.50E-03	5.60E-01	6.25E-01	3.28E-02	5.21E-01	6.28E+00	4.13E+00	4.76E+00	3.88E-02
4.65E+00	1.43E-03	5.60E-01	6.78E-01	3.87E-02	5.55E-01	6.94E+00	4.65E+00	5.27E+00	4.31E-02
5.24E+00	1.36E-03	5.60E-01	7.40E-01	4.53E-02	5.93E-01	7.69E+00	5.24E+00	5.86E+00	4.79E-02
5.92E+00	1.30E-03	5.60E-01	8.10E-01	5.28E-02	6.35E-01	8.53E+00	5.92E+00	6.54E+00	5.34E-02
6.69E+00	1.23E-03	5.60E-01	8.91E-01	6.11E-02	6.81E-01	9.47E+00	6.69E+00	7.31E+00	5.97E-02
7.58E+00	1.17E-03	5.60E-01	9.84E-01	7.03E-02	7.33E-01	1.05E+01	7.58E+00	8.20E+00	6.70E-02
8.59E+00	1.11E-03	5.60E-01	1.09E+00	8.05E-02	7.90E-01	1.17E+01	8.59E+00	9.21E+00	7.52E-02
9.75E+00	1.05E-03	5.60E-01	1.21E+00	9.16E-02	8.54E-01	1.31E+01	9.75E+00	1.04E+01	8.47E-02
1.11E+01	9.94E-04	5.60E-01	1.35E+00	1.04E-01	9.25E-01	1.45E+01	1.11E+01	1.17E+01	9.55E-02
1.26E+01	9.36E-04	5.60E-01	1.51E+00	1.17E-01	1.00E+00	1.62E+01	1.26E+01	1.32E+01	1.08E-01
1.43E+01	8.80E-04	5.60E-01	1.69E+00	1.30E-01	1.09E+00	1.81E+01	1.43E+01	1.50E+01	1.22E-01
1.63E+01	8.24E-04	5.60E-01	1.90E+00	1.45E-01	1.19E+00	2.02E+01	1.63E+01	1.69E+01	1.38E-01
1.86E+01	7.69E-04	5.60E-01	2.14E+00	1.61E-01	1.29E+00	2.26E+01	1.86E+01	1.92E+01	1.57E-01
2.12E+01	7.15E-04	5.60E-01	2.41E+00	1.77E-01	1.41E+00	2.52E+01	2.12E+01	2.18E+01	1.78E-01
2.42E+01	6.63E-04	5.60E-01	2.73E+00	1.95E-01	1.55E+00	2.82E+01	2.42E+01	2.48E+01	2.03E-01
2.76E+01	6.13E-04	5.60E-01	3.09E+00	2.13E-01	1.69E+00	3.15E+01	2.76E+01	2.82E+01	2.30E-01
3.15E+01	5.64E-04	5.60E-01	3.50E+00	2.31E-01	1.86E+00	3.53E+01	3.15E+01	3.21E+01	2.62E-01
3.60E+01	5.17E-04	5.60E-01	3.96E+00	2.51E-01	2.04E+00	3.95E+01	3.60E+01	3.66E+01	2.99E-01
4.11E+01	4.73E-04	5.60E-01	4.50E+00	2.70E-01	2.25E+00	4.42E+01	4.11E+01	4.17E+01	3.41E-01
4.70E+01	4.31E-04	5.60E-01	5.11E+00	2.91E-01	2.47E+00	4.95E+01	4.70E+01	4.76E+01	3.88E-01
5.37E+01	3.92E-04	5.60E-01	5.81E+00	3.11E-01	2.73E+00	5.55E+01	5.37E+01	5.43E+01	4.43E-01

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time averaged (tav = 3600. s) volume concentration: concentration in the z = 1.50 plane.

downwind distance x (m)	time of max conc (s)	cloud duration (s)	effective half width bbc (m)	average concentration (volume fraction) at (x,y,z) y/bbc= 0.0	y/bbc= 0.5	y/bbc= 1.0	y/bbc= 1.5	y/bbc= 2.0	y/bbc= 2.5
-6.23E-01	1.80E+03	3.60E+03	6.23E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
-4.98E-01	1.80E+03	3.60E+03	6.32E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
-3.74E-01	1.80E+03	3.60E+03	6.40E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
-2.49E-01	1.80E+03	3.60E+03	6.49E-01	3.25E-38	2.92E-38	1.04E-38	4.69E-40	1.53E-42	0.00E+00
-1.25E-01	1.80E+03	3.60E+03	6.59E-01	2.51E-28	2.22E-28	7.88E-29	4.07E-30	1.89E-32	7.53E-36
-5.22E-08	1.80E+03	3.60E+03	6.69E-01	1.88E-22	1.63E-22	5.76E-23	3.37E-24	2.12E-26	1.13E-29
1.25E-01	1.80E+03	3.60E+03	6.80E-01	1.37E-18	1.17E-18	4.11E-19	2.68E-20	2.20E-22	2.07E-25
2.49E-01	1.80E+03	3.60E+03	6.91E-01	7.19E-16	6.00E-16	2.10E-16	1.51E-17	1.56E-19	1.96E-22
3.74E-01	1.80E+03	3.60E+03	7.03E-01	7.32E-14	6.01E-14	2.10E-14	1.64E-15	2.08E-17	3.79E-20
4.98E-01	1.80E+03	3.60E+03	7.16E-01	2.53E-12	2.04E-12	7.11E-13	5.96E-14	9.06E-16	2.25E-18
6.23E-01	1.80E+03	3.60E+03	7.29E-01	4.12E-11	3.28E-11	1.14E-11	1.02E-12	1.81E-14	5.73E-17
6.32E-01	1.80E+03	3.60E+03	7.30E-01	4.99E-11	3.97E-11	1.38E-11	1.24E-12	2.22E-14	7.11E-17
6.42E-01	1.80E+03	3.60E+03	7.31E-01	6.02E-11	4.79E-11	1.66E-11	1.50E-12	2.72E-14	8.96E-17
6.54E-01	1.80E+03	3.60E+03	7.32E-01	7.44E-11	5.90E-11	2.04E-11	1.86E-12	3.42E-14	1.15E-16
6.68E-01	1.80E+03	3.60E+03	7.33E-01	9.41E-11	7.46E-11	2.58E-11	2.36E-12	4.42E-14	1.52E-16

6.83E-01	1.80E+03	3.60E+03	7.35E-01	1.22E-10	9.69E-11	3.35E-11	3.08E-12	5.88E-14	2.09E-16
7.01E-01	1.80E+03	3.60E+03	7.37E-01	1.64E-10	1.30E-10	4.48E-11	4.15E-12	8.07E-14	2.96E-16
7.21E-01	1.80E+03	3.60E+03	7.39E-01	2.25E-10	1.77E-10	6.13E-11	5.73E-12	1.14E-13	4.35E-16
7.44E-01	1.80E+03	3.60E+03	7.42E-01	3.17E-10	2.50E-10	8.62E-11	8.15E-12	1.66E-13	6.54E-16
7.71E-01	1.80E+03	3.60E+03	7.45E-01	4.64E-10	3.64E-10	1.25E-10	1.20E-11	2.51E-13	1.04E-15
8.01E-01	1.80E+03	3.60E+03	7.48E-01	7.02E-10	5.48E-10	1.89E-10	1.83E-11	3.95E-13	1.72E-15
8.36E-01	1.80E+03	3.60E+03	7.52E-01	1.10E-09	8.58E-10	2.96E-10	2.90E-11	6.47E-13	2.98E-15
8.75E-01	1.80E+03	3.60E+03	7.56E-01	1.79E-09	1.39E-09	4.79E-10	4.77E-11	1.10E-12	5.38E-15
9.21E-01	1.80E+03	3.60E+03	7.62E-01	3.03E-09	2.34E-09	8.04E-10	8.15E-11	1.96E-12	1.03E-14
9.73E-01	1.80E+03	3.60E+03	7.68E-01	5.30E-09	4.07E-09	1.40E-09	1.44E-10	3.64E-12	2.04E-14
1.03E+00	1.80E+03	3.60E+03	7.75E-01	9.57E-09	7.32E-09	2.51E-09	2.64E-10	6.99E-12	4.26E-14
1.10E+00	1.80E+03	3.60E+03	7.83E-01	1.78E-08	1.36E-08	4.64E-09	4.99E-10	1.39E-11	9.20E-14
1.18E+00	1.80E+03	3.60E+03	7.92E-01	3.41E-08	2.58E-08	8.81E-09	9.69E-10	2.85E-11	2.07E-13
1.27E+00	1.80E+03	3.60E+03	8.03E-01	6.66E-08	5.00E-08	1.71E-08	1.92E-09	6.00E-11	4.79E-13
1.37E+00	1.80E+03	3.60E+03	8.16E-01	1.32E-07	9.85E-08	3.35E-08	3.87E-09	1.29E-10	1.14E-12
1.49E+00	1.80E+03	3.60E+03	8.31E-01	2.64E-07	1.96E-07	6.64E-08	7.87E-09	2.78E-10	2.74E-12
1.62E+00	1.80E+03	3.60E+03	8.48E-01	5.29E-07	3.89E-07	1.32E-07	1.60E-08	6.05E-10	6.61E-12
1.77E+00	1.80E+03	3.60E+03	8.68E-01	1.05E-06	7.68E-07	2.59E-07	3.24E-08	1.31E-09	1.60E-11
1.95E+00	1.80E+03	3.60E+03	8.92E-01	2.07E-06	1.50E-06	5.03E-07	6.45E-08	2.78E-09	3.79E-11
2.15E+00	1.80E+03	3.60E+03	9.19E-01	3.97E-06	2.85E-06	9.55E-07	1.26E-07	5.78E-09	8.78E-11
2.38E+00	1.80E+03	3.60E+03	9.52E-01	7.40E-06	5.28E-06	1.76E-06	2.37E-07	1.16E-08	1.96E-10
2.64E+00	1.80E+03	3.60E+03	9.90E-01	1.33E-05	9.44E-06	3.14E-06	4.32E-07	2.25E-08	4.20E-10
2.94E+00	1.80E+03	3.60E+03	1.03E+00	2.30E-05	1.62E-05	5.37E-06	7.55E-07	4.15E-08	8.53E-10
3.29E+00	1.80E+03	3.60E+03	1.09E+00	3.80E-05	2.66E-05	8.80E-06	1.26E-06	7.28E-08	1.63E-09
3.68E+00	1.80E+03	3.60E+03	1.15E+00	5.97E-05	4.17E-05	1.37E-05	1.99E-06	1.21E-07	2.92E-09
4.13E+00	1.80E+03	3.60E+03	1.22E+00	8.92E-05	6.20E-05	2.04E-05	3.00E-06	1.88E-07	4.89E-09
4.65E+00	1.80E+03	3.60E+03	1.30E+00	1.27E-04	8.77E-05	2.87E-05	4.27E-06	2.77E-07	7.65E-09
5.24E+00	1.80E+03	3.60E+03	1.40E+00	1.70E-04	1.18E-04	3.85E-05	5.77E-06	3.85E-07	1.12E-08
5.92E+00	1.80E+03	3.60E+03	1.51E+00	2.18E-04	1.50E-04	4.90E-05	7.40E-06	5.04E-07	1.52E-08
6.69E+00	1.80E+03	3.60E+03	1.64E+00	2.65E-04	1.82E-04	5.94E-05	9.01E-06	6.25E-07	1.95E-08
7.58E+00	1.80E+03	3.60E+03	1.79E+00	3.07E-04	2.11E-04	6.88E-05	1.05E-05	7.35E-07	2.35E-08
8.59E+00	1.80E+03	3.60E+03	1.97E+00	3.40E-04	2.34E-04	7.62E-05	1.16E-05	8.24E-07	2.69E-08
9.75E+00	1.80E+03	3.60E+03	2.17E+00	3.62E-04	2.49E-04	8.09E-05	1.24E-05	8.83E-07	2.92E-08
1.11E+01	1.81E+03	3.60E+03	2.41E+00	3.71E-04	2.55E-04	8.28E-05	1.27E-05	9.09E-07	3.04E-08
1.26E+01	1.81E+03	3.60E+03	2.68E+00	3.66E-04	2.52E-04	8.18E-05	1.25E-05	9.02E-07	3.04E-08
1.43E+01	1.81E+03	3.60E+03	2.99E+00	3.51E-04	2.41E-04	7.83E-05	1.20E-05	8.65E-07	2.93E-08
1.63E+01	1.81E+03	3.60E+03	3.34E+00	3.26E-04	2.24E-04	7.28E-05	1.12E-05	8.07E-07	2.74E-08
1.86E+01	1.81E+03	3.60E+03	3.75E+00	2.96E-04	2.04E-04	6.61E-05	1.01E-05	7.33E-07	2.50E-08
2.12E+01	1.81E+03	3.60E+03	4.22E+00	2.63E-04	1.81E-04	5.87E-05	9.00E-06	6.52E-07	2.22E-08
2.42E+01	1.81E+03	3.60E+03	4.76E+00	2.29E-04	1.58E-04	5.11E-05	7.84E-06	5.68E-07	1.94E-08
2.76E+01	1.81E+03	3.60E+03	5.37E+00	1.96E-04	1.35E-04	4.38E-05	6.71E-06	4.86E-07	1.66E-08
3.15E+01	1.82E+03	3.60E+03	6.08E+00	1.66E-04	1.14E-04	3.69E-05	5.66E-06	4.10E-07	1.40E-08
3.60E+01	1.82E+03	3.60E+03	6.89E+00	1.38E-04	9.47E-05	3.08E-05	4.72E-06	3.42E-07	1.17E-08
4.11E+01	1.82E+03	3.60E+03	7.81E+00	1.14E-04	7.80E-05	2.53E-05	3.89E-06	2.81E-07	9.63E-09
4.70E+01	1.82E+03	3.60E+03	8.87E+00	9.27E-05	6.37E-05	2.07E-05	3.17E-06	2.30E-07	7.85E-09
5.37E+01	1.83E+03	3.60E+03	1.01E+01	7.50E-05	5.15E-05	1.67E-05	2.57E-06	1.86E-07	6.34E-09

1

time averaged (tav = 3600. s) volume concentration: maximum concentration (volume fraction) along centerline.

downwind distance x (m)	height z (m)	maximum concentration c(x,0,z)	time of max conc (s)	cloud duration (s)
-6.23E-01	0.00E+00	0.00E+00	1.80E+03	3.60E+03
-4.98E-01	0.00E+00	1.59E-02	1.80E+03	3.60E+03
-3.74E-01	0.00E+00	1.85E-02	1.80E+03	3.60E+03
-2.49E-01	0.00E+00	2.01E-02	1.80E+03	3.60E+03
-1.25E-01	0.00E+00	2.12E-02	1.80E+03	3.60E+03
-5.22E-08	0.00E+00	2.21E-02	1.80E+03	3.60E+03
1.25E-01	0.00E+00	2.28E-02	1.80E+03	3.60E+03
2.49E-01	0.00E+00	2.34E-02	1.80E+03	3.60E+03
3.74E-01	0.00E+00	2.39E-02	1.80E+03	3.60E+03
4.98E-01	0.00E+00	2.42E-02	1.80E+03	3.60E+03
6.23E-01	0.00E+00	2.45E-02	1.80E+03	3.60E+03
6.32E-01	0.00E+00	2.43E-02	1.80E+03	3.60E+03
6.42E-01	0.00E+00	2.42E-02	1.80E+03	3.60E+03
6.54E-01	0.00E+00	2.40E-02	1.80E+03	3.60E+03
6.68E-01	0.00E+00	2.37E-02	1.80E+03	3.60E+03
6.83E-01	0.00E+00	2.35E-02	1.80E+03	3.60E+03
7.01E-01	0.00E+00	2.32E-02	1.80E+03	3.60E+03
7.21E-01	0.00E+00	2.29E-02	1.80E+03	3.60E+03
7.44E-01	0.00E+00	2.25E-02	1.80E+03	3.60E+03
7.71E-01	0.00E+00	2.21E-02	1.80E+03	3.60E+03
8.01E-01	0.00E+00	2.17E-02	1.80E+03	3.60E+03
8.36E-01	0.00E+00	2.12E-02	1.80E+03	3.60E+03
8.75E-01	0.00E+00	2.07E-02	1.80E+03	3.60E+03
9.21E-01	0.00E+00	2.02E-02	1.80E+03	3.60E+03
9.73E-01	0.00E+00	1.95E-02	1.80E+03	3.60E+03
1.03E+00	0.00E+00	1.89E-02	1.80E+03	3.60E+03
1.10E+00	0.00E+00	1.82E-02	1.80E+03	3.60E+03

1.18E+00	0.00E+00	1.74E-02	1.80E+03	3.60E+03
1.27E+00	0.00E+00	1.66E-02	1.80E+03	3.60E+03
1.37E+00	0.00E+00	1.58E-02	1.80E+03	3.60E+03
1.49E+00	0.00E+00	1.49E-02	1.80E+03	3.60E+03
1.62E+00	0.00E+00	1.39E-02	1.80E+03	3.60E+03
1.77E+00	0.00E+00	1.30E-02	1.80E+03	3.60E+03
1.95E+00	0.00E+00	1.20E-02	1.80E+03	3.60E+03
2.15E+00	0.00E+00	1.10E-02	1.80E+03	3.60E+03
2.38E+00	0.00E+00	1.01E-02	1.80E+03	3.60E+03
2.64E+00	0.00E+00	9.09E-03	1.80E+03	3.60E+03
2.94E+00	0.00E+00	8.15E-03	1.80E+03	3.60E+03
3.29E+00	0.00E+00	7.23E-03	1.80E+03	3.60E+03
3.68E+00	0.00E+00	6.36E-03	1.80E+03	3.60E+03
4.13E+00	0.00E+00	5.55E-03	1.80E+03	3.60E+03
4.65E+00	0.00E+00	4.79E-03	1.80E+03	3.60E+03
5.24E+00	0.00E+00	4.10E-03	1.80E+03	3.60E+03
5.92E+00	0.00E+00	3.48E-03	1.80E+03	3.60E+03
6.69E+00	0.00E+00	2.93E-03	1.80E+03	3.60E+03
7.58E+00	0.00E+00	2.44E-03	1.80E+03	3.60E+03
8.59E+00	0.00E+00	2.02E-03	1.80E+03	3.60E+03
9.75E+00	0.00E+00	1.66E-03	1.80E+03	3.60E+03
1.11E+01	0.00E+00	1.36E-03	1.81E+03	3.60E+03
1.26E+01	0.00E+00	1.10E-03	1.81E+03	3.60E+03
1.43E+01	0.00E+00	8.93E-04	1.81E+03	3.60E+03
1.63E+01	0.00E+00	7.18E-04	1.81E+03	3.60E+03
1.86E+01	0.00E+00	5.75E-04	1.81E+03	3.60E+03
2.12E+01	0.00E+00	4.58E-04	1.81E+03	3.60E+03
2.42E+01	0.00E+00	3.64E-04	1.81E+03	3.60E+03
2.76E+01	0.00E+00	2.89E-04	1.81E+03	3.60E+03
3.15E+01	0.00E+00	2.28E-04	1.82E+03	3.60E+03
3.60E+01	0.00E+00	1.80E-04	1.82E+03	3.60E+03
4.11E+01	0.00E+00	1.41E-04	1.82E+03	3.60E+03
4.70E+01	0.00E+00	1.11E-04	1.82E+03	3.60E+03
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SLAB MODELING RESULTS: ALTERNATIVE SCENARIO, DISTANCE TO 150 PPM AMMONIA

```
                    SESSION INFORMATION

          INPUT DATA FILE NAME :  cppalt3.DTA
          OUTPUT LIST FILE NAME : cppalt3.LST


          GRAPHICS DATA FILE NAME : cppalt3.DAT
          GRAPHICS PLOT FILE NAME : cppalt3.XZ




problem input

  idspl =         1
  ncalc =         1
  wms   =   .017031
  cps   =   2170.00
  tbp   =    239.72
  cmed0 =       .00
  dhe   =  1370840.
  cpsl  =   4294.00
  rhosl =    682.80
  spb   =   2132.52
  spc   =    -32.98
  ts    =    239.72
  qs    =       .01
  as    =      1.55
  tsd   =     3600.
  qtis  =       .00
  hs    =       .00
  tav   =   3600.00
  xffm  =     34.00
  zp(1) =      1.50
  zp(2) =       .00
  zp(3) =       .00
  zp(4) =       .00
  z0    =   .010000
  za    =     10.00
  ua    =      3.00
  ta    =    300.37
  rh    =     50.00
  stab  =      4.00


release gas properties

 molecular weight of source gas (kg)               - wms  =  1.7031E-02
```

```
 vapor heat capacity, const. p.  (j/kg-k)          - cps  =  2.1700E+03
 temperature of source gas (k)                     - ts   =  2.3972E+02
 density of source gas (kg/m3)                     - rhos =  8.6582E-01
 boiling point temperature                         - tbp  =  2.3972E+02
 liquid mass fraction                              - cmed0=  0.0000E+00
 liquid heat capacity (j/kg-k)                     - cpsl =  4.2940E+03
 heat of vaporization (j/kg)                       - dhe  =  1.3708E+06
 liquid source density (kg/m3)                     - rhosl=  6.8280E+02
 saturation pressure constant                      - spa  =  1.0315E+01
 saturation pressure constant (k)                  - spb  =  2.1325E+03
 saturation pressure constant (k)                  - spc  = -3.2980E+01


spill characteristics

 spill type                                        - idspl=          1
 mass source rate (kg/s)                           - qs   =  6.8500E-03
 continuous source duration (s)                    - tsd  =  3.6000E+03
 continuous source mass (kg)                       - qtcs =  2.4660E+01
 instantaneous source mass (kg)                    - qtis =  0.0000E+00
 source area (m2)                                  - as   =  1.5520E+00
 vertical vapor velocity (m/s)                     - ws   =  5.0976E-03
 source half width (m)                             - bs   =  6.2290E-01
 source height (m)                                 - hs   =  0.0000E+00
 horizontal vapor velocity (m/s)                   - us   =  0.0000E+00


field parameters

 concentration averaging time (s)                  - tav  =  3.6000E+03
 mixing layer height (m)                           - hmx  =  1.0400E+03
 maximum downwind distrace (m)                     - xffm =  3.4000E+01
 concentration measurement height (m)              - zp(1)=  1.5000E+00
                                                   - zp(2)=  0.0000E+00
                                                   - zp(3)=  0.0000E+00
                                                   - zp(4)=  0.0000E+00


ambient meteorological properties

 molecular weight of ambient air (kg)            - wmae  =  2.8754E-02
 heat capacity of ambient air at const p. (j/kg-k)- cpaa  =  1.0158E+03
 density of ambient air (kg/m3)                  - rhoa  =  1.1666E+00
 ambient measurement height (m)                  - za    =  1.0000E+01
 ambient atmospheric pressure (pa=n/m2=j/m3)     - pa    =  1.0133E+05
 ambient wind speed (m/s)                        - ua    =  3.0000E+00
 ambient temperature (k)                         - ta    =  3.0037E+02
 relative humidity (percent)                     - rh    =  5.0000E+01
 ambient friction velocity (m/s)                 - uastr =  1.7831E-01
 atmospheric stability class value               - stab  =  4.0000E+00
 inverse monin-obukhov length (1/m)              - ala   =  0.0000E+00
 surface roughness height (m)                    - z0    =  1.0000E-02


additional parameters

 sub-step multiplier                             - ncalc =          1
```

```
 number of calculational sub-steps                - nssm  =           3
 acceleration of gravity (m/s2)                   - grav  =  9.8067E+00
 gas constant (j/mol- k)                          - rr    =  8.3143E+00
 von karman constant                              - xk    =  4.1000E-01
1
```

instantaneous spatially averaged cloud parameters

x	zc	h	bb	b	bbx	bx	cv	rho	t	u	ua
-6.23E-01	0.00E+00	0.00E+00	6.23E-01	5.61E-01	6.23E-01	6.23E-01	0.00E+00	1.17E+00	3.00E+02	0.00E+00	0.00E+00
-4.98E-01	0.00E+00	1.14E-01	6.32E-01	5.61E-01	6.85E-01	6.85E-01	1.02E-02	1.16E+00	3.00E+02	6.75E-01	6.79E-01
-3.74E-01	0.00E+00	1.62E-01	6.39E-01	5.61E-01	7.47E-01	7.47E-01	1.18E-02	1.16E+00	3.00E+02	8.11E-01	8.17E-01
-2.49E-01	0.00E+00	2.02E-01	6.46E-01	5.61E-01	8.10E-01	8.10E-01	1.26E-02	1.16E+00	2.99E+02	8.97E-01	9.05E-01
-1.25E-01	0.00E+00	2.38E-01	6.53E-01	5.61E-01	8.72E-01	8.72E-01	1.33E-02	1.16E+00	2.99E+02	9.60E-01	9.70E-01
-5.22E-08	0.00E+00	2.70E-01	6.60E-01	5.61E-01	9.34E-01	9.34E-01	1.37E-02	1.16E+00	2.99E+02	1.01E+00	1.02E+00
1.25E-01	0.00E+00	3.01E-01	6.67E-01	5.61E-01	9.97E-01	9.97E-01	1.40E-02	1.16E+00	2.99E+02	1.05E+00	1.07E+00
2.49E-01	0.00E+00	3.29E-01	6.74E-01	5.61E-01	1.06E+00	1.06E+00	1.43E-02	1.16E+00	2.99E+02	1.09E+00	1.10E+00
3.74E-01	0.00E+00	3.57E-01	6.81E-01	5.61E-01	1.12E+00	1.12E+00	1.45E-02	1.16E+00	2.99E+02	1.12E+00	1.14E+00
4.98E-01	0.00E+00	3.83E-01	6.89E-01	5.61E-01	1.18E+00	1.18E+00	1.47E-02	1.16E+00	2.99E+02	1.15E+00	1.17E+00
6.23E-01	0.00E+00	4.09E-01	6.96E-01	5.61E-01	1.25E+00	1.25E+00	1.48E-02	1.16E+00	2.99E+02	1.17E+00	1.19E+00
6.31E-01	6.28E-07	4.11E-01	6.96E-01	5.61E-01	1.25E+00	1.25E+00	1.47E-02	1.16E+00	2.99E+02	1.17E+00	1.20E+00
6.41E-01	2.85E-06	4.12E-01	6.97E-01	5.61E-01	1.26E+00	1.26E+00	1.46E-02	1.16E+00	2.99E+02	1.17E+00	1.20E+00
6.51E-01	7.26E-06	4.15E-01	6.97E-01	5.61E-01	1.27E+00	1.27E+00	1.45E-02	1.16E+00	2.99E+02	1.18E+00	1.20E+00
6.64E-01	1.47E-05	4.17E-01	6.98E-01	5.61E-01	1.29E+00	1.29E+00	1.44E-02	1.16E+00	2.99E+02	1.18E+00	1.20E+00
6.77E-01	2.61E-05	4.20E-01	6.99E-01	5.61E-01	1.30E+00	1.30E+00	1.43E-02	1.16E+00	2.99E+02	1.18E+00	1.21E+00
6.93E-01	4.28E-05	4.23E-01	7.00E-01	5.61E-01	1.32E+00	1.32E+00	1.41E-02	1.16E+00	2.99E+02	1.18E+00	1.21E+00
7.11E-01	6.64E-05	4.26E-01	7.01E-01	5.61E-01	1.33E+00	1.33E+00	1.39E-02	1.16E+00	2.99E+02	1.19E+00	1.21E+00
7.31E-01	9.91E-05	4.30E-01	7.02E-01	5.61E-01	1.35E+00	1.35E+00	1.37E-02	1.16E+00	2.99E+02	1.19E+00	1.22E+00
7.54E-01	1.43E-04	4.34E-01	7.03E-01	5.61E-01	1.38E+00	1.38E+00	1.35E-02	1.16E+00	2.99E+02	1.20E+00	1.22E+00
7.80E-01	2.03E-04	4.39E-01	7.05E-01	5.61E-01	1.40E+00	1.40E+00	1.33E-02	1.16E+00	2.99E+02	1.20E+00	1.22E+00
8.09E-01	2.81E-04	4.44E-01	7.06E-01	5.61E-01	1.43E+00	1.43E+00	1.31E-02	1.16E+00	2.99E+02	1.21E+00	1.23E+00
8.42E-01	3.83E-04	4.50E-01	7.08E-01	5.61E-01	1.47E+00	1.47E+00	1.28E-02	1.16E+00	2.99E+02	1.21E+00	1.24E+00
8.80E-01	5.15E-04	4.57E-01	7.10E-01	5.61E-01	1.50E+00	1.50E+00	1.25E-02	1.16E+00	2.99E+02	1.22E+00	1.24E+00
9.23E-01	6.85E-04	4.65E-01	7.13E-01	5.61E-01	1.55E+00	1.55E+00	1.22E-02	1.16E+00	3.00E+02	1.23E+00	1.25E+00
9.72E-01	9.01E-04	4.73E-01	7.16E-01	5.61E-01	1.59E+00	1.59E+00	1.18E-02	1.16E+00	3.00E+02	1.23E+00	1.26E+00
1.03E+00	1.17E-03	4.83E-01	7.19E-01	5.61E-01	1.65E+00	1.65E+00	1.15E-02	1.16E+00	3.00E+02	1.24E+00	1.26E+00
1.09E+00	1.52E-03	4.94E-01	7.22E-01	5.61E-01	1.71E+00	1.71E+00	1.11E-02	1.16E+00	3.00E+02	1.25E+00	1.27E+00
1.16E+00	1.94E-03	5.06E-01	7.26E-01	5.61E-01	1.78E+00	1.78E+00	1.06E-02	1.16E+00	3.00E+02	1.26E+00	1.28E+00
1.24E+00	2.47E-03	5.19E-01	7.31E-01	5.61E-01	1.86E+00	1.86E+00	1.02E-02	1.16E+00	3.00E+02	1.28E+00	1.30E+00
1.33E+00	3.12E-03	5.34E-01	7.36E-01	5.61E-01	1.95E+00	1.95E+00	9.75E-03	1.16E+00	3.00E+02	1.29E+00	1.31E+00
1.43E+00	3.92E-03	5.51E-01	7.42E-01	5.61E-01	2.06E+00	2.06E+00	9.28E-03	1.16E+00	3.00E+02	1.30E+00	1.32E+00
1.55E+00	4.88E-03	5.70E-01	7.49E-01	5.61E-01	2.17E+00	2.17E+00	8.79E-03	1.16E+00	3.00E+02	1.32E+00	1.33E+00
1.68E+00	6.04E-03	5.91E-01	7.56E-01	5.61E-01	2.31E+00	2.31E+00	8.30E-03	1.16E+00	3.00E+02	1.33E+00	1.35E+00
1.83E+00	7.44E-03	6.15E-01	7.65E-01	5.61E-01	2.46E+00	2.46E+00	7.79E-03	1.16E+00	3.00E+02	1.35E+00	1.37E+00
2.01E+00	9.10E-03	6.41E-01	7.75E-01	5.61E-01	2.63E+00	2.63E+00	7.28E-03	1.17E+00	3.00E+02	1.37E+00	1.38E+00
2.20E+00	1.11E-02	6.70E-01	7.86E-01	5.61E-01	2.82E+00	2.82E+00	6.77E-03	1.17E+00	3.00E+02	1.39E+00	1.40E+00
2.42E+00	1.34E-02	7.02E-01	7.98E-01	5.61E-01	3.04E+00	3.04E+00	6.27E-03	1.17E+00	3.00E+02	1.41E+00	1.42E+00
2.67E+00	1.61E-02	7.38E-01	8.12E-01	5.61E-01	3.29E+00	3.29E+00	5.77E-03	1.17E+00	3.00E+02	1.43E+00	1.44E+00
2.95E+00	1.92E-02	7.78E-01	8.28E-01	5.60E-01	3.57E+00	3.57E+00	5.29E-03	1.17E+00	3.00E+02	1.45E+00	1.47E+00
3.27E+00	2.28E-02	8.21E-01	8.46E-01	5.60E-01	3.89E+00	3.89E+00	4.82E-03	1.17E+00	3.00E+02	1.48E+00	1.49E+00
3.63E+00	2.69E-02	8.70E-01	8.67E-01	5.60E-01	4.25E+00	4.25E+00	4.37E-03	1.17E+00	3.00E+02	1.50E+00	1.51E+00
4.04E+00	3.16E-02	9.23E-01	8.90E-01	5.60E-01	4.67E+00	4.66E+00	3.94E-03	1.17E+00	3.00E+02	1.53E+00	1.54E+00
4.51E+00	3.69E-02	9.82E-01	9.16E-01	5.60E-01	5.13E+00	5.13E+00	3.54E-03	1.17E+00	3.00E+02	1.56E+00	1.57E+00
5.04E+00	4.28E-02	1.05E+00	9.46E-01	5.60E-01	5.66E+00	5.66E+00	3.15E-03	1.17E+00	3.00E+02	1.58E+00	1.59E+00
5.64E+00	4.94E-02	1.12E+00	9.80E-01	5.60E-01	6.26E+00	6.26E+00	2.80E-03	1.17E+00	3.00E+02	1.61E+00	1.62E+00
6.32E+00	5.68E-02	1.20E+00	1.02E+00	5.60E-01	6.94E+00	6.94E+00	2.47E-03	1.17E+00	3.00E+02	1.64E+00	1.65E+00
7.09E+00	6.49E-02	1.29E+00	1.06E+00	5.60E-01	7.71E+00	7.71E+00	2.17E-03	1.17E+00	3.00E+02	1.67E+00	1.68E+00
7.96E+00	7.38E-02	1.38E+00	1.11E+00	5.60E-01	8.58E+00	8.58E+00	1.89E-03	1.17E+00	3.00E+02	1.70E+00	1.71E+00
8.95E+00	8.35E-02	1.49E+00	1.17E+00	5.60E-01	9.58E+00	9.57E+00	1.64E-03	1.17E+00	3.00E+02	1.74E+00	1.74E+00
1.01E+01	9.41E-02	1.60E+00	1.23E+00	5.60E-01	1.07E+01	1.07E+01	1.42E-03	1.17E+00	3.00E+02	1.77E+00	1.78E+00
1.14E+01	1.05E-01	1.73E+00	1.30E+00	5.60E-01	1.20E+01	1.20E+01	1.22E-03	1.17E+00	3.00E+02	1.80E+00	1.81E+00
1.28E+01	1.18E-01	1.87E+00	1.38E+00	5.60E-01	1.34E+01	1.34E+01	1.04E-03	1.17E+00	3.00E+02	1.84E+00	1.84E+00
1.44E+01	1.30E-01	2.03E+00	1.48E+00	5.60E-01	1.51E+01	1.51E+01	8.86E-04	1.17E+00	3.00E+02	1.87E+00	1.88E+00
1.63E+01	1.44E-01	2.20E+00	1.58E+00	5.60E-01	1.69E+01	1.69E+01	7.49E-04	1.17E+00	3.00E+02	1.90E+00	1.91E+00
1.84E+01	1.59E-01	2.39E+00	1.70E+00	5.60E-01	1.90E+01	1.90E+01	6.30E-04	1.17E+00	3.00E+02	1.94E+00	1.95E+00
2.08E+01	1.74E-01	2.59E+00	1.83E+00	5.60E-01	2.14E+01	2.14E+01	5.28E-04	1.17E+00	3.00E+02	1.98E+00	1.98E+00
2.35E+01	1.90E-01	2.82E+00	1.99E+00	5.60E-01	2.41E+01	2.41E+01	4.40E-04	1.17E+00	3.00E+02	2.01E+00	2.02E+00
2.66E+01	2.06E-01	3.07E+00	2.16E+00	5.60E-01	2.72E+01	2.72E+01	3.66E-04	1.17E+00	3.00E+02	2.05E+00	2.06E+00
3.01E+01	2.23E-01	3.34E+00	2.35E+00	5.60E-01	3.07E+01	3.07E+01	3.02E-04	1.17E+00	3.00E+02	2.09E+00	2.09E+00
3.40E+01	2.41E-01	3.64E+00	2.58E+00	5.60E-01	3.46E+01	3.46E+01	2.49E-04	1.17E+00	3.00E+02	2.12E+00	2.13E+00

1

x	cm	cmv	cmda	cmw	cmwv	wc	vg	ug	w	v	vx
-6.23E-01	0.00E+00	0.00E+00	9.88E-01	1.18E-02	1.18E-02	0.00E+00	0.00E+00	0.00E+00	7.34E-01	9.76E-02	0.00E+00
-4.98E-01	6.08E-03	6.08E-03	9.82E-01	1.18E-02	1.18E-02	0.00E+00	0.00E+00	0.00E+00	2.72E-01	2.20E-02	2.01E-01
-3.74E-01	7.00E-03	7.00E-03	9.81E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	2.38E-01	2.65E-02	2.17E-01

-2.49E-01	7.53E-03	7.53E-03	9.81E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	2.20E-01	2.94E-02	2.25E-01
-1.25E-01	7.90E-03	7.90E-03	9.80E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	2.09E-01	3.15E-02	2.30E-01
-5.22E-08	8.16E-03	8.16E-03	9.80E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	2.01E-01	3.32E-02	2.34E-01
1.25E-01	8.37E-03	8.37E-03	9.80E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	1.95E-01	3.46E-02	2.37E-01
2.49E-01	8.53E-03	8.53E-03	9.80E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	1.90E-01	3.59E-02	2.39E-01
3.74E-01	8.65E-03	8.65E-03	9.80E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	1.85E-01	3.70E-02	2.41E-01
4.98E-01	8.76E-03	8.76E-03	9.80E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	1.82E-01	3.79E-02	2.42E-01
6.23E-01	8.84E-03	8.84E-03	9.79E-01	1.17E-02	1.17E-02	0.00E+00	0.00E+00	0.00E+00	1.78E-01	3.88E-02	2.44E-01
6.31E-01	8.78E-03	8.78E-03	9.79E-01	1.17E-02	1.17E-02	1.76E-04	0.00E+00	0.00E+00	1.78E-01	3.89E-02	2.44E-01
6.41E-01	8.72E-03	8.72E-03	9.80E-01	1.17E-02	1.17E-02	3.73E-04	0.00E+00	0.00E+00	1.78E-01	3.89E-02	2.44E-01
6.51E-01	8.66E-03	8.66E-03	9.80E-01	1.17E-02	1.17E-02	5.92E-04	0.00E+00	0.00E+00	1.78E-01	3.90E-02	2.44E-01
6.64E-01	8.58E-03	8.58E-03	9.80E-01	1.17E-02	1.17E-02	8.37E-04	0.00E+00	0.00E+00	1.77E-01	3.91E-02	2.44E-01
6.77E-01	8.50E-03	8.50E-03	9.80E-01	1.17E-02	1.17E-02	1.11E-03	0.00E+00	0.00E+00	1.77E-01	3.92E-02	2.44E-01
6.93E-01	8.41E-03	8.41E-03	9.80E-01	1.17E-02	1.17E-02	1.41E-03	0.00E+00	0.00E+00	1.76E-01	3.93E-02	2.44E-01
7.11E-01	8.30E-03	8.30E-03	9.80E-01	1.17E-02	1.17E-02	1.74E-03	0.00E+00	0.00E+00	1.76E-01	3.94E-02	2.44E-01
7.31E-01	8.19E-03	8.19E-03	9.80E-01	1.17E-02	1.17E-02	2.11E-03	0.00E+00	0.00E+00	1.76E-01	3.95E-02	2.45E-01
7.54E-01	8.07E-03	8.07E-03	9.80E-01	1.17E-02	1.17E-02	2.52E-03	0.00E+00	0.00E+00	1.75E-01	3.96E-02	2.45E-01
7.80E-01	7.93E-03	7.93E-03	9.80E-01	1.17E-02	1.17E-02	2.96E-03	0.00E+00	0.00E+00	1.74E-01	3.98E-02	2.45E-01
8.09E-01	7.78E-03	7.78E-03	9.80E-01	1.17E-02	1.17E-02	3.44E-03	0.00E+00	0.00E+00	1.74E-01	3.99E-02	2.45E-01
8.42E-01	7.61E-03	7.61E-03	9.81E-01	1.17E-02	1.17E-02	3.97E-03	0.00E+00	0.00E+00	1.73E-01	4.01E-02	2.46E-01
8.80E-01	7.44E-03	7.44E-03	9.81E-01	1.17E-02	1.17E-02	4.53E-03	0.00E+00	0.00E+00	1.72E-01	4.03E-02	2.46E-01
9.23E-01	7.24E-03	7.24E-03	9.81E-01	1.17E-02	1.17E-02	5.14E-03	0.00E+00	0.00E+00	1.72E-01	4.05E-02	2.46E-01
9.72E-01	7.04E-03	7.04E-03	9.81E-01	1.17E-02	1.17E-02	5.79E-03	0.00E+00	0.00E+00	1.71E-01	4.08E-02	2.47E-01
1.03E+00	6.82E-03	6.82E-03	9.81E-01	1.17E-02	1.17E-02	6.48E-03	0.00E+00	0.00E+00	1.70E-01	4.11E-02	2.47E-01
1.09E+00	6.58E-03	6.58E-03	9.82E-01	1.17E-02	1.17E-02	7.21E-03	0.00E+00	0.00E+00	1.69E-01	4.14E-02	2.47E-01
1.16E+00	6.33E-03	6.33E-03	9.82E-01	1.17E-02	1.17E-02	7.96E-03	0.00E+00	0.00E+00	1.68E-01	4.17E-02	2.48E-01
1.24E+00	6.07E-03	6.07E-03	9.82E-01	1.18E-02	1.18E-02	8.75E-03	0.00E+00	0.00E+00	1.67E-01	4.21E-02	2.48E-01
1.33E+00	5.80E-03	5.80E-03	9.82E-01	1.18E-02	1.18E-02	9.56E-03	0.00E+00	0.00E+00	1.65E-01	4.24E-02	2.49E-01
1.43E+00	5.52E-03	5.52E-03	9.83E-01	1.18E-02	1.18E-02	1.04E-02	0.00E+00	0.00E+00	1.64E-01	4.29E-02	2.49E-01
1.55E+00	5.23E-03	5.23E-03	9.83E-01	1.18E-02	1.18E-02	1.12E-02	0.00E+00	0.00E+00	1.63E-01	4.33E-02	2.50E-01
1.68E+00	4.93E-03	4.93E-03	9.83E-01	1.18E-02	1.18E-02	1.20E-02	0.00E+00	0.00E+00	1.62E-01	4.38E-02	2.51E-01
1.83E+00	4.63E-03	4.63E-03	9.84E-01	1.18E-02	1.18E-02	1.28E-02	0.00E+00	0.00E+00	1.60E-01	4.44E-02	2.51E-01
2.01E+00	4.33E-03	4.33E-03	9.84E-01	1.18E-02	1.18E-02	1.36E-02	0.00E+00	0.00E+00	1.58E-01	4.49E-02	2.52E-01
2.20E+00	4.02E-03	4.02E-03	9.84E-01	1.18E-02	1.18E-02	1.43E-02	0.00E+00	0.00E+00	1.57E-01	4.55E-02	2.53E-01
2.42E+00	3.72E-03	3.72E-03	9.85E-01	1.18E-02	1.18E-02	1.50E-02	0.00E+00	0.00E+00	1.55E-01	4.62E-02	2.53E-01
2.67E+00	3.43E-03	3.43E-03	9.85E-01	1.18E-02	1.18E-02	1.57E-02	0.00E+00	0.00E+00	1.53E-01	4.69E-02	2.54E-01
2.95E+00	3.14E-03	3.14E-03	9.85E-01	1.18E-02	1.18E-02	1.62E-02	0.00E+00	0.00E+00	1.52E-01	4.76E-02	2.55E-01
3.27E+00	2.86E-03	2.86E-03	9.85E-01	1.18E-02	1.18E-02	1.67E-02	0.00E+00	0.00E+00	1.50E-01	4.83E-02	2.56E-01
3.63E+00	2.59E-03	2.59E-03	9.86E-01	1.18E-02	1.18E-02	1.71E-02	0.00E+00	0.00E+00	1.48E-01	4.91E-02	2.56E-01
4.04E+00	2.34E-03	2.34E-03	9.86E-01	1.18E-02	1.18E-02	1.74E-02	0.00E+00	0.00E+00	1.46E-01	4.99E-02	2.57E-01
4.51E+00	2.10E-03	2.10E-03	9.86E-01	1.18E-02	1.18E-02	1.76E-02	0.00E+00	0.00E+00	1.44E-01	5.08E-02	2.58E-01
5.04E+00	1.87E-03	1.87E-03	9.86E-01	1.18E-02	1.18E-02	1.77E-02	0.00E+00	0.00E+00	1.42E-01	5.17E-02	2.59E-01
5.64E+00	1.66E-03	1.66E-03	9.87E-01	1.18E-02	1.18E-02	1.77E-02	0.00E+00	0.00E+00	1.40E-01	5.26E-02	2.59E-01
6.32E+00	1.46E-03	1.46E-03	9.87E-01	1.18E-02	1.18E-02	1.76E-02	0.00E+00	0.00E+00	1.38E-01	5.35E-02	2.60E-01
7.09E+00	1.29E-03	1.29E-03	9.87E-01	1.18E-02	1.18E-02	1.74E-02	0.00E+00	0.00E+00	1.36E-01	5.45E-02	2.61E-01
7.96E+00	1.12E-03	1.12E-03	9.87E-01	1.18E-02	1.18E-02	1.70E-02	0.00E+00	0.00E+00	1.34E-01	5.55E-02	2.61E-01
8.95E+00	9.74E-04	9.74E-04	9.87E-01	1.18E-02	1.18E-02	1.66E-02	0.00E+00	0.00E+00	1.32E-01	5.65E-02	2.62E-01
1.01E+01	8.41E-04	8.41E-04	9.87E-01	1.18E-02	1.18E-02	1.62E-02	0.00E+00	0.00E+00	1.30E-01	5.76E-02	2.62E-01
1.14E+01	7.23E-04	7.23E-04	9.87E-01	1.18E-02	1.18E-02	1.56E-02	0.00E+00	0.00E+00	1.28E-01	5.86E-02	2.63E-01
1.28E+01	6.17E-04	6.17E-04	9.88E-01	1.18E-02	1.18E-02	1.50E-02	0.00E+00	0.00E+00	1.26E-01	5.97E-02	2.64E-01
1.44E+01	5.25E-04	5.25E-04	9.88E-01	1.18E-02	1.18E-02	1.43E-02	0.00E+00	0.00E+00	1.24E-01	6.08E-02	2.64E-01
1.63E+01	4.44E-04	4.44E-04	9.88E-01	1.18E-02	1.18E-02	1.36E-02	0.00E+00	0.00E+00	1.22E-01	6.19E-02	2.65E-01
1.84E+01	3.74E-04	3.74E-04	9.88E-01	1.18E-02	1.18E-02	1.29E-02	0.00E+00	0.00E+00	1.20E-01	6.30E-02	2.65E-01
2.08E+01	3.13E-04	3.13E-04	9.88E-01	1.18E-02	1.18E-02	1.21E-02	0.00E+00	0.00E+00	1.18E-01	6.41E-02	2.66E-01
2.35E+01	2.61E-04	2.61E-04	9.88E-01	1.18E-02	1.18E-02	1.13E-02	0.00E+00	0.00E+00	1.16E-01	6.53E-02	2.66E-01
2.66E+01	2.17E-04	2.17E-04	9.88E-01	1.18E-02	1.18E-02	1.06E-02	0.00E+00	0.00E+00	1.14E-01	6.64E-02	2.67E-01
3.01E+01	1.79E-04	1.79E-04	9.88E-01	1.18E-02	1.18E-02	9.80E-03	0.00E+00	0.00E+00	1.13E-01	6.75E-02	2.67E-01
3.40E+01	1.47E-04	1.47E-04	9.88E-01	1.18E-02	1.18E-02	9.06E-03	0.00E+00	0.00E+00	1.11E-01	6.87E-02	2.68E-01

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time averaged (tav = 3600. s) volume concentration: concentration contour parameters

c(x,y,z,t) = cc(x) * (erf(xa)-erf(xb)) * (erf(ya)-erf(yb)) * (exp(-za*za)+exp(-zb*zb))

```
   c(x,y,z,t) = concentration (volume fraction) at (x,y,z,t)
            x = downwind distance (m)
            y = crosswind horizontal distance (m)
            z = height (m)
            t = time (s)

          erf = error functon
           xa = (x-xc+bx)/(sr2*betax)
           xb = (x-xc-bx)/(sr2*betax)
           ya = (y+b)/(sr2*betac)
           yb = (y-b)/(sr2*betac)
          exp = exponential function
           za = (z-zc)/(sr2*sig)
           zb = (z+zc)/(sr2*sig)
          sr2 = sqrt(2.0)

     x        cc(x)     b(x)    betac(x)    zc(x)    sig(x)                t        xc(t)     bx(t)   betax(t)
```

-6.23E-01	0.00E+00	5.61E-01	1.57E-01	0.00E+00	0.00E+00	3.51E-01	0.00E+00	6.23E-01	5.09E-03
-4.98E-01	1.99E-03	5.61E-01	1.68E-01	0.00E+00	6.56E-02	4.17E-01	6.23E-02	6.85E-01	5.60E-03
-3.74E-01	2.32E-03	5.61E-01	1.78E-01	0.00E+00	9.37E-02	4.84E-01	1.25E-01	7.47E-01	6.10E-03
-2.49E-01	2.53E-03	5.61E-01	1.89E-01	0.00E+00	1.17E-01	5.59E-01	1.87E-01	8.10E-01	6.61E-03
-1.25E-01	2.69E-03	5.61E-01	1.99E-01	0.00E+00	1.37E-01	6.35E-01	2.49E-01	8.72E-01	7.12E-03
-5.22E-08	2.82E-03	5.61E-01	2.11E-01	0.00E+00	1.56E-01	7.20E-01	3.11E-01	9.34E-01	7.63E-03
1.25E-01	2.94E-03	5.61E-01	2.22E-01	0.00E+00	1.74E-01	8.04E-01	3.74E-01	9.97E-01	8.14E-03
2.49E-01	3.05E-03	5.61E-01	2.33E-01	0.00E+00	1.90E-01	8.98E-01	4.36E-01	1.06E+00	8.64E-03
3.74E-01	3.15E-03	5.61E-01	2.45E-01	0.00E+00	2.06E-01	9.91E-01	4.98E-01	1.12E+00	9.16E-03
4.98E-01	3.24E-03	5.61E-01	2.57E-01	0.00E+00	2.21E-01	1.09E+00	5.61E-01	1.18E+00	9.66E-03
6.23E-01	3.33E-03	5.61E-01	2.69E-01	0.00E+00	2.36E-01	1.20E+00	6.23E-01	1.25E+00	1.02E-02
6.31E-01	3.31E-03	5.61E-01	2.69E-01	6.28E-07	2.37E-01	1.21E+00	6.31E-01	1.25E+00	1.02E-02
6.41E-01	3.30E-03	5.61E-01	2.70E-01	2.85E-06	2.38E-01	1.23E+00	6.41E-01	1.26E+00	1.03E-02
6.51E-01	3.28E-03	5.61E-01	2.71E-01	7.26E-06	2.39E-01	1.24E+00	6.51E-01	1.27E+00	1.04E-02
6.64E-01	3.25E-03	5.61E-01	2.73E-01	1.47E-05	2.41E-01	1.26E+00	6.64E-01	1.29E+00	1.05E-02
6.77E-01	3.23E-03	5.61E-01	2.74E-01	2.61E-05	2.42E-01	1.29E+00	6.77E-01	1.30E+00	1.06E-02
6.93E-01	3.20E-03	5.61E-01	2.75E-01	4.28E-05	2.44E-01	1.31E+00	6.93E-01	1.32E+00	1.07E-02
7.11E-01	3.17E-03	5.61E-01	2.77E-01	6.64E-05	2.46E-01	1.34E+00	7.11E-01	1.33E+00	1.09E-02
7.31E-01	3.14E-03	5.61E-01	2.79E-01	9.91E-05	2.48E-01	1.38E+00	7.31E-01	1.35E+00	1.11E-02
7.54E-01	3.10E-03	5.61E-01	2.81E-01	1.43E-04	2.51E-01	1.42E+00	7.54E-01	1.38E+00	1.12E-02
7.80E-01	3.06E-03	5.61E-01	2.84E-01	2.03E-04	2.53E-01	1.46E+00	7.80E-01	1.40E+00	1.15E-02
8.09E-01	3.02E-03	5.61E-01	2.87E-01	2.81E-04	2.56E-01	1.51E+00	8.09E-01	1.43E+00	1.17E-02
8.42E-01	2.97E-03	5.61E-01	2.90E-01	3.83E-04	2.60E-01	1.56E+00	8.42E-01	1.47E+00	1.20E-02
8.80E-01	2.92E-03	5.61E-01	2.94E-01	5.15E-04	2.64E-01	1.63E+00	8.80E-01	1.50E+00	1.23E-02
9.23E-01	2.86E-03	5.61E-01	2.98E-01	6.85E-04	2.68E-01	1.70E+00	9.23E-01	1.55E+00	1.26E-02
9.72E-01	2.80E-03	5.61E-01	3.03E-01	9.01E-04	2.73E-01	1.78E+00	9.72E-01	1.59E+00	1.30E-02
1.03E+00	2.74E-03	5.61E-01	3.08E-01	1.17E-03	2.78E-01	1.86E+00	1.03E+00	1.65E+00	1.35E-02
1.09E+00	2.67E-03	5.61E-01	3.14E-01	1.52E-03	2.84E-01	1.96E+00	1.09E+00	1.71E+00	1.40E-02
1.16E+00	2.60E-03	5.61E-01	3.21E-01	1.94E-03	2.91E-01	2.08E+00	1.16E+00	1.78E+00	1.46E-02
1.24E+00	2.53E-03	5.61E-01	3.29E-01	2.47E-03	2.98E-01	2.20E+00	1.24E+00	1.86E+00	1.52E-02
1.33E+00	2.45E-03	5.61E-01	3.38E-01	3.12E-03	3.07E-01	2.34E+00	1.33E+00	1.95E+00	1.60E-02
1.43E+00	2.37E-03	5.61E-01	3.49E-01	3.92E-03	3.16E-01	2.50E+00	1.43E+00	2.06E+00	1.68E-02
1.55E+00	2.29E-03	5.61E-01	3.60E-01	4.88E-03	3.26E-01	2.68E+00	1.55E+00	2.17E+00	1.78E-02
1.68E+00	2.21E-03	5.61E-01	3.74E-01	6.04E-03	3.38E-01	2.88E+00	1.68E+00	2.31E+00	1.88E-02
1.83E+00	2.13E-03	5.61E-01	3.89E-01	7.44E-03	3.51E-01	3.11E+00	1.83E+00	2.46E+00	2.01E-02
2.01E+00	2.05E-03	5.61E-01	4.06E-01	9.10E-03	3.65E-01	3.36E+00	2.01E+00	2.63E+00	2.15E-02
2.20E+00	1.97E-03	5.61E-01	4.26E-01	1.11E-02	3.80E-01	3.64E+00	2.20E+00	2.82E+00	2.30E-02
2.42E+00	1.89E-03	5.61E-01	4.48E-01	1.34E-02	3.98E-01	3.95E+00	2.42E+00	3.04E+00	2.48E-02
2.67E+00	1.81E-03	5.61E-01	4.73E-01	1.61E-02	4.17E-01	4.30E+00	2.67E+00	3.29E+00	2.69E-02
2.95E+00	1.73E-03	5.60E-01	5.02E-01	1.92E-02	4.38E-01	4.69E+00	2.95E+00	3.57E+00	2.92E-02
3.27E+00	1.66E-03	5.60E-01	5.35E-01	2.28E-02	4.61E-01	5.13E+00	3.27E+00	3.89E+00	3.18E-02
3.63E+00	1.58E-03	5.60E-01	5.73E-01	2.69E-02	4.87E-01	5.62E+00	3.63E+00	4.25E+00	3.47E-02
4.04E+00	1.51E-03	5.60E-01	6.15E-01	3.16E-02	5.15E-01	6.16E+00	4.04E+00	4.66E+00	3.81E-02
4.51E+00	1.45E-03	5.60E-01	6.64E-01	3.69E-02	5.46E-01	6.76E+00	4.51E+00	5.13E+00	4.19E-02
5.04E+00	1.38E-03	5.60E-01	7.19E-01	4.28E-02	5.80E-01	7.44E+00	5.04E+00	5.66E+00	4.62E-02
5.64E+00	1.32E-03	5.60E-01	7.81E-01	4.94E-02	6.18E-01	8.19E+00	5.64E+00	6.26E+00	5.11E-02
6.32E+00	1.26E-03	5.60E-01	8.52E-01	5.68E-02	6.59E-01	9.02E+00	6.32E+00	6.94E+00	5.67E-02
7.09E+00	1.20E-03	5.60E-01	9.33E-01	6.49E-02	7.05E-01	9.95E+00	7.09E+00	7.71E+00	6.30E-02
7.96E+00	1.15E-03	5.60E-01	1.02E+00	7.38E-02	7.55E-01	1.10E+01	7.96E+00	8.58E+00	7.01E-02
8.95E+00	1.09E-03	5.60E-01	1.13E+00	8.35E-02	8.11E-01	1.21E+01	8.95E+00	9.57E+00	7.82E-02
1.01E+01	1.04E-03	5.60E-01	1.25E+00	9.41E-02	8.72E-01	1.34E+01	1.01E+01	1.07E+01	8.74E-02
1.14E+01	9.82E-04	5.60E-01	1.38E+00	1.05E-01	9.39E-01	1.48E+01	1.14E+01	1.20E+01	9.78E-02
1.28E+01	9.29E-04	5.60E-01	1.53E+00	1.18E-01	1.01E+00	1.64E+01	1.28E+01	1.34E+01	1.10E-01
1.44E+01	8.76E-04	5.60E-01	1.70E+00	1.30E-01	1.10E+00	1.82E+01	1.44E+01	1.51E+01	1.23E-01
1.63E+01	8.24E-04	5.60E-01	1.90E+00	1.44E-01	1.19E+00	2.02E+01	1.63E+01	1.69E+01	1.38E-01
1.84E+01	7.73E-04	5.60E-01	2.12E+00	1.59E-01	1.29E+00	2.24E+01	1.84E+01	1.90E+01	1.55E-01
2.08E+01	7.23E-04	5.60E-01	2.37E+00	1.74E-01	1.40E+00	2.48E+01	2.08E+01	2.14E+01	1.75E-01
2.35E+01	6.74E-04	5.60E-01	2.65E+00	1.90E-01	1.52E+00	2.75E+01	2.35E+01	2.41E+01	1.97E-01
2.66E+01	6.27E-04	5.60E-01	2.98E+00	2.06E-01	1.65E+00	3.06E+01	2.66E+01	2.72E+01	2.22E-01
3.01E+01	5.81E-04	5.60E-01	3.34E+00	2.23E-01	1.80E+00	3.39E+01	3.01E+01	3.07E+01	2.50E-01
3.40E+01	5.37E-04	5.60E-01	3.76E+00	2.41E-01	1.96E+00	3.77E+01	3.40E+01	3.46E+01	2.83E-01

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time averaged (tav = 3600. s) volume concentration: concentration in the z = 1.50 plane.

downwind distance x (m)	time of max conc (s)	cloud duration (s)	effective half width bbc (m)	average concentration (volume fraction) at (x,y,z) y/bbc= 0.0	y/bbc= 0.5	y/bbc= 1.0	y/bbc= 1.5	y/bbc= 2.0	y/bbc= 2.5
-6.23E-01	1.80E+03	3.60E+03	6.23E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
-4.98E-01	1.80E+03	3.60E+03	6.32E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
-3.74E-01	1.80E+03	3.60E+03	6.40E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
-2.49E-01	1.80E+03	3.60E+03	6.49E-01	3.26E-38	2.92E-38	1.05E-38	4.69E-40	1.53E-42	0.00E+00
-1.25E-01	1.80E+03	3.60E+03	6.59E-01	2.52E-28	2.22E-28	7.88E-29	4.07E-30	1.89E-32	7.54E-36
-5.22E-08	1.80E+03	3.60E+03	6.69E-01	1.88E-22	1.63E-22	5.76E-23	3.37E-24	2.12E-26	1.13E-29
1.25E-01	1.80E+03	3.60E+03	6.80E-01	1.37E-18	1.17E-18	4.11E-19	2.68E-20	2.20E-22	2.07E-25
2.49E-01	1.80E+03	3.60E+03	6.91E-01	7.19E-16	6.00E-16	2.10E-16	1.51E-17	1.56E-19	1.96E-22
3.74E-01	1.80E+03	3.60E+03	7.03E-01	7.32E-14	6.01E-14	2.10E-14	1.64E-15	2.08E-17	3.79E-20
4.98E-01	1.80E+03	3.60E+03	7.16E-01	2.53E-12	2.04E-12	7.10E-13	5.96E-14	9.06E-16	2.25E-18
6.23E-01	1.80E+03	3.60E+03	7.29E-01	4.11E-11	3.28E-11	1.14E-11	1.02E-12	1.81E-14	5.73E-17
6.31E-01	1.80E+03	3.60E+03	7.30E-01	4.93E-11	3.92E-11	1.36E-11	1.22E-12	2.19E-14	7.02E-17

6.41E-01	1.80E+03	3.60E+03	7.31E-01	5.86E-11	4.66E-11	1.61E-11	1.46E-12	2.64E-14	8.71E-17
6.51E-01	1.80E+03	3.60E+03	7.32E-01	7.10E-11	5.64E-11	1.95E-11	1.77E-12	3.26E-14	1.10E-16
6.64E-01	1.80E+03	3.60E+03	7.33E-01	8.80E-11	6.98E-11	2.42E-11	2.20E-12	4.11E-14	1.42E-16
6.77E-01	1.80E+03	3.60E+03	7.35E-01	1.12E-10	8.83E-11	3.06E-11	2.80E-12	5.31E-14	1.87E-16
6.93E-01	1.80E+03	3.60E+03	7.36E-01	1.45E-10	1.15E-10	3.96E-11	3.66E-12	7.06E-14	2.57E-16
7.11E-01	1.80E+03	3.60E+03	7.38E-01	1.93E-10	1.53E-10	5.27E-11	4.91E-12	9.65E-14	3.61E-16
7.31E-01	1.80E+03	3.60E+03	7.40E-01	2.63E-10	2.07E-10	7.16E-11	6.73E-12	1.35E-13	5.26E-16
7.54E-01	1.80E+03	3.60E+03	7.43E-01	3.68E-10	2.89E-10	9.98E-11	9.47E-12	1.95E-13	7.82E-16
7.80E-01	1.80E+03	3.60E+03	7.46E-01	5.29E-10	4.15E-10	1.43E-10	1.37E-11	2.90E-13	1.23E-15
8.09E-01	1.80E+03	3.60E+03	7.49E-01	7.86E-10	6.14E-10	2.12E-10	2.06E-11	4.47E-13	1.97E-15
8.42E-01	1.80E+03	3.60E+03	7.53E-01	1.20E-09	9.38E-10	3.23E-10	3.18E-11	7.13E-13	3.30E-15
8.80E-01	1.80E+03	3.60E+03	7.57E-01	1.91E-09	1.48E-09	5.09E-10	5.08E-11	1.18E-12	5.84E-15
9.23E-01	1.80E+03	3.60E+03	7.62E-01	3.11E-09	2.40E-09	8.26E-10	8.38E-11	2.02E-12	1.06E-14
9.72E-01	1.80E+03	3.60E+03	7.68E-01	5.24E-09	4.03E-09	1.38E-09	1.43E-10	3.59E-12	2.02E-14
1.03E+00	1.80E+03	3.60E+03	7.74E-01	9.08E-09	6.95E-09	2.38E-09	2.50E-10	6.58E-12	3.98E-14
1.09E+00	1.80E+03	3.60E+03	7.81E-01	1.61E-08	1.23E-08	4.21E-09	4.51E-10	1.24E-11	8.11E-14
1.16E+00	1.80E+03	3.60E+03	7.90E-01	2.94E-08	2.23E-08	7.61E-09	8.32E-10	2.42E-11	1.72E-13
1.24E+00	1.80E+03	3.60E+03	8.00E-01	5.46E-08	4.11E-08	1.40E-08	1.57E-09	4.80E-11	3.73E-13
1.33E+00	1.80E+03	3.60E+03	8.11E-01	1.03E-07	7.69E-08	2.62E-08	2.99E-09	9.72E-11	8.29E-13
1.43E+00	1.80E+03	3.60E+03	8.24E-01	1.96E-07	1.45E-07	4.94E-08	5.78E-09	1.99E-10	1.86E-12
1.55E+00	1.80E+03	3.60E+03	8.39E-01	3.74E-07	2.76E-07	9.34E-08	1.12E-08	4.10E-10	4.24E-12
1.68E+00	1.80E+03	3.60E+03	8.56E-01	7.12E-07	5.22E-07	1.76E-07	2.17E-08	8.43E-10	9.68E-12
1.83E+00	1.80E+03	3.60E+03	8.76E-01	1.35E-06	9.79E-07	3.30E-07	4.16E-08	1.72E-09	2.18E-11
2.01E+00	1.80E+03	3.60E+03	8.99E-01	2.51E-06	1.81E-06	6.08E-07	7.86E-08	3.45E-09	4.86E-11
2.20E+00	1.80E+03	3.60E+03	9.26E-01	4.58E-06	3.28E-06	1.10E-06	1.45E-07	6.78E-09	1.05E-10
2.42E+00	1.80E+03	3.60E+03	9.57E-01	8.13E-06	5.79E-06	1.93E-06	2.61E-07	1.29E-08	2.22E-10
2.67E+00	1.80E+03	3.60E+03	9.93E-01	1.40E-05	9.91E-06	3.30E-06	4.55E-07	2.38E-08	4.47E-10
2.95E+00	1.80E+03	3.60E+03	1.04E+00	2.32E-05	1.64E-05	5.43E-06	7.63E-07	4.20E-08	8.63E-10
3.27E+00	1.80E+03	3.60E+03	1.08E+00	3.71E-05	2.60E-05	8.59E-06	1.23E-06	7.09E-08	1.58E-09
3.63E+00	1.80E+03	3.60E+03	1.14E+00	5.68E-05	3.96E-05	1.31E-05	1.89E-06	1.14E-07	2.73E-09
4.04E+00	1.80E+03	3.60E+03	1.20E+00	8.31E-05	5.78E-05	1.90E-05	2.79E-06	1.74E-07	4.46E-09
4.51E+00	1.80E+03	3.60E+03	1.28E+00	1.16E-04	8.07E-05	2.64E-05	3.92E-06	2.53E-07	6.86E-09
5.04E+00	1.80E+03	3.60E+03	1.37E+00	1.56E-04	1.08E-04	3.52E-05	5.27E-06	3.49E-07	9.94E-09
5.64E+00	1.80E+03	3.60E+03	1.46E+00	1.99E-04	1.37E-04	4.48E-05	6.75E-06	4.57E-07	1.36E-08
6.32E+00	1.80E+03	3.60E+03	1.58E+00	2.43E-04	1.68E-04	5.47E-05	8.28E-06	5.70E-07	1.75E-08
7.09E+00	1.80E+03	3.60E+03	1.71E+00	2.85E-04	1.97E-04	6.40E-05	9.73E-06	6.79E-07	2.15E-08
7.96E+00	1.80E+03	3.60E+03	1.86E+00	3.22E-04	2.21E-04	7.20E-05	1.10E-05	7.74E-07	2.50E-08
8.95E+00	1.80E+03	3.60E+03	2.03E+00	3.49E-04	2.40E-04	7.81E-05	1.19E-05	8.48E-07	2.78E-08
1.01E+01	1.81E+03	3.60E+03	2.23E+00	3.66E-04	2.52E-04	8.18E-05	1.25E-05	8.94E-07	2.97E-08
1.14E+01	1.81E+03	3.60E+03	2.45E+00	3.71E-04	2.55E-04	8.29E-05	1.27E-05	9.11E-07	3.05E-08
1.28E+01	1.81E+03	3.60E+03	2.71E+00	3.65E-04	2.51E-04	8.16E-05	1.25E-05	8.99E-07	3.03E-08
1.44E+01	1.81E+03	3.60E+03	3.00E+00	3.50E-04	2.41E-04	7.81E-05	1.20E-05	8.64E-07	2.93E-08
1.63E+01	1.81E+03	3.60E+03	3.34E+00	3.27E-04	2.25E-04	7.31E-05	1.12E-05	8.09E-07	2.75E-08
1.84E+01	1.81E+03	3.60E+03	3.71E+00	3.00E-04	2.06E-04	6.68E-05	1.02E-05	7.41E-07	2.53E-08
2.08E+01	1.81E+03	3.60E+03	4.14E+00	2.69E-04	1.85E-04	6.00E-05	9.20E-06	6.65E-07	2.27E-08
2.35E+01	1.81E+03	3.60E+03	4.63E+00	2.37E-04	1.63E-04	5.29E-05	8.11E-06	5.87E-07	2.00E-08
2.66E+01	1.81E+03	3.60E+03	5.19E+00	2.06E-04	1.42E-04	4.59E-05	7.05E-06	5.10E-07	1.74E-08
3.01E+01	1.82E+03	3.60E+03	5.82E+00	1.76E-04	1.21E-04	3.94E-05	6.04E-06	4.37E-07	1.49E-08
3.40E+01	1.82E+03	3.60E+03	6.53E+00	1.50E-04	1.03E-04	3.34E-05	5.12E-06	3.70E-07	1.27E-08

1

time averaged (tav = 3600. s) volume concentration: maximum concentration (volume fraction) along centerline.

downwind distance x (m)	height z (m)	maximum concentration c(x,0,z)	time of max conc (s)	cloud duration (s)
-6.23E-01	0.00E+00	0.00E+00	1.80E+03	3.60E+03
-4.98E-01	0.00E+00	1.59E-02	1.80E+03	3.60E+03
-3.74E-01	0.00E+00	1.85E-02	1.80E+03	3.60E+03
-2.49E-01	0.00E+00	2.01E-02	1.80E+03	3.60E+03
-1.25E-01	0.00E+00	2.12E-02	1.80E+03	3.60E+03
-5.22E-08	0.00E+00	2.21E-02	1.80E+03	3.60E+03
1.25E-01	0.00E+00	2.28E-02	1.80E+03	3.60E+03
2.49E-01	0.00E+00	2.34E-02	1.80E+03	3.60E+03
3.74E-01	0.00E+00	2.39E-02	1.80E+03	3.60E+03
4.98E-01	0.00E+00	2.42E-02	1.80E+03	3.60E+03
6.23E-01	0.00E+00	2.45E-02	1.80E+03	3.60E+03
6.31E-01	0.00E+00	2.43E-02	1.80E+03	3.60E+03
6.41E-01	0.00E+00	2.42E-02	1.80E+03	3.60E+03

6.51E-01	0.00E+00	2.40E-02	1.80E+03	3.60E+03
6.64E-01	0.00E+00	2.38E-02	1.80E+03	3.60E+03
6.77E-01	0.00E+00	2.36E-02	1.80E+03	3.60E+03
6.93E-01	0.00E+00	2.33E-02	1.80E+03	3.60E+03
7.11E-01	0.00E+00	2.30E-02	1.80E+03	3.60E+03
7.31E-01	0.00E+00	2.27E-02	1.80E+03	3.60E+03
7.54E-01	0.00E+00	2.24E-02	1.80E+03	3.60E+03
7.80E-01	0.00E+00	2.20E-02	1.80E+03	3.60E+03
8.09E-01	0.00E+00	2.16E-02	1.80E+03	3.60E+03
8.42E-01	0.00E+00	2.12E-02	1.80E+03	3.60E+03
8.80E-01	0.00E+00	2.07E-02	1.80E+03	3.60E+03
9.23E-01	0.00E+00	2.01E-02	1.80E+03	3.60E+03
9.72E-01	0.00E+00	1.96E-02	1.80E+03	3.60E+03
1.03E+00	0.00E+00	1.90E-02	1.80E+03	3.60E+03
1.09E+00	0.00E+00	1.83E-02	1.80E+03	3.60E+03
1.16E+00	0.00E+00	1.76E-02	1.80E+03	3.60E+03
1.24E+00	0.00E+00	1.69E-02	1.80E+03	3.60E+03
1.33E+00	0.00E+00	1.61E-02	1.80E+03	3.60E+03
1.43E+00	0.00E+00	1.53E-02	1.80E+03	3.60E+03
1.55E+00	0.00E+00	1.44E-02	1.80E+03	3.60E+03
1.68E+00	0.00E+00	1.35E-02	1.80E+03	3.60E+03
1.83E+00	0.00E+00	1.26E-02	1.80E+03	3.60E+03
2.01E+00	0.00E+00	1.17E-02	1.80E+03	3.60E+03
2.20E+00	0.00E+00	1.08E-02	1.80E+03	3.60E+03
2.42E+00	0.00E+00	9.91E-03	1.80E+03	3.60E+03
2.67E+00	0.00E+00	9.01E-03	1.80E+03	3.60E+03
2.95E+00	0.00E+00	8.13E-03	1.80E+03	3.60E+03
3.27E+00	0.00E+00	7.28E-03	1.80E+03	3.60E+03
3.63E+00	0.00E+00	6.47E-03	1.80E+03	3.60E+03
4.04E+00	0.00E+00	5.70E-03	1.80E+03	3.60E+03
4.51E+00	0.00E+00	4.98E-03	1.80E+03	3.60E+03
5.04E+00	0.00E+00	4.32E-03	1.80E+03	3.60E+03
5.64E+00	0.00E+00	3.72E-03	1.80E+03	3.60E+03
6.32E+00	0.00E+00	3.17E-03	1.80E+03	3.60E+03
7.09E+00	0.00E+00	2.69E-03	1.80E+03	3.60E+03
7.96E+00	0.00E+00	2.27E-03	1.80E+03	3.60E+03
8.95E+00	0.00E+00	1.90E-03	1.80E+03	3.60E+03
1.01E+01	0.00E+00	1.58E-03	1.81E+03	3.60E+03
1.14E+01	0.00E+00	1.31E-03	1.81E+03	3.60E+03
1.28E+01	0.00E+00	1.08E-03	1.81E+03	3.60E+03
1.44E+01	0.00E+00	8.82E-04	1.81E+03	3.60E+03
1.63E+01	0.00E+00	7.20E-04	1.81E+03	3.60E+03
1.84E+01	0.00E+00	5.86E-04	1.81E+03	3.60E+03
2.08E+01	0.00E+00	4.75E-04	1.81E+03	3.60E+03
2.35E+01	0.00E+00	3.84E-04	1.81E+03	3.60E+03
2.66E+01	0.00E+00	3.09E-04	1.81E+03	3.60E+03
3.01E+01	0.00E+00	2.48E-04	1.82E+03	3.60E+03
3.40E+01	0.00E+00	1.99E-04	1.82E+03	3.60E+03

CPPALT3.DAT

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