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SOME TECHNIQUES FOR ESTIMATING THE RESULTS OF THE EMISSION OF RADIOACTIVE EFFLUENT FROM ORNL STACKS

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I. INTRODUCTION

There are at the Oak Ridge National Laboratory five stacks which from time to time emit small quantities of radioactive material to the atmosphere. As can be seen from Figs. 1 and 2 and from Table 1, these stacks are located at different points within the Laboratory, have different emission characteristics, and serve a variety of equipment and processes. Because of this the task of predicting a safe upper limit to the permissible rate of release of activity from a given stack is quite complex; the limit depends not only upon the atmospheric concentrations generated by the stack under consideration but also upon the contributions from each of the other stacks. Moreover, the atmospheric concentration produced at a given point by a given release rate is a complicated function of the meteorological conditions which prevail at the time of the release.

In most previous calculations aimed at the establishment of permissible release rates, each stack has been regarded as isolated from the others and the interrelationship between the several stacks has generally been neglected; that is, each stack has been treated as if the others did not exist. To compensate for this, a maximum permissible release rate, or alternatively a total permitted annual release for all of the stacks taken together, has usually been imposed. One of the purposes of this study is to examine the cumulative effect of emissions from all the stacks and to develop a more realistic approach to the prediction of maximum permissible release rates for each of them.

Closely related to the problem of establishing maximum permissible release rates (which are useful primarily for the control of normal day-to-day operations) is that of estimating, for planning purposes, the consequences of the inadvertent release of a relatively large quantity of radioactive material from one of the stacks. Since it is regarded as extremely unlikely that such an event would involve two or more stacks simultaneously, this portion of the work assumes that the offending stack is isolated.

While the analyses are far from perfect and contain a number of debatable assumptions (discussed in some detail in Section V), the results obtained by the methods described below are believed to approach more

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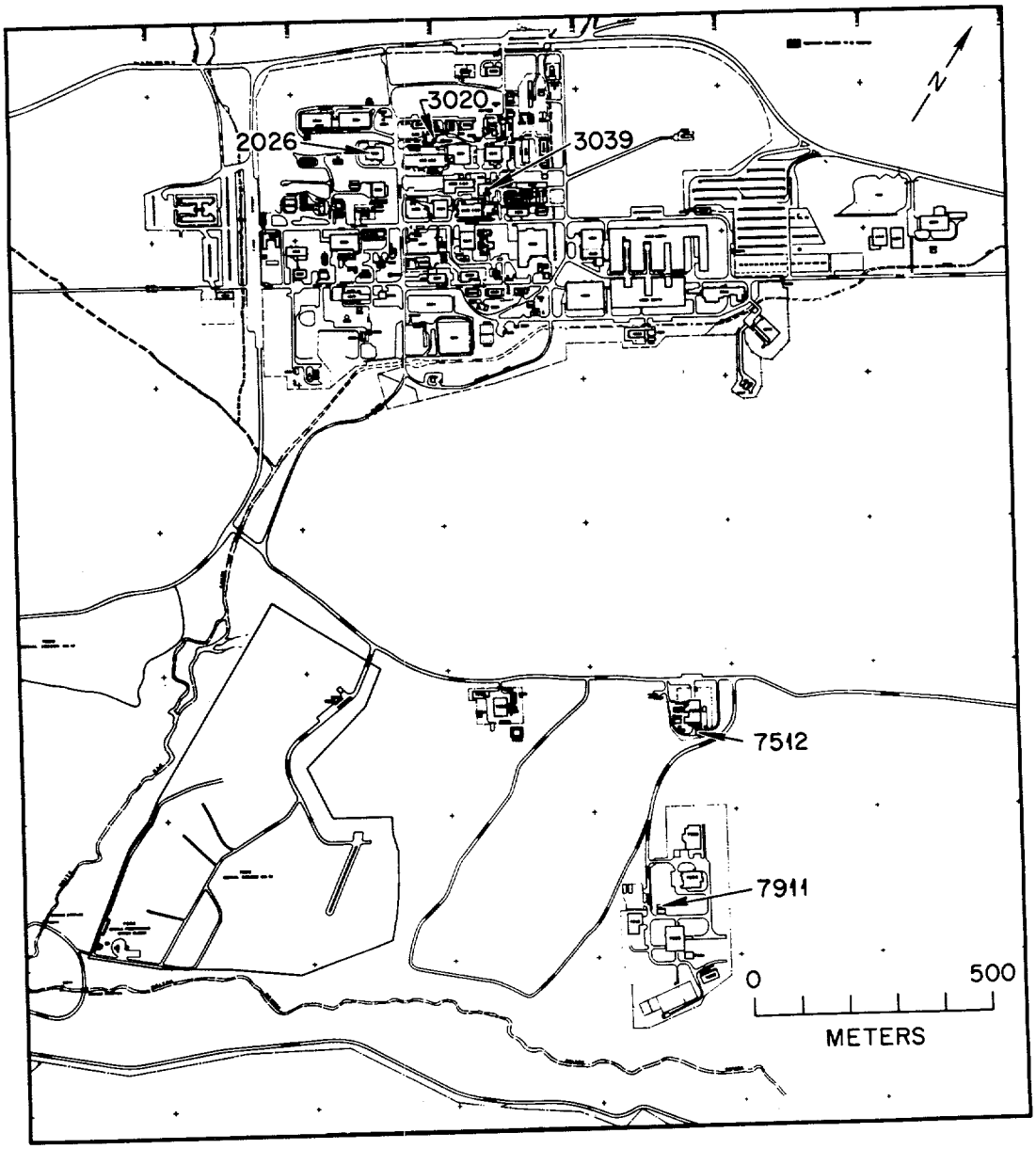

Fig. 1. Map of the ORNL Area Showing Locations of the Five Stacks

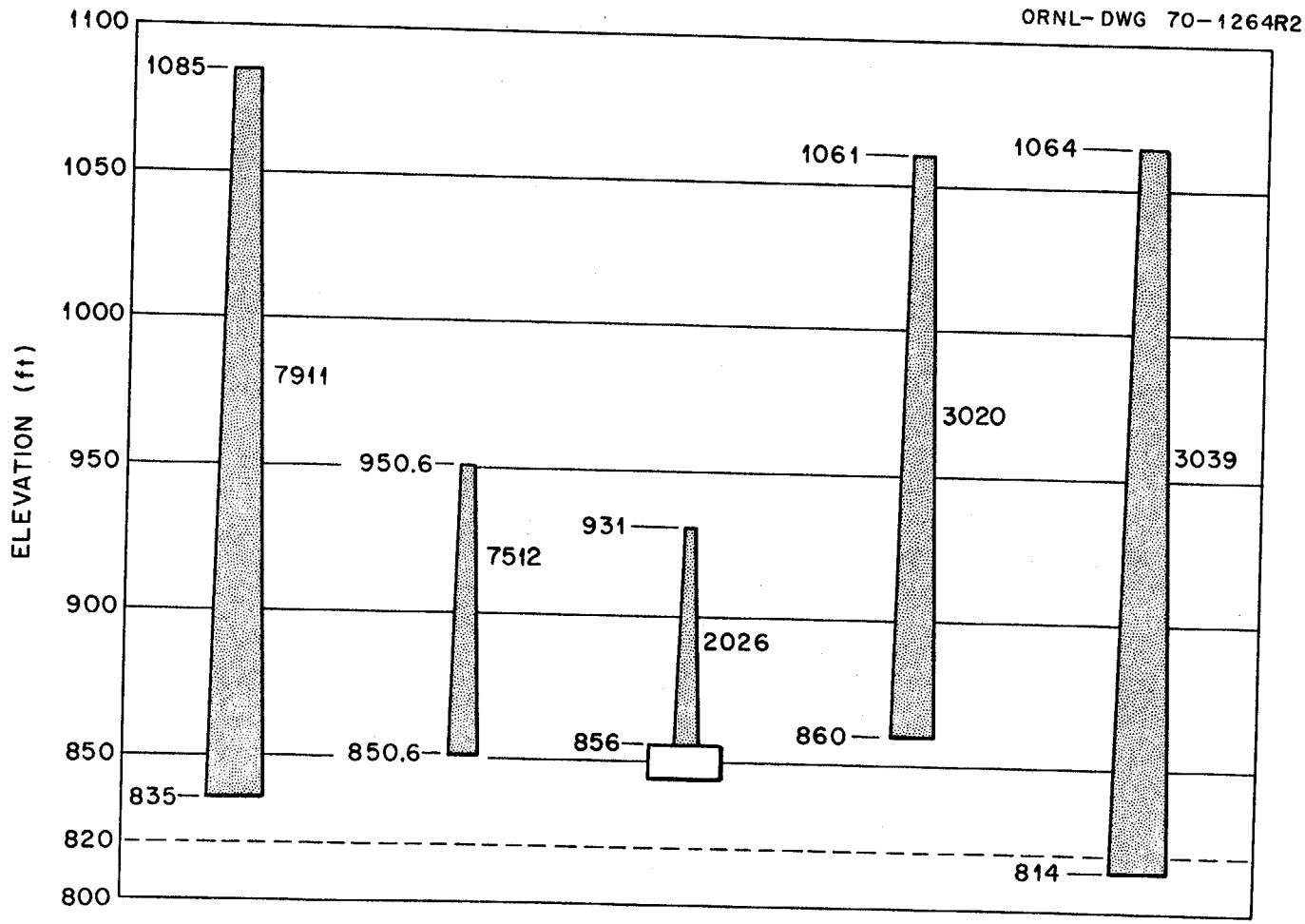

Fig. 2. Relative Elevations of ORNL Stacks

Table 1. ORNL Stack Data

Stack No.	Operations Served	Construction	Elevation (ft) Base	Elevation (ft) Orifice	Stack Height Actual (feet)	Stack Height Calc. h_o* (meters)	Flow cfm	Flow m^3/sec	Orifice Diameter (meters)	Characteristic Stack Constant $\kappa(m^2/sec)$
2026	High-Level Analytical Laboratory	Metal	856.0	931.0	75	33.8	21,000	9.917	1.0668	17.750
3020	Radiochemical Pilot Plant	Concrete	860.0	1061.0	201	73.5	24,000	11.333	0.9144	23.667
3039	ORR, Isotopes Division, 4500 Research Complex	Brick	814.0	1064.0	250	74.4	140,000	66.067	2.4384	51.750
7512	MSRE	Metal	850.6	950.6	100	39.8	21,000	9.917	0.9144	21.000
7911	HFIR, TRU, TUFCDF	Concrete	835.0	1085.0	250	80.8	50,000	23.600	1.5240	29.583

*All stacks are assumed to have a base elevation of 820 ft (see text).

nearly the real world than do those obtained by the procedures in use heretofore.

The method which has been most generally employed to estimate the permissible rate of release from a single, isolated stack involves the computation of the ground-level atmospheric concentrations produced at each point downwind as a result of a constant unit rate of release from the stack; the concentrations so obtained are then compared with previously determined maximum permissible concentrations (MPC) for these points. An upper limit to the permissible release rate may then be obtained by requiring that the MPC be nowhere exceeded. A common variation to this approach is to require that the average concentration over some specific period of time shall not exceed MPC. This requirement is more flexible in that it allows the MPC to be exceeded for some periods of time provided that this is compensated for by other periods during which the concentration is less than the MPC.

Both of the foregoing procedures suffer from the fact that they fail to take into consideration the time variation of the meteorological conditions and that of the activity release rate. Only rarely are atmospheric stability conditions and the wind-velocity vector constant over long periods of time; and, in many cases, the release rates will vary in an unpredictable fashion.* These shortcomings have usually been handled by choosing a "most typical" or, more conservatively, a "pessimistic" set of meteorological conditions, assuming that the release rate is random about a mean unit value, and calculating a sort of expected average concentration.

In the present approach to the calculation of maximum permissible release rates, which is presented in Section II, the notion of a constant unit release is retained because there is no way to anticipate the actual time behavior of this rate. However, the time dependence of the meteorological conditions will be taken into consideration by utilizing data samples which provide an estimate of the joint frequency of the occurrance of various wind-velocity vectors and atmospheric stability conditions.

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*It is recognized that in cases in which certain operations are performed on a fixed schedule the release rates may be, to some extent, predictable but this is not treated explicitly here.

The method for estimating the consequences of an inadvertent activity release is somewhat more conventional because any such release would be expected to be of short duration. Hence, it is reasonable to suppose that the meteorological conditions would be constant during the course of the release. Moreover, as pointed out above, it is almost certain that only one stack would be involved and so the stack can be considered as isolated and treated independently of the others. A number of computer codes have been developed for treating this case.[1-11] One of these, PLUME (Ref. 1), was written specifically to handle the consequences of activity releases from the ORNL reactors and is generally conceded to be among those which give the most realistic results. A somewhat less sophisticated, but more easily applied, procedure has been developed in Section IV of this work. This procedure permits computation of the coordinates of the isopleths of the time-integrated ground-level concentration in the path of the effluent plume generated by an inadvertent release.

II. CALCULATION OF PERMISSIBLE AVERAGE RELEASE RATES

1. Average Ground-Level Concentrations Produced by a Single Stack

The basic relation used to compute the ground level atmospheric concentration is the Gaussian Plume Formula developed by Meade and Pasquill and modified by Gifford[12]

$$X(x,y) = \frac{Q}{\pi u \sigma_y \sigma_z} \exp\left[-\frac{h^2}{2\sigma_z^2} - \frac{y^2}{2\sigma_y^2}\right] \tag{1}$$

where here

$X(x,y)$ = ground level atmospheric concentration (ci/m^3) at a location x-meters downwind and y-meters crosswind from the stack.

Q = release rate (ci/sec)

h = effective stack height (m)

u = windspeed (m/sec) (always taken in the x-direction)

$\sigma_y(x)$, $\sigma_z(x)$ = horizontal and vertical dispersion parameters, respectively (m)

The dispersion parameters σ_y and σ_z are functions of x, the downwind distance, and also of the degree of atmospheric stability. Values of σ_y and σ_z for various stability conditions are shown graphically in Figures 3a and 3b.

The effective stack height, h, is the actual stack height, h_o, plus the distance, Δh, above the stack orifice to which the plume rises due to buoyancy and momentum. In the cases considered here, buoyancy will be neglected and the plume rise, due only to the initial velocity of the stack effluent, is obtained from Holland's formula[13]

$$\Delta h \cong 1.5\ vd/u \tag{2}$$

where, if Δh is to be expressed in meters, d is the orifice diameter in meters, and v and u are the effluent and wind velocities, respectively, both expressed in the same units. Since for each of the stacks under consideration v and d are known, the effective stack height has, in each case, the form

$$h = h_o + \kappa/u \tag{3}$$

where $\kappa = 1.5$ vd is a constant characteristic of each stack. Values of κ and h_o for the five ORNL stacks are given in Table 1.

Since both y and σ_y are real, it is clear from Eq (1) that for any given wind direction the maximum value of X, the ground-level concentration, occurs directly beneath the plume axis, i.e., when y = 0. If the annual average value of X(x,o) in some given direction is required, it is necessary to account for the fact that the wind will blow in that direction only part of the time. Moreover, the wind speed and the atmospheric stability condition which prevail during wind flows in the given direction will vary with time. Information concerning the frequency with which the wind blows in each of the 16 cardinal directions, together with the joint frequency of eight discrete wind speeds and two generalized atmospheric stability conditions (lapse or C-type representative of unstable and inversion or E-type representative of stable conditions), has been collected at the Oak

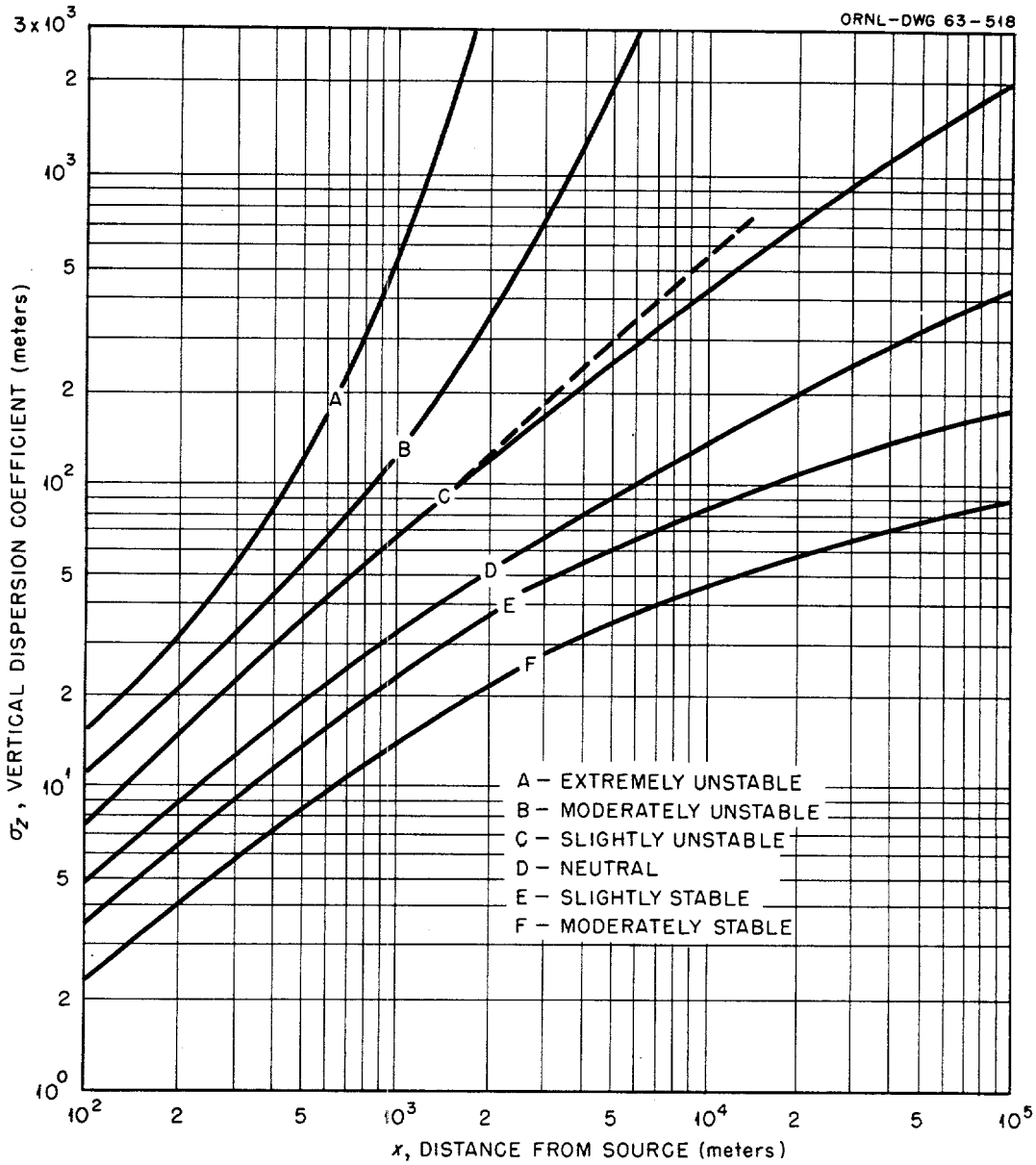

Fig. 3a. Vertical Dispersion Parameters

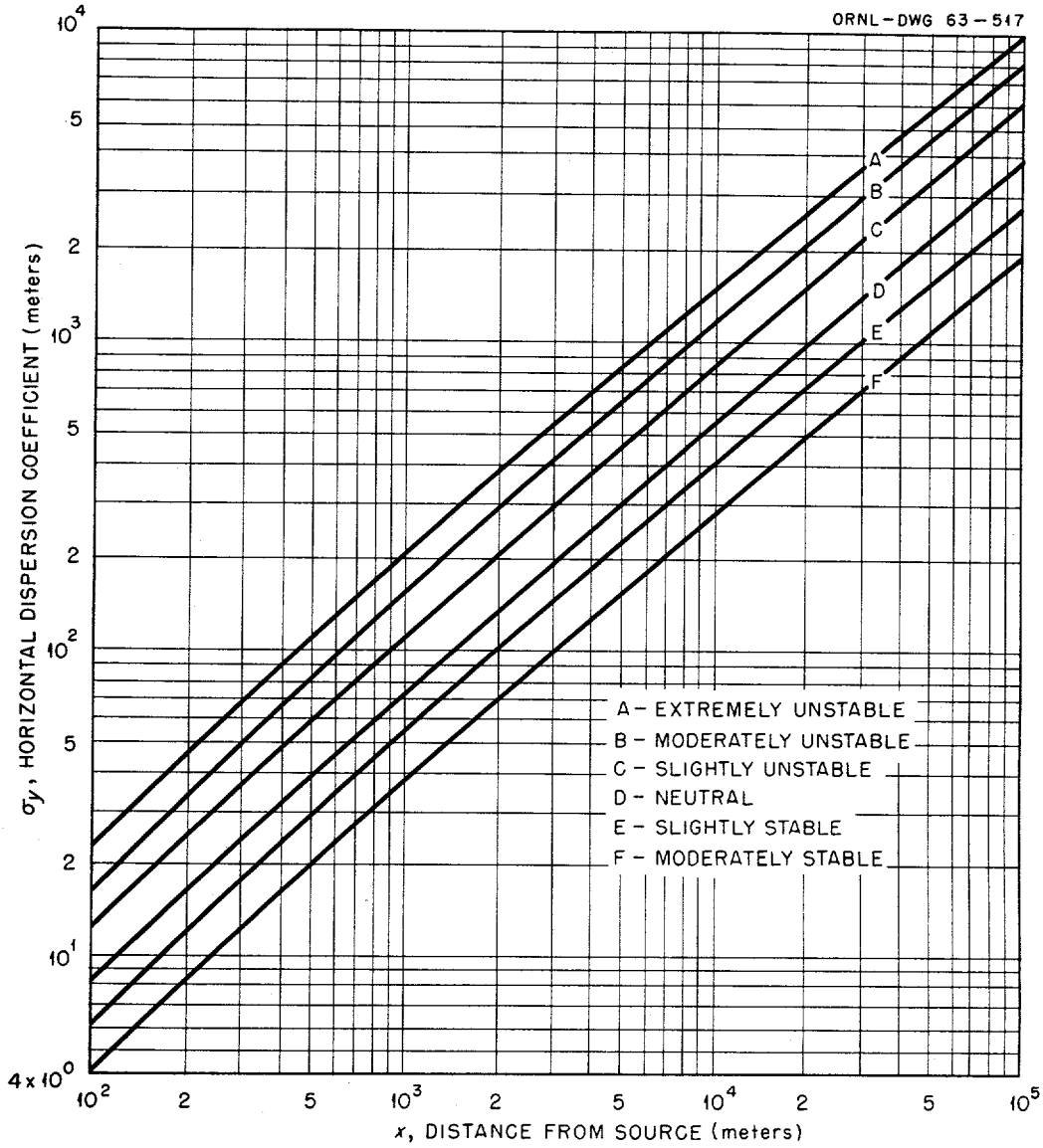

Fig. 3b. Horizontal Dispersion Parameters

Ridge National Laboratory over the past several years. These data have been reduced to a form appropriate for use in connection with Eq (1) and are exhibited in Table II. Basically what has been estimated is the fraction of the time that the wind blows in direction θ_i (i = 1, 2, ..., 16) with speed u_j (j = 1, 2, ..., 8) under stability conditions S_k(k = 1,2).

Let C_{ij} (i = 1, 2, ..., 16); (j = 1, 2, ..., 8) be the fraction of the time that, under lapse conditions, the wind blows in the i'th direction with wind speed u_j, and let E_{ij} be the corresponding fraction for inversion conditions. Then if Q is constant, the expected annual average ground-level concentration at any point x along the plume centerline in the i'th direction will be

$$\frac{X_i(x,o)}{Q} = \frac{1}{\pi}\left\{\sum_{j=1}^{8} C_{ij}\,\frac{e^{-h_{cj}^2/2\sigma_{zc}^2}}{u_j\sigma_{zc}\sigma_{yc}} + \sum_{j=1}^{8} E_{ij}\,\frac{e^{-h_{ej}^2/2\sigma_{ze}^2}}{u_j\sigma_{ze}\sigma_{ye}}\right\} \tag{4}$$

Here the subscripts c and e refer to the lapse and inversion conditions, respectively. The value of the effective stack height h_{kj} is given by Eq (3) with the appropriate value of u_j. For the inversion cases, h_{ej} will be taken to be identical with the height of the inversion "lid" or will be given by Eq (3) whichever is smaller. In the subsequent calculations the inversion lid is always assumed to occur at the elevation of the orifice of the tallest stack.

Another consequence of the presence of an inversion is the requirement that the vertical dispersion parameter be restricted. This is accomplished by assuming that σ_{ze} remains constant once it attains a value H/2.15, where H is the elevation of the inversion lid expressed in meters.

By utilizing Eq (4) it is possible to construct 16 curves, each of which gives the expected annual average ground-level concentration due to a continuous unit rate of release in one of the cardinal directions as a function of distance from the stack in that direction.

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TABLE II.

FREQUENCY OF WIND SPEED AND WIND DIRECTION UNDER C-STABILITY CONDITIONS AT OAK RIDGE NATIONAL LABORATORY
(BASED ON OBSERVATIONS MADE BY THE UNITED STATES WEATHER BUREAU)

WIND DIRECTION	WIND SPEED (MILES PER HOUR) 0.5	2.5	7.0	12.0	17.0	22.0	27.0	29
SSW	0.001065	0.002813	0.004800	0.004610	0.003561	0.002337	0.000238	0.000016
SW	0.001828	0.005818	0.009219	0.008774	0.005102	0.002766	0.000366	0.000016
WSW	0.001319	0.003513	0.005977	0.003942	0.001701	0.000397	0.000016	0.0
W	0.001780	0.004753	0.004514	0.001749	0.000397	0.000207	0.000016	0.000016
WNW	0.001001	0.001812	0.001399	0.000477	0.000032	0.000048	0.000016	0.0
NW	0.001272	0.002225	0.001510	0.000525	0.000111	0.000064	0.0	0.000032
NNW	0.001303	0.002051	0.002003	0.000954	0.000334	0.000191	0.000079	0.000032
N	0.002051	0.005341	0.008854	0.005945	0.003227	0.002066	0.000477	0.000318
NNE	0.001685	0.005293	0.010221	0.006469	0.003449	0.001764	0.000620	0.000207
NE	0.002607	0.008758	0.013543	0.008536	0.003227	0.001446	0.000350	0.000302
ENE	0.001240	0.004546	0.008266	0.007566	0.003052	0.001828	0.000604	0.000493
E	0.001224	0.004006	0.008138	0.008917	0.005786	0.003481	0.001256	0.000445
ESE	0.000381	0.002273	0.003815	0.005818	0.003672	0.001987	0.000477	0.000127
SE	0.000381	0.001780	0.003799	0.003910	0.002130	0.001160	0.000159	0.000048
SSE	0.000302	0.001160	0.001907	0.001319	0.000890	0.000318	0.000048	0.0
S	0.000556	0.002130	0.002655	0.001764	0.000922	0.000556	0.000048	0.0

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TABLE II. (Continued)

FREQUENCY OF WIND SPEED AND WIND DIRECTION UNDER F STABILITY CONDITIONS AT OAK RIDGE NATIONAL LABORATORY
(BASED ON OBSERVATIONS MADE BY THE UNITED STATES WEATHER BUREAU)

WIND DIRECTION	WIND SPEED (MILES PER HOUR) 0.5	2.5	7.0	12.0	17.0	22.0	27.0	29
SSW	0.002035	0.006533	0.012573	0.013861	0.011620	0.005850	0.000286	0.000079
SW	0.004324	0.013050	0.026275	0.026371	0.016817	0.007312	0.000429	0.000064
WSW	0.002480	0.006915	0.012033	0.008965	0.002416	0.000572	0.0	0.0
W	0.004419	0.010380	0.012478	0.005198	0.000970	0.000223	0.0	0.0
WNW	0.002464	0.005198	0.004085	0.001415	0.000302	0.000079	0.0	0.0
NW	0.003799	0.007662	0.006215	0.002225	0.000668	0.000254	0.000016	0.000016
NNW	0.0023[illegible]4	0.006994	0.007741	0.004292	0.001224	0.000684	0.000127	0.000095
N	0.004657	0.013336	0.023494	0.017262	0.008393	0.004165	0.000509	0.000350
NNE	0.004832	0.013018	0.023859	0.017676	0.007487	0.002813	0.000318	0.000143
NE	0.007662	0.022715	0.037211	0.019663	0.006104	0.001749	0.000254	0.000175
ENE	0.002066	0.007646	0.014576	0.013527	0.005214	0.001860	0.000302	0.000207
E	0.002432	0.007010	0.015673	0.015291	0.007423	0.002893	0.000493	0.000064
ESE	0.001446	0.003576	0.008250	0.007487	0.003259	0.001319	0.000318	0.000095
SE	0.001701	0.004260	0.008250	0.007328	0.002686	0.000699	0.000048	0.000048
SSE	0.000827	0.002925	0.004769	0.003116	0.001256	0.000334	0.000016	0.0
S	0.001780	0.004276	0.007884	0.006152	0.002861	0.000779	0.000079	0.0

It is obvious that the wind varies in direction more or less continuously through 360° and does not, in fact, blow only in 16 discrete directions. The use of the 16 directions arises from the fact that the data are reported in those terms. This difficulty can be eliminated by weighting the plume centerline values with the value of the cross wind term, $e^{-y^2/2\sigma_y^2}$, averaged over the chord of the 22.5° arc associated with each direction. This weighting factor is given by*

$$W = \frac{1}{x \tan \pi/16} \int_0^{x \tan \pi/16} e^{-y^2/2\sigma_y^2} dy = \sqrt{\frac{\pi}{2}} \frac{\sigma_y}{x \tan \pi/16} \operatorname{erf}\left[\frac{x \tan \pi/16}{\sqrt{2}\ \sigma_y}\right] \tag{5}$$

Multiplication of Eq (4) by W yields for the expected average annual ground-level concentration in the i'th direction

$$\frac{\overline{X}_i(x)}{Q} = \frac{1}{\sqrt{2\pi}} \cdot \frac{1}{x \tan \pi/16} \left\{ \frac{1}{\sigma_{zc}} \operatorname{erf}\left[\frac{x \tan \pi/16}{\sqrt{2}\ \sigma_{yc}}\right] \sum_{j=1}^{8} C_{ij} \frac{e^{-h_{cj}^2/2\sigma_{zc}^2}}{u_j} \right.$$

$$\left. + \frac{1}{\sigma_{ze}} \operatorname{erf}\left[\frac{x \tan \pi/16}{\sqrt{2}\ \sigma_{ye}}\right] \sum_{j=1}^{8} E_{ij} \frac{e^{-h_{ej}^2/2\sigma_{ze}^2}}{u_j} \right\} \tag{6}$$

The quantity $\overline{X}_i(x)/Q$ is the expected annual average ground-level concentration at a distance x from the stack in the i'th direction, which results from a continuous release of one curie per second. It should be understood that the "i'th direction" now includes an isosceles triangle whose altitude coincides with the x-axis and which has apex angle $\pi/8$ radians. The value of $\overline{X}_i(x)/Q$ is assumed to hold everywhere on the base of such a triangle whose altitude is x (measured along the i'th cardinal direction).

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*A good approximation is $W = \frac{8\sqrt{2}}{\sqrt{\pi}} \cdot \frac{\sigma_y}{x}$

Values of $\overline{X}_i(x)/Q$, which may be called the expected annual average stack dilution factor, for each of the five ORNL stacks and for each of the sixteen directions have been calculated by means of a computer program, STAREL, which was developed for the purpose of evaluating Eq (6). The results of these calculations are presented in Tables III-VII. A description of STAREL and instructions for its use are contained in Appendix A.

For these calculations, the 3039 (ORR) stack, the 3020 (Pilot Plant) stack, and the 2026 (High-Level Analytical Lab) stack, which are all within 200 meters of one another, were assumed to be located at the site of the 3039 stack. Likewise the 7911 (HFIR) stack and the 7512 (MSRE) stack were assumed to be located at the 7911 site.

2. The Establishment of an Effective Area Perimeter

In order to obtain a maximum permissible release rate based upon the stack dilution factors obtained above, it is first necessary to establish a criterion which specifies the magnitude of the acceptable values of the ground-level concentration at various locations. The criterion most frequently adopted and that which is used here is the following: The plant shall be operated in such a way that the expected annual average ground-level concentration of the radionuclide under consideration shall not exceed the nonoccupational maximum permissible concentration on and beyond the controlled area boundary.*

The controlled area boundary of ORNL which will be used in this study is shown in Fig. 4. This boundary must be modified in order to take into account the crosswind averaging procedure described in the previous section and, as will be seen, the modification results in a smaller boundary or "effective area perimeter" for each stack location. As was pointed out previously, only two stack locations are to be considered; thus, only two effective area perimeters are required.

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*The criterion is stated here in terms of a single radioactive species. Should a mixture be involved (which is frequently the case) the problem can be handled using the appropriate MPC for the mixture, calculated in the usual way (see, for example, 10 CFR, part 20).

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TABLE III.

AVERAGED GROUND CONCENTRATION PER UNIT RELEASE RATE WEIGHTED BY STABILITY CONDITION AND FREQUENCY OF WIND SPEEDS FOR VARIOUS DIRECTIONS

(AVERAGED OVER AN ARC OF 22.5 DEGREES)

(CURIES/CU.METER PER CURIES/SEC.)

DISTANCE	DIRECTION FROM STACK							
METERS	SSW	SW	WSW	W	WNW	NW	NNW	N
150.	6.255E-19	8.461E-19	1.998E-19	7.760E-20	1.694E-20	2.855E-20	8.014E-20	7.083E-19
200.	4.055E-14	5.890E-14	1.782E-14	7.036E-15	1.617E-15	2.285E-15	5.462E-15	4.462E-14
300.	1.825E-10	2.923E-10	1.153E-10	5.622E-11	1.499E-11	1.794E-11	3.286E-11	2.197E-10
400.	3.454E-09	5.801E-09	2.591E-09	1.439E-09	4.079E-10	4.683E-10	7.605E-10	4.511E-09
500.	1.268E-08	2.188E-08	1.044E-08	6.416E-09	1.905E-09	2.174E-09	3.225E-09	1.747E-08
600.	2.446E-08	4.308E-08	2.144E-08	1.452E-08	4.501E-09	5.172E-09	7.062E-09	3.511E-08
700.	3.497E-08	6.258E-08	3.206E-08	2.362E-08	7.582E-09	8.796E-09	1.123E-08	5.179E-08
800.	4.270E-08	7.741E-08	4.046E-08	3.194E-08	1.055E-08	1.238E-08	1.500E-08	6.485E-08
900.	4.790E-08	8.777E-08	4.649E-08	3.893E-08	1.324E-08	1.578E-08	1.822E-08	7.428E-08
1000.	5.150E-08	9.529E-08	5.087E-08	4.502E-08	1.585E-08	1.931E-08	2.121E-08	8.146E-08
1100.	5.385E-08	1.005E-07	5.378E-08	5.003E-08	1.823E-08	2.275E-08	2.388E-08	8.667E-08
1200.	5.607E-08	1.054E-07	5.641E-08	5.509E-08	2.082E-08	2.666E-08	2.679E-08	9.180E-08
1300.	5.846E-08	1.107E-07	5.907E-08	6.045E-08	2.370E-08	3.110E-08	3.003E-08	9.733E-08
1400.	6.115E-08	1.165E-07	6.191E-08	6.617E-08	2.683E-08	3.600E-08	3.358E-08	1.034E-07
1600.	6.729E-08	1.296E-07	6.814E-08	7.838E-08	3.362E-08	4.665E-08	4.135E-08	1.169E-07
1800.	7.382E-08	1.432E-07	7.461E-08	9.065E-08	4.048E-08	5.744E-08	4.928E-08	1.308E-07
2000.	7.996E-08	1.559E-07	8.065E-08	1.019E-07	4.680E-08	6.737E-08	5.661E-08	1.438E-07
2500.	7.619E-08	1.490E-07	7.690E-08	1.006E-07	4.747E-08	6.897E-08	5.721E-08	1.389E-07
3000.	6.321E-08	1.235E-07	6.410E-08	8.461E-08	4.026E-08	5.841E-08	4.858E-08	1.158E-07
3500.	5.383E-08	1.050E-07	5.476E-08	7.281E-08	3.492E-08	5.062E-08	4.217E-08	9.893E-08
4000.	4.670E-08	9.108E-08	4.761E-08	6.370E-08	3.075E-08	4.456E-08	3.715E-08	8.608E-08
4500.	4.111E-08	8.014E-08	4.196E-08	5.643E-08	2.738E-08	3.969E-08	3.309E-08	7.595E-08
5000.	3.661E-08	7.135E-08	3.739E-08	5.051E-08	2.461E-08	3.570E-08	2.974E-08	6.777E-08
6000.	2.984E-08	5.818E-08	3.048E-08	4.149E-08	2.034E-08	2.956E-08	2.458E-08	5.542E-08
7000.	2.504E-08	4.885E-08	2.555E-08	3.499E-08	1.723E-08	2.509E-08	2.081E-08	4.660E-08
8000.	2.148E-08	4.193E-08	2.189E-08	3.013E-08	1.488E-08	2.172E-08	1.796E-08	4.005E-08
10000.	1.660E-08	3.247E-08	1.687E-08	2.341E-08	1.161E-08	1.702E-08	1.399E-08	3.104E-08
15000.	1.046E-08	2.053E-08	1.056E-08	1.484E-08	7.400E-09	1.092E-08	8.889E-09	1.963E-08
20000.	7.568E-09	1.488E-08	7.605E-09	1.076E-08	5.383E-09	7.983E-09	6.452E-09	1.423E-08
30000.	4.860E-09	9.581E-09	4.858E-09	6.929E-09	3.475E-09	5.181E-09	4.155E-09	9.157E-09
40000.	3.563E-09	7.036E-09	3.550E-09	5.087E-09	2.555E-09	3.822E-09	3.050E-09	6.722E-09
50000.	2.806E-09	5.548E-09	2.789E-09	4.011E-09	2.016E-09	3.023E-09	2.404E-09	5.299E-09
60000.	2.314E-09	4.580E-09	2.297E-09	3.310E-09	1.665E-09	2.500E-09	1.984E-09	4.373E-09
70000.	1.968E-09	3.897E-09	1.950E-09	2.816E-09	1.417E-09	2.130E-09	1.688E-09	3.720E-09
80000.	1.711E-09	3.389E-09	1.694E-09	2.449E-09	1.233E-09	1.855E-09	1.468E-09	3.235E-09
100000.	1.355E-09	2.687E-09	1.340E-09	1.941E-09	9.778E-10	1.474E-09	1.163E-09	2.564E-09

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TABLE III. (Continued)

AVERAGED GROUND CONCENTRATION PER UNIT RELEASE RATE WEIGHTED BY STABILITY CONDITION AND FREQUENCY OF WIND SPEEDS FOR VARIOUS DIRECTIONS

(AVERAGED OVER AN ARC OF 22.5 DEGREES)

(CURIES/CU.METER PER CURIES/SEC.)

DISTANCE	DIRECTION FROM STACK							
METERS	NNE	NE	ENE	E	ESE	SE	SSE	S
150.	6.905E-19	6.236E-19	7.530E-19	1.275E-18	6.759E-19	3.679E-19	1.193E-19	1.579E-19
200.	4.504E-14	4.509E-14	4.758E-14	7.636E-14	4.357E-14	2.544E-14	8.774E-15	1.130E-14
300.	2.327E-10	2.651E-10	2.355E-10	3.318E-10	1.943E-10	1.257E-10	4.686E-11	6.088E-11
400.	4.885E-09	5.868E-09	4.761E-09	6.206E-09	3.585E-09	2.479E-09	9.760E-10	1.289E-09
500.	1.906E-08	2.365E-08	1.813E-08	2.254E-08	1.285E-08	9.244E-09	3.794E-09	5.117E-09
600.	3.829E-08	4.883E-08	3.580E-08	4.294E-08	2.428E-08	1.789E-08	7.632E-09	1.056E-08
700.	5.627E-08	7.352E-08	5.196E-08	6.059E-08	3.408E-08	2.551E-08	1.126E-08	1.598E-08
800.	7.012E-08	9.351E-08	6.404E-08	7.304E-08	4.094E-08	3.100E-08	1.409E-08	2.046E-08
900.	7.992E-08	1.085E-07	7.205E-08	8.076E-08	4.517E-08	3.458E-08	1.611E-08	2.387E-08
1000.	8.715E-08	1.202E-07	7.713E-08	8.530E-08	4.762E-08	3.695E-08	1.759E-08	2.660E-08
1100.	9.224E-08	1.290E-07	7.982E-08	8.742E-08	4.874E-08	3.840E-08	1.860E-08	2.866E-08
1200.	9.716E-08	1.378E-07	8.177E-08	8.892E-08	4.949E-08	3.972E-08	1.955E-08	3.069E-08
1300.	1.024E-07	1.471E-07	8.352E-08	9.034E-08	5.019E-08	4.115E-08	2.054E-08	3.283E-08
1400.	1.082E-07	1.572E-07	8.533E-08	9.195E-08	5.098E-08	4.276E-08	2.162E-08	3.514E-08
1600.	1.212E-07	1.792E-07	8.946E-08	9.599E-08	5.298E-08	4.648E-08	2.399E-08	4.014E-08
1800.	1.346E-07	2.018E-07	9.396E-08	1.007E-07	5.530E-08	5.047E-08	2.644E-08	4.522E-08
2000.	1.471E-07	2.226E-07	9.825E-08	1.052E-07	5.754E-08	5.422E-08	2.871E-08	4.988E-08
2500.	1.411E-07	2.153E-07	9.050E-08	9.682E-08	5.246E-08	5.098E-08	2.735E-08	4.822E-08
3000.	1.170E-07	1.789E-07	7.454E-08	7.957E-08	4.275E-08	4.184E-08	2.262E-08	4.005E-08
3500.	9.955E-08	1.525E-07	6.302E-08	6.718E-08	3.583E-08	3.531E-08	1.921E-08	3.412E-08
4000.	8.634E-08	1.325E-07	5.432E-08	5.786E-08	3.068E-08	3.042E-08	1.663E-08	2.962E-08
4500.	7.599E-08	1.168E-07	4.753E-08	5.061E-08	2.672E-08	2.664E-08	1.462E-08	2.610E-08
5000.	6.769E-08	1.041E-07	4.210E-08	4.482E-08	2.359E-08	2.363E-08	1.300E-08	2.326E-08
6000.	5.523E-08	8.510E-08	3.401E-08	3.621E-08	1.899E-08	1.918E-08	1.059E-08	1.900E-08
7000.	4.640E-08	7.159E-08	2.831E-08	3.017E-08	1.579E-08	1.607E-08	8.881E-09	1.598E-08
8000.	3.986E-08	6.156E-08	2.413E-08	2.572E-08	1.346E-08	1.378E-08	7.620E-09	1.374E-08
10000.	3.089E-08	4.779E-08	1.845E-08	1.970E-08	1.032E-08	1.066E-08	5.897E-09	1.067E-08
15000.	1.957E-08	3.034E-08	1.144E-08	1.225E-08	6.440E-09	6.750E-09	3.727E-09	6.774E-09
20000.	1.420E-08	2.205E-08	8.183E-09	8.784E-09	4.637E-09	4.903E-09	2.703E-09	4.925E-09
30000.	9.155E-09	1.424E-08	5.196E-09	5.592E-09	2.966E-09	3.165E-09	1.741E-09	3.180E-09
40000.	6.728E-09	1.047E-08	3.783E-09	4.078E-09	2.170E-09	2.328E-09	1.278E-09	2.340E-09
50000.	5.309E-09	8.267E-09	2.965E-09	3.200E-09	1.706E-09	1.838E-09	1.008E-09	1.847E-09
60000.	4.384E-09	6.829E-09	2.438E-09	2.633E-09	1.406E-09	1.519E-09	8.324E-10	1.526E-09
70000.	3.731E-09	5.814E-09	2.068E-09	2.235E-09	1.195E-09	1.293E-09	7.082E-10	1.299E-09
80000.	3.246E-09	5.059E-09	1.794E-09	1.940E-09	1.038E-09	1.125E-09	6.161E-10	1.131E-09
100000.	2.574E-09	4.013E-09	1.416E-09	1.533E-09	8.217E-10	8.929E-10	4.884E-10	8.971E-10

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TABLE IV.

AVERAGED GROUND CONCENTRATION PER UNIT RELEASE RATE WEIGHTED BY STABILITY CONDITION AND FREQUENCY OF WIND SPEEDS FOR VARIOUS DIRECTIONS

(AVERAGED OVER AN ARC OF 22.5 DEGREES)

(CURIES/CU.METER PER CURIES/SEC.)

DISTANCE	DIRECTION FROM STACK							
METERS	SSW	SW	WSW	W	WNW	NW	NNW	N
150.	1.368E-17	2.078E-17	7.125E-18	3.067E-18	7.576E-19	9.781E-19	2.062E-18	1.549E-17
200.	3.255E-13	5.264E-13	2.133E-13	1.071E-13	2.897E-14	3.429E-14	6.113E-14	3.985E-13
300.	6.147E-10	1.056E-09	4.983E-10	3.033E-10	8.972E-11	1.026E-10	1.535E-10	8.398E-10
400.	8.237E-09	1.463E-08	7.391E-09	5.277E-09	1.672E-09	1.934E-09	2.531E-09	1.202E-08
500.	2.561E-08	4.650E-08	2.437E-08	1.943E-08	6.418E-09	7.506E-09	9.068E-09	3.898E-08
600.	4.426E-08	8.148E-08	4.362E-08	3.723E-08	1.260E-08	1.484E-08	1.714E-08	6.914E-08
700.	5.797E-08	1.077E-07	5.841E-08	5.212E-08	1.793E-08	2.123E-08	2.385E-08	9.212E-08
800.	6.603E-08	1.234E-07	6.756E-08	6.231E-08	2.181E-08	2.598E-08	2.860E-08	1.063E-07
900.	7.028E-08	1.318E-07	7.268E-08	6.910E-08	2.476E-08	2.978E-08	3.214E-08	1.144E-07
1000.	7.278E-08	1.368E-07	7.580E-08	7.442E-08	2.755E-08	3.363E-08	3.546E-08	1.197E-07
1100.	7.424E-08	1.398E-07	7.764E-08	7.868E-08	3.015E-08	3.744E-08	3.855E-08	1.234E-07
1200.	7.588E-08	1.431E-07	7.949E-08	8.325E-08	3.306E-08	4.183E-08	4.202E-08	1.275E-07
1300.	7.792E-08	1.471E-07	8.161E-08	8.830E-08	3.628E-08	4.678E-08	4.585E-08	1.324E-07
1400.	8.036E-08	1.520E-07	8.401E-08	9.375E-08	3.971E-08	5.211E-08	4.992E-08	1.379E-07
1600.	8.597E-08	1.634E-07	8.936E-08	1.052E-07	4.676E-08	6.320E-08	5.825E-08	1.503E-07
1800.	9.168E-08	1.751E-07	9.465E-08	1.161E-07	5.336E-08	7.371E-08	6.599E-08	1.626E-07
2000.	9.666E-08	1.854E-07	9.918E-08	1.255E-07	5.898E-08	8.279E-08	7.252E-08	1.733E-07
2500.	8.921E-08	1.717E-07	9.116E-08	1.189E-07	5.710E-08	8.120E-08	6.988E-08	1.618E-07
3000.	7.296E-08	1.404E-07	7.462E-08	9.808E-08	4.744E-08	6.754E-08	5.807E-08	1.327E-07
3500.	6.114E-08	1.176E-07	6.250E-08	8.267E-08	4.019E-08	5.734E-08	4.918E-08	1.115E-07
4000.	5.227E-08	1.006E-07	5.336E-08	7.097E-08	3.464E-08	4.953E-08	4.235E-08	9.549E-08
4500.	4.544E-08	8.754E-08	4.630E-08	6.187E-08	3.029E-08	4.342E-08	3.701E-08	8.312E-08
5000.	4.004E-08	7.721E-08	4.073E-08	5.465E-08	2.682E-08	3.853E-08	3.274E-08	7.334E-08
6000.	3.214E-08	6.208E-08	3.257E-08	4.401E-08	2.168E-08	3.128E-08	2.642E-08	5.898E-08
7000.	2.669E-08	5.163E-08	2.695E-08	3.663E-08	1.809E-08	2.620E-08	2.201E-08	4.905E-08
8000.	2.274E-08	4.404E-08	2.288E-08	3.125E-08	1.546E-08	2.247E-08	1.879E-08	4.183E-08
10000.	1.743E-08	3.384E-08	1.743E-08	2.400E-08	1.191E-08	1.740E-08	1.444E-08	3.211E-08
15000.	1.090E-08	2.124E-08	1.080E-08	1.504E-08	7.495E-09	1.105E-08	9.057E-09	2.013E-08
20000.	7.867E-09	1.537E-08	7.748E-09	1.087E-08	5.428E-09	8.048E-09	6.544E-09	1.455E-08
30000.	5.048E-09	9.887E-09	4.940E-09	6.982E-09	3.494E-09	5.210E-09	4.202E-09	9.348E-09
40000.	3.700E-09	7.260E-09	3.607E-09	5.122E-09	2.567E-09	3.840E-09	3.082E-09	6.859E-09
50000.	2.915E-09	5.725E-09	2.833E-09	4.036E-09	2.024E-09	3.036E-09	2.429E-09	5.406E-09
60000.	2.405E-09	4.727E-09	2.333E-09	3.331E-09	1.671E-09	2.511E-09	2.004E-09	4.462E-09
70000.	2.045E-09	4.022E-09	1.981E-09	2.833E-09	1.422E-09	2.139E-09	1.704E-09	3.795E-09
80000.	1.778E-09	3.499E-09	1.721E-09	2.464E-09	1.237E-09	1.863E-09	1.482E-09	3.301E-09
100000.	1.409E-09	2.774E-09	1.361E-09	1.952E-09	9.812E-10	1.479E-09	1.174E-09	2.616E-09

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TABLE IV. (Continued)

AVERAGED GROUND CONCENTRATION PER UNIT RELEASE RATE WEIGHTED BY STABILITY CONDITION AND FREQUENCY OF WIND SPEEDS FOR VARIOUS DIRECTIONS

(AVERAGED OVER AN ARC OF 22.5 DEGREES)

(CURIES/CU.METER PER CURIES/SEC.)

DISTANCE	DIRECTION FROM STACK							
METERS	NNE	NE	ENE	E	ESE	SE	SSE	S
150.	1.598E-17	1.702E-17	1.663E-17	2.527E-17	1.471E-17	8.965E-18	3.192E-18	4.111E-18
200.	4.241E-13	4.886E-13	4.258E-13	5.906E-13	3.450E-13	2.262E-13	8.524E-14	1.111E-13
300.	9.146E-10	1.130E-09	8.731E-10	1.094E-09	6.253E-10	4.465E-10	1.822E-10	2.453E-10
400.	1.307E-08	1.691E-08	1.215E-08	1.435E-08	8.096E-09	6.007E-09	2.613E-09	3.673E-09
500.	4.210E-08	5.631E-08	3.852E-08	4.379E-08	2.455E-08	1.856E-08	8.476E-09	1.235E-08
600.	7.423E-08	1.015E-07	6.730E-08	7.460E-08	4.172E-08	3.185E-08	1.504E-08	2.245E-08
700.	9.840E-08	1.366E-07	8.867E-08	9.666E-08	5.395E-08	4.144E-08	2.001E-08	3.038E-08
800.	1.129E-07	1.584E-07	1.012E-07	1.090E-07	6.067E-08	4.685E-08	2.302E-08	3.540E-08
900.	1.208E-07	1.710E-07	1.072E-07	1.145E-07	6.347E-08	4.934E-08	2.462E-08	3.830E-08
1000.	1.255E-07	1.791E-07	1.097E-07	1.165E-07	6.415E-08	5.039E-08	2.551E-08	4.019E-08
1100.	1.283E-07	1.845E-07	1.101E-07	1.165E-07	6.364E-08	5.064E-08	2.599E-08	4.146E-08
1200.	1.315E-07	1.906E-07	1.102E-07	1.163E-07	6.301E-08	5.097E-08	2.649E-08	4.283E-08
1300.	1.355E-07	1.978E-07	1.105E-07	1.164E-07	6.257E-08	5.160E-08	2.713E-08	4.446E-08
1400.	1.403E-07	2.061E-07	1.111E-07	1.170E-07	6.243E-08	5.256E-08	2.791E-08	4.634E-08
1600.	1.513E-07	2.251E-07	1.132E-07	1.193E-07	6.295E-08	5.524E-08	2.979E-08	5.058E-08
1800.	1.628E-07	2.444E-07	1.158E-07	1.222E-07	6.409E-08	5.835E-08	3.176E-08	5.488E-08
2000.	1.730E-07	2.615E-07	1.181E-07	1.250E-07	6.532E-08	6.129E-08	3.354E-08	5.871E-08
2500.	1.608E-07	2.448E-07	1.054E-07	1.118E-07	5.809E-08	5.620E-08	3.098E-08	5.490E-08
3000.	1.315E-07	2.005E-07	8.549E-08	9.057E-08	4.680E-08	4.564E-08	2.528E-08	4.496E-08
3500.	1.103E-07	1.684E-07	7.108E-08	7.532E-08	3.881E-08	3.811E-08	2.116E-08	3.774E-08
4000.	9.437E-08	1.443E-07	6.034E-08	6.398E-08	3.292E-08	3.253E-08	1.808E-08	3.233E-08
4500.	8.212E-08	1.257E-07	5.212E-08	5.530E-08	2.845E-08	2.827E-08	1.572E-08	2.816E-08
5000.	7.246E-08	1.110E-07	4.567E-08	4.850E-08	2.496E-08	2.492E-08	1.386E-08	2.487E-08
6000.	5.830E-08	8.941E-08	3.630E-08	3.861E-08	1.990E-08	2.003E-08	1.114E-08	2.004E-08
7000.	4.852E-08	7.448E-08	2.989E-08	3.184E-08	1.644E-08	1.667E-08	9.257E-09	1.670E-08
8000.	4.141E-08	6.362E-08	2.528E-08	2.697E-08	1.395E-08	1.423E-08	7.894E-09	1.427E-08
10000.	3.184E-08	4.899E-08	1.916E-08	2.049E-08	1.064E-08	1.096E-08	6.063E-09	1.099E-08
15000.	2.002E-08	3.086E-08	1.177E-08	1.264E-08	6.612E-09	6.904E-09	3.805E-09	6.931E-09
20000.	1.450E-08	2.237E-08	8.401E-09	9.044E-09	4.754E-09	5.008E-09	2.753E-09	5.027E-09
30000.	9.333E-09	1.442E-08	5.328E-09	5.752E-09	3.040E-09	3.231E-09	1.771E-09	3.242E-09
40000.	6.857E-09	1.060E-08	3.878E-09	4.194E-09	2.224E-09	2.377E-09	1.300E-09	2.385E-09
50000.	5.409E-09	8.369E-09	3.040E-09	3.292E-09	1.750E-09	1.876E-09	1.025E-09	1.883E-09
60000.	4.467E-09	6.912E-09	2.500E-09	2.709E-09	1.442E-09	1.550E-09	8.464E-10	1.555E-09
70000.	3.801E-09	5.885E-09	2.120E-09	2.299E-09	1.225E-09	1.320E-09	7.202E-10	1.324E-09
80000.	3.307E-09	5.121E-09	1.840E-09	1.996E-09	1.065E-09	1.149E-09	6.265E-10	1.152E-09
100000.	2.623E-09	4.062E-09	1.453E-09	1.578E-09	8.429E-10	9.117E-10	4.967E-10	9.144E-10

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TABLE V.

AVERAGED GROUND CONCENTRATION PER UNIT RELEASE RATE WEIGHTED BY STABILITY CONDITION AND FREQUENCY OF WIND SPEEDS FOR VARIOUS DIRECTIONS

(AVERAGED OVER AN ARC OF 22.5 DEGREES)

(CURIES/CU.METER PER CURIES/SEC.)

DISTANCE	DIRECTION FROM STACK							
METERS	SSW	SW	WSW	W	WNW	NW	NNW	N
150.	7.795E-09	1.316E-08	5.951E-09	3.370E-09	9.638E-10	1.105E-09	1.763E-09	1.028E-08
200.	5.695E-08	9.942E-08	4.860E-08	3.165E-08	9.647E-09	1.106E-08	1.560E-08	8.033E-08
300.	2.116E-07	3.848E-07	2.023E-07	1.622E-07	5.371E-08	6.284E-08	7.562E-08	3.231E-07
400.	2.867E-07	5.308E-07	2.841E-07	2.505E-07	8.561E-08	1.016E-07	1.155E-07	4.511E-07
500.	3.182E-07	5.920E-07	3.089E-07	2.844E-07	9.899E-08	1.203E-07	1.354E-07	4.999E-07
600.	3.371E-07	6.277E-07	3.165E-07	3.003E-07	1.072E-07	1.341E-07	1.512E-07	5.265E-07
700.	3.560E-07	6.627E-07	3.243E-07	3.163E-07	1.167E-07	1.503E-07	1.694E-07	5.545E-07
800.	3.721E-07	6.927E-07	3.320E-07	3.325E-07	1.268E-07	1.671E-07	1.875E-07	5.807E-07
900.	3.826E-07	7.128E-07	3.372E-07	3.459E-07	1.357E-07	1.820E-07	2.028E-07	6.000E-07
1000.	3.869E-07	7.218E-07	3.388E-07	3.550E-07	1.426E-07	1.938E-07	2.139E-07	6.107E-07
1100.	3.821E-07	7.139E-07	3.339E-07	3.558E-07	1.454E-07	1.994E-07	2.182E-07	6.069E-07
1200.	3.745E-07	7.007E-07	3.270E-07	3.539E-07	1.468E-07	2.028E-07	2.197E-07	5.985E-07
1300.	3.649E-07	6.839E-07	3.189E-07	3.500E-07	1.470E-07	2.045E-07	2.192E-07	5.868E-07
1400.	3.542E-07	6.649E-07	3.101E-07	3.447E-07	1.464E-07	2.048E-07	2.173E-07	5.731E-07
1600.	3.313E-07	6.241E-07	2.914E-07	3.319E-07	1.437E-07	2.030E-07	2.106E-07	5.423E-07
1800.	3.084E-07	5.830E-07	2.730E-07	3.176E-07	1.398E-07	1.990E-07	2.020E-07	5.104E-07
2000.	2.866E-07	5.437E-07	2.554E-07	3.029E-07	1.352E-07	1.938E-07	1.926E-07	4.792E-07
2500.	2.321E-07	4.418E-07	2.078E-07	2.517E-07	1.140E-07	1.647E-07	1.601E-07	3.921E-07
3000.	1.893E-07	3.607E-07	1.686E-07	2.048E-07	9.292E-08	1.347E-07	1.307E-07	3.197E-07
3500.	1.594E-07	3.038E-07	1.413E-07	1.719E-07	7.806E-08	1.135E-07	1.100E-07	2.690E-07
4000.	1.374E-07	2.620E-07	1.213E-07	1.478E-07	6.710E-08	9.780E-08	9.470E-08	2.317E-07
4500.	1.205E-07	2.300E-07	1.060E-07	1.293E-07	5.873E-08	8.580E-08	8.300E-08	2.032E-07
5000.	1.073E-07	2.048E-07	9.407E-08	1.148E-07	5.214E-08	7.634E-08	7.378E-08	1.808E-07
6000.	8.782E-08	1.677E-07	7.658E-08	9.360E-08	4.249E-08	6.241E-08	6.024E-08	1.478E-07
7000.	7.423E-08	1.419E-07	6.445E-08	7.885E-08	3.578E-08	5.270E-08	5.081E-08	1.249E-07
8000.	6.423E-08	1.228E-07	5.557E-08	6.803E-08	3.086E-08	4.556E-08	4.389E-08	1.080E-07
10000.	5.053E-08	9.669E-08	4.348E-08	5.329E-08	2.415E-08	3.578E-08	3.442E-08	8.486E-08
15000.	3.292E-08	6.306E-08	2.810E-08	3.449E-08	1.562E-08	2.325E-08	2.233E-08	5.520E-08
20000.	2.437E-08	4.671E-08	2.071E-08	2.544E-08	1.151E-08	1.719E-08	1.648E-08	4.083E-08
30000.	1.604E-08	3.077E-08	1.357E-08	1.669E-08	7.545E-09	1.130E-08	1.082E-08	2.686E-08
40000.	1.195E-08	2.292E-08	1.008E-08	1.240E-08	5.603E-09	8.404E-09	8.046E-09	1.999E-08
50000.	9.510E-09	1.825E-08	8.012E-09	9.856E-09	4.453E-09	6.687E-09	6.399E-09	1.591E-08
60000.	7.901E-09	1.517E-08	6.648E-09	8.180E-09	3.695E-09	5.553E-09	5.313E-09	1.321E-08
70000.	6.756E-09	1.297E-08	5.680E-09	6.990E-09	3.157E-09	4.746E-09	4.540E-09	1.130E-08
80000.	5.900E-09	1.133E-08	4.957E-09	6.101E-09	2.755E-09	4.144E-09	3.963E-09	9.864E-09
100000.	4.706E-09	9.037E-09	3.950E-09	4.862E-09	2.195E-09	3.304E-09	3.159E-09	7.867E-09

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TABLE V. (Continued)

AVERAGED GROUND CONCENTRATION PER UNIT RELEASE RATE WEIGHTED BY STABILITY CONDITION AND FREQUENCY OF WIND SPEEDS FOR VARIOUS DIRECTIONS

(AVERAGED OVER AN ARC OF 22.5 DEGREES)

(CURIES/CU.METER PER CURIES/SEC.)

DISTANCE	DIRECTION FROM STACK							
METERS	NNE	NE	ENE	E	ESE	SE	SSE	S
150.	1.115E-08	1.348E-08	1.082E-08	1.398E-08	8.056E-09	5.613E-09	2.226E-09	2.952E-09
200.	8.762E-08	1.104E-07	8.251E-08	1.005E-07	5.704E-08	4.159E-08	1.745E-08	2.389E-08
300.	3.488E-07	4.676E-07	3.187E-07	3.611E-07	2.023E-07	1.533E-07	7.025E-08	1.026E-07
400.	4.817E-07	6.650E-07	4.327E-07	4.737E-07	2.640E-07	2.032E-07	9.769E-08	1.483E-07
500.	5.265E-07	7.345E-07	4.602E-07	4.966E-07	2.740E-07	2.151E-07	1.065E-07	1.670E-07
600.	5.461E-07	7.665E-07	4.610E-07	4.946E-07	2.689E-07	2.165E-07	1.098E-07	1.765E-07
700.	5.668E-07	8.005E-07	4.607E-07	4.928E-07	2.633E-07	2.183E-07	1.132E-07	1.853E-07
800.	5.864E-07	8.345E-07	4.605E-07	4.914E-07	2.583E-07	2.203E-07	1.167E-07	1.931E-07
900.	6.005E-07	8.614E-07	4.581E-07	4.877E-07	2.530E-07	2.212E-07	1.193E-07	1.986E-07
1000.	6.074E-07	8.777E-07	4.524E-07	4.805E-07	2.469E-07	2.204E-07	1.206E-07	2.014E-07
1100.	6.011E-07	8.740E-07	4.400E-07	4.663E-07	2.380E-07	2.158E-07	1.194E-07	1.997E-07
1200.	5.910E-07	8.641E-07	4.261E-07	4.509E-07	2.290E-07	2.105E-07	1.174E-07	1.966E-07
1300.	5.784E-07	8.498E-07	4.114E-07	4.347E-07	2.201E-07	2.047E-07	1.150E-07	1.927E-07
1400.	5.640E-07	8.324E-07	3.964E-07	4.184E-07	2.114E-07	1.987E-07	1.121E-07	1.881E-07
1600.	5.331E-07	7.927E-07	3.667E-07	3.866E-07	1.950E-07	1.865E-07	1.059E-07	1.783E-07
1800.	5.017E-07	7.505E-07	3.387E-07	3.569E-07	1.801E-07	1.748E-07	9.956E-08	1.682E-07
2000.	4.713E-07	7.087E-07	3.129E-07	3.298E-07	1.668E-07	1.637E-07	9.339E-08	1.584E-07
2500.	3.859E-07	5.831E-07	2.509E-07	2.647E-07	1.341E-07	1.336E-07	7.627E-08	1.301E-07
3000.	3.146E-07	4.757E-07	2.032E-07	2.145E-07	1.087E-07	1.089E-07	6.217E-08	1.061E-07
3500.	2.648E-07	4.005E-07	1.700E-07	1.796E-07	9.102E-08	9.159E-08	5.231E-08	8.936E-08
4000.	2.281E-07	3.452E-07	1.458E-07	1.541E-07	7.814E-08	7.892E-08	4.507E-08	7.702E-08
4500.	2.001E-07	3.029E-07	1.274E-07	1.347E-07	6.836E-08	6.925E-08	3.954E-08	6.759E-08
5000.	1.781E-07	2.696E-07	1.129E-07	1.195E-07	6.070E-08	6.164E-08	3.519E-08	6.017E-08
6000.	1.457E-07	2.207E-07	9.189E-08	9.732E-08	4.949E-08	5.047E-08	2.880E-08	4.925E-08
7000.	1.231E-07	1.866E-07	7.730E-08	8.193E-08	4.172E-08	4.267E-08	2.434E-08	4.164E-08
8000.	1.065E-07	1.614E-07	6.664E-08	7.067E-08	3.602E-08	3.694E-08	2.106E-08	3.603E-08
10000.	8.379E-08	1.270E-07	5.213E-08	5.533E-08	2.825E-08	2.908E-08	1.657E-08	2.835E-08
15000.	5.457E-08	8.275E-08	3.369E-08	3.580E-08	1.832E-08	1.896E-08	1.079E-08	1.848E-08
20000.	4.039E-08	6.126E-08	2.482E-08	2.640E-08	1.353E-08	1.405E-08	7.989E-09	1.368E-08
30000.	2.659E-08	4.033E-08	1.627E-08	1.732E-08	8.889E-09	9.255E-09	5.260E-09	9.008E-09
40000.	1.979E-08	3.003E-08	1.208E-08	1.287E-08	6.610E-09	6.894E-09	3.917E-09	6.708E-09
50000.	1.576E-08	2.391E-08	9.602E-09	1.023E-08	5.258E-09	5.490E-09	3.118E-09	5.341E-09
60000.	1.309E-08	1.986E-08	7.968E-09	8.489E-09	4.366E-09	4.562E-09	2.591E-09	4.437E-09
70000.	1.119E-08	1.699E-08	6.807E-09	7.254E-09	3.731E-09	3.901E-09	2.215E-09	3.795E-09
80000.	9.775E-09	1.483E-08	5.940E-09	6.331E-09	3.258E-09	3.407E-09	1.935E-09	3.314E-09
100000.	7.797E-09	1.183E-08	4.733E-09	5.046E-09	2.597E-09	2.718E-09	1.543E-09	2.644E-09

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TABLE VI.

AVERAGED GROUND CONCENTRATION PER UNIT RELEASE RATE WEIGHTED BY STABILITY CONDITION AND FREQUENCY OF WIND SPEEDS FOR VARIOUS DIRECTIONS

(AVERAGED OVER AN ARC OF 22.5 DEGREES)

(CURIES/CU.METER PER CURIES/SEC.)

DISTANCE	DIRECTION FROM STACK							
METERS	SSW	SW	WSW	W	WNW	NW	NNW	N
150.	4.612E-20	6.695E-20	2.023E-20	8.013E-21	1.846E-21	2.608E-21	6.228E-21	5.084E-20
200.	1.039E-14	1.620E-14	5.961E-15	2.726E-15	7.010E-16	8.680E-16	1.702E-15	1.209E-14
300.	1.144E-10	1.921E-10	8.581E-11	4.794E-11	1.363E-11	1.567E-11	2.531E-11	1.495E-10
400.	2.912E-09	5.071E-09	2.465E-09	1.593E-09	4.838E-10	5.546E-10	7.874E-10	4.087E-09
500.	1.240E-08	2.213E-08	1.128E-08	8.246E-09	2.638E-09	3.057E-09	3.930E-09	1.826E-08
600.	2.581E-08	4.687E-08	2.459E-08	1.963E-08	6.488E-09	7.590E-09	9.159E-09	3.931E-08
700.	3.815E-08	7.011E-08	3.745E-08	3.172E-08	1.071E-08	1.261E-08	1.463E-08	5.942E-08
800.	4.709E-08	8.730E-08	4.718E-08	4.172E-08	1.433E-08	1.700E-08	1.915E-08	7.457E-08
900.	5.286E-08	9.865E-08	5.372E-08	4.926E-08	1.727E-08	2.072E-08	2.270E-08	8.487E-08
1000.	5.672E-08	1.064E-07	5.821E-08	5.541E-08	1.999E-08	2.441E-08	2.591E-08	9.232E-08
1100.	5.924E-08	1.117E-07	6.118E-08	6.039E-08	2.252E-08	2.805E-08	2.884E-08	9.769E-08
1200.	6.168E-08	1.168E-07	6.397E-08	6.561E-08	2.538E-08	3.232E-08	3.217E-08	1.031E-07
1300.	6.439E-08	1.224E-07	6.692E-08	7.130E-08	2.862E-08	3.723E-08	3.595E-08	1.092E-07
1400.	6.743E-08	1.286E-07	7.014E-08	7.748E-08	3.217E-08	4.267E-08	4.011E-08	1.159E-07
1600.	7.422E-08	1.424E-07	7.709E-08	9.060E-08	3.973E-08	5.434E-08	4.900E-08	1.305E-07
1800.	8.114E-08	1.565E-07	8.397E-08	1.034E-07	4.708E-08	6.576E-08	5.763E-08	1.451E-07
2000.	8.731E-08	1.691E-07	9.000E-08	1.146E-07	5.351E-08	7.585E-08	6.518E-08	1.582E-07
2500.	8.258E-08	1.603E-07	8.499E-08	1.116E-07	5.340E-08	7.648E-08	6.484E-08	1.514E-07
3000.	6.824E-08	1.323E-07	7.045E-08	9.320E-08	4.497E-08	6.437E-08	5.464E-08	1.256E-07
3500.	5.763E-08	1.117E-07	5.957E-08	7.932E-08	3.850E-08	5.516E-08	4.679E-08	1.063E-07
4000.	4.956E-08	9.607E-08	5.123E-08	6.859E-08	3.345E-08	4.798E-08	4.063E-08	9.165E-08
4500.	4.326E-08	8.390E-08	4.470E-08	6.013E-08	2.943E-08	4.229E-08	3.573E-08	8.016E-08
5000.	3.825E-08	7.422E-08	3.948E-08	5.334E-08	2.618E-08	3.769E-08	3.177E-08	7.098E-08
6000.	3.083E-08	5.990E-08	3.175E-08	4.321E-08	2.129E-08	3.077E-08	2.581E-08	5.735E-08
7000.	2.566E-08	4.993E-08	2.636E-08	3.609E-08	1.784E-08	2.586E-08	2.159E-08	4.783E-08
8000.	2.189E-08	4.265E-08	2.243E-08	3.086E-08	1.529E-08	2.223E-08	1.848E-08	4.086E-08
10000.	1.680E-08	3.281E-08	1.713E-08	2.377E-08	1.181E-08	1.727E-08	1.425E-08	3.144E-08
15000.	1.051E-08	2.061E-08	1.064E-08	1.494E-08	7.457E-09	1.099E-08	8.960E-09	1.974E-08
20000.	7.581E-09	1.491E-08	7.634E-09	1.080E-08	5.406E-09	8.011E-09	6.479E-09	1.427E-08
30000.	4.859E-09	9.585E-09	4.867E-09	6.941E-09	3.482E-09	5.189E-09	4.162E-09	9.165E-09
40000.	3.560E-09	7.034E-09	3.553E-09	5.092E-09	2.558E-09	3.825E-09	3.053E-09	6.723E-09
50000.	2.803E-09	5.545E-09	2.791E-09	4.013E-09	2.018E-09	3.025E-09	2.406E-09	5.298E-09
60000.	2.311E-09	4.577E-09	2.298E-09	3.312E-09	1.666E-09	2.501E-09	1.985E-09	4.372E-09
70000.	1.965E-09	3.894E-09	1.951E-09	2.817E-09	1.418E-09	2.131E-09	1.688E-09	3.718E-09
80000.	1.708E-09	3.386E-09	1.694E-09	2.449E-09	1.233E-09	1.856E-09	1.468E-09	3.233E-09
100000.	1.353E-09	2.684E-09	1.340E-09	1.941E-09	9.780E-10	1.474E-09	1.163E-09	2.562E-09

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TABLE VI. (Continued)

AVERAGED GROUND CONCENTRATION PER UNIT RELEASE RATE WEIGHTED BY STABILITY CONDITION AND FREQUENCY OF WIND SPEEDS FOR VARIOUS DIRECTIONS

(AVERAGED OVER AN ARC OF 22.5 DEGREES)

(CURIES/CU.METER PER CURIES/SEC.)

DISTANCE	DIRECTION FROM STACK							
METERS	NNE	NE	ENE	E	ESE	SE	SSE	S
150.	5.130E-20	5.132E-20	5.421E-20	8.699E-20	4.955E-20	2.892E-20	9.970E-21	1.285E-20
200.	1.263E-14	1.393E-14	1.298E-14	1.903E-14	1.114E-14	6.981E-15	2.540E-15	3.282E-15
300.	1.618E-10	1.945E-10	1.576E-10	2.054E-10	1.186E-10	8.202E-11	3.233E-11	4.277E-11
400.	4.456E-09	5.601E-09	4.205E-09	5.146E-09	2.924E-09	2.124E-09	8.878E-10	1.213E-09
500.	1.984E-08	2.585E-08	1.837E-08	2.152E-08	1.212E-08	9.034E-09	3.971E-09	5.623E-09
600.	4.245E-08	5.681E-08	3.883E-08	4.411E-08	2.473E-08	1.870E-08	8.548E-09	1.246E-08
700.	6.384E-08	8.709E-08	5.792E-08	6.439E-08	3.602E-08	2.748E-08	1.292E-08	1.924E-08
800.	7.976E-08	1.103E-07	7.183E-08	7.866E-08	4.392E-08	3.374E-08	1.620E-08	2.450E-08
900.	9.036E-08	1.264E-07	8.058E-08	8.727E-08	4.864E-08	3.765E-08	1.838E-08	2.819E-08
1000.	9.776E-08	1.383E-07	8.581E-08	9.218E-08	5.124E-08	4.009E-08	1.988E-08	3.092E-08
1100.	1.028E-07	1.469E-07	8.845E-08	9.448E-08	5.232E-08	4.151E-08	2.086E-08	3.289E-08
1200.	1.078E-07	1.555E-07	9.040E-08	9.619E-08	5.301E-08	4.279E-08	2.178E-08	3.486E-08
1300.	1.134E-07	1.650E-07	9.225E-08	9.789E-08	5.365E-08	4.421E-08	2.278E-08	3.700E-08
1400.	1.195E-07	1.755E-07	9.424E-08	9.984E-08	5.441E-08	4.583E-08	2.389E-08	3.935E-08
1600.	1.332E-07	1.985E-07	9.874E-08	1.045E-07	5.636E-08	4.960E-08	2.632E-08	4.446E-08
1800.	1.470E-07	2.215E-07	1.034E-07	1.095E-07	5.860E-08	5.357E-08	2.880E-08	4.957E-08
2000.	1.594E-07	2.420E-07	1.075E-07	1.140E-07	6.069E-08	5.722E-08	3.101E-08	5.412E-08
2500.	1.516E-07	2.318E-07	9.835E-08	1.044E-07	5.503E-08	5.348E-08	2.929E-08	5.179E-08
3000.	1.252E-07	1.917E-07	8.065E-08	8.548E-08	4.471E-08	4.377E-08	2.413E-08	4.281E-08
3500.	1.057E-07	1.622E-07	6.762E-08	7.165E-08	3.729E-08	3.675E-08	2.034E-08	3.620E-08
4000.	9.098E-08	1.397E-07	5.777E-08	6.121E-08	3.177E-08	3.150E-08	1.748E-08	3.118E-08
4500.	7.950E-08	1.222E-07	5.013E-08	5.314E-08	2.754E-08	2.745E-08	1.525E-08	2.727E-08
5000.	7.036E-08	1.083E-07	4.409E-08	4.675E-08	2.421E-08	2.425E-08	1.349E-08	2.416E-08
6000.	5.684E-08	8.762E-08	3.520E-08	3.737E-08	1.936E-08	1.956E-08	1.088E-08	1.955E-08
7000.	4.742E-08	7.319E-08	2.907E-08	3.090E-08	1.603E-08	1.630E-08	9.068E-09	1.633E-08
8000.	4.054E-08	6.263E-08	2.463E-08	2.621E-08	1.361E-08	1.393E-08	7.744E-09	1.397E-08
10000.	3.122E-08	4.832E-08	1.870E-08	1.994E-08	1.039E-08	1.074E-08	5.958E-09	1.078E-08
15000.	1.965E-08	3.048E-08	1.150E-08	1.231E-08	6.458E-09	6.770E-09	3.744E-09	6.804E-09
20000.	1.423E-08	2.211E-08	8.207E-09	8.805E-09	4.642E-09	4.910E-09	2.709E-09	4.936E-09
30000.	9.163E-09	1.425E-08	5.202E-09	5.596E-09	2.966E-09	3.167E-09	1.742E-09	3.183E-09
40000.	6.730E-09	1.048E-08	3.785E-09	4.078E-09	2.169E-09	2.329E-09	1.279E-09	2.341E-09
50000.	5.309E-09	8.269E-09	2.966E-09	3.199E-09	1.706E-09	1.838E-09	1.009E-09	1.848E-09
60000.	4.383E-09	6.830E-09	2.438E-09	2.632E-09	1.405E-09	1.519E-09	8.324E-10	1.526E-09
70000.	3.730E-09	5.814E-09	2.067E-09	2.233E-09	1.194E-09	1.293E-09	7.083E-10	1.299E-09
80000.	3.245E-09	5.059E-09	1.793E-09	1.938E-09	1.037E-09	1.125E-09	6.160E-10	1.131E-09
100000.	2.573E-09	4.013E-09	1.416E-09	1.532E-09	8.211E-10	8.927E-10	4.884E-10	8.970E-10

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TABLE VII.

AVERAGED GROUND CONCENTRATION PER UNIT RELEASE RATE WEIGHTED BY STABILITY CONDITION AND FREQUENCY OF WIND SPEEDS FOR VARIOUS DIRECTIONS

(AVERAGED OVER AN ARC OF 22.5 DEGREES)

(CURIES/CU.METER PER CURIES/SEC.)

DISTANCE	DIRECTION FROM STACK							
METERS	SSW	SW	WSW	W	WNW	NW	NNW	N
150.	7.493E-10	1.231E-09	5.193E-10	2.712E-10	7.474E-11	8.720E-11	1.497E-10	9.404E-10
200.	1.349E-08	2.305E-08	1.074E-08	6.355E-09	1.855E-09	2.119E-09	3.251E-09	1.823E-08
300.	1.006E-07	1.798E-07	9.194E-08	6.756E-08	2.165E-08	2.509E-08	3.214E-08	1.487E-07
400.	1.763E-07	3.230E-07	1.716E-07	1.432E-07	4.806E-08	5.650E-08	6.625E-08	2.729E-07
500.	2.085E-07	3.865E-07	2.065E-07	1.836E-07	6.293E-08	7.491E-08	8.487E-08	3.284E-07
600.	2.197E-07	4.091E-07	2.152E-07	1.982E-07	6.894E-08	8.340E-08	9.359E-08	3.464E-07
700.	2.275E-07	4.238E-07	2.171E-07	2.048E-07	7.265E-08	8.985E-08	1.009E-07	3.568E-07
800.	2.365E-07	4.402E-07	2.195E-07	2.117E-07	7.707E-08	9.764E-08	1.098E-07	3.692E-07
900.	2.459E-07	4.576E-07	2.232E-07	2.202E-07	8.249E-08	1.069E-07	1.199E-07	3.837E-07
1000.	2.543E-07	4.734E-07	2.273E-07	2.294E-07	8.836E-08	1.167E-07	1.300E-07	3.978E-07
1100.	2.574E-07	4.796E-07	2.282E-07	2.350E-07	9.265E-08	1.241E-07	1.369E-07	4.046E-07
1200.	2.588E-07	4.829E-07	2.284E-07	2.397E-07	9.650E-08	1.308E-07	1.426E-07	4.092E-07
1300.	2.587E-07	4.833E-07	2.278E-07	2.434E-07	9.980E-08	1.366E-07	1.471E-07	4.116E-07
1400.	2.572E-07	4.814E-07	2.265E-07	2.461E-07	1.026E-07	1.416E-07	1.505E-07	4.120E-07
1600.	2.511E-07	4.719E-07	2.219E-07	2.487E-07	1.065E-07	1.491E-07	1.542E-07	4.078E-07
1800.	2.424E-07	4.574E-07	2.154E-07	2.481E-07	1.085E-07	1.536E-07	1.548E-07	3.989E-07
2000.	2.322E-07	4.398E-07	2.077E-07	2.449E-07	1.091E-07	1.557E-07	1.532E-07	3.867E-07
2500.	1.935E-07	3.680E-07	1.741E-07	2.105E-07	9.545E-08	1.375E-07	1.321E-07	3.263E-07
3000.	1.579E-07	3.004E-07	1.414E-07	1.716E-07	7.806E-08	1.128E-07	1.081E-07	2.663E-07
3500.	1.328E-07	2.528E-07	1.185E-07	1.441E-07	6.565E-08	9.515E-08	9.109E-08	2.239E-07
4000.	1.144E-07	2.178E-07	1.016E-07	1.238E-07	5.644E-08	8.201E-08	7.842E-08	1.927E-07
4500.	1.002E-07	1.909E-07	8.868E-08	1.082E-07	4.937E-08	7.191E-08	6.868E-08	1.688E-07
5000.	8.910E-08	1.698E-07	7.856E-08	9.598E-08	4.379E-08	6.393E-08	6.099E-08	1.500E-07
6000.	7.275E-08	1.387E-07	6.377E-08	7.804E-08	3.561E-08	5.218E-08	4.969E-08	1.223E-07
7000.	6.136E-08	1.171E-07	5.352E-08	6.558E-08	2.992E-08	4.398E-08	4.182E-08	1.031E-07
8000.	5.299E-08	1.012E-07	4.604E-08	5.646E-08	2.575E-08	3.795E-08	3.604E-08	8.896E-08
10000.	4.156E-08	7.943E-08	3.588E-08	4.407E-08	2.009E-08	2.972E-08	2.817E-08	6.969E-08
15000.	2.695E-08	5.157E-08	2.305E-08	2.837E-08	1.292E-08	1.922E-08	1.817E-08	4.511E-08
20000.	1.990E-08	3.810E-08	1.693E-08	2.085E-08	9.488E-09	1.417E-08	1.337E-08	3.327E-08
30000.	1.306E-08	2.503E-08	1.105E-08	1.363E-08	6.198E-09	9.287E-09	8.750E-09	2.182E-08
40000.	9.711E-09	1.862E-08	8.191E-09	1.010E-08	4.594E-09	6.897E-09	6.492E-09	1.621E-08
50000.	7.723E-09	1.481E-08	6.500E-09	8.022E-09	3.646E-09	5.481E-09	5.156E-09	1.289E-08
60000.	6.411E-09	1.230E-08	5.388E-09	6.652E-09	3.023E-09	4.548E-09	4.276E-09	1.070E-08
70000.	5.479E-09	1.051E-08	4.600E-09	5.679E-09	2.580E-09	3.885E-09	3.652E-09	9.138E-09
80000.	4.783E-09	9.176E-09	4.012E-09	4.954E-09	2.251E-09	3.391E-09	3.186E-09	7.976E-09
100000.	3.813E-09	7.316E-09	3.194E-09	3.945E-09	1.792E-09	2.702E-09	2.538E-09	6.356E-09

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TABLE VII. (Continued)

AVERAGED GROUND CONCENTRATION PER UNIT RELEASE RATE WEIGHTED BY STABILITY CONDITION AND FREQUENCY OF WIND SPEEDS FOR VARIOUS DIRECTIONS

(AVERAGED OVER AN ARC OF 22.5 DEGREES)

(CURIES/CU.METER PER CURIES/SEC.)

DISTANCE	DIRECTION FROM STACK							
METERS	NNE	NE	ENE	E	ESE	SE	SSE	S
150.	1.008E-09	1.182E-09	1.001E-09	1.354E-09	7.886E-10	5.281E-10	2.023E-10	2.649E-10
200.	1.984E-08	2.432E-08	1.904E-08	2.409E-08	1.380E-08	9.787E-09	3.953E-09	5.287E-09
300.	1.615E-07	2.108E-07	1.493E-07	1.744E-07	9.815E-08	7.334E-08	3.233E-08	4.584E-08
400.	2.936E-07	3.985E-07	2.667E-07	2.979E-07	1.666E-07	1.270E-07	5.931E-08	8.789E-08
500.	3.499E-07	4.842E-07	3.133E-07	3.419E-07	1.903E-07	1.469E-07	7.097E-08	1.083E-07
600.	3.654E-07	5.102E-07	3.210E-07	3.462E-07	1.914E-07	1.497E-07	7.402E-08	1.157E-07
700.	3.719E-07	5.216E-07	3.182E-07	3.413E-07	1.865E-07	1.487E-07	7.495E-08	1.197E-07
800.	3.800E-07	5.352E-07	3.153E-07	3.374E-07	1.818E-07	1.483E-07	7.613E-08	1.237E-07
900.	3.903E-07	5.526E-07	3.140E-07	3.355E-07	1.782E-07	1.489E-07	7.782E-08	1.280E-07
1000.	4.010E-07	5.713E-07	3.135E-07	3.344E-07	1.753E-07	1.500E-07	7.967E-08	1.322E-07
1100.	4.051E-07	5.806E-07	3.095E-07	3.298E-07	1.713E-07	1.493E-07	8.033E-08	1.341E-07
1200.	4.077E-07	5.878E-07	3.052E-07	3.247E-07	1.674E-07	1.485E-07	8.072E-08	1.353E-07
1300.	4.087E-07	5.924E-07	3.002E-07	3.191E-07	1.636E-07	1.474E-07	8.082E-08	1.360E-07
1400.	4.080E-07	5.946E-07	2.948E-07	3.131E-07	1.599E-07	1.461E-07	8.062E-08	1.360E-07
1600.	4.028E-07	5.925E-07	2.826E-07	2.998E-07	1.525E-07	1.426E-07	7.945E-08	1.348E-07
1800.	3.935E-07	5.833E-07	2.693E-07	2.856E-07	1.451E-07	1.383E-07	7.748E-08	1.321E-07
2000.	3.815E-07	5.692E-07	2.556E-07	2.711E-07	1.378E-07	1.335E-07	7.498E-08	1.285E-07
2500.	3.217E-07	4.831E-07	2.104E-07	2.232E-07	1.136E-07	1.120E-07	6.306E-08	1.087E-07
3000.	2.623E-07	3.942E-07	1.703E-07	1.808E-07	9.186E-08	9.112E-08	5.138E-08	8.874E-08
3500.	2.206E-07	3.317E-07	1.423E-07	1.512E-07	7.679E-08	7.654E-08	4.319E-08	7.467E-08
4000.	1.898E-07	2.855E-07	1.218E-07	1.295E-07	6.580E-08	6.585E-08	3.715E-08	6.429E-08
4500.	1.663E-07	2.502E-07	1.062E-07	1.130E-07	5.745E-08	5.769E-08	3.255E-08	5.635E-08
5000.	1.478E-07	2.224E-07	9.403E-08	1.001E-07	5.091E-08	5.127E-08	2.892E-08	5.009E-08
6000.	1.206E-07	1.816E-07	7.624E-08	8.127E-08	4.138E-08	4.187E-08	2.360E-08	4.091E-08
7000.	1.017E-07	1.531E-07	6.395E-08	6.823E-08	3.478E-08	3.532E-08	1.990E-08	3.451E-08
8000.	8.783E-08	1.322E-07	5.498E-08	5.871E-08	2.996E-08	3.051E-08	1.718E-08	2.981E-08
10000.	6.886E-08	1.037E-07	4.283E-08	4.579E-08	2.341E-08	2.395E-08	1.347E-08	2.339E-08
15000.	4.464E-08	6.725E-08	2.750E-08	2.946E-08	1.511E-08	1.555E-08	8.732E-09	1.517E-08
20000.	3.294E-08	4.964E-08	2.019E-08	2.165E-08	1.112E-08	1.149E-08	6.445E-09	1.120E-08
30000.	2.163E-08	3.259E-08	1.318E-08	1.415E-08	7.282E-09	7.548E-09	4.231E-09	7.358E-09
40000.	1.607E-08	2.423E-08	9.766E-09	1.049E-08	5.405E-09	5.614E-09	3.145E-09	5.471E-09
50000.	1.278E-08	1.927E-08	7.750E-09	8.328E-09	4.294E-09	4.466E-09	2.501E-09	4.351E-09
60000.	1.061E-08	1.599E-08	6.424E-09	6.906E-09	3.562E-09	3.709E-09	2.076E-09	3.612E-09
70000.	9.068E-09	1.367E-08	5.484E-09	5.896E-09	3.043E-09	3.170E-09	1.774E-09	3.087E-09
80000.	7.916E-09	1.193E-08	4.783E-09	5.143E-09	2.655E-09	2.768E-09	1.549E-09	2.695E-09
100000.	6.309E-09	9.511E-09	3.807E-09	4.096E-09	2.115E-09	2.207E-09	1.235E-09	2.149E-09

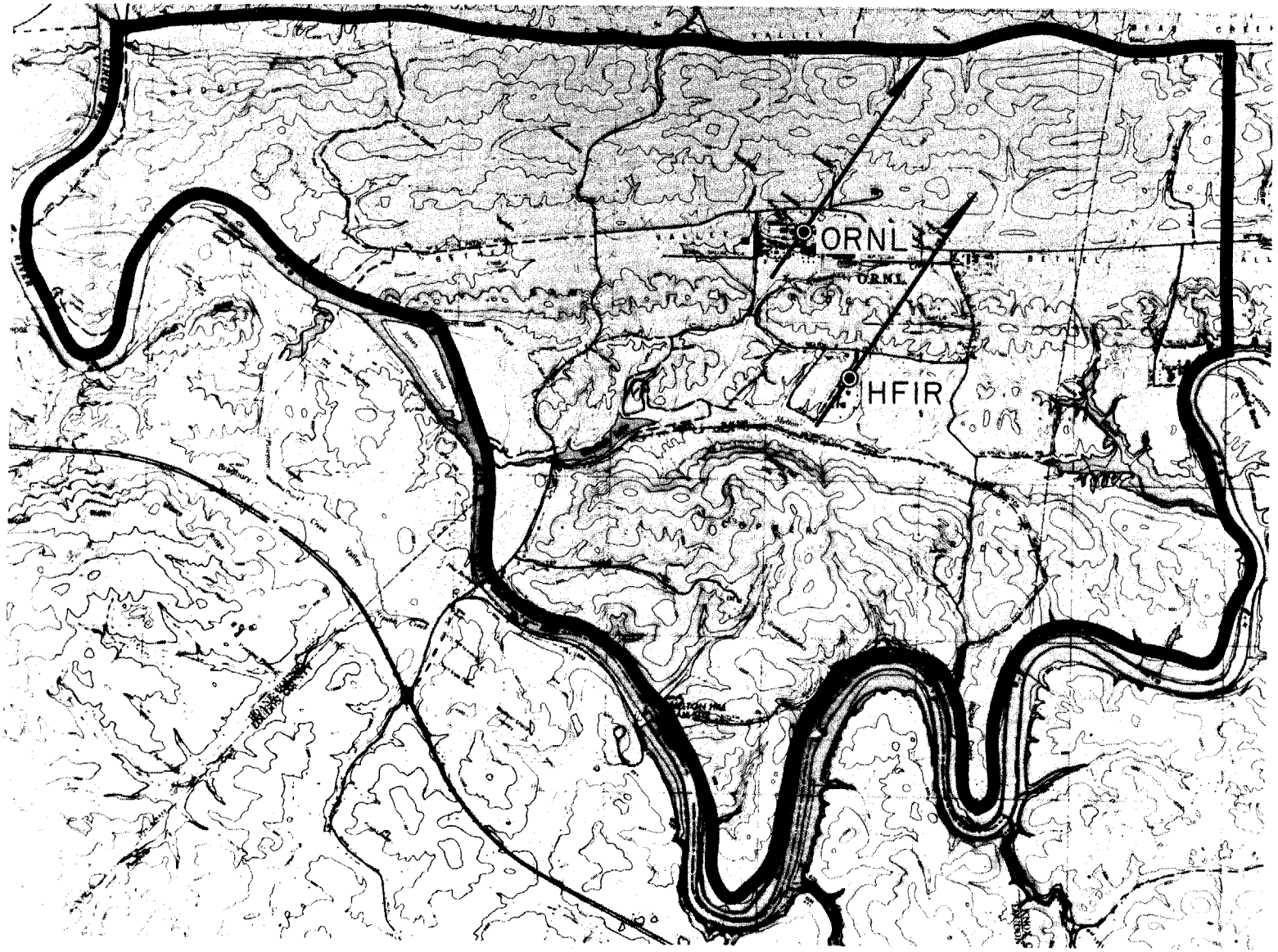

Fig. 4. ORNL Controlled Area Boundary

The effective area perimeters are formed by constructing about each stack location a series of 16 isosceles triangles as shown in Fig. 5. The altitude of each triangle lies along one of the cardinal directions, the apices are located at the stack, and the base lines are such that they touch, but are interior to, the controlled area boundary. The two irregular polygons thus obtained may be regarded to be the effective area perimeters associated respectively with the two stack locations. The stack dilution factors on these perimeters are calculated using Eq (6) with the triangle altitudes as the values of x, the downwind distance to the perimeter. The distances to the effective perimeter and the values of X_i/Q at these points are listed in Table VIII. It is worth noting that, with the exception of four northwesterly directions which are associated with the 3039 stack and with the 3020 stack, all of the peak values of the stack dilution factors occur within the effective area perimeters. This means that except for the eight cases cited, the expected average annual concentrations outside the perimeters are monotone decreasing with distance. In the eight exceptional cases, the maximum values occur slightly beyond the perimeter; and the peak values rather than the perimeter values have been entered into Table VIII.

3. Determination of Maximum Permissible Release Rates for the Five Stacks

It can be seen by examining Table VIII that in the case of the ORR site the maximum values of the stack dilution factors on and beyond the effective site perimeter occur north of the stack site. In the case of the HFIR site the maxima occur on the northeast perimeter. In order to compute the annual average concentration at a point on the site boundary it is necessary to sum the contributions from all of the stacks. It can be seen from Fig. 5 that the northerly direction from the ORR is overlapped by the north-northwest direction from the HFIR. Thus to obtain the annual average ground-level concentration on the area boundary north of the ORR site, it is necessary first to multiply the northerly dilution factors of the 3039, 3020, and 2026 stacks by their respective average annual discharge rates (expressed in ci/sec) and to multiply the NNW dilution factors of the 7911 and 7512 stacks by their respective annual average discharge rates. The sum of the five terms so obtained is then the expected annual

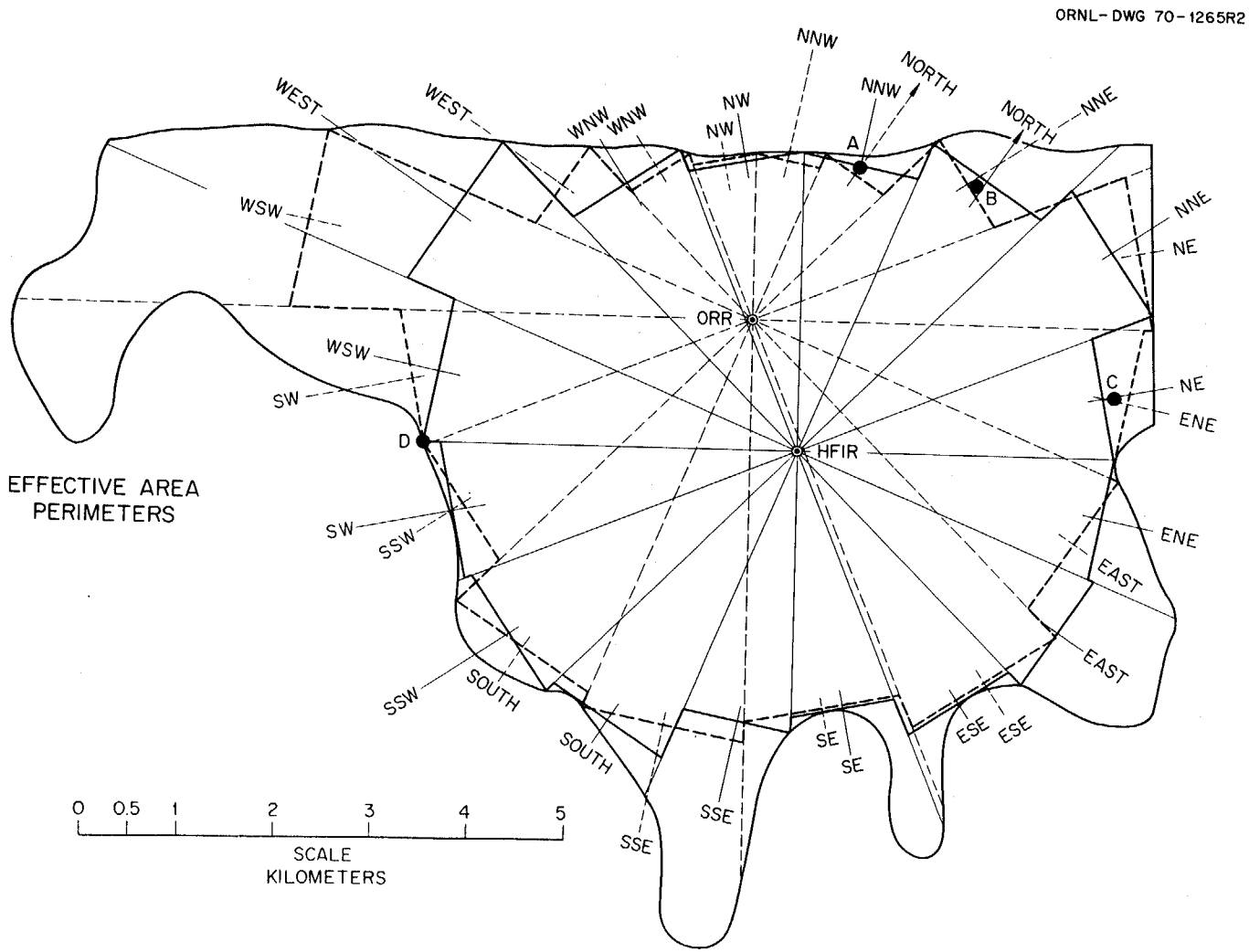

Fig. 5. Effective Area Perimeters

Table VIII. Stack Dilution Factors on Effective Area Perimeter

Direction From Stack	ORNL Distance (meters)	ORNL Stacks Dilution Factor (sec/m^3) 3039	3020	2026	Melton Valley Distance (meters)	Melton Valley Stacks Dilution Factor (sec/m^3) 7911	7512
N	1870	1.50×10^{-7}*	1.80×10^{-7}*	4.99×10^{-7}	3465	1.08×10^{-7}	2.26×10^{-7}
NNE	2630	1.34×10^{-7}	1.52×10^{-7}	3.65×10^{-7}	3925	9.30×10^{-8}	1.94×10^{-7}
NE	4115	1.29×10^{-7}	1.40×10^{-7}	3.34×10^{-7}	3315	1.72×10^{-7}	3.52×10^{-7}
ENE	4040	5.37×10^{-8}	5.96×10^{-8}	1.44×10^{-7}	3315	7.20×10^{-8}	1.52×10^{-7}
E	4115	5.60×10^{-8}	6.18×10^{-8}	1.49×10^{-7}	3355	7.52×10^{-8}	1.59×10^{-8}
ESE	4120	2.96×10^{-8}	3.17×10^{-8}	7.56×10^{-8}	3160	4.21×10^{-8}	8.65×10^{-8}
SE	4190	2.89×10^{-8}	3.08×10^{-8}	7.50×10^{-8}	2780	4.76×10^{-8}	9.93×10^{-8}
SSE	4380	1.51×10^{-8}	1.62×10^{-8}	4.07×10^{-8}	2935	2.47×10^{-8}	5.27×10^{-8}
S	4190	2.82×10^{-8}	3.06×10^{-8}	7.32×10^{-8}	3505	3.62×10^{-8}	7.46×10^{-8}
SSW	3620	5.19×10^{-8}	5.88×10^{-8}	1.54×10^{-7}	3580	5.62×10^{-8}	1.30×10^{-7}
SW	3620	1.01×10^{-7}	1.13×10^{-7}	2.93×10^{-7}	3660	1.06×10^{-7}	2.40×10^{-7}
WSW	4725	3.98×10^{-8}	4.36×10^{-8}	1.00×10^{-7}	3885	5.30×10^{-8}	1.05×10^{-7}
W	2440	1.03×10^{-7}	1.22×10^{-7}	2.59×10^{-7}	4380	6.20×10^{-8}	1.12×10^{-7}
WNW	1790	5.10×10^{-8}*	6.20×10^{-8}	1.40×10^{-7}	3350	4.03×10^{-8}	6.90×10^{-8}
NW	1675	7.50×10^{-8}*	9.00×10^{-8}	2.02×10^{-7}	3085	6.26×10^{-8}	1.09×10^{-7}
NNW	1675	6.10×10^{-8}*	7.60×10^{-8}	2.08×10^{-7}	3050	5.38×10^{-8}	1.06×10^{-7}

*In these cases, the peak values occur slightly outside the effective area perimeter and the peak values are listed rather than the values on the perimeter.

average concentration on the site boundary at the point in question. Values of the expected annual average concentration at other points on the site boundary can be found by determining the overlapping directions from Fig. 5 and proceeding in a manner similar to that described above.

The location of the maximum value of the expected annual average concentration on the site boundary is not unique because it depends not only upon the fixed values of the stack dilution factors but also upon the variable discharge rates. However, it can be deduced from Table VIII and Fig. 5 that there are only four locations where a maximum can occur; these are listed below and are shown on Fig. 5.

Location	Direction from ORR	Direction from HFIR
A	N	NNW
B	NNE	N
C	ENE	NE
D	SW	SW

Let Q_1, Q_2, Q_3, Q_4, and Q_5 be the release rates, expressed in curies per second, from the 3039, 3020, 2026, 7911, and 7512 stacks, respectively. Then using the stack dilution factors from Table VIII in the directions indicated above, the expected annual average concentration at the five points where maxima can occur are given by:

A $(1.50\ Q_1 + 1.80\ Q_2 + 4.99\ Q_3 + 0.54\ Q_4 + 1.06\ Q_5) \times 10^{-7}$ ci/m^3

B $(1.34\ Q_1 + 1.52\ Q_2 + 3.65\ Q_3 + 1.08\ Q_4 + 2.26\ Q_5) \times 10^{-7}$ ci/m^3

C $(0.54\ Q_1 + 0.60\ Q_2 + 1.44\ Q_3 + 1.72\ Q_4 + 3.52\ Q_5) \times 10^{-7}$ ci/m^3

D $(1.01\ Q_1 + 1.13\ Q_2 + 2.93\ Q_3 + 1.06\ Q_4 + 2.40\ Q_5) \times 10^{-7}$ ci/m^3

The criterion set forth in Section II-2 above requires that the values of these expressions be less than the nonoccupational maximum permissible concentration for the nuclide under consideration. Thus, if this criterion is to be met, the following inequalities must all be satisfied

$$(1.50\ Q_1 + 1.80\ Q_2 + 4.99\ Q_3 + 0.54\ Q_4 + 1.06\ Q_5) \leq \text{MPC} \times 10^3 \qquad (7A)$$

$$(1.34\ Q_1 + 1.52\ Q_2 + 3.65\ Q_3 + 1.08\ Q_4 + 2.26\ Q_5) \leq \text{MPC} \times 10^3 \qquad (7B)$$

$$(0.54\ Q_1 + 0.60\ Q_2 + 1.44\ Q_3 + 1.72\ Q_4 + 3.52\ Q_5) \leq \text{MPC} \times 10^3 \qquad (7C)$$

$$(1.01\ Q_1 + 1.13\ Q_2 + 2.39\ Q_3 + 1.06\ Q_4 + 2.40\ Q_5) \leq \text{MPC} \times 10^3 \qquad (7D)$$

where MPC is the nonoccupational maximum permissible concentration expressed in ci/m^3 or $\mu ci/cm^3$.

Equations (7) clearly demonstrate the interaction between the stacks and also shows to some extent their relative effectiveness. For example, the 3039 stack is on the average nearly three times as effective as the 2026 stack in diluting the effluent material.

As a practical matter it is more convenient to express the inequalities in terms of that quantity of radioactive material which can be emitted over a relatively long period of time. If the Q_i are expressed in terms of curies per year, Eqs (7) become

$$(0.47\ Q_1 + 0.57\ Q_2 + 1.58\ Q_3 + 0.17\ Q_4 + 0.34\ Q_5) \leq \text{MPC} \times 10^{14} \qquad (8A)$$

$$(0.42\ Q_1 + 0.48\ Q_2 + 1.16\ Q_3 + 0.34\ Q_4 + 0.71\ Q_5) \leq \text{MPC} \times 10^{14} \qquad (8B)$$

$$(0.17\ Q_1 + 0.19\ Q_2 + 0.46\ Q_3 + 0.55\ Q_4 + 1.12\ Q_5) \leq \text{MPC} \times 10^{14} \qquad (8C)$$

$$(0.32\ Q_1 + 0.54\ Q_2 + 0.76\ Q_3 + 0.34\ Q_4 + 0.76\ Q_5) \leq \text{MPC} \times 10^{14} \qquad (8D)$$

As an example consider the case in which the releases from the five stacks during some particular year were 150, 60, 100, 75, and 10 ci, respectively. The right hand sides of the four equations become: A - 273, B - 236, C - 133, D - 184. Thus in this case the highest annual average concentration occurred on the boundary north of the ORR site, and unless the MPC were less than 2.73×10^{-12} $\mu ci/cm^3$ the criterion is everywhere satisfied.

Another useful approach is to consider the fraction of MPC represented by the average concentration during the year. This is given as a percentage by

$$F_A = \frac{10^{-12}}{MPC} (0.47\ Q_1 + 0.57\ Q_2 + 1.58\ Q_3 + 0.17\ Q_4 + 0.34\ Q_5) \qquad (9)$$

for the A directions. Similar expressions can be written for the other three directions. In the example cited above

$$F_A = \frac{2.73 \times 10^{-10}}{MPC}$$

so that if, for example, the MPC were 2×10^{-11}, this would yield $F_A = 13.6\%$; i.e., only about one-seventh of the permitted amount was released that year.

A convenient way to keep track of release rates is to maintain records of the MPC percentages F on a monthly basis and also to calculate running averages. Criteria can be established which set upper limits on permissible individual values of F and which require that averages remain below some established maximum.

III. THE USE OF LOG-POLAR PLOTS

Tables III-VII are often exhibited on maps in the form of isopleths or contours of constant value of $\overline{X}/Q$. In this way it is possible to obtain a clearer picture of the overall effect of the stack effluent. Such a map, prepared for the 3039 stack, is shown in Fig. 6. This figure makes evident the fact that very large maps are required if the environs of the site are to be shown in sufficient detail to permit a reasonable degree of resolution.

A convenient way to surmount this problem is to transform from the usual set of rectangular cartesian coordinates to a polar coordinate

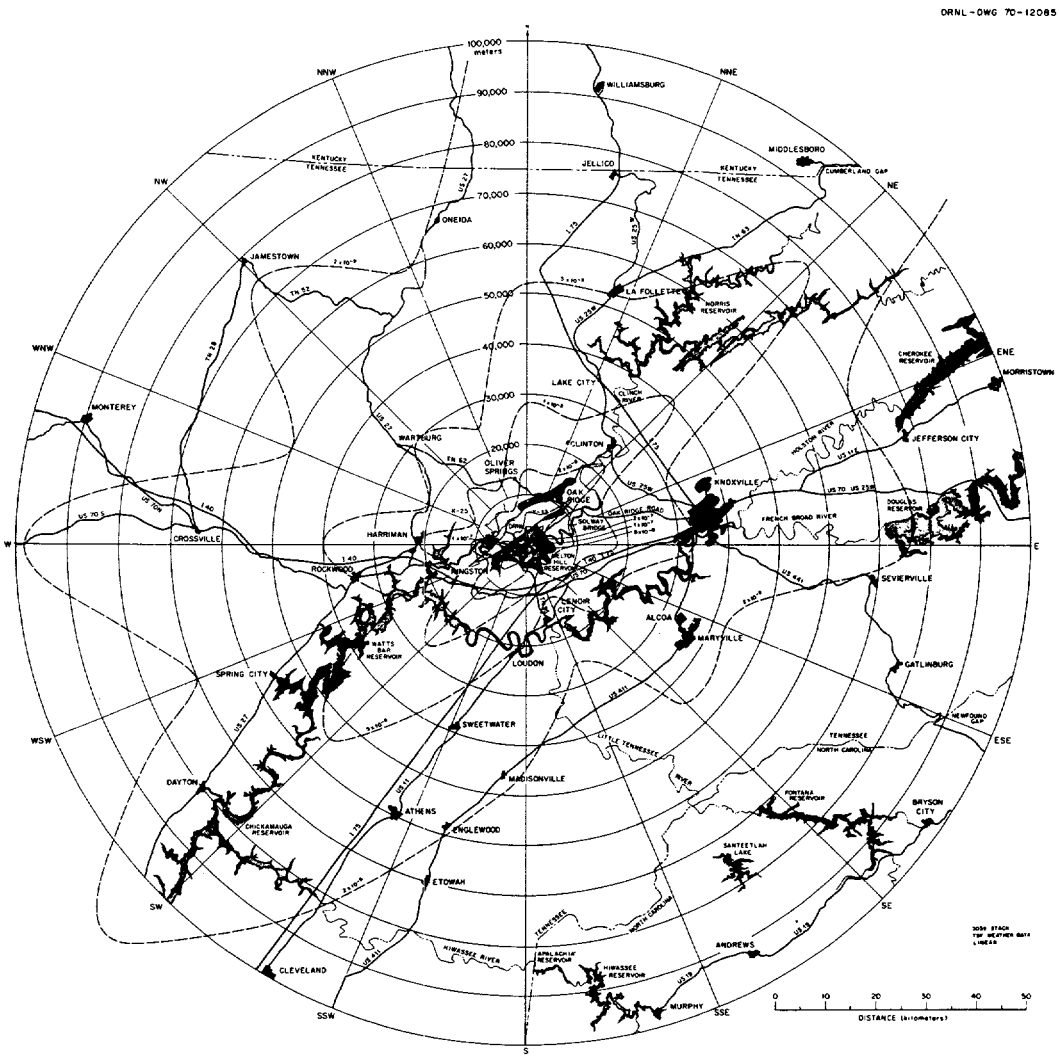

Fig. 6. Isopleths of Expected Annual Average Stack Dilution Factors for the 3039 Stack

system whose origin is located at the stack and in which the radius vector ρ is the natural logarithm of a number proportional to the actual radius vector. The equations of transformation are

$$\rho = 1/2 \ln \left[\frac{x^2 + y^2}{r_o^2} \right], \quad \theta = \tan^{-1} y/x \tag{10}$$

Here $r_o = (x_o^2 + y_o^2)^{1/2}$ defines a circle about the stack which vanishes when the transformation is made.* Thus if r_o is taken to be 100 meters, as will be the case in the sequel, a point 1000 meters from the stack would be located a distance ln(1000/100) = 2.303 units from the origin.

Although the transformation can be made directly using Eq (10), in many practical cases the values of θ are small and it is therefore difficult to plot points using these equations. Use of a second transformation

$$\begin{aligned} x' &= \rho \cos \theta = \frac{x}{2\sqrt{x^2 + y^2}} \ln \left[\frac{x^2 + y^2}{r_o^2} \right] \\ y' &= \rho \sin \theta = \frac{y}{2\sqrt{x^2 + y^2}} \ln \left[\frac{x^2 + y^2}{r_o^2} \right] \end{aligned} \tag{11}$$

where x' and y' are a new set of rectangular cartesian coordinates, which now include the logarithmic contraction, often facilitates the work. The use of these transformations is illustrated in Fig. 7. For the case shown x = 1500 meters, y = 500 meters, ρ = 2.761, θ = 0.322 radians, x' = 2.619, y' = 0.873.

Log-polar plots showing the expected annual average stack-dilution factor isopleths for each of the five ORNL stacks are given in Figs. 8-12. The improvement in legibility over those shown in Fig. 6 is immediately obvious.

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*The branch for which $x^2 + y^2 < r_o^2$ can be plotted on second graph if desired.

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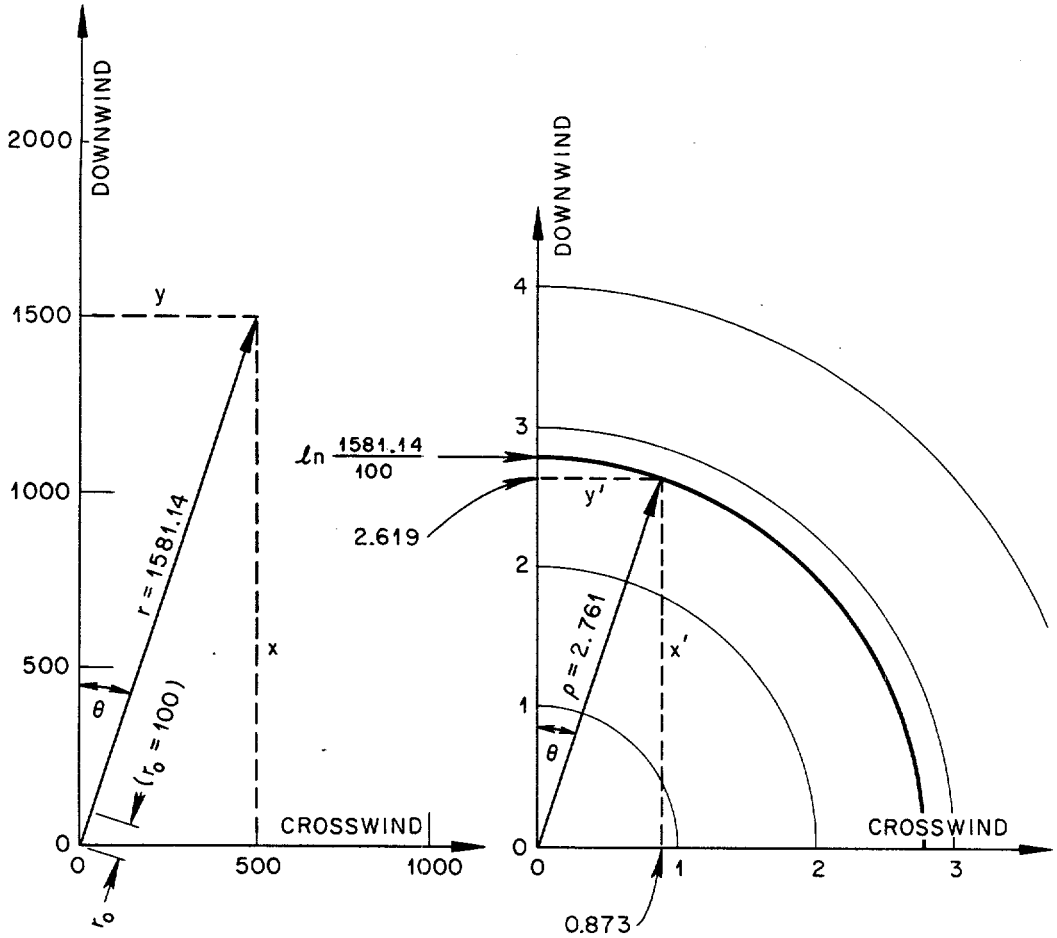

RECTANGULAR CARTESIANS

$$x = r_0 e^{\rho} \cos \theta$$

$$y = r_0 e^{\rho} \sin \theta$$

LOG-POLARS

$$\rho = \tfrac{1}{2} \ln \frac{x^2 + y^2}{r_0^2}$$

$$\theta = \tan^{-1} y/x$$

MODIFIED RECTANGULAR CARTESIANS

$$x' = \frac{x}{2\sqrt{x^2 + y^2}} \ln \left[\frac{x^2 + y^2}{r_0^2}\right]$$

$$y' = \frac{y}{2\sqrt{x^2 + y^2}} \ln \left[\frac{x^2 + y^2}{r_0^2}\right]$$

Fig. 7. Logarithmic Polar Coordinate Transformation

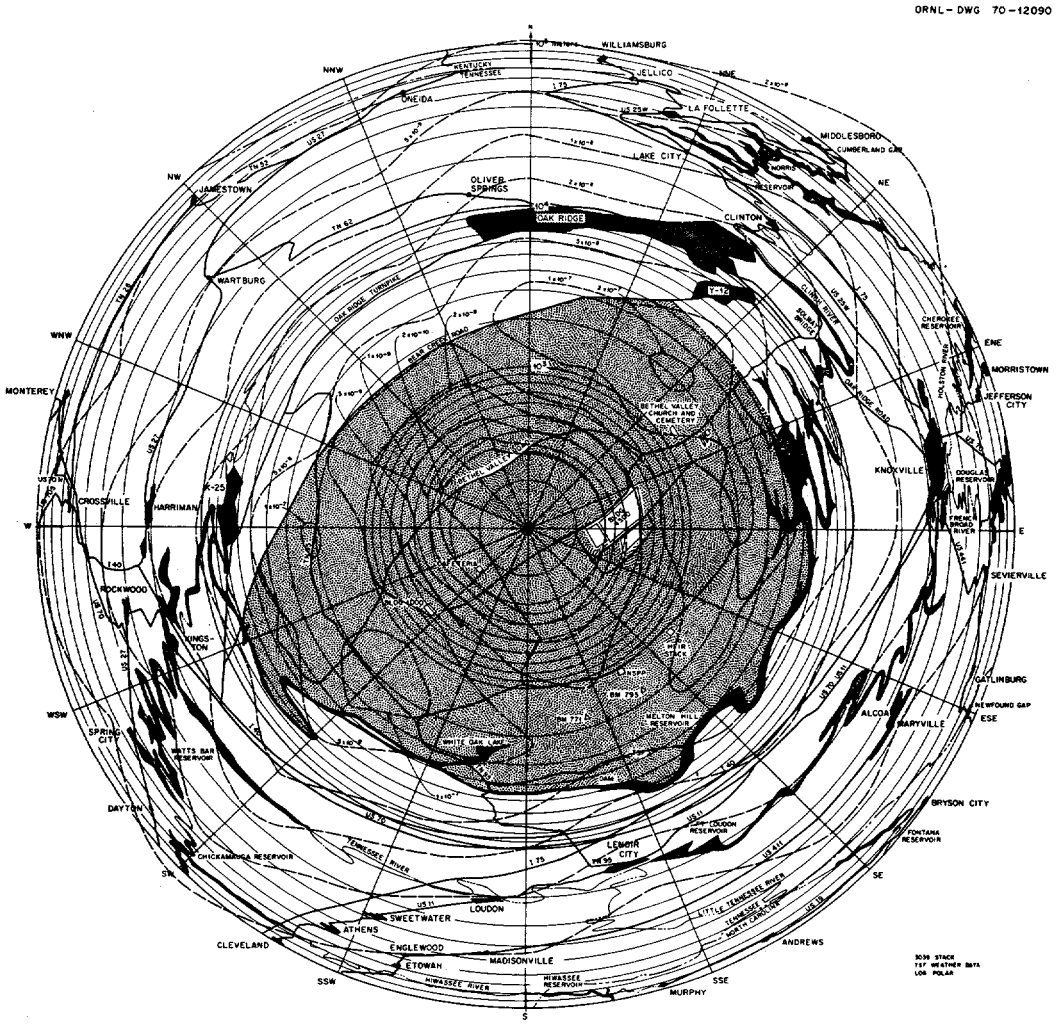

Fig. 8. Log Polar Isopleths of Expected Annual Average Stack Dilution Factors for the 3039 Stack

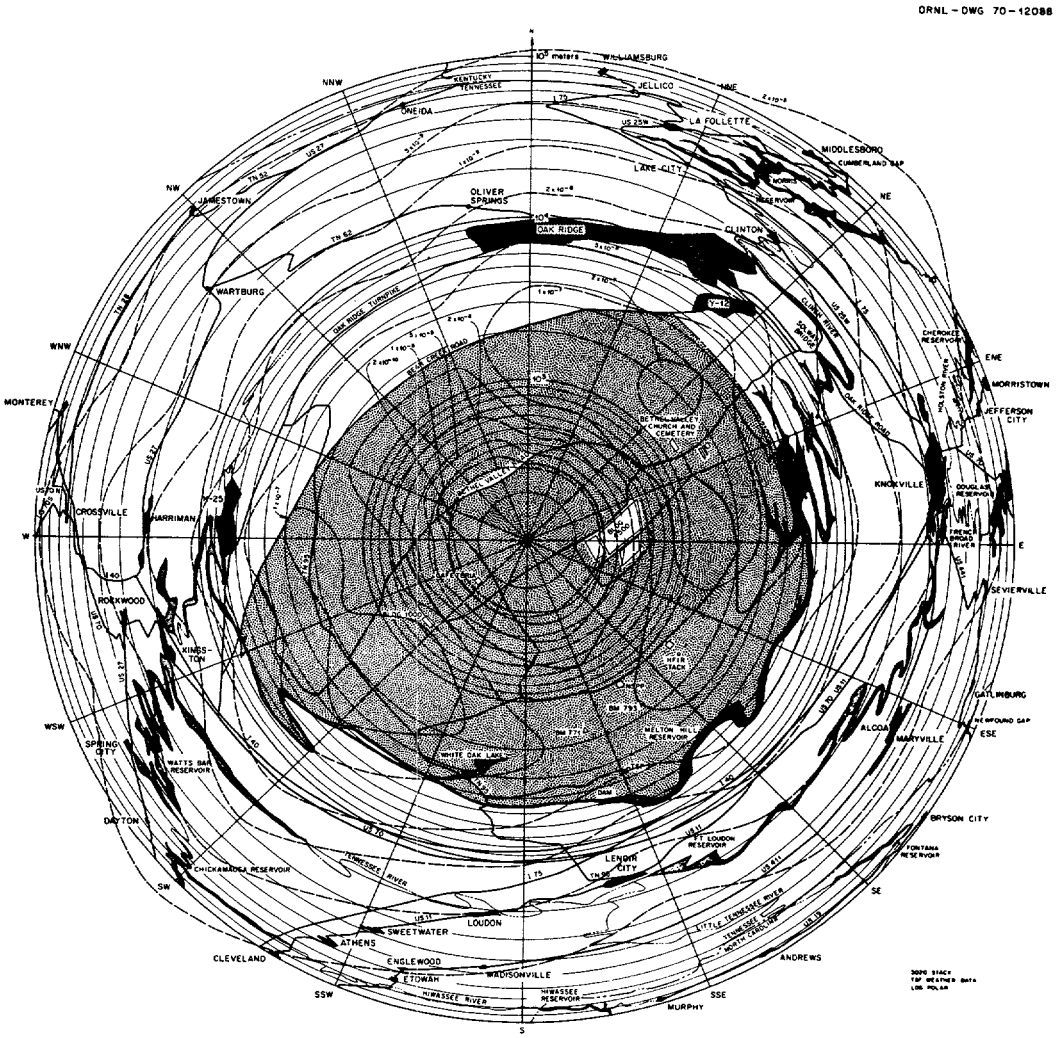

Fig. 9. Log Polar Isopleths of Expected Annual Average Stack Dilution Factors for the 3020 Stack

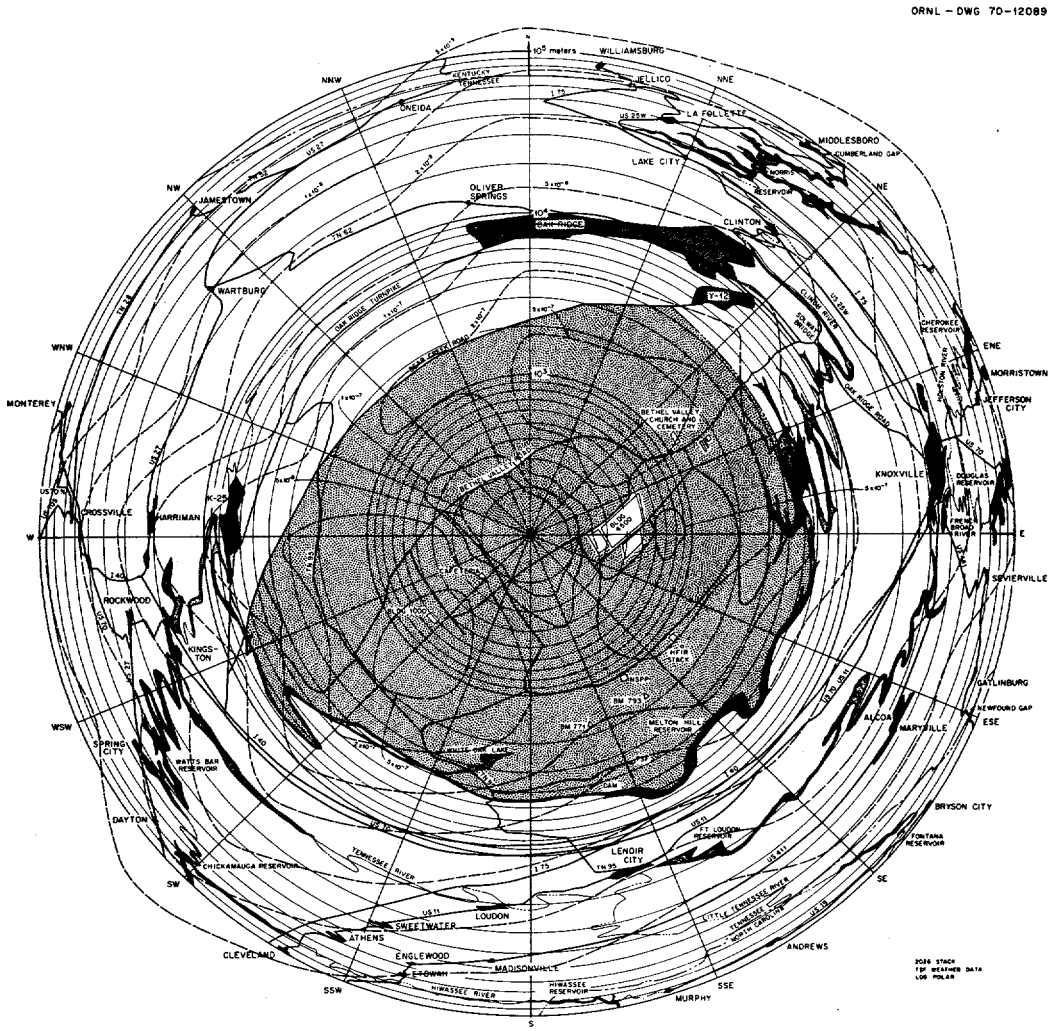

Fig. 10. Log Polar Isopleths of Expected Annual Average Stack Dilution Factors for the 2026 Stack

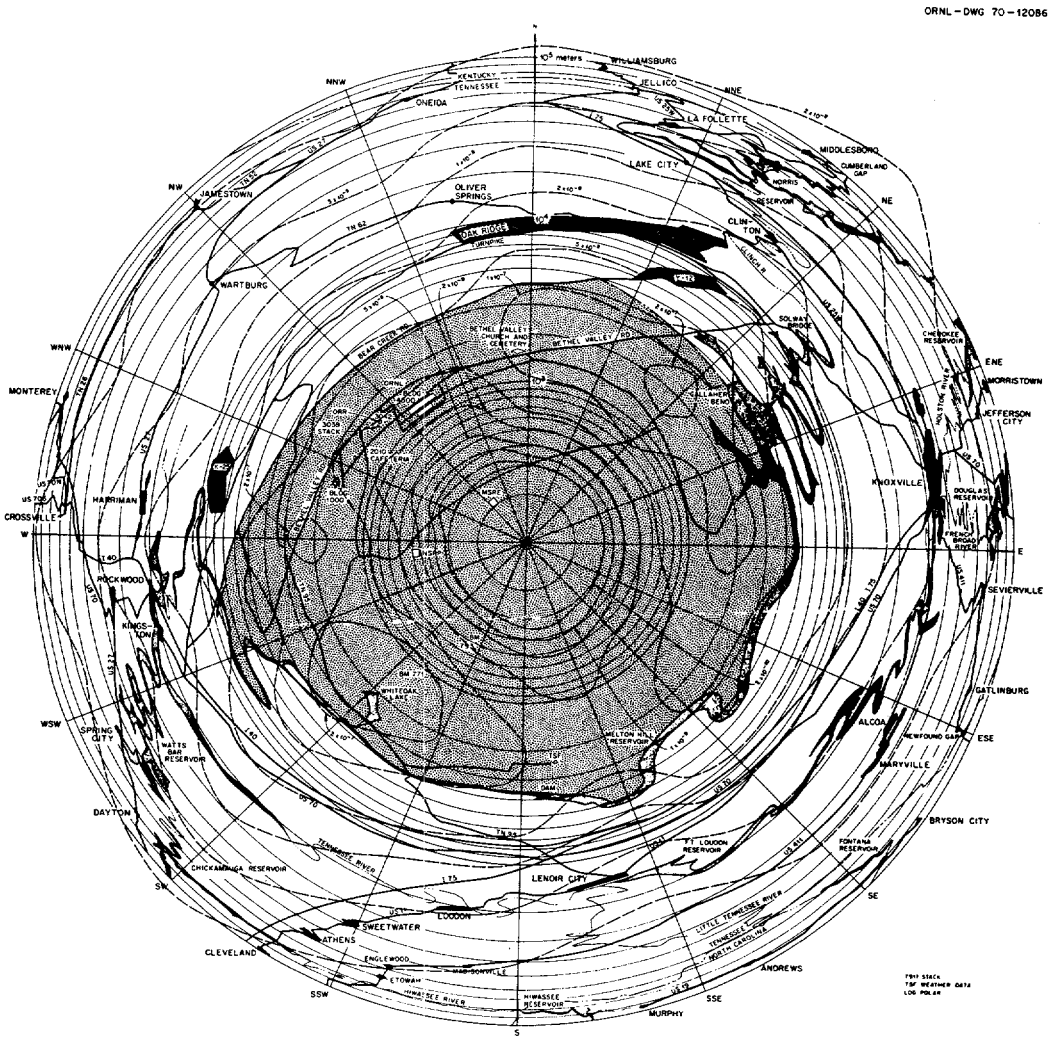

Fig. 11. Log Polar Isopleths of Expected Annual Average Stack Dilution Factors for the 7911 Stack

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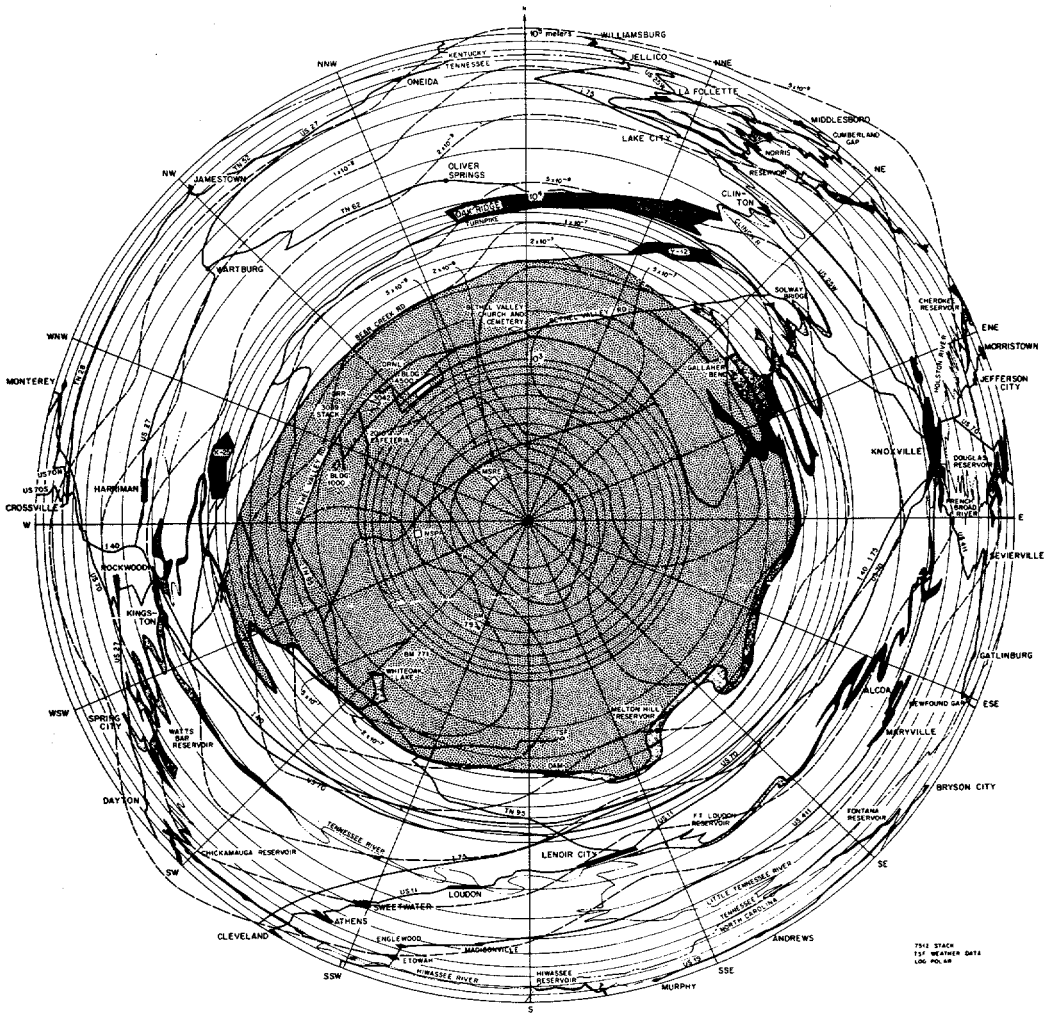

Fig. 12. Log Polar Isopleths of Expected Annual Average Stack Dilution Factors for the 7512 Stack

Isopleth representations, both those which employ rectangular cartesians and those of the log-polar type, suffer from the disadvantage that there is no simple way to combine the plots from several stack locations into a single set of isopleths. They are, therefore, primarily useful for the study of the behavior of single isolated stacks. They will be put to this use in the following section which deals with accidental releases.

IV. ACCIDENTAL RELEASES

1. Calculation of the Time-Integrated Concentration

In Section II a technique for estimating the expected annual ground-level concentrations resulting from continuous emission was presented. This technique was designed to permit a priori calculation of permissible stack release rates for the purpose of process control. Consequently, the emission rates contemplated were quite low.

It is now necessary to turn to the case, quite different from that of routine release, in which a relatively large amount of radioactive material is released from one of the stacks over a comparatively short period of time and to estimate what the consequences of such an incident are apt to be.

As before, the computation starts with the Gaussian Plume formula [Eq (1)]. In this case, however, the release is of short duration and the meteorological conditions are assumed to be known and to remain constant throughout the release.* Hence the crosswind averaging procedure will not be used but rather the concentrations will be calculated as a function of both x, the downwind distance, and y, the crosswind distance. The source term Q is in this case a time-integrated release rate and is expressed in curies so that X(x,y) is now given in terms of a time-integrated concentration expressed in units of curie sec/m^3.

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*In some cases of interest this may not be so, and in such circumstances methods similar to those described in Section II may be used.

Two calculations are required: First, the ground-level stack-dilution factors on the plume centerline are found by setting Q = 1 and y = 0 in Eq (1). The value and location of the maximum value of X/Q is also found. Second, the coordinates of the isopleths or loci of constant X(x,y)/Q are found by setting X/Q equal to a succession of constants and solving Eq (1) for the values of y which correspond to various values of x. We have from Eq (1)

$$y = \sqrt{2}\,\sigma_y \left\{ - \ln \frac{X}{Q} - \ln \pi u \sigma_y \sigma_z - \frac{h^2}{2\sigma_z^2} \right\}^{1/2} \tag{12}$$

If X/Q is set equal to a constant less than the maximum value found above, Eq (12) will define a curve (closed when $h^2>0$) which, in fact, defines an isopleth corresponding to the constant stack dilution factor used in the equation.

A computer program, RELISH, described in Appendix B, has been prepared to compute both the centerline stack-dilution factors and the isopleth coordinates for an appropriate series of values of X/Q. For convenience in plotting, the program provides the coordinates not only in ordinary rectangular Cartesian coordinates, but also in log-polar and modified-rectangular Cartesians as described in Section III. The results of some typical computations plotted in log-polars are shown in Figs. 13 and 14, and for comparison the results of one case are shown plotted in rectangular cartesians in Fig. 15. The values of the coordinates used in these examples are given in Tables IX-XII. Note that both ground-level and elevated sources can be handled by the program.

2. Estimation of Radiation Doses Following an Accidental Release

The values of X/Q found by the foregoing procedure may be regarded as time-integrated concentrations which result from the release of one curie of radioactive material (curie sec/m^3curie). The time-integrated concentrations which result from the release of some other amount of material are obtained by merely multiplying the values of the stack-dilution factor by that amount. For example, if the maximum centerline

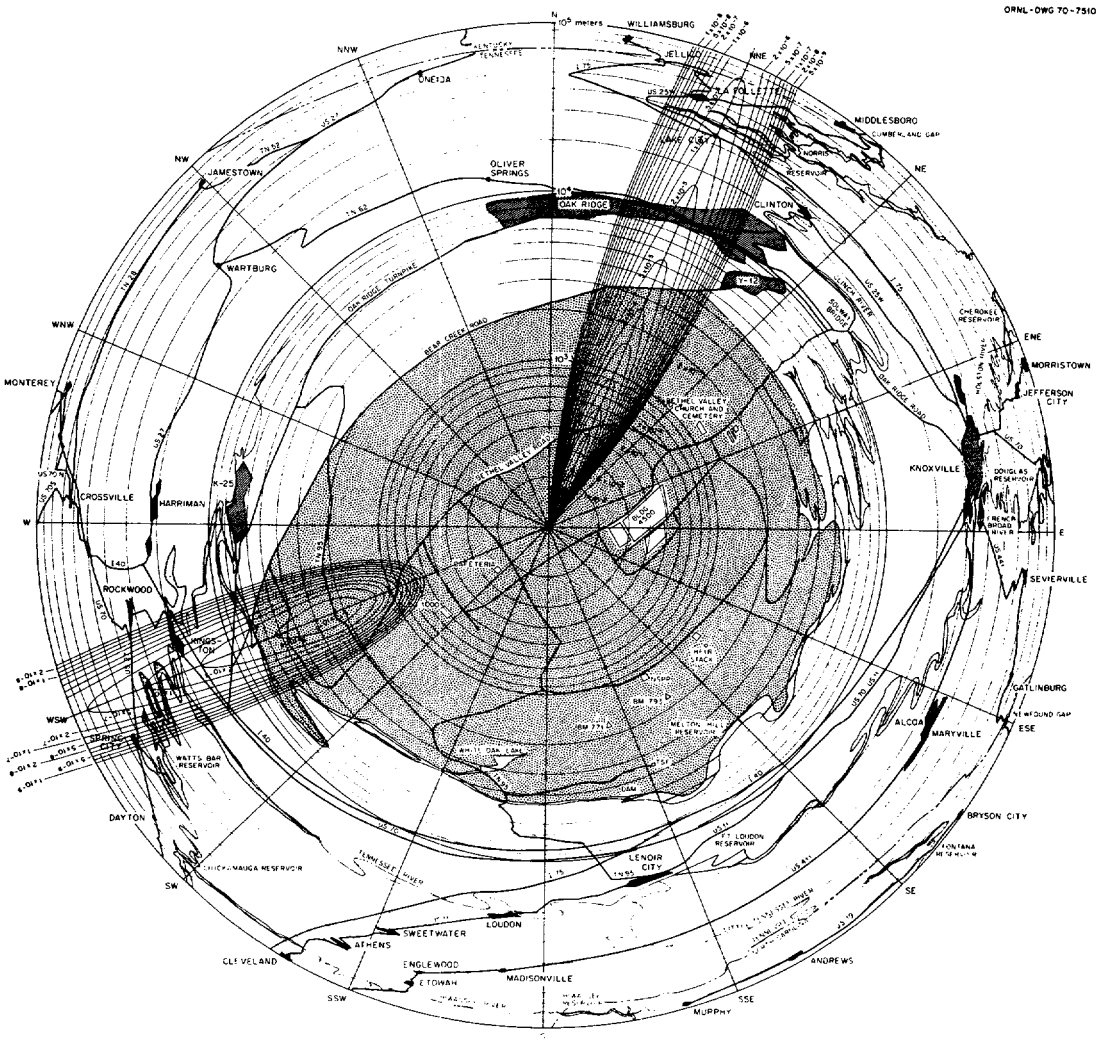

Fig. 13. Stack Dilution Factor Isopleths for Releases from the 3039 Site under Inversion Conditions, Wind Speed 0.67 Meters/Sec; Logarithmic Polar Coordinates. (Ground level release shown in NNE, stack release shown in WSW.)

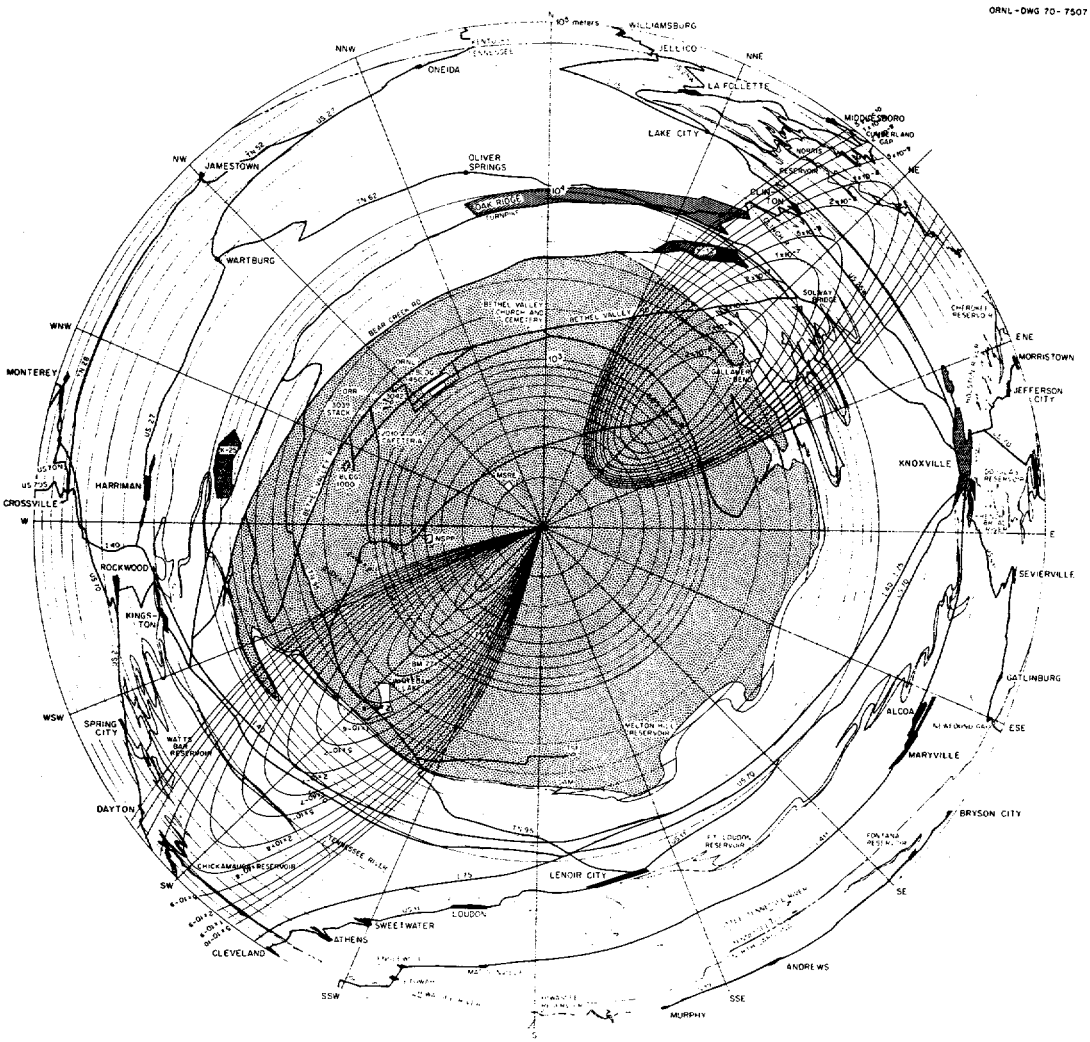

Fig. 14. Stack Dilution Factor Isopleths for Releases from 7911 Site under Lapse Conditions, Wind Speed 3.33 Meters/Sec; Logarithmic Polar Coordinates. (Ground level release shown in SW, stack release shown in NE.)

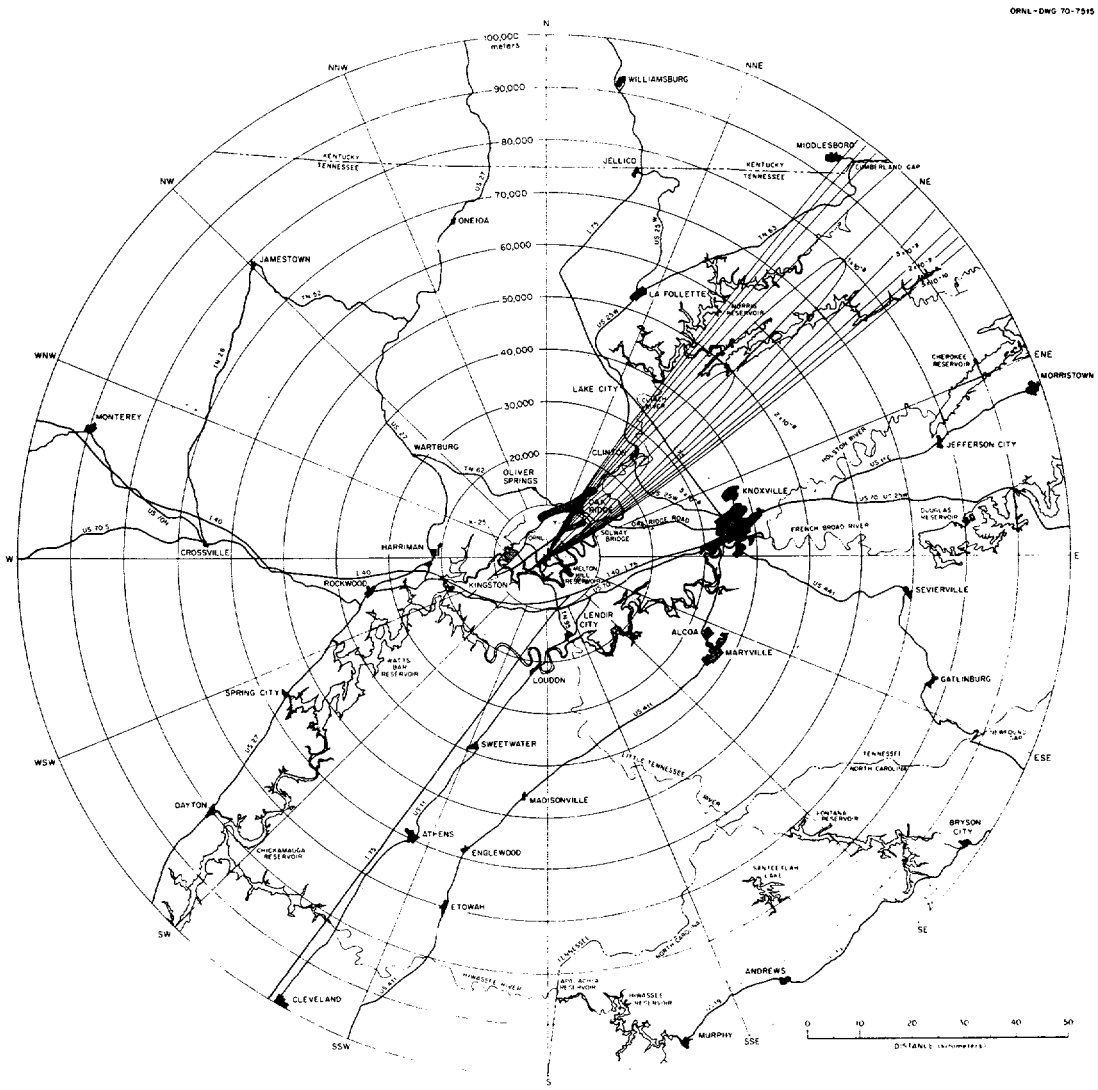

Fig. 15. Stack Dilution Factor Isopleths for Release from 3039 Stack under Lapse Conditions, Wind Speed 3.33 Meters/Sec; Polar Coordinates.

TABLE IX.

3029 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =1.129E-05 AT 2250.0 METERS DOWNWIND

CHI/Q=1.000E-05 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
4.665E-46	150.0	0.0	0.40547	0.0	0.4055	0.0
2.742E-46	200.0	0.0	0.69315	0.0	0.6931	0.0
1.217E-24	300.0	0.0	1.09861	0.0	1.0986	0.0
4.608E-16	400.0	0.0	1.38629	0.0	1.3863	0.0
5.454E-12	500.0	0.0	1.60944	0.0	1.6094	0.0
4.263E-10	600.0	0.0	1.79176	0.0	1.7918	0.0
6.960E-09	700.0	0.0	1.94591	0.0	1.9459	0.0
4.648E-08	800.0	0.0	2.07944	0.0	2.0794	0.0
1.790E-07	900.0	0.0	2.19722	0.0	2.1972	0.0
4.819E-07	1000.0	0.0	2.30258	0.0	2.3026	0.0
9.305E-07	1100.0	0.0	2.39789	0.0	2.3979	0.0
1.558E-06	1200.0	0.0	2.48491	0.0	2.4849	0.0
2.350E-06	1300.0	0.0	2.56495	0.0	2.5649	0.0
3.274E-06	1400.0	0.0	2.63906	0.0	2.6391	0.0
5.360E-06	1600.0	0.0	2.77259	0.0	2.7726	0.0
7.520E-06	1800.0	0.0	2.89037	0.0	2.8904	0.0
9.537E-06	2000.0	0.0	2.99573	0.0	2.9957	0.0
1.033E-05	2500.0	30.9	3.21895	0.707	3.2187	0.0397
8.748E-06	3000.0	0.0	3.40120	0.0	3.4012	0.0
7.604E-06	3500.0	0.0	3.55535	0.0	3.5553	0.0
6.735E-06	4000.0	0.0	3.68888	0.0	3.6889	0.0
6.051E-06	4500.0	0.0	3.80666	0.0	3.8067	0.0
5.498E-06	5000.0	0.0	3.91202	0.0	3.9120	0.0
4.658E-06	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.049E-06	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.586E-06	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.928E-06	10000.0	0.0	4.60517	0.0	4.6052	0.0
2.080E-06	15000.0	0.0	5.01064	0.0	5.0106	0.0
1.631E-06	20000.0	0.0	5.29832	0.0	5.2983	0.0
1.159E-06	30000.0	0.0	5.70378	0.0	5.7038	0.0
9.091E-07	40000.0	0.0	5.99146	0.0	5.9915	0.0
7.521E-07	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.457E-07	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.670E-07	70000.0	0.0	6.55108	0.0	6.5511	0.0
5.066E-07	80000.0	0.0	6.68461	0.0	6.6846	0.0
4.196E-07	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE IX. (Continued)

3039 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =1.129E-05 AT 2250.0 METERS DOWNWIND

CHI/Q=5.000E-06 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
4.665E-46	150.0	0.0	0.40547	0.0	0.4055	0.0
2.742E-46	200.0	0.0	0.69315	0.0	0.6931	0.0
1.217E-24	300.0	0.0	1.09861	0.0	1.0986	0.0
4.608E-16	400.0	0.0	1.38629	0.0	1.3863	0.0
5.454E-12	500.0	0.0	1.60944	0.0	1.6094	0.0
4.263E-10	600.0	0.0	1.79176	0.0	1.7918	0.0
6.960E-09	700.0	0.0	1.94591	0.0	1.9459	0.0
4.648E-08	800.0	0.0	2.07944	0.0	2.0794	0.0
1.790E-07	900.0	0.0	2.19722	0.0	2.1972	0.0
4.819E-07	1000.0	0.0	2.30258	0.0	2.3026	0.0
9.305E-07	1100.0	0.0	2.39789	0.0	2.3979	0.0
1.558E-06	1200.0	0.0	2.48491	0.0	2.4849	0.0
2.350E-06	1300.0	0.0	2.56495	0.0	2.5649	0.0
3.274E-06	1400.0	0.0	2.63906	0.0	2.6391	0.0
5.360E-06	1600.0	30.3	2.77277	1.085	2.7723	0.0525
7.520E-06	1800.0	81.7	2.89140	2.599	2.8884	0.1311
9.537E-06	2000.0	113.1	2.99733	3.237	2.9925	0.1692
1.033E-05	2500.0	146.8	3.22060	3.361	3.2151	0.1888
8.748E-06	3000.0	152.2	3.40248	2.905	3.3981	0.1724
7.604E-06	3500.0	151.6	3.55628	2.480	3.5530	0.1539
6.735E-06	4000.0	144.3	3.68953	2.066	3.6871	0.1330
6.051E-06	4500.0	128.5	3.80707	1.636	3.8055	0.1087
5.498E-06	5000.0	99.8	3.91222	1.143	3.9114	0.0781
4.658E-06	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.049E-06	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.586E-06	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.928E-06	10000.0	0.0	4.60517	0.0	4.6052	0.0
2.080E-06	15000.0	0.0	5.01064	0.0	5.0106	0.0
1.631E-06	20000.0	0.0	5.29832	0.0	5.2983	0.0
1.159E-06	30000.0	0.0	5.70378	0.0	5.7038	0.0
9.091E-07	40000.0	0.0	5.99146	0.0	5.9915	0.0
7.531E-07	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.457E-07	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.670E-07	70000.0	0.0	6.55108	0.0	6.5511	0.0
5.066E-07	80000.0	0.0	6.68461	0.0	6.6846	0.0
4.196E-07	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE IX. (Continued)

3039 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100 CHI/Q(MAX) =1.129E-05 AT 2250.0 METERS DOWNWIND

CHI/Q=2.000E-06 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
4.665E-46	150.0	0.0	0.40547	0.0	0.4055	0.0
2.742E-46	200.0	0.0	0.69315	0.0	0.6931	0.0
1.217E-24	300.0	0.0	1.09861	0.0	1.0986	0.0
4.608E-16	400.0	0.0	1.38629	0.0	1.3863	0.0
5.454E-12	500.0	0.0	1.60944	0.0	1.6094	0.0
4.263E-10	600.0	0.0	1.79176	0.0	1.7918	0.0
6.960E-09	700.0	0.0	1.94591	0.0	1.9459	0.0
4.648E-08	800.0	0.0	2.07944	0.0	2.0794	0.0
1.790E-07	900.0	0.0	2.19722	0.0	2.1972	0.0
4.819E-07	1000.0	0.0	2.30258	0.0	2.3026	0.0
9.305E-07	1100.0	0.0	2.39789	0.0	2.3979	0.0
1.558E-06	1200.0	0.0	2.48491	0.0	2.4849	0.0
2.350E-06	1300.0	38.2	2.56538	1.684	2.5643	0.0754
3.274E-06	1400.0	71.4	2.64036	2.921	2.6369	0.1346
5.360E-06	1600.0	114.1	2.77512	4.079	2.7681	0.1974
7.520E-06	1800.0	147.2	2.89370	4.675	2.8841	0.2358
9.537E-06	2000.0	175.9	2.99959	5.027	2.9880	0.2628
1.033E-05	2500.0	220.9	3.22276	5.050	3.2103	0.2837
8.748E-06	3000.0	247.2	3.40458	4.711	3.3931	0.2796
7.604E-06	3500.0	270.6	3.55833	4.420	3.5477	0.2743
6.735E-06	4000.0	291.3	3.69152	4.165	3.6818	0.2681
6.051E-06	4500.0	309.6	3.80902	3.935	3.8000	0.2614
5.498E-06	5000.0	325.6	3.91414	3.726	3.9059	0.2544
4.658E-06	6000.0	351.4	4.09606	3.352	4.0890	0.2395
4.049E-06	7000.0	369.3	4.24988	3.020	4.2440	0.2239
3.586E-06	8000.0	379.4	4.38315	2.715	4.3782	0.2076
2.928E-06	10000.0	375.4	4.60587	2.150	4.6026	0.1728
2.080E-06	15000.0	169.0	5.01070	0.646	5.0104	0.0565
1.631E-06	20000.0	0.0	5.29832	0.0	5.2983	0.0
1.159E-06	30000.0	0.0	5.70378	0.0	5.7038	0.0
9.091E-07	40000.0	0.0	5.99146	0.0	5.9915	0.0
7.531E-07	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.457E-07	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.670E-07	70000.0	0.0	6.55108	0.0	6.5511	0.0
5.066E-07	80000.0	0.0	6.68461	0.0	6.6846	0.0
4.196E-07	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE IX. (Continued)

3039 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =1.129E-05 AT 2250.0 METERS DOWNWIND

CHI/Q=1.000E-06 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
4.665E-46	150.0	0.0	0.40547	0.0	0.4055	0.0
2.742E-46	200.0	0.0	0.69315	0.0	0.6931	0.0
1.217E-24	300.0	0.0	1.09861	0.0	1.0986	0.0
4.608E-16	400.0	0.0	1.38629	0.0	1.3863	0.0
5.45[illegible]E-12	500.0	0.0	1.60944	0.0	1.6094	0.0
4.263E-10	600.0	0.0	1.79176	0.0	1.7918	0.0
6.960E-09	700.0	0.0	1.94591	0.0	1.9459	0.0
4.648E-08	800.0	0.0	2.07944	0.0	2.0794	0.0
1.790E-07	900.0	0.0	2.19722	0.0	2.1972	0.0
4.819E-07	1000.0	0.0	2.30258	0.0	2.3026	0.0
9.305E-07	1100.0	0.0	2.39789	0.0	2.3979	0.0
1.558E-06	1200.0	58.9	2.48611	2.811	2.4831	0.1219
2.350E-06	1300.0	87.9	2.56723	3.870	2.5614	0.1733
3.274E-06	1400.0	110.8	2.64218	4.527	2.6339	0.2085
5.360E-06	1600.0	148.9	2.77690	5.317	2.7649	0.2573
7.520E-06	1800.0	181.7	2.89544	5.763	2.8808	0.2908
9.537E-06	2000.0	211.4	3.00129	6.033	2.9847	0.3155
1.033E-05	2500.0	263.4	3.22440	6.016	3.2066	0.3379
8.748E-06	3000.0	299.7	3.40616	5.705	3.3893	0.3386
7.604E-06	3500.0	333.5	3.55987	5.443	3.5438	0.3376
6.735E-06	4000.0	365.1	3.69303	5.215	3.6777	0.3357
6.051E-06	4500.0	394.8	3.81050	5.014	3.7959	0.3330
5.498E-06	5000.0	422.7	3.91558	4.833	3.9017	0.3299
4.658E-06	6000.0	474.1	4.09746	4.518	4.0847	0.3227
4.049E-06	7000.0	520.0	4.25125	4.248	4.2396	0.3149
3.586E-06	8000.0	561.0	4.38448	4.011	4.3737	0.3067
2.928E-06	10000.0	630.3	4.60715	3.606	4.5980	0.2898
2.080E-06	15000.0	732.5	5.01183	2.796	5.0059	0.2445
1.631E-06	20000.0	763.5	5.29905	2.186	5.2952	0.2021
1.159E-06	30000.0	589.8	5.70398	1.126	5.7029	0.1121
9.091E-07	40000.0	0.0	5.99146	0.0	5.9915	0.0
7.531E-07	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.457E-07	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.670E-07	70000.0	0.0	6.55108	0.0	6.5511	0.0
5.066E-07	80000.0	0.0	6.68461	0.0	6.6846	0.0
4.196E-07	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE IX. (Continued)

3039 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =1.129E-05 AT 2250.0 METERS DOWNWIND

CHI/Q=5.000E-07 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
4.665E-46	150.0	0.0	0.40547	0.0	0.4055	0.0
2.742E-46	200.0	0.0	0.69315	0.0	0.6931	0.0
1.217E-24	300.0	0.0	1.09861	0.0	1.0986	0.0
4.608E-16	400.0	0.0	1.38629	0.0	1.3863	0.0
5.454E-12	500.0	0.0	1.60944	0.0	1.6094	0.0
4.263E-10	600.0	0.0	1.79176	0.0	1.7918	0.0
6.960E-09	700.0	0.0	1.94591	0.0	1.9459	0.0
4.648E-08	800.0	0.0	2.07944	0.0	2.0794	0.0
1.790E-07	900.0	0.0	2.19722	0.0	2.1972	0.0
4.819E-07	1000.0	0.0	2.30258	0.0	2.3026	0.0
9.305E-07	1100.0	64.4	2.39961	3.351	2.3955	0.1403
1.558E-06	1200.0	94.3	2.48799	4.494	2.4803	0.1950
2.350E-06	1300.0	118.4	2.56908	5.202	2.5585	0.2329
3.274E-06	1400.0	139.5	2.64400	5.691	2.6310	0.2622
5.360E-06	1600.0	177.0	2.77867	6.312	2.7618	0.3055
7.520E-06	1800.0	210.6	2.89717	6.673	2.8775	0.3366
9.537E-06	2000.0	241.7	3.00298	6.891	2.9813	0.3603
1.033E-05	2500.0	300.0	3.22602	6.843	3.2030	0.3844
8.748E-06	3000.0	344.3	3.40774	6.547	3.3855	0.3885
7.604E-06	3500.0	386.3	3.56140	6.298	3.5399	0.3907
6.735E-06	4000.0	426.3	3.69453	6.083	3.6737	0.3915
6.051E-06	4500.0	464.6	3.81196	5.895	3.7918	0.3915
5.498E-06	5000.0	501.4	3.91702	5.726	3.8975	0.3908
4.658E-06	6000.0	571.0	4.09885	5.436	4.0804	0.3883
4.049E-06	7000.0	635.9	4.25260	5.191	4.2352	0.3847
3.586E-06	8000.0	696.8	4.38581	4.978	4.3693	0.3806
2.928E-06	10000.0	808.4	4.60843	4.622	4.5934	0.3713
2.080E-06	15000.0	1022.1	5.01295	3.898	5.0014	0.3408
1.631E-06	20000.0	1186.7	5.30007	3.396	5.2908	0.3139
1.159E-06	30000.0	1408.6	5.70488	2.688	5.6986	0.2676
9.091E-07	40000.0	1514.2	5.99218	2.168	5.9879	0.2267
7.531E-07	50000.0	1512.9	6.21507	1.733	6.2122	0.1880
6.457E-07	60000.0	1394.3	6.39720	1.331	6.3955	0.1486
5.670E-07	70000.0	1113.2	6.55121	0.911	6.5504	0.1042
5.066E-07	80000.0	401.1	6.68462	0.287	6.6845	0.0335
4.196E-07	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE IX. (Continued)

3039 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =1.129E-05 AT 2250.0 METERS DOWNWIND

CHI/Q=2.000E-07 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
4.665E-46	150.0	0.0	0.40547	0.0	0.4055	0.0
2.742E-46	200.0	0.0	0.69315	0.0	0.6931	0.0
1.217E-24	300.0	0.0	1.09861	0.0	1.0986	0.0
4.608E-16	400.0	0.0	1.38629	0.0	1.3863	0.0
5.454E-12	500.0	0.0	1.60944	0.0	1.6094	0.0
4.263E-10	600.0	0.0	1.79176	0.0	1.7918	0.0
6.960E-09	700.0	0.0	1.94591	0.0	1.9459	0.0
4.648E-08	800.0	0.0	2.07944	0.0	2.0794	0.0
1.790E-07	900.0	0.0	2.19722	0.0	2.1972	0.0
4.819E-07	1000.0	70.3	2.30505	4.021	2.2994	0.1616
9.305E-07	1100.0	101.3	2.40212	5.264	2.3920	0.2204
1.558E-06	1200.0	126.8	2.49045	6.030	2.4767	0.2616
2.350E-06	1300.0	149.3	2.57150	6.553	2.5547	0.2935
3.274E-06	1400.0	170.2	2.64639	6.930	2.6271	0.3193
5.360E-06	1600.0	208.4	2.78100	7.420	2.7577	0.3592
7.520E-06	1800.0	243.6	2.89944	7.707	2.8733	0.3888
9.537E-06	2000.0	276.7	3.00521	7.877	2.9769	0.4119
1.033E-05	2500.0	342.4	3.22817	7.799	3.1983	0.4381
8.748E-06	3000.0	395.6	3.40982	7.512	3.3806	0.4458
7.604E-06	3500.0	446.6	3.56342	7.271	3.5348	0.4510
6.735E-06	4000.0	495.7	3.69650	7.065	3.6684	0.4546
6.051E-06	4500.0	543.3	3.81390	6.884	3.7864	0.4571
5.498E-06	5000.0	589.5	3.91892	6.724	3.8920	0.4588
4.658E-06	6000.0	678.1	4.10069	6.448	4.0747	0.4605
4.049E-06	7000.0	762.6	4.25439	6.217	4.2294	0.4607
3.586E-06	8000.0	843.4	4.38755	6.018	4.3634	0.4600
2.928E-06	10000.0	996.2	4.61011	5.689	4.5874	0.4570
2.080E-06	15000.0	1310.1	5.01443	4.991	4.9954	0.4363
1.631E-06	20000.0	1581.0	5.30143	4.520	5.2849	0.4178
1.159E-06	30000.0	2036.4	5.70608	3.883	5.6930	0.3864
9.091E-07	40000.0	2409.8	5.99328	3.448	5.9824	0.3604
7.531E-07	50000.0	2722.1	6.21609	3.116	6.2069	0.3379
6.457E-07	60000.0	2984.9	6.39817	2.848	6.3903	0.3179
5.670E-07	70000.0	3205.3	6.55213	2.622	6.5453	0.2997
5.066E-07	80000.0	3388.1	6.68551	2.425	6.6795	0.2829
4.196E-07	100000.0	3652.2	6.90842	2.092	6.9038	0.2521

TABLE IX. (Continued)

3039 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =1.129E-05 AT 2250.0 METERS DOWNWIND

CHI/Q=1.000E-07 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
4.665E-46	150.0	0.0	0.40547	0.0	0.4055	0.0
2.742E-46	200.0	0.0	0.69315	0.0	0.6931	0.0
1.217E-24	300.0	0.0	1.09861	0.0	1.0986	0.0
4.608E-16	400.0	0.0	1.38629	0.0	1.3863	0.0
5.454E-12	500.0	0.0	1.60944	0.0	1.6094	0.0
4.263E-10	600.0	0.0	1.79176	0.0	1.7918	0.0
6.960E-09	700.0	0.0	1.94591	0.0	1.9459	0.0
4.648E-08	800.0	0.0	2.07944	0.0	2.0794	0.0
1.790E-07	900.0	51.8	2.19888	3.292	2.1952	0.1263
4.819E-07	1000.0	94.0	2.30698	5.369	2.2969	0.2159
9.305E-07	1100.0	122.1	2.40401	6.333	2.3893	0.2652
1.558E-06	1200.0	146.6	2.49231	6.965	2.4739	0.3022
2.350E-06	1300.0	169.1	2.57333	7.409	2.5518	0.3318
3.274E-06	1400.0	190.1	2.64819	7.732	2.6241	0.3563
5.360E-06	1600.0	229.3	2.78275	8.156	2.7546	0.3948
7.520E-06	1800.0	265.8	2.90116	8.401	2.8700	0.4239
9.537E-06	2000.0	300.5	3.00689	8.545	2.9735	0.4468
1.033E-05	2500.0	371.3	3.22978	8.448	3.1947	0.4745
8.748E-06	3000.0	430.3	3.41138	8.163	3.3768	0.4844
7.604E-06	3500.0	487.3	3.56495	7.926	3.5309	0.4916
6.735E-06	4000.0	542.4	3.69799	7.722	3.6645	0.4969
6.051E-06	4500.0	596.0	3.81536	7.544	3.7823	0.5009
5.498E-06	5000.0	648.2	3.92035	7.386	3.8878	0.5040
4.658E-06	6000.0	749.0	4.10208	7.116	4.0705	0.5082
4.049E-06	7000.0	845.9	4.25574	6.890	4.2250	0.5105
3.586E-06	8000.0	939.3	4.38887	6.696	4.3589	0.5118
2.928E-06	10000.0	1117.5	4.61137	6.376	4.5829	0.5121
2.080E-06	15000.0	1491.4	5.01555	5.678	4.9909	0.4962
1.631E-06	20000.0	1823.5	5.30246	5.209	5.2806	0.4814
1.159E-06	30000.0	2404.8	5.70698	4.583	5.6887	0.4560
9.091E-07	40000.0	2909.6	5.99410	4.160	5.9783	0.4349
7.531E-07	50000.0	3359.2	6.21686	3.844	6.2029	0.4167
6.457E-07	60000.0	3765.5	6.39890	3.591	6.3863	0.4008
5.670E-07	70000.0	4136.3	6.55282	3.382	6.5414	0.3865
5.066E-07	80000.0	4476.7	6.68617	3.203	6.6757	0.3736
4.196E-07	100000.0	5080.8	6.90904	2.909	6.9001	0.3506

TABLE IX. (Continued)

303? STACK

STACK HEIGHT 74 400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =1.129E-05 AT 2250.0 METERS DOWNWIND

CHI/Q=5.000E-08 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
4.665E-46	150.0	0.0	0.40547	0.0	0.4055	0.0
2.742E-46	200.0	0.0	0.69315	0.0	0.6931	0.0
1.217E-24	300.0	0.0	1.09861	0.0	1.0986	0.0
4.608E-16	400.0	0.0	1.38629	0.0	1.3863	0.0
5.454E-12	500.0	0.0	1.60944	0.0	1.6094	0.0
4.263E-10	600.0	0.0	1.79176	0.0	1.7918	0.0
6.960E-09	700.0	0.0	1.94591	0.0	1.9459	0.0
4.648E-08	800.0	0.0	2.07944	0.0	2.0794	0.0
1.790E-07	900.0	76.6	2.20084	4.866	2.1929	0.1867
4.819E-07	1000.0	112.8	2.30891	6.437	2.2944	0.2588
9.305E-07	1100.0	139.8	2.40590	7.241	2.3867	0.3032
1.558E-06	1200.0	164.1	2.49417	7.785	2.4712	0.3379
2.350E-06	1300.0	186.7	2.57516	8.172	2.5490	0.3661
3.274E-06	1400.0	208.1	2.64999	8.456	2.6212	0.3897
5.360E-06	1600.0	248.5	2.78450	8.827	2.7515	0.4273
7.520E-06	1800.0	286.4	2.90287	9.040	2.8668	0.4561
9.537E-06	2000.0	322.5	3.00857	9.161	2.9702	0.4790
1.033E-05	2500.0	398.1	3.23139	9.047	3.1912	0.5081
8.748E-06	3000.0	462.5	3.41294	8.764	3.3731	0.5200
7.604E-06	3500.0	524.8	3.56646	8.528	3.5270	0.5289
6.735E-06	4000.0	585.3	3.69947	8.325	3.6605	0.5357
6.051E-06	4500.0	644.3	3.81681	8.149	3.7783	0.5410
5.498E-06	5000.0	702.0	3.92178	7.992	3.8837	0.5453
4.658E-06	6000.0	813.8	4.10346	7.724	4.0662	0.5515
4.049E-06	7000.0	921.7	4.25709	7.501	4.2207	0.5557
3.586E-06	8000.0	1026.2	4.39019	7.310	4.3545	0.5586
2.928E-06	10000.0	1226.8	4.61264	6.994	4.5783	0.5617
2.080E-06	15000.0	1653.0	5.01667	6.289	4.9865	0.5495
1.631E-06	20000.0	2037.3	5.30348	5.816	5.2762	0.5375
1.159E-06	30000.0	2723.8	5.70789	5.188	5.6845	0.5161
9.091E-07	40000.0	3335.3	5.99493	4.766	5.9742	0.4981
7.531E-07	50000.0	3893.3	6.21763	4.452	6.1989	0.4827
6.457E-07	60000.0	4410.1	6.39962	4.204	6.3824	0.4691
5.670E-07	70000.0	4893.2	6.55352	3.999	6.5376	0.4570
5.066E-07	80000.0	5348.2	6.68684	3.825	6.6719	0.4460
4.196E-07	100000.0	6188.0	6.90967	3.541	6.8965	0.4268

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =1.129E-05 AT 2250.0 METERS DOWNWIND

CHI/Q=2.000E-08 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
4.665E-46	150.0	0.0	0.40547	0.0	0.4055	0.0
2.742E-46	200.0	0.0	0.69315	0.0	0.6931	0.0
1.217E-24	300.0	0.0	1.09861	0.0	1.0986	0.0
4.608E-16	400.0	0.0	1.38629	0.0	1.3863	0.0
5.454E-12	500.0	0.0	1.60944	0.0	1.6094	0.0
4.263E-10	600.0	0.0	1.79176	0.0	1.7918	0.0
6.960E-09	700.0	0.0	1.94591	0.0	1.9459	0.0
4.648E-08	800.0	55.7	2.08186	3.985	2.0768	0.1447
1.790E-07	900.0	100.4	2.20341	6.368	2.1898	0.2444
4.819E-07	1000.0	133.7	2.31144	7.615	2.2911	0.3063
9.305E-07	1100.0	160.2	2.40838	8.285	2.3833	0.3470
1.558E-06	1200.0	184.6	2.49660	8.747	2.4676	0.3797
2.350E-06	1300.0	207.7	2.57755	9.078	2.5453	0.4067
3.274E-06	1400.0	229.8	2.65235	9.321	2.6173	0.4296
5.360E-06	1600.0	271.7	2.78680	9.638	2.7475	0.4666
7.520E-06	1800.0	311.4	2.90512	9.817	2.8626	0.4953
9.537E-06	2000.0	349.6	3.01078	9.914	2.9658	0.5184
1.033E-05	2500.0	430.9	3.23351	9.780	3.1665	0.5493
8.748E-06	3000.0	501.8	3.41500	9.496	3.3682	0.5634
7.604E-06	3500.0	570.6	3.56847	9.260	3.5220	0.5742
6.735E-06	4000.0	637.7	3.70143	9.058	3.6553	0.5827
6.051E-06	4500.0	703.2	3.81872	8.882	3.7729	0.5896
5.498E-06	5000.0	767.4	3.92366	8.726	3.8783	0.5952
4.658E-06	6000.0	892.3	4.10528	8.459	4.0606	0.6039
4.049E-06	7000.0	1013.2	4.25886	8.236	4.2149	0.6101
3.586E-06	8000.0	1130.9	4.39192	8.046	4.3487	0.6147
2.928E-06	10000.0	1357.9	4.61431	7.733	4.5723	0.6209
2.080E-06	15000.0	1845.0	5.01814	7.012	4.9806	0.6126
1.631E-06	20000.0	2289.5	5.30483	6.531	5.2704	0.6032
1.159E-06	30000.0	3095.5	5.70908	5.891	5.6789	0.5860
9.091E-07	40000.0	3826.0	5.99602	5.464	5.9688	0.5709
7.531E-07	50000.0	4503.2	6.21865	5.146	6.1936	0.5578
6.457E-07	60000.0	5139.5	6.40059	4.896	6.3772	0.5463
5.670E-07	70000.0	5742.7	6.55443	4.690	6.5325	0.5359
5.066E-07	80000.0	6318.3	6.68772	4.516	6.6670	0.5265
4.196E-07	100000.0	7401.6	6.91049	4.233	6.8916	0.5101

TABLE IX. (Continued)

3039 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =1.129E-05 AT 2250.0 METERS DOWNWIND

CHI/Q=1.000E-08 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
4.665E-46	150.0	0.0	0.40547	0.0	0.4055	0.0
2.742E-46	200.0	0.0	0.69315	0.0	0.6931	0.0
1.217E-24	300.0	0.0	1.09861	0.0	1.0986	0.0
4.608E-16	400.0	0.0	1.38629	0.0	1.3863	0.0
5.454E-12	500.0	0.0	1.60944	0.0	1.6094	0.0
4.263E-10	600.0	0.0	1.79176	0.0	1.7918	0.0
6.960E-09	700.0	0.0	1.94591	0.0	1.9459	0.0
4.648E-08	800.0	75.2	2.08384	5.372	2.0747	0.1951
1.790E-07	900.0	115.2	2.20535	7.296	2.1875	0.2801
4.819E-07	1000.0	147.5	2.31335	8.393	2.2886	0.3377
9.305E-07	1100.0	174.0	2.41026	8.990	2.3806	0.3766
1.558E-06	1200.0	198.8	2.49844	9.406	2.4649	0.4083
2.350E-06	1300.0	222.3	2.57936	9.704	2.5425	0.4348
3.274E-06	1400.0	244.9	2.65413	9.923	2.6144	0.4574
5.360E-06	1600.0	288.1	2.78854	10.206	2.7444	0.4941
7.520E-06	1800.0	329.2	2.90682	10.363	2.8594	0.5229
9.537E-06	2000.0	368.7	3.01244	10.445	2.9625	0.5461
1.033E-05	2500.0	454.2	3.23511	10.298	3.1830	0.5783
8.748E-06	3000.0	529.7	3.41654	10.013	3.3645	0.5940
7.604E-06	3500.0	603.0	3.56997	9.776	3.5181	0.6061
6.735E-06	4000.0	674.6	3.70290	9.573	3.6513	0.6158
6.051E-06	4500.0	744.7	3.82017	9.396	3.7689	0.6237
5.498E-06	5000.0	813.4	3.92508	9.240	3.8742	0.6302
4.658E-06	6000.0	947.3	4.10666	8.972	4.0564	0.6404
4.049E-06	7000.0	1077.3	4.26020	8.749	4.2106	0.6480
3.586E-06	8000.0	1204.0	4.39323	8.559	4.3443	0.6538
2.928E-06	10000.0	1449.2	4.61556	8.246	4.5678	0.6620
2.080E-06	15000.0	1977.9	5.01925	7.512	4.9762	0.6562
1.631E-06	20000.0	2463.2	5.30584	7.021	5.2661	0.6486
1.159E-06	30000.0	3349.4	5.70998	6.370	5.6747	0.6336
9.091E-07	40000.0	4159.0	5.99684	5.936	5.9647	0.6202
7.531E-07	50000.0	4914.6	6.21942	5.614	6.1896	0.6084
6.457E-07	60000.0	5628.8	6.40131	5.359	6.3733	0.5979
5.670E-07	70000.0	6309.8	6.55513	5.151	6.5287	0.5885
5.066E-07	80000.0	6963.0	6.68838	4.974	6.6632	0.5799
4.196E-07	100000.0	8201.2	6.91111	4.688	6.8880	0.5649

TABLE IX. (Continued)

3039 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100 CHI/Q(MAX) =1.129E-05 AT 2250.0 METERS DOWNWIND

CHI/Q=5.000E-09 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
4.665E-46	150.0	0.0	0.40547	0.0	0.4055	0.0
2.742E-46	200.0	0.0	0.69315	0.0	0.6931	0.0
1.217E-24	300.0	0.0	1.09861	0.0	1.0986	0.0
4.608E-16	400.0	0.0	1.38629	0.0	1.3863	0.0
5.454E-12	500.0	0.0	1.60944	0.0	1.6094	0.0
4.263E-10	600.0	0.0	1.79176	0.0	1.7918	0.0
6.960E-09	700.0	30.8	1.94687	2.516	1.9450	0.0855
4.648E-08	800.0	90.6	2.08582	6.462	2.0726	0.2348
1.790E-07	900.0	128.3	2.20729	8.115	2.1852	0.3116
4.819E-07	1000.0	160.2	2.31526	9.101	2.2861	0.3662
9.305E-07	1100.0	186.9	2.41212	9.641	2.3781	0.4040
1.558E-06	1200.0	212.0	2.50027	10.018	2.4621	0.4350
2.350E-06	1300.0	236.0	2.58116	10.289	2.5397	0.4610
3.274E-06	1400.0	259.2	2.65590	10.488	2.6115	0.4834
5.360E-06	1600.0	303.5	2.79027	10.742	2.7414	0.5201
7.520E-06	1800.0	345.9	2.90851	10.879	2.8562	0.5489
9.537E-06	2000.0	386.9	3.01410	10.948	2.9592	0.5724
1.033E-05	2500.0	476.4	3.23671	10.788	3.1795	0.6058
8.748E-06	3000.0	556.1	3.41809	10.502	3.3608	0.6230
7.604E-06	3500.0	633.7	3.57148	10.263	3.5143	0.6363
6.735E-06	4000.0	709.6	3.70437	10.060	3.6474	0.6470
6.051E-06	4500.0	783.9	3.82161	9.882	3.7649	0.6559
5.498E-06	5000.0	856.9	3.92650	9.725	3.8701	0.6632
4.658E-06	6000.0	999.3	4.10802	9.456	4.0522	0.6749
4.049E-06	7000.0	1137.8	4.26153	9.232	4.2063	0.6837
3.586E-06	8000.0	1273.0	4.39453	9.041	4.3399	0.6906
2.928E-06	10000.0	1535.1	4.61682	8.727	4.5634	0.7005
2.080E-06	15000.0	2102.4	5.02036	7.979	4.9718	0.6968
1.631E-06	20000.0	2625.4	5.30686	7.478	5.2617	0.6907
1.159E-06	30000.0	3585.3	5.71087	6.815	5.6705	0.6777
9.091E-07	40000.0	4467.2	5.99766	6.372	5.9606	0.6657
7.531E-07	50000.0	5294.1	6.22018	6.044	6.1856	0.6549
6.457E-07	60000.0	6078.9	6.40204	5.785	6.3694	0.6453
5.670E-07	70000.0	6829.9	6.55582	5.573	6.5248	0.6366
5.066E-07	80000.0	7552.8	6.68905	5.393	6.6594	0.6287
4.196E-07	100000.0	8929.5	6.91173	5.103	6.8843	0.6147

TABLE IX. (Continued)

3039 STACK

STACK HEIGHT 74 400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100 CHI/Q(MAX) =1.129E-05 AT 2250.0 METERS DOWNWIND

CHI/Q=2.000E-09 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
4.665E-46	150.0	0.0	0.40547	0.0	0.4055	0.0
2.742E-46	200.0	0.0	0.69315	0.0	0.6931	0.0
1.217E-24	300.0	0.0	1.09861	0.0	1.0986	0.0
4.608E-16	400.0	0.0	1.38629	0.0	1.3863	0.0
5.454E-12	500.0	0.0	1.60944	0.0	1.6094	0.0
4.263E-10	600.0	0.0	1.79176	0.0	1.7918	0.0
6.960E-09	700.0	59.7	1.94954	4.877	1.9425	0.1657
4.648E-08	800.0	107.6	2.08841	7.663	2.0698	0.2785
1.790E-07	900.0	143.8	2.20983	9.079	2.1821	0.3487
4.819E-07	1000.0	175.5	2.31776	9.956	2.2829	0.4007
9.305E-07	1100.0	202.6	2.41457	10.435	2.3746	0.4373
1.558E-06	1200.0	228.3	2.50268	10.771	2.4586	0.4677
2.350E-06	1300.0	253.0	2.58353	11.012	2.5360	0.4935
3.274E-06	1400.0	276.9	2.65824	11.187	2.6077	0.5157
5.360E-06	1600.0	322.9	2.79254	11.408	2.7374	0.5524
7.520E-06	1800.0	367.0	2.91073	11.523	2.8521	0.5815
9.537E-06	2000.0	409.7	3.01628	11.576	2.9549	0.6052
1.033E-05	2500.0	504.1	3.23881	11.401	3.1749	0.6402
8.748E-06	3000.0	589.2	3.42012	11.112	3.3560	0.6592
7.604E-06	3500.0	672.2	3.57346	10.872	3.5093	0.6740
6.735E-06	4000.0	753.4	3.70631	10.666	3.6423	0.6860
6.051E-06	4500.0	833.0	3.82351	10.487	3.7596	0.6959
5.498E-06	5000.0	911.2	3.92836	10.328	3.8647	0.7043
4.658E-06	6000.0	1064.2	4.10983	10.058	4.0467	0.7177
4.049E-06	7000.0	1213.2	4.26329	9.832	4.2007	0.7280
3.586E-06	8000.0	1358.8	4.39625	9.640	4.3342	0.7362
2.928E-06	10000.0	1641.7	4.61847	9.323	4.5575	0.7482
2.080E-06	15000.0	2256.5	5.02182	8.555	4.9659	0.7470
1.631E-06	20000.0	2825.6	5.30820	8.042	5.2560	0.7426
1.159E-06	30000.0	3875.2	5.71206	7.360	5.6650	0.7318
9.091E-07	40000.0	4844.6	5.99874	6.906	5.9552	0.7213
7.531E-07	50000.0	5757.5	6.22119	6.569	6.1804	0.7117
6.457E-07	60000.0	6627.1	6.40299	6.303	6.3643	0.7030
5.670E-07	70000.0	7462.1	6.55673	6.085	6.5198	0.6950
5.066E-07	80000.0	8268.2	6.68992	5.901	6.6545	0.6878
4.196E-07	100000.0	9809.7	6.91254	5.603	6.8795	0.6749

TABLE IX. (Continued)

3039 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =1.129E-05 AT 2250.0 METERS DOWNWIND

CHI/Q=1.000E-09 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
4.665E-46	150.0	0.0	0.40547	0.0	0.4055	0.0
2.742E-46	200.0	0.0	0.69315	0.0	0.6931	0.0
1.217E-24	300.0	0.0	1.09861	0.0	1.0986	0.0
4.608E-16	400.0	0.0	1.38629	0.0	1.3863	0.0
5.454E-12	500.0	0.0	1.60944	0.0	1.6094	0.0
4.263E-10	600.0	0.0	1.79176	0.0	1.7918	0.0
6.960E-09	700.0	74.5	1.95154	6.075	1.9406	0.2065
4.648E-08	800.0	118.9	2.09037	8.454	2.0677	0.3073
1.790E-07	900.0	154.5	2.21175	9.742	2.1799	0.3743
4.819E-07	1000.0	186.3	2.31964	10.553	2.2804	0.4248
9.305E-07	1100.0	213.7	2.41642	10.994	2.3721	0.4608
1.558E-06	1200.0	239.9	2.50449	11.304	2.4559	0.4909
2.350E-06	1300.0	265.1	2.58532	11.525	2.5332	0.5165
3.274E-06	1400.0	289.5	2.66000	11.685	2.6049	0.5387
5.360E-06	1600.0	336.7	2.79426	11.885	2.7344	0.5755
7.520E-06	1800.0	382.1	2.91241	11.985	2.8489	0.6048
9.537E-06	2000.0	426.1	3.01793	12.027	2.9517	0.6288
1.033E-05	2500.0	524.2	3.24039	11.842	3.1714	0.6650
8.748E-06	3000.0	613.1	3.42166	11.551	3.3524	0.6851
7.604E-06	3500.0	699.9	3.57495	11.308	3.5055	0.7010
6.735E-06	4000.0	784.9	3.70777	11.101	3.6384	0.7139
6.051E-06	4500.0	868.2	3.82494	10.921	3.7557	0.7246
5.498E-06	5000.0	950.3	3.92976	10.761	3.8607	0.7337
4.658E-06	6000.0	1110.7	4.11119	10.488	4.0425	0.7484
4.049E-06	7000.0	1267.2	4.26462	10.261	4.1964	0.7597
3.586E-06	8000.0	1420.3	4.39754	10.067	4.3298	0.7687
2.928E-06	10000.0	1718.0	4.61971	9.748	4.5530	0.7822
2.080E-06	15000.0	2366.4	5.02293	8.965	4.9616	0.7827
1.631E-06	20000.0	2968.1	5.30921	8.441	5.2517	0.7794
1.159E-06	30000.0	4080.9	5.71295	7.746	5.6608	0.7700
9.091E-07	40000.0	5111.6	5.99556	7.282	5.9512	0.7605
7.531E-07	50000.0	6084.6	6.22196	6.938	6.1764	0.7516
6.457E-07	60000.0	7013.4	6.40372	6.667	6.3604	0.7435
5.670E-07	70000.0	7906.8	6.55742	6.445	6.5160	0.7360
5.066E-07	80000.0	8770.7	6.69059	6.257	6.6507	0.7291
4.196E-07	100000.0	10426.2	6.91316	5.952	6.8759	0.7169

TABLE IX. (Continued)

3C39 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =1.129E-05 AT 2250.0 METERS DOWNWIND

CHI/Q=5.000E-10 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
4.665E-46	150.0	0.0	0.40547	0.0	0.4055	0.0
2.742E-46	200.0	0.0	0.69315	0.0	0.6931	0.0
1.217E-24	300.0	0.0	1.09861	0.0	1.0986	0.0
4.608E-16	400.0	0.0	1.38629	0.0	1.3863	0.0
5.454E-12	500.0	0.0	1.60944	0.0	1.6094	0.0
4.263E-10	600.0	0.0	1.79176	0.0	1.7918	0.0
6.960E-09	700.0	86.8	1.95354	7.068	1.9387	0.2404
4.648E-08	800.0	129.2	2.09231	9.174	2.0656	0.3336
1.790E-07	900.0	164.5	2.21366	10.359	2.1776	0.3981
4.819E-07	1000.0	196.5	2.32152	11.115	2.2780	0.4475
9.305E-07	1100.0	224.3	2.41826	11.524	2.3695	0.4831
1.558E-06	1200.0	250.9	2.50630	11.810	2.4532	0.5130
2.350E-06	1300.0	276.7	2.58710	12.014	2.5304	0.5385
3.274E-06	1400.0	301.7	2.66175	12.161	2.6020	0.5607
5.360E-06	1600.0	350.1	2.79597	12.341	2.7314	0.5976
7.520E-06	1800.0	396.7	2.91408	12.428	2.8458	0.6271
9.537E-06	2000.0	441.9	3.01956	12.460	2.9484	0.6515
1.033E-05	2500.0	543.5	3.24196	12.265	3.1680	0.6887
8.748E-06	3000.0	636.1	3.42319	11.971	3.3487	0.7100
7.604E-06	3500.0	726.5	3.57644	11.727	3.5018	0.7269
6.735E-06	4000.0	815.1	3.70922	11.518	3.6345	0.7406
6.051E-06	4500.0	902.1	3.82636	11.336	3.7517	0.7521
5.498E-06	5000.0	987.8	3.93116	11.175	3.8566	0.7619
4.658E-06	6000.0	1155.4	4.11255	10.900	4.0384	0.7777
4.049E-06	7000.0	1319.0	4.26594	10.671	4.1922	0.7899
3.586E-06	8000.0	1479.2	4.39883	10.476	4.3255	0.7998
2.928E-06	10000.0	1791.1	4.62096	10.154	4.5486	0.8147
2.080E-06	15000.0	2471.4	5.02403	9.356	4.9572	0.8167
1.631E-06	20000.0	3104.0	5.31022	8.822	5.2474	0.8144
1.159E-06	30000.0	4276.7	5.71384	8.113	5.6567	0.8064
9.091E-07	40000.0	5365.4	6.00038	7.640	5.9471	0.7977
7.531E-07	50000.0	6395.0	6.22272	7.289	6.1724	0.7895
6.457E-07	60000.0	7379.6	6.40444	7.012	6.3565	0.7818
5.670E-07	70000.0	8327.8	6.55811	6.785	6.5122	0.7747
5.066E-07	80000.0	9245.9	6.69125	6.593	6.6470	0.7682
4.196E-07	100000.0	11008.3	6.91378	6.282	6.8723	0.7565

TABLE IX. (Continued)

3039 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100 CHI/Q(MAX) =1.129E-05 AT 2250.0 METERS DOWNWIND

CHI/Q=2.000E-10 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
4.665E-46	150.0	0.0	0.40547	0.0	0.4055	0.0
2.742E-46	200.0	0.0	0.69315	0.0	0.6931	0.0
1.217E-24	300.0	0.0	1.09861	0.0	1.0986	0.0
4.608E-16	400.0	0.0	1.38629	0.0	1.3863	0.0
5.454E-12	500.0	0.0	1.60944	0.0	1.6094	0.0
4.263E-10	600.0	40.2	1.79400	3.835	1.7900	0.1200
6.960E-09	700.0	100.8	1.95617	8.192	1.9362	0.2787
4.648E-08	800.0	141.7	2.09488	10.041	2.0628	0.3653
1.790E-07	900.0	176.9	2.21617	11.118	2.1746	0.4274
4.819E-07	1000.0	209.2	2.32399	11.814	2.2748	0.4758
9.305E-07	1100.0	237.5	2.42068	12.185	2.3661	0.5109
1.558E-06	1200.0	264.8	2.50868	12.445	2.4497	0.5406
2.350E-06	1300.0	291.3	2.58944	12.629	2.5268	0.5661
3.274E-06	1400.0	317.0	2.66406	12.759	2.5983	0.5884
5.360E-06	1600.0	366.9	2.79822	12.917	2.7274	0.6255
7.520E-06	1800.0	415.1	2.91628	12.987	2.8417	0.6554
9.537E-06	2000.0	462.0	3.02172	13.007	2.9442	0.6801
1.033E-05	2500.0	568.0	3.24404	12.800	3.1634	0.7187
8.748E-06	3000.0	665.3	3.42520	12.503	3.3440	0.7415
7.604E-06	3500.0	760.3	3.57840	12.256	3.4968	0.7596
6.735E-06	4000.0	853.5	3.71114	12.045	3.6294	0.7744
6.051E-06	4500.0	945.1	3.82824	11.861	3.7465	0.7868
5.498E-06	5000.0	1035.2	3.93301	11.698	3.8513	0.7974
4.658E-06	6000.0	1211.9	4.11434	11.420	4.0329	0.8146
4.049E-06	7000.0	1384.5	4.26768	11.188	4.1866	0.8281
3.586E-06	8000.0	1553.7	4.40054	10.990	4.3198	0.8389
2.928E-06	10000.0	1883.3	4.62260	10.666	4.5427	0.8555
2.080E-06	15000.0	2603.7	5.02548	9.847	4.9514	0.8595
1.631E-06	20000.0	3275.1	5.31155	9.300	5.2417	0.8584
1.159E-06	30000.0	4522.5	5.71502	8.573	5.6512	0.8519
9.091E-07	40000.0	5683.4	6.00146	8.087	5.9418	0.8442
7.531E-07	50000.0	6783.6	6.22373	7.726	6.1672	0.8367
6.457E-07	60000.0	7837.3	6.40539	7.442	6.3514	0.8296
5.670E-07	70000.0	8853.7	6.55902	7.209	6.5072	0.8230
5.066E-07	80000.0	9839.0	6.69212	7.011	6.6421	0.8169
4.196E-07	100000.0	11733.5	6.91459	6.692	6.8675	0.8058

TABLE X.

7911 STACK

STACK HEIGHT 80.800 METERS STACK CONSTANT 29.58 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =5.130E-06 AT 1000.0 METERS DOWNWIND

CHI/Q=5.000E-06 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
3.767E-19	150.0	0.0	0.40547	0.0	0.4055	0.0
3.604E-13	200.0	0.0	0.69315	0.0	0.6931	0.0
9.741E-09	300.0	0.0	1.09861	0.0	1.0986	0.0
3.072E-07	400.0	0.0	1.38629	0.0	1.3863	0.0
1.351E-06	500.0	0.0	1.60944	0.0	1.6094	0.0
2.752E-06	600.0	0.0	1.79176	0.0	1.7918	0.0
3.935E-06	700.0	0.0	1.94591	0.0	1.9459	0.0
4.688E-06	800.0	0.0	2.07944	0.0	2.0794	0.0
5.050E-06	900.0	13.9	2.19734	0.883	2.1971	0.0339
5.130E-06	1000.0	24.7	2.30289	1.412	2.3022	0.0568
5.038E-06	1100.0	14.5	2.39798	0.757	2.3978	0.0317
4.854E-06	1200.0	0.0	2.48491	0.0	2.4849	0.0
4.621E-06	1300.0	0.0	2.56495	0.0	2.5649	0.0
4.367E-06	1400.0	0.0	2.63906	0.0	2.6391	0.0
3.856E-06	1600.0	0.0	2.77259	0.0	2.7726	0.0
3.387E-06	1800.0	0.0	2.89037	0.0	2.8904	0.0
2.977E-06	2000.0	0.0	2.99573	0.0	2.9957	0.0
2.211E-06	2500.0	0.0	3.21888	0.0	3.2189	0.0
1.698E-06	3000.0	0.0	3.40120	0.0	3.4012	0.0
1.344E-06	3500.0	0.0	3.55535	0.0	3.5553	0.0
1.091E-06	4000.0	0.0	3.68888	0.0	3.6889	0.0
9.036E-07	4500.0	0.0	3.80666	0.0	3.8067	0.0
7.619E-07	5000.0	0.0	3.91202	0.0	3.9120	0.0
5.646E-07	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.368E-07	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.490E-07	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.391E-07	10000.0	0.0	4.60517	0.0	4.6052	0.0
1.244E-07	15000.0	0.0	5.01064	0.0	5.0106	0.0
7.802E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
4.238E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
2.746E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
1.961E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.508E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.207E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.952E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.212E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE X. (Continued)

7911 STACK

STACK HEIGHT 80.800 METERS STACK CONSTANT 29.56 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =5.130E-06 AT 1000.0 METERS DOWNWIND

CHI/Q=2.000E-06 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
3.767E-19	150.0	0.0	0.40547	0.0	0.4055	0.0
3.604E-13	200.0	0.0	0.69315	0.0	0.6931	0.0
9.741E-09	300.0	0.0	1.09861	0.0	1.0986	0.0
3.072E-07	400.0	0.0	1.38629	0.0	1.3863	0.0
1.351E-06	500.0	0.0	1.60944	0.0	1.6094	0.0
2.752E-06	600.0	53.4	1.79570	5.085	1.7886	0.1592
3.935E-06	700.0	90.1	1.95413	7.334	1.9381	0.2495
4.688E-06	800.0	114.9	2.08965	8.172	2.0684	0.2970
5.050E-06	900.0	134.1	2.20820	8.475	2.1841	0.3254
5.130E-06	1000.0	149.6	2.31365	8.508	2.2882	0.3423
5.038E-06	1100.0	161.5	2.40855	8.350	2.3830	0.3498
4.854E-06	1200.0	171.1	2.49497	8.114	2.4700	0.3522
4.621E-06	1300.0	178.7	2.57431	7.829	2.5503	0.3506
4.367E-06	1400.0	184.5	2.64767	7.509	2.6250	0.3460
3.856E-06	1600.0	190.9	2.77965	6.802	2.7601	0.3292
3.387E-06	1800.0	190.1	2.89592	6.029	2.8799	0.3042
2.977E-06	2000.0	181.7	2.99984	5.190	2.9875	0.2714
2.211E-06	2500.0	111.6	3.21987	2.556	3.2167	0.1436
1.698E-06	3000.0	0.0	3.40120	0.0	3.4012	0.0
1.344E-06	3500.0	0.0	3.55535	0.0	3.5553	0.0
1.091E-06	4000.0	0.0	3.68888	0.0	3.6889	0.0
9.036E-07	4500.0	0.0	3.80666	0.0	3.8067	0.0
7.619E-07	5000.0	0.0	3.91202	0.0	3.9120	0.0
5.646E-07	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.368E-07	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.490E-07	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.391E-07	10000.0	0.0	4.60517	0.0	4.6052	0.0
1.244E-07	15000.0	0.0	5.01064	0.0	5.0106	0.0
7.802E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
4.238E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
2.746E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
1.961E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.508E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.207E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.953E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.212E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE X. (Continued)

7911 STACK

STACK HEIGHT 80.800 METERS STACK CONSTANT 29.58 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =5.13CE-06 AT 1000.0 METERS DOWNWIND

CHI/Q=1.000E-06 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
3.767E-19	150.0	0.0	0.40547	0.0	0.4055	0.0
3.604E-13	200.0	0.0	0.69315	0.0	0.6931	0.0
9.741E-09	300.0	0.0	1.09861	0.0	1.0986	0.0
3.072E-07	400.0	0.0	1.38629	0.0	1.3863	0.0
1.351E-06	500.0	43.5	1.61321	4.971	1.6071	0.1398
2.752E-06	600.0	95.1	1.80416	9.004	1.7819	0.2824
3.935E-06	700.0	128.2	1.96240	10.377	1.9303	0.3535
4.688E-06	800.0	154.7	2.09780	10.946	2.0596	0.3983
5.050E-06	900.0	177.3	2.21627	11.146	2.1745	0.4284
5.130E-06	1000.0	197.1	2.32164	11.150	2.2778	0.4490
5.038E-06	1100.0	213.6	2.41640	10.990	2.3721	0.4606
4.854E-06	1200.0	228.4	2.50270	10.776	2.4586	0.4679
4.621E-06	1300.0	241.6	2.58193	10.530	2.5385	0.4718
4.367E-06	1400.0	253.5	2.65519	10.265	2.6127	0.4731
3.856E-06	1600.0	273.6	2.78700	9.705	2.7471	0.4698
3.387E-06	1800.0	289.3	2.90312	9.131	2.8663	0.4607
2.977E-06	2000.0	300.9	3.00692	8.555	2.9735	0.4473
2.211E-06	2500.0	313.8	3.22669	7.155	3.2016	0.4019
1.698E-06	3000.0	302.2	3.40624	5.752	3.3891	0.3414
1.344E-06	3500.0	259.4	3.55809	4.239	3.5484	0.2630
1.091E-06	4000.0	158.5	3.68966	2.269	3.6868	0.1461
9.036E-07	4500.0	0.0	3.80666	0.0	3.8067	0.0
7.619E-07	5000.0	0.0	3.91202	0.0	3.9120	0.0
5.646E-07	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.368E-07	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.490E-07	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.391E-07	10000.0	0.0	4.60517	0.0	4.6052	0.0
1.244E-07	15000.0	0.0	5.01064	0.0	5.0106	0.0
7.802E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
4.238E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
2.746E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
1.961E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.508E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.207E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.953E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.212E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE X. (Continued)

7911 STACK

STACK HEIGHT 80.800 METERS STACK CONSTANT 29.58 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =5.130E-06 AT 1000.0 METERS DOWNWIND

CHI/Q=5.000E-07 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
3.767E-19	150.0	0.0	0.40547	0.0	0.4055	0.0
3.604E-13	200.0	0.0	0.69315	0.0	0.6931	0.0
9.741E-09	300.0	0.0	1.09861	0.0	1.0986	0.0
3.072E-07	400.0	0.0	1.38629	0.0	1.3863	0.0
1.351E-06	500.0	79.1	1.62179	8.988	1.6019	0.2534
2.752E-06	600.0	123.4	1.81247	11.621	1.7753	0.3651
3.935E-06	700.0	157.3	1.97054	12.666	1.9226	0.4321
4.688E-06	800.0	186.2	2.10582	13.103	2.0510	0.4774
5.050E-06	900.0	211.9	2.22420	13.249	2.1650	0.5097
5.130E-06	1000.0	235.2	2.32951	13.236	2.2676	0.5334
5.038E-06	1100.0	255.3	2.42413	13.068	2.3614	0.5481
4.854E-06	1200.0	273.9	2.51031	12.859	2.4473	0.5587
4.621E-06	1300.0	291.3	2.58944	12.628	2.5268	0.5661
4.367E-06	1400.0	307.4	2.66260	12.384	2.6006	0.5710
3.856E-06	1600.0	336.7	2.79425	11.882	2.7344	0.5753
3.387E-06	1800.0	362.3	2.91023	11.380	2.8530	0.5742
2.977E-06	2000.0	384.8	3.01390	10.889	2.9596	0.5694
2.211E-06	2500.0	429.6	3.23342	9.749	3.1867	0.5475
1.698E-06	3000.0	459.2	3.41278	8.702	3.3735	0.5164
1.344E-06	3500.0	474.5	3.56446	7.721	3.5321	0.4789
1.091E-06	4000.0	475.4	3.69589	6.778	3.6701	0.4362
9.036E-07	4500.0	460.6	3.81187	5.844	3.7921	0.3881
7.619E-07	5000.0	427.3	3.91566	4.884	3.9014	0.3334
5.646E-07	6000.0	270.6	4.09536	2.582	4.0912	0.1845
4.368E-07	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.490E-07	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.391E-07	10000.0	0.0	4.60517	0.0	4.6052	0.0
1.244E-07	15000.0	0.0	5.01064	0.0	5.0106	0.0
7.802E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
4.238E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
2.746E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
1.961E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.508E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.207E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.953E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.212E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE X. (Continued)

/-11 STACK

STACK HEIGHT 80.800 METERS STACK CONSTANT 29.58 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =5.13CE-06 AT 1000.0 METERS DOWNWIND

CHI/Q=2.000E-07 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
3.767E-19	150.0	0.0	0.40547	0.0	0.4055	0.0
3.604E-13	200.0	0.0	0.69315	0.0	0.6931	0.0
9.741E-09	300.0	0.0	1.09861	0.0	1.0986	0.0
3.072E-07	400.0	42.0	1.39177	5.990	1.3842	0.1452
1.351E-06	500.0	109.6	1.63292	12.368	1.5950	0.3498
2.752E-06	600.0	153.0	1.82325	14.305	1.7667	0.4505
3.935E-06	700.0	189.0	1.98111	15.113	1.9126	0.5165
4.688E-06	800.0	221.1	2.11624	15.448	2.0398	0.5637
5.050E-06	900.0	250.4	2.23450	15.547	2.1527	0.5989
5.130E-06	1000.0	277.7	2.33972	15.518	2.2544	0.6260
5.038E-06	1100.0	301.7	2.43417	15.339	2.3475	0.6439
4.854E-06	1200.0	324.5	2.52019	15.132	2.4328	0.6579
4.621E-06	1300.0	346.1	2.59919	14.908	2.5117	0.6687
4.367E-06	1400.0	366.7	2.67223	14.677	2.5850	0.6771
3.856E-06	1600.0	405.2	2.80367	14.211	2.7179	0.6883
3.387E-06	1800.0	440.6	2.91947	13.755	2.8357	0.6941
2.977E-06	2000.0	473.4	3.02298	13.316	2.9417	0.6962
2.211E-06	2500.0	546.1	3.24218	12.322	3.1675	0.6919
1.698E-06	3000.0	607.4	3.42128	11.445	3.3533	0.6789
1.344E-06	3500.0	658.7	3.57275	10.658	3.5111	0.6608
1.091E-06	4000.0	701.1	3.70401	9.941	3.6484	0.6395
9.036E-07	4500.0	735.2	3.81983	9.279	3.7699	0.6159
7.619E-07	5000.0	761.4	3.92348	8.659	3.8788	0.5907
5.646E-07	6000.0	790.6	4.10295	7.507	4.0678	0.5360
4.368E-07	7000.0	788.2	4.25479	6.424	4.2281	0.4761
3.490E-07	8000.0	750.6	4.38641	5.360	4.3672	0.4098
2.391E-07	10000.0	520.2	4.60652	2.978	4.6003	0.2393
1.244E-07	15000.0	0.0	5.01064	0.0	5.0106	0.0
7.802E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
4.238E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
2.746E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
1.961E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.508E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.207E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.953E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.212E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE X. (Continued)

7911 STACK

STACK HEIGHT 80.800 METERS STACK CONSTANT 29.58 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =5.12CE-06 AT 1000.0 METERS DOWNWIND

CHI/Q=1 000E-07 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
3.767E-19	150.0	0.0	0.40547	0.0	0.4055	0.0
3.604E-13	200.0	0.0	0.69315	0.0	0.6931	0.0
9.741E-09	300.0	0.0	1.09861	0.0	1.0986	0.0
3.072E-07	400.0	67.9	1.40049	9.630	1.3808	0.2343
1.351E-06	500.0	128.0	1.64118	14.360	1.5899	0.4070
2.752E-06	600.0	172.0	1.83126	15.998	1.7603	0.5047
3.935E-06	700.0	209.9	1.98895	16.691	1.9052	0.5712
4.688E-06	800.0	244.2	2.12397	16.972	2.0315	0.6200
5.050E-06	900.0	276.0	2.24215	17.046	2.1436	0.6573
5.130E-06	1000.0	305.9	2.34731	17.008	2.2446	0.6866
5.038E-06	1100.0	332.6	2.44163	16.822	2.3371	0.7066
4.854E-06	1200.0	358.0	2.52754	16.613	2.4220	0.7226
4.621E-06	1300.0	382.4	2.60644	16.391	2.5005	0.7355
4.367E-06	1400.0	405.8	2.67939	16.165	2.5735	0.7459
3.856E-06	1600.0	450.1	2.81068	15.713	2.7056	0.7612
3.387E-06	1800.0	491.6	2.92634	15.276	2.8229	0.7710
2.977E-06	2000.0	530.7	3.02975	14.860	2.9284	0.7770
2.211E-06	2500.0	619.9	3.24871	13.926	3.1532	0.7819
1.698E-06	3000.0	698.9	3.42762	13.114	3.3382	0.7777
1.344E-06	3500.0	769.2	3.57893	12.396	3.4955	0.7683
1.091E-06	4000.0	832.1	3.71006	11.751	3.6323	0.7556
9.036E-07	4500.0	888.2	3.82577	11.166	3.7534	0.7409
7.619E-07	5000.0	938.2	3.92932	10.627	3.8619	0.7246
5.646E-07	6000.0	1021.0	4.10862	9.658	4.0504	0.6893
4.368E-07	7000.0	1082.9	4.26032	8.794	4.2102	0.6513
3.490E-07	8000.0	1124.7	4.39181	8.003	4.3490	0.6114
2.391E-07	10000.0	1148.8	4.61173	6.554	4.5816	0.5264
1.244E-07	15000.0	814.7	5.01211	3.109	5.0047	0.2718
7.802E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
4.238E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
2.746E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
1.961E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.508E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.207E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.953E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.212E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE X. (Continued)

7911 STACK

STACK HEIGHT 80.800 METERS STACK CONSTANT 29.58 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =5.12CE-06 AT 1000.0 METERS DOWNWIND

CHI/Q=5.000E-08 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
3.767E-19	150.0	0.0	0.40547	0.0	0.4055	0.0
3.604E-13	200.0	0.0	0.69315	0.0	0.6931	0.0
9.741E-09	300.0	0.0	1.09861	0.0	1.0986	0.0
3.072E-07	400.0	86.3	1.40905	12.178	1.3773	0.2972
1.351E-06	500.0	144.0	1.64930	16.071	1.5848	0.4566
2.752E-06	600.0	189.2	1.83914	17.498	1.7540	0.5530
3.935E-06	700.0	228.8	1.99668	18.103	1.8978	0.6204
4.688E-06	800.0	265.2	2.13159	18.343	2.0233	0.6708
5.050E-06	900.0	299.3	2.24969	18.398	2.1347	0.7100
5.130E-06	1000.0	331.7	2.35478	18.351	2.2350	0.7414
5.038E-06	1100.0	360.8	2.44898	18.159	2.3270	0.7632
4.854E-06	1200.0	388.7	2.53479	17.947	2.4115	0.7811
4.621E-06	1300.0	415.5	2.61359	17.726	2.4895	0.7957
4.367E-06	1400.0	441.5	2.68646	17.502	2.5621	0.8079
3.856E-06	1600.0	491.0	2.81759	17.060	2.6936	0.8266
3.387E-06	1800.0	537.8	2.93313	16.636	2.8104	0.8397
2.977E-06	2000.0	582.3	3.03642	16.234	2.9154	0.8489
2.211E-06	2500.0	685.8	3.25515	15.340	3.1392	0.8611
1.698E-06	3000.0	779.7	3.43388	14.569	3.3235	0.8638
1.344E-06	3500.0	865.8	3.58504	13.894	3.4801	0.8609
1.091E-06	4000.0	945.1	3.71604	13.294	3.6165	0.8545
9.036E-07	4500.0	1018.5	3.83164	12.753	3.7371	0.8459
7.619E-07	5000.0	1086.6	3.93509	12.261	3.8453	0.8356
5.646E-07	6000.0	1208.3	4.11422	11.386	4.0332	0.8122
4.368E-07	7000.0	1313.0	4.26578	10.623	4.1927	0.7864
3.490E-07	8000.0	1402.3	4.39716	9.942	4.3311	0.7592
2.391E-07	10000.0	1539.2	4.61688	8.750	4.5631	0.7024
1.244E-07	15000.0	1664.6	5.01676	6.332	4.9861	0.5533
7.802E-08	20000.0	1489.5	5.30108	4.259	5.2864	0.3937
4.238E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
2.746E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
1.961E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.508E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.207E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.953E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.212E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

7911 STACK

TABLE X. (Continued)

STACK HEIGHT 80.800 METERS STACK CONSTANT 29.58 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =5.130E-06 AT 1000.0 METERS DOWNWIND

CHI/Q=2.000E-08 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
3.767E-19	150.0	0.0	0.40547	0.0	0.4055	0.0
3.604E-13	200.0	0.0	0.69315	0.0	0.6931	0.0
9.741E-09	300.0	0.0	1.09861	0.0	1.0986	0.0
3.072E-07	400.0	105.9	1.42016	14.827	1.3729	0.3634
1.351E-06	500.0	162.8	1.65984	18.039	1.5783	0.5140
2.752E-06	600.0	209.7	1.84937	19.262	1.7458	0.6101
3.935E-06	700.0	251.7	2.00671	19.778	1.8883	0.6790
4.688E-06	800.0	290.8	2.14148	19.974	2.0127	0.7315
5.050E-06	900.0	327.7	2.25948	20.008	2.1231	0.7731
5.130E-06	1000.0	363.1	2.36449	19.953	2.2226	0.8069
5.038E-06	1100.0	395.0	2.45854	19.753	2.3139	0.8309
4.854E-06	1200.0	425.8	2.54420	19.537	2.3977	0.8508
4.621E-06	1300.0	455.6	2.62288	19.316	2.4752	0.8676
4.367E-06	1400.0	484.6	2.69564	19.094	2.5473	0.8818
3.856E-06	1600.0	540.3	2.82658	18.659	2.6780	0.9043
3.387E-06	1800.0	593.4	2.94196	18.246	2.7940	0.9211
2.977E-06	2000.0	644.3	3.04510	17.857	2.8984	0.9338
2.211E-06	2500.0	764.2	3.26354	16.998	3.1210	0.9540
1.698E-06	3000.0	875.2	3.44204	16.264	3.3043	0.9640
1.344E-06	3500.0	978.9	3.59301	15.626	3.4602	0.9678
1.091E-06	4000.0	1076.5	3.72384	15.063	3.5959	0.9677
9.036E-07	4500.0	1168.7	3.83930	14.558	3.7160	0.9651
7.619E-07	5000.0	1256.1	3.94262	14.102	3.8238	0.9606
5.646E-07	6000.0	1418.4	4.12153	13.301	4.0110	0.9482
4.368E-07	7000.0	1566.1	4.27292	12.611	4.1698	0.9329
3.490E-07	8000.0	1701.1	4.40414	12.005	4.3078	0.9160
2.391E-07	10000.0	1938.1	4.62361	10.968	4.5391	0.8797
1.244E-07	15000.0	2357.2	5.02283	8.931	4.9619	0.7797
7.802E-08	20000.0	2605.2	5.30673	7.421	5.2623	0.6855
4.238E-08	30000.0	2741.9	5.70794	5.222	5.6842	0.5195
2.746E-08	40000.0	2281.9	5.99309	3.265	5.9834	0.3413
1.961E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.508E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.207E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.953E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.212E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE X. (Continued)

7911 STACK

STACK HEIGHT 80.800 METERS STACK CONSTANT 29.58 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100 CHI/Q(MAX) =5.13CE-06 AT 1000.0 METERS DOWNWIND

CHI/Q=1.000E-08 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
3.767E-19	150.0	0.0	0.40547	0.0	0.4055	0.0
3.604E-13	200.0	0.0	0.69315	0.0	0.6931	0.0
9.741E-09	300.0	0.0	1.09861	0.0	1.0986	0.0
3.072E-07	400.0	118.6	1.42840	16.510	1.3695	0.4059
1.351E-06	500.0	175.7	1.66767	19.364	1.5733	0.5529
2.752E-06	600.0	223.9	1.85697	20.467	1.7397	0.6493
3.935E-06	700.0	267.7	2.01417	20.929	1.8813	0.7195
4.688E-06	800.0	308.7	2.14884	21.099	2.0048	0.7736
5.050E-06	900.0	347.6	2.26676	21.120	2.1145	0.8168
5.130E-06	1000.0	385.1	2.37172	21.060	2.2133	0.8523
5.038E-06	1100.0	419.0	2.46565	20.854	2.3041	0.8777
4.854E-06	1200.0	451.9	2.55121	20.635	2.3875	0.8991
4.621E-06	1300.0	483.8	2.62980	20.413	2.4647	0.9172
4.367E-06	1400.0	514.9	2.70248	20.191	2.5364	0.9328
3.856E-06	1600.0	574.8	2.83328	19.760	2.6664	0.9579
3.387E-06	1800.0	632.2	2.94853	19.353	2.7819	0.9771
2.977E-06	2000.0	687.5	3.05158	18.971	2.8858	0.9920
2.211E-06	2500.0	818.6	3.26980	18.130	3.1075	1.0175
1.698E-06	3000.0	941.0	3.44812	17.415	3.2901	1.0320
1.344E-06	3500.0	1056.5	3.59895	16.797	3.4454	1.0400
1.091E-06	4000.0	1166.1	3.72566	16.252	3.5806	1.0438
9.036E-07	4500.0	1270.5	3.84501	15.767	3.7004	1.0448
7.619E-07	5000.0	1370.5	3.94824	15.328	3.8078	1.0437
5.646E-07	6000.0	1558.6	4.12700	14.562	3.9944	1.0376
4.368E-07	7000.0	1733.2	4.27825	13.907	4.1528	1.0283
3.490E-07	8000.0	1896.1	4.40935	13.334	4.2905	1.0169
2.391E-07	10000.0	2192.1	4.62864	12.364	4.5213	0.9911
1.244E-07	15000.0	2768.3	5.02738	10.456	4.9439	0.9124
7.802E-08	20000.0	3200.4	5.31096	9.091	5.2442	0.8392
4.238E-08	30000.0	3802.4	5.71175	7.224	5.6664	0.7182
2.746E-08	40000.0	4072.9	5.99662	5.814	5.9658	0.6075
1.961E-08	50000.0	4028.8	6.21784	4.607	6.1978	0.4994
1.508E-08	60000.0	3679.0	6.39881	3.509	6.3868	0.3916
1.207E-08	70000.0	2842.8	6.55190	2.326	6.5465	0.2659
9.953E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.212E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE X. (Continued)

791' STACK

STACK HEIGHT 90.800 METERS STACK CONSTANT 29.58 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =5.130E-06 AT 1000.0 METERS DOWNWIND

CHI/Q=5.000E-09 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
3.767E-19	150.0	0.0	0.40547	0.0	0.4055	0.0
3.604E-13	200.0	0.0	0.69315	0.0	0.6931	0.0
9.741E-09	300.0	39.7	1.10730	7.540	1.0977	0.1453
3.072E-07	400.0	130.0	1.43650	18.005	1.3662	0.4440
1.351E-06	500.0	187.7	1.67537	20.579	1.5685	0.5889
2.752E-06	600.0	237.4	1.86445	21.583	1.7337	0.6858
3.935E-06	700.0	282.8	2.02151	22.000	1.8743	0.7573
4.688E-06	800.0	325.6	2.15609	22.147	1.9970	0.8128
5.050E-06	900.0	366.5	2.27394	22.157	2.1060	0.8576
5.130E-06	1000.0	405.9	2.37884	22.092	2.2042	0.8947
5.038E-06	1100.0	441.8	2.47266	21.880	2.2945	0.9215
4.854E-06	1200.0	476.5	2.55812	21.659	2.3775	0.9442
4.621E-06	1300.0	510.4	2.63663	21.435	2.4543	0.9636
4.367E-06	1400.0	543.4	2.70923	21.214	2.5256	0.9803
3.856E-06	1600.0	607.3	2.83989	20.785	2.6551	1.0078
3.387E-06	1800.0	668.8	2.95502	20.382	2.7700	1.0292
2.977E-06	2000.0	728.1	3.05797	20.005	2.8735	1.0461
2.211E-06	2500.0	869.5	3.27597	19.178	3.0942	1.0762
1.698E-06	3000.0	1002.5	3.45413	18.478	3.2760	1.0948
1.344E-06	3500.0	1128.7	3.60482	17.874	3.4308	1.1064
1.091E-06	4000.0	1249.2	3.73541	17.344	3.5656	1.1136
9.036E-07	4500.0	1364.8	3.85066	16.872	3.6849	1.1176
7.619E-07	5000.0	1476.0	3.95380	16.447	3.7920	1.1194
5.646E-07	6000.0	1687.3	4.13240	15.706	3.9781	1.1187
4.368E-07	7000.0	1885.6	4.28352	15.076	4.1361	1.1141
3.490E-07	8000.0	2072.9	4.41452	14.526	4.2734	1.1073
2.391E-07	10000.0	2419.6	4.63362	13.602	4.5037	1.0897
1.244E-07	15000.0	3125.8	5.03189	11.771	4.9261	1.0265
7.802E-08	20000.0	3701.1	5.31515	10.484	5.2264	0.9672
4.238E-08	30000.0	4625.8	5.71553	8.766	5.6488	0.8710
2.746E-08	40000.0	5288.7	6.00013	7.532	5.9484	0.7865
1.961E-08	50000.0	5739.1	6.22115	6.548	6.1806	0.7094
1.508E-08	60000.0	6032.6	6.40196	5.741	6.3698	0.6404
1.207E-08	70000.0	6154.4	6.55493	5.025	6.5297	0.5741
9.953E-09	80000.0	6101.8	6.68751	4.362	6.6681	0.5086
7.212E-09	100000.0	5392.3	6.90921	3.087	6.8992	0.3720

TABLE X. (Continued)

7911 STACK

STACK HEIGHT 80.800 METERS STACK CONSTANT 29.58 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =5.130E-06 AT 1000.0 METERS DOWNWIND

CHI/Q=2.000E-09 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
3.767E-19	150.0	0.0	0.40547	0.0	0.4055	0.0
3.604E-13	200.0	0.0	0.69315	0.0	0.6931	0.0
9.741E-09	300.0	61.2	1.11899	11.528	1.0964	0.2236
3.072E-07	400.0	143.7	1.44702	19.766	1.3618	0.4894
1.351E-06	500.0	202.5	1.68538	22.048	1.5621	0.6327
2.752E-06	600.0	254.0	1.87418	22.945	1.7259	0.7306
3.935E-06	700.0	301.6	2.03106	23.311	1.8653	0.8037
4.688E-06	800.0	346.7	2.16551	23.433	1.9869	0.8612
5.050E-06	900.0	390.0	2.28327	23.429	2.0950	0.9079
5.130E-06	1000.0	431.9	2.38810	23.358	2.1924	0.9468
5.038E-06	1100.0	470.1	2.48177	23.141	2.2821	0.9753
4.854E-06	1200.0	507.3	2.56712	22.916	2.3645	0.9996
4.621E-06	1300.0	543.6	2.64551	22.691	2.4407	1.0205
4.367E-06	1400.0	579.0	2.71801	22.469	2.5117	1.0388
3.856E-06	1600.0	647.8	2.84849	22.042	2.6403	1.0690
3.387E-06	1800.0	714.2	2.96348	21.643	2.7546	1.0930
2.977E-06	2000.0	778.6	3.06629	21.271	2.8574	1.1124
2.211E-06	2500.0	932.6	3.28403	20.458	3.0769	1.1479
1.698E-06	3000.0	1078.5	3.46197	19.773	3.2579	1.1712
1.344E-06	3500.0	1217.7	3.61248	19.183	3.4119	1.1870
1.091E-06	4000.0	1351.3	3.74292	18.667	3.5460	1.1980
9.036E-07	4500.0	1480.2	3.85803	18.208	3.6649	1.2055
7.619E-07	5000.0	1605.0	3.96105	17.796	3.7715	1.2106
5.646E-07	6000.0	1843.6	4.13945	17.080	3.9569	1.2158
4.368E-07	7000.0	2069.8	4.29040	16.472	4.1143	1.2166
3.490E-07	8000.0	2285.7	4.42126	15.945	4.2512	1.2146
2.391E-07	10000.0	2691.0	4.64013	15.062	4.4807	1.2058
1.244E-07	15000.0	3543.5	5.03779	13.291	4.9028	1.1582
7.802E-08	20000.0	4274.0	5.32064	12.063	5.2032	1.1119
4.238E-08	30000.0	5529.2	5.72048	10.443	5.6257	1.0369
2.746E-08	40000.0	6558.7	6.00472	9.312	5.9256	0.9716
1.961E-08	50000.0	7417.6	6.22549	8.438	6.1581	0.9136
1.508E-08	60000.0	8161.4	6.40610	7.746	6.3476	0.8634
1.207E-08	70000.0	8790.0	6.55890	7.157	6.5078	0.8172
9.953E-09	80000.0	9315.9	6.69135	6.642	6.6464	0.7740
7.212E-09	100000.0	10090.1	6.91282	5.762	6.8779	0.6940

TABLE X. (Continued)

7911 STACK

STACK HEIGHT 80.800 METERS STACK CONSTANT 29.58 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =5.13CE-06 AT 1000.0 METERS DOWNWIND

CHI/Q=1.000E-09 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
3.767E-19	150.0	0.0	0.40547	0.0	0.4055	0.0
3.604E-13	200.0	0.0	0.69315	0.0	0.6931	0.0
9.741E-09	300.0	73.4	1.12766	13.742	1.0954	0.2679
3.072E-07	400.0	153.3	1.45483	20.972	1.3585	0.5207
1.351E-06	500.0	213.0	1.69282	23.075	1.5574	0.6635
2.752E-06	600.0	265.9	1.88142	23.901	1.7201	0.7623
3.935E-06	700.0	315.1	2.03817	24.235	1.8585	0.8366
4.688E-06	800.0	361.9	2.17253	24.340	1.9794	0.8954
5.050E-06	900.0	406.9	2.29022	24.328	2.0868	0.9435
5.130E-06	1000.0	450.5	2.39499	24.254	2.1836	0.9838
5.038E-06	1100.0	490.5	2.48656	24.031	2.2729	1.0134
4.854E-06	1200.0	529.4	2.57381	23.804	2.3549	1.0388
4.621E-06	1300.0	567.4	2.65212	23.578	2.4307	1.0608
4.367E-06	1400.0	604.5	2.72455	23.356	2.5013	1.0801
3.856E-06	1600.0	676.9	2.85490	22.930	2.6293	1.1123
3.387E-06	1800.0	746.8	2.96978	22.533	2.7431	1.1380
2.977E-06	2000.0	814.7	3.07249	22.164	2.8455	1.1591
2.211E-06	2500.0	977.7	3.29003	21.359	3.0641	1.1983
1.698E-06	3000.0	1132.5	3.46781	20.682	3.2443	1.2248
1.344E-06	3500.0	1280.9	3.61819	20.101	3.3978	1.2435
1.091E-06	4000.0	1423.7	3.74852	19.592	3.5315	1.2570
9.036E-07	4500.0	1561.9	3.86354	19.141	3.6499	1.2669
7.619E-07	5000.0	1696.0	3.96647	18.737	3.7563	1.2741
5.646E-07	6000.0	1953.5	4.14472	18.034	3.9411	1.2832
4.368E-07	7000.0	2199.0	4.29555	17.440	4.0981	1.2874
3.490E-07	8000.0	2434.3	4.42630	16.924	4.2346	1.2885
2.391E-07	10000.0	2879.4	4.64500	16.063	4.4636	1.2853
1.244E-07	15000.0	3829.3	5.04220	14.321	4.8855	1.2472
7.802E-08	20000.0	4660.8	5.32476	13.118	5.1858	1.2085
4.238E-08	30000.0	6124.8	5.72420	11.539	5.6085	1.1450
2.746E-08	40000.0	7375.5	6.00818	10.447	5.9086	1.0895
1.961E-08	50000.0	8469.1	6.22875	9.614	6.1413	1.0402
1.508E-08	60000.0	9458.6	6.40920	8.959	6.3310	0.9980
1.207E-08	70000.0	10347.0	6.56189	8.408	6.4914	0.9595
9.953E-09	80000.0	11147.8	6.69423	7.933	6.6302	0.9239
7.212E-09	100000.0	12523.3	6.91554	7.138	6.8619	0.8593

TABLE X. (Continued)

7911 STACK

STACK HEIGHT 80.800 METERS STACK CONSTANT 29.58 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =5.130E-06 AT 1000.0 METERS DOWNWIND

CHI/Q=5.000E-10 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
3.767E-19	150.0	0.0	0.40547	0.0	0.4055	0.0
3.604E-13	200.0	0.0	0.69315	0.0	0.6931	0.0
9.741E-09	300.0	83.8	1.13618	15.606	1.0943	0.3057
3.072E-07	400.0	162.3	1.46252	22.089	1.3552	0.5500
1.351E-06	500.0	223.0	1.70016	24.038	1.5527	0.6925
2.752E-06	600.0	277.3	1.88855	24.804	1.7143	0.7923
3.935E-06	700.0	328.0	2.04517	25.109	1.8519	0.8678
4.688E-06	800.0	376.4	2.17944	25.199	1.9720	0.9279
5.050E-06	900.0	423.1	2.29707	25.180	2.0788	0.9773
5.130E-06	1000.0	468.5	2.40179	25.101	2.1750	1.0189
5.038E-06	1100.0	510.0	2.49526	24.875	2.2638	1.0496
4.854E-06	1200.0	550.6	2.58042	24.646	2.3454	1.0760
4.621E-06	1300.0	590.2	2.65865	24.418	2.4208	1.0991
4.367E-06	1400.0	629.0	2.73100	24.195	2.4911	1.1193
3.856E-06	1600.0	704.7	2.86123	23.770	2.6185	1.1533
3.387E-06	1800.0	778.0	2.97600	23.375	2.7318	1.1807
2.977E-06	2000.0	849.3	3.07862	23.008	2.8337	1.2033
2.211E-06	2500.0	1020.7	3.29597	22.210	3.0514	1.2459
1.698E-06	3000.0	1184.1	3.47359	21.540	3.2310	1.2753
1.344E-06	3500.0	1341.1	3.62384	20.965	3.3839	1.2966
1.091E-06	4000.0	1492.6	3.75406	20.463	3.5172	1.3124
9.036E-07	4500.0	1639.5	3.86898	20.018	3.6352	1.3244
7.619E-07	5000.0	1782.4	3.97183	19.620	3.7412	1.3336
5.646E-07	6000.0	2057.6	4.14994	18.928	3.9255	1.3462
4.368E-07	7000.0	2321.0	4.30065	18.344	4.0821	1.3535
3.490E-07	8000.0	2574.4	4.43129	17.838	4.2183	1.3574
2.391E-07	10000.0	3056.2	4.64982	16.994	4.4468	1.3590
1.244E-07	15000.0	4095.2	5.04658	15.270	4.8684	1.3291
7.802E-08	20000.0	5017.8	5.32884	14.084	5.1686	1.2968
4.238E-08	30000.0	6667.3	5.72789	12.530	5.5915	1.2427
2.746E-08	40000.0	8110.5	6.01161	11.462	5.8917	1.1946
1.961E-08	50000.0	9403.8	6.23199	10.652	6.1246	1.1519
1.508E-08	60000.0	10598.3	6.41229	10.017	6.3145	1.1154
1.207E-08	70000.0	11698.6	6.56485	9.488	6.4751	1.0821
9.953E-09	80000.0	12718.5	6.69709	9.033	6.6140	1.0515
7.212E-09	100000.0	14555.2	6.91824	8.281	6.8461	0.9965

TABLE X. (Continued)

7911 STACK

STACK HEIGHT 80.300 METERS STACK CONSTANT 29.58 SQ.METERS/SEC WIND SPEED 2.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =5.13CE-06 AT 1000.0 METERS DOWNWIND

CHI/Q=2.000E-10 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
3.767E-19	150.0	0.0	0.40547	0.0	0.4055	0.0
3.604E-13	200.0	0.0	0.69315	0.0	0.6931	0.0
9.741E-09	300.0	95.9	1.14722	17.720	1.0928	0.3492
3.072E-07	400.0	173.5	1.47251	23.452	1.3509	0.5860
1.351E-06	500.0	235.6	1.70968	25.229	1.5466	0.7287
2.752E-06	600.0	291.7	1.89782	25.925	1.7068	0.8297
3.535E-06	700.0	344.4	2.05429	26.196	1.8433	0.9068
4.688E-06	800.0	394.8	2.18844	26.269	1.9624	0.9686
5.050E-06	900.0	443.6	2.30598	26.240	2.0683	1.0196
5.130E-06	1000.0	491.2	2.41064	26.158	2.1637	1.0627
5.038E-06	1100.0	534.8	2.50398	25.927	2.2520	1.0948
4.854E-06	1200.0	577.4	2.58902	25.694	2.3330	1.1225
4.621E-06	1300.0	619.1	2.66715	25.465	2.4080	1.1468
4.367E-06	1400.0	660.0	2.73941	25.242	2.4778	1.1682
3.856E-06	1600.0	739.9	2.86948	24.817	2.6045	1.2044
3.387E-06	1800.0	817.4	2.98411	24.423	2.7171	1.2338
2.977E-06	2000.0	892.9	3.08661	24.059	2.8185	1.2583
2.211E-06	2500.0	1075.0	3.30370	23.268	3.0350	1.3050
1.698E-06	3000.0	1249.1	3.48113	22.605	3.2137	1.3381
1.344E-06	3500.0	1416.7	3.63121	22.037	3.3659	1.3625
1.091E-06	4000.0	1579.1	3.76129	21.542	3.4986	1.3811
9.036E-07	4500.0	1736.8	3.87609	21.104	3.6161	1.3956
7.619E-07	5000.0	1890.5	3.97883	20.711	3.7217	1.4072
5.646E-07	6000.0	2187.6	4.15675	20.032	3.9053	1.4239
4.368E-07	7000.0	2473.0	4.30730	19.458	4.0613	1.4348
3.490E-07	8000.0	2748.6	4.43782	18.961	4.1970	1.4420
2.391E-07	10000.0	3275.3	4.65612	18.135	4.4248	1.4492
1.244E-07	15000.0	4422.2	5.05231	16.426	4.8461	1.4287
7.802E-08	20000.0	5454.1	5.33418	15.254	5.1463	1.4034
4.238E-08	30000.0	7323.0	5.73272	13.718	5.5692	1.3594
2.746E-08	40000.0	8990.3	6.01611	12.667	5.8697	1.3193
1.961E-08	50000.0	10512.6	6.23624	11.874	6.1028	1.2831
1.508E-08	60000.0	11939.0	6.41634	11.254	6.2930	1.2522
1.207E-08	70000.0	13275.7	6.56875	10.739	6.4537	1.2240
9.053E-09	80000.0	14536.7	6.70085	10.299	6.5929	1.1980
7.212E-09	100000.0	16869.7	6.92179	9.575	6.8253	1.1514

TABLE XI.

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=1.000E-02 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	5.9	0.40624	2.262	0.4059	0.0160
7.372E-03	200.0	0.0	0.69315	0.0	0.6931	0.0
3.460E-03	300.0	0.0	1.09861	0.0	1.0986	0.0
2.023E-03	400.0	0.0	1.38629	0.0	1.3863	0.0
1.334E-03	500.0	0.0	1.60944	0.0	1.6094	0.0
9.779E-04	600.0	0.0	1.79176	0.0	1.7918	0.0
7.519E-04	700.0	0.0	1.94591	0.0	1.9459	0.0
5.988E-04	800.0	0.0	2.07944	0.0	2.0794	0.0
4.898E-04	900.0	0.0	2.19722	0.0	2.1972	0.0
4.093E-04	1000.0	0.0	2.30258	0.0	2.3026	0.0
3.521E-04	1100.0	0.0	2.39789	0.0	2.3979	0.0
3.069E-04	1200.0	0.0	2.48491	0.0	2.4849	0.0
2.705E-04	1300.0	0.0	2.56495	0.0	2.5649	0.0
2.406E-04	1400.0	0.0	2.63906	0.0	2.6391	0.0
1.949E-04	1600.0	0.0	2.77259	0.0	2.7726	0.0
1.618E-04	1800.0	0.0	2.89037	0.0	2.8904	0.0
1.370E-04	2000.0	0.0	2.99573	0.0	2.9957	0.0
1.042E-04	2500.0	0.0	3.21888	0.0	3.2189	0.0
8.824E-05	3000.0	0.0	3.40120	0.0	3.4012	0.0
7.670E-05	3500.0	0.0	3.55535	0.0	3.5553	0.0
6.793E-05	4000.0	0.0	3.68888	0.0	3.6889	0.0
6.104E-05	4500.0	0.0	3.80666	0.0	3.8067	0.0
5.546E-05	5000.0	0.0	3.91202	0.0	3.9120	0.0
4.699E-05	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.084E-05	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.617E-05	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.953E-05	10000.0	0.0	4.60517	0.0	4.6052	0.0
2.098E-05	15000.0	0.0	5.01064	0.0	5.0106	0.0
1.646E-05	20000.0	0.0	5.29832	0.0	5.2983	0.0
1.169E-05	30000.0	0.0	5.70378	0.0	5.7038	0.0
9.170E-06	40000.0	0.0	5.99146	0.0	5.9915	0.0
7.596E-06	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.513E-06	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.719E-06	70000.0	0.0	6.55108	0.0	6.5511	0.0
5.110E-06	80000.0	0.0	6.68461	0.0	6.6846	0.0
4.233E-06	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XI. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=5.000E-03 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	11.9	0.40862	4.551	0.4073	0.0324
7.372E-03	200.0	10.2	0.69444	2.916	0.6935	0.0353
3.460E-03	300.0	0.0	1.09861	0.0	1.0986	0.0
2.023E-03	400.0	0.0	1.38629	0.0	1.3863	0.0
1.334E-03	500.0	0.0	1.60944	0.0	1.6094	0.0
9.779E-04	600.0	0.0	1.79176	0.0	1.7918	0.0
7.519E-04	700.0	0.0	1.94591	0.0	1.9459	0.0
5.988E-04	800.0	0.0	2.07944	0.0	2.0794	0.0
4.898E-04	900.0	0.0	2.19722	0.0	2.1972	0.0
4.093E-04	1000.0	0.0	2.30258	0.0	2.3026	0.0
3.521E-04	1100.0	0.0	2.39789	0.0	2.3979	0.0
3.069E-04	1200.0	0.0	2.48491	0.0	2.4849	0.0
2.705E-04	1300.0	0.0	2.56495	0.0	2.5649	0.0
2.406E-04	1400.0	0.0	2.63906	0.0	2.6391	0.0
1.949E-04	1600.0	0.0	2.77259	0.0	2.7726	0.0
1.618E-04	1800.0	0.0	2.89037	0.0	2.8904	0.0
1.370E-04	2000.0	0.0	2.99573	0.0	2.9957	0.0
1.042E-04	2500.0	0.0	3.21888	0.0	3.2189	0.0
8.824E-05	3000.0	0.0	3.40120	0.0	3.4012	0.0
7.670E-05	3500.0	0.0	3.55535	0.0	3.5553	0.0
6.793E-05	4000.0	0.0	3.68888	0.0	3.6889	0.0
6.104E-05	4500.0	0.0	3.80666	0.0	3.8067	0.0
5.546E-05	5000.0	0.0	3.91202	0.0	3.9120	0.0
4.699E-05	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.084E-05	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.617E-05	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.953E-05	10000.0	0.0	4.60517	0.0	4.6052	0.0
2.098E-05	15000.0	0.0	5.01064	0.0	5.0106	0.0
1.646E-05	20000.0	0.0	5.29832	0.0	5.2983	0.0
1.169E-05	30000.0	0.0	5.70378	0.0	5.7038	0.0
9.170E-06	40000.0	0.0	5.99146	0.0	5.9915	0.0
7.596E-06	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.513E-06	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.719E-06	70000.0	0.0	6.55108	0.0	6.5511	0.0
5.110E-06	80000.0	0.0	6.68461	0.0	6.6846	0.0
4.232E-06	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XI. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=2.000E-03 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	16.9	0.41175	6.418	0.4092	0.0460
7.372E-03	200.0	18.7	0.69749	5.334	0.6945	0.0648
3.460E-03	300.0	17.8	1.10036	3.389	1.0984	0.0650
2.023E-03	400.0	3.4	1.38633	0.486	1.3863	0.0118
1.334E-03	500.0	0.0	1.60944	0.0	1.6094	0.0
9.779E-04	600.0	0.0	1.79176	0.0	1.7918	0.0
7.519E-04	700.0	0.0	1.94591	0.0	1.9459	0.0
5.988E-04	800.0	0.0	2.07944	0.0	2.0794	0.0
4.898E-04	900.0	0.0	2.19722	0.0	2.1972	0.0
4.093E-04	1000.0	0.0	2.30258	0.0	2.3026	0.0
3.521E-04	1100.0	0.0	2.39789	0.0	2.3979	0.0
3.069E-04	1200.0	0.0	2.48491	0.0	2.4849	0.0
2.705E-04	1300.0	0.0	2.56495	0.0	2.5649	0.0
2.406E-04	1400.0	0.0	2.63906	0.0	2.6391	0.0
1.949E-04	1600.0	0.0	2.77259	0.0	2.7726	0.0
1.618E-04	1800.0	0.0	2.89037	0.0	2.8904	0.0
1.370E-04	2000.0	0.0	2.99573	0.0	2.9957	0.0
1.042E-04	2500.0	0.0	3.21888	0.0	3.2189	0.0
8.824E-05	3000.0	0.0	3.40120	0.0	3.4012	0.0
7.670E-05	3500.0	0.0	3.55535	0.0	3.5553	0.0
6.793E-05	4000.0	0.0	3.68888	0.0	3.6889	0.0
6.104E-05	4500.0	0.0	3.80666	0.0	3.8067	0.0
5.546E-05	5000.0	0.0	3.91202	0.0	3.9120	0.0
4.699E-05	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.084E-05	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.617E-05	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.953E-05	10000.0	0.0	4.60517	0.0	4.6052	0.0
2.098E-05	15000.0	0.0	5.01064	0.0	5.0106	0.0
1.646E-05	20000.0	0.0	5.29832	0.0	5.2983	0.0
1.169E-05	30000.0	0.0	5.70378	0.0	5.7038	0.0
9.170E-06	40000.0	0.0	5.99146	0.0	5.9915	0.0
7.596E-06	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.513E-06	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.719E-06	70000.0	0.0	6.55108	0.0	6.5511	0.0
5.110E-06	80000.0	0.0	6.68461	0.0	6.6846	0.0
4.233E-06	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XI. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=1.000E-02 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	19.8	0.41410	7.521	0.4105	0.0542
7.372E-03	200.0	23.1	0.69978	6.590	0.6952	0.0803
3.460E-03	300.0	26.7	1.10257	5.092	1.0982	0.0979
2.023E-03	400.0	26.4	1.39847	3.782	1.3855	0.0916
1.334E-03	500.0	20.9	1.61031	2.393	1.6089	0.0672
9.779E-04	600.0	0.0	1.79176	0.0	1.7918	0.0
7.519E-04	700.0	0.0	1.94591	0.0	1.9459	0.0
5.988E-04	800.0	0.0	2.07944	0.0	2.0794	0.0
4.898E-04	900.0	0.0	2.19722	0.0	2.1972	0.0
4.093E-04	1000.0	0.0	2.30258	0.0	2.3026	0.0
3.521E-04	1100.0	0.0	2.39789	0.0	2.3979	0.0
3.069E-04	1200.0	0.0	2.48491	0.0	2.4849	0.0
2.705E-04	1300.0	0.0	2.56495	0.0	2.5649	0.0
2.406E-04	1400.0	0.0	2.63906	0.0	2.6391	0.0
1.949E-04	1600.0	0.0	2.77259	0.0	2.7726	0.0
1.618E-04	1800.0	0.0	2.89037	0.0	2.8904	0.0
1.370E-04	2000.0	0.0	2.99573	0.0	2.9957	0.0
1.042E-04	2500.0	0.0	3.21888	0.0	3.2189	0.0
8.924E-05	3000.0	0.0	3.40120	0.0	3.4012	0.0
7.670E-05	3500.0	0.0	3.55535	0.0	3.5553	0.0
6.793E-05	4000.0	0.0	3.68888	0.0	3.6889	0.0
6.104E-05	4500.0	0.0	3.80666	0.0	3.8067	0.0
5.546E-05	5000.0	0.0	3.91202	0.0	3.9120	0.0
4.699E-05	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.084E-05	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.617E-05	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.953E-05	10000.0	0.0	4.60517	0.0	4.6052	0.0
2.098E-05	15000.0	0.0	5.01064	0.0	5.0106	0.0
1.646E-05	20000.0	0.0	5.29832	0.0	5.2983	0.0
1.169E-05	30000.0	0.0	5.70378	0.0	5.7038	0.0
9.170E-06	40000.0	0.0	5.99146	0.0	5.9915	0.0
7.596E-06	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.513E-06	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.719E-06	70000.0	0.0	6.55108	0.0	6.5511	0.0
5.110E-06	80000.0	0.0	6.68461	0.0	6.6846	0.0
4.233E-06	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XI. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100 CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=5.000E-04 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	22.4	0.41645	8.476	0.4119	0.0614
7.372E-03	200.0	26.8	0.70206	7.637	0.6958	0.0933
3.460E-03	300.0	33.4	1.10476	6.347	1.0980	0.1221
2.023E-03	400.0	37.2	1.39061	5.319	1.3846	0.1289
1.334E-03	500.0	38.5	1.61240	4.408	1.6076	0.1239
9.779E-04	600.0	37.9	1.79375	3.611	1.7902	0.1130
7.519E-04	700.0	34.2	1.94710	2.794	1.9448	0.0949
5.988E-04	800.0	25.8	2.07996	1.845	2.0789	0.0670
4.898E-04	900.0	0.0	2.19722	0.0	2.1972	0.0
4.093E-04	1000.0	0.0	2.30258	0.0	2.3026	0.0
3.521E-04	1100.0	0.0	2.39789	0.0	2.3979	0.0
3.069E-04	1200.0	0.0	2.48491	0.0	2.4849	0.0
2.705E-04	1300.0	0.0	2.56495	0.0	2.5649	0.0
2.406E-04	1400.0	0.0	2.63906	0.0	2.6391	0.0
1.949E-04	1600.0	0.0	2.77259	0.0	2.7726	0.0
1.618E-04	1800.0	0.0	2.89037	0.0	2.8904	0.0
1.370E-04	2000.0	0.0	2.99573	0.0	2.9957	0.0
1.042E-04	2500.0	0.0	3.21888	0.0	3.2189	0.0
8.824E-05	3000.0	0.0	3.40120	0.0	3.4012	0.0
7.670E-05	3500.0	0.0	3.55535	0.0	3.5553	0.0
6.793E-05	4000.0	0.0	3.68888	0.0	3.6889	0.0
6.104E-05	4500.0	0.0	3.80666	0.0	3.8067	0.0
5.546E-05	5000.0	0.0	3.91202	0.0	3.9120	0.0
4.699E-05	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.084E-05	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.617E-05	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.953E-05	10000.0	0.0	4.60517	0.0	4.6052	0.0
2.098E-05	15000.0	0.0	5.01064	0.0	5.0106	0.0
1.646E-05	20000.0	0.0	5.29832	0.0	5.2983	0.0
1.169E-05	30000.0	0.0	5.70378	0.0	5.7038	0.0
9.170E-06	40000.0	0.0	5.99146	0.0	5.9915	0.0
7.596E-06	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.513E-06	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.719E-06	70000.0	0.0	6.55108	0.0	6.5511	0.0
5.110E-06	80000.0	0.0	6.68461	0.0	6.6846	0.0
4.233E-06	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XI. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=2.000E-04 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	25.3	0.41953	9.586	0.4137	0.0699
7.372E-03	200.0	31.0	0.70505	8.825	0.6967	0.1082
3.460E-03	300.0	40.5	1.10765	7.690	1.0977	0.1482
2.023E-03	400.0	47.9	1.39342	6.831	1.3835	0.1657
1.334E-03	500.0	53.6	1.61515	6.118	1.6060	0.1721
9.779E-04	600.0	58.2	1.79645	5.544	1.7880	0.1735
7.519E-04	700.0	61.5	1.94976	5.025	1.9423	0.1708
5.988E-04	800.0	63.6	2.08259	4.542	2.0760	0.1649
4.898E-04	900.0	64.2	2.19976	4.081	2.1942	0.1565
4.093E-04	1000.0	63.4	2.30459	3.629	2.3000	0.1459
3.521E-04	1100.0	61.5	2.39945	3.199	2.3957	0.1339
3.069E-04	1200.0	57.9	2.48607	2.762	2.4832	0.1198
2.705E-04	1300.0	52.3	2.56576	2.302	2.5637	0.1031
2.406E-04	1400.0	43.8	2.63955	1.790	2.6383	0.0824
1.949E-04	1600.0	0.0	2.77259	0.0	2.7726	0.0
1.618E-04	1800.0	0.0	2.89037	0.0	2.8904	0.0
1.370E-04	2000.0	0.0	2.99573	0.0	2.9957	0.0
1.042E-04	2500.0	0.0	3.21888	0.0	3.2189	0.0
8.824E-05	3000.0	0.0	3.40120	0.0	3.4012	0.0
7.670E-05	3500.0	0.0	3.55535	0.0	3.5553	0.0
6.793E-05	4000.0	0.0	3.68888	0.0	3.6889	0.0
6.104E-05	4500.0	0.0	3.80666	0.0	3.8067	0.0
5.546E-05	5000.0	0.0	3.91202	0.0	3.9120	0.0
4.699E-05	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.084E-05	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.617E-05	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.953E-05	10000.0	0.0	4.60517	0.0	4.6052	0.0
2.098E-05	15000.0	0.0	5.01064	0.0	5.0106	0.0
1.646E-05	20000.0	0.0	5.29832	0.0	5.2983	0.0
1.169E-05	30000.0	0.0	5.70378	0.0	5.7038	0.0
9.170E-06	40000.0	0.0	5.99146	0.0	5.9915	0.0
7.596E-06	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.513E-06	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.719E-06	70000.0	0.0	6.55108	0.0	6.5511	0.0
5.110E-06	80000.0	0.0	6.68461	0.0	6.6846	0.0
4.233E-06	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XI. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=1.000E-04 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	27.4	0.42184	10.342	0.4150	0.0757
7.372E-03	200.0	33.9	0.70731	9.621	0.6974	0.1182
3.460E-03	300.0	45.2	1.10982	8.562	1.0974	0.1652
2.023E-03	400.0	54.6	1.39553	7.776	1.3827	0.1888
1.334E-03	500.0	62.6	1.61722	7.139	1.6047	0.2010
9.779E-04	600.0	69.8	1.79848	6.636	1.7864	0.2078
7.519E-04	700.0	76.0	1.95176	6.194	1.9404	0.2106
5.988E-04	800.0	81.2	2.08456	5.795	2.0739	0.2105
4.898E-04	900.0	85.5	2.20172	5.428	2.1918	0.2083
4.093E-04	1000.0	89.0	2.30653	5.085	2.2975	0.2044
3.521E-04	1100.0	91.7	2.40136	4.766	2.3931	0.1995
3.069E-04	1200.0	93.7	2.48794	4.464	2.4804	0.1936
2.705E-04	1300.0	94.9	2.56761	4.175	2.5608	0.1869
2.406E-04	1400.0	95.4	2.64137	3.897	2.6353	0.1795
1.949E-04	1600.0	93.9	2.77431	3.357	2.7695	0.1625
1.618E-04	1800.0	88.7	2.89158	2.822	2.8881	0.1423
1.370E-04	2000.0	79.0	2.99651	2.261	2.9942	0.1182
1.042E-04	2500.0	34.8	3.21897	0.797	3.2187	0.0448
8.824E-05	3000.0	0.0	3.40120	0.0	3.4012	0.0
7.670E-05	3500.0	0.0	3.55535	0.0	3.5553	0.0
6.793E-05	4000.0	0.0	3.68888	0.0	3.6889	0.0
6.104E-05	4500.0	0.0	3.80666	0.0	3.8067	0.0
5.546E-05	5000.0	0.0	3.91202	0.0	3.9120	0.0
4.699E-05	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.084E-05	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.617E-05	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.953E-05	10000.0	0.0	4.60517	0.0	4.6052	0.0
2.098E-05	15000.0	0.0	5.01064	0.0	5.0106	0.0
1.646E-05	20000.0	0.0	5.29832	0.0	5.2983	0.0
1.169E-05	30000.0	0.0	5.70378	0.0	5.7038	0.0
9.170E-06	40000.0	0.0	5.99146	0.0	5.9915	0.0
7.596E-06	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.513E-06	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.719E-06	70000.0	0.0	6.55108	0.0	6.5511	0.0
5.110E-06	80000.0	0.0	6.68461	0.0	6.6846	0.0
4.233E-06	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XI. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SC.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=5.000E-05 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	29.3	0.42415	11.041	0.4163	0.0812
7.372E-03	200.0	36.5	0.70956	10.351	0.6980	0.1275
3.460E-03	300.0	49.4	1.11198	9.348	1.0972	0.1806
2.023E-03	400.0	60.6	1.39764	8.614	1.3819	0.2093
1.334E-03	500.0	70.5	1.61928	8.026	1.6034	0.2261
9.779E-04	600.0	79.7	1.80051	7.567	1.7848	0.2371
7.519E-04	700.0	88.1	1.95276	7.170	1.9385	0.2438
5.988E-04	800.0	95.6	2.08653	6.816	2.0718	0.2476
4.898E-04	900.0	102.5	2.20367	6.496	2.1895	0.2493
4.093E-04	1000.0	108.7	2.30846	6.202	2.2949	0.2494
3.521E-04	1100.0	114.2	2.40325	5.927	2.3904	0.2482
3.069E-04	1200.0	119.2	2.48981	5.671	2.4776	0.2460
2.705E-04	1300.0	123.6	2.56945	5.432	2.5579	0.2432
2.406E-04	1400.0	127.6	2.64319	5.206	2.6323	0.2399
1.949E-04	1600.0	134.0	2.77608	4.788	2.7664	0.2317
1.618E-04	1800.0	138.6	2.89333	4.403	2.8848	0.2221
1.370E-04	2000.0	141.3	2.99822	4.042	2.9908	0.2113
1.042E-04	2500.0	147.7	3.22062	3.381	3.2150	0.1899
8.824E-05	3000.0	153.4	3.40250	2.927	3.3981	0.1737
7.670E-05	3500.0	153.2	3.55630	2.506	3.5529	0.1555
6.793E-05	4000.0	146.4	3.68955	2.095	3.6871	0.1345
6.104E-05	4500.0	131.4	3.80709	1.672	3.8055	0.1111
5.546E-05	5000.0	104.2	3.91224	1.194	3.9114	0.0815
4.699E-05	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.084E-05	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.617E-05	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.953E-05	10000.0	0.0	4.60517	0.0	4.6052	0.0
2.098E-05	15000.0	0.0	5.01064	0.0	5.0106	0.0
1.646E-05	20000.0	0.0	5.29832	0.0	5.2983	0.0
1.169E-05	30000.0	0.0	5.70378	0.0	5.7038	0.0
9.170E-06	40000.0	0.0	5.99146	0.0	5.9915	0.0
7.596E-06	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.513E-06	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.719E-06	70000.0	0.0	6.55108	0.0	6.5511	0.0
5.110E-06	80000.0	0.0	6.68461	0.0	6.6846	0.0
4.233E-06	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XI. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=2.000E-05 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	31.6	0.42718	11.898	0.4180	0.0881
7.372E-03	200.0	39.7	0.71251	11.239	0.6988	0.1389
3.460E-03	300.0	54.5	1.11483	10.290	1.0969	0.1991
2.023E-03	400.0	67.7	1.40041	9.603	1.3808	0.2336
1.334E-03	500.0	79.7	1.62199	9.060	1.6018	0.2554
9.779E-04	600.0	91.2	1.80317	8.640	1.7827	0.2709
7.519E-04	700.0	101.9	1.95639	8.279	1.9360	0.2817
5.988E-04	800.0	111.9	2.08913	7.962	2.0690	0.2894
4.898E-04	900.0	121.3	2.20623	7.678	2.1865	0.2947
4.093E-04	1000.0	130.2	2.31099	7.420	2.2916	0.2984
3.521E-04	1100.0	138.4	2.40575	7.173	2.3869	0.3004
3.069E-04	1200.0	146.2	2.49227	6.946	2.4740	0.3014
2.705E-04	1300.0	153.5	2.57188	6.736	2.5541	0.3017
2.406E-04	1400.0	160.5	2.64559	6.541	2.6284	0.3014
1.949E-04	1600.0	173.4	2.77843	6.185	2.7623	0.2993
1.618E-04	1800.0	184.9	2.89562	5.866	2.8805	0.2959
1.370E-04	2000.0	195.3	3.00047	5.576	2.9863	0.2915
1.042E-04	2500.0	221.5	3.22278	5.063	3.2102	0.2844
8.824E-05	3000.0	247.9	3.40460	4.725	3.3930	0.2804
7.670E-05	3500.0	271.4	3.55835	4.435	3.5477	0.2751
6.793E-05	4000.0	292.3	3.69154	4.180	3.6817	0.2691
6.104E-05	4500.0	310.8	3.80904	3.951	3.8000	0.2624
5.546E-05	5000.0	327.0	3.91416	3.742	3.9058	0.2555
4.699E-05	6000.0	353.2	4.09607	3.369	4.0890	0.2407
4.084E-05	7000.0	371.5	4.24990	3.038	4.2439	0.2252
3.617E-05	8000.0	382.2	4.38317	2.735	4.3782	0.2091
2.953E-05	10000.0	379.6	4.60589	2.174	4.6026	0.1747
2.098E-05	15000.0	186.9	5.01071	0.714	5.0103	0.0624
1.646E-05	20000.0	0.0	5.29832	0.0	5.2983	0.0
1.169E-05	30000.0	0.0	5.70378	0.0	5.7038	0.0
9.170E-06	40000.0	0.0	5.99146	0.0	5.9915	0.0
7.596E-06	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.513E-06	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.719E-06	70000.0	0.0	6.55108	0.0	6.5511	0.0
5.110E-06	80000.0	0.0	6.68461	0.0	6.6846	0.0
4.233E-06	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XI. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

F STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=1.000E-05 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	33.3	0.42946	12.502	0.4193	0.0930
7.372E-03	200.0	42.0	0.71473	11.862	0.6995	0.1469
3.460E-03	300.0	58.0	1.11697	10.945	1.0967	0.2121
2.023E-03	400.0	72.6	1.40249	10.285	1.3800	0.2504
1.334E-03	500.0	86.1	1.62403	9.766	1.6005	0.2755
9.779E-04	600.0	99.0	1.80518	9.366	1.7811	0.2938
7.519E-04	700.0	111.2	1.95836	9.024	1.9341	0.3072
5.988E-04	800.0	122.8	2.09108	8.724	2.0669	0.3172
4.898E-04	900.0	133.8	2.20816	8.458	2.1841	0.3248
4.093E-04	1000.0	144.4	2.31290	8.217	2.2892	0.3306
3.521E-04	1100.0	154.3	2.40763	7.982	2.3843	0.3343
3.069E-04	1200.0	163.7	2.49413	7.768	2.4712	0.3371
2.705E-04	1300.0	172.8	2.57370	7.570	2.5513	0.3391
2.406E-04	1400.0	181.5	2.64739	7.387	2.6254	0.3404
1.949E-04	1600.0	198.0	2.78019	7.055	2.7591	0.3415
1.618E-04	1800.0	213.4	2.89735	6.761	2.8772	0.3411
1.370E-04	2000.0	227.7	3.00217	6.496	2.9829	0.3396
1.042E-04	2500.0	263.9	3.22442	6.027	3.2066	0.3385
8.824E-05	3000.0	300.3	3.40618	5.716	3.3892	0.3393
7.670E-05	3500.0	334.2	3.55989	5.454	3.5438	0.3384
6.793E-05	4000.0	365.9	3.69305	5.227	3.6777	0.3364
6.104E-05	4500.0	395.7	3.81051	5.025	3.7959	0.3338
5.546E-05	5000.0	423.8	3.91560	4.845	3.9016	0.3307
4.699E-05	6000.0	475.4	4.09747	4.530	4.0847	0.3236
4.084E-05	7000.0	521.6	4.25126	4.261	4.2395	0.3159
3.617E-05	8000.0	562.9	4.38450	4.025	4.3737	0.3078
2.953E-05	10000.0	632.8	4.60717	3.621	4.5980	0.2910
2.098E-05	15000.0	736.9	5.01184	2.812	5.0058	0.2459
1.646E-05	20000.0	770.2	5.29906	2.205	5.2951	0.2039
1.169E-05	30000.0	606.9	5.70399	1.159	5.7028	0.1154
9.170E-06	40000.0	0.0	5.99146	0.0	5.9915	0.0
7.596E-06	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.513E-06	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.719E-06	70000.0	0.0	6.55108	0.0	6.5511	0.0
5.110E-06	80000.0	0.0	6.68461	0.0	6.6846	0.0
4.233E-06	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XI. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100 CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=5.000E-06 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	34.8	0.43174	13.076	0.4205	0.0977
7.372E-03	200.0	44.2	0.71695	12.451	0.7001	0.1546
3.460E-03	300.0	61.4	1.11910	11.559	1.0964	0.2242
2.023E-03	400.0	77.2	1.40457	10.920	1.3791	0.2661
1.334E-03	500.0	92.0	1.62607	10.420	1.5992	0.2941
9.779E-04	600.0	106.2	1.80718	10.036	1.7795	0.3149
7.519E-04	700.0	119.8	1.96033	9.708	1.9323	0.3306
5.988E-04	800.0	132.8	2.09302	9.422	2.0648	0.3426
4.898E-04	900.0	145.3	2.21008	9.168	2.1818	0.3521
4.093E-04	1000.0	157.3	2.31481	8.940	2.2867	0.3597
3.521E-04	1100.0	168.6	2.40950	8.714	2.3817	0.3650
3.069E-04	1200.0	179.5	2.49557	8.508	2.4685	0.3693
2.705E-04	1300.0	190.1	2.57552	8.318	2.5484	0.3726
2.406E-04	1400.0	200.3	2.64919	8.143	2.6225	0.3752
1.949E-04	1600.0	219.9	2.78195	7.827	2.7560	0.3788
1.619E-04	1800.0	238.5	2.89907	7.547	2.8740	0.3808
1.370E-04	2000.0	256.1	3.00386	7.297	2.9795	0.3815
1.042E-04	2500.0	300.4	3.22605	6.853	3.2030	0.3849
8.824E-05	3000.0	344.8	3.40776	6.556	3.3855	0.3891
7.670E-05	3500.0	386.9	3.56142	6.308	3.5399	0.3913
6.793E-05	4000.0	427.0	3.69454	6.093	3.6737	0.3922
6.104E-05	4500.0	465.4	3.81198	5.905	3.7918	0.3922
5.546E-05	5000.0	502.3	3.91704	5.737	3.8974	0.3915
4.699E-05	6000.0	572.1	4.09897	5.446	4.0804	0.3890
4.084E-05	7000.0	637.2	4.25262	5.201	4.2351	0.3855
3.617E-05	8000.0	698.4	4.38582	4.989	4.3692	0.3814
2.953E-05	10000.0	810.4	4.60844	4.633	4.5934	0.3722
2.098E-05	15000.0	1025.2	5.01297	3.910	5.0013	0.3418
1.646E-05	20000.0	1191.1	5.30009	3.408	5.2907	0.3151
1.169E-05	30000.0	1415.8	5.70489	2.702	5.6986	0.2689
9.170E-06	40000.0	1525.1	5.99219	2.184	5.9878	0.2283
7.596E-06	50000.0	1528.8	6.21508	1.751	6.2122	0.1899
6.513E-06	60000.0	1417.7	6.39721	1.354	6.3954	0.1511
5.719E-06	70000.0	1150.9	6.55122	0.942	6.5503	0.1077
5.110E-06	80000.0	517.6	6.68463	0.371	6.6845	0.0432
4.233E-06	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XI. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=2.000E-06 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-03	150.0	36.8	0.43472	13.792	0.4222	0.1036
7.372E-03	200.0	46.8	0.71986	13.184	0.7009	0.1642
3.460E-03	300.0	65.5	1.12190	12.319	1.0961	0.2394
2.023E-03	400.0	82.9	1.40730	11.703	1.3780	0.2854
1.334E-03	500.0	99.2	1.62874	11.222	1.5976	0.3170
9.779E-04	600.0	115.0	1.80981	10.853	1.7774	0.3408
7.519E-04	700.0	130.2	1.96292	10.540	1.9298	0.3590
5.988E-04	800.0	144.9	2.09558	10.267	2.0620	0.3735
4.898E-04	900.0	159.1	2.21261	10.026	2.1788	0.3852
4.093E-04	1000.0	172.9	2.31731	9.809	2.2834	0.3948
3.521E-04	1100.0	185.9	2.41197	9.591	2.3783	0.4019
3.069E-04	1200.0	198.5	2.49840	9.391	2.4649	0.4077
2.705E-04	1300.0	210.8	2.57792	9.209	2.5447	0.4126
2.406E-04	1400.0	222.7	2.65156	9.040	2.6186	0.4166
1.949E-04	1600.0	245.9	2.78426	8.737	2.7519	0.4229
1.618E-04	1800.0	268.1	2.90134	8.471	2.8697	0.4274
1.370E-04	2000.0	289.4	3.00609	8.233	2.9751	0.4305
1.042E-04	2500.0	342.8	3.22819	7.808	3.1983	0.4385
8.824E-05	3000.0	396.0	3.40983	7.520	3.3805	0.4463
7.670E-05	3500.0	447.1	3.56344	7.280	3.5347	0.4515
6.793E-05	4000.0	496.2	3.69652	7.073	3.6684	0.4552
6.104E-05	4500.0	544.0	3.81392	6.893	3.7864	0.4577
5.546E-05	5000.0	590.2	3.91894	6.732	3.8919	0.4594
4.699E-05	6000.0	679.0	4.10071	6.457	4.0747	0.4611
4.084E-05	7000.0	763.7	4.25441	6.226	4.2293	0.4614
3.617E-05	8000.0	844.7	4.38757	6.027	4.3633	0.4607
2.953E-05	10000.0	997.9	4.61012	5.698	4.5873	0.4577
2.098E-05	15000.0	1312.5	5.01445	5.001	4.9954	0.4371
1.646E-05	20000.0	1584.3	5.30145	4.529	5.2849	0.4186
1.169E-05	30000.0	2041.4	5.70609	3.893	5.6929	0.3874
9.170E-06	40000.0	2416.7	5.99329	3.457	5.9824	0.3614
7.596E-06	50000.0	2731.0	6.21610	3.126	6.2068	0.3390
6.513E-06	60000.0	2995.9	6.39817	2.859	6.3902	0.3191
5.719E-06	70000.0	3218.6	6.55214	2.633	6.5452	0.3010
5.110E-06	80000.0	3403.8	6.68552	2.436	6.6795	0.2842
4.233E-06	100000.0	3673.5	6.90843	2.104	6.9038	0.2536

TABLE XIV. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=1.000E-06 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	38.3	0.43697	14.307	0.4234	0.1080
7.372E-03	200.0	48.8	0.72205	13.709	0.7015	0.1711
3.460E-03	300.0	68.5	1.12402	12.860	1.0958	0.2502
2.023E-03	400.0	86.9	1.40936	12.258	1.3772	0.2992
1.334E-03	500.0	104.4	1.63076	11.789	1.5964	0.3332
9.779E-04	600.0	121.3	1.81179	11.429	1.7759	0.3590
7.519E-04	700.0	137.6	1.96488	11.124	1.9280	0.3791
5.988E-04	800.0	153.5	2.09751	10.859	2.0599	0.3952
4.898E-04	900.0	168.8	2.21452	10.625	2.1765	0.4083
4.093E-04	1000.0	183.8	2.31920	10.416	2.2810	0.4193
3.521E-04	1100.0	197.9	2.41383	10.200	2.3757	0.4275
3.069E-04	1200.0	211.7	2.50023	10.005	2.4622	0.4344
2.705E-04	1300.0	225.2	2.57973	9.826	2.5419	0.4402
2.406E-04	1400.0	238.3	2.65334	9.661	2.6157	0.4453
1.949E-04	1600.0	263.9	2.78600	9.364	2.7489	0.4533
1.618E-04	1800.0	288.5	2.90305	9.104	2.8665	0.4594
1.370E-04	2000.0	312.2	3.00777	8.873	2.9718	0.4639
1.042E-04	2500.0	371.6	3.22980	8.455	3.1947	0.4749
8.824E-05	3000.0	430.7	3.41140	8.171	3.3768	0.4848
7.670E-05	3500.0	487.7	3.56496	7.933	3.5308	0.4920
6.793E-05	4000.0	542.9	3.69801	7.730	3.6644	0.4974
6.104E-05	4500.0	596.6	3.81537	7.552	3.7823	0.5014
5.546E-05	5000.0	648.9	3.92037	7.394	3.8878	0.5045
4.699E-05	6000.0	749.9	4.10209	7.124	4.0704	0.5087
4.084E-05	7000.0	846.9	4.25576	6.898	4.2250	0.5111
3.617E-05	8000.0	940.4	4.38889	6.704	4.3589	0.5124
2.953E-05	10000.0	1118.9	4.61139	6.384	4.5828	0.5128
2.098E-05	15000.0	1493.5	5.01557	5.686	4.9909	0.4969
1.646E-05	20000.0	1826.3	5.30247	5.218	5.2805	0.4822
1.369E-05	30000.0	2409.1	5.70700	4.591	5.6887	0.4568
9.170E-06	40000.0	2915.3	5.99411	4.168	5.9783	0.4357
7.596E-06	50000.0	3366.4	6.21687	3.852	6.2028	0.4176
6.513E-06	60000.0	3774.3	6.39890	3.599	6.3863	0.4017
5.719E-06	70000.0	4146.6	6.55283	3.390	6.5414	0.3875
5.110E-06	80000.0	4488.7	6.68618	3.211	6.6757	0.3746
4.233E-06	100000.0	5096.2	6.90905	2.917	6.9001	0.3516

TABLE XI. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=5.000E-07 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	39.6	0.43921	14.801	0.4246	0.1122
7.372E-03	200.0	50.6	0.72423	14.211	0.7021	0.1778
3.460E-03	300.0	71.3	1.12612	13.377	1.0956	0.2605
2.023E-03	400.0	90.8	1.41140	12.786	1.3764	0.3124
1.334E-03	500.0	109.3	1.63276	12.328	1.5951	0.3486
9.779E-04	600.0	127.3	1.81376	11.975	1.7743	0.3763
7.519E-04	700.0	144.7	1.96682	11.676	1.9261	0.3981
5.988E-04	800.0	161.6	2.09943	11.418	2.0579	0.4156
4.898E-04	900.0	178.0	2.21642	11.190	2.1743	0.4301
4.093E-04	1000.0	194.1	2.32108	10.986	2.2785	0.4423
3.521E-04	1100.0	209.3	2.41568	10.773	2.3731	0.4515
3.069E-04	1200.0	224.1	2.50205	10.580	2.4595	0.4594
2.705E-04	1300.0	238.7	2.58153	10.404	2.5391	0.4662
2.406E-04	1400.0	252.9	2.65512	10.241	2.6128	0.4720
1.949E-04	1600.0	280.7	2.78774	9.949	2.7458	0.4817
1.618E-04	1800.0	307.5	2.90475	9.694	2.8633	0.4891
1.370E-04	2000.0	333.5	3.00944	9.467	2.9685	0.4950
1.042E-04	2500.0	398.4	3.23141	9.055	3.1911	0.5085
8.824E-05	3000.0	462.9	3.41296	8.771	3.3730	0.5204
7.670E-05	3500.0	525.3	3.56648	8.535	3.5270	0.5293
6.793E-05	4000.0	585.9	3.69949	8.332	3.6604	0.5361
6.104E-05	4500.0	644.9	3.81683	8.156	3.7782	0.5415
5.546E-05	5000.0	702.7	3.92180	7.999	3.8836	0.5458
4.699E-05	6000.0	814.6	4.10348	7.732	4.0662	0.5521
4.084E-05	7000.0	922.6	4.25711	7.508	4.2206	0.5563
3.617E-05	8000.0	1027.2	4.39020	7.317	4.3545	0.5591
2.953E-05	10000.0	1228.1	4.61265	7.001	4.5783	0.5623
2.098E-05	15000.0	1654.9	5.01668	6.296	4.9864	0.5501
1.646E-05	20000.0	2039.8	5.30349	5.824	5.2761	0.5381
1.169E-05	30000.0	2727.6	5.70790	5.195	5.6845	0.5168
9.170E-06	40000.0	3340.3	5.99494	4.774	5.9741	0.4989
7.596E-06	50000.0	3899.5	6.21764	4.460	6.1988	0.4835
6.513E-06	60000.0	4417.5	6.39963	4.211	6.3824	0.4699
5.719E-06	70000.0	4902.0	6.55353	4.006	6.5375	0.4578
5.110E-06	80000.0	5358.2	6.68685	3.832	6.6719	0.4469
4.233E-06	100000.0	6200.6	6.90967	3.548	6.8964	0.4276

TABLE XI. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT C.C SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 8C.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =2.651E-C2 AT 100.0 METERS DOWNWIND

CHI/Q=2.000E-07 CCORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	41.4	0.44215	15.425	0.4262	0.1176
7.372E-03	200.0	53.C	C.72710	14.845	0.7028	0.1863
3.460E-03	300.0	74.9	1.12888	14.027	1.0952	0.2736
2.023E-03	400.0	95.7	1.41410	13.449	1.3753	0.3289
1.334E-03	500.0	115.4	1.63540	13.001	1.5935	0.3679
9.779E-04	600.0	134.7	1.81636	12.656	1.7722	0.398C
7.519E-04	700.0	153.5	1.96938	12.365	1.9237	0.4217
5.988E-04	800.0	171.7	2.10196	12.113	2.0552	0.4411
4.898E-04	900.0	189.5	2.21892	11.891	2.1713	0.4572
4.093E-04	1000.0	207.0	2.32355	11.693	2.2753	0.4709
3.521E-04	1100.0	223.4	2.41811	11.483	2.3697	0.4814
3.069E-04	1200.0	239.6	2.50445	11.292	2.4560	0.4904
2.705E-04	1300.0	255.5	2.58389	11.118	2.5354	0.4982
2.406E-04	1400.0	271.0	2.65746	10.957	2.6090	0.5051
1.949E-04	1600.0	301.5	2.79003	10.670	2.7418	0.5166
1.618E-04	1800.0	331.0	2.90699	10.418	2.8591	0.5257
1.370E-04	2000.0	359.7	3.01165	10.195	2.9641	0.5331
1.042E-04	2500.0	431.2	3.23353	9.787	3.1865	0.5496
8.824E-05	3000.0	502.2	3.41502	9.503	3.3681	0.5638
7.670E-05	3500.0	571.1	3.56848	9.267	3.5219	0.5746
6.793E-05	4000.0	638.2	3.70145	9.065	3.6552	0.5832
6.104E-05	4500.0	703.7	3.81874	8.888	3.7729	0.590C
5.546E-05	5000.0	768.C	3.92368	8.732	3.8782	0.5957
4.699E-05	6000.0	893.0	4.10530	8.465	4.0606	0.6043
4.084E-05	7000.0	1014.1	4.25888	8.243	4.2149	0.6106
3.617E-05	8000.0	1131.8	4.39194	8.053	4.3486	0.6152
2.953E-05	10000.0	1359.1	4.61432	7.739	4.5723	0.6214
2.098E-05	15000.0	1846.7	5.C1816	7.019	4.9806	0.6132
1.646E-05	20000.0	2291.8	5.30484	6.537	5.2704	0.6039
1.169E-05	30000.0	3098.8	5.70909	5.897	5.6789	0.5866
9.170E-06	40000.0	3830.4	5.99603	5.470	5.9687	0.5716
7.596E-06	50000.0	4508.6	6.21866	5.153	6.1935	0.5585
6.513E-06	60000.0	5145.9	6.40059	4.902	6.3772	0.5469
5.719E-06	70000.0	5750.1	6.55444	4.696	6.5324	0.5366
5.110E-06	80000.0	6326.8	6.68773	4.522	6.6669	0.5273
4.233E-06	100000.0	7412.2	6.91049	4.239	6.8916	0.5108

TABLE XI. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=1.000E-07 COORDINATES OF THE ISOPLETH

CENTERLINE CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	42.7	0.44437	15.878	0.4274	0.1216
7.372E-03	200.0	54.7	0.72926	15.305	0.7034	0.1925
3.460E-03	300.0	77.6	1.13097	14.497	1.0950	0.2831
2.023E-03	400.0	99.2	1.41613	13.926	1.3745	0.3408
1.324E-03	500.0	119.9	1.63739	13.485	1.5923	0.3818
9.779E-04	600.0	140.1	1.81831	13.145	1.7707	0.4135
7.519E-04	700.0	159.8	1.97131	12.858	1.9219	0.4387
5.988E-04	800.0	179.0	2.10386	12.611	2.0531	0.4593
4.898E-04	900.0	197.8	2.22080	12.392	2.1691	0.4766
4.093E-04	1000.0	216.2	2.32542	12.197	2.2729	0.4913
3.521E-04	1100.0	233.6	2.41995	11.988	2.3672	0.5027
3.069E-04	1200.0	250.7	2.50626	11.799	2.4533	0.5125
2.705E-04	1300.0	267.5	2.58568	11.626	2.5326	0.5211
2.406E-04	1400.0	284.0	2.65922	11.467	2.6061	0.5286
1.949E-04	1600.0	316.3	2.79175	11.181	2.7388	0.5414
1.618E-04	1800.0	347.7	2.90868	10.932	2.8559	0.5516
1.370E-04	2000.0	378.3	3.01331	10.711	2.9608	0.5600
1.042E-04	2500.0	454.5	3.23513	10.304	3.1830	0.5787
8.824E-05	3000.0	530.0	3.41656	10.019	3.3645	0.5944
7.670E-05	3500.0	603.4	3.56999	9.782	3.5181	0.6065
6.793E-05	4000.0	675.0	3.70292	9.579	3.6513	0.6162
6.104E-05	4500.0	745.2	3.82019	9.402	3.7689	0.6241
5.546E-05	5000.0	813.9	3.92510	9.246	3.8741	0.6306
4.699E-05	6000.0	948.0	4.10667	8.978	4.0564	0.6409
4.084E-05	7000.0	1078.1	4.26022	8.756	4.2106	0.6485
3.617E-05	8000.0	1204.9	4.39324	8.565	4.3442	0.6543
2.953E-05	10000.0	1450.3	4.61558	8.252	4.5678	0.6625
2.098E-05	15000.0	1979.5	5.01927	7.518	4.9761	0.6567
1.646E-05	20000.0	2465.3	5.30586	7.027	5.2660	0.6491
1.169E-05	30000.0	3352.4	5.70999	6.376	5.6747	0.6341
9.170E-06	40000.0	4163.0	5.99685	5.942	5.9646	0.6208
7.596E-06	50000.0	4919.5	6.21942	5.619	6.1895	0.6090
6.513E-06	60000.0	5634.7	6.40132	5.365	6.3733	0.5985
5.719E-06	70000.0	6316.6	6.55513	5.156	6.5286	0.5891
5.110E-06	80000.0	6970.7	6.68839	4.980	6.6631	0.5806
4.233E-06	100000.0	8210.7	6.91111	4.694	6.8879	0.5656

GROUND LEVEL RELEASE

TABLE XI. (Continued)

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=5.000E-08

COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	43.9	0.44657	16.316	0.4286	0.1255
7.372E-03	200.0	56.4	0.73141	15.748	0.7040	0.1985
3.460E-03	300.0	80.1	1.13304	14.949	1.0947	0.2923
2.023E-03	400.0	102.6	1.41815	14.385	1.3737	0.3523
1.334E-03	500.0	124.2	1.63937	13.949	1.5910	0.3952
9.779E-04	600.0	145.3	1.82026	13.614	1.7691	0.4284
7.519E-04	700.0	165.9	1.97323	13.331	1.9201	0.4550
5.988E-04	800.0	186.0	2.10576	13.087	2.0511	0.4768
4.898E-04	900.0	205.7	2.22267	12.872	2.1668	0.4951
4.093E-04	1000.0	225.0	2.32727	12.680	2.2705	0.5108
3.521E-04	1100.0	243.3	2.42177	12.472	2.3646	0.5230
3.069E-04	1200.0	261.3	2.50806	12.283	2.4507	0.5336
2.705E-04	1300.0	278.9	2.58746	12.111	2.5299	0.5429
2.406E-04	1400.0	296.4	2.66097	11.952	2.6033	0.5511
1.949E-04	1600.0	330.4	2.79347	11.668	2.7357	0.5650
1.618E-04	1800.0	363.6	2.91037	11.420	2.8527	0.5763
1.370E-04	2000.0	396.0	3.01496	11.200	2.9575	0.5856
1.042E-04	2500.0	476.6	3.23673	10.794	3.1795	0.6062
8.824E-05	3000.0	556.4	3.41811	10.508	3.3608	0.6233
7.670E-05	3500.0	634.1	3.57150	10.269	3.5143	0.6367
6.793E-05	4000.0	710.0	3.70439	10.065	3.6474	0.6474
6.104E-05	4500.0	784.4	3.82163	9.888	3.7649	0.6562
5.546E-05	5000.0	857.4	3.92651	9.730	3.8700	0.6636
4.699E-05	6000.0	1000.0	4.10804	9.462	4.0522	0.6753
4.084E-05	7000.0	1138.6	4.26155	9.238	4.2063	0.6842
3.617E-05	8000.0	1273.8	4.39455	9.047	4.3399	0.6910
2.953E-05	10000.0	1536.1	4.61683	8.733	4.5633	0.7010
2.098E-05	15000.0	2103.9	5.02038	7.984	4.9717	0.6973
1.646E-05	20000.0	2627.4	5.30687	7.484	5.2617	0.6912
1.169E-05	30000.0	3588.2	5.71088	6.821	5.6705	0.6782
9.170E-06	40000.0	4470.9	5.99767	6.378	5.9606	0.6662
7.596E-06	50000.0	5298.6	6.22019	6.049	6.1856	0.6555
6.513E-06	60000.0	6084.3	6.40205	5.790	6.3694	0.6459
5.719E-06	70000.0	6836.2	6.55583	5.578	6.5248	0.6372
5.110E-06	80000.0	7559.9	6.68906	5.398	6.6594	0.6293
4.233E-06	100000.0	8938.3	6.91173	5.108	6.8843	0.6153

GROUND LEVEL RELEASE

TABLE XI. (Continued)

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=2.000E-08 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	45.5	0.44947	16.873	0.4301	0.1305
7.372E-03	200.0	58.5	0.73423	16.312	0.7047	0.2062
3.460E-03	300.0	83.3	1.13577	15.522	1.0943	0.3040
2.023E-03	400.0	106.9	1.42081	14.967	1.3726	0.3669
1.334E-03	500.0	129.7	1.64198	14.537	1.5894	0.4122
9.779E-04	600.0	151.9	1.82282	14.207	1.7671	0.4474
7.519E-04	700.0	173.6	1.97575	13.928	1.9177	0.4756
5.988E-04	800.0	194.8	2.10825	13.687	2.0484	0.4985
4.898E-04	900.0	215.7	2.22514	13.476	2.1639	0.5185
4.093E-04	1000.0	236.1	2.32972	13.287	2.2674	0.5354
3.521E-04	1100.0	255.6	2.42418	13.080	2.3613	0.5486
3.069E-04	1200.0	274.7	2.51044	12.892	2.4472	0.5601
2.705E-04	1300.0	293.4	2.58980	12.720	2.5262	0.5702
2.406E-04	1400.0	312.0	2.66329	12.562	2.5995	0.5792
1.949E-04	1600.0	348.3	2.79573	12.279	2.7318	0.5946
1.618E-04	1800.0	383.7	2.91259	12.033	2.8486	0.6072
1.370E-04	2000.0	418.3	3.01714	11.814	2.9532	0.6177
1.042E-04	2500.0	504.4	3.23883	11.407	3.1749	0.6406
8.824E-05	3000.0	589.5	3.42014	11.118	3.3560	0.6595
7.670E-05	3500.0	672.6	3.57348	10.877	3.5093	0.6743
6.793E-05	4000.0	753.8	3.70633	10.672	3.6422	0.6862
6.104E-05	4500.0	833.4	3.82352	10.493	3.7596	0.6963
5.546E-05	5000.0	911.7	3.92838	10.334	3.8647	0.7047
4.699E-05	6000.0	1064.8	4.10985	10.063	4.0466	0.7181
4.084E-05	7000.0	1213.9	4.26331	9.838	4.2006	0.7284
3.617E-05	8000.0	1359.6	4.39626	9.645	4.3341	0.7366
2.953E-05	10000.0	1642.7	4.61848	9.329	4.5574	0.7487
2.098E-05	15000.0	2257.9	5.02184	8.560	4.9659	0.7475
1.646E-05	20000.0	2827.4	5.30821	8.047	5.2559	0.7430
1.169E-05	30000.0	3877.9	5.71207	7.365	5.6649	0.7323
9.170E-06	40000.0	4848.0	5.99876	6.911	5.9552	0.7218
7.596E-06	50000.0	5761.7	6.22120	6.573	6.1803	0.7122
6.513E-06	60000.0	6632.1	6.40300	6.308	6.3642	0.7035
5.719E-06	70000.0	7467.8	6.55674	6.089	6.5197	0.6955
5.110E-06	80000.0	8274.7	6.68993	5.905	6.6544	0.6883
4.233E-06	100000.0	9817.6	6.91255	5.607	6.8795	0.6754

TABLE XI. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100 CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=1.000E-08 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	46.7	0.45165	17.280	0.4313	0.1342
7.372E-03	200.0	60.1	0.73636	16.723	0.7052	0.2119
3.460E-03	300.0	85.7	1.13782	15.940	1.0941	0.3125
2.023E-03	400.0	110.1	1.42281	15.389	1.3718	0.3776
1.334E-03	500.0	133.6	1.64394	14.964	1.5882	0.4245
9.779E-04	600.0	156.7	1.82475	14.637	1.7655	0.4611
7.519E-04	700.0	179.2	1.97765	14.361	1.9159	0.4905
5.988E-04	800.0	201.3	2.11013	14.122	2.0464	0.5149
4.898E-04	900.0	222.9	2.22700	13.913	2.1617	0.5355
4.093E-04	1000.0	244.3	2.33156	13.726	2.2650	0.5532
3.521E-04	1100.0	264.5	2.42599	13.519	2.3588	0.5671
3.069E-04	1200.0	284.4	2.51222	13.331	2.4445	0.5793
2.705E-04	1300.0	303.9	2.59156	13.160	2.5235	0.5900
2.406E-04	1400.0	323.3	2.66503	13.002	2.5967	0.5996
1.949E-04	1600.0	361.2	2.79743	12.720	2.7288	0.6159
1.618E-04	1800.0	398.2	2.91426	12.473	2.8455	0.6294
1.370E-04	2000.0	434.4	3.01878	12.255	2.9500	0.6408
1.042E-04	2500.0	524.4	3.24041	11.847	3.1714	0.6653
8.824E-05	3000.0	613.4	3.42168	11.556	3.3523	0.6854
7.670E-05	3500.0	700.2	3.57497	11.314	3.5055	0.7013
6.793E-05	4000.0	785.2	3.70779	11.106	3.6383	0.7142
6.104E-05	4500.0	868.7	3.82495	10.926	3.7556	0.7250
5.546E-05	5000.0	950.7	3.92978	10.766	3.8606	0.7341
4.699E-05	6000.0	1111.3	4.11121	10.493	4.0425	0.7487
4.084E-05	7000.0	1267.9	4.26463	10.266	4.1964	0.7601
3.617E-05	8000.0	1421.0	4.39756	10.072	4.3298	0.7691
2.953E-05	10000.0	1719.0	4.61973	9.754	4.5530	0.7826
2.098E-05	15000.0	2367.7	5.02294	8.970	4.9615	0.7832
1.646E-05	20000.0	2969.8	5.30922	8.446	5.2516	0.7798
1.169E-05	30000.0	4083.4	5.71296	7.751	5.6608	0.7705
9.170E-06	40000.0	5114.9	5.99957	7.287	5.9511	0.7610
7.596E-06	50000.0	6088.6	6.22197	6.943	6.1763	0.7521
6.513E-06	60000.0	7018.1	6.40372	6.672	6.3604	0.7440
5.719E-06	70000.0	7912.2	6.55743	6.449	6.5159	0.7365
5.110E-06	80000.0	8776.8	6.69059	6.261	6.6507	0.7296
4.233E-06	100000.0	10433.7	6.91317	5.957	6.8758	0.7174

TABLE XI. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=5.000E-09 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	47.8	0.45383	17.676	0.4324	0.1378
7.372E-03	200.0	61.6	0.73848	17.122	0.7058	0.2174
3.460E-03	300.0	88.0	1.13987	16.345	1.0938	0.3208
2.023E-03	400.0	113.2	1.42480	15.799	1.3710	0.3879
1.334E-03	500.0	137.5	1.64589	15.377	1.5870	0.4365
9.779E-04	600.0	161.4	1.82667	15.052	1.7640	0.4744
7.519E-04	700.0	184.7	1.97955	14.778	1.9141	0.5049
5.988E-04	800.0	207.5	2.11200	14.542	2.0443	0.5303
4.898E-04	900.0	230.0	2.22885	14.335	2.1595	0.5518
4.093E-04	1000.0	252.1	2.33339	14.149	2.2626	0.5704
3.521E-04	1100.0	273.1	2.42780	13.942	2.3563	0.5850
3.069E-04	1200.0	293.7	2.51400	13.755	2.4419	0.5977
2.705E-04	1300.0	314.1	2.59332	13.583	2.5208	0.6091
2.406E-04	1400.0	334.2	2.66676	13.425	2.5939	0.6192
1.949E-04	1600.0	373.6	2.79913	13.143	2.7258	0.6365
1.618E-04	1800.0	412.2	2.91592	12.897	2.8424	0.6508
1.370E-04	2000.0	450.0	3.02042	12.679	2.9468	0.6630
1.042E-04	2500.0	543.7	3.24198	12.270	3.1679	0.6890
8.824E-05	3000.0	636.4	3.42320	11.976	3.3487	0.7103
7.670E-05	3500.0	726.9	3.57646	11.732	3.5017	0.7272
6.793E-05	4000.0	815.5	3.70924	11.523	3.6345	0.7410
6.104E-05	4500.0	902.5	3.82638	11.341	3.7517	0.7525
5.546E-05	5000.0	988.2	3.93118	11.180	3.8566	0.7622
4.699E-05	6000.0	1156.0	4.11257	10.905	4.0383	0.7780
4.084E-05	7000.0	1319.6	4.26596	10.676	4.1921	0.7903
3.617E-05	8000.0	1479.9	4.39885	10.481	4.3255	0.8002
2.953E-05	10000.0	1792.0	4.62097	10.159	4.5485	0.8151
2.098E-05	15000.0	2472.7	5.02404	9.361	4.9571	0.8172
1.646E-05	20000.0	3105.7	5.31023	8.827	5.2473	0.8148
1.169E-05	30000.0	4279.1	5.71385	8.118	5.6566	0.8068
9.170E-06	40000.0	5368.5	6.00039	7.644	5.9471	0.7982
7.596E-06	50000.0	6398.8	6.22273	7.293	6.1724	0.7899
6.513E-06	60000.0	7384.0	6.40445	7.016	6.3565	0.7823
5.719E-06	70000.0	8332.9	6.55812	6.789	6.5121	0.7752
5.110E-06	80000.0	9251.7	6.69125	6.597	6.6470	0.7687
4.333E-06	100000.0	11015.4	6.91378	6.286	6.8722	0.7570

TABLE XI. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=2.000E-02 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	49.3	0.45668	18.182	0.4339	0.1425
7.372E-03	200.0	63.6	0.74127	17.633	0.7064	0.2245
3.460E-03	300.0	90.9	1.14256	16.862	1.0934	0.3314
2.023E-03	400.0	117.1	1.42742	16.321	1.3699	0.4011
1.334E-03	500.0	142.5	1.64847	15.904	1.5854	0.4517
9.779E-04	600.0	167.3	1.82920	15.581	1.7620	0.4913
7.519E-04	700.0	191.6	1.98204	15.310	1.9117	0.5233
5.988E-04	800.0	215.5	2.11447	15.076	2.0417	0.5500
4.898E-04	900.0	239.0	2.23129	14.871	2.1566	0.5726
4.093E-04	1000.0	262.1	2.33581	14.687	2.2595	0.5922
3.521E-04	1100.0	284.1	2.43018	14.480	2.3530	0.6076
3.069E-04	1200.0	305.7	2.51635	14.292	2.4385	0.6212
2.705E-04	1300.0	327.0	2.59563	14.121	2.5172	0.6332
2.406E-04	1400.0	348.1	2.66905	13.963	2.5902	0.6440
1.949E-04	1600.0	389.5	2.80137	13.681	2.7219	0.6626
1.618E-04	1800.0	430.0	2.91812	13.434	2.8383	0.6780
1.370E-04	2000.0	469.7	3.02257	13.216	2.9425	0.6910
1.042E-04	2500.0	568.2	3.24406	12.805	3.1634	0.7190
8.824E-05	3000.0	665.5	3.42522	12.508	3.3439	0.7418
7.670E-05	3500.0	760.6	3.57842	12.261	3.4968	0.7599
6.793E-05	4000.0	853.9	3.71116	12.050	3.6294	0.7747
6.104E-05	4500.0	945.5	3.82826	11.866	3.7465	0.7872
5.546E-05	5000.0	1035.7	3.93303	11.703	3.8513	0.7977
4.699E-05	6000.0	1212.5	4.11436	11.424	4.0328	0.8149
4.084E-05	7000.0	1385.1	4.26770	11.193	4.1865	0.8284
3.617E-05	8000.0	1554.3	4.40055	10.995	4.3198	0.8393
2.953E-05	10000.0	1884.1	4.62261	10.670	4.5427	0.8555
2.098E-05	15000.0	2604.9	5.02549	9.852	4.9514	0.8599
1.646E-05	20000.0	3276.7	5.31156	9.304	5.2417	0.8588
1.169E-05	30000.0	4524.7	5.71503	8.577	5.6511	0.8523
9.170E-06	40000.0	5686.4	6.00147	8.091	5.9417	0.8447
7.596E-06	50000.0	6787.2	6.22374	7.730	6.1672	0.8372
6.513E-06	60000.0	7841.5	6.40540	7.446	6.3514	0.8301
5.719E-06	70000.0	8858.5	6.55902	7.212	6.5071	0.8235
5.110E-06	80000.0	9844.4	6.69213	7.015	6.6420	0.8173
4.233E-06	100000.0	11740.2	6.91460	6.696	6.8674	0.8062

TABLE XI. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=1.000E-09 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	50.3	0.45884	18.553	0.4350	0.1460
7.372E-03	200.0	65.0	0.74337	18.007	0.7070	0.2298
3.460E-03	300.0	93.1	1.14458	17.241	1.0932	0.3392
2.023E-03	400.0	120.0	1.42940	16.703	1.3691	0.4108
1.334E-03	500.0	146.1	1.65040	16.288	1.5842	0.4629
9.779E-04	600.0	171.7	1.83111	15.968	1.7605	0.5037
7.519E-04	700.0	196.7	1.98392	15.698	1.9099	0.5368
5.988E-04	800.0	221.3	2.11632	15.466	2.0397	0.5643
4.898E-04	900.0	245.6	2.23313	15.261	2.1544	0.5878
4.093E-04	1000.0	269.4	2.33763	15.079	2.2571	0.6082
3.521E-04	1100.0	292.1	2.43197	14.872	2.3505	0.6242
3.069E-04	1200.0	314.5	2.51811	14.684	2.4259	0.6383
2.705E-04	1300.0	336.5	2.59737	14.512	2.5145	0.6509
2.406E-04	1400.0	358.3	2.67077	14.354	2.5874	0.6621
1.949E-04	1600.0	401.0	2.80305	14.071	2.7189	0.6815
1.618E-04	1800.0	443.0	2.91977	13.825	2.8352	0.6977
1.370E-04	2000.0	484.1	3.02420	13.607	2.9393	0.7115
1.042E-04	2500.0	586.1	3.24563	13.193	3.1600	0.7408
8.824E-05	3000.0	686.8	3.42673	12.894	3.3403	0.7647
7.670E-05	3500.0	785.2	3.57990	12.645	3.4931	0.7836
6.793E-05	4000.0	881.8	3.71260	12.431	3.6256	0.7992
6.104E-05	4500.0	976.7	3.82968	12.246	3.7425	0.8123
5.546E-05	5000.0	1070.2	3.93442	12.081	3.8473	0.8235
4.699E-05	6000.0	1253.5	4.11571	11.801	4.0287	0.8417
4.084E-05	7000.0	1432.7	4.26901	11.567	4.1823	0.8560
3.617E-05	8000.0	1608.4	4.40184	11.367	4.3155	0.8676
2.953E-05	10000.0	1951.0	4.62385	11.040	4.5383	0.8854
2.098E-05	15000.0	2700.7	5.02659	10.207	4.9470	0.8907
1.646E-05	20000.0	3400.3	5.31256	9.649	5.2374	0.8904
1.169E-05	30000.0	4702.1	5.71592	8.908	5.6470	0.8851
9.170E-06	40000.0	5915.5	6.00228	8.412	5.9377	0.8781
7.596E-06	50000.0	7066.8	6.22450	8.045	6.1632	0.8711
6.513E-06	60000.0	8170.6	6.40612	7.755	6.3475	0.8644
5.719E-06	70000.0	9236.2	6.55971	7.517	6.5033	0.8581
5.110E-06	80000.0	10270.1	6.69278	7.315	6.6383	0.8522
4.233E-06	100000.0	12260.0	6.91521	6.990	6.8638	0.8415

TABLE XI. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=5.000E-10 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	51.4	0.46098	18.915	0.4361	0.1494
7.372E-03	200.0	66.4	0.74546	18.371	0.7075	0.2349
3.460E-03	300.0	95.2	1.14660	17.609	1.0929	0.3469
2.023E-03	400.0	122.9	1.43137	17.074	1.3683	0.4203
1.334E-03	500.0	149.6	1.65233	16.662	1.5830	0.4738
9.779E-04	600.0	175.9	1.83300	16.343	1.7589	0.5158
7.519E-04	700.0	201.7	1.98579	16.075	1.9082	0.5499
5.988E-04	800.0	227.0	2.11817	15.844	2.0377	0.5783
4.898E-04	900.0	252.0	2.23496	15.641	2.1522	0.6026
4.093E-04	1000.0	276.6	2.33944	15.460	2.2548	0.6236
3.521E-04	1100.0	299.9	2.43375	15.252	2.3480	0.6402
3.069E-04	1200.0	323.0	2.51987	15.063	2.4333	0.6549
2.705E-04	1300.0	345.7	2.59911	14.891	2.5118	0.6679
2.406E-04	1400.0	368.1	2.67249	14.733	2.5846	0.6796
1.949E-04	1600.0	412.3	2.80473	14.450	2.7160	0.6999
1.618E-04	1800.0	455.6	2.92142	14.203	2.8321	0.7168
1.370E-04	2000.0	498.1	3.02582	13.984	2.9361	0.7312
1.042E-04	2500.0	603.4	3.24718	13.569	3.1565	0.7619
8.824E-05	3000.0	707.3	3.42825	13.267	3.3368	0.7867
7.670E-05	3500.0	809.0	3.58137	13.015	3.4894	0.8066
6.793E-05	4000.0	908.8	3.71404	12.800	3.6217	0.8229
6.104E-05	4500.0	1006.9	3.83109	12.613	3.7386	0.8366
5.546E-05	5000.0	1103.6	3.93581	12.447	3.8433	0.8483
4.699E-05	6000.0	1293.3	4.11705	12.164	4.0246	0.8675
4.084E-05	7000.0	1478.7	4.27032	11.928	4.1781	0.8826
3.617E-05	8000.0	1660.6	4.40312	11.727	4.3112	0.8949
2.953E-05	10000.0	2015.6	4.62508	11.396	4.5339	0.9139
2.098E-05	15000.0	2793.2	5.02768	10.548	4.9427	0.9204
1.646E-05	20000.0	3519.6	5.31357	9.981	5.2332	0.9209
1.169E-05	30000.0	4872.9	5.71680	9.226	5.6428	0.9166
9.170E-06	40000.0	6136.1	6.00309	8.721	5.9337	0.9102
7.596E-06	50000.0	7335.8	6.22526	8.347	6.1593	0.9037
6.513E-06	60000.0	8486.9	6.40683	8.051	6.3437	0.8973
5.719E-06	70000.0	9599.1	6.56040	7.808	6.4996	0.8913
5.110E-06	80000.0	10678.8	6.69344	7.603	6.6346	0.8856
4.232E-06	100000.0	12758.7	6.91583	7.271	6.8602	0.8753

TABLE XI. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 0.667 METERS/SEC

E STABILITY CONDITION WITH INVERSION LID AT 80.8 METERS

RHO ZERO = 100. CHI/Q(MAX) =2.651E-02 AT 100.0 METERS DOWNWIND

CHI/Q=2.000E-10 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
1.254E-02	150.0	52.8	0.46380	19.380	0.4375	0.1539
7.372E-03	200.0	68.2	0.74821	18.839	0.7081	0.2416
3.460E-03	300.0	97.9	1.14926	18.082	1.0925	0.3567
2.023E-03	400.0	126.5	1.43396	17.550	1.3672	0.4324
1.334E-03	500.0	154.2	1.65487	17.141	1.5814	0.4877
9.779E-04	600.0	181.4	1.83550	16.824	1.7569	0.5312
7.519E-04	700.0	208.1	1.98826	16.557	1.9058	0.5666
5.988E-04	800.0	234.4	2.12061	16.327	2.0351	0.5962
4.898E-04	900.0	260.2	2.23736	16.126	2.1493	0.6214
4.093E-04	1000.0	285.7	2.34182	15.946	2.2517	0.6434
3.521E-04	1100.0	310.0	2.43610	15.737	2.3448	0.6607
3.069E-04	1200.0	333.9	2.52219	15.548	2.4299	0.6761
2.705E-04	1300.0	357.5	2.60140	15.376	2.5083	0.6898
2.406E-04	1400.0	380.8	2.67475	15.217	2.5810	0.7020
1.949E-04	1600.0	426.7	2.80694	14.933	2.7121	0.7233
1.618E-04	1800.0	471.7	2.92359	14.686	2.8281	0.7412
1.370E-04	2000.0	516.0	3.02795	14.466	2.9319	0.7564
1.042E-04	2500.0	625.6	3.24924	14.048	3.1521	0.7887
8.824E-05	3000.0	733.7	3.43024	13.743	3.3320	0.8149
7.670E-05	3500.0	839.5	3.58332	13.488	3.4845	0.8358
6.793E-05	4000.0	943.4	3.71594	13.270	3.6167	0.8530
6.104E-05	4500.0	1045.6	3.83295	13.081	3.7335	0.8675
5.546E-05	5000.0	1146.3	3.93764	12.913	3.8381	0.8799
4.699E-05	6000.0	1344.0	4.11882	12.626	4.0192	0.9003
4.084E-05	7000.0	1537.5	4.27205	12.388	4.1726	0.9165
3.617E-05	8000.0	1727.3	4.40481	12.184	4.3056	0.9296
2.953E-05	10000.0	2098.0	4.62671	11.849	4.5281	0.9500
2.098E-05	15000.0	2910.9	5.02912	10.982	4.9370	0.9581
1.646E-05	20000.0	3671.3	5.31489	10.402	5.2275	0.9596
1.169E-05	30000.0	5090.0	5.71797	9.630	5.6374	0.9565
9.170E-06	40000.0	6416.1	6.00417	9.113	5.9284	0.9509
7.596E-06	50000.0	7676.9	6.22626	8.729	6.1541	0.9449
6.513E-06	60000.0	8887.9	6.40778	8.426	6.3386	0.9389
5.719E-06	70000.0	10058.7	6.56130	8.177	6.4946	0.9332
5.110E-06	80000.0	11196.2	6.69431	7.967	6.6297	0.9278
4.233E-06	100000.0	13389.4	6.91664	7.626	6.8555	0.9179

TABLE XII.

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =1.075E-03 AT 100.0 METERS DOWNWIND

CHI/Q=1.000E-03 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
5.022E-04	150.0	0.0	0.40547	0.0	0.4055	0.0
2.926E-04	200.0	0.0	0.69315	0.0	0.6931	0.0
1.353E-04	300.0	0.0	1.09861	0.0	1.0986	0.0
7.826E-05	400.0	0.0	1.38629	0.0	1.3863	0.0
5.118E-05	500.0	0.0	1.60944	0.0	1.6094	0.0
3.618E-05	600.0	0.0	1.79176	0.0	1.7918	0.0
2.698E-05	700.0	0.0	1.94591	0.0	1.9459	0.0
2.093E-05	800.0	0.0	2.07944	0.0	2.0794	0.0
1.673E-05	900.0	0.0	2.19722	0.0	2.1972	0.0
1.369E-05	1000.0	0.0	2.30258	0.0	2.3026	0.0
1.155E-05	1100.0	0.0	2.39789	0.0	2.3979	0.0
9.888E-06	1200.0	0.0	2.48491	0.0	2.4849	0.0
8.571E-06	1300.0	0.0	2.56495	0.0	2.5649	0.0
7.509E-06	1400.0	0.0	2.63906	0.0	2.6391	0.0
5.917E-06	1600.0	0.0	2.77259	0.0	2.7726	0.0
4.795E-06	1800.0	0.0	2.89037	0.0	2.8904	0.0
3.973E-06	2000.0	0.0	2.99573	0.0	2.9957	0.0
2.699E-06	2500.0	0.0	3.21888	0.0	3.2189	0.0
1.967E-06	3000.0	0.0	3.40120	0.0	3.4012	0.0
1.506E-06	3500.0	0.0	3.55535	0.0	3.5553	0.0
1.195E-06	4000.0	0.0	3.68888	0.0	3.6889	0.0
9.740E-07	4500.0	0.0	3.80666	0.0	3.8067	0.0
8.113E-07	5000.0	0.0	3.91202	0.0	3.9120	0.0
5.915E-07	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.527E-07	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.592E-07	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.439E-07	10000.0	0.0	4.60517	0.0	4.6052	0.0
1.257E-07	15000.0	0.0	5.01064	0.0	5.0106	0.0
7.855E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
4.255E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
2.754E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
1.965E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.510E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.209E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.965E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.219E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XII. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =1.075E-03 AT 100.0 METERS DOWNWIND

CHI/Q=5.000E-04 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
5.022E-04	150.0	1.7	0.40553	0.635	0.4055	0.0045
2.926E-04	200.0	0.0	0.69315	0.0	0.6931	0.0
1.253E-04	300.0	0.0	1.09861	0.0	1.0986	0.0
7.826E-05	400.0	0.0	1.38629	0.0	1.3863	0.0
5.118E-05	500.0	0.0	1.60944	0.0	1.6094	0.0
3.618E-05	600.0	0.0	1.79176	0.0	1.7918	0.0
2.698E-05	700.0	0.0	1.94591	0.0	1.9459	0.0
2.093E-05	800.0	0.0	2.07944	0.0	2.0794	0.0
1.673E-05	900.0	0.0	2.19722	0.0	2.1972	0.0
1.369E-05	1000.0	0.0	2.30258	0.0	2.3026	0.0
1.155E-05	1100.0	0.0	2.39789	0.0	2.3979	0.0
9.888E-06	1200.0	0.0	2.48491	0.0	2.4849	0.0
8.571E-06	1300.0	0.0	2.56495	0.0	2.5649	0.0
7.509E-06	1400.0	0.0	2.63906	0.0	2.6391	0.0
5.917E-06	1600.0	0.0	2.77259	0.0	2.7726	0.0
4.795E-06	1800.0	0.0	2.89037	0.0	2.8904	0.0
3.973E-06	2000.0	0.0	2.99573	0.0	2.9957	0.0
2.699E-06	2500.0	0.0	3.21888	0.0	3.2189	0.0
1.967E-06	3000.0	0.0	3.40120	0.0	3.4012	0.0
1.506E-06	3500.0	0.0	3.55535	0.0	3.5553	0.0
1.195E-06	4000.0	0.0	3.68888	0.0	3.6889	0.0
9.740E-07	4500.0	0.0	3.80666	0.0	3.8067	0.0
8.113E-07	5000.0	0.0	3.91202	0.0	3.9120	0.0
5.915E-07	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.527E-07	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.592E-07	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.439E-07	10000.0	0.0	4.60517	0.0	4.6052	0.0
1.257E-07	15000.0	0.0	5.01064	0.0	5.0106	0.0
7.855E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
4.255E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
2.754E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
1.965E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.510E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.209E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.965E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.219E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XII. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =1.075E-03 AT 100.0 METERS DOWNWIND

CHI/Q=2.000E-04 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
5.022E-04	150.0	24.0	0.41812	9.096	0.4129	0.0661
2.926E-04	200.0	20.3	0.69829	5.806	0.6947	0.0706
1.353E-04	300.0	0.0	1.09861	0.0	1.0986	0.0
7.826E-05	400.0	0.0	1.38629	0.0	1.3863	0.0
5.118E-05	500.0	0.0	1.60944	0.0	1.6094	0.0
3.618E-05	600.0	0.0	1.79176	0.0	1.7918	0.0
2.698E-05	700.0	0.0	1.94591	0.0	1.9459	0.0
2.093E-05	800.0	0.0	2.07944	0.0	2.0794	0.0
1.673E-05	900.0	0.0	2.19722	0.0	2.1972	0.0
1.369E-05	1000.0	0.0	2.30258	0.0	2.3026	0.0
1.155E-05	1100.0	0.0	2.39789	0.0	2.3979	0.0
9.888E-06	1200.0	0.0	2.48491	0.0	2.4849	0.0
8.571E-06	1300.0	0.0	2.56495	0.0	2.5649	0.0
7.509E-06	1400.0	0.0	2.63906	0.0	2.6391	0.0
5.917E-06	1600.0	0.0	2.77259	0.0	2.7726	0.0
4.795E-06	1800.0	0.0	2.89037	0.0	2.8904	0.0
3.973E-06	2000.0	0.0	2.99573	0.0	2.9957	0.0
2.699E-06	2500.0	0.0	3.21888	0.0	3.2189	0.0
1.967E-06	3000.0	0.0	3.40120	0.0	3.4012	0.0
1.506E-06	3500.0	0.0	3.55535	0.0	3.5553	0.0
1.195E-06	4000.0	0.0	3.68888	0.0	3.6889	0.0
9.740E-07	4500.0	0.0	3.80666	0.0	3.8067	0.0
8.113E-07	5000.0	0.0	3.91202	0.0	3.9120	0.0
5.915E-07	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.527E-07	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.592E-07	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.439E-07	10000.0	0.0	4.60517	0.0	4.6052	0.0
1.257E-07	15000.0	0.0	5.01064	0.0	5.0106	0.0
7.855E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
4.255E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
2.754E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
1.965E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.510E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.209E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.965E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.219E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

GROUND LEVEL RELEASE

TABLE XII. (Continued)

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =1.075E-03 AT 100.0 METERS DOWNWIND

CHI/Q=1.000E-04 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
5.022E-04	150.0	31.8	0.42744	11.968	0.4181	0.0886
2.926E-04	200.0	34.2	0.70753	9.694	0.6974	0.1191
1.353E-04	300.0	26.7	1.10256	5.092	1.0982	0.0979
7.826E-05	400.0	0.0	1.38629	0.0	1.3863	0.0
5.118E-05	500.0	0.0	1.60944	0.0	1.6094	0.0
3.618E-05	600.0	0.0	1.79176	0.0	1.7918	0.0
2.698E-05	700.0	0.0	1.94591	0.0	1.9459	0.0
2.083E-05	800.0	0.0	2.07944	0.0	2.0794	0.0
1.673E-05	900.0	0.0	2.19722	0.0	2.1972	0.0
1.369E-05	1000.0	0.0	2.30258	0.0	2.3026	0.0
1.155E-05	1100.0	0.0	2.39789	0.0	2.3979	0.0
9.888E-06	1200.0	0.0	2.48491	0.0	2.4849	0.0
8.571E-06	1300.0	0.0	2.56495	0.0	2.5649	0.0
7.509E-06	1400.0	0.0	2.63906	0.0	2.6391	0.0
5.917E-06	1600.0	0.0	2.77259	0.0	2.7726	0.0
4.795E-06	1800.0	0.0	2.89037	0.0	2.8904	0.0
3.973E-06	2000.0	0.0	2.99573	0.0	2.9957	0.0
2.699E-06	2500.0	0.0	3.21888	0.0	3.2189	0.0
1.967E-06	3000.0	0.0	3.40120	0.0	3.4012	0.0
1.506E-06	3500.0	0.0	3.55535	0.0	3.5553	0.0
1.195E-06	4000.0	0.0	3.68888	0.0	3.6889	0.0
9.740E-07	4500.0	0.0	3.80666	0.0	3.8067	0.0
8.113E-07	5000.0	0.0	3.91202	0.0	3.9120	0.0
5.915E-07	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.527E-07	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.592E-07	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.439E-07	10000.0	0.0	4.60517	0.0	4.6052	0.0
1.257E-07	15000.0	0.0	5.01064	0.0	5.0106	0.0
7.855E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
4.255E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
2.754E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
1.965E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.510E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.209E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.965E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.219E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XII. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.C SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100.' CHI/Q(MAX) =1.C75E-03 AT 1CC.0 METERS DOWNWIND

CHI/Q=5.000E-05 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
5.022E-04	150.0	38.0	0.43659	14.221	0.4232	0.1073
2.926E-04	200.0	43.8	0.71660	12.360	0.7000	0.1534
1.353E-04	300.0	48.5	1.11152	9.186	1.0973	0.1774
7.826E-05	400.0	42.9	1.39201	6.118	1.3941	0.1484
5.118E-05	500.0	12.1	1.60973	1.391	1.6093	0.0391
3.618E-05	600.0	0.0	1.79176	0.0	1.7918	0.0
2.698E-05	700.0	0.0	1.94591	0.0	1.9459	0.0
2.093E-05	800.0	0.0	2.07944	0.0	2.0794	0.0
1.673E-05	900.0	0.0	2.19722	0.0	2.1972	0.0
1.369E-05	1000.0	0.0	2.30258	0.0	2.3026	0.0
1.155E-05	1100.0	0.0	2.39789	0.0	2.3979	0.0
9.888E-06	1200.0	0.0	2.48491	0.0	2.4849	0.0
8.571E-06	1300.0	0.0	2.56495	0.0	2.5649	0.0
7.509E-06	1400.0	0.0	2.63906	0.0	2.6391	0.0
5.917E-06	1600.0	0.0	2.77259	0.0	2.7726	0.0
4.795E-06	1800.0	0.0	2.89037	0.0	2.8904	0.0
3.973E-06	2000.0	0.0	2.99573	0.0	2.9957	0.0
2.699E-06	2500.0	0.0	3.21888	0.0	3.2189	0.0
1.967E-06	3000.0	0.0	3.40120	0.0	3.4012	0.0
1.506E-06	3500.0	0.0	3.55535	0.0	3.5553	0.0
1.195E-06	4000.0	0.0	3.68888	0.0	3.6889	0.0
9.740E-07	4500.0	0.0	3.80666	0.0	3.8067	0.0
8.113E-07	5000.0	0.0	3.91202	0.0	3.9120	0.0
5.915E-07	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.527E-07	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.592E-07	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.439E-07	10000.0	0.0	4.60517	0.0	4.6052	0.0
1.257E-07	15000.0	0.0	5.01064	0.0	5.0106	0.0
7.855E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
4.255E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
2.754E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
1.965E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.510E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.209E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.965E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.219E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XII. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =1.075E-03 AT 100.0 METERS DOWNWIND

CHI/Q=2.000E-05 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
5.022E-04	150.0	44.9	0.44843	16.676	0.4296	0.1287
2.926E-04	200.0	54.0	0.72834	15.112	0.7032	0.1899
1.353E-04	300.0	67.2	1.12311	12.632	1.0959	0.2456
7.826E-05	400.0	74.8	1.40349	10.596	1.3796	0.2581
5.118E-05	500.0	76.9	1.62113	8.744	1.6023	0.2465
3.618E-05	600.0	72.7	1.79906	6.913	1.7860	0.2165
2.698E-05	700.0	59.9	1.94956	4.894	1.9425	0.1663
2.093E-05	800.0	26.5	2.07999	1.901	2.0788	0.0690
1.673E-05	900.0	0.0	2.19722	0.0	2.1972	0.0
1.369E-05	1000.0	0.0	2.30258	0.0	2.3026	0.0
1.155E-05	1100.0	0.0	2.39789	0.0	2.3979	0.0
9.888E-06	1200.0	0.0	2.48491	0.0	2.4849	0.0
8.571E-06	1300.0	0.0	2.56495	0.0	2.5649	0.0
7.509E-06	1400.0	0.0	2.63906	0.0	2.6391	0.0
5.917E-06	1600.0	0.0	2.77259	0.0	2.7726	0.0
4.795E-06	1800.0	0.0	2.89037	0.0	2.8904	0.0
3.973E-06	2000.0	0.0	2.99573	0.0	2.9957	0.0
2.699E-06	2500.0	0.0	3.21888	0.0	3.2189	0.0
1.967E-06	3000.0	0.0	3.40120	0.0	3.4012	0.0
1.506E-06	3500.0	0.0	3.55535	0.0	3.5553	0.0
1.195E-06	4000.0	0.0	3.68888	0.0	3.6889	0.0
9.740E-07	4500.0	0.0	3.80666	0.0	3.8067	0.0
8.113E-07	5000.0	0.0	3.91202	0.0	3.9120	0.0
5.915E-07	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.527E-07	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.592E-07	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.439E-07	10000.0	0.0	4.60517	0.0	4.6052	0.0
1.257E-07	15000.0	0.0	5.01064	0.0	5.0106	0.0
7.855E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
4.255E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
2.754E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
1.965E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.510E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.209E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.965E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.219E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XII. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =1.075E-03 AT 100.0 METERS DOWNWIND

CHI/Q=1.000E-05 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
5.022E-04	150.0	49.5	0.45721	18.274	0.4342	0.1434
2.926E-04	200.0	60.6	0.73704	16.853	0.7054	0.2137
1.353E-04	300.0	78.5	1.13171	14.660	1.0949	0.2864
7.826E-05	400.0	91.9	1.41201	12.938	1.3762	0.3161
5.118E-05	500.0	101.4	1.62958	11.462	1.5971	0.3238
3.618E-05	600.0	107.1	1.80745	10.125	1.7793	0.3177
2.698E-05	700.0	109.1	1.95791	8.860	1.9345	0.3016
2.093E-05	800.0	107.0	2.08830	7.616	2.0699	0.2768
1.673E-05	900.0	100.0	2.20335	6.337	2.1899	0.2432
1.369E-05	1000.0	86.4	2.30630	4.938	2.2977	0.1985
1.155E-05	1100.0	63.7	2.39957	3.317	2.3956	0.1388
9.888E-06	1200.0	0.0	2.48491	0.0	2.4849	0.0
8.571E-06	1300.0	0.0	2.56495	0.0	2.5649	0.0
7.509E-06	1400.0	0.0	2.63906	0.0	2.6391	0.0
5.917E-06	1600.0	0.0	2.77259	0.0	2.7726	0.0
4.795E-06	1800.0	0.0	2.89037	0.0	2.8904	0.0
3.973E-06	2000.0	0.0	2.99573	0.0	2.9957	0.0
2.699E-06	2500.0	0.0	3.21888	0.0	3.2189	0.0
1.967E-06	3000.0	0.0	3.40120	0.0	3.4012	0.0
1.506E-06	3500.0	0.0	3.55535	0.0	3.5553	0.0
1.195E-06	4000.0	0.0	3.68888	0.0	3.6889	0.0
9.740E-07	4500.0	0.0	3.80666	0.0	3.8067	0.0
8.113E-07	5000.0	0.0	3.91202	0.0	3.9120	0.0
5.915E-07	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.527E-07	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.592E-07	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.439E-07	10000.0	0.0	4.60517	0.0	4.6052	0.0
1.257E-07	15000.0	0.0	5.01064	0.0	5.0106	0.0
7.855E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
4.255E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
2.754E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
1.965E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.510E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.209E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.965E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.219E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XII. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =1.075E-03 AT 100.0 METERS DOWNWIND

CHI/Q=5.00 E-06 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
5.022E-04	150.0	53.7	0.46584	19.709	0.4385	0.1571
2.926E-04	200.0	66.5	0.74560	18.396	0.7075	0.2353
1.253E-04	300.0	88.3	1.14016	16.403	1.0938	0.3220
7.826E-05	400.0	106.2	1.42038	14.875	1.3728	0.3646
5.118E-05	500.0	121.0	1.63789	13.604	1.5919	0.3852
3.618E-05	600.0	132.9	1.81571	12.491	1.7727	0.3927
2.698E-05	700.0	142.2	1.96613	11.483	1.9269	0.3914
2.093E-05	800.0	148.9	2.09648	10.546	2.0611	0.3837
1.673E-05	900.0	153.1	2.21149	9.656	2.1802	0.3709
1.369E-05	1000.0	154.7	2.31441	8.794	2.2872	0.3538
1.155E-05	1100.0	153.7	2.40756	7.954	2.3844	0.3332
9.888E-06	1200.0	150.0	2.49266	7.127	2.4734	0.3093
8.571E-06	1300.0	143.4	2.57100	6.294	2.5555	0.2819
7.509E-06	1400.0	133.2	2.64256	5.434	2.6317	0.2503
5.917E-06	1600.0	96.7	2.77441	3.457	2.7694	0.1673
4.795E-06	1800.0	0.0	2.89037	0.0	2.8904	0.0
3.973E-06	2000.0	0.0	2.99573	0.0	2.9957	0.0
2.699E-06	2500.0	0.0	3.21888	0.0	3.2189	0.0
1.967E-06	3000.0	0.0	3.40120	0.0	3.4012	0.0
1.506E-06	3500.0	0.0	3.55535	0.0	3.5553	0.0
1.195E-06	4000.0	0.0	3.68888	0.0	3.6889	0.0
9.740E-07	4500.0	0.0	3.80666	0.0	3.8067	0.0
8.112E-07	5000.0	0.0	3.91202	0.0	3.9120	0.0
5.915E-07	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.527E-07	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.592E-07	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.439E-07	10000.0	0.0	4.60517	0.0	4.6052	0.0
1.257E-07	15000.0	0.0	5.01064	0.0	5.0106	0.0
7.855E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
4.255E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
2.754E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
1.965E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.510E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.209E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.965E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.219E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XII. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =1.075E-03 AT 100.0 METERS DOWNWIND

CHI/Q=2.000E-06 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
5.022E-04	150.0	58.8	0.47701	21.417	0.4441	0.1742
2.926E-04	200.0	73.6	0.75669	20.209	0.7101	0.2614
1.353E-04	300.0	99.8	1.15112	18.405	1.0922	0.3634
7.826E-05	400.0	122.7	1.43124	17.050	1.3683	0.4197
5.118E-05	500.0	142.9	1.64867	15.945	1.5852	0.4529
3.618E-05	600.0	160.8	1.82643	15.000	1.7642	0.4727
2.698E-05	700.0	176.7	1.97679	14.165	1.9167	0.4837
2.093E-05	800.0	190.7	2.10708	13.410	2.0496	0.4887
1.673E-05	900.0	203.1	2.22205	12.715	2.1676	0.4891
1.369E-05	1000.0	213.8	2.32493	12.068	2.2736	0.4861
1.155E-05	1100.0	222.4	2.41793	11.432	2.3700	0.4793
9.888E-06	1200.0	229.7	2.50290	10.837	2.4583	0.4706
8.571E-06	1300.0	235.6	2.58111	10.273	2.5397	0.4603
7.509E-06	1400.0	240.2	2.65356	9.735	2.6154	0.4487
5.017E-06	1600.0	245.3	2.78421	8.717	2.7520	0.4220
4.795E-06	1800.0	245.0	2.89955	7.750	2.8731	0.3910
3.973E-06	2000.0	238.7	3.00280	6.805	2.9816	0.3558
2.699E-06	2500.0	192.8	3.22184	4.410	3.2123	0.2478
1.967E-06	3000.0	0.0	3.40120	0.0	3.4012	0.0
1.506E-06	3500.0	0.0	3.55535	0.0	3.5553	0.0
1.195E-06	4000.0	0.0	3.68988	0.0	3.6889	0.0
9.740E-07	4500.0	0.0	3.80666	0.0	3.8067	0.0
8.113E-07	5000.0	0.0	3.91202	0.0	3.9120	0.0
5.915E-07	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.527E-07	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.592E-07	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.439E-07	10000.0	0.0	4.60517	0.0	4.6052	0.0
1.257E-07	15000.0	0.0	5.01064	0.0	5.0106	0.0
7.855E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
4.255E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
2.754E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
1.965E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.510E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.209E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.965E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.219E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XII. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =1.075E-03 AT 100.0 METERS DOWNWIND

CHI/Q=1.000E-06 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
5.022E-04	150.0	62.4	0.48531	22.592	0.4481	0.1864
2.926E-04	200.0	78.6	0.76491	21.448	0.7119	0.2797
1.353E-04	300.0	107.7	1.15925	19.752	1.0910	0.3918
7.826E-05	400.0	133.8	1.43930	18.491	1.3650	0.4565
5.118E-05	500.0	157.4	1.65668	17.473	1.5802	0.4974
3.618E-05	600.0	179.0	1.83438	16.610	1.7578	0.5244
2.698E-05	700.0	198.8	1.98470	15.856	1.9092	0.5422
2.093E-05	800.0	217.1	2.11496	15.181	2.0412	0.5538
1.673E-05	900.0	233.9	2.22990	14.567	2.1582	0.5608
1.369E-05	1000.0	249.4	2.33274	14.001	2.2634	0.5644
1.155E-05	1100.0	262.8	2.42564	13.435	2.3593	0.5636
9.888E-06	1200.0	275.0	2.51051	12.909	2.4471	0.5609
8.571E-06	1300.0	286.2	2.58863	12.419	2.5281	0.5567
7.509E-06	1400.0	296.5	2.66099	11.958	2.6033	0.5513
5.917E-06	1600.0	314.1	2.79149	11.105	2.7392	0.5377
4.795E-06	1800.0	328.0	2.90670	10.326	2.8596	0.5210
3.973E-06	2000.0	338.4	3.00984	9.602	2.9677	0.5021
2.699E-06	2500.0	351.0	3.22864	7.992	3.1973	0.4489
1.967E-06	3000.0	341.6	3.40764	6.496	3.3858	0.3855
1.506E-06	3500.0	305.3	3.55914	4.986	3.5457	0.3092
1.195E-06	4000.0	227.0	3.69049	3.248	3.6846	0.2091
9.740E-07	4500.0	0.0	3.80666	0.0	3.8067	0.0
8.113E-07	5000.0	0.0	3.91202	0.0	3.9120	0.0
5.915E-07	6000.0	0.0	4.09434	0.0	4.0943	0.0
4.527E-07	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.592E-07	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.439E-07	10000.0	0.0	4.60517	0.0	4.6052	0.0
1.257E-07	15000.0	0.0	5.01064	0.0	5.0106	0.0
7.855E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
4.255E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
2.754E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
1.965E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.510E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.209E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.965E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.219E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XII. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT C.C SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =1.075E-03 AT 100.0 METERS DOWNWIND

CHI/Q=5.000E-07 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
5.022E-04	150.0	65.8	0.49347	23.686	0.4519	0.1982
2.926E-04	200.0	83.2	0.77301	22.595	0.7137	0.2970
1.353E-04	300.0	115.1	1.16725	20.987	1.0898	0.4181
7.826E-05	400.0	144.0	1.44723	19.800	1.3617	0.4902
5.118E-05	500.0	170.7	1.66455	18.849	1.5753	0.5378
3.618E-05	600.0	195.5	1.84221	18.048	1.7516	0.5707
2.698E-05	700.0	218.7	1.99249	17.352	1.9018	0.5943
2.093E-05	800.0	240.5	2.12271	16.735	2.0328	0.6112
1.673E-05	900.0	261.1	2.23762	16.176	2.1490	0.6234
1.369E-05	1000.0	280.4	2.34044	15.666	2.2535	0.6320
1.155E-05	1100.0	297.7	2.43323	15.142	2.3488	0.6356
9.888E-06	1200.0	313.9	2.51800	14.659	2.4360	0.6372
8.571E-06	1300.0	329.2	2.59603	14.212	2.5166	0.6373
7.509E-06	1400.0	343.7	2.66832	13.794	2.5914	0.6362
5.917E-06	1600.0	370.3	2.79867	13.030	2.7266	0.6310
4.795E-06	1800.0	393.9	2.91375	12.343	2.8464	0.6228
3.973E-06	2000.0	414.7	3.01678	11.715	2.9539	0.6125
2.699E-06	2500.0	457.4	3.23534	10.369	3.1825	0.5823
1.967E-06	3000.0	486.0	3.41415	9.203	3.3702	0.5460
1.506E-06	3500.0	501.1	3.56549	8.148	3.5295	0.5053
1.195E-06	4000.0	502.4	3.69671	7.159	3.6679	0.4607
9.740E-07	4500.0	488.9	3.81253	6.200	3.7902	0.4117
8.113E-07	5000.0	458.1	3.91620	5.234	3.8999	0.3573
5.915E-07	6000.0	318.1	4.09575	3.035	4.0900	0.2168
4.527E-07	7000.0	0.0	4.24850	0.0	4.2485	0.0
3.592E-07	8000.0	0.0	4.38203	0.0	4.3820	0.0
2.439E-07	10000.0	0.0	4.60517	0.0	4.6052	0.0
1.257E-07	15000.0	0.0	5.01064	0.0	5.0106	0.0
7.855E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
4.255E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
2.754E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
1.965E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.510E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.209E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.965E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.219E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XII. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =1.075E-03 AT 100.0 METERS DOWNWIND

CHI/Q=2.000E-07 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
5.022E-04	150.0	70.0	0.50405	25.026	0.4567	0.2132
2.926E-04	200.0	89.0	0.78351	23.993	0.7158	0.3186
1.353E-04	300.0	124.1	1.17764	22.479	1.0882	0.4503
7.826E-05	400.0	156.5	1.45753	21.371	1.3573	0.5311
5.118E-05	500.0	186.8	1.67478	20.488	1.5688	0.5862
3.618E-05	600.0	215.4	1.85238	19.749	1.7434	0.6259
2.698E-05	700.0	242.6	2.00260	19.112	1.8922	0.6557
2.093E-05	800.0	268.4	2.13278	18.549	2.0220	0.6785
1.673E-05	900.0	293.2	2.24765	18.043	2.1371	0.6962
1.369E-05	1000.0	316.9	2.35043	17.583	2.2406	0.7100
1.155E-05	1100.0	338.3	2.44309	17.096	2.3351	0.7182
9.888E-06	1200.0	358.9	2.52774	16.650	2.4218	0.7242
8.571E-06	1300.0	378.6	2.60566	16.238	2.5017	0.7286
7.509E-06	1400.0	397.6	2.67784	15.855	2.5760	0.7316
5.917E-06	1600.0	433.5	2.80801	15.160	2.7103	0.7343
4.795E-06	1800.0	466.9	2.92293	14.542	2.8293	0.7339
3.973E-06	2000.0	498.0	3.02581	13.983	2.9361	0.7312
2.699E-06	2500.0	568.3	3.24407	12.807	3.1634	0.7191
1.967E-06	3000.0	627.9	3.42263	11.821	3.3500	0.7012
1.506E-06	3500.0	678.1	3.57377	10.964	3.5085	0.6797
1.195E-06	4000.0	719.7	3.70481	10.200	3.6463	0.6560
9.740E-07	4500.0	753.3	3.82048	9.503	3.7681	0.6307
8.113E-07	5000.0	779.1	3.92402	8.857	3.8772	0.6042
5.915E-07	6000.0	808.1	4.10333	7.671	4.0666	0.5477
4.527E-07	7000.0	806.1	4.25508	6.569	4.2271	0.4868
3.592E-07	8000.0	769.8	4.38663	5.496	4.3665	0.4202
2.439E-07	10000.0	548.3	4.60667	3.138	4.5998	0.2522
1.257E-07	15000.0	0.0	5.01064	0.0	5.0106	0.0
7.855E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
4.255E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
2.754E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
1.965E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.510E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.209E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.965E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.219E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XII. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =1.075E-03 AT 100.0 METERS DOWNWIND

CHI/Q=1.000E-07 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
5.022E-04	150.0	73.1	0.51191	25.970	0.4602	0.2242
2.926E-04	200.0	93.2	0.79131	24.974	0.7173	0.3341
1.353E-04	300.0	130.6	1.18535	23.521	1.0869	0.4731
7.826E-05	400.0	165.4	1.46518	22.460	1.3540	0.5598
5.118E-05	500.0	198.2	1.68238	21.619	1.5640	0.6198
3.618E-05	600.0	229.3	1.85993	20.917	1.7374	0.6640
2.698E-05	700.0	259.1	2.01012	20.314	1.8851	0.6978
2.093E-05	800.0	287.7	2.14027	19.782	2.0140	0.7244
1.673E-05	900.0	315.3	2.25510	19.307	2.1233	0.7456
1.369E-05	1000.0	341.9	2.35786	18.875	2.2311	0.7628
1.155E-05	1100.0	366.1	2.45042	18.408	2.3250	0.7738
9.888E-06	1200.0	389.5	2.53498	17.980	2.4112	0.7825
8.571E-06	1300.0	412.1	2.61282	17.587	2.4907	0.7895
7.509E-06	1400.0	433.9	2.68493	17.221	2.5646	0.7949
5.917E-06	1600.0	475.8	2.81496	16.561	2.6982	0.8024
4.795E-06	1800.0	515.3	2.92976	15.976	2.8166	0.8064
3.973E-06	2000.0	552.8	3.03254	15.450	2.9230	0.8079
2.699E-06	2500.0	639.5	3.25057	14.349	3.1492	0.8056
1.567E-06	3000.0	716.8	3.42896	13.438	3.3351	0.7969
1.506E-06	3500.0	785.9	3.57994	12.656	3.4930	0.7843
1.195E-06	4000.0	847.8	3.71085	11.967	3.6302	0.7695
9.740E-07	4500.0	903.2	3.82641	11.349	3.7516	0.7530
8.113E-07	5000.0	952.6	3.92985	10.787	3.8604	0.7355
5.915E-07	6000.0	1034.7	4.10899	9.784	4.0492	0.6983
4.527E-07	7000.0	1096.0	4.26060	8.898	4.2093	0.6590
3.592E-07	8000.0	1137.6	4.39204	8.093	4.3483	0.6183
2.439E-07	10000.0	1161.8	4.61187	6.627	4.5811	0.5322
1.257E-07	15000.0	834.2	5.01218	3.183	5.0044	0.2783
7.855E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
4.255E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
2.754E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
1.965E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.510E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.209E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.965E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.219E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XII. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT C.C SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100 CHI/Q(MAX) =1.C75E-03 AT 1CC.0 METERS DOWNWIND

CHI/Q=5.000E-08 CCCRDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC PCLAR RHC	THETA	MCDIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
5.022E-04	150.0	76.0	0.51965	26.862	0.4636	0.2348
2.926E-04	200.0	97.1	0.79899	25.899	0.7187	0.349C
1.353E-04	300.C	136.7	1.19295	24.498	1.0856	0.4947
7.826E-05	400.0	173.7	1.47272	23.479	1.3508	0.5867
5.118E-05	500.0	208.9	1.68986	22.672	1.5593	0.6514
3.618E-05	600.0	242.4	1.86738	22.002	1.7314	0.6996
2.698E-05	700.0	274.7	2.01753	21.427	1.8781	0.737C
2.093E-05	800.0	305.8	2.14764	20.921	2.0061	0.7669
1.673E-05	900.0	336.0	2.26245	20.470	2.1196	0.7912
1.369E-05	1000.0	365.2	2.36518	20.061	2.2217	0.8113
1.155E-05	1100.0	391.9	2.45764	19.609	2.3151	0.8248
9.888E-06	1200.0	417.8	2.54212	19.196	2.4008	0.8359
8.571E-06	1300.0	443.C	2.61987	18.817	2.4799	0.845C
7.509E-06	1400.0	467.5	2.69191	18.465	2.5533	0.8526
5.917E-06	1600.0	514.6	2.82181	17.830	2.6863	0.864C
4.795E-06	1800.0	559.6	2.93650	17.269	2.8041	0.8717
3.973E-06	2000.0	602.6	3.03917	16.766	2.9100	0.8767
2.699E-06	2500.0	703.6	3.25699	15.718	3.1352	0.8823
1.967E-06	3000.0	795.8	3.43520	14.857	3.3204	0.8808
1.506E-06	3500.0	880.6	3.58604	14.123	3.4776	0.8750
1.195E-06	4000.0	959.C	3.71682	13.482	3.6144	0.8666
9.740E-07	4500.0	1031.6	3.83227	12.912	3.7354	0.8563
8.113E-07	5000.0	1099.0	3.93561	12.397	3.8439	0.8449
5.915E-07	6000.0	1219.8	4.11459	11.492	4.0321	0.8197
4.527E-07	7000.0	1323.8	4.266C7	10.709	4.1918	0.7927
3.592E-07	8000.0	1412.7	4.39738	10.014	4.3304	0.7647
2.439E-07	10000.0	1548.9	4.61702	8.805	4.5626	0.7067
1.257E-07	15000.0	1674.2	5.01683	6.369	4.9859	0.5565
7.855E-08	20000.0	1500.8	5.30112	4.291	5.2863	0.3967
4.255E-08	30000.0	0.0	5.7C378	0.0	5.7038	0.0
2.754E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
1.965E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.510E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.209E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.965E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.219E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XII. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =1.075E-03 AT 100.0 METERS DOWNWIND

CHI/Q=2.000E-08 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
5.022E-04	150.0	79.7	0.52970	27.972	0.4678	0.2485
2.926E-04	200.0	102.1	0.80897	27.047	0.7205	0.3679
1.353E-04	300.0	144.4	1.20282	25.705	1.0838	0.5217
7.826E-05	400.0	184.3	1.48251	24.732	1.3465	0.6203
5.118E-05	500.0	222.2	1.69959	23.965	1.5531	0.6903
3.618E-05	600.0	258.8	1.87705	23.329	1.7236	0.7433
2.698E-05	700.0	294.0	2.02715	22.784	1.8690	0.7850
2.093E-05	800.0	328.2	2.15723	22.307	1.9958	0.8188
1.673E-05	900.0	361.5	2.27200	21.882	2.1093	0.8468
1.369E-05	1000.0	393.9	2.37469	21.498	2.2095	0.8702
1.155E-05	1100.0	423.6	2.46703	21.061	2.3022	0.8866
9.889E-06	1200.0	452.6	2.55140	20.663	2.3873	0.9003
8.571E-06	1300.0	480.8	2.62906	20.297	2.4658	0.9120
7.509E-06	1400.0	508.4	2.70100	19.959	2.5388	0.9220
5.917E-06	1600.0	561.9	2.83073	19.349	2.6708	0.9379
4.795E-06	1800.0	613.2	2.94527	18.812	2.7879	0.9497
3.973E-06	2000.0	662.7	3.04781	18.331	2.8931	0.9586
2.699E-06	2500.0	780.2	3.26535	17.333	3.1171	0.9728
1.967E-06	3000.0	889.6	3.44333	16.516	3.3013	0.9789
1.506E-06	3500.0	992.1	3.59399	15.825	3.4578	0.9801
1.195E-06	4000.0	1088.7	3.72461	15.225	3.5939	0.9782
9.740E-07	4500.0	1180.1	3.83992	14.695	3.7143	0.9741
8.113E-07	5000.0	1266.9	3.94314	14.218	3.8223	0.9685
5.915E-07	6000.0	1428.2	4.12190	13.389	4.0099	0.9545
4.527E-07	7000.0	1575.2	4.27319	12.682	4.1689	0.9381
3.592E-07	8000.0	1709.7	4.40436	12.063	4.3071	0.9205
2.439E-07	10000.0	1945.8	4.62375	11.011	4.5386	0.8831
1.257E-07	15000.0	2364.0	5.02290	8.956	4.9617	0.7820
7.855E-08	20000.0	2611.6	5.30677	7.440	5.2621	0.6871
4.255E-08	30000.0	2749.2	5.70796	5.236	5.6841	0.5209
2.754E-08	40000.0	2291.7	5.99310	3.279	5.9833	0.3428
1.965E-08	50000.0	0.0	6.21461	0.0	6.2146	0.0
1.510E-08	60000.0	0.0	6.39693	0.0	6.3969	0.0
1.209E-08	70000.0	0.0	6.55108	0.0	6.5511	0.0
9.965E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.219E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XII. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =1.075E-03 AT 100.0 METERS DOWNWIND

CHI/Q=1.000E-09 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
5.022E-04	150.0	82.3	0.53717	28.765	0.4709	0.2585
2.926E-04	200.0	105.7	0.81639	27.865	0.7217	0.3816
1.353E-04	300.0	150.0	1.21016	26.562	1.0824	0.5411
7.826E-05	400.0	191.8	1.48979	25.620	1.3433	0.6442
5.118E-05	500.0	231.9	1.70682	24.878	1.5484	0.7180
3.618E-05	600.0	270.5	1.88424	24.264	1.7178	0.7743
2.698E-05	700.0	307.8	2.03431	23.739	1.8622	0.8185
2.093E-05	800.0	344.2	2.16436	23.279	1.9882	0.8554
1.673E-05	900.0	379.6	2.27910	22.870	2.0999	0.8858
1.369E-05	1000.0	414.2	2.38177	22.502	2.2004	0.9115
1.155E-05	1100.0	446.1	2.47402	22.074	2.2927	0.9298
9.888E-06	1200.0	477.2	2.55831	21.685	2.3773	0.9453
8.571E-06	1300.0	507.6	2.63589	21.327	2.4554	0.9587
7.509E-06	1400.0	537.3	2.70776	20.997	2.5280	0.9702
5.917E-06	1600.0	595.1	2.83737	20.402	2.6594	0.9891
4.795E-06	1800.0	650.8	2.95180	19.878	2.7759	1.0037
3.973E-06	2000.0	704.7	3.05425	19.410	2.8807	1.0150
2.699E-06	2500.0	833.5	3.27158	18.439	3.1036	1.0348
1.967E-06	3000.0	954.4	3.44940	17.648	3.2871	1.0457
1.506E-06	3500.0	1068.7	3.59992	16.979	3.4430	1.0513
1.195E-06	4000.0	1177.3	3.73042	16.401	3.5786	1.0533
9.740E-07	4500.0	1281.1	3.84562	15.891	3.6987	1.0529
8.113E-07	5000.0	1380.4	3.94875	15.434	3.8064	1.0509
5.915E-07	6000.0	1567.6	4.12736	14.642	3.9933	1.0433
4.527E-07	7000.0	1741.4	4.27852	13.970	4.1520	1.0329
3.592E-07	8000.0	1903.8	4.40957	13.386	4.2898	1.0209
2.439E-07	10000.0	2199.0	4.62878	12.402	4.5208	0.9941
1.757E-07	15000.0	2774.1	5.02745	10.478	4.9436	0.9143
7.855E-08	20000.0	3205.7	5.31100	9.106	5.2441	0.8405
4.255E-08	30000.0	3807.7	5.71177	7.233	5.6663	0.7192
2.754E-08	40000.0	4078.5	5.99664	5.822	5.9657	0.6083
1.965E-08	50000.0	4035.0	6.21785	4.614	6.1977	0.5001
1.510E-08	60000.0	3686.4	6.39881	3.516	6.3868	0.3924
1.209E-08	70000.0	2853.3	6.55191	2.334	6.5465	0.2668
9.965E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
7.219E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE XII. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =1.075E-03 AT 100.0 METERS DOWNWIND

CHI/Q=5.000E-09 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
5.022E-04	150.0	84.9	0.54453	29.521	0.4738	0.2683
2.926E-04	200.0	109.2	0.82370	28.644	0.7229	0.3949
1.353E-04	300.0	155.3	1.21739	27.377	1.0810	0.5598
7.826E-05	400.0	199.1	1.49696	26.461	1.3401	0.6670
5.118E-05	500.0	241.1	1.71395	25.742	1.5439	0.7444
3.618E-05	600.0	281.7	1.89133	25.147	1.7121	0.8037
2.698E-05	700.0	321.1	2.04137	24.639	1.8555	0.8510
2.093E-05	800.0	359.5	2.17139	24.195	1.9806	0.8899
1.673E-05	900.0	397.0	2.28610	23.801	2.0917	0.9226
1.369E-05	1000.0	433.7	2.38875	23.445	2.1915	0.9504
1.155E-05	1100.0	467.5	2.48092	23.026	2.2833	0.9704
9.888E-06	1200.0	500.6	2.56512	22.644	2.3674	0.9876
8.571E-06	1300.0	533.0	2.64263	22.293	2.4451	1.0024
7.509E-06	1400.0	564.7	2.71444	21.968	2.5173	1.0155
5.917E-06	1600.0	626.6	2.84393	21.386	2.6481	1.0370
4.795E-06	1800.0	686.4	2.95825	20.873	2.7641	1.0540
3.973E-06	2000.0	744.4	3.06060	20.416	2.8684	1.0676
2.699E-06	2500.0	883.6	3.27774	19.466	3.0904	1.0923
1.967E-06	3000.0	1015.1	3.45540	18.694	3.2731	1.1075
1.506E-06	3500.0	1140.2	3.60578	18.043	3.4285	1.1168
1.195E-06	4000.0	1259.8	3.73616	17.481	3.5636	1.1223
9.740E-07	4500.0	1374.6	3.85127	16.986	3.6833	1.1251
8.113E-07	5000.0	1485.2	3.95430	16.544	3.7906	1.1260
5.915E-07	6000.0	1695.5	4.13276	15.780	3.9770	1.1239
4.527E-07	7000.0	1893.1	4.28379	15.134	4.1352	1.1184
3.592E-07	8000.0	2079.9	4.41473	14.574	4.2727	1.1108
2.439E-07	10000.0	2425.8	4.63376	13.636	4.5032	1.0924
1.257E-07	15000.0	3131.0	5.03196	11.790	4.9258	1.0282
7.855E-08	20000.0	3705.7	5.31519	10.497	5.2262	0.9683
4.255E-08	30000.0	4630.1	5.71555	8.774	5.6487	0.8718
2.754E-08	40000.0	5293.0	6.00014	7.538	5.9483	0.7871
1.965E-08	50000.0	5743.4	6.22116	6.553	6.1805	0.7099
1.510E-08	60000.0	6037.1	6.40197	5.746	6.3698	0.6409
1.209E-08	70000.0	6159.3	6.55494	5.028	6.5297	0.5745
9.965E-09	80000.0	6107.0	6.68752	4.365	6.6681	0.5090
7.219E-09	100000.0	5399.0	6.90921	3.090	6.8992	0.3725

TABLE XII. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =1.075E-03 AT 100.0 METERS DOWNWIND

CHI/Q=2.000E-09 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
5.022E-04	150.0	88.3	0.55409	30.471	0.4776	0.2810
2.926E-04	200.0	113.7	0.83320	29.621	0.7243	0.4118
1.353E-04	300.0	162.2	1.22679	28.395	1.0792	0.5834
7.826E-05	400.0	208.3	1.50629	27.511	1.3360	0.6958
5.118E-05	500.0	252.8	1.72323	26.818	1.5379	0.7774
3.618E-05	600.0	295.8	1.90056	26.245	1.7046	0.8405
2.698E-05	700.0	337.7	2.05055	25.757	1.8468	0.8911
2.093E-05	800.0	378.7	2.18053	25.331	1.9709	0.9329
1.673E-05	900.0	418.8	2.29521	24.953	2.0810	0.9683
1.369E-05	1000.0	458.1	2.39783	24.612	2.1800	0.9986
1.155E-05	1100.0	494.4	2.48989	24.201	2.2711	1.0207
9.888E-06	1200.0	529.9	2.57399	23.827	2.3546	1.0398
8.571E-06	1300.0	564.8	2.65141	23.484	2.4318	1.0566
7.509E-06	1400.0	599.1	2.72313	23.166	2.5036	1.0713
5.917E-06	1600.0	665.9	2.85246	22.597	2.6335	1.0960
4.795E-06	1800.0	730.7	2.96665	22.096	2.7488	1.1159
3.973E-06	2000.0	793.8	3.06888	21.649	2.8524	1.1322
2.699E-06	2500.0	945.8	3.28576	20.723	3.0732	1.1627
1.967E-06	3000.0	1090.2	3.46321	19.971	3.2550	1.1828
1.506E-06	3500.0	1228.3	3.61342	19.338	3.4096	1.1965
1.195E-06	4000.0	1361.1	3.74366	18.792	3.5441	1.2059
9.740E-07	4500.0	1489.3	3.85863	18.312	3.6632	1.2124
8.113E-07	5000.0	1613.4	3.96155	17.884	3.7701	1.2166
5.915E-07	6000.0	1851.1	4.13981	17.146	3.9558	1.2205
4.527E-07	7000.0	2076.7	4.29067	16.524	4.1135	1.2204
3.592E-07	8000.0	2292.0	4.42147	15.987	4.2505	1.2178
2.439E-07	10000.0	2696.6	4.64027	15.092	4.4802	1.2081
1.257E-07	15000.0	3548.0	5.03785	13.308	4.9026	1.1596
7.855E-08	20000.0	4277.9	5.32068	12.073	5.2030	1.1129
4.255E-08	30000.0	5532.9	5.72051	10.450	5.6256	1.0375
2.754E-08	40000.0	6562.1	6.00474	9.317	5.9255	0.9721
1.965E-08	50000.0	7420.9	6.22550	8.442	6.1580	0.9140
1.510E-08	60000.0	8164.7	6.40610	7.749	6.3476	0.8638
1.209E-08	70000.0	8793.4	6.55891	7.160	6.5078	0.8175
9.965E-09	80000.0	9319.4	6.69135	6.645	6.6464	0.7743
7.219E-09	100000.0	10093.7	6.91282	5.764	6.8779	0.6942

TABLE XII. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =1.075E-03 AT 100.0 METERS DOWNWIND

CHI/Q=1.000E-09 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
5.022E-04	150.0	90.7	0.56121	31.154	0.4803	0.2903
2.926E-04	200.0	117.0	0.84026	30.323	0.7253	0.4242
1.353E-04	300.0	167.2	1.23379	29.125	1.0778	0.6005
7.826E-05	400.0	215.0	1.51324	28.263	1.3328	0.7166
5.118E-05	500.0	261.2	1.73013	27.587	1.5334	0.8012
3.618E-05	600.0	306.1	1.90742	27.029	1.6991	0.8668
2.698E-05	700.0	349.8	2.05739	26.554	1.8404	0.9198
2.093E-05	800.0	392.6	2.18734	26.140	1.9636	0.9637
1.673E-05	900.0	434.5	2.30200	25.772	2.0730	1.0009
1.369E-05	1000.0	475.7	2.40459	25.442	2.1714	1.0330
1.155E-05	1100.0	513.8	2.49657	25.036	2.2620	1.0565
9.889E-06	1200.0	551.1	2.58060	24.667	2.3451	1.0770
8.571E-06	1300.0	587.8	2.65794	24.329	2.4219	1.0950
7.509E-06	1400.0	623.8	2.72960	24.016	2.4933	1.1109
5.917E-06	1600.0	694.2	2.85882	23.454	2.6226	1.1379
4.795E-06	1800.0	762.6	2.97291	22.961	2.7374	1.1597
3.973E-06	2000.0	829.3	3.07506	22.521	2.8406	1.1778
2.699E-06	2500.0	990.2	3.29174	21.608	3.0604	1.2122
1.967E-06	3000.0	1143.7	3.46904	20.868	3.2415	1.2357
1.506E-06	3500.0	1290.9	3.61912	20.246	3.3955	1.2524
1.195E-06	4000.0	1433.0	3.74925	19.710	3.5296	1.2645
9.740E-07	4500.0	1570.5	3.86413	19.239	3.6483	1.2732
8.113E-07	5000.0	1704.0	3.96696	18.819	3.7549	1.2797
5.915E-07	6000.0	1960.6	4.14507	18.096	3.9400	1.2875
4.527E-07	7000.0	2205.5	4.29582	17.488	4.0973	1.2909
3.592E-07	8000.0	2440.2	4.42651	16.963	4.2339	1.2915
2.439E-07	10000.0	2884.6	4.64513	16.091	4.4632	1.2875
1.257E-07	15000.0	3833.5	5.04227	14.336	4.8853	1.2485
7.855E-08	20000.0	4664.4	5.32480	13.128	5.1856	1.2094
4.255E-08	30000.0	6128.0	5.72422	11.545	5.6084	1.1456
2.754E-08	40000.0	7378.6	6.00819	10.452	5.9085	1.0899
1.965E-08	50000.0	8472.1	6.22876	9.617	6.1412	1.0406
1.510E-08	60000.0	9461.5	6.40921	8.961	6.3310	0.9983
1.209E-08	70000.0	10349.9	6.56189	8.411	6.4913	0.9598
9.965E-09	80000.0	11150.7	6.69423	7.935	6.6301	0.9241
7.219E-09	100000.0	12526.2	6.91554	7.140	6.8619	0.8595

TABLE XII. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =1.075E-03 AT 100.0 METERS DOWNWIND

CHI/Q=5.000E-10 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
5.022E-04	150.0	93.0	0.56823	31.811	0.4829	0.2995
2.926E-04	200.0	120.2	0.84723	30.997	0.7262	0.4363
1.353E-04	300.0	172.0	1.24069	29.825	1.0764	0.6171
7.826E-05	400.0	221.6	1.52009	28.982	1.3297	0.7365
5.118E-05	500.0	269.5	1.73693	28.322	1.5290	0.8240
3.618E-05	600.0	316.0	1.91420	27.778	1.6936	0.8921
2.698E-05	700.0	361.5	2.06413	27.315	1.8340	0.9472
2.093E-05	800.0	406.1	2.19406	26.911	1.9565	0.9930
1.673E-05	900.0	449.8	2.30869	26.553	2.0652	1.0320
1.369E-05	1000.0	492.7	2.41126	26.231	2.1629	1.0658
1.155E-05	1100.0	532.5	2.50316	25.830	2.2531	1.0906
9.888E-06	1200.0	571.5	2.58711	25.466	2.3358	1.1124
8.571E-06	1300.0	609.8	2.66440	25.131	2.4122	1.1316
7.509E-06	1400.0	647.6	2.73599	24.823	2.4832	1.1486
5.917E-06	1600.0	721.3	2.86510	24.268	2.6119	1.1776
4.795E-06	1800.0	793.2	2.97910	23.781	2.7262	1.2013
3.973E-06	2000.0	863.3	3.08115	23.347	2.8289	1.2210
2.699E-06	2500.0	1032.8	3.29766	22.446	3.0478	1.2591
1.967E-06	3000.0	1194.8	3.47481	21.716	3.2282	1.2857
1.506E-06	3500.0	1350.7	3.62476	21.102	3.3817	1.3050
1.195E-06	4000.0	1501.4	3.75478	20.574	3.5153	1.3195
9.740E-07	4500.0	1647.7	3.86957	20.110	3.6337	1.3305
8.113E-07	5000.0	1790.0	3.97232	19.697	3.7399	1.3389
5.915E-07	6000.0	2064.4	4.15028	18.986	3.9245	1.3503
4.527E-07	7000.0	2327.1	4.30091	18.389	4.0813	1.3568
3.592E-07	8000.0	2580.0	4.43150	17.875	4.2176	1.3602
2.439E-07	10000.0	3061.1	4.64995	17.020	4.4463	1.3611
1.257E-07	15000.0	4099.1	5.04665	15.284	4.8681	1.3303
7.855E-08	20000.0	5021.2	5.32888	14.093	5.1685	1.2976
4.255E-08	30000.0	6670.3	5.72791	12.535	5.5914	1.2432
2.754E-08	40000.0	8113.3	6.01162	11.466	5.8917	1.1950
1.965E-08	50000.0	9406.5	6.23200	10.654	6.1246	1.1522
1.510E-08	60000.0	10600.8	6.41230	10.020	6.3145	1.1156
1.209E-08	70000.0	11701.1	6.56486	9.490	6.4750	1.0824
9.965E-09	80000.0	12721.0	6.69710	9.035	6.6140	1.0517
7.219E-09	100000.0	14557.7	6.91824	8.283	6.8461	0.9966

TABLE XII. (Continued)

GROUND LEVEL RELEASE

STACK HEIGHT 0.0 METERS STACK CONSTANT 0.0 SQ.METERS/SEC WIND SPEED 3.333 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =1.075E-03 AT 100.0 METERS DOWNWIND

CHI/Q=2.000E-10 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
5.022E-04	150.0	96.1	0.57735	32.640	0.4862	0.3114
2.926E-04	200.0	124.2	0.85630	31.847	0.7274	0.4518
1.353E-04	300.0	178.2	1.24967	30.706	1.0745	0.6381
7.826E-05	400.0	229.9	1.52900	29.887	1.3257	0.7619
5.118E-05	500.0	280.0	1.74580	29.246	1.5233	0.8529
3.618E-05	600.0	328.7	1.92301	28.718	1.6865	0.9240
2.698E-05	700.0	376.4	2.07291	28.269	1.8257	0.9817
2.093E-05	800.0	423.2	2.20280	27.878	1.9472	1.0300
1.673E-05	900.0	469.1	2.31740	27.531	2.0550	1.0712
1.369E-05	1000.0	514.4	2.41995	27.219	2.1520	1.1069
1.155E-05	1100.0	556.2	2.51174	26.824	2.2415	1.1334
9.888E-06	1200.0	597.4	2.59560	26.465	2.3236	1.1567
8.571E-06	1300.0	637.8	2.67280	26.135	2.3995	1.1773
7.509E-06	1400.0	677.7	2.74432	25.830	2.4701	1.1957
5.917E-06	1600.0	755.8	2.87329	25.284	2.5980	1.2272
4.795E-06	1800.0	831.9	2.98716	24.804	2.7116	1.2531
3.973E-06	2000.0	906.2	3.08910	24.376	2.8137	1.2749
2.699E-06	2500.0	1086.4	3.30537	23.488	3.0315	1.3174
1.967E-06	3000.0	1259.2	3.48233	22.769	3.2110	1.3477
1.506E-06	3500.0	1425.9	3.63212	22.165	3.3637	1.3703
1.195E-06	4000.0	1587.4	3.76200	21.646	3.4967	1.3877
9.740E-07	4500.0	1744.5	3.87667	21.190	3.6146	1.4012
8.113E-07	5000.0	1897.7	3.97931	20.784	3.7204	1.4120
5.915E-07	6000.0	2194.0	4.15709	20.085	3.9043	1.4276
4.527E-07	7000.0	2478.8	4.30756	19.500	4.0605	1.4379
3.592E-07	8000.0	2753.9	4.43802	18.995	4.1964	1.4445
2.439E-07	10000.0	3279.8	4.65626	18.159	4.4244	1.4511
1.257E-07	15000.0	4425.9	5.05237	16.439	4.8458	1.4298
7.855E-08	20000.0	5457.2	5.33422	15.262	5.1461	1.4042
4.255E-08	30000.0	7325.8	5.73274	13.723	5.5691	1.3599
2.754E-08	40000.0	8992.9	6.01612	12.671	5.8696	1.3196
1.965E-08	50000.0	10515.0	6.23625	11.876	6.1028	1.2834
1.510E-08	60000.0	11941.2	6.41635	11.256	6.2929	1.2524
1.209E-08	70000.0	13277.9	6.56875	10.741	6.4537	1.2242
9.965E-09	80000.0	14538.9	6.70086	10.300	6.5929	1.1982
7.219E-09	100000.0	16871.8	6.92179	9.577	6.8253	1.1516

value were 5.1×10^{-6} sec/m^3 for a unit release, it would become $50 \times 5.1 \times 10^{-6} = 2.55 \times 10^{-4}$ sec/m^3 for a 50-curie release. Likewise, the isopleth representing 1×10^{-7} would now be the locus of points where the integrated ground-level concentration was 5×10^{-6}.

In the case of accidental releases, the radiation dose delivered to an individual located for the duration of the incident somewhere in the path of the plume is usually sought. If, as is frequently the case, the radiation dose of interest is that which results from inhalation of the radioactive material, this can readily be estimated from the value of X/Q at the point in question since it depends upon the concentration at that point only. The usual procedure is to multiply the time-integrated concentration by the breathing rate thus obtaining the total quantity of material inhaled. This in turn is multiplied by a factor which relates the quantity of inhaled material to the dose eventually delivered to the critical organ.[14]

Calculation of the direct radiation dose due to submersion in the plume is somewhat more complex. Because of the relatively short range of beta particles, the effective concentration of β-emitters which contribute to the dose received by a receptor located in the plume is given by the value of X/Q at the point in question. The β-dose can, therefore, be estimated with acceptable accuracy by the relation[15]

$$D_\beta \cong 0.23\ (X/Q)q\overline{E}_\beta \tag{13}$$

where D_β is the β-dose expressed in rad if q is the total release in curies, $\overline{E}_\beta$ is the average beta energy released per disintegration expressed in Mev/dis, and X/Q is expressed in sec/m^3 as before.

The direct radiation dose from gamma rays, however, depends not only upon the concentration of gamma emitters in the vicinity of the receptor, but also upon the concentration everywhere in the plume. Thus an accurate determination of the γ-dose requires a space integration. Methods of solving this problem have been developed; however, RELISH in its present form is not suitable for the calculation of submersion γ-doses by means of a space integration. It is possible to obtain an estimate of the

submersion γ-dose from the RELISH output by means of the "infinite cloud" model.[16] Use of this model yields

$$D_\gamma = 0.25(X/Q)q\overline{E}_\gamma \tag{14}$$

where D_γ is the γ-dose expressed in rad, $\overline{E}_\gamma$ is the average photon energy per disintegration expressed in Mev/dis, and q is the number of curies of gamma emitters released.

Equation (14) yields conservative results for ground-level releases. For elevated releases the results are nonconservative near the source but become reasonably accurate at distances greater than that at which the peak ground-level concentration occurs.

V. DISCUSSIONS OF THE ASSUMPTIONS USED IN THE ANALYSIS

As was pointed out in the Introduction, the analysis herein presented contains a number of assumptions, some of which have not been set forth explicitly in the text and which are open to debate. The purpose of this section is to identify the more significant of these assumptions and, insofar as is possible, to justify their use.

To begin with, the validity of the entire analysis, both the portion dealing with STAREL and that dealing with RELISH, depends upon the extent to which the Gaussian Plume model actually represents the behavior of the lower atmosphere. This model is recognized as leaving much to be desired, but it is conceded to be the best one currently available and has been used throughout. The model does not permit consideration of the effect of changes in ground elevation as a function of distance from the source. Thus the entire analysis is based upon a "flat" world located 820 feet above sea level. The elevation of the stack orifices is measured from this elevation and also all of the ground-level concentrations are calculated at 820 feet above sea level. Despite the fact that the flow of air generally follows the contours of the ground, this probably results in nonconservative values of the concentrations on the hilltops; however, the most frequently encountered wind vectors are channeled along the

valleys. The value of 820 feet for the base elevation was chosen because it is typical of the elevations found on the site boundary.

The calculations have been made for distances up to 100 km from the source. It is, however, unlikely that wind vectors determined at the source are still valid at such great distances. Consequently, beyond distances of 15-20 km the results become progressively more and more unreliable, particularly those associated with the accident, or RELISH, calculation. The routine release, or STAREL, calculations are probably less effected because they represent a long-term average. It is reasonable to believe that any changes in wind direction with distance would tend to further diffuse the plume so that the concentration values would decrease and the values shown on the calculated isopleths would be conservative.

In all cases radioactive decay has been neglected. The inclusion of decay is planned for later, more sophisticated versions of the programs; however, except in those cases where decay produces a daughter of equal or greater radiological significance than its parent, this simplification leads to conservative results. Likewise, depletion of the plume by fallout has been neglected. This too leads to conservative results except in those cases where the radiological significance of the ground-deposited material is greater than that of the same material when airborne.

The joint frequency data used in connection with the routine release (STAREL) calculations were obtained from weather observations made at the Tower Shielding Facility at ORNL. These data consisted of over 62,000 individual observations taken during the period 1960 through 1968. The division between lapse and inversion was made according to whether or not the vertical temperature gradient exceeded the adiabatic lapse rate. The program can, however, be adapted to handle a more detailed breakdown of the data when it becomes available. In any case, the procedure used should give conservative results. The choice of the actual elevation of the orifice of the tallest stack as the location of the inversion lid was also arbitrary. If the lid were higher, the effective stack heights would also be higher; and, if the lid were lower, lofting of the plume from one

or more of the stacks would occur. Thus the procedure is thought to produce generally conservative results.

Use of joint frequency data collected in the past to predict future conditions is, of course, always open to question. However, if the sampling period is long enough, the results will quite probably be representative over future time periods of comparable length. In any case, data so used can be expected to produce results that are more realistic than those obtained by selecting an arbitrary "typical" set of conditions.

The use of a constant release rate for the STAREL calculations was again arbitrary and was chosen because there is no way at present to predict the time variation of the routine release rate. The fact is that this so-called "routine release rate" is really intermittent and the assumption is basically that these releases are equally likely to occur under any of the meteorological conditions considered. In this connection it is worth noting that the difference between a "routine" release and the accidental release treated by RELISH is merely a difference of magnitude. The former is smoothed out and handled as a constant rate; whereas the latter is handled as a delta function.

The ideal situation for handling routine releases would involve constant monitoring of the release rates and atmospheric conditions with simultaneous computation of the resultant ground-level concentrations. A system for gathering the data and performing the calculations using a modification of STAREL is possible in principal and is under consideration.

The chief assumption unique to the RELISH program is that the meteorological conditions--presence of lapse or inversion and wind-velocity vector--are known and remain constant throughout the release. This is likely to be true for the types of incidents which might occur at ORNL but is probably not so for the case in which slow, long-term leakage from a power reactor envelope is being considered. The latter can be handled by repeating the calculation for the various conditions as they occur and summing the results.

VI. COMPARISON WITH MEASURED VALUES

In order to investigate the validity of the STAREL program, calculations of the annual average ground-level concentration of ^{131}I were made for each of nine established sampling points in the vicinity of ORNL. Their locations are shown in Fig. 16. The input data were the annual releases from each of the five stacks as reported by the Laboratory Facilities Department of the ORNL Operations Division for the years 1967, 1968, and 1969.[17] The results of these calculations have been compared in Table XIII with measured values obtained by the ORNL Health Physics Division at these points for the same time periods.[18]

It can be seen that with only five exceptions the calculated values agree with the measured values within a factor of two. This may be regarded as excellent, if perhaps fortuitous, agreement for this type of calculation. Of the twenty-seven results, only five of the calculated results were lower than the measured results and on the average the calculated results exceeded the measured by a factor of about 1.4. Since the sources of error associated with the measured releases and concentrations are not well known, the agreement found is no guarantee that the calculation procedure is as accurate as it would seem. However, it does tend to support the validity of the calculations.

The analyses presented above represent a first attempt to standardize the procedures for estimating the consequences of the release of radioactive effluents from the ORNL stacks and to provide, therefore, a uniform basis for the establishment of operating limits. The results are expressed entirely in terms of ground-level concentrations which can be compared with established maximum permissible concentrations or converted to expected radiation doses and compared to permissible doses.

The use of the two computer programs, in particular the STAREL program, should greatly simplify many of the safety analysis tasks at the Laboratory. It should be understood, however, that these calculations can and will be improved as more data become available and as more sophisticated computational methods are developed.

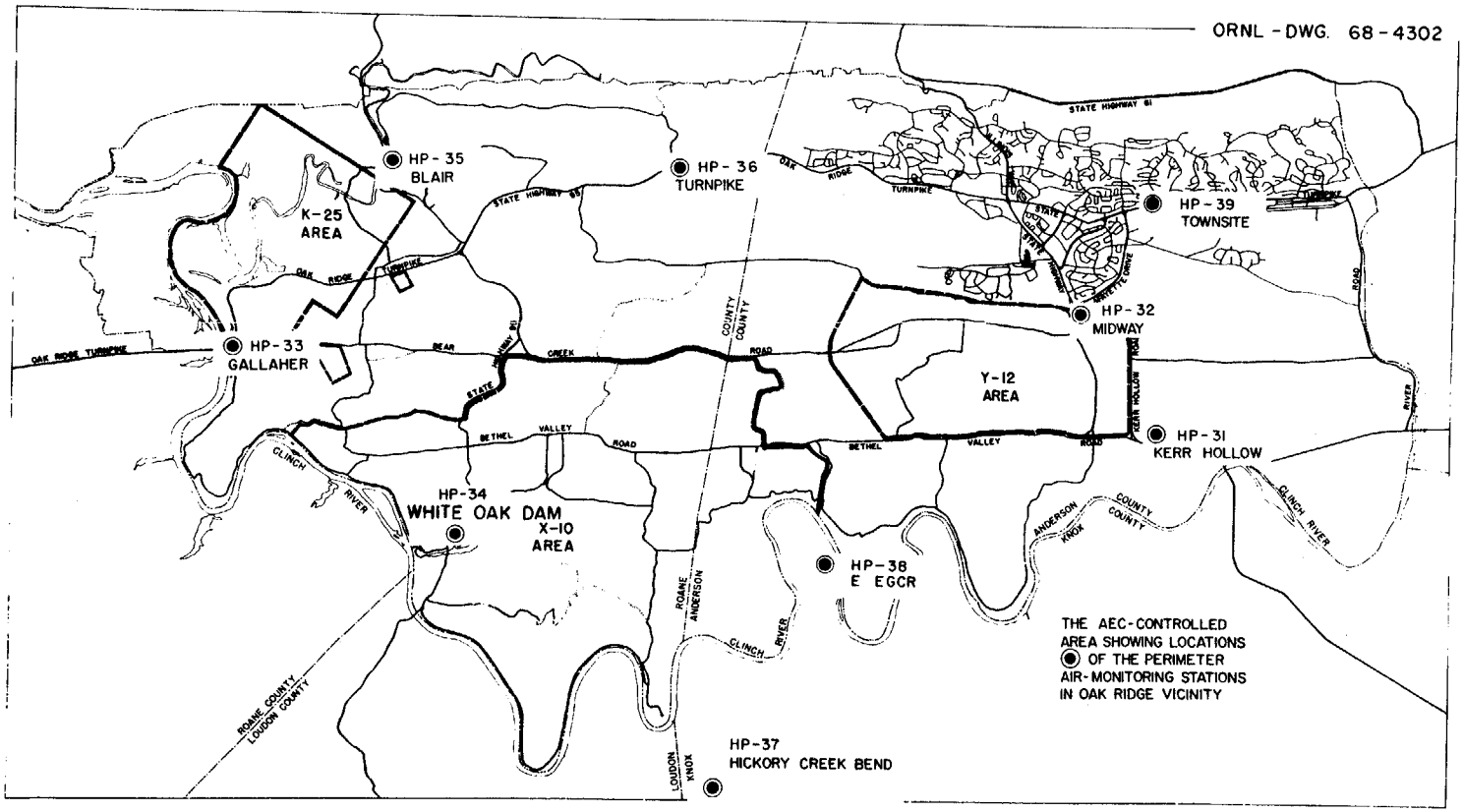

Fig. 16. Station Sites for Perimeter Air Monitoring System

TABLE XIII

Comparison of Calculated and Measured Annual Average Ground Level Concentrations of ^{131}I

Sample Station	1967		1968		1969	
	Meas.	Calc.	Meas.	Calc.	Meas.	Calc.
	$\mu c/cm^3 \times 10^{12}$		$\mu c/cm^3 \times 10^{12}$		$\mu c/cm^3 \times 10^{12}$	
31	.028	.035	.014	.016	.023	.038
32	.019	.037	.009	.016	.019	.041
33	.023	.021	.012	.010	.024	.023
34	.026	.055	.024	.025	.020	.056
35	.010	.013	.010	.006	.014	.013
36	.009	.020	.009	.009	.010	.021
37	.008	.012	.010	.005	.011	.013
38	.023	.031	.018	.014	.025	.034
39	.017	.020	.014	.009	.012	.022

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APPENDIX A

PRØGRAM STAREL

PRØGRAM STAREL was written with two thoughts in mind:

1. To compute the centerline ground-level concentration as a function of stack characteristics, wind speed, and distance downwind from the stack.
2. To compute the ground-level concentration weighted by statistics compiled by the United States Weather Bureau for each of the sixteen cardinal directions as a function of stack characteristics and distance from the stack.

BLØCK DATA FOR PRØGRAM STAREL

PRØGRAM STAREL is based on observations made by the United States Weather Bureau over a four-year period. This data has been condensed in the following manner:

1. Only two atmospheric stability conditions were considered and the observations are classified into:
   a. C-stability conditions (ICØN = 3, INV = 1).
   b. E-stability conditions with inversion (ICØN = 5, INV = 2).
2. The observations were classified into eight discrete wind speeds (meters/sec) as follows:

J	V(J)	J	V(J)
1	0.2235	5	7.5997
2	1.1177	6	9.8348
3	3.1293	7	12.0700
4	5.3645	8	12.9642

3. The observations were classified into sixteen discrete wind directions as follows:

I	Direction	I	Direction
1	SSW	5	WNW
2	SW	6	NW
3	WSW	7	NNW
4	W	8	N

I	Direction	I	Direction
9	NNE	13	ESE
10	NE	14	SE
11	ENE	15	SSE
12	E	16	S

These observations are stored in the BLØCK DATA subprogram as follows:

ØC(I,J) The number of times the wind was observed blowing in I direction at a speed of V(J) meters/sec under C-stability conditions.

ØE(I,J) The number of times the wind was observed blowing in I direction at a speed of V(J) meters/sec under E-stability conditions.

V(J) The wind speed as defined previously.

X(K) The distance downwind from the stack under investigation where K = 1,36 and X(K) ranges from 150 to 100,000 meters.

TØT The total number of observations.

SUBRØUTINE SIGMA

In order to evaluate the horizontal and vertical dispersion coefficients to be used in both PRØGRAM STAREL and PRØGRAM RELISH (discussed) in Appendix B), a subroutine was written to calculate these quantities regardless of the stability condition.

Basically, the calculation is based on a curve fitting of the stability conditions as shown in Figures 3a and 3b in the text of this report. The calculation assumes a series of straight lines when plotted on log-log scale as shown in the above figures. The equations of these straight lines have the form

$$\sigma = AD^B$$

where: σ is the dispersion coefficient,

A and B are predetermined constants, and

D is the distance downwind from the stack.

SUBRØUTINE SIGMA simply selects the constants when the following data is input from the main program:

D - the distance downwind from the stack

ICØN - the atmospheric stability condition

INV - whether or not an inversion exists

TØP - the height of the inversion lid

ICØN =	1	A stability
	2	B
	3	C
	4	D
	5	E
	6	F
INV =	1	No inversion
	2	Inversion

D and TØP are input in meters and the dispersion coefficients are calculated in meters.

If an inversion exists (INV = 2), the vertical dispersion coefficient (σ_z) is held constant once it reaches the value of TØP/2.15 (see text). Tables A-1 and A-2 show the values of the dispersion coefficients for all stability conditions with no inversion and Table A-3 shows the values of the vertical dispersion coefficients under inversion conditions with the inversion lid at a height of 80.8 meters.

INPUT DATA FOR PRØGRAM STAREL

In addition to the BLØCK DATA subprogram and SUBRØUTINE SIGMA, the input data required consists of the stack characteristics and the height of the inversion lid.

```
80   READ (50, 101) NAME, TEL, CAP, TØP, IØPT
101  FØRMAT (8A4, F8.2, 2F 10.4, I5)
```

NAME is the name of the stack under investigation.

TEL is the physical stack height (meters).

CAP is the stack constant (meters^2/sec).

TØP is the height of the inversion lid.

IØPT is a printout option which will be defined later.

It should be noted here that if the physical height of the stack, TEL, is greater than the height of the inversion lid, TØP, lofting occurs and the

TABLE A-1.

HORIZONTAL DISPERSION COEFFICIENTS (METERS)

NO INVERSION

DISTANCE FROM STACK METERS	ATMOSPHERIC STABILITY CONDITIONS A	B	C	D	E	F
150.	3.10916E 01	2.35876E 01	1.76978E 01	1.17794E 01	8.80552E 00	5.86056E 00
200.	4.10734E 01	3.10657E 01	2.33153E 01	1.55005E 01	1.15601E 01	7.68480E 00
300.	6.08113E 01	4.57977E 01	3.43858E 01	2.29233E 01	1.69655E 01	1.12593E 01
400.	8.03345E 01	6.03172E 01	4.53004E 01	3.00332E 01	2.22728E 01	1.47640E 01
500.	9.96994E 01	7.46806E 01	5.61003E 01	3.71600E 01	2.75083E 01	1.82177E 01
600.	1.18939E 02	8.89209E 01	6.68098E 01	4.42216E 01	3.26873E 01	2.16314E 01
700.	1.38076E 02	1.03060E 02	7.74448E 01	5.12292E 01	3.78198E 01	2.50120E 01
800.	1.57124E 02	1.17112E 02	8.80162E 01	5.81911E 01	4.29129E 01	2.83647E 01
900.	1.76096E 02	1.31089E 02	9.85324E 01	6.51131E 01	4.79715E 01	3.16930E 01
1000.	1.95000E 02	1.45000E 02	1.09000E 02	7.20000E 01	5.30000E 01	3.50000E 01
1100.	2.12751E 02	1.58255E 02	1.18786E 02	7.84378E 01	5.77976E 01	3.82015E 01
1200.	2.30363E 02	1.71412E 02	1.28486E 02	8.48165E 01	6.25557E 01	4.13792E 01
1300.	2.47849E 02	1.84479E 02	1.38106E 02	9.11413E 01	6.72778E 01	4.45254E 01
1400.	2.65221E 02	1.97463E 02	1.47655E 02	9.74169E 01	7.19671E 01	4.76718E 01
1600.	2.99652E 02	2.23209E 02	1.66556E 02	1.09835E 02	8.12568E 01	5.38911E 01
1800.	3.33714E 02	2.48691E 02	1.85228E 02	1.22097E 02	9.04413E 01	6.00470E 01
2000.	3.67452E 02	2.73941E 02	2.03696E 02	1.34221E 02	9.95336E 01	6.61474E 01
2500.	4.50594E 02	3.36204E 02	2.49118E 02	1.64021E 02	1.21921E 02	8.11910E 01
3000.	5.32309E 02	3.97444E 02	2.93652E 02	1.93217E 02	1.43903E 02	9.59892E 01
3500.	6.12856E 02	4.57847E 02	3.37463E 02	2.21922E 02	1.65553E 02	1.10586E 02
4000.	6.92419E 02	5.17543E 02	3.80662E 02	2.50212E 02	1.86924E 02	1.25014E 02
4500.	7.71129E 02	5.76627E 02	4.23335E 02	2.78145E 02	2.08052E 02	1.39294E 02
5000.	8.49088E 02	6.35173E 02	4.65545E 02	3.05764E 02	2.28968E 02	1.53445E 02
6000.	1.00307E 03	7.50871E 02	5.48771E 02	3.60192E 02	2.70250E 02	1.81413E 02
7000.	1.15485E 03	8.64988E 02	6.30642E 02	4.13703E 02	3.10908E 02	2.09000E 02
8000.	1.30477E 03	9.77767E 02	7.11373E 02	4.66441E 02	3.51041E 02	2.36267E 02
10000.	1.60000E 03	1.20000E 03	8.69999E 02	5.70000E 02	4.29999E 02	2.90000E 02
15000.	2.26441E 03	1.69395E 03	1.23289E 03	8.10236E 02	6.05380E 02	4.10965E 02
20000.	2.89718E 03	2.16336E 03	1.57889E 03	1.03987E 03	7.71672E 02	5.26296E 02
30000.	4.10026E 03	3.05385E 03	2.23747E 03	1.47815E 03	1.08641E 03	7.45824E 02
40000.	5.24603E 03	3.90010E 03	2.86538E 03	1.89709E 03	1.38483E 03	9.55128E 02
50000.	6.35099E 03	4.71489E 03	3.47143E 03	2.30220E 03	1.67169E 03	1.15714E 03
60000.	7.42449E 03	5.50547E 03	4.06060E 03	2.69664E 03	1.94965E 03	1.35353E 03
70000.	8.47250E 03	6.27646E 03	4.63609E 03	3.08241E 03	2.22043E 03	1.54536E 03
80000.	9.49019E 03	7.03108E 03	5.20014E 03	3.46092E 03	2.48521E 03	1.73338E 03
100000.	1.15000E 04	8.50000E 03	6.30000E 03	4.20000E 03	3.00000E 03	2.10000E 03

TABLE A-2.

VERTICAL DISPERSION COEFFICIENTS (METERS)

NO INVERSION

DISTANCE FROM STACK — ATMOSPHERIC STABILITY CONDITIONS

METERS	A	B	C	D	E	F
150.	2.37899E 01	1.50000E 01	1.07450E 01	6.63765E 00	4.32200E 00	2.36129E 00
200.	3.29999E 01	2.00000E 01	1.40000E 01	8.47973E 00	5.60000E 00	3.11228E 00
300.	6.25512E 01	3.12923E 01	2.05312E 01	1.19756E 01	8.12900E 00	4.59312E 00
400.	9.84655E 01	4.29904E 01	2.69399E 01	1.52991E 01	1.05894E 01	6.05392E 00
500.	1.39999E 02	5.49997E 01	3.32591E 01	1.85000E 01	1.30000E 01	7.49999E 00
600.	2.11337E 02	6.96522E 01	3.95078E 01	2.13682E 01	1.49293E 01	8.71970E 00
700.	2.99258E 02	8.50476E 01	4.56985E 01	2.41375E 01	1.67823E 01	9.90446E 00
800.	4.04743E 02	1.01109E 02	5.18401E 01	2.68249E 01	1.85724E 01	1.10601E 01
900.	5.28103E 02	1.17775E 02	5.79388E 01	2.94426E 01	2.03092E 01	1.21909E 01
1000.	6.69637E 02	1.34999E 02	6.39999E 01	3.20000E 01	2.20000E 01	1.33000E 01
1100.	9.15244E 02	1.56201E 02	6.96169E 01	3.42092E 01	2.34504E 01	1.42971E 01
1200.	1.21734E 03	1.78451E 02	7.51741E 01	3.63590E 01	2.48577E 01	1.52725E 01
1300.	1.58261E 03	2.01708E 02	8.06772E 01	3.84556E 01	2.62269E 01	1.62284E 01
1400.	2.01780E 03	2.25934E 02	8.61308E 01	4.05045E 01	2.75617E 01	1.71668E 01
1600.	3.12599E 03	2.77165E 02	9.69047E 01	4.44753E 01	3.01406E 01	1.89966E 01
1800.	4.59910E 03	3.31916E 02	1.07521E 02	4.83006E 01	3.26149E 01	2.07718E 01
2000.	6.49998E 03	3.89997E 02	1.18000E 02	5.20000E 01	3.50000E 01	2.25000E 01
2500.	1.84364E 04	6.13139E 02	1.42063E 02	6.02198E 01	3.99093E 01	2.50560E 01
3000.	4.32126E 04	8.87377E 02	1.65324E 02	6.78916E 01	4.44274E 01	2.73585E 01
3500.	8.87951E 04	1.21297E 03	1.87938E 02	7.51357E 01	4.86443E 01	2.94696E 01
4000.	1.65701E 05	1.59015E 03	2.10014E 02	8.20327E 01	5.26193E 01	3.14296E 01
4500.	2.87287E 05	2.01908E 03	2.31628E 02	8.86399E 01	5.63942E 01	3.32662E 01
5000.	4.69998E 05	2.49998E 03	2.52841E 02	9.49999E 01	6.00000E 01	3.50000E 01
6000.	1.92492E 06	3.81760E 03	2.94240E 02	1.05201E 02	6.57566E 01	3.78220E 01
7000.	6.34043E 06	5.46054E 03	3.34488E 02	1.14676E 02	7.10526E 01	4.03847E 01
8000.	1.78064E 07	7.44536E 03	3.73777E 02	1.23570E 02	7.59838E 01	4.27446E 01
10000.	9.99986E 07	1.24958E 04	4.49999E 02	1.40000E 02	8.49999E 01	4.70000E 01
15000.	4.29974E 09	3.83486E 04	6.16128E 02	1.74990E 02	9.88369E 01	5.42169E 01
20000.	6.19999E 10	8.49916E 04	7.69999E 02	2.05000E 02	1.10000E 02	5.99999E 01
30000.	2.66583E 12	2.41473E 05	1.00319E 03	2.47917E 02	1.25393E 02	6.64528E 01
40000.	3.84393E 13	5.06555E 05	1.21031E 03	2.83712E 02	1.37604E 02	7.14478E 01
50000.	3.04599E 14	8.99991E 05	1.40000E 03	3.15000E 02	1.47888E 02	7.55794E 01
60000.	1.65282E 15	2.35731E 06	1.55756E 03	3.47989E 02	1.56859E 02	7.91319E 01
70000.	6.90604E 15	5.32087E 06	1.70454E 03	3.78562E 02	1.64868E 02	8.22655E 01
80000.	2.38327E 16	1.07709E 07	1.84302E 03	4.07209E 02	1.72134E 02	8.50800E 01
100000.	1.88851E 17	3.49995E 07	2.10000E 03	4.60000E 02	1.85000E 02	8.99999E 01

TABLE A-3.

VERTICAL DISPERSION COEFFICIENTS (METERS)

INVERSION LID AT 80.8 METERS

DISTANCE FROM STACK — ATMOSPHERIC STABILITY CONDITIONS

METERS	A	B	C	D	E	F
150.	2.37899E 01	1.50000E 01	1.07450E 01	6.63765E 00	4.32200E 00	2.36129E 00
200.	3.29999E 01	2.00000E 01	1.40000E 01	8.47973E 00	5.60000E 00	3.11228E 00
300.	3.75814E 01	3.12923E 01	2.05312E 01	1.19756E 01	8.12900E 00	4.59312E 00
400.	3.75814E 01	3.75814E 01	2.69399E 01	1.52991E 01	1.05894E 01	6.05392E 00
500.	3.75814E 01	3.75814E 01	3.32591E 01	1.85000E 01	1.30000E 01	7.49999E 00
600.	3.75814E 01	3.75814E 01	3.75814E 01	2.13682E 01	1.49293E 01	8.71970E 00
700.	3.75814E 01	3.75814E 01	3.75814E 01	2.41375E 01	1.67823E 01	9.90446E 00
800.	3.75814E 01	3.75814E 01	3.75814E 01	2.68249E 01	1.85724E 01	1.10601E 01
900.	3.75814E 01	3.75814E 01	3.75814E 01	2.94426E 01	2.03092E 01	1.21909E 01
1000.	3.75814E 01	3.75814E 01	3.75814E 01	3.20000E 01	2.20000E 01	1.33000E 01
1100.	3.75814E 01	3.75814E 01	3.75814E 01	3.42092E 01	2.34504E 01	1.42971E 01
1200.	3.75814E 01	3.75814E 01	3.75814E 01	3.63590E 01	2.48577E 01	1.52725E 01
1300.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	2.62269E 01	1.62284E 01
1400.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	2.75617E 01	1.71668E 01
1600.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.01406E 01	1.89966E 01
1800.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.26149E 01	2.07718E 01
2000.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.50000E 01	2.25000E 01
2500.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	2.50560E 01
3000	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	2.73585E 01
3500.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	2.94696E 01
4000.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.14296E 01
4500.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.32662E 01
5000.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.50000E 01
6000.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01
7000.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01
8000.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01
10000.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01
15000.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01
20000.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01
30000.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01
40000.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01
50000.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01
60000.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01
70000.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01
80000.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01
100000.	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01	3.75814E 01

program produces erroneous results. The CØMMENTS which follow refer to the comment cards in the program listing.

CØMMENT 1 CALCULATIØN AND STØRAGE ØF SIGMAS

Since only two atmospheric stability conditions are considered in STAREL, it is convenient to calculate the dispersion coefficients at the beginning of the program and store them for future recall. For C-stability conditions with no inversion ICØN = 3 and INV = 1, and for E-stability conditions with inversion ICØN = 5 and INV = 2. As mentioned previously, the height of the inversion lid, TØP, is read in as input data.

CØMMENT 2 CALCULATIØN ØF EXPØNENTS

The calculation of exponents is somewhat complicated since they depend on several parameters. Under C-stability conditions, the exponents depend only on the stack characteristics, the wind speed, and the vertical dispersion coefficient. However, under E-stability conditions, the exponents also depend on the height of the inversion lid, TØP. In addition, all exponents are limited to no less than minus 100.

CØMMENT 3 ØUTPUT ØF PRØGRAM STAREL

If ØPT = 1, the following tables are printed out:

1. The number of observations made by the U. S. Weather Bureau for each wind speed and direction.
2. The frequency of wind speed and direction.
3. The atmospheric dispersion coefficients used in the calculation.
4. The centerline ground concentrationfor C- and E-stability conditions for various wind speeds.
5. The average ground concentration for C- and E-stability conditions for various wind speeds.
6. The centerline ground concentration weighted by frequency data for each direction.
7. The average ground concentration weighted by frequency data for each direction.

If ØPT = 2, only Tables 6 and 7 are printed out.

LISTING

PRØGRAM STAREL is written in Fortran IV for the IBM 360 and is shown on pages 136 through 146 with the control cards used at ORNL. The Job No. and the Charge No. have been omitted from the job card.

USING PRØGRAM STAREL

Suppose one wanted to run PRØGRAM STAREL under the following conditions: conditions:

NAME - 3039 stack

TEL - 74.4 meters

CAP - 51.750 meters^2/sec

TØP - 80.8 meters

IØPT - 2

The data card with this information is shown in Figure A-1 and would be inserted into the program deck as shown in the program listing. The program runs approximately 15 sec on the IBM 360/75.

The output of the program from the above data is shown in Tables A-4 and Table III of the text.

```
//      JOB       ,MSGLEVEL=1,CLASS=C,REGION=470K
// EXEC FORTHCLG,PARM.FORT='DECK,OPT=2,MAP,BCD,LIST',PARM.GO='DUMP=H',
// REGION.GO=445K
//FORT.SYSIN DD *
C       PROGRAM STAREL
C
      DIMENSION X(36),SIGYC(36),SIGYE(36),SIGZC(36),SIGZE(36),DENC(36),
     1     DENE(36),ERC(36),ERE(36),T(2,8),EXE(8,36),EXC(8,36),FC(16,8),
     2     OC(16,8),FE(16,8),OF(16,8),CHIQC(16,36),CHIQE(16,36),V(8),
     3     CHQCA(16,36),CHQEA(16,36),CHIQCX(16,36),CHIQEX(16,36),
     4     CHIQTX(16,36),CHIQCA(16,36),CHIQEA(16,36),CHIQTA(16,36),
     5     NAME(8),Y(36)
      COMMON ICON,D,INV,TOP
      COMMON/NAM2/OC,OE,V,X,TOT
   80 READ(50,101)NAME,TEL,CAP,TOP,IOPT
  101 FORMAT(8A4,F8.2,2F10.4,I5)
C
COMMENT  1   CALCULATE AND STORE SIGMAS
C
      DO3ICON=3,5,2
      DO3INV=1,2
      DO3K=1,36
      D=X(K)
      CALL SIGMA (SIGY,SIGZ)
      IF(ICON.EQ.3.AND.INV.EQ.1)GO TO 11
      GO TO 12
   11 SIGYC(K)=SIGY
      SIGZC(K)=SIGZ
      GO TO 3
   12 IF(ICON.EQ.5.AND.INV.EQ.2)GO TO 13
      GO TO 3
   13 SIGYE(K)=SIGY
      SIGZE(K)=SIGZ
    3 CONTINUE
      DO7K=1,36
      Y(K)=0.1*X(K)
      DENC(K)=1./(3.1416*SIGYC(K)*SIGZC(K))
      DENE(K)=1./(3.1416*SIGYE(K)*SIGZE(K))
      ERC(K)=6.30084*(SIGYC(K)/X(K))*ERF(0.14065*X(K)/SIGYC(K))
      ERE(K)=6.30084*(SIGYE(K)/X(K))*ERF(0.14065*X(K)/SIGYE(K))
      DO7I=1,16
      SUMC=0.
      SUME=0.
      DO8J=1,8
      DO9INV=1,2
C
COMMENT  2  CALCULATION OF EXPONENTS
C
      T(INV,J)=TEL+CAP/V(J)
      IF(INV.EQ.1)GO TO 23
      IF(T(INV,J).GE.TOP)T(INV,J)=TOP
      EXE(J,K)=T(INV,J)**2/(2.*SIGZE(K)**2)
      IF(EXE(J,K).GE.100.)EXE(J,K)=100.
      GO TO 9
   23 EXC(J,K)=T(INV,J)**2/(2.*SIGZC(K)**2)
      IF(EXC(J,K).GE.100.)EXC(J,K)=100.
    9 CONTINUE
      CHIQC(J,K)=(DENC(K)/V(J))*EXP(-EXC(J,K))
      CHIQE(J,K)=(DENE(K)/V(J))*EXP(-EXE(J,K))
      CHQCA(J,K)=CHIQC(J,K)*ERC(K)
      CHQEA(J,K)=CHIQE(J,K)*ERE(K)
      FC(I,J)=OC(I,J)/TOT
      FE(I,J)=OE(I,J)/TOT
```

```
   41 SUMC=SUMC+(FC(I,J)/V(J. *EXP(-EXC(J,K))*DENC(K)
      SUME=SUME+(FE(I,J)/V(J))*EXP(-EXE(J,K))*DENE(K)
    8 CONTINUE
      CHIQCX(I,K)=SUMC
      CHIQEX(I,K)=SUME
      CHIQTX(I,K)=CHIQCX(I,K)+CHIQEX(I,K)
      CHIQCA(I,K)=CHIQCX(I,K)*ERC(K)
      CHIQEA(I,K)=CHIQEX(I,K)*ERE(K)
      CHIQTA(I,K)=CHIQCA(I,K)+CHIQEA(I,K)
    7 CONTINUE
C
COMMENT  3  OUTPUT OF PROGRAM STAREL
C
      IF(IOPT.EQ.2)GO TO 30
      WRITE(51,420)NAME
  420 FORMAT(1H1,8A4)
      WRITE(51,401)
  401 FORMAT(1H0/1H0/1H0,32X,66HANNUAL WIND VELOCITY AT TSF  STATION DUR
     1ING C-STABILITY CONDITIONS/1H ,32X,65H(NUMBER OF OBSERVATIONS MADE
     2 BY THE UNITED STATES WEATHER BUREAU)/1H0,127H-------------------
     3-----------------------------------------------------------------
     4----------------------------------------/1H ,10H      WIND,47X,
     527HWIND SPEED (MILES PER HOUR)/1H ,12H   DIRECTION,8X,3H0.5,11X,
     63H2.5,11X,3H7.0,10X,4H12.0,10X,4H17.0,10X,4H22.0,10X,4H27.0,11X,
     73H 29/1H0,127H---------------------------------------------------
     8-----------------------------------------------------------------
     9---------)
      WRITE(51,402)((OC(I,J),J=1,8),I=1,16)
  402 FORMAT(1H0,6X,3HSSW,8F14.0/1H0,6X,3H SW,8F14.0/1H0,6X,3HWSW,8F14.0
     1/1H0,6X,3H  W,8F14.0/1H0,6X,3HWNW,8F14.0/1H0,6X,3H NW,8F14.0/
     21H0,6X,3HNNW,8F14.0/1H0,6X,3H  N,8F14.0/1H0,6X,3HNNE,8F14.0/1H0,
     36X,3H NE,8F14.0/1H0,6X,3HENE,8F14.0/1H0,6X,3H  E,8F14.0/1H0,6X,
     43HESE,8F14.0/1H0,6X,3H SE,8F14.0/1H0,6X,3HSSE,8F14.0/1H0,6X,3H  S,
     58F14.0/1H0,127H--------------------------------------------------
     6-----------------------------------------------------------------
     7----------)
      WRITE(51,420)NAME
      WRITE(51,403)
  403 FORMAT(1H0/1H0/1H0,32X,66HANNUAL WIND VELOCITY AT TSF  STATION DUR
     1ING E-STABILITY CONDITIONS/1H ,32X,65H(NUMBER OF OBSERVATIONS MADE
     2 BY THE UNITED STATES WEATHER BUREAU)/1H0,127H-------------------
     3-----------------------------------------------------------------
     4----------------------------------------/1H ,10H      WIND,47X,
     527HWIND SPEED (MILES PER HOUR)/1H ,12H   DIRECTION,8X,3H0.5,11X,
     63H2.5,11X,3H7.0,10X,4H12.0,10X,4H17.0,10X,4H22.0,10X,4H27.0,11X,
     73H 29/1H0,127H---------------------------------------------------
     8-----------------------------------------------------------------
     9---------)
      WRITE(51,402)((OE(I,J),J=1,8),I=1,16)
      WRITE(51,420)NAME
   28 WRITE(51,404)
  404 FORMAT(1H0/1H0/1H0,13X,104HFREQUENCY OF WIND SPEED AND WIND DIRECT
     1ION UNDER C-STABILITY CONDITIONS AT OAK RIDGE NATIONAL LABORATORY/
     21H ,33X,64H(BASED ON OBSERVATIONS MADE BY THE UNITED STATES WEATHE
     3R BUREAU)/1H0,127H-----------------------------------------------
     4-----------------------------------------------------------------
     5-------------/1H ,10H      WIND,47X,27HWIND SPEED (MILES PER HOUR)
     6/1H ,12H   DIRECTION,8X,3H0.5,11X,3H2.5,11X,3H7.0,10X,4H12.0,10X,
     74H17.0,10X,4H22.0,10X,4H27.0,11X,3H 29/1H0,127H------------------
     8-----------------------------------------------------------------
     9-----------------------------------------)
      WRITE(51,405)((FC(I,J),J=1,8),I=1,16)
  405 FORMAT(1H0,6X,5HSSW  ,8F14.6/1H0,6X,5H SW  ,8F14.6/1H0,6X,5HWSW  ,
     18F14.6/1H0,6X,5H  W  ,8F14.6/1H0,6X,5HWNW  ,8F14.6/1H0,6X,5H NW  ,
     28F14.6/1H0,6X,5HNNW  ,8F14.6/1H0,6X,5H  N  ,8F14.6/1H0,6X,5HNNE  ,
     38F14.6/1H0,6X,5H NE  ,8F14.6/1H0,6X,5HENE  ,8F14.6/1H0,6X,5H  E  ,
```

```
   48F14.6/1H0,6X,5HESE  ,8F14.6/1H0,6X,5H SE  ,8F14.6/1H0,6X,5HSSE  ,
   58F14.6/1H0,6X,5H  S  ,8F14.6/1H0,127H-----------------------------
   6-------------------------------------------------------------------
   7-------------------------------)
    WRITE(51,420)NAME
    WRITE(51,406)
406 FORMAT(1H0/1H0/1H0,13X,104HFREQUENCY OF WIND SPEED AND WIND DIRECT
   1ION UNDER E-STABILITY CONDITIONS AT OAK RIDGE NATIONAL LABORATORY/
   21H ,33X,64H(BASED ON OBSERVATIONS MADE BY THE UNITED STATES WEATHE
   3R BUREAU)/1H0,127H-----------------------------------------------
   4-------------------------------------------------------------------
   5-------------/1H ,10H      WIND,47X,27HWIND SPEED (MILES PER HOUR)
   6/1H ,12H   DIRECTION,8X,3H0.5,11X,3H2.5,11X,3H7.0,10X,4H12.0,10X,
   74H17.0,10X,4H22.0,10X,4H27.0,11X,3H 29/1H0,127H------------------
   8-------------------------------------------------------------------
   9-----------------------------------------)
    WRITE(51,405)((FF(I,J),J=1,8),I=1,16)
    WRITE(51,407)NAME
407 FORMAT(1H1/1H0/1H0,8A4/1H0,47X,35HATMOSPHERIC DISPERSION COEFFICIE
   1NTS/1H0,127H-----------------------------------------------------
   2-------------------------------------------------------------------
   3-------/1H0,11H   DISTANCE,21X,22HC-STABILITY CONDITIONS,34X,22HE-
   4STABILITY CONDITIONS/1H ,12H  FROM STACK,13X,7HSIGMA-Y,21X,7HSIGMA
   5-Z,21X,7HSIGMA-Y,21X,7HSIGMA-Z/1H ,11H   (METERS)/1H0,127H--------
   6-------------------------------------------------------------------
   7-----------------------------------------------------)
    WRITE(51,408)((Y(K),SIGYC(K),SIGZC(K),SIGYE(K),SIGZE(K)),K=1,36)
408 FORMAT(1H ,1PF10.0,E23.3,3E28.3)
    WRITE(51,409)
409 FORMAT(1H0,127H-----------------------------------------------------
   1-------------------------------------------------------------------
   2----------)
    WRITE(51,410)NAME
410 FORMAT(1H1/1H0/1H ,8A4/1H0,12X,105HCENTERLINE GROUND CONCENTRATION
   1 PER UNIT RELEASE RATE UNDER C-STABILITY CONDITIONS AT VARIOUS WIN
   2D SPEEDS/1H0,47X,33H(CURIES/CU.METER PER CURIES/SEC.)/1H0,127H----
   3-------------------------------------------------------------------
   4-----------------------------------------------------------/1H0,11H
   5  DISTANCE,46X,27HWIND SPEED (MILES PER HOUR)/1H ,12H    (METERS),
   69X,3H0.5,11X,3H2.5,11X,3H7.0,10X,4H12.0,10X,4H17.0,10X,4H22.0,10X,
   74H27.0,11X,3H 29/1H0,127H----------------------------------------
   8-------------------------------------------------------------------
   9--------------------)
    WRITE(51,411)(Y(K),(CHIQC(J,K),J=1,8),K=1,36)
411 FORMAT(1H ,1PF10.0,3X,8E14.3)
    WRITE(51,409)
    WRITE(51,412)NAME
412 FORMAT(1H1/1H0/1H ,8A4/1H0,12X,105HCENTERLINE GROUND CONCENTRATION
   1 PER UNIT RELEASE RATE UNDER E-STABILITY CONDITIONS AT VARIOUS WIN
   2D SPEEDS/1H0,47X,33H(CURIES/CU.METER PER CURIES/SEC.)/1H0,127H----
   3-------------------------------------------------------------------
   4-----------------------------------------------------------/1H0,11H
   5  DISTANCE,46X,27HWIND SPEED (MILES PER HOUR)/1H ,12H    (METERS),
   69X,3H0.5,11X,3H2.5,11X,3H7.0,10X,4H12.0,10X,4H17.0,10X,4H22.0,10X,
   74H27.0,11X,3H 29/1H0,127H----------------------------------------
   8-------------------------------------------------------------------
   9--------------------)
    WRITE(51,411)(Y(K),(CHIQE(J,K),J=1,8),K=1,36)
    WRITE(51,409)
    WRITE(51,413)NAME
413 FORMAT(1H1/1H0/1H ,8A4/1H0,13X,103HAVERAGED GROUND CONCENTRATION P
   1ER UNIT RELEASE RATE UNDER C-STABILITY CONDITIONS AT VARIOUS WIND
   2SPEEDS/1H0,46X,38H(AVERAGED OVER AN ARC OF 22.5 DEGREES)/1H0,47X,
   333H(CURIES/CU.METER PER CURIES/SEC.)/1H0,127H--------------------
   4-------------------------------------------------------------------
   5-----------------------------------------/1H0,11H   DISTANCE,46X,27
```

```
     6HWIND SPEED (MILES PER HOUR)/1H ,12H    (METERS),9X,3H0.5,11X,3H2.
     75,11X,3H7.0,10X,4H12.0,10X,4H17.0,10X,4H22.0,10X,4H27.0,11X,3H 29)
      WRITE(51,409)
      WRITE(51,411)(Y(K),(CHQCA(J,K),J=1,8),K=1,36)
      WRITE(51,409)
      WRITE(51,414)NAME
  414 FORMAT(1H1/1H0/1H ,8A4/1H0,13X,103HAVERAGED GROUND CONCENTRATION P
     1ER UNIT RELEASE RATE UNDER E-STABILITY CONDITIONS AT VARIOUS WIND
     2SPEEDS/1H0,46X,38H(AVERAGED OVER AN ARC OF 22.5 DEGREES)/1H0,47X,
     333H(CURIES/CU.METER PER CURIES/SEC.)/1H0,127H--------------------
     4-------------------------------------------------------------------
     5-----------------------------------------/1H0,11H   DISTANCE,46X,27
     6HWIND SPEED (MILES PER HOUR)/1H ,12H    (METERS),9X,3H0.5,11X,3H2.
     75,11X,3H7.0,10X,4H12.0,10X,4H17.0,10X,4H22.0,10X,4H27.0,11X,3H 29)
      WRITE(51,409)
      WRITE(51,411)(Y(K),(CHQEA(J,K),J=1,8),K=1,36)
      WRITE(51,409)
   30 WRITE(51,415)NAME
  415 FORMAT(1H1/1H0/1H ,8A4/1H0,20X,89HCENTERLINE GROUND CONCENTRATION
     1PER UNIT RELEASE RATE WEIGHTED BY STABILITY CONDITION AND/1H ,41X,
     247HFREQUENCY OF WIND SPEEDS FOR VARIOUS DIRECTIONS/1H0,47X,33H(CUR
     3IES/CU.METER PER CURIES/SEC.)/1H0,127H-----------------------------
     4-------------------------------------------------------------------
     5--------------------------------/1H ,12H    DISTANCE,50X,20HDIREC
     6TION FROM STACK)
      WRITE(51,416)
  416 FORMAT(1H0,11H     METERS,11X,3HSSW,11X,3H SW,11X,3HWSW,11X,3H W ,
     111X,3HWNW,11X,3H NW,11X,3HNNW,11X,2H N/1H0,127H-------------------
     2-------------------------------------------------------------------
     3-------------------------------------------)
      WRITE(51,411)(Y(K),(CHIQTX(I,K),I=1,8),K=1,36)
      WRITE(51,409)
      WRITE(51,415)NAME
      WRITE(51,417)
  417 FORMAT(1H0,11H     METERS,11X,3HNNE,11X,3H NE,11X,3HENE,11X,3H E ,
     111X,3HESE,11X,3H SE,11X,3HSSE,11X,3H S /1H0,127H------------------
     2-------------------------------------------------------------------
     3-------------------------------------------)
      WRITE(51,411)(Y(K),(CHIQTX(I,K),I=9,16),K=1,36)
      WRITE(51,409)
      WRITE(51,418)NAME
  418 FORMAT(1H1/1H0/1H ,8A4/1H0,21X,87HAVERAGED GROUND CONCENTRATION PE
     1R UNIT RELEASE RATE WEIGHTED BY STABILITY CONDITION AND/1H ,41X,47
     2HFREQUENCY OF WIND SPEEDS FOR VARIOUS DIRECTIONS/1H0,46X,38H(AVERA
     3GED OVER AN ARC OF 22.5 DEGREES)/1H0,47X,33H(CURIES/CU.METER PER C
     4URIES/SEC.)/1H0,127H-----------------------------------------------
     5-------------------------------------------------------------------
     6---------------/1H ,12H    DISTANCE,50X,20HDIRECTION FROM STACK)
      WRITE(51,416)
      WRITE(51,411)(Y(K),(CHIQTA(I,K),I=1,8),K=1,36)
      WRITE(51,409)
      WRITE(51,418)NAME
      WRITE(51,417)
      WRITE(51,411)(Y(K),(CHIQTA(I,K),I=9,16),K=1,36)
      WRITE(51,409)
      GO TO 80
      END
C  BLOCK DATA FOR TSF - DAY AND NIGHT - ZERO WIND SPEED OMITTED
C
      BLOCK DATA
      COMMON/NAM2/OC,OE,V,X,TOT
      DIMENSION OC(16,8),OE(16,8),V(8),X(36)
      DATA OC/67.,115.,83.,112.,63.,80.,82.,129.,106.,164.,78.,77.,24.,
     124.,19.,35.,177.,366.,221.,299.,114.,140.,129.,336.,333.,551.,
     2286.,252.,143.,112.,73.,134.,302.,580.,376.,284.,88.,95.,126.,
     3557.,643.,852.,520.,512.,240.,239.,120.,167.,290.,552.,248.,110.,
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     430.,33.,60.,374.,407.,537.,476.,561.,366.,246.,83.,111.,224.,321.,
     5107.,25.,2.,7.,21.,203.,217.,203.,192.,364.,231.,134.,56.,58.,
     6147.,174.,25.,13.,3.,4.,12.,130.,111.,91.,115.,219.,125.,73.,20.,
     735.,15.,23.,1.,1.,1.,0.,5.,30.,39.,22.,38.,79.,30.,10.,3.,3.,1.,
     81.,0.,1.,0.,2.,2.,20.,13.,19.,31.,28.,8.,3.,0.,0./
      DATA OE/128.,272.,156.,278.,155.,239.,150.,293.,304.,482.,130.,
     1153.,91.,107.,52.,112.,411.,821.,435.,653.,327.,482.,440.,839.,
     2819.,1429.,481.,441.,225.,268.,184.,269.,791.,1653.,757.,785.,
     3257.,391.,487.,1478.,1501.,2341.,917.,986.,519.,519.,300.,496.,
     4872.,1659.,564.,327.,89.,140.,270.,1086.,1112.,1237.,851.,962.,
     5471.,461.,196.,387.,731.,1058.,152.,61.,19.,42.,77.,528.,471.,
     6384.,328.,467.,205.,169.,79.,180.,368.,460.,36.,14.,5.,16.,43.,
     7262.,177.,110.,117.,182.,83.,44.,21.,49.,18.,27.,0.,0.,0.,1.,8.,
     832.,20.,16.,19.,31.,20.,3.,1.,5.,5.,4.,0.,0.,0.,1.,6.,22.,9.,11.,
     913.,4.,6.,3.,0.,0./
      DATA V/.2235,1.1177,3.1293,5.3645,7.5997,9.8348,12.0770,12.9642/
      DATA X/150.,200.,300.,400.,500.,600.,700.,800.,900.,1000.,1100.,
     11200.,1300.,1400.,1600.,1800.,2000.,2500.,3000.,3500.,4000.,4500.,
     25000.,6000.,7000.,8000.,10000.,15000.,20000.,30000.,40000.,50000.,
     360000.,70000.,80000.,100000./
      DATA TOT/62911./
      END
C
C     SUBROUTINE SIGMA FOLLOWS
C
      SUBROUTINE SIGMA (SIGY,SIGZ)
      COMMON ICON,D,INV,TOP
      IF(20.-D)102,102,101
  101 GO TO (11,12,13,14,15,16),ICON
   11 Y=1.0000000000
      YK=0.2100000000
      Z=0.7500217470
      ZK=0.3912018805
      GO TO 123
   12 Y=1.0000000000
      YK=0.1600000000
      Z=0.7776075787
      ZK=0.2336256146
      GO TO 123
   13 Y=1.0000000000
      YK=0.1200000000
      Z=0.8479969066
      ZK=0.1419067629
      GO TO 123
   14 Y=1.0000000000
      YK=0.0800000000
      Z=0.8797061684
      ZK=0.0817872340
      GO TO 123
   15 Y=1.0000000000
      YK=0.0600000000
      Z=0.9586073148
      ZK=0.0363000000
      GO TO 123
   16 Y=1.0000000000
      YK=0.0400000000
      Z=0.9736710613
      ZK=0.0180625000
      GO TO 123
  102 IF(50.-D)104,104,103
  103 GO TO (21,22,23,24,25,26),ICON
   21 Y=1.0000000000
      YK=0.2100000000
      Z=0.8415546455
      ZK=0.2973814587
      GO TO 123
```

```
 22 Y=1.0000000000
    YK=0.1600000000
    Z=0.8646143147
    ZK=0.1800205496
    GO TO 123
 23 Y=1.0000000000
    YK=0.1200000000
    Z=0.8438259401
    ZK=0.1436910260
    GO TO 123
 24 Y=1.0000000000
    YK=0.0800000000
    Z=0.8797061684
    ZK=0.0817872340
    GO TO 123
 25 Y=1.0000000000
    YK=0.0600000000
    Z=0.9586073148
    ZK=0.0363000000
    GO TO 123
 26 Y=1.0000000000
    YK=0.0400000000
    Z=0.9736710613
    ZK=0.0180625000
    GO TO 123
104 IF(100.-D)106,106,105
105 GO TO (31,32,33,34,35,36),ICON
 31 Y=1.0000000000
    YK=0.2100000000
    Z=0.9068905956
    ZK=0.2303085536
    GO TO 123
 32 Y=1.0000000000
    YK=0.1600000000
    Z=0.9159357352
    ZK=0.1472748297
    GO TO 123
 33 Y=1.0000000000
    YK=0.1200000000
    Z=0.9240511468
    ZK=0.1049855253
    GO TO 123
 34 Y=1.0000000000
    YK=0.0800000000
    Z=0.8797061684
    ZK=0.0817872340
    GO TO 123
 35 Y=1.0000000000
    YK=0.0600000000
    Z=0.9586073148
    ZK=0.0363000000
    GO TO 123
 36 Y=1.0000000000
    YK=0.0400000000
    Z=0.9736710613
    ZK=0.0180625000
    GO TO 123
106 IF(200.-D)108,108,107
107 GO TO (41,42,43,44,45,46),ICON
 41 Y=0.9678153166
    YK=0.2435502957
    Z=1.1375035240
    ZK=0.0796313743
    GO TO 123
 42 Y=0.9572480196
    YK=0.1948159956
```

```
      Z=1.0000000000
      ZK=0.1000000000
      GO TO 123
   43 Y=0.9582452519
      YK=0.1454423028
      Z=0.9198296513
      ZK=0.1070464864
      GO TO 123
   44 Y=0.9542425094
      YK=0.0987654320
      Z=0.8513582368
      ZK=0.0931925905
      GO TO 123
   45 Y=0.9461246192
      YK=0.0768956923
      Z=0.9004643265
      ZK=0.0474452349
      GO TO 123
   46 Y=0.9420080530
      YK=0.0522448979
      Z=0.9598999622
      ZK=0.0192450949
      GO TO 123
  108 IF(500.-D)110,110,109
  109 GO TO (51,52,53,54,55,56),ICON
   51 Y=0.9678153166
      YK=0.2435502957
      Z=1.5771575670
      ZK=0.0077522375
      GO TO 123
   52 Y=0.9572480196
      YK=0.1948159956
      Z=1.1040174000
      ZK=0.0576305604
      GO TO 123
   53 Y=0.9582452519
      YK=0.1454423028
      Z=0.9443208352
      ZK=0.0940193984
      GO TO 123
   54 Y=0.9542425094
      YK=0.0987654320
      Z=0.8513582368
      ZK=0.0931925905
      GO TO 123
   55 Y=0.9461246192
      YK=0.0768956923
      Z=0.9191217704
      ZK=0.0429794905
      GO TO 123
   56 Y=0.9420080530
      YK=0.0522448979
      Z=0.9598999622
      ZK=0.0192450949
      GO TO 123
  110 IF(1000.-D)112,112,111
  111 GO TO(61,62,63,64,65,66),ICON
   61 Y=0.9678153166
      YK=0.2435502957
      Z=2.2587342680
      ZK=0.0001121687
      GO TO 123
   62 Y=0.9572480196
      YK=0.1948159956
      Z=1.2954558840
      ZK=0.0175374367
```

```
      GO TO 123
   63 Y=0.9582452519
      YK=0.1454423028
      Z=0.9443208352
      ZK=0.0940193984
      GO TO 123
   64 Y=0.9542425094
      YK=0.0987654320
      Z=0.7905466344
      ZK=0.1359909711
      GO TO 123
   65 Y=0.9461246192
      YK=0.0768956923
      Z=0.7589919005
      ZK=0.1162644600
      GO TO 123
   66 Y=0.9420080530
      YK=0.0522448979
      Z=0.8264637450
      ZK=0.0441022153
      GO TO 123
  112 IF(2000.-D)114,114,113
  113 GO TO (71,72,73,74,75,76),ICON
   71 Y=0.9140853713
      YK=0.3530030822
      Z=3.2782067170
      ZK=0.0000000980
      GO TO 123
   72 Y=0.9178132438
      YK=0.2558163339
      Z=1.5305147170
      ZK=0.0034577183
      GO TO 123
   73 Y=0.9020927547
      YK=0.2143622140
      Z=0.8826430494
      ZK=0.1439629793
      GO TO 123
   74 Y=0.8985423592
      YK=0.1451126987
      Z=0.7004397181
      ZK=0.2534141284
      GO TO 123
   75 Y=0.9091925860
      YK=0.0992425949
      Z=0.6698513983
      ZK=0.2152129922
      GO TO 123
   76 Y=0.9183299536
      YK=0.0615287629
      Z=0.7584987557
      ZK=0.0705269940
      GO TO 123
  114 IF(5000.-D)116,116,115
  115 GO TO (81,82,83,84,85,86),ICON
   81 Y=0.9140853713
      YK=0.3530030822
      Z=4.6720220660
      ZK=2.457131E-12
      GO TO 123
   82 Y=0.9178132438
      YK=0.2558163339
      Z=2.0276307590
      ZK=0.0000790304
      GO TO 123
   83 Y=0.9020927547
```

```
      YK=0.2143622140
      Z=0.8316959281
      ZK=0.2120453734
      GO TO 123
   84 Y=0.8985423592
      YK=0.1451126987
      Z=0.6576877317
      ZK=0.3507166735
      GO TO 123
   85 Y=0.9091925860
      YK=0.0992425949
      Z=0.5882374251
      ZK=0.4002014516
      GO TO 123
   86 Y=0.9183299536
      YK=0.0615287629
      Z=0.4821971203
      ZK=0.5760170783
      GO TO 123
  116 IF(10000.-D)118,118,117
  117 GO TO (91,92,93,94,95,96),ICON
   91 Y=0.9140853713
      YK=0.3530030822
      Z=7.7331235280
      ZK=1.168170E-23
      GO TO 123
   92 Y=0.9178132438
      YK=0.2558163339
      Z=2.3219280950
      ZK=0.0000064446
      GO TO 123
   93 Y=0.9020927547
      YK=0.2143622140
      Z=0.8316959281
      ZK=0.2120453734
      GO TO 123
   94 Y=0.8985423592
      YK=0.1451126987
      Z=0.5594274086
      ZK=0.8098757611
      GO TO 123
   95 Y=0.9091925860
      YK=0.0992425949
      Z=0.5025003405
      ZK=0.8306490326
      GO TO 123
   96 Y=0.9183299536
      YK=0.0615287629
      Z=0.4253058347
      ZK=0.9351354456
      GO TO 123
  118 IF(20000.-D)120,120,119
  119 GO TO (201,202,203,204,205,206),ICON
  201 Y=0.8565778577
      YK=0.5995267309
      Z=9.2761244050
      ZK=7.861445E-30
      GO TO 123
  202 Y=0.8502376797
      YK=0.4766839476
      Z=2.7655347460
      ZK=0.0000001083
      GO TO 123
  203 Y=0.8598212968
      YK=0.3163982445
      Z=0.7749334444
```

```
      ZK=0.3576668879
      GO TO 123
  204 Y=0.8673744347
      YK=0.1933646657
      Z=0.5501970826
      ZK=0.8817382996
      GO TO 123
  205 Y=0.8436527991
      YK=0.1814919049
      Z=0.3719687774
      ZK=2.7640367680
      GO TO 123
  206 Y=0.8598212968
      YK=0.1054660815
      Z=0.3523017439
      ZK=1.8318541060
      GO TO 123
  120 IF(50000.-D)122,122,121
  121 GO TO (211,212,213,214,215,216),ICON
  211 Y=0.8565778577
      YK=0.5995267309
      Z=9.2761244065
      ZK=7.861445E-30
      GO TO 123
  212 Y=0.8502376797
      YK=0.4766839476
      Z=2.5753218110
      ZK=0.0000007126
      GO TO 123
  213 Y=0.8598212968
      YK=0.3163982445
      Z=0.6524533971
      ZK=1.2030096010
      GO TO 123
  214 Y=0.8673744347
      YK=0.1933646657
      Z=0.4688060729
      ZK=1.9742624210
      GO TO 123
  215 Y=0.8436527991
      YK=0.1814919049
      Z=0.3230167845
      ZK=4.4883612650
      GO TO 123
  216 Y=0.8598212968
      YK=0.1054660815
      Z=0.2519296364
      ZK=4.9498760910
      GO TO 123
  122 GO TO (221,222,223,224,225,226),ICON
  221 Y=0.8565778577
      YK=0.5995267309
      Z=9.2761244050
      ZK=7.861445E-30
      GO TO 123
  222 Y=0.8502376797
      YK=0.4766839476
      Z=5.2812861100
      ZK=1.372896E-19
      GO TO 123
  223 Y=0.8598212968
      YK=0.3163982445
      Z=0.5849625007
      ZK=2.4969324370
      GO TO 123
  224 Y=0.8673744347
```

```
      YK=0.1933646657
      Z=0.5462820326
      ZK=0.8537833250
      GO TO 123
  225 Y=0.8436527991
      YK=0.1814919049
      Z=0.3230167845
      ZK=4.4883612650
      GO TO 123
  226 Y=0.8598212968
      YK=0.1054660815
      Z=0.2519296364
      ZK=4.9498760910
  123 SIGY=YK*D**Y
      SIGZ=ZK*D**Z
      IF(INV.EQ.2.AND.SIGZ.GE.TOP/2.15)GO TO 124
      GO TO 125
  124 SIGZ=TOP/2.15
  125 RETURN
      END
 /*
//LINK.SYSIN DD *
 ENTRY MAIN
 /*
//GO.FT50F001 DD *
REMOVE THIS CARD AND PLACE DATA HERE
 /*
//
```

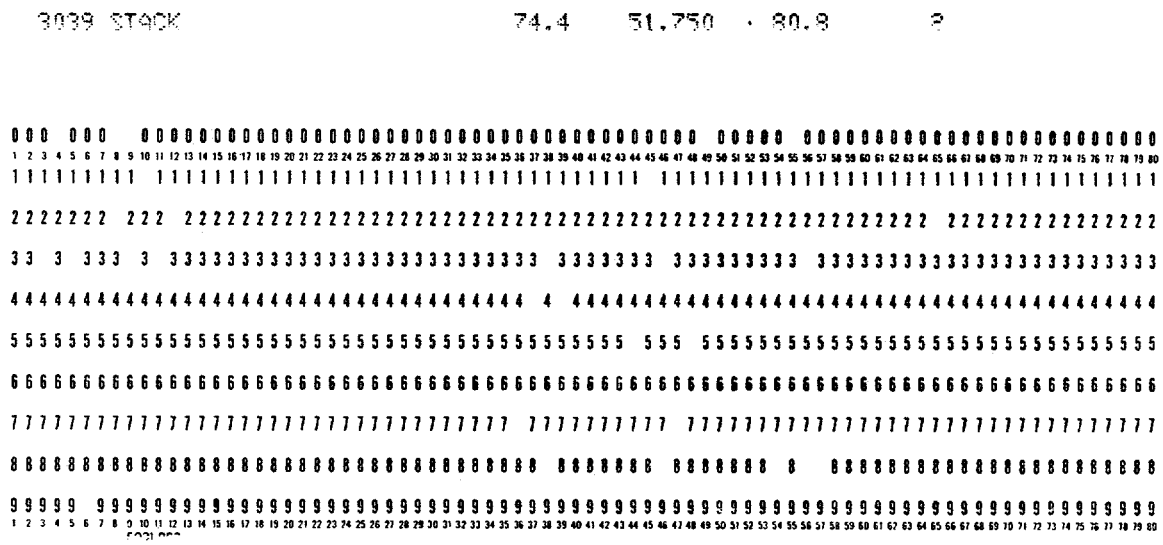

Fig. A-1. Input Data Card for PRØGRAM STAREL

3039 STACK

TABLE A-4

CENTERLINE GROUND CONCENTRATION PER UNIT RELEASE RATE WEIGHTED BY STABILITY CONDITION AND FREQUENCY OF WIND SPEEDS FOR VARIOUS DIRECTIONS

(CURIES/CU.METER PER CURIES/SEC.)

DISTANCE	DIRECTION FROM STACK							
METERS	SSW	SW	WSW	W	WNW	NW	NNW	N
150.	9.265E-19	1.253E-18	2.959E-19	1.149E-19	2.509E-20	4.228E-20	1.187E-19	1.049E-18
200.	6.053E-14	8.793E-14	2.660E-14	1.050E-14	2.414E-15	3.412E-15	8.153E-15	6.660E-14
300.	2.754E-10	4.411E-10	1.741E-10	8.486E-11	2.262E-11	2.708E-11	4.961E-11	3.317E-10
400.	5.256E-09	8.827E-09	3.942E-09	2.189E-09	6.206E-10	7.126E-10	1.157E-09	6.864E-09
500.	1.942E-08	3.351E-08	1.598E-08	9.825E-09	2.917E-09	3.329E-09	4.939E-09	2.676E-08
600.	3.766E-08	6.632E-08	3.300E-08	2.236E-08	6.930E-09	7.964E-09	1.087E-08	5.405E-08
700.	5.412E-08	9.686E-08	4.962E-08	3.660E-08	1.176E-08	1.366E-08	1.741E-08	8.017E-08
800.	6.663E-08	1.209E-07	6.315E-08	5.008E-08	1.664E-08	1.961E-08	2.358E-08	1.013E-07
900.	7.596E-08	1.394E-07	7.374E-08	6.257E-08	2.161E-08	2.608E-08	2.954E-08	1.183E-07
1000.	8.413E-08	1.562E-07	8.304E-08	7.559E-08	2.742E-08	3.422E-08	3.629E-08	1.342E-07
1100.	9.178E-08	1.721E-07	9.148E-08	8.884E-08	3.381E-08	4.363E-08	4.365E-08	1.498E-07
1200.	1.006E-07	1.905E-07	1.008E-07	1.042E-07	4.158E-08	5.536E-08	5.261E-08	1.678E-07
1300.	1.110E-07	2.119E-07	1.115E-07	1.220E-07	5.075E-08	6.938E-08	6.321E-08	1.889E-07
1400.	1.229E-07	2.363E-07	1.234E-07	1.418E-07	6.112E-08	8.534E-08	7.526E-08	2.129E-07
1600.	1.497E-07	2.912E-07	1.501E-07	1.856E-07	8.417E-08	1.209E-07	1.021E-07	2.667E-07
1800.	1.780E-07	3.484E-07	1.779E-07	2.307E-07	1.079E-07	1.576E-07	1.300E-07	3.228E-07
2000.	2.046E-07	4.022E-07	2.039E-07	2.727E-07	1.302E-07	1.920E-07	1.561E-07	3.754E-07
2500.	2.068E-07	4.077E-07	2.061E-07	2.826E-07	1.372E-07	2.036E-07	1.641E-07	3.833E-07
3000.	1.747E-07	3.441E-07	1.746E-07	2.406E-07	1.174E-07	1.740E-07	1.405E-07	3.246E-07
3500.	1.512E-07	2.976E-07	1.513E-07	2.095E-07	1.027E-07	1.522E-07	1.230E-07	2.815E-07
4000.	1.331E-07	2.620E-07	1.335E-07	1.855E-07	9.131E-08	1.352E-07	1.094E-07	2.484E-07
4500.	1.189E-07	2.339E-07	1.192E-07	1.663E-07	8.211E-08	1.216E-07	9.835E-08	2.221E-07
5000.	1.073E-07	2.111E-07	1.077E-07	1.506E-07	7.454E-08	1.104E-07	8.929E-08	2.008E-07
6000.	8.971E-08	1.766E-07	8.997E-08	1.265E-07	6.284E-08	9.322E-08	7.525E-08	1.682E-07
7000.	7.698E-08	1.516E-07	7.714E-08	1.089E-07	5.424E-08	8.057E-08	6.493E-08	1.445E-07
8000.	6.738E-08	1.327E-07	6.745E-08	9.552E-08	4.768E-08	7.092E-08	5.704E-08	1.266E-07
10000.	5.391E-08	1.063E-07	5.386E-08	7.666E-08	3.836E-08	5.721E-08	4.586E-08	1.015E-07
15000.	3.703E-08	7.320E-08	3.683E-08	5.285E-08	2.654E-08	3.976E-08	3.166E-08	6.988E-08
20000.	2.846E-08	5.633E-08	2.822E-08	4.068E-08	2.046E-08	3.074E-08	2.437E-08	5.377E-08
30000.	1.979E-08	3.925E-08	1.957E-08	2.834E-08	1.428E-08	2.152E-08	1.698E-08	3.745E-08
40000.	1.534E-08	3.044E-08	1.513E-08	2.198E-08	1.108E-08	1.673E-08	1.317E-08	2.904E-08
50000.	1.260E-08	2.503E-08	1.241E-08	1.807E-08	9.114E-09	1.378E-08	1.083E-08	2.387E-08
60000.	1.075E-08	2.135E-08	1.058E-08	1.541E-08	7.777E-09	1.177E-08	9.234E-09	2.036E-08
70000.	9.396E-09	1.868E-08	9.242E-09	1.348E-08	6.804E-09	1.030E-08	8.076E-09	1.781E-08
80000.	8.367E-09	1.663E-08	8.225E-09	1.201E-08	6.061E-09	9.183E-09	7.192E-09	1.586E-08
100000.	6.896E-09	1.372E-08	6.773E-09	9.899E-09	4.999E-09	7.579E-09	5.929E-09	1.308E-08

TABLE A-4 (Continued)

3039 STACK

CENTERLINE GROUND CONCENTRATION PER UNIT RELEASE RATE WEIGHTED BY STABILITY CONDITION AND FREQUENCY OF WIND SPEEDS FOR VARIOUS DIRECTIONS

(CURIES/CU.METER PER CURIES/SEC.)

DISTANCE	DIRECTION FROM STACK							
METERS	NNE	NE	ENE	E	ESE	SE	SSE	S
150.	1.023E-18	9.237E-19	1.115E-18	1.889E-18	1.001E-18	5.449E-19	1.767E-19	2.338E-19
200.	6.724E-14	6.731E-14	7.103E-14	1.140E-13	6.503E-14	3.797E-14	1.310E-14	1.687E-14
300.	3.512E-10	4.001E-10	3.555E-10	5.009E-10	2.933E-10	1.898E-10	7.073E-11	9.189E-11
400.	7.433E-09	8.929E-09	7.244E-09	9.444E-09	5.456E-09	3.773E-09	1.485E-09	1.962E-09
500.	2.919E-08	3.621E-08	2.776E-08	3.451E-08	1.968E-08	1.415E-08	5.810E-09	7.836E-09
600.	5.894E-08	7.517E-08	5.511E-08	6.611E-08	3.737E-08	2.754E-08	1.175E-08	1.626E-08
700.	8.711E-08	1.138E-07	8.039E-08	9.374E-08	5.272E-08	3.948E-08	1.743E-08	2.474E-08
800.	1.095E-07	1.462E-07	9.976E-08	1.138E-07	6.376E-08	4.836E-08	2.200E-08	3.198E-08
900.	1.271E-07	1.730E-07	1.136E-07	1.273E-07	7.117E-08	5.476E-08	2.558E-08	3.809E-08
1000.	1.432E-07	1.988E-07	1.242E-07	1.373E-07	7.661E-08	6.017E-08	2.880E-08	4.400E-08
1100.	1.586E-07	2.241E-07	1.327E-07	1.453E-07	8.091E-08	6.511E-08	3.182E-08	4.981E-08
1200.	1.765E-07	2.535E-07	1.415E-07	1.539E-07	8.546E-08	7.077E-08	3.524E-08	5.651E-08
1300.	1.974E-07	2.877E-07	1.512E-07	1.636E-07	9.067E-08	7.744E-08	3.920E-08	6.426E-08
1400.	2.211E-07	3.263E-07	1.620E-07	1.749E-07	9.663E-08	8.510E-08	4.366E-08	7.298E-08
1600.	2.744E-07	4.125E-07	1.863E-07	2.006E-07	1.103E-07	1.025E-07	5.365E-08	9.235E-08
1800.	3.299E-07	5.017E-07	2.119E-07	2.280E-07	1.249E-07	1.208E-07	6.402E-08	1.124E-07
2000.	3.821E-07	5.852E-07	2.360E-07	2.541E-07	1.387E-07	1.380E-07	7.375E-08	1.310E-07
2500.	3.883E-07	5.983E-07	2.323E-07	2.500E-07	1.356E-07	1.383E-07	7.459E-08	1.339E-07
3000.	3.278E-07	5.058E-07	1.951E-07	2.098E-07	1.132E-07	1.160E-07	6.287E-08	1.132E-07
3500.	2.835E-07	4.380E-07	1.680E-07	1.805E-07	9.691E-08	9.986E-08	5.432E-08	9.799E-08
4000.	2.497E-07	3.862E-07	1.473E-07	1.582E-07	8.464E-08	8.760E-08	4.778E-08	8.636E-08
4500.	2.230E-07	3.451E-07	1.310E-07	1.407E-07	7.505E-08	7.798E-08	4.262E-08	7.716E-08
5000.	2.013E-07	3.118E-07	1.178E-07	1.265E-07	6.737E-08	7.024E-08	3.845E-08	6.970E-08
6000.	1.684E-07	2.611E-07	9.785E-08	1.051E-07	5.586E-08	5.858E-08	3.213E-08	5.836E-08
7000.	1.447E-07	2.245E-07	8.351E-08	8.973E-08	4.766E-08	5.022E-08	2.757E-08	5.016E-08
8000.	1.267E-07	1.968E-07	7.276E-08	7.823E-08	4.155E-08	4.396E-08	2.414E-08	4.397E-08
10000.	1.016E-07	1.579E-07	5.780E-08	6.221E-08	3.307E-08	3.521E-08	1.933E-08	3.528E-08
15000.	7.002E-08	1.090E-07	3.925E-08	4.234E-08	2.258E-08	2.427E-08	1.331E-08	2.436E-08
20000.	5.393E-08	8.402E-08	2.996E-08	3.236E-08	1.730E-08	1.870E-08	1.024E-08	1.878E-08
30000.	3.760E-08	5.863E-08	2.070E-08	2.239E-08	1.201E-08	1.305E-08	7.136E-09	1.311E-08
40000.	2.918E-08	4.552E-08	1.597E-08	1.730E-08	9.295E-09	1.013E-08	5.536E-09	1.018E-08
50000.	2.399E-08	3.744E-08	1.308E-08	1.418E-08	7.630E-09	8.334E-09	4.551E-09	8.372E-09
60000.	2.047E-08	3.196E-08	1.114E-08	1.208E-08	6.504E-09	7.114E-09	3.883E-09	7.146E-09
70000.	1.791E-08	2.796E-08	9.725E-09	1.055E-08	5.684E-09	6.225E-09	3.397E-09	6.252E-09
80000.	1.596E-08	2.491E-08	8.650E-09	9.386E-09	5.060E-09	5.546E-09	3.025E-09	5.571E-09
100000.	1.316E-08	2.055E-08	7.117E-09	7.725E-09	4.169E-09	4.575E-09	2.495E-09	4.595E-09

APPENDIX B

PRØGRAM RELISH

PRØGRAM RELISH calculates the isopleth coordinates of stack releases in three coordinate systems:

1. Rectangular cartesian
2. Logarithmic polar
3. Modified rectangular cartesian

BLØCK DATA FOR PRØGRAM RELISH

The isopleths which are to be examined are stored in the BLØCK DATA subprogram and range in value from 1×10^{-2}, 5×10^{-3}, 2×10^{-3}, 1×10^{-3}, etc., down to 2×10^{-10}; X(K) is the distance downwind from the stack under investigation where K = 1, 36 and X(K) ranges from 150 meters to 100,000 meters.

In addition to the BLØCK DATA, the other input data consists of stack characteristics and the atmospheric conditions which exist at the time of the release.

```
80    READ (50, 101) NAME, TEL, CAP, V, TØP, ICØN, INV
101   FØRMAT (8A4, F8.2, 3F10.4, 2I5)
```

where:

NAME is the name of the stack.

TEL is the physical stack height (meters).

CAP is the stack constant (meters^2/sec)

V is the wind speed (meters/sec)

TØP is the height of the inversion lid if an inversion exists (meters).

ICØN is the atmospheric stability condition (1, 2, 3, 4, 5, 6, 7 for A, B, C, D, E, F, respectively).

INV is the inversion condition (1 for no inversion, 2 for inversion).

PRØGRAM RELISH requires SUBRØUTINE SIGMA to calculate the horizontal and vertical dispersion coefficients. SUBRØUTINE SIGMA is discussed in Appendix A.

The CØMMENTS discussed refer to the CØMMENT cards in the program.

CØMMENT 1 DETERMINE THE EFFECTIVE STACK HEIGHT

The effective stack height is determined from the physical stack height, the stack constant, and the wind speed and, in addition, is limited to be no greater than the inversion lid if an inversion exists. It should be pointed out that if the physical stack height is greater than the height of the inversion lid lofting occurs and the program will not produce correct results. PRØGRAM RELISH will give correct results for a ground level release when TEL and CAP are input as 0. However, if the wind speed is input as 0, the value of the effective stack height becomes infinite and the program will not produce correct results.

CØMMENT 2 CALCULATIØN OF MAXIMUM CØNCENTRATIØN

In order to determine the starting isopleth, it is necessary to calculate the maximum value of the centerline ground concentration for the input data. In order to accomplish this, the concentration is calculated at 50-meter invervals starting at 100 meters from the source. As soon as a calculation is made which is less than the previous calculation, the previous calculation is determined to be the maximum concentration and control is transferred out of the DØ LØØP. If the maximum value has not been reached at 99950 meters downwind from the stack, which is highly unlikely, the program proceeds with the maximum concentration as the value determined at a distance of 99900 meters downwind (approximately 60 miles from the source).

CØMMENT 3 RHØ-ZERØ

RHØ-ZERØ (RHØØ) in PRØGRAM RELISH is 100 since the center of the logarithmic polar coordinate system is 100 meters. If a different system is used, i.e., the center is chosen as 1000 meters, this statement should be adjusted accordingly.

CØMMENT 4 CALCULATIØN OF ISØPLETH CØØRDINATES

The isopleths are calculated in descending order beginning with the first one encountered which is less than CQMAX. The first calculation made is the quantity BR(I,K). Since the subsequent calculation extracts the square root of this quantity, BR(I,K) is checked and, if it is negative, it is made equal to zero since no isopleth exists at that point. The calculation of the coordinates of the isopleths then proceeds.

CØMMENT 5 ØUTPUT OF PRØGRAM RELISH

Each page of the output of PRØGRAM RELISH contains the following information:

1. The name of the stack as input
2. The stack height
3. The stack constant
4. The wind speed
5. The atmospheric stability condition
6. Rho-zero
7. Chi/Q (max)
8. The location downwind of Chi/Q (max)

In addition, each page lists the coordinates of separate isopleths in the three coordinate systems.

LISTING

PRØGRAM RELISH is written in Fortran IV and is shown on pages 153 through 155 with the control cards in use at ORNL. The Job No. and Charge No. have been omitted from the job card.

USING PRØGRAM RELISH

Suppose one wanted to run PROGRAM RELISH under the following conditions:

NAME - 3039 Stack

TEL - 74.4 meters

CAP - 51.750 meters^2/sec

V - 7.456 meters/sec

TØP - 80.8 meters

ICØN - 3 (C-conditions)

INV - 1 (no inversion)

The data card with this information is shown in Figure B-1 and would be inserted into the program deck as shown in the program listing. The program runs approximately 15 sec on the IBM 360/75.

The output of the program from the above data is shown in Table B-1.

```
//      JOB       ,MSGLEVEL=1,CLASS=C,REGION=470K
// EXEC FORTHCLG,PARM.FORT='DECK,OPT=2,MAP,BCD,LIST',PARM.GO='DUMP=H',
// REGION.GO=445K
//FORT.SYSIN DD *
C       PROGRAM RELISH
C
      DIMENSION CHQ(2000),XX(2000),CHIQ(36),X(36),BR(24,36),Y(24,36),
     1 NAME(8), RHO(24,36),THET(24,36),XPRI(24,36),YPRI(24,36),CQ(24)
      COMMON ICON,D,INV,TOP
      COMMON/TOMH/X,CQ
   80 READ(50,101)NAME,TEL,CAP,V,TOP,ICON,INV
  101 FORMAT(8A4,F8.2,3F10.4,2I5)
C
COMMENT  1  DETERMINE THE EFFECTIVE STACK HEIGHT
C
      T=TEL+CAP/V
      GO TO (13,11),INV
   11 IF (T.GE.TOP) T=TOP
C
COMMENT  2  CALCULATION OF MAXIMUM CONCENTRATION
C
   13 D=50.
      CHQ(1)=0.
      DO5N=2,2000
      D=D+50.
      XX(N)=D
      CALL SIGMA (SIGY,SIGZ)
      EX=T*T/(2.*SIGZ*SIGZ)
      IF(EX.GE.100.)EX=100.
   15 CHQ(N)=EXP(-EX)/(3.1416*SIGY*SIGZ*V)
      IF(CHQ(N).LT.1.0E-20)GO TO 5
      IF(CHQ(N).GT.CHQ(N-1))GO TO 5
      GO TO 16
    5 CONTINUE
   16 CQMAX=CHQ(N-1)
      DMAX=XX(N-1)
C
COMMENT  3  RHO-ZERO
C
   43 RHOO=100.
      DO6K=1,36
      D=X(K)
      CALL SIGMA (SIGY,SIGZ)
      DEN=3.1416*SIGY*SIGZ*V
      EX=T*T/(2.*SIGZ*SIGZ)
      IF(EX.GE.100.)EX=100.
   18 CHIQ(K)=EXP(-EX)/DEN
C
COMMENT  4  CALCULATION OF ISOPLETH COORDINATES
C
      DO6I=1,24
      IF(CQ(I).GT.CQMAX)GO TO 6
      BR(I,K)=-ALOG(CQ(I))-ALOG(DEN)-EX
      IF(BR(I,K))19,19,20
   19 Y(I,K)=0.0
      GO TO 21
   20 Y(I,K)=1.4142*SIGY*SQRT(BR(I,K))
   21 FSQ=X(K)**2+Y(I,K)**2
      QFSQ=SQRT(FSQ)
      TGT=Y(I,K)/X(K)
      RHO(I,K)=ALOG(QFSQ/RHOO)
      THET(I,K)=ATAN(TGT)*57.29578
      XPRI(I,K)=RHO(I,K)*X(K)/QFSQ
```

```
      YPRI(I,K)=RHO(I,K)*Y(I,K)/QFSQ
    6 CONTINUE
C
COMMENT  5   OUTPUT OF PROGRAM RELISH
C
      DO7I=1,24
      IF(CQ(I).GT.CQMAX)GO TO 7
      WRITE(51,201)NAME,TEL,CAP,V
  201 FORMAT(1H1,8A4/1H0,14H  STACK HEIGHT,2X,F6.3,26H METERS      STACK
     1CONSTANT,2X,F5.2,29H SQ.METERS/SEC      WIND SPEED,2X,F6.3,11H METE
     2RS/SEC)
      GO TO (102,103),INV
  102 GO TO (111,112,113,114,115,116),ICON
  111 WRITE(51,202)
  202 FORMAT(1H0,39H  A STABILITY CONDITION    NO INVERSION)
      GO TO 104
  112 WRITE(51,203)
  203 FORMAT(1H0,39H  B STABILITY CONDITION    NO INVERSION)
      GO TO 104
  113 WRITE(51,204)
  204 FORMAT(1H0,39H  C STABILITY CONDITION    NO INVERSION)
      GO TO 104
  114 WRITE(51,205)
  205 FORMAT(1H0,39H  D STABILITY CONDITION    NO INVERSION)
      GO TO 104
  115 WRITE(51,206)
  206 FORMAT(1H0,39H  E STABILITY CONDITION    NO INVERSION)
      GO TO 104
  116 WRITE(51,207)
  207 FORMAT(1H0,39H  F STABILITY CONDITION    NO INVERSION)
      GO TO 104
  103 GO TO (121,122,123,124,125,126),ICON
  121 WRITE(51,208)TOP
  208 FORMAT(1H0,45H  A STABILITY CONDITION WITH INVERSION LID AT,2X,F4.
     11,7H METERS)
      GO TO 104
  122 WRITE(51,209)TOP
  209 FORMAT(1H0,45H  B STABILITY CONDITION WITH INVERSION LID AT,2X,F4.
     11,7H METERS)
      GO TO 104
  123 WRITE(51,210)TOP
  210 FORMAT(1H0,45H  C STABILITY CONDITION WITH INVERSION LID AT,2X,F4.
     11,7H METERS)
      GO TO 104
  124 WRITE(51,211)TOP
  211 FORMAT(1H0,45H  D STABILITY CONDITION WITH INVERSION LID AT,2X,F4.
     11,7H METERS)
      GO TO 104
  125 WRITE(51,212)TOP
  212 FORMAT(1H0,45H  E STABILITY CONDITION WITH INVERSION LID AT,2X,F4.
     11,7H METERS)
      GO TO 104
  126 WRITE(51,213)TOP
  213 FORMAT(1H0,45H  F STABILITY CONDITION WITH INVERSION LID AT,2X,F4.
     11,7H METERS)
  104 WRITE(51,214)RHOO,CQMAX,DMAX
  214 FORMAT(1H0,12H  RHO ZERO =,F5.0,5X,13H CHI/Q(MAX) =,1PE9.3,4H AT ,
     10PF8.1,16H METERS DOWNWIND)
      WRITE(51,215)CQ(I)
  215 FORMAT(1H0/1H ,8H  CHI/Q=,1PE9.3,37X,27HCOORDINATES OF THE ISOPLET
     1H/1H0,123H-----------------------------------------------------------
     2-------------------------------------------------------------------
     3 /1H0,13H  CENTERLINE,8X,21HRECTANGULAR CARTESIAN,17X,17HLOGARITHM
     4IC POLAR,13X,30HMODIFIED RECTANGULAR CARTESIAN/1H ,9H    CHI/Q,12X
    53,1HX,18X,1HY,15X,3HRHO,14X,5HTHETA,13X,7HX-PRIME,11X,7HY-PRIME)
      WRITE(51,216)
```

```
  216 FORMAT(1H ,121H-----------------------------------------------------
     1-----------------------------------------------------------------
     2----)
      WRITE(51,217)(CHIQ(K),X(K),Y(I,K),RHO(I,K),THET(I,K),XPRI(I,K),
     1YPRI(I,K),K=1,36)
  217 FORMAT(1H ,2X,1PE9.3,7X,0PF8.1,11X,0PF8.1,9X,0PF6.5,10X,0PF7.3,12X
     1,0PF7.4,11X,0PF7.4)
      WRITE(51,216)
    7 CONTINUE
      GO TO 80
      END
C
C   BLOCK DATA
C
      BLOCK DATA
      DIMENSION X(36),CQ(24)
      COMMON/TCMH/X,CQ
      DATA X/150.,200.,300.,400.,500.,600.,700.,800.,900.,1000.,1100.,
     11200.,1300.,1400.,1600.,1800.,2000.,2500.,3000.,3500.,4000.,4500.,
     25000.,6000.,7000.,8000.,10000.,15000.,20000.,30000.,40000.,50000.,
     360000.,70000.,80000.,100000./
      DATA CQ/1.0E-2,5.0E-3,2.0E-3,1.0E-3,5.0E-4,2.0E-4,1.0E-4,5.0E-5,
     12.0E-5,1.0E-5,5.0E-6,2.0E-6,1.0E-6,5.0E-7,2.0E-7,1.0E-7,5.0E-8,
     22.0E-8,1.0E-8,5.0E-9,2.0E-9,1.0E-9,5.0E-10,2.0E-10/
      END
C
C   PLACE SUBROUTINE SIGMA HERE
C
C
C
C  THE /* HAS BEEN MOVED FROM COLS 1 AND 2 TO 2 AND 3 FOR LISTING
C
C
 /*
//LINK.SYSIN DD *
 ENTRY MAIN
 /*
//GO.FT50F001 DD *
REMOVE THIS CARD AND PLACE DATA HERE
 /*
//
```

```
3039 STACK                    74.4    51.730    7.456    80.8      3    1

000 000  0000000000000000000000000000000000000000000000000000 0000000000000000 0000000000000000
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
1111111111 1111111111111111111111111111111111111111 1111111111111111111111111111111111111
2222222 222 2222222222222222222222222222222222222222222222222222222222222222222222222222222222
33 3 333 3 3333333333333333333333333333 3333333 333333333 333333333 33333333 33333
444444444444444444444444444444444444 4 4444444444444444 4444444444444444444444444
5555555555555555555555555555555555555555555555 555 555555555 5555555555555555555555555
6666666666666666666666666666666666666666666666666666666666 66666666666666666666666
7777777777777777777777777777777777777 7777777777 7777777 77777777777777777777777777
8888888888888888888888888888888888888888 8888888 88888888 8888888 8  888888888888888
99999 9999999999999999999999999999999999999999999999999999999999999999999999999999999999999999
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
```

Fig. B-1. Input Data Card for PRØGRAM RELISH

TABLE B-1

3039 STACK

STACK HEIGHT 74 400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 7.456 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =2.791E-06 AT 900.0 METERS DOWNWIND

CHI/Q=2.000E-06 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
8.077E-17	150.0	0.0	0.40547	0.0	0.4055	0.0
6.115E-12	200.0	0.0	0.69315	0.0	0.6931	0.0
2.362E-08	300.0	0.0	1.09861	0.0	1.0986	0.0
3.666E-07	400.0	0.0	1.38629	0.0	1.3863	0.0
1.150E-06	500.0	0.0	1.60944	0.0	1.6094	0.0
1.943E-06	600.0	0.0	1.79176	0.0	1.7918	0.0
2.474E-06	700.0	50.5	1.94851	4.129	1.9434	0.1403
2.732E-06	800.0	69.5	2.08320	4.966	2.0754	0.1803
2.791E-06	900.0	80.5	2.20120	5.108	2.1925	0.1960
2.729E-06	1000.0	85.9	2.30626	4.911	2.2978	0.1974
2.609E-06	1100.0	86.6	2.40098	4.501	2.3936	0.1884
2.461E-06	1200.0	82.8	2.48728	3.947	2.4814	0.1712
2.305E-06	1300.0	73.6	2.56655	3.239	2.5624	0.1450
2.149E-06	1400.0	56.0	2.63986	2.291	2.6377	0.1055
1.860E-06	1600.0	0.0	2.77259	0.0	2.7726	0.0
1.610E-06	1800.0	0.0	2.89037	0.0	2.8904	0.0
1.401E-06	2000.0	0.0	2.99573	0.0	2.9957	0.0
1.024E-06	2500.0	0.0	3.21888	0.0	3.2189	0.0
7.791E-07	3000.0	0.0	3.40120	0.0	3.4012	0.0
6.130E-07	3500.0	0.0	3.55535	0.0	3.5553	0.0
4.954E-07	4000.0	0.0	3.68888	0.0	3.6889	0.0
4.093E-07	4500.0	0.0	3.80666	0.0	3.8067	0.0
3.444E-07	5000.0	0.0	3.91202	0.0	3.9120	0.0
2.545E-07	6000.0	0.0	4.09434	0.0	4.0943	0.0
1.965E-07	7000.0	0.0	4.24850	0.0	4.2485	0.0
1.568E-07	8000.0	0.0	4.38203	0.0	4.3820	0.0
1.073E-07	10000.0	0.0	4.60517	0.0	4.6052	0.0
5.571E-08	15000.0	0.0	5.01064	0.0	5.0106	0.0
3.492E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
1.896E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
1.228E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
8.769E-09	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.741E-09	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.396E-09	70000.0	0.0	6.55108	0.0	6.5511	0.0
4.450E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
3.224E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE B-1. (Continued)

3039 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 7.456 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =2.791E-06 AT 900.0 METERS DOWNWIND

CHI/Q=1.000E-06 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
8.077E-17	150.0	0.0	0.40547	0.0	0.4055	0.0
6.115E-12	200.0	0.0	0.69315	0.0	0.6931	0.0
2.362E-08	300.0	0.0	1.09861	0.0	1.0986	0.0
3.666E-07	400.0	0.0	1.38629	0.0	1.3863	0.0
1.150E-06	500.0	29.6	1.61119	3.393	1.6084	0.0954
1.943E-06	600.0	77.0	1.79992	7.312	1.7853	0.2291
2.474E-06	700.0	104.2	1.95688	8.471	1.9355	0.2883
2.732E-06	800.0	124.8	2.09146	8.866	2.0665	0.3223
2.791E-06	900.0	141.2	2.20938	8.915	2.1827	0.3424
2.729E-06	1000.0	154.4	2.31437	8.780	2.2873	0.3533
2.609E-06	1100.0	164.5	2.40895	8.505	2.3825	0.3563
2.461E-06	1200.0	172.5	2.49513	8.178	2.4698	0.3549
2.305E-06	1300.0	178.5	2.57428	7.817	2.5504	0.3501
2.149E-06	1400.0	182.6	2.64750	7.433	2.6252	0.3425
1.860E-06	1600.0	185.5	2.77927	6.614	2.7608	0.3201
1.610E-06	1800.0	180.8	2.89539	5.735	2.8809	0.2894
1.401E-06	2000.0	167.2	2.99921	4.779	2.9888	0.2499
1.024E-06	2500.0	54.2	3.21911	1.241	3.2184	0.0697
7.791E-07	3000.0	0.0	3.40120	0.0	3.4012	0.0
6.130E-07	3500.0	0.0	3.55535	0.0	3.5553	0.0
4.954E-07	4000.0	0.0	3.68888	0.0	3.6889	0.0
4.093E-07	4500.0	0.0	3.80666	0.0	3.8067	0.0
3.444E-07	5000.0	0.0	3.91202	0.0	3.9120	0.0
2.545E-07	6000.0	0.0	4.09434	0.0	4.0943	0.0
1.965E-07	7000.0	0.0	4.24850	0.0	4.2485	0.0
1.568E-07	8000.0	0.0	4.38203	0.0	4.3820	0.0
1.073E-07	10000.0	0.0	4.60517	0.0	4.6052	0.0
5.571E-08	15000.0	0.0	5.01064	0.0	5.0106	0.0
3.492E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
1.896E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
1.228E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
8.769E-09	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.741E-09	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.396E-09	70000.0	0.0	6.55108	0.0	6.5511	0.0
4.450E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
3.224E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE B-1. (Continued)

3039 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 7.456 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =2.791E-06 AT 900.0 METERS DOWNWIND

CHI/Q=5.000E-07 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
8.077E-17	150.0	0.0	0.40547	0.0	0.4055	0.0
6.115E-12	200.0	0.0	0.69315	0.0	0.6931	0.0
2.362E-08	300.0	0.0	1.09861	0.0	1.0986	0.0
3.666E-07	400.0	0.0	1.38629	0.0	1.3863	0.0
1.150E-06	500.0	72.4	1.61981	8.239	1.6031	0.2321
1.943E-06	600.0	110.1	1.80831	10.395	1.7786	0.3263
2.474E-06	700.0	138.5	1.96511	11.192	1.9277	0.3814
2.732E-06	800.0	162.2	2.09959	11.462	2.0577	0.4172
2.791E-06	900.0	182.7	2.21742	11.477	2.1731	0.4412
2.729E-06	1000.0	200.8	2.32235	11.354	2.2769	0.4572
2.609E-06	1100.0	215.9	2.41680	11.105	2.3715	0.4655
2.461E-06	1200.0	229.4	2.50285	10.822	2.4583	0.4700
2.305E-06	1300.0	241.4	2.58190	10.521	2.5385	0.4715
2.149E-06	1400.0	252.2	2.65502	10.210	2.6130	0.4706
1.960E-06	1600.0	270.0	2.78662	9.577	2.7478	0.4636
1.610E-06	1800.0	283.3	2.90260	8.944	2.8673	0.4512
1.401E-06	2000.0	292.4	3.00630	8.316	2.9747	0.4348
1.024E-06	2500.0	298.3	3.22594	6.804	3.2032	0.3822
7.791E-07	3000.0	276.6	3.40543	5.267	3.3910	0.3126
6.130E-07	3500.0	215.4	3.55724	3.521	3.5505	0.2185
4.954E-07	4000.0	0.0	3.68888	0.0	3.6889	0.0
4.093E-07	4500.0	0.0	3.80666	0.0	3.8067	0.0
3.444E-07	5000.0	0.0	3.91202	0.0	3.9120	0.0
2.545E-07	6000.0	0.0	4.09434	0.0	4.0943	0.0
1.965E-07	7000.0	0.0	4.24850	0.0	4.2485	0.0
1.568E-07	8000.0	0.0	4.38203	0.0	4.3820	0.0
1.073E-07	10000.0	0.0	4.60517	0.0	4.6052	0.0
5.571E-08	15000.0	0.0	5.01064	0.0	5.0106	0.0
3.492E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
1.896E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
1.228E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
8.769E-09	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.741E-09	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.396E-09	70000.0	0.0	6.55108	0.0	6.5511	0.0
4.450E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
3.224E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE B-1. (Continued)

3039 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 7.456 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =2.791E-06 AT 500.0 METERS DOWNWIND

CHI/Q=2.000E-07 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
8.077E-17	150.0	0.0	0.40547	0.0	0.4055	0.0
6.115E-12	200.0	0.0	0.69315	0.0	0.6931	0.0
2.362E-08	300.0	0.0	1.09861	0.0	1.0986	0.0
3.666E-07	400.0	49.9	1.39401	7.107	1.3833	0.1725
1.150E-06	500.0	104.9	1.63099	11.852	1.5962	0.3350
1.943E-06	600.0	142.5	1.81918	13.357	1.7700	0.4202
2.474E-06	700.0	173.7	1.97579	13.936	1.9176	0.4759
2.732E-06	800.0	201.3	2.11013	14.122	2.0464	0.5148
2.791E-06	900.0	226.2	2.22786	14.110	2.1606	0.5431
2.729E-06	1000.0	249.2	2.33271	13.993	2.2635	0.5640
2.609E-06	1100.0	269.2	2.42698	13.752	2.3574	0.5770
2.461E-06	1200.0	287.9	2.51289	13.490	2.4436	0.5862
2.305E-06	1300.0	305.4	2.59180	13.219	2.5231	0.5927
2.149E-06	1400.0	321.8	2.66479	12.944	2.5971	0.5969
1.860E-06	1600.0	351.7	2.79619	12.398	2.7310	0.6004
1.610E-06	1800.0	378.3	2.91198	11.869	2.8497	0.5989
1.401E-06	2000.0	401.9	3.01552	11.362	2.9564	0.5941
1.024E-06	2500.0	450.2	3.23483	10.209	3.1836	0.5733
7.791E-07	3000.0	484.3	3.41406	9.170	3.3704	0.5441
6.130E-07	3500.0	505.1	3.56565	8.211	3.5291	0.5093
4.954E-07	4000.0	512.7	3.69703	7.304	3.6670	0.4700
4.093E-07	4500.0	506.7	3.81296	6.424	3.7890	0.4266
3.444E-07	5000.0	485.4	3.91671	5.544	3.8984	0.3784
2.545E-07	6000.0	380.9	4.09636	3.633	4.0881	0.2595
1.965E-07	7000.0	0.0	4.24850	0.0	4.2485	0.0
1.568E-07	8000.0	0.0	4.38203	0.0	4.3820	0.0
1.073E-07	10000.0	0.0	4.60517	0.0	4.6052	0.0
5.571E-08	15000.0	0.0	5.01064	0.0	5.0106	0.0
3.492E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
1.896E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
1.228E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
8.769E-09	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.741E-09	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.396E-09	70000.0	0.0	6.55108	0.0	6.5511	0.0
4.450E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
3.224E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE B-1. (Continued)

3039 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 7.456 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100 CHI/Q(MAX) =2.791E-06 AT 900.0 METERS DOWNWIND

CHI/Q=1.000E-07 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
8.077E-17	150.0	0.0	0.40547	0.0	0.4055	0.0
6.115E-12	200.0	0.0	0.69315	0.0	0.6931	0.0
2.362E-08	300.0	0.0	1.09861	0.0	1.0986	0.0
3.666E-07	400.0	73.0	1.40269	10.346	1.3799	0.2519
1.150E-06	500.0	124.0	1.63927	13.927	1.5911	0.3945
1.943E-06	600.0	162.7	1.82725	15.175	1.7635	0.4783
2.474E-06	700.0	196.2	1.98372	15.656	1.9101	0.5353
2.732E-06	800.0	226.4	2.11796	15.800	2.0379	0.5767
2.791E-06	900.0	254.2	2.23561	15.775	2.1514	0.6078
2.729E-06	1000.0	280.3	2.34040	15.658	2.2535	0.6317
2.609E-06	1100.0	303.4	2.43455	15.419	2.3469	0.6473
2.461E-06	1200.0	325.2	2.52034	15.163	2.4326	0.6593
2.305E-06	1300.0	346.0	2.59916	14.902	2.5117	0.6684
2.149E-06	1400.0	365.7	2.67206	14.641	2.5853	0.6754
1.860E-06	1600.0	402.7	2.80330	14.127	2.7185	0.6842
1.610E-06	1800.0	436.7	2.91896	13.636	2.8367	0.6882
1.401E-06	2000.0	468.0	3.02239	13.170	2.9429	0.6886
1.024E-06	2500.0	537.3	3.24146	12.130	3.1691	0.6811
7.791E-07	3000.0	595.0	3.42049	11.219	3.3551	0.6655
6.130E-07	3500.0	642.6	3.57193	10.404	3.5132	0.6450
4.954E-07	4000.0	681.0	3.70317	9.662	3.6506	0.6215
4.093E-07	4500.0	710.7	3.81898	8.975	3.7722	0.5958
3.444E-07	5000.0	732.1	3.92263	8.330	3.8812	0.5683
2.545E-07	6000.0	750.0	4.10210	7.125	4.0704	0.5088
1.965E-07	7000.0	733.0	4.25395	5.978	4.2308	0.4430
1.568E-07	8000.0	674.7	4.38557	4.821	4.3701	0.3686
1.073E-07	10000.0	326.2	4.60570	1.868	4.6033	0.1501
5.571E-08	15000.0	0.0	5.01064	0.0	5.0106	0.0
3.492E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
1.896E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
1.228E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
8.769E-09	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.741E-09	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.396E-09	70000.0	0.0	6.55108	0.0	6.5511	0.0
4.450E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
3.224E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

3039 STACK

TABLE B-1. (Continued)

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 7.456 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =2.791E-06 AT 900.0 METERS DOWNWIND

CHI/Q=5.000E-08 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
8.077E-17	150.0	0.0	0.40547	0.0	0.4055	0.0
6.115E-12	200.0	0.0	0.69315	0.0	0.6931	0.0
2.362E-08	300.0	0.0	1.09861	0.0	1.0986	0.0
3.666E-07	400.0	90.4	1.41121	12.739	1.3765	0.3112
1.150E-06	500.0	140.5	1.64743	15.693	1.5860	0.4456
1.943E-06	600.0	180.7	1.83519	16.765	1.7572	0.5293
2.474E-06	700.0	216.3	1.99152	17.174	1.9027	0.5880
2.732E-06	800.0	249.0	2.12566	17.287	2.0296	0.6317
2.791E-06	900.0	279.5	2.24325	17.250	2.1423	0.6652
2.729E-06	1000.0	308.3	2.34798	17.133	2.2438	0.6917
2.609E-06	1100.0	334.1	2.44200	16.893	2.3366	0.7096
2.461E-06	1200.0	358.7	2.52769	16.641	2.4218	0.7239
2.305E-06	1300.0	382.3	2.60641	16.386	2.5005	0.7353
2.149E-06	1400.0	404.9	2.67923	16.132	2.5737	0.7444
1.860E-06	1600.0	447.9	2.81031	15.639	2.7063	0.7576
1.610E-06	1800.0	488.1	2.92585	15.172	2.8239	0.7657
1.401E-06	2000.0	525.9	3.02916	14.732	2.9296	0.7703
1.024E-06	2500.0	612.2	3.24799	13.759	3.1548	0.7725
7.791E-07	3000.0	688.2	3.42684	12.920	3.3401	0.7662
6.130E-07	3500.0	755.5	3.57812	12.181	3.4976	0.7550
4.954E-07	4000.0	815.2	3.70923	11.520	3.6345	0.7408
4.093E-07	4500.0	868.1	3.82493	10.919	3.7557	0.7245
3.444E-07	5000.0	914.6	3.92848	10.366	3.8644	0.7069
2.545E-07	6000.0	990.0	4.10777	9.369	4.0530	0.6687
1.965E-07	7000.0	1043.3	4.25948	8.477	4.2129	0.6279
1.568E-07	8000.0	1075.5	4.39098	7.657	4.3518	0.5851
1.073E-07	10000.0	1075.0	4.61092	6.136	4.5845	0.4928
5.571E-08	15000.0	573.5	5.01136	2.190	5.0077	0.1915
3.492E-08	20000.0	0.0	5.29832	0.0	5.2983	0.0
1.896E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
1.228E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
8.769E-09	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.741E-09	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.396E-09	70000.0	0.0	6.55108	0.0	6.5511	0.0
4.450E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
3.224E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE B-1. (Continued)

3039 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 7.456 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =2.791E-06 AT 900.0 METERS DOWNWIND

CHI/Q=2.000E-08 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
8.077E-17	150.0	0.0	0.40547	0.0	0.4055	0.0
6.115E-12	200.0	0.0	0.69315	0.0	0.6931	0.0
2.362E-08	300.0	19.8	1.10079	3.781	1.0984	0.0726
3.666E-07	400.0	109.3	1.42227	15.278	1.3720	0.3748
1.150E-06	500.0	159.7	1.65801	17.713	1.5794	0.5044
1.943E-06	600.0	202.1	1.84550	18.616	1.7489	0.5891
2.474E-06	700.0	240.4	2.00166	18.954	1.8931	0.6502
2.732E-06	800.0	276.0	2.13567	19.035	2.0189	0.6965
2.791E-06	900.0	309.7	2.25317	18.987	2.1306	0.7331
2.729E-06	1000.0	341.8	2.35782	18.869	2.2311	0.7625
2.609E-06	1100.0	370.7	2.45169	18.626	2.3233	0.7830
2.461E-06	1200.0	398.6	2.53724	18.376	2.4079	0.7999
2.305E-06	1300.0	425.5	2.61584	18.125	2.4860	0.8138
2.149E-06	1400.0	451.6	2.68855	17.878	2.5587	0.8254
1.860E-06	1600.0	501.5	2.81944	17.402	2.6904	0.8432
1.610E-06	1800.0	548.7	2.93480	16.954	2.8073	0.8558
1.401E-06	2000.0	593.8	3.03797	16.536	2.9123	0.8646
1.024E-06	2500.0	698.9	3.25650	15.619	3.1362	0.8768
7.791E-07	3000.0	794.7	3.43511	14.838	3.3206	0.8797
6.130E-07	3500.0	882.9	3.58619	14.158	3.4773	0.8772
4.954E-07	4000.0	964.5	3.71713	13.556	3.6136	0.8713
4.093E-07	4500.0	1040.2	3.83269	13.016	3.7342	0.8632
3.444E-07	5000.0	1110.7	3.93611	12.524	3.8424	0.8536
2.545E-07	6000.0	1237.7	4.11518	11.656	4.0303	0.8314
1.965E-07	7000.0	1348.1	4.26670	10.901	4.1897	0.8069
1.568E-07	8000.0	1443.6	4.39805	10.229	4.3281	0.7810
1.073E-07	10000.0	1594.6	4.61772	9.060	4.5601	0.7271
5.571E-08	15000.0	1764.8	5.01751	6.710	4.9831	0.5863
3.492E-08	20000.0	1666.9	5.30178	4.764	5.2835	0.4404
1.896E-08	30000.0	0.0	5.70378	0.0	5.7038	0.0
1.228E-08	40000.0	0.0	5.99146	0.0	5.9915	0.0
8.769E-09	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.741E-09	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.396E-09	70000.0	0.0	6.55108	0.0	6.5511	0.0
4.450E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
3.224E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE B-1. (Continued)

3039 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 7.456 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =2.791E-06 AT 900.0 METERS DOWNWIND

CHI/Q=1.000E-08 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
8.077E-17	150.0	0.0	0.40547	0.0	0.4055	0.0
6.115E-12	200.0	0.0	0.69315	0.0	0.6931	0.0
2.362E-08	300.0	45.1	1.10978	8.546	1.0975	0.1649
3.666E-07	400.0	121.6	1.43048	16.907	1.3686	0.4160
1.150E-06	500.0	172.8	1.66586	19.067	1.5745	0.5442
1.943E-06	600.0	216.9	1.85316	19.873	1.7428	0.6300
2.474E-06	700.0	257.1	2.00919	20.169	1.8860	0.6927
2.732E-06	800.0	294.8	2.14312	20.230	2.0109	0.7411
2.791E-06	900.0	330.7	2.26054	20.174	2.1218	0.7796
2.729E-06	1000.0	365.1	2.36514	20.056	2.2217	0.8111
2.609E-06	1100.0	396.3	2.45890	19.810	2.3134	0.8333
2.461E-06	1200.0	426.4	2.54435	19.560	2.3975	0.8518
2.305E-06	1300.0	455.5	2.62286	19.311	2.4753	0.8674
2.149E-06	1400.0	483.9	2.69548	19.067	2.5476	0.8806
1.860E-06	1600.0	538.4	2.82623	18.599	2.6786	0.9014
1.610E-06	1800.0	590.5	2.94148	18.162	2.7949	0.9169
1.401E-06	2000.0	640.4	3.04453	17.755	2.8995	0.9284
1.024E-06	2500.0	758.0	3.26285	16.867	3.1225	0.9467
7.791E-07	3000.0	866.7	3.44128	16.114	3.3061	0.9551
6.130E-07	3500.0	968.2	3.59221	15.463	3.4622	0.9577
4.954E-07	4000.0	1063.5	3.72303	14.889	3.5980	0.9566
4.093E-07	4500.0	1153.4	3.83848	14.377	3.7183	0.9521
3.444E-07	5000.0	1238.6	3.94180	13.913	3.8262	0.9478
2.545E-07	6000.0	1396.2	4.12071	13.100	4.0135	0.9339
1.965E-07	7000.0	1539.1	4.27210	12.400	4.1724	0.9174
1.568E-07	8000.0	1669.0	4.40333	11.784	4.3105	0.8993
1.073E-07	10000.0	1895.2	4.62281	10.732	4.5420	0.8608
5.571E-08	15000.0	2285.1	5.02211	8.662	4.9648	0.7563
3.492E-08	20000.0	2496.9	5.30605	7.116	5.2652	0.6573
1.896E-08	30000.0	2530.6	5.70733	4.822	5.6871	0.4797
1.228E-08	40000.0	1837.3	5.99252	2.630	5.9862	0.2750
8.769E-09	50000.0	0.0	6.21461	0.0	6.2146	0.0
6.741E-09	60000.0	0.0	6.39693	0.0	6.3969	0.0
5.396E-09	70000.0	0.0	6.55108	0.0	6.5511	0.0
4.450E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
3.224E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

TABLE B-1. (Continued)

3039 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 7.456 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =2.791E-06 AT 900.0 METERS DOWNWIND

CHI/Q=5.000E-09 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
8.077E-17	150.0	0.0	0.40547	0.0	0.4055	0.0
6.115E-12	200.0	0.0	0.69315	0.0	0.6931	0.0
2.362E-08	300.0	60.6	1.11860	11.418	1.0965	0.2215
3.666E-07	400.0	132.8	1.43855	18.362	1.3653	0.4532
1.150E-06	500.0	185.0	1.67360	20.305	1.5696	0.5808
1.943E-06	600.0	230.7	1.86070	21.032	1.7367	0.6678
2.474E-06	700.0	272.8	2.01661	21.292	1.8790	0.7323
2.732E-06	800.0	312.5	2.15045	21.337	2.0030	0.7825
2.791E-06	900.0	350.4	2.26781	21.275	2.1133	0.8229
2.729E-06	1000.0	387.0	2.37236	21.155	2.2125	0.8562
2.609E-06	1100.0	420.2	2.46600	20.907	2.3036	0.8800
2.461E-06	1200.0	452.4	2.55135	20.657	2.3873	0.9000
2.305E-06	1300.0	483.7	2.62978	20.409	2.4647	0.9171
2.149E-06	1400.0	514.2	2.70232	20.167	2.5367	0.9316
1.860E-06	1600.0	573.0	2.83293	19.705	2.6670	0.9552
1.610E-06	1800.0	629.5	2.94806	19.275	2.7828	0.9732
1.401E-06	2000.0	683.8	3.05101	18.876	2.8869	0.9871
1.024E-06	2500.0	812.7	3.26911	18.009	3.1089	1.0107
7.791E-07	3000.0	933.1	3.44737	17.278	3.2918	1.0239
6.130E-07	3500.0	1046.5	3.59817	16.647	3.4474	1.0308
4.954E-07	4000.0	1154.1	3.72886	16.094	3.5827	1.0337
4.093E-07	4500.0	1256.5	3.84420	15.601	3.7026	1.0339
3.444E-07	5000.0	1354.5	3.94743	15.157	3.8101	1.0321
2.545E-07	6000.0	1538.5	4.12618	14.381	3.9969	1.0248
1.965E-07	7000.0	1708.8	4.27744	13.719	4.1554	1.0144
1.568E-07	8000.0	1867.4	4.40855	13.139	4.2931	1.0021
1.073E-07	10000.0	2154.3	4.62785	12.158	4.5241	0.9746
5.571E-08	15000.0	2707.2	5.02666	10.230	4.9467	0.8928
3.492E-08	20000.0	3112.9	5.31029	8.847	5.2471	0.8167
1.896E-08	30000.0	3652.9	5.71114	6.942	5.6693	0.6903
1.228E-08	40000.0	3841.5	5.99605	5.486	5.9686	0.5732
8.769E-09	50000.0	3679.8	6.21731	4.209	6.2005	0.4563
6.741E-09	60000.0	3138.7	6.39830	2.995	6.3896	0.3342
5.396E-09	70000.0	1810.5	6.55141	1.482	6.5492	0.1694
4.450E-09	80000.0	0.0	6.68461	0.0	6.6846	0.0
3.224E-09	100000.0	0.0	6.90775	0.0	6.9078	0.0

3039 STACK

TABLE B-1. (Continued)

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 7.456 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =2.791E-06 AT 900.0 METERS DOWNWIND

CHI/Q=2.000E-09 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
8.077E-17	150.0	0.0	0.40547	0.0	0.4055	0.0
6.115E-12	200.0	0.0	0.69315	0.0	0.6931	0.0
2.362E-08	300.0	76.4	1.13004	14.289	1.0951	0.2789
3.666E-07	400.0	146.2	1.44903	20.083	1.3609	0.4976
1.150E-06	500.0	200.0	1.68364	21.800	1.5632	0.6253
1.943E-06	600.0	247.8	1.87050	22.441	1.7289	0.7140
2.474E-06	700.0	292.3	2.02625	22.661	1.8698	0.7807
2.732E-06	800.0	334.5	2.15998	22.688	1.9928	0.8331
2.791E-06	900.0	375.0	2.27725	22.618	2.1021	0.8758
2.729E-06	1000.0	414.2	2.38174	22.497	2.2005	0.9113
2.609E-06	1100.0	449.9	2.47524	22.246	2.2910	0.9371
2.461E-06	1200.0	484.7	2.56047	21.994	2.3741	0.9589
2.305E-06	1300.0	518.6	2.63878	21.747	2.4510	0.9777
2.149E-06	1400.0	551.7	2.71123	21.507	2.5225	0.9940
1.860E-06	1600.0	615.8	2.84165	21.051	2.6520	1.0207
1.610E-06	1800.0	677.6	2.95663	20.628	2.7671	1.0416
1.401E-06	2000.0	737.3	3.05945	20.237	2.8706	1.0583
1.024E-06	2500.0	879.9	3.27727	19.391	3.0914	1.0881
7.791E-07	3000.0	1014.3	3.45531	18.680	3.2733	1.1067
6.130E-07	3500.0	1141.9	3.60592	18.069	3.4281	1.1184
4.954E-07	4000.0	1263.9	3.73646	17.535	3.5628	1.1258
4.093E-07	4500.0	1381.0	3.85167	17.061	3.6822	1.1301
3.444E-07	5000.0	1493.9	3.95478	16.635	3.7893	1.1321
2.545E-07	6000.0	1708.4	4.13332	15.894	3.9753	1.1319
1.965E-07	7000.0	1910.2	4.28441	15.264	4.1333	1.1279
1.568E-07	8000.0	2101.1	4.41538	14.716	4.2705	1.1216
1.073E-07	10000.0	2455.3	4.63444	13.795	4.5008	1.1051
5.571E-08	15000.0	3180.3	5.03262	11.971	4.9232	1.0438
3.492E-08	20000.0	3776.1	5.31583	10.692	5.2235	0.9862
1.896E-08	30000.0	4745.3	5.71614	8.988	5.6459	0.8931
1.228E-08	40000.0	5459.2	6.00069	7.772	5.9456	0.8115
8.769E-09	50000.0	5968.6	6.22168	6.807	6.1778	0.7375
6.741E-09	60000.0	6329.9	6.40246	6.022	6.3671	0.6717
5.396E-09	70000.0	6531.9	6.55542	5.331	6.5271	0.6091
4.450E-09	80000.0	6576.8	6.68798	4.700	6.6655	0.5480
3.224E-09	100000.0	6157.3	6.90965	3.523	6.8966	0.4246

TABLE B-1. (Continued)

3039 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 7.456 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =2.791E-06 AT 900.0 METERS DOWNWIND

CHI/Q=1.000E-09 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
8.077E-17	150.0	0.0	0.40547	0.0	0.4055	0.0
6.115E-12	200.0	0.0	0.69315	0.0	0.6931	0.0
2.362E-08	300.0	86.5	1.13852	16.079	1.0940	0.3153
3.666E-07	400.0	155.7	1.45681	21.265	1.3576	0.5283
1.150E-06	500.0	210.6	1.69111	22.842	1.5585	0.6565
1.943E-06	600.0	260.0	1.87779	23.427	1.7230	0.7466
2.474E-06	700.0	306.1	2.03342	23.622	1.8630	0.8148
2.732E-06	800.0	350.1	2.16707	23.638	1.9853	0.8689
2.791E-06	900.0	392.5	2.28428	23.563	2.0938	0.9131
2.729E-06	1000.0	433.6	2.38872	23.441	2.1916	0.9502
2.609E-06	1100.0	471.2	2.48212	23.187	2.2816	0.9773
2.461E-06	1200.0	507.7	2.56725	22.934	2.3643	1.0004
2.305E-06	1300.0	543.5	2.64548	22.687	2.4408	1.0204
2.149E-06	1400.0	578.4	2.71785	22.448	2.5119	1.0378
1.860E-06	1600.0	646.3	2.84816	21.995	2.6409	1.0667
1.610E-06	1800.0	711.8	2.96302	21.576	2.7554	1.0896
1.401E-06	2000.0	775.4	3.06574	21.190	2.8585	1.1082
1.024E-06	2500.0	927.5	3.28336	20.355	3.0783	1.1421
7.791E-07	3000.0	1071.6	3.46124	19.656	3.2595	1.1643
6.130E-07	3500.0	1209.1	3.61171	19.057	3.4138	1.1793
4.954E-07	4000.0	1341.0	3.74214	18.534	3.5481	1.1895
4.093E-07	4500.0	1468.2	3.85724	18.070	3.6670	1.1964
3.444E-07	5000.0	1591.3	3.96026	17.654	3.7738	1.2010
2.545E-07	6000.0	1826.5	4.13866	16.931	3.9593	1.2053
1.965E-07	7000.0	2049.4	4.28962	16.319	4.1168	1.2053
1.568E-07	8000.0	2261.9	4.42048	15.787	4.2537	1.2027
1.273E-07	10000.0	2660.4	4.63936	14.898	4.4834	1.1928
5.571E-08	15000.0	3495.9	5.03708	13.119	4.9056	1.1433
3.492E-08	20000.0	4208.9	5.31998	11.884	5.2060	1.0956
1.896E-08	30000.0	5427.6	5.71989	10.255	5.6285	1.0183
1.228E-08	40000.0	6417.6	6.00417	9.115	5.9284	0.9511
8.769E-09	50000.0	7234.0	6.22497	8.232	6.1608	0.8913
6.741E-09	60000.0	7932.5	6.40559	7.531	6.3503	0.8396
5.396E-09	70000.0	8512.4	6.55842	6.933	6.5105	0.7917
4.450E-09	80000.0	8985.6	6.69088	6.409	6.6491	0.7468
3.224E-09	100000.0	9640.2	6.91238	5.506	6.8805	0.6633

TABLE B-1. (Continued)

3039 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 7.456 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100. CHI/Q(MAX) =2.791E-06 AT 500.0 METERS DOWNWIND

CHI/Q=5.000E-10 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
8.077E-17	150.0	0.0	0.40547	0.0	0.4055	0.0
6.115E-12	200.0	0.0	0.69315	0.0	0.6931	0.0
2.362E-08	300.0	95.5	1.14685	17.654	1.0928	0.3478
3.666E-07	400.0	164.6	1.46447	22.361	1.3543	0.5572
1.150E-06	500.0	220.7	1.69846	23.820	1.5538	0.6859
1.943E-06	600.0	271.6	1.88498	24.357	1.7172	0.7774
2.474E-06	700.0	319.4	2.04050	24.529	1.8563	0.8471
2.732E-06	800.0	365.2	2.17406	24.534	1.9778	0.9027
2.791E-06	900.0	409.3	2.29121	24.454	2.0857	0.9485
2.729E-06	1000.0	452.2	2.39560	24.331	2.1828	0.9870
2.609E-06	1100.0	491.5	2.48890	24.075	2.2724	1.0153
2.461E-06	1200.0	529.8	2.57395	23.822	2.3547	1.0396
2.305E-06	1300.0	567.3	2.65210	23.575	2.4308	1.0607
2.149E-06	1400.0	604.0	2.72440	23.336	2.5015	1.0792
1.860E-06	1600.0	675.4	2.85457	22.885	2.6299	1.1101
1.610E-06	1800.0	744.5	2.96933	22.470	2.7439	1.1349
1.401E-06	2000.0	811.6	3.07195	22.087	2.8465	1.1551
1.024E-06	2500.0	972.8	3.28937	21.262	3.0655	1.1928
7.791E-07	3000.0	1126.0	3.46709	20.572	3.2460	1.2183
6.130E-07	3500.0	1272.7	3.61744	19.982	3.3997	1.2362
4.954E-07	4000.0	1413.9	3.74775	19.468	3.5335	1.2490
4.093E-07	4500.0	1550.5	3.86276	19.012	3.6520	1.2584
3.444E-07	5000.0	1683.0	3.96569	18.604	3.7585	1.2651
2.545E-07	6000.0	1937.4	4.14394	17.896	3.9434	1.2734
1.965E-07	7000.0	2179.8	4.29477	17.297	4.1006	1.2769
1.568E-07	8000.0	2412.0	4.42553	16.778	4.2371	1.2775
1.073E-07	10000.0	2850.8	4.64424	15.912	4.4663	1.2732
5.571E-08	15000.0	3785.3	5.04150	14.163	4.8883	1.2336
3.492E-08	20000.0	4601.1	5.32410	12.956	5.1886	1.1937
1.896E-08	30000.0	6033.1	5.72361	11.371	5.6113	1.1284
1.228E-08	40000.0	7250.3	6.00763	10.274	5.9113	1.0715
8.769E-09	50000.0	8308.8	6.22823	9.435	6.1440	1.0210
6.741E-09	60000.0	9261.9	6.40870	8.775	6.3337	0.9777
5.396E-09	70000.0	10112.2	6.56141	8.220	6.4940	0.9381
4.450E-09	80000.0	10873.3	6.69376	7.740	6.6328	0.9015
3.224E-09	100000.0	12163.7	6.91510	6.935	6.8645	0.8350

TABLE B-1. (Continued)

3039 STACK

STACK HEIGHT 74.400 METERS STACK CONSTANT 51.75 SQ.METERS/SEC WIND SPEED 7.456 METERS/SEC

C STABILITY CONDITION NO INVERSION

RHO ZERO = 100 CHI/Q(MAX) =2.791E-06 AT 500.0 METERS DOWNWIND

CHI/Q=2.000E-10 COORDINATES OF THE ISOPLETH

CENTERLINE, CHI/Q	RECTANGULAR CARTESIAN X	Y	LOGARITHMIC POLAR RHO	THETA	MODIFIED RECTANGULAR CARTESIAN X-PRIME	Y-PRIME
8.077E-17	150.0	0.0	0.40547	0.0	0.4055	0.0
6.115E-12	200.0	0.0	0.69315	0.0	0.6931	0.0
2.362E-08	300.0	106.2	1.15767	19.498	1.0913	0.3864
3.666E-07	400.0	175.6	1.47442	23.702	1.3500	0.5927
1.150E-06	500.0	233.4	1.70802	25.026	1.5477	0.7225
1.943E-06	600.0	286.3	1.89432	25.508	1.7097	0.8158
2.474E-06	700.0	336.2	2.04969	25.655	1.8476	0.8874
2.732E-06	800.0	384.1	2.18316	25.647	1.9681	0.9449
2.791E-06	900.0	430.5	2.30023	25.562	2.0751	0.9925
2.729E-06	1000.0	475.6	2.40456	25.438	2.1714	1.0328
2.609E-06	1100.0	517.1	2.49773	25.179	2.2604	1.0626
2.461E-06	1200.0	557.6	2.58266	24.924	2.3421	1.0884
2.305E-06	1300.0	597.3	2.66071	24.676	2.4177	1.1108
2.149E-06	1400.0	636.2	2.73292	24.438	2.4881	1.1306
1.860E-06	1600.0	712.0	2.86293	23.989	2.6156	1.1640
1.610E-06	1800.0	785.6	2.97754	23.578	2.7290	1.1910
1.401E-06	2000.0	857.2	3.08005	23.199	2.8310	1.2133
1.024E-06	2500.0	1029.6	3.29721	22.384	3.0488	1.2556
7.791E-07	3000.0	1194.1	3.47473	21.704	3.2284	1.2850
6.130E-07	3500.0	1352.2	3.62490	21.123	3.3813	1.3063
4.954E-07	4000.0	1504.9	3.75507	20.618	3.5146	1.3223
4.093E-07	4500.0	1653.1	3.86995	20.171	3.6326	1.3344
3.444E-07	5000.0	1797.2	3.97277	19.770	3.7386	1.3438
2.545E-07	6000.0	2075.0	4.15083	19.077	3.9229	1.3566
1.965E-07	7000.0	2341.0	4.30150	18.492	4.0794	1.3643
1.568E-07	8000.0	2597.1	4.43213	17.985	4.2156	1.3685
1.073E-07	10000.0	3084.5	4.65061	17.142	4.4440	1.3707
5.571E-08	15000.0	4136.9	5.04729	15.419	4.8656	1.3419
3.492E-08	20000.0	5073.3	5.32950	14.234	5.1659	1.3104
1.896E-08	30000.0	6750.7	5.72848	12.682	5.5887	1.2576
1.228E-08	40000.0	8222.7	6.01216	11.616	5.8890	1.2106
8.769E-09	50000.0	9545.7	6.23251	10.808	6.1219	1.1688
6.741E-09	60000.0	10770.2	6.41279	10.176	6.3119	1.1330
5.396E-09	70000.0	11901.4	6.56533	9.649	6.4724	1.1004
4.450E-09	80000.0	12953.1	6.69755	9.197	6.6115	1.0705
3.224E-09	100000.0	14855.6	6.91867	8.450	6.8436	1.0167

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