

NOAA Technical Memorandum ERL ARL-69



RANCHO SECO BUILDING WAKE EFFECTS ON ATMOSPHERIC DIFFUSION

G. E. Start
J. H. Cate
C. R. Dickson
N. R. Ricks
G. R. Ackermann
J. F. Sagendorf

Air Resources Laboratories
Idaho Falls, Idaho
November 1977

noaa

NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION

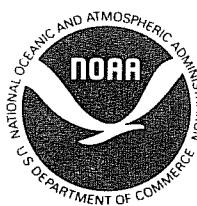
/ Environmental
Research Laboratories

NOAA Technical Memorandum ERL ARL-69

RANCHO SECO BUILDING WAKE EFFECTS ON ATMOSPHERIC DIFFUSION

G. E. Start
J. H. Cate
C. R. Dickson
N. R. Ricks
G. R. Ackermann
J. F. Sagendorf

Air Resources Laboratories
Idaho Falls, Idaho
November 1977



UNITED STATES
DEPARTMENT OF COMMERCE
Juanita M. Kreps, Secretary

NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION
Richard A. Frank, Administrator

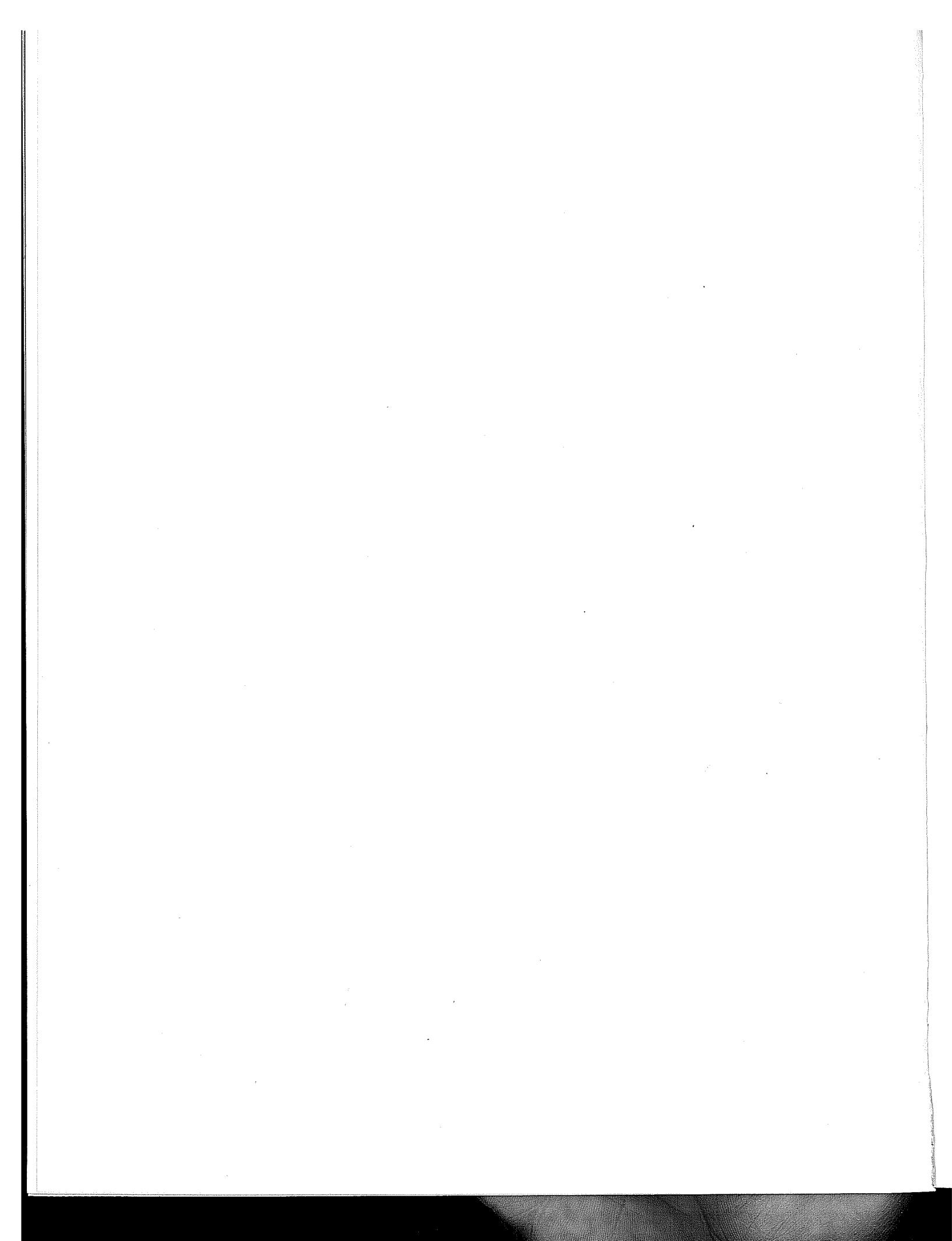
Environmental Research
Laboratories
Wilmot N. Hess, Director

NOTICE

The Environmental Research Laboratories do not approve, recommend, or endorse any proprietary product or proprietary material mentioned in this publication. No reference shall be made to the Environmental Research Laboratories or to this publication furnished by the Environmental Research Laboratories in any advertising or sales promotion which would indicate or imply that the Environmental Research Laboratories approve, recommend, or endorse any proprietary product or proprietary material mentioned herein, or which has as its purpose an intent to cause directly or indirectly the advertised product to be used or purchased because of this Environmental Research Laboratories publication.

CONTENTS

	Page
ABSTRACT	1
1. INTRODUCTION	1
2. DIFFUSION THEORY	4
2.1 The Diffusion Equation	4
2.2 Building Wake Modifications of the Diffusion Equation	6
3. MEASUREMENTS AND ANALYSES	6
3.1 Sampling Grid	6
3.2 Tracers	9
3.3 Meteorological Instrumentation	11
3.4 Instrument Bus	12
3.5 Sample Analysis	14
3.6 Stability Category Determination	15
3.7 Photographic Panorama of Test Site	15
4. RESULTS	17
4.1 Simultaneous Ground-Level Tracer Releases	20
4.2 Cooling Tower Wake Effects on the Meteorological Tower Sensors	23
4.3 Diffusion Statistics	24
4.4 Effects Due to Height of Release of Tracers	29
4.5 Wake Dilutions Versus the "cA" Correction Term	40
4.6 Effects of Topographic Height Variations Upon Sampled Concentration	41
4.7 Effects of Cooling Tower Wake Flows Upon Tracer Concentrations	45
5. SUMMARY	45
ACKNOWLEDGMENTS	46
REFERENCES	47
APPENDIX A: Normalized Concentrations	49
APPENDIX B: Supplemental Meteorological Data	115
APPENDIX C: Concentration Isopleths By Gas for Each Test	117
APPENDIX D: Complete Listing of Meteorological and Diffusion Parameters	165
APPENDIX E: Tests of Means and Standard Deviations	185



RANCHO SECO BUILDING WAKE EFFECTS ON ATMOSPHERIC DIFFUSION*

G. E. Start, J. H. Cate, C. R. Dickson,
N. R. Ricks, G. R. Ackermann, J. F. Sagendorf

Abstract. A series of 23 paired gaseous tracer releases at the Rancho Seco Nuclear Power Station in 1975 was the third of several tests designed to investigate the diffusion characteristics of the atmosphere under conditions of low windspeed and temperature inversion. This test also evaluated the effects of flow around buildings upon dilution of pollutants. Gaseous tracers were laterally dispersed about six times more than the expected amounts from Pasquill-Gifford curves of sigma-y. Most of this increase could be related to observed variance of the horizontal wind direction (meandering). For ground-level releases the effective sigma-z values were 16 times greater than the corresponding values from the Pasquill-Gifford curves. Measured ground-level axial concentrations were about 75 times smaller than predicted by the Gaussian diffusion equation for a ground-level release when Pasquill-Gifford values of sigma-y and sigma-z were used. Systematic building wake cavity circulations distributed near ground-level released tracers and oil fog vertically throughout the zone in the lee of the containment and auxiliary buildings. This vertical flux of material redistributed material so that the plume mass occurred at a greater height than expected for the height of release. Data representing the findings of this test series are presented in appendices.

1. INTRODUCTION

Safety considerations, especially with respect to pollutant concentrations in the atmosphere, are playing a major role in the design and operation of nuclear power plants. Since pollutant concentrations are often greatest under conditions of low windspeed and temperature inversion, a multi-part testing program has been undertaken to investigate the diffusion characteristics of the atmosphere under these conditions.

*Research jointly sponsored by the U. S. Nuclear Regulatory Commission (NRC) Office of Nuclear Regulatory Research, under the Interagency Agreement AT(49-25)-1004, and by the National Oceanic and Atmospheric Administration (NOAA).

The first series of tests was conducted in 1974 at the Idaho National Engineering Laboratory in the eastern Idaho desert (Sagendorf and Dickson, 1974), during conditions of low windspeed (less than 2.0 m/sec) and temperature inversion over the flat terrain.

A second phase of testing was conducted during the summer of 1974 to contrast the effects of desert meteorological conditions with similar atmospheric conditions over a wooded, hilly terrain. The site of this second series was a proposed nuclear power station near Oak Ridge, Tennessee (Wilson et al., 1976).

A need remained to examine diffusion characteristics of the atmosphere near the structures of a nuclear power station under a wide range of thermodynamic and hydrodynamic conditions. Therefore, in the autumn of 1975, 23 tests were conducted at the Rancho Seco Nuclear Power Station (fig. 1), approximately 25 miles south of Sacramento, California.

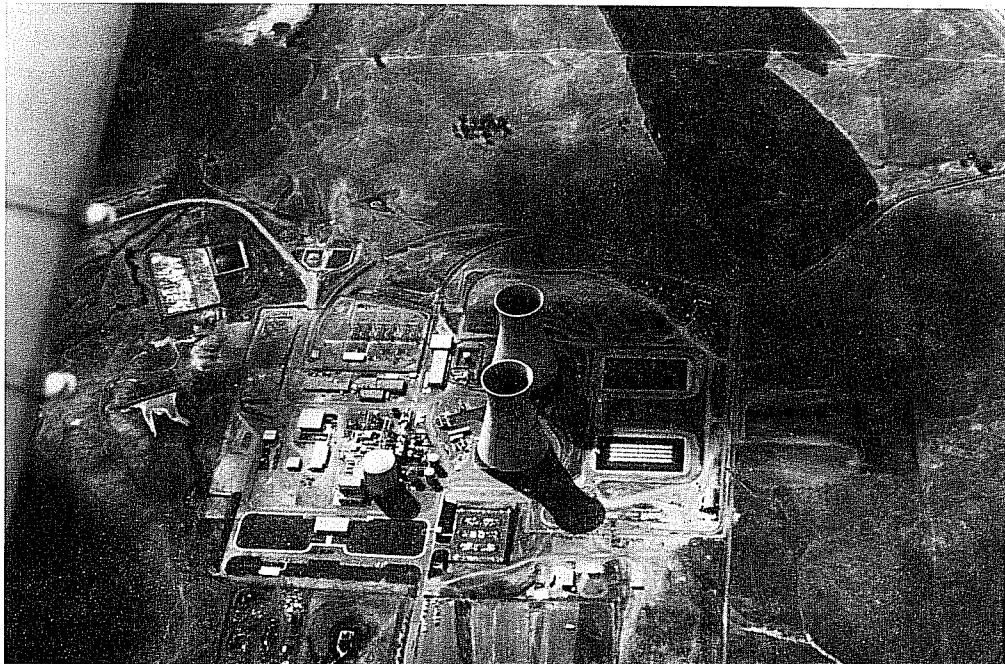


Figure 1. Aerial view of Rancho Seco facility looking west. Site layout may be compared with the plotplan shown in figure 3.

The Rancho Seco Nuclear Power Station is set in the broad, dry, interior valley of central California. The perimeter of the plant blends into a pattern of low hills and subtly sloping flat valleys (fig. 2). High terrain dominates the west portion of the outer arcs, as well as the northeast-through-southeast portions. A broad basin lies to the south and southwest. On the north side of the facility beyond the high terrain, a flat valley extends north and northwest. Moreover, the site is dominated by large hyperbolic cooling towers rising 146 m above plant grade. These topographic and structural features had important influences on measured concentration data, which are discussed below.

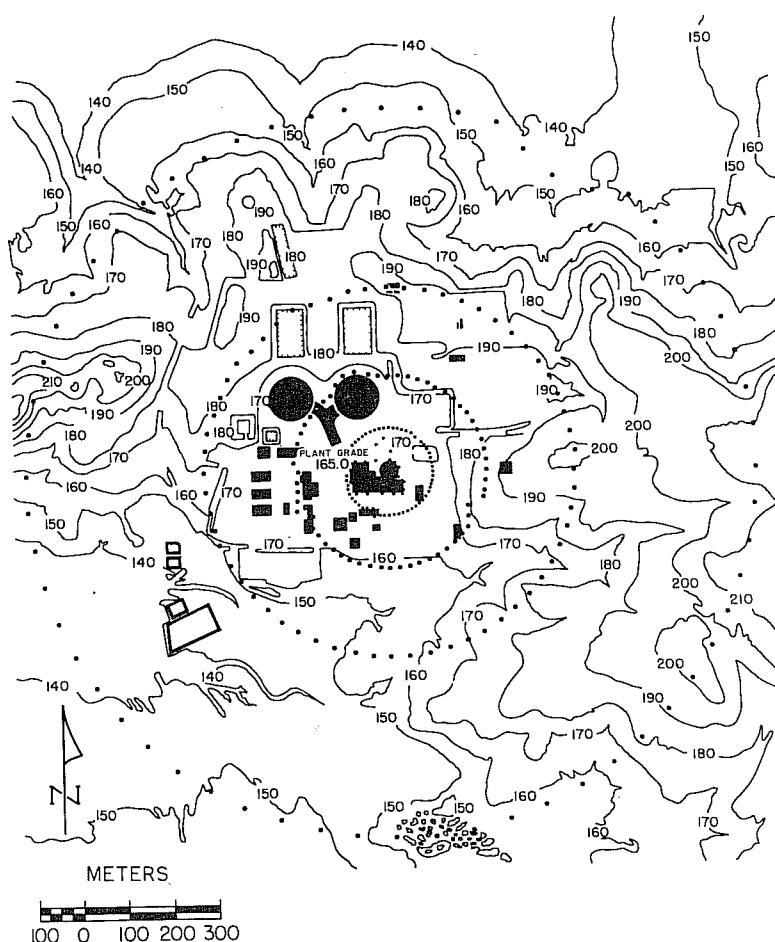


Figure 2. Topography of the Rancho Seco study site, showing the details of terrain that influenced the measured concentrations. Heights are feet above sea level.

The presence of building structures produces change in atmospheric pressure and velocity fields. These aerodynamic distortions are loosely termed the "building wake." The portion of the building wake immediately downwind of a structure is termed the "cavity." For a more complete discussion of the aerodynamics of flow around a structure, the reader may refer to standard references (e.g., Halitsky, 1968).

The sampling program at the Rancho Seco site was designed to (1) study atmospheric diffusion under a variety of thermal lapse rates and wind conditions, and (2) evaluate the effects of flow around buildings upon dilution of pollutants. Pollutant concentrations were measured at several distances of up to 800 m downwind, as well as adjacent to the buildings.

2. DIFFUSION THEORY

2.1 The Diffusion Equation

The windspeed-normalized relative concentrations are given in the form C_u/Q , where C is the concentration (in gm m^{-3}), u is the mean windspeed through the effluent-carrying layer (in m s^{-1}), and Q is the source strength (in gm s^{-1}). These concentration values may be related to the plume axis height above the ground (H) and to spatial Cartesian coordinates (x, y, z) through the Gaussian diffusion equation.

$$\frac{C(x,y,z;H)u}{Q} = \frac{1}{2\pi\sigma_y\sigma_z} \exp\left[-\frac{1}{2}\left(\frac{y}{\sigma_y}\right)^2\right] \left[\exp\left[-\frac{1}{2}\left(\frac{z-H}{\sigma_z}\right)^2\right] + \exp\left[-\frac{1}{2}\left(\frac{z+H}{\sigma_z}\right)^2\right] \right] \quad (1)$$

Values for σ_y and σ_z , the standard deviations of effluent concentrations in the lateral and vertical coordinate directions (Pasquill, 1961 and Gifford, 1961, e.g.), have been determined for various stability categories. By direct measurement of some of the variables (x, u, Q) and by plume centerline sampling ($y=0, z=0, H=0$), the above equation simplifies so that comparisons may be made with σ_y and σ_z values commonly accepted for a given stability. If the receptors are at ground level, equation (1) may be expressed as

$$\frac{C(x,y,0;H)u}{Q} = \frac{1}{\pi\sigma_y\sigma_z} \exp \left[-\frac{1}{2}\left(\frac{y^2}{\sigma_y^2} + \frac{H^2}{\sigma_z^2}\right) \right] \quad (2)$$

The factor of two accounting for ground reflection of the plume is included as is customary. Integration of equation (2) with respect to y yields the familiar expression for the crosswind integrated concentration from a continuous, elevated-point source.

$$CIC(x;H) = \frac{\sqrt{2} Q}{\sqrt{\pi} \sigma_z u} \exp \left[-\frac{1}{2} \left(\frac{H}{\sigma_z} \right)^2 \right] \quad (3)$$

Equations (1), (2), and (3) are widely known Gaussian plume formulas and may be examined in greater detail by referring to numerous books and papers (e.g., Gifford, 1968 or Pasquill, 1974).

With crosswind-oriented samples of ground-level concentrations $C(x,y,0)$, the second moment of the lateral effluent-concentration distribution for a fixed downwind-distance, x , and N values, is

$$\sigma_y^2 = \sum \left[C(y) \cdot (y - y_0)^2 \right] / N \cdot \sum \left[C(y) \right], \quad (4)$$

where the position of the center of mass of the mean plume, y_0 , is

$$y_0 = \sum \left[C(y) \cdot (y) \right] / N \cdot \sum \left[C(y) \right]. \quad (5)$$

After equation (3) is solved for the effective σ_z (a virtual value of vertical spreading), the centerline Gaussian continuous point-source equation for an elevated plume near a reflecting boundary is

$$\sigma_z (\text{effective}) = \sigma_z \exp \left[+\frac{1}{2} \left(\frac{H}{\sigma_z} \right)^2 \right] = \frac{\sqrt{2} Q}{\sqrt{\pi u} CIC(x;H)}, \quad (6)$$

where H is the mean-plume axis height at downwind distance x , and σ_z is the Gaussian parameter for the plume with centerline at height H instead of at the ground. Since mostly surface-based concentrations are available and the height of plume centerline was not measured, only the effective σ_z may be obtained from equation (6). The sign inside the exponential term changed, following its move with σ_z to the opposite side of the equation. All subsequent references to σ_z in this paper will mean effective σ_z .

2.2 Building Wake Modifications of the Diffusion Equation

A simplified method to allow for additional plume spreading behind the building structure is expressed as

$$C(x, o, z; H) = \frac{Q}{2\pi(\sigma_y \sigma_z u + cA)} \left[\exp \left[-\frac{1}{2} \left(\frac{z-H}{\sigma_y} \right)^2 \right] + \exp \left[-\frac{1}{2} \left(\frac{z+H}{\sigma_z} \right)^2 \right] \right], \quad (7)$$

where A represents the area of the structure in the Y-Z plane and c is an appropriate constant. c is usually assigned the value 0.5, which Gifford (1961) chose by intuition as a plausible lower estimate of the fraction of the structural area producing an initial plume spreading. For Z and H both equal to zero, equation (7) reduces to

$$C(x, o, o; o) = \frac{Q}{\pi(\sigma_y \sigma_z + cA)} \quad (8)$$

In a subsequent section, equation (8) will be evaluated with Pasquill-Gifford values of σ_y and σ_z , an area A equal to 2050 m^2 , and c valued at 0.5. The values of A and c were taken from the original Safety Analysis Review for the Rancho Seco site, prepared by the Sacramento Municipal Utility District.

3. MEASUREMENTS AND ANALYSES

3.1 Sampling Grid

Figure 3 is a plot plan of the Rancho Seco study site. The sampling grid for this test series consisted of four circular arcs centered on the reactor containment vessel with radii of 100, 200, 400, and 800 m. Sampler positions were spaced every six degrees starting at north and were numbered. Samplers (fig. 4) consisting of a box containing a calibrated pump and removable sample bag were located at each grid position. There were samplers at every position of the two outer arcs. Two positions on the 200 m arc lacked samplers, one in the center of the plant warehouse and the other in the cooling tower pond. Two other positions, 160 and 161, were shifted along the wall of an interfering office building, and positions 173 through 178 were re-located around the base of the east cooling tower. Two positions on the 100 m arc were not used. These were number 82, which would have been under the administration building, and number 67, which was in the center of the main road to the facility. Also, nineteen samplers were placed around the base of the containment vessel and auxiliary building complex,

and three samplers were placed on the auxiliary building roof (fig. 5). The samplers around the building and on the roof were wired to be activated simultaneously. The four arcs were divided into six independent 60-degree sectors so that the entire arcs did not need to be run for every test.

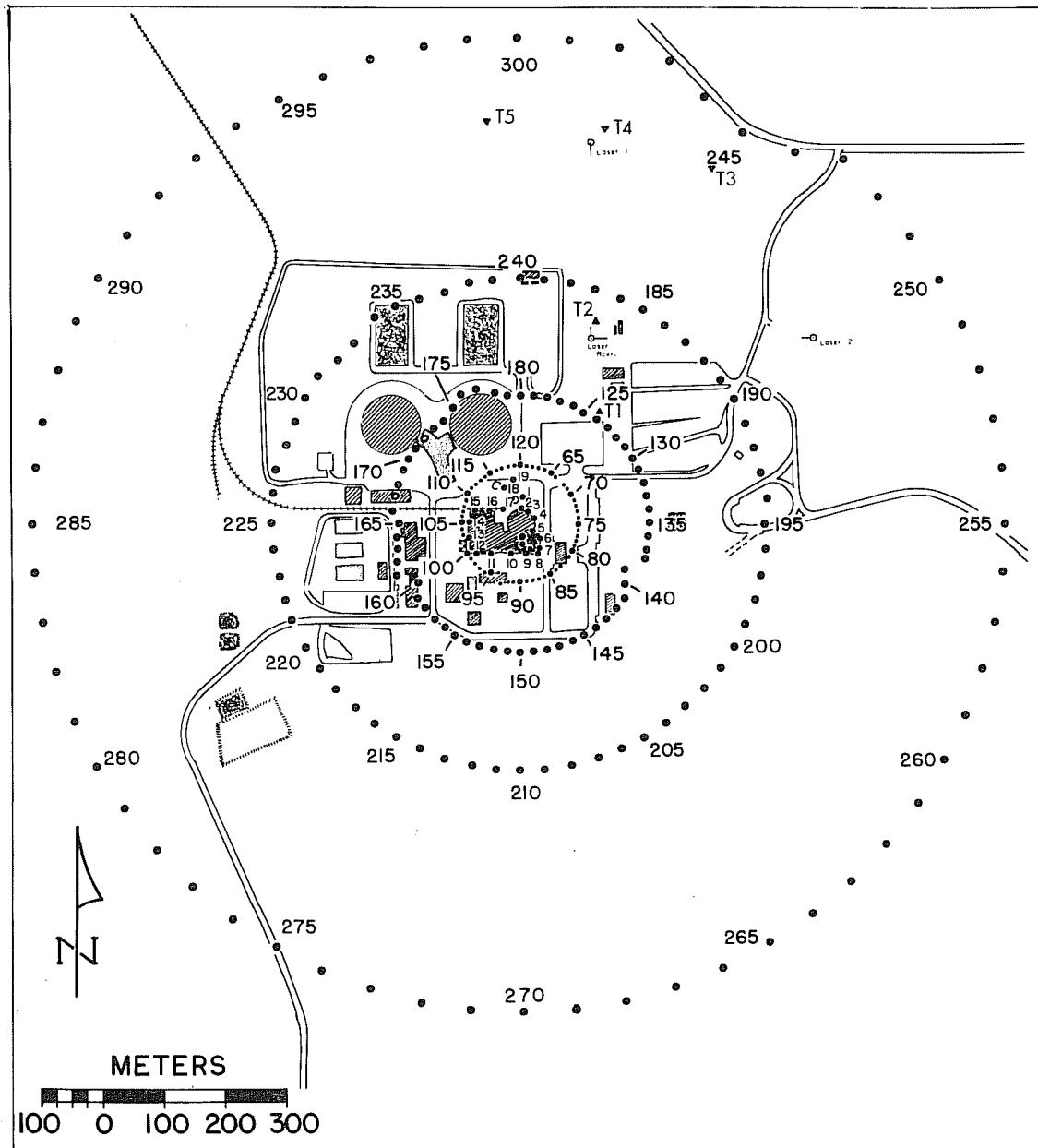


Figure 3. Plot plan of Rancho Seco study site, indicating sampler positions, tower (T), and laser (l) locations.

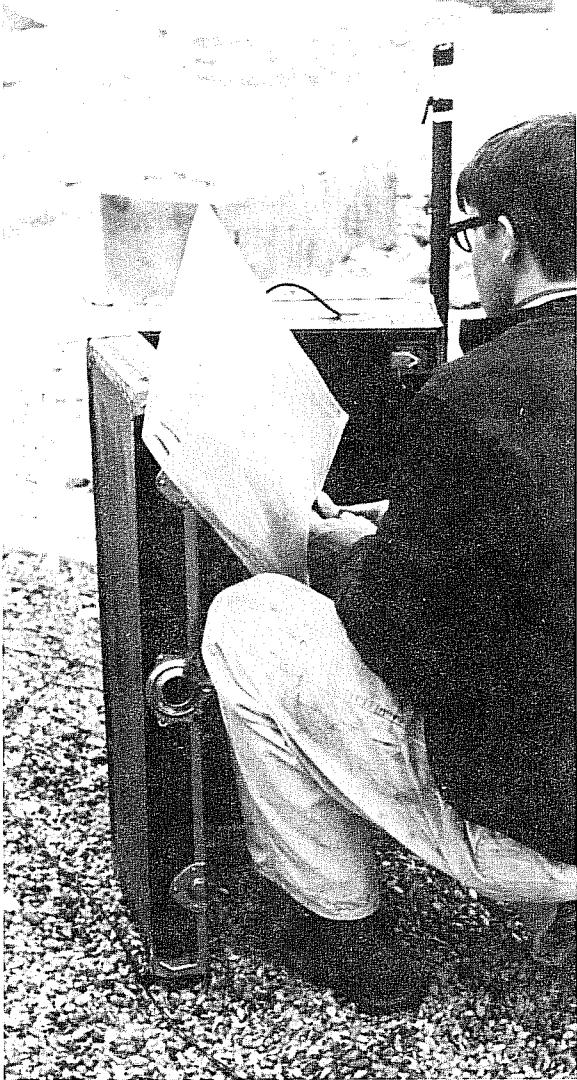


Figure 4. Sample bag and surface sampler. Battery-powered pump may be seen in the upper right hand corner of the box.

Five towers, each 46 m in height, were erected in the northeast grid quadrant to sample vertical concentration profiles through the plume. Their positions are shown on figure 3. Tower number one was located approximately 70 degrees at 205 m from the grid center; tower two was at 24 degrees and 385 m. Towers three, four, and five were at 600 m and at 24, 12, and 0 degrees respectively. Tower number two also served as the meteorological tower. Each tower had a sampler at its base; samplers were also spaced vertically every 10 m on the towers and were raised or lowered by a rope and pulley system. This method made the vertical samplers easily serviceable.

A very limited number of tracer gas samplers were collected at these tower locations. Therefore, these data were neither analysed nor discussed in this report. They are listed in Appendix A to complete the listings of normalized relative concentrations.

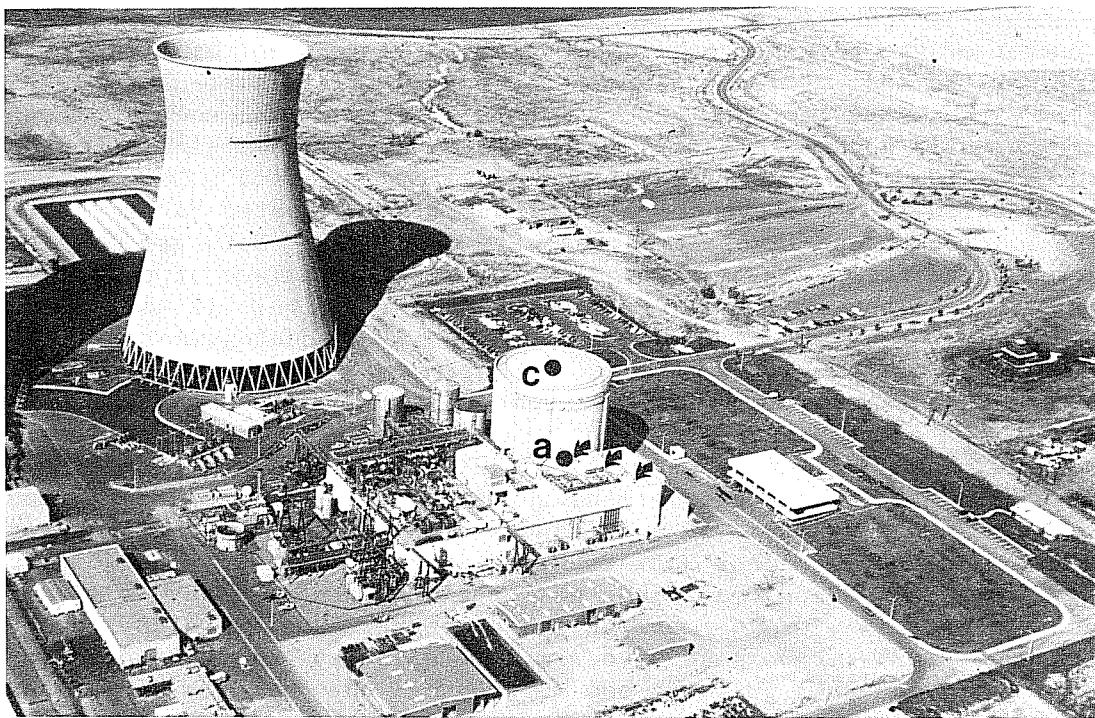


Figure 5. Aerial view of inner plant area. Elevated release points are indicated by dots on roof of containment vessel and auxiliary building. Locations of rooftop samplers in auxiliary building are indicated by arrows.

3.2 Tracers

Sulfurhexafluoride (SF6) and dichlorodifluoromethane (F12) were released as tracer gases. Both are inert and nontoxic in the concentrations used, and are of negligible concentration in the free atmosphere. SF6 is used primarily in electrical work, whereas F12 is used frequently as a refrigerant. Both tracer releases were operated simultaneously; start-up and termination were coordinated by radio. During the measurements, the tracers were released and allowed to be advected to the outermost arc before the samplers were activated. The tracer release then continued for one hour before the sampling was terminated.

Several release locations were used during the test series. The top center of the reactor containment vessel, 43 m above the plant floor, was the most elevated release point. It is designated by "C" in figure 6 and is the apex of the sampling system. The roof of the auxiliary building served as a second release level; the release itself occurred against the south face of the containment vessel. The release point, located 16.5 m above the plant floor, is designated "a" in figure 5. Two ground-level locations were also used. Both are shown in figure 6. The first, "G5", was against the southeast face of the containment vessel between sampler positions four and five. It was somewhat back in the niche formed by the joining of the containment vessel and the auxiliary building. The second location, "G17", was on the northwest side of the containment vessel complex at sampling point 17.

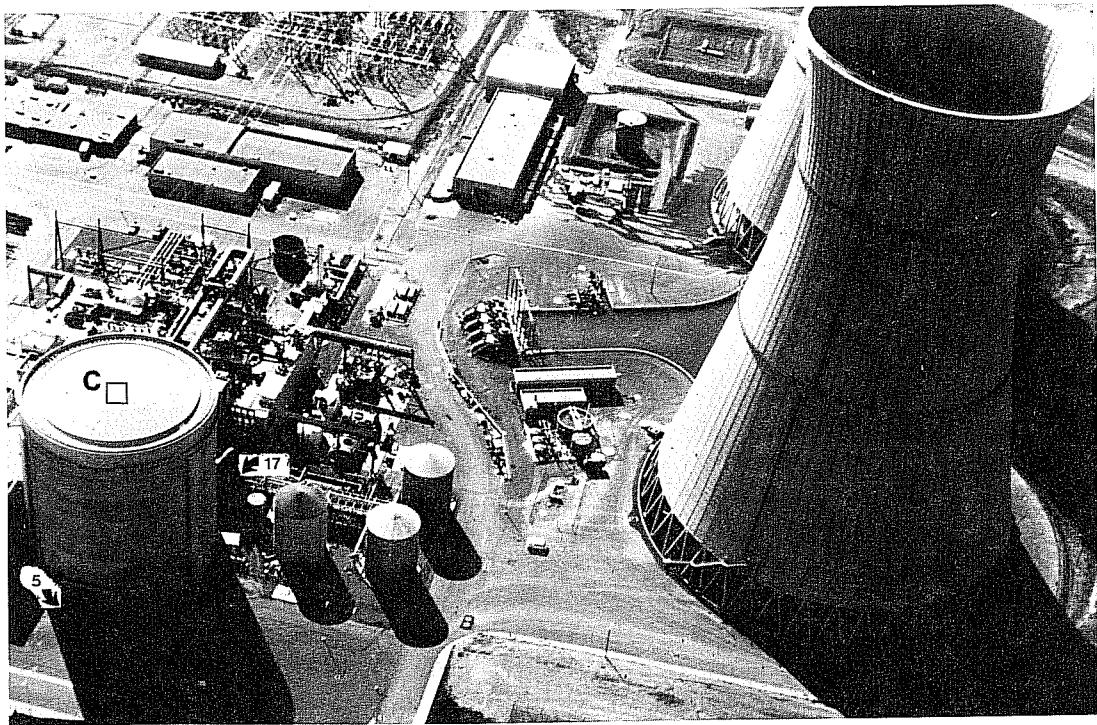


Figure 6. Detail of inner plant area. Sampling positions 5 and 17 and the elevated release location (C) on the containment vessel roof are indicated.

An oil fog, produced by a turbine generator, was released simultaneously with the tracers to provide a visual plume. Besides aiding in determining which sampling arc sectors should be activated, this fog provided a means of photographic documentation. For the early tests in the series, the oil fog was released from the top of the containment vessel. Later it was released from the ground near sampler position "G5".

3.3 Meteorological Instrumentation

Meteorological data for the test series came from instrumentation mounted on tower two; a schematic drawing is given in figure 7. Sensors were located at heights of 4 m, 16 m, and 46 m. A thermocouple mounted in a Climet model 016-1 motor-aspirated temperature shield provided temperature data for each level. Horizontal wind velocities were obtained from Weather Measure model W103 cup anemometers fitted with tricup stainless steel cup assemblies. Horizontal and vertical wind angles were derived using bivanes. Figures 8 and 9 show additional detail of the anemometer and bivane assemblies. In addition, two CW lasers with Campbell Scientific CA9 space averaging anemometers were used to measure space-averaged wind velocity at 3 m above the ground. The lasers operated over a 300 m path length with one pointing in a north-south direction, the other in an east-west direction. These lasers provided backup instrumentation, in case winds were below the anemometer threshold speeds. Output from these systems was fed into digital data logging systems.

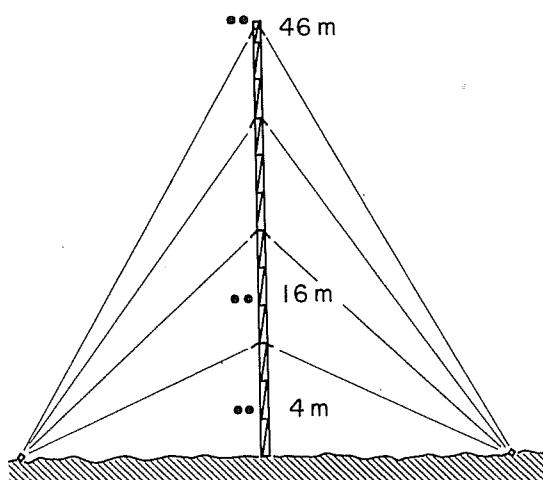


Figure 7. Schematic of meteorological tower instrumentation.

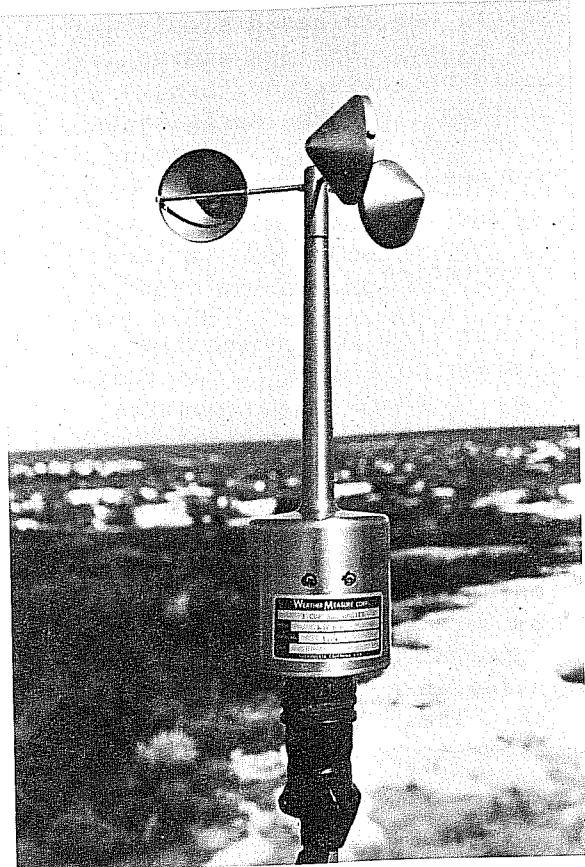


Figure 8. Weather Measure Corp.
W103-A anemometer.

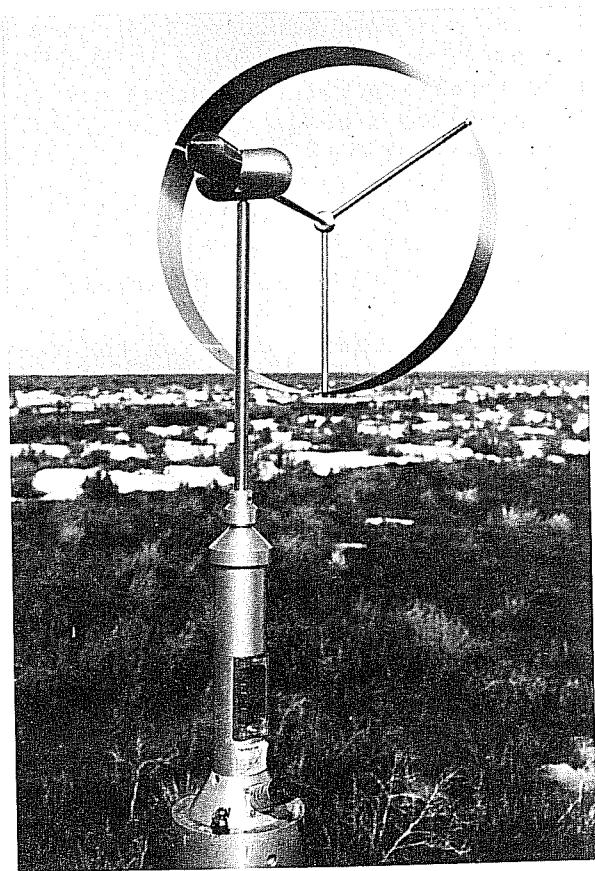


Figure 9. NOAA model NRTS bivane.

3.4 Instrument Bus

The control center for test operations was located in the instrument bus (fig. 10). The gas chromatograph, shown in figure 11, was used for sample analysis and was located near the rear of the bus. Two digital recording systems (fig. 12), an HP2010 and an HP2012, were located toward the front. These units recorded the output signals from the meteorological instruments on magnetic tape. One system served as a backup for the other. Also mounted in this area was the grid control panel, which consisted of activation switches for the various battery operated grid sectors.



Figure 10. Mobile laboratory containing grid control and sample analysis equipment.

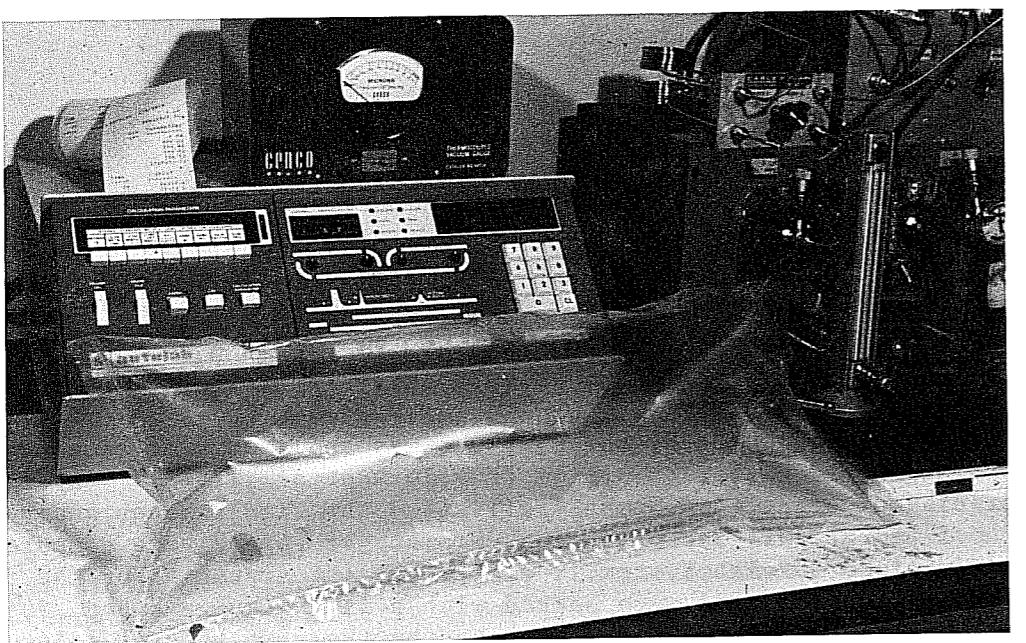


Figure 11. Gas chromatograph equipment and typical sample bag used in the field study.

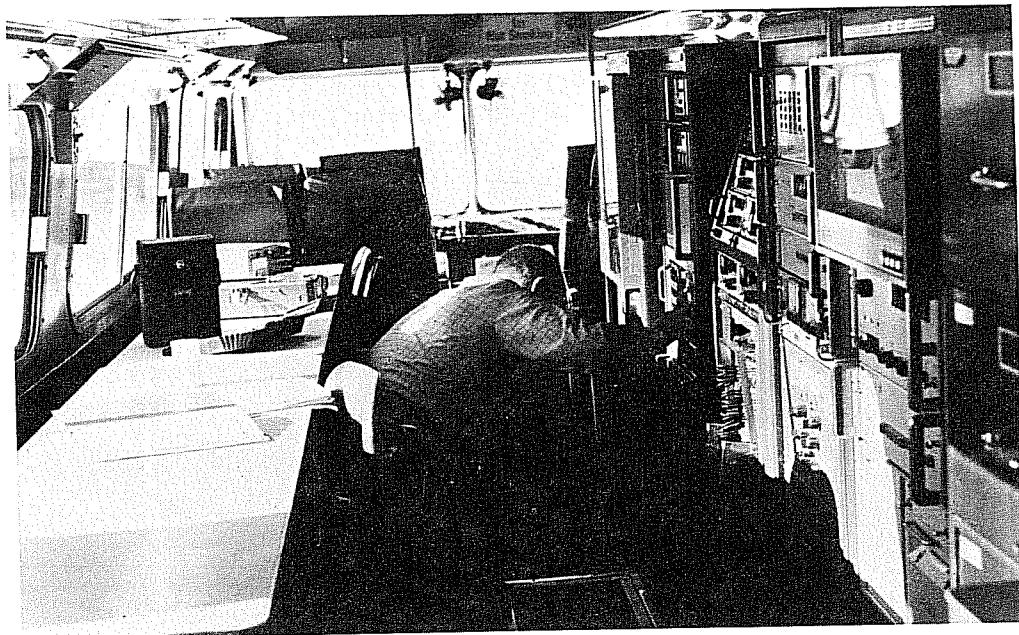


Figure 12. Primary digital data acquisition system inside of bus. Meteorology data from the tower and control of the samplers were directed from this location.

3.5 Sample Analysis

The gas collected by the samplers was analyzed with an electron capture gas chromatograph system (Lovelock et al., 1971). An arrangement of four parallel columns facilitated the simultaneous analysis of each of the tracer gases. Tracer chromatogram areas were computed with the aid of an Autolab System IV electronic integrator. For the tracer analyses, four columns were packed with a 5A molecular sieve, 80-100 mesh. All tracer gases were separated by the same type of molecular sieve column packing which was preconditioned at an elevated temperature.

3.6 Stability Category Determination

The Nuclear Regulatory Commission (NRC) criteria, based on lapse rate within the first 100 m of the atmosphere, were used to determine the stability class during the test period. The classes with corresponding ranges of the lapse rate are listed in Table 1. Incremental temperature differences were calculated by the subtraction of temperatures measured at 46 m and 10 m. Appendix B, Table B-1, lists average hourly temperatures for each test. Test #9 was altered from class C to class D because conditions underwent significant transition during the test. The earlier sampled concentrations during neutral and stable conditions were believed to be better described by D than C; they probably dominated the averaged 1-hr concentrations.

Table 1. NRC Stability Classes

Class	$\Delta T / \Delta Z$ $^{\circ}\text{C}/100\text{ m}$
A	<-1.9
B	-1.9 to -1.7
C	-1.7 to -1.5
D	-1.5 to -0.5
E	-0.5 to +1.5
F	+1.5 to +4.0
G	>+4.0

3.7 Photographic Panorama of Test Site

Each of the previously mentioned subparts of the field study, together with the relative magnitudes of the terrain features, may be related to the panorama of photographs in figure 13. These photographs were taken from the roof of the reactor containment vessel. The series begins at the north point, just east of the east cooling tower, and continues clockwise around the facility. Features in the photographs may be correlated with the terrain map (fig. 2), the plotplan (fig. 3), and with the details of the concentration isopleth analyses found in Appendix C.

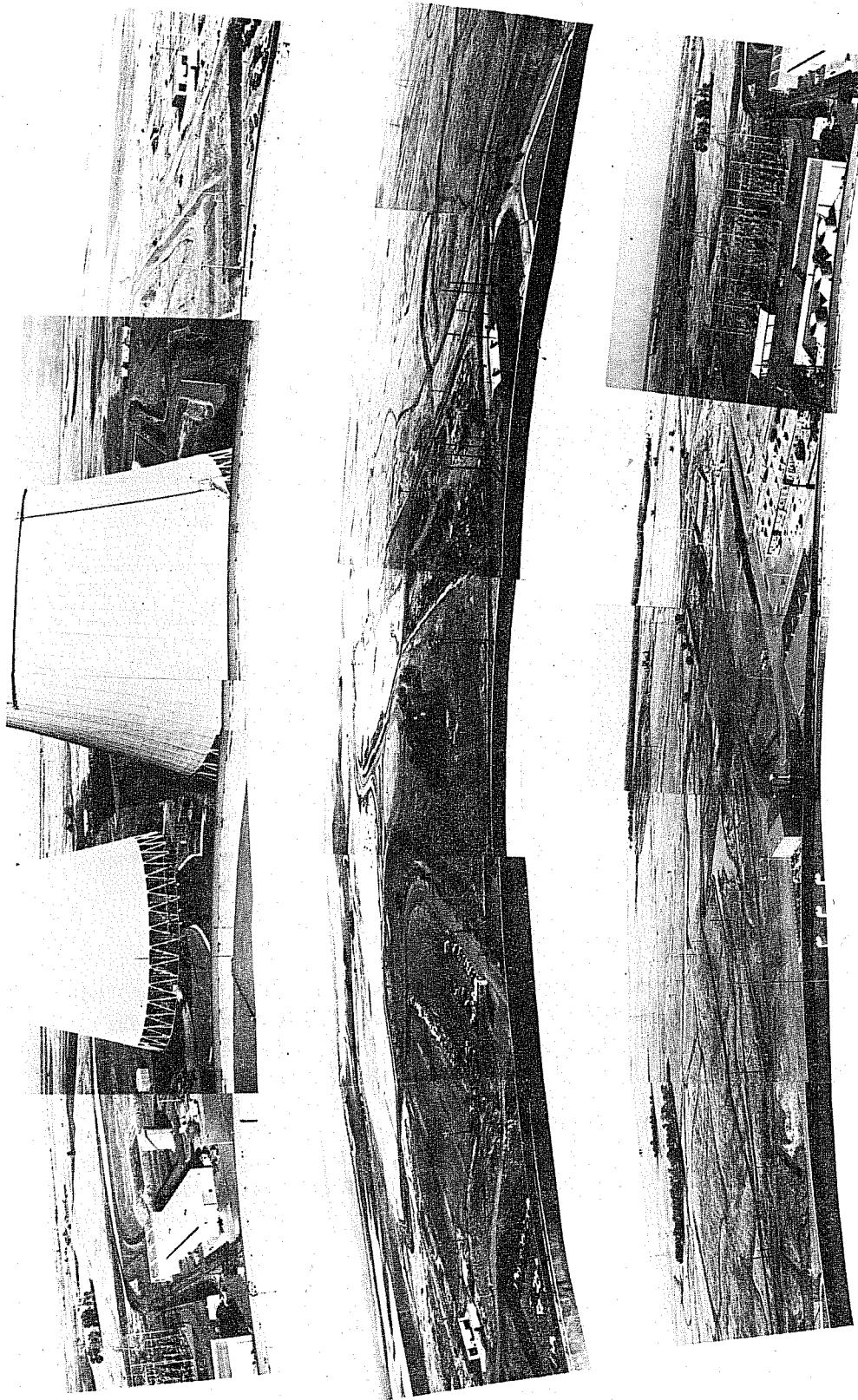


Figure 13. Photographic panorama of the test site as viewed from the top of the containment structure. Picture sequence begins at west with the upper left strip and continues clockwise through north (slightly to the right of the closest hyperbolic cooling tower). East is at the middle of the center strip and south is near the left edge of the lowest strip.

4. RESULTS

Twenty-three tests were conducted in the series, each consisting of the release of a pair of tracers at various points on and around the complex. A summary of measured and calculated meteorological and diffusion parameters (e.g. sigma-y, normalized concentrations, height of release, stability category, etc.) is provided in Appendix D. In discussions to follow, specialized grouping of parameters (extracted from this full set in Appendix D) are presented to illustrate behaviors of parameters relative to one another, with stability category, downwind distance, etc. Tests conducted under each NRC stability class are listed by number in Table 2. No tests were run under stability classes B or C.

Table 3 is a wind data summary for the test series. Winds are averaged for the duration of each test (approximately 1 hour).

Table 2. List of Rancho Seco Tests by NRC Stability Class

Stability Class	Number Occurring	Test Number(s)
A	2	1,7
D	4	6,9,15,22
E	5	11,12,13,16,19
F	3	10,18,23
G	9	2,3,4,5,8,14,17,20,21

Table 3. Rancho Seco Summary of Winds

Test	4 m Height				10 m Height				46 m Height			
	DIR	SPD	\bar{u}	σ_{θ}	DIR	SPD	\bar{u}	σ_{θ}	DIR	SPD	\bar{u}	σ_{θ}
1	313.2	1.7	0.8	80.9	296.1	1.8	1.0	75.5	321.4	1.7	0.5	12.8
2	116.5	1.1	0.8	47.9	161.4	2.1	1.8	32.3	-	-	-	-
3	81.6	1.5	1.4	19.7	100.3	1.8	1.7	19.6	127.6	2.1	2.1	9.9
4	38.1	1.3	1.3	7.1	26.4	2.3	2.3	6.8	29.1	1.8	1.8	6.1
5	70.7	1.2	0.9	52.4	57.8	1.8	1.7	56.9	66.3	0.8	0.7	25.9
6	228.3	2.9	2.8	14.2	226.3	3.2	3.1	17.2	225.2	3.5	3.4	17.0
7	341.6	4.6	4.6	10.0	322.1	5.3	5.1	15.3	318.9	5.9	5.7	13.9
8	-	-	-	-	109.8	2.6	2.5	19.0	114.0	4.3	4.2	11.9
9	240.0	1.6	1.5	25.7	239.2	1.8	1.7	26.5	243.0	2.1	1.9	23.7
10	-	3.1	-	-	-	-	-	-	-	6.9	-	-
11	310.0	3.9	3.7	19.3	320.0	5.0	4.8	15.7	-	6.4	-	-
12	349.2	1.3	1.3	24.6	345.2	1.8	1.7	22.1	344.5	3.3	3.1	22.4
13	242.7	0.9	0.8	30.3	255.8	0.8	0.8	28.2	276.6	1.0	1.0	1.0
14	108.6	1.0	0.9	31.3	121.1	2.3	2.3	9.8	143.3	3.8	3.8	5.5
15	339.4	1.2	0.8	52.9	356.5	1.7	1.3	39.8	350.6	1.9	1.4	39.8
16	227.2	0.7	0.6	28.4	206.5	0.9	0.8	23.5	239.1	1.0	0.9	15.8
17	49.5	2.0	2.0	12.4	51.7	3.0	3.0	9.2	60.9	3.0	2.9	13.2
18	250.6	0.7	0.7	1.4	148.9	0.5	0.4	35.6	259.3	0.7	0.7	0.9
19	238.6	1.1	1.1	12.9	239.4	1.5	1.3	32.1	238.8	1.9	1.8	24.5
20	-	-	-	-	-	-	-	-	-	-	-	-
21	261.7	2.8	2.2	39.4	259.9	3.7	2.9	46.5	256.1	5.1	3.4	53.6
22	-	2.1	-	-	-	2.6	-	-	-	2.8	-	-
23	328.8	1.2	0.8	51.7	-	-	-	-	331.0	3.4	3.3	12.3

DIR = direction in degrees

SPD = speed in m/sec

 σ_{θ} = standard deviation of horizontal wind direction in degrees \bar{u} = along wind component in m/sec

- = missing data

Tables 4 through 8 further describe tests within each stability class by listing tracer release points and windspeed. Release position C is located at the top center of the reactor containment vessel approximately 43 m above the plant grade. Release position A is on the auxiliary building roof approximately 16.5 m above plant grade. The release was made from the roof on the south side of the containment vessel at the juncture of the roof and containment structure. Release position G indicates a release at plant grade at the juncture of the containment, auxiliary, turbine complex with plant grade. The actual location is designated by a number that refers to sampler position near or along the walls of the containment structure (as shown in figure 3).

Table 4. Test Summary by Paired Release Points and Wind Speeds for Stability A

Test No.	Release position		Wind speeds (m/sec)		
	SF6	F12	4 m	16 m	46 m
1	C	A	0.8	1.0	0.5
7	A	G5	4.6	5.1	5.7

Table 5. Test Summary by Paired Release Points and Wind Speeds for Stability D

Test No.	Release position		Wind speeds (m/sec)		
	SF6	F12	4 m	16 m	46 m
9	C	G5	1.5	1.7	1.9
6	A	G5	2.8	3.1	3.4
15	A	G5	0.8	1.3	1.4
22	G17	G5	1.9	2.5	2.7

Table 6. Test Summary by Paired Release Points and Wind Speeds
for Stability E

Test No.	Release position		Wind speeds (m.sec)		
	SF6	F12	4 m	16 m	46 m
11	A	G5	3.7	4.8	6.4
12	A	G5	1.3	1.7	3.1
13	A	G5	0.8	0.9	1.0
.....
19	G17	G5	1.1	1.3	1.8
16	G17	G5	1.0	0.8	0.9

Table 7. Test Summary by Paired Release Points and Wind Speeds
for Stability F

Test No.	Release position		Wind speeds (m.sec)		
	SF6	F12	4 m	16 m	46 m
10	A	G5	3.0	4.9	6.9
.....
23	G17	G5	0.8	-*	3.3
18	G17	G5	0.7	0.4	0.7

* = missing data

4.1 Simultaneous Ground-Level Tracer Releases

In tests 5 and 16-23, both tracers were released at ground level. Test 20 had meteorological data problems and test 23 had data gaps in parts of the statistical array; hence, neither was included in this section's results.

Figures 14 and 15 are plots of sigma-y and effective sigma-z (CIC), respectively. In both cases, F12 data are along the X axis and SF6 data are along the Y axis. The correlation coefficient for sigma-y comparisons is 0.92 and for sigma-z is 0.73, indicating good correspondences. Closer examination of the regression line for sigma-y shows

Table 8. Test Summary by Paired Release Points and Wind Speeds
for Stability G

Test No.	Release position		Wind speeds (m.sec)		
	SF6	F12	4 m	16 m	46 m
3	C	A	1.4	1.7	2.1
2	C	A	0.8	1.8	1.2
.....
4	C	G5	1.3	2.3	1.8
.....
8	A	G5	0.9	2.5	4.2
14	A	G5	0.9	2.3	3.8
U
21	G17	G5	2.3	2.9	3.4
20	G17	G5	2.2	-*	-*
17	G 5	G5	2.0	3.0	2.9
5	G17	G5	0.9	1.7	0.7

*- = Missing data

that F12 is only slightly larger than sigma-y for SF6. For sigma-z, the converse appears to be true. Both curves show good grouping about the regression line, which tends to suggest that both tracers behave similarly when released at the same level.

Figure 16 is a plot of the ratio of sigma-y for F12/SF6 vs. stability class; figure 17 is the corresponding plot for the sigma-z ratio. The regression line for the sigma-y ratio is a straight horizontal line; for sigma-z the ratio is slightly tilted. However, the sigma-z line was biased by a few large values for stabilities E and F. These points correspond to data from tests 16 and 18, tests in which SF6 elevated while F12 did not. This elevating resulted in a decreased SF6 ground-level sampler concentration, and therefore a relatively larger value of sigma-z. This in turn produced larger ratios. When these few data points were removed, both tracers appeared to behave similarly for similar release heights.

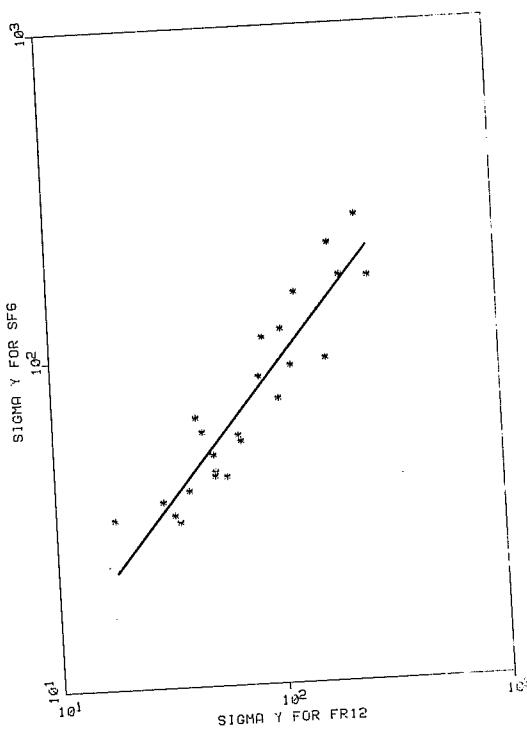


Figure 14. Comparison of sigma- y values for simultaneous ground-level releases of F12 and SF6 tracers. A regression line is drawn through the set data points.

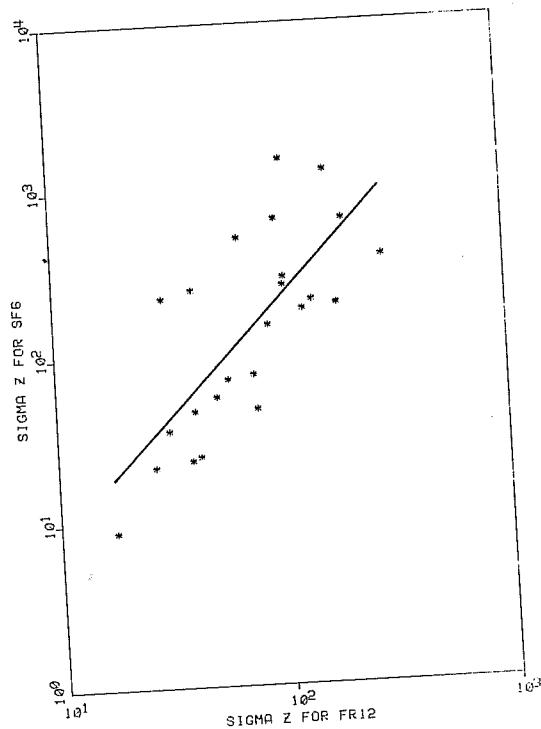


Figure 15. Comparison of effective sigma- z values for simultaneous ground level releases as in Fig. 14.

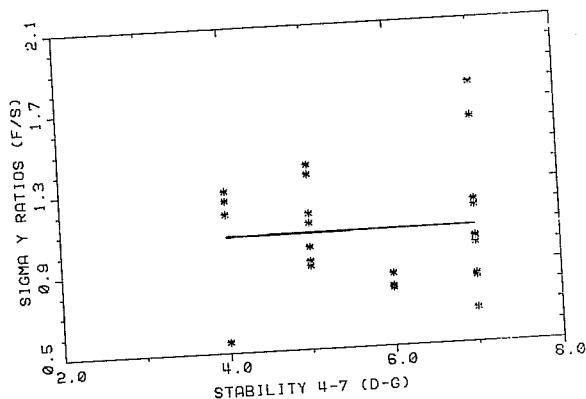


Figure 16. Ratios of sigma- y values (F12/SF6) vs. stability categories for simultaneous ground-level releases of tracers, and a regression line.

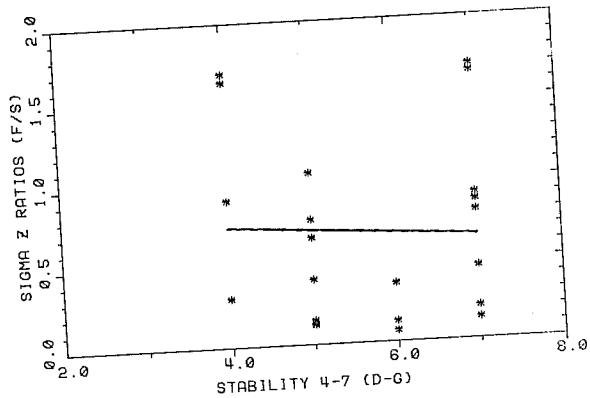


Figure 17. Ratios of sigma- z values vs. stability categories, as in Fig. 16.

4.2 Cooling Tower Wake Effects on the Meteorological Tower Sensors

The meteorological data were examined to determine what effects, if any, the cooling tower wake had on them. The shadow of the cooling towers on the meteorological tower was assumed to occur for winds of 218 degrees to 251 degrees. An additional 15-degree spread was allowed and the wake area was defined as extending from 203 degrees to 266 degrees.

With these criteria, the meteorological tower was found to be within the cooling tower wakes during tests 6, 9, 13, 16, 19, 21, and 22. Statistics were calculated for the meteorological data from these tests for comparison with statistics from the remaining sixteen tests.

Table 9 lists mean and standard deviations of the horizontal wind direction (SA) at 4 m, 16 m, and 46 m levels on the meteorological tower.

Table 9. Meteorological Statistics for Testing Cooling Tower Wake Effects.

Variable ¹	No wake			Wake		
	No. Obs.	Mean	Std. Dev.	No. Obs.	Mean	Std. Dev.
SA 4	16	28.39	22.28	7	21.67	12.05
SA 16	14 ^a	24.72	21.07	7	30.02	9.03
SA 46	16	16.69	20.16	7	20.64	16.68

¹ Standard deviation of the horizontal wind direction.

^a Tests 20 and 23 had sensor failure on the 16 m bivane during the test period.

Student's t test and an F test were run to test for significance of the wake on the meteorological data. The results are listed in Table 10. The basic assumption was that the standard deviations were equal. This would be so if the cooling tower wake had no effect. The 16 m level failed the F test; however, the t value of the means was not appreciably changed because of the difference in standard deviations between the samples. Both tests were run with 95% confidence limits.

Table 10. Results of Student's t Test and F Test for Meteorological Tower Data

Variable ¹	t	Criteria (95%)	F	Criteria (95%)
SA 4	.70	2.08	3.42	3.94
SA 16	.60	2.09	5.45	3.98
SA 46	.43	2.08	1.21	3.94

¹ Standard deviation of the horizontal wind direction.

The definitions of Student's t test and the F test are listed in Appendix E. The reader is referred to Alder and Roessler (1964) for more information.

4.3 Diffusion Statistics

The cross-sectional area of the Rancho Seco reactor complex is 2050 m². The value of the constant, c, is assumed to be 0.5.

Diffusion data from Pasquill (1961) and Gifford (1961) are given in Table 11. Also listed are values for Cu/Q with and without building modification for the stability classes under which diffusion tests were run. The assumption is made that stability G data is the same as class F data for comparison purposes. The building wake modifications of Cu/Q are discussed below.

For comparison of the observed data with the expected values, as categorized in Table 1, three ratios were formed. The first, RY, represents the ratio of the measured sigma-y value (for a given test and distance downwind) and the Pasquill-Gifford value. Similarly, RZ is the ratio of the sigma-z from the CIC equation (effective) divided by the Pasquill-Gifford expected value. The third ratio, RC, is the Pasquill-Gifford concentration divided by the measured peak or axial concentration.

Table 12 lists the ratios, first for all tests and data points, and then for stable and unstable classifications. Topographically affected concentrations and sigmas are included here. The ratios for unstable categories, stabilities A and D, are generally much smaller, implying a better correspondence to Pasquill-Gifford values. For the stable cases, some of the larger ratios of RZ and RC are probably due in part to topographic effects on the plume. These are discussed below.

Table 11. Pasquill-Gifford Diffusion Data

Stability	Distance Meters	σ_y Meters	σ_z Meters	$1/(\pi\sigma_y\sigma_z)$ ^a	$1/(\pi(\sigma_y\sigma_z + cA))$ ^b
A	100	27.00	14.10	8.36E-4	2.26E-4
	200	50.50	29.40	2.14E-4	1.27E-4
	400	94.00	73.00	4.64E-5	4.04E-5
	800	173.00	275.00	6.69E-6	6.55E-6
D	100	8.00	4.65	8.56E-3	2.99E-4
	200	15.30	8.50	2.45E-3	2.76E-4
	400	29.00	15.40	7.13E-4	2.16E-4
	800	55.50	26.50	2.16E-4	1.28E-4
E	100	6.10	3.50	1.49E-2	3.04E-4
	200	11.40	6.35	4.40E-3	2.90E-4
	400	21.60	11.10	1.33E-3	2.52E-4
	800	40.90	18.20	4.28E-4	1.80E-4
F	100	4.00	2.31	3.44E-2	3.08E-4
	200	7.60	4.05	1.03E-2	3.01E-4
	400	14.60	7.10	3.07E-3	2.82E-4
	800	27.50	12.00	9.65E-4	2.35E-4

^a defined as Cu/Q.^b defined as Cu/Q with building effect (cA for Rancho Seco is 1025 m).

Table 12. Comparisons of Diffusion Statistics By Data

Data Considered	RY	RZ	RC
All data.	5.7	48.9	353.4
Stab. (E,F,G)	6.9	58.2	474.3
Unstab. (A,D)	2.7	15.9	48.9

Table 13 lists the ratios from the full data set (Appendix D) averaged for each arc distance. Data points are also plotted against distance in figures 18 through 20. The data show the effects of the building decreasing as the distance from the source increases. Decreasing RY indicates that the observed sigma-y values are approaching the Pasquill values. A similar result is seen for sigma-z. The decreasing RC indicates a relative increase of observed to expected concentration and implies a lessening effect of the building with downwind distance.

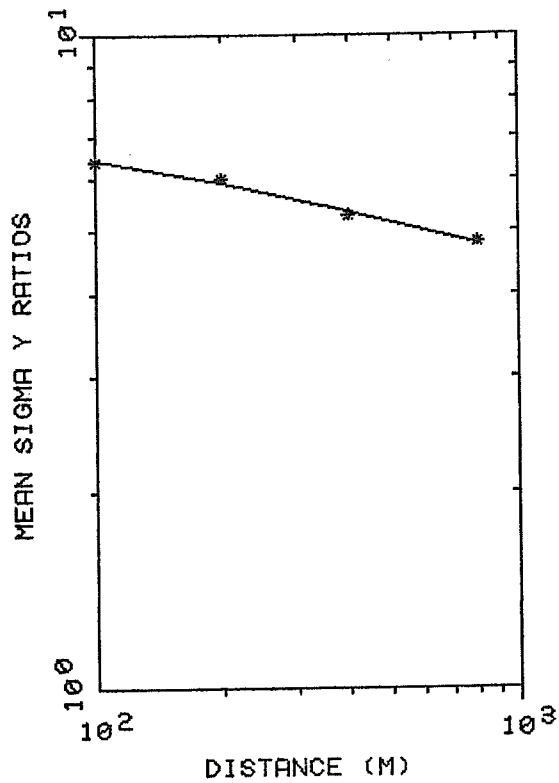


Figure 18. Mean ratios for calculated (observed) sigma-y values divided by expected Pasquill-Gifford values. * denotes the mean ratios for each distance. The line is a regression fit of the mean values.

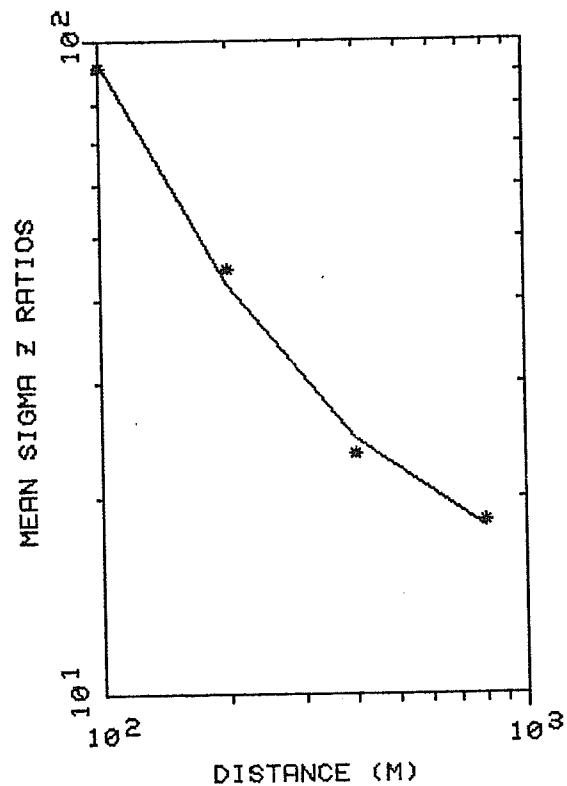


Figure 19. Mean ratios for calculated (observed) sigma-z values divided by expected Pasquill-Gifford values.

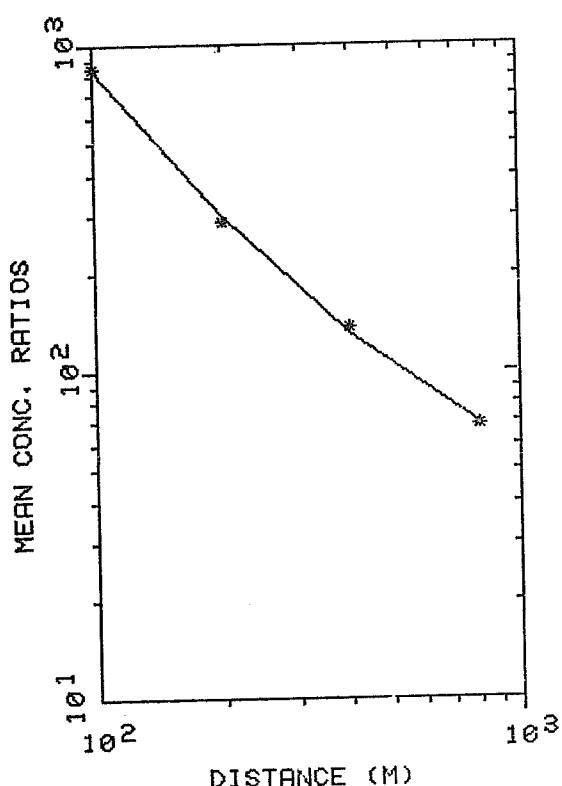


Figure 20. Mean ratios for Pasquill-Gifford values divided by observed maximum concentration values.

The full data set of diffusion statistics from Appendix D is classified in Table 14. Listed are the mean values for each ratio, which are presented by stability class for each arc distance.

The RC ratio is largest for G stabilities and 100 m. The largest ratio values occur for the shortest distances and decrease with distance from release, suggesting that the plume "forgets" the building influences as it streams away. The largest ratios also occur for the most stable categories of stability class.

The RZ section of Table 14 suggests the same large ratios near the building representing the disruption by the building, and shows values which decrease with distance as the building effects become of lesser importance.

RY values are generally small throughout with the trend similar to that for RZ.

Table 13. Comparisons of Diffusion Statistics by Distance

Distance (m)	RY	RZ	RC
100	6.4	91.2	848.9
200	6.0	44.8	289.4
400	5.3	23.3	135.7
800	4.8	18.4	68.4

Table 14. Comparison Ratios of Diffusion Statistics With
Pasquill-Gifford Values

Var.	Stability	100 m	200 m	400 m	800 m	Avg.
RC	A	5.8285E+01	1.1042E+01	4.8800E+00	9.7250E-01	1.8795E+01
	D	1.1962E+02	5.7627E+01	4.7700E+01	3.0896E+01	6.3962E+01
	E	5.9872E+02	2.7997E+02	8.2979E+01	3.8836E+01	2.7237E+02
	F	3.4320E+02	3.5453E+02	6.7855E+02	1.7173E+02	4.0657E+02
	G	1.4920E+03	4.1752E+02	1.5571E+02	9.8548E+01	5.5472E+02
	Avg.	7.8461E+02	2.7844E+02	1.7878E+02	7.2129E+01	3.3927E+02
RY	A	1.2325E+00	1.0675E+00	1.1500E+00	1.5175E+00	1.2419E+00
	D	3.4300E+00	3.6487E+00	3.0862E+00	3.3687E+00	3.3834E+00
	E	5.5280E+00	4.3940E+00	4.6456E+00	4.9014E+00	4.8705E+00
	F	9.9667E+00	9.6117E+00	8.5067E+00	6.7625E+00	8.8891E+00
	G	9.0633E+00	8.3888E+00	6.7329E+00	6.0094E+00	7.5705E+00
	Avg.	6.7519E+00	6.1706E+00	5.3773E+00	4.9136E+00	5.8365E+00
RZ	A	3.2695E+01	1.0460E+01	3.7550E+00	8.4750E+01	1.1939E+01
	D	3.0979E+01	1.4522E+01	1.5282E+01	1.0685E+01	1.7867E+01
	E	1.1458E+02	7.1012E+01	2.0008E+01	1.2161E+01	5.8921E+01
	F	2.8860E+01	3.0247E+01	1.5716E+02	1.9187E+01	6.2471E+01
	G	1.2045E+02	5.1187E+01	2.4464E+01	2.8786E+01	5.7154E+01
	Avg.	8.2662E+01	4.2662E+01	3.8096E+01	1.8503E+01	4.6867E+01

The ratios of measured to expected Pasquill-Gifford sigma-y values include effects from both horizontal wind direction fluctuations and the initial building-produced spreading in the immediate lee of the structure. The separation of these two effects from one another was not achieved. The horizontal wind direction fluctuations during this test series were so large that the lateral spreading effects caused by the structures were nearly obscured. Lateral plume spreading (estimated from standard deviations of bivane horizontal wind direction fluctuations) were compared with the observed standard deviations of lateral tracer spreading (σ_y). The wind direction fluctuations well accounted for the observed lateral tracer spreadings. For 52 comparisons of ground-level tracer releases nearly two-thirds of the variance in observed σ_y values was explainable by use of the wind fluctuation statistics. The correlation coefficient was 0.82, and the F-value statistic was 104.3.

4.4 Effects Due to Height of Release of Tracers

Three basic heights were used for the paired releases of the gaseous tracers. One release point was at the top center of the containment building roof; a second release location was on the auxiliary building roof, and two ground-level sites were used. This section presents a summary of the different behaviors relating to the heights of the plume axis and the actual heights of release of the gaseous tracers.

Table 15 summarizes the general atmospheric conditions and shows the release heights of the tracers for each test. It also lists the sampled tracer concentrations collected on the auxiliary roof as the result of ground-level released gaseous tracers. In most cases, ground-level released tracers were collected in very substantial amounts by these roof samplers. During tests 6 to 8 and 10 to 15, SF6 was released on the auxiliary building roof. Massive amounts of SF6 were sometimes collected in these roof samplers and masked the presence of F12. In general, roof-level-sampled tracer concentrations (from ground-level releases) yielded tracer concentrations nearly comparable with the highest concentrations sampled at ground-level along the edge of the containment and auxiliary buildings. Two important exceptions to tracer plumes that elevated to the roof level were tests 16 and 18. For some unknown reason, F12 was not substantially lifted aloft to the roof samplers whereas SF6 was. In all other instances, the ground-level-released tracer was sampled in very substantial amounts at the roof locations.

Paired tracer releases are grouped according to their combination of release heights in Table 16. Four distinct and simultaneous groupings were (1) containment top and auxiliary roof, (2) containment top and ground-level, (3) auxiliary roof and ground-level, and (4) both ground-level tracer releases. Average diffusion statistic ratios were formed for each tracer for each release height. These ratios were observed values divided by Pasquill-Gifford expected values (or their reciprocal) for σ_y , σ_z , and normalized concentrations. A pattern of dependence upon height is easily recognized. For the σ_y ratios (RY),

Table 15. Auxiliary Roof Sampler Concentrations for
Tracers Released at Ground Level

Test No.	NRC Stab.	4 m Wind		Tracer		Measured Concentration ³		
		Dir. ¹	Spd. ²	Gas	Release	401 ^a	402 ^b	403 ^c
4	G	38	1.3	F12	G5	1.07E-3	1.413E-4	7.50E-4
5	G	71	0.9	SF6	G5	1.03E-3	8.99E-4	4.22E-4
5	G	71	0.9	F12	G5	2.61E-3	9.89E-4	5.15E-4
6	D	228	2.8	F12	G5	0.0	0.0	0.0
7	A	342	4.6	F12	G5	0.0	0.0	0.0
8	G	--	0.9	F12	G5	MSG	MSG	1.25E-4
9	D	240	1.5	F12	G5	1.05E-4	MSG	MSG
10	F	330	3.0	F12	G5	0.0	0.0	6.88E-4
11	E	310	3.7	F12	G5	0.0	0.0	0.0
12	E	349	1.3	F12	G5	0.0	0.0	2.91E-4
13	E	243	0.8	F12	G5	1.61E-3	MSG	1.52E-4
14	G	109	0.9	F12	G5	4.31E-5	3.26E-5	1.03E-5
15	D	339	0.8	F12	G5	1.96E-3	3.47E-4	MSG
16	E	227	1.0	SF6	G17	1.56E-3	3.53E-4	8.36E-4
16	E	227	1.0	F12	G5	0.0	0.0	0.0
17	G	50	2.0	SF6	G17	2.70E-5	2.58E-7	2.41E-5
17	G	50	2.0	F12	G5	4.91E-4	2.59E-4	1.19E-4
18	F	251	0.7	SF6	G17	1.46E-3	1.01E-4	8.16E-4
18	F	251	0.7	F12	G5	0.0	0.0	0.0
19	E	239	1.1	SF6	G17	3.05E-4	3.58E-4	1.46E-4
19	E	239	1.1	F12	G5	6.58E-4	0.0	8.22E-4
21	G	262	2.3	SF6	G17	2.33E-5	2.17E-6	2.53E-6
21	G	262	2.3	F12	G5	1.95E-4	3.00E-6	3.99E-5
22	D	24	1.9	SF6	G17	1.51E-4	7.10E-5	3.68E-5
22	D	24	1.9	F12	G5	1.66E-3	1.68E-3	9.54E-4
23	F	329	0.8	SF6	G17	MSG	1.68E-4	1.01E-4
23	F	329	0.8	F12	G5	MSG	1.28E-3	9.90E-4

¹In degrees true north = 0 or 360 degrees

²In m/sec from 4 m level on meteorological tower

³Cu/Q (m^{-2}) concentrations are normalized

^a3 m from the juncture of the auxiliary roof and containment

^bMidway between 401 and 403

^cEdge of auxiliary roof to south

MSG Missing data

Table 16. Comparisons of Diffusions Statistics for Paired Tracer Releases Using Combinations of Different and Same Release Heights

Release Locations	Tracer	RY σ_y (M/PG)*	RZ σ_z (M/PG)*	RC C(PG/M)*
Containment Auxiliary	SF6	4.2	146.4	804.3
	F12	5.8	22.0	669.5
Containment Ground	SF6	4.4	143.5	1803.3
	F12	5.2	16.2	163.2
Auxiliary Ground	SF6	4.1	52.2	187.8
	F12	5.5	9.4	47.9
Ground Ground	SF6	7.2	50.7	392.5
	F12	7.3	17.2	109.3
Paired ground-level releases without test 16 and 18 data				
Ground	SF6	6.3	16.3	78.1
	F12	6.7	16.0	75.8

* M = measured values; PG = Pasquill-Gifford values

the tracer released nearer to the ground had a slightly larger proportional deviation from expected Pasquill-Gifford values. Effective sigma-z ratios (RZ) and concentration ratios (RC) were largest for the more elevated tracer.

Paired ground-level releases are also shown in Table 16. The first listing shows average values for all tests, including tests 16 and 18 for which F12 did not experience a building-induced elevation of the tracer plume. This ratio set has large mean ratios of RZ and RC for SF6 as compared with F12, since the SF6 plume was elevated. In the second listing of paired ground-level release ratios, test 16 and 18 values are deleted. Excellent agreement of these diffusion ratios indicates that both gaseous tracers behaved in an essentially identical way, except for those two unexplained failures of F12 to elevate.

Figure 21 illustrates the comparisons of sigma-y values for the elevated tracer (SF6) with corresponding values for the lower level released tracer (F12). The solid sloping line represents the locus of points of one-to-one correspondence. Most paired data values lie well below the line, showing that the near-ground released tracer does develop a slightly wider lateral spread.

Figure 22 depicts a similar comparison for effective sigma-z values. In this comparison, the elevated tracer has the largest effective sigma-z values, as would be expected. Considerably more scatter occurs within the sigma-z type of diagram. Without specific information about the heights of the plume axes and the vertical concentration profiles, little more may be determined about this greater scattering. In other words, the discussions deal with the effective sigma-z provided by equation 6.

Figures 23 through 33 illustrate characteristic plume behaviors shown by the oil fog visual tracer. Figures 23 through 26 illustrate oil fog releases from the containment top during neutral and unstable temperature lapse rates (stability categories A-D). Figure 23 shows a coning plume which gradually develops large vertical loops. Figure 24 shows one of the typical fumigation episodes with ground-surface impaction approximately 200 m to the northeast of the containment building. Figure 25 views the looping plume from about 1000 m northeast of the containment building.

An episode of building wake cavity capture of oil fog is shown in figure 26. Usually these episodes were of short duration and of relatively small importance compared with the total plume movements and diffusion during neutral and unstable stability conditions.

Figures 27 through 29 typify containment building roof releases of oil fog during strongly stable temperature lapse rates (stability categories E through G). Figure 27 illustrates the elevated plume behavior during stability category G. A small zone of more diffuse oil fog extends along the lower edge of the plume. This diffuse zone probably represents the main portion of the building wake influence upon the plume. Figure 28 shows this plume encountering and flowing around the west cooling tower. In figure 29, the plume is shown flowing between the cooling towers several minutes later with little apparent alteration of the plume structure by the cooling tower wakes.

Figures 30 through 32 typify ground-level releases of oil fog during stable stability categories. Oil fog smoke released in the building wake cavity is drawn upward along the lee edge of the structures and streams away from the buildings as if released from a vertically elongated source. Depending upon the amount of stable layering of the atmosphere, the oil fog plume may be contained to greater or lesser extent within particular layers. Oil fog released in the building cavity zone tends to remain well above the ground surface (fig. 31). A somewhat clear zone (mostly without oil fog) exists between the lower plume boundary and the ground surface.

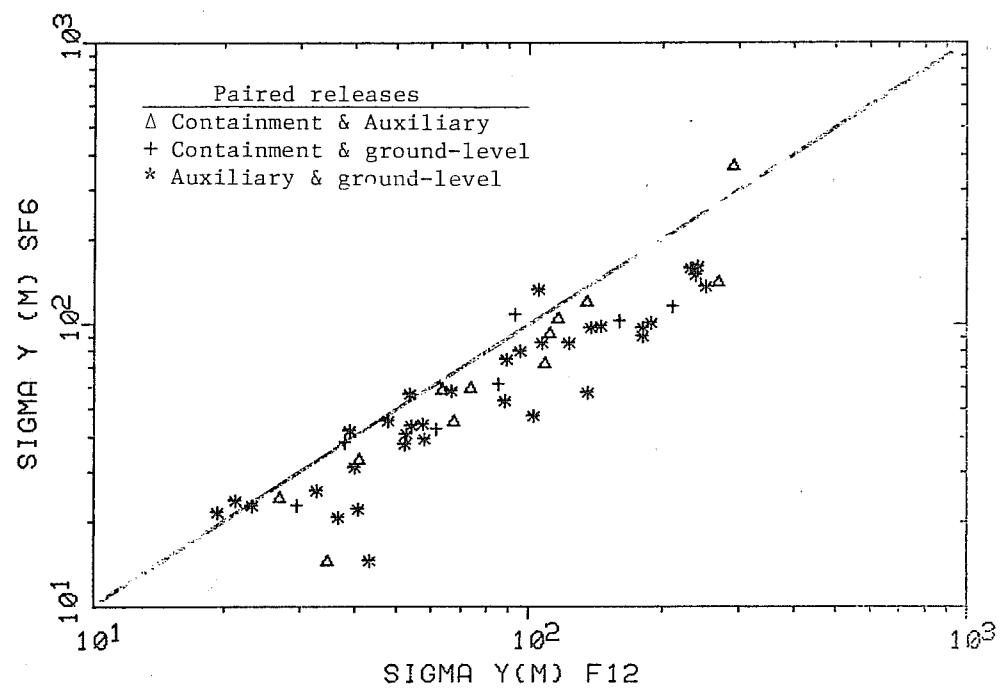


Figure 21. Comparisons of σ_y values for F12 (lower height of tracer release) and SF6 (more elevated release height).

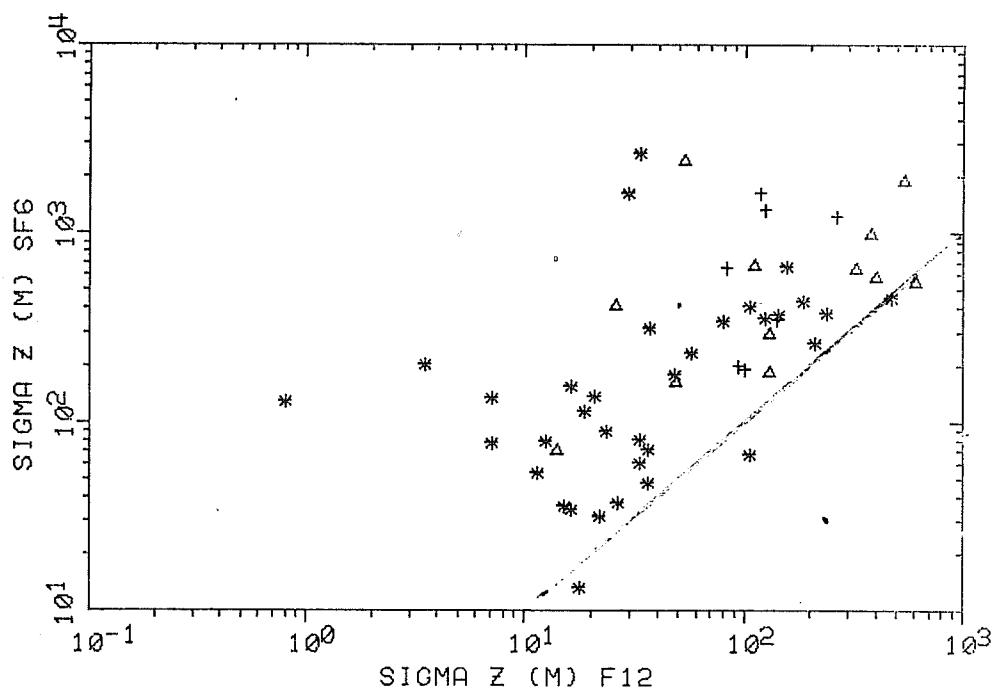


Figure 22. Comparisons of effective σ_z values as in Fig. 21.

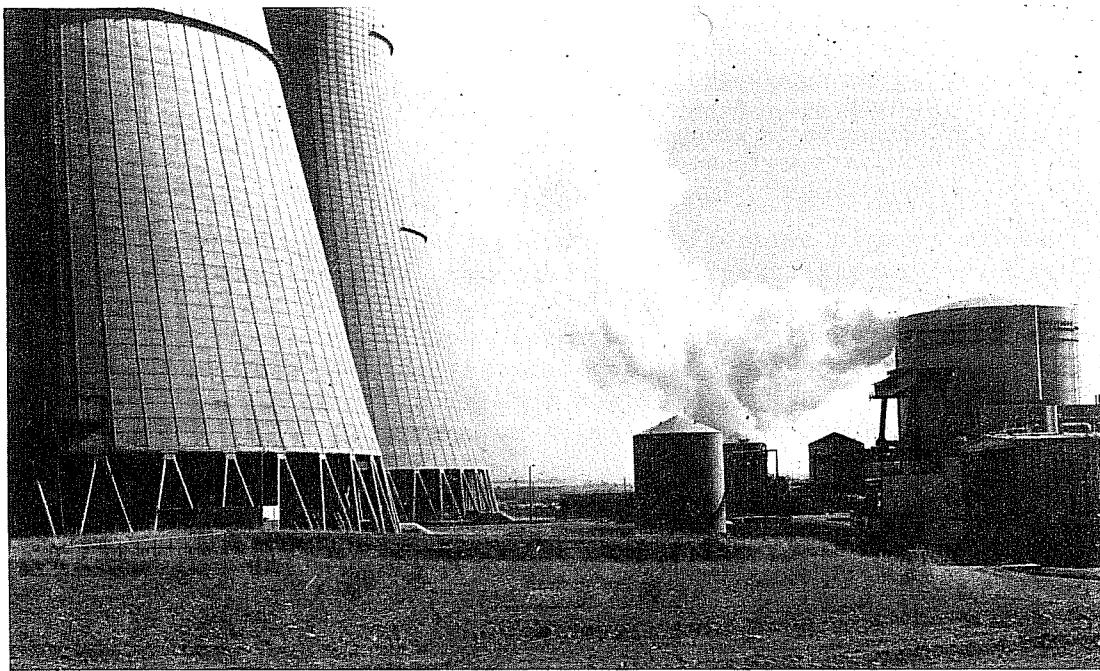


Figure 23. Rooftop release from containment vessel under strongly unstable conditions. Pronounced looping is evident.

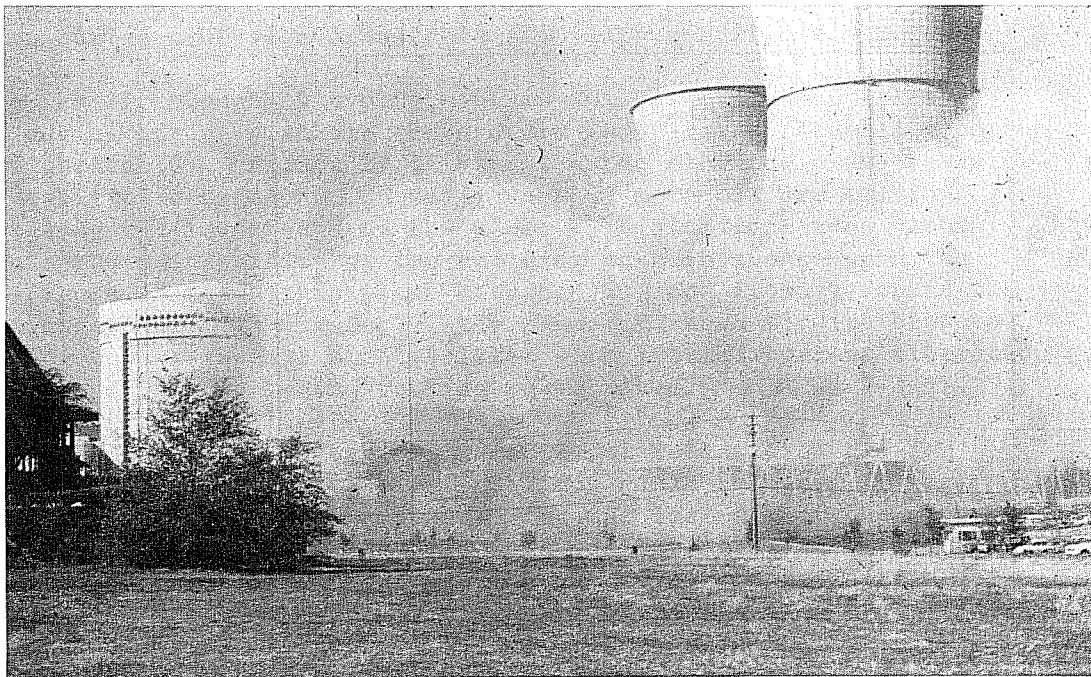


Figure 24. Surface release from position 5 under neutral conditions. Lateral diffusion into wake of containment vessel and enhanced surface impaction are evident.

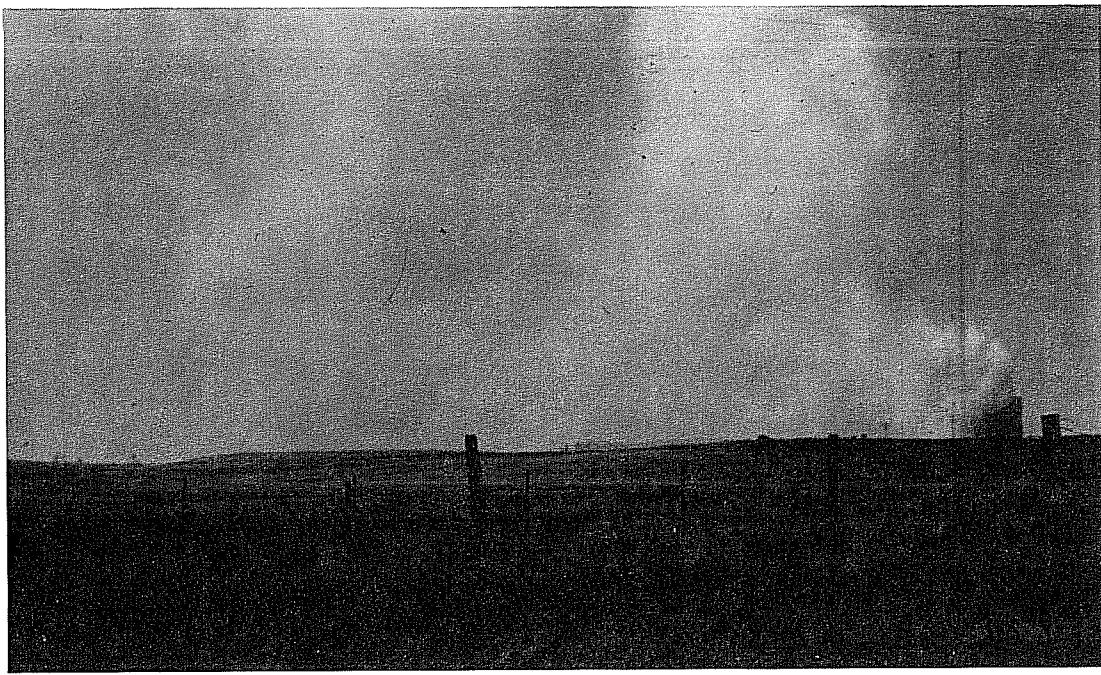


Figure 25. Strongly looping plume characteristic of releases under unstable conditions. Building wake effects were overpowered by thermal convective effects under such conditions.

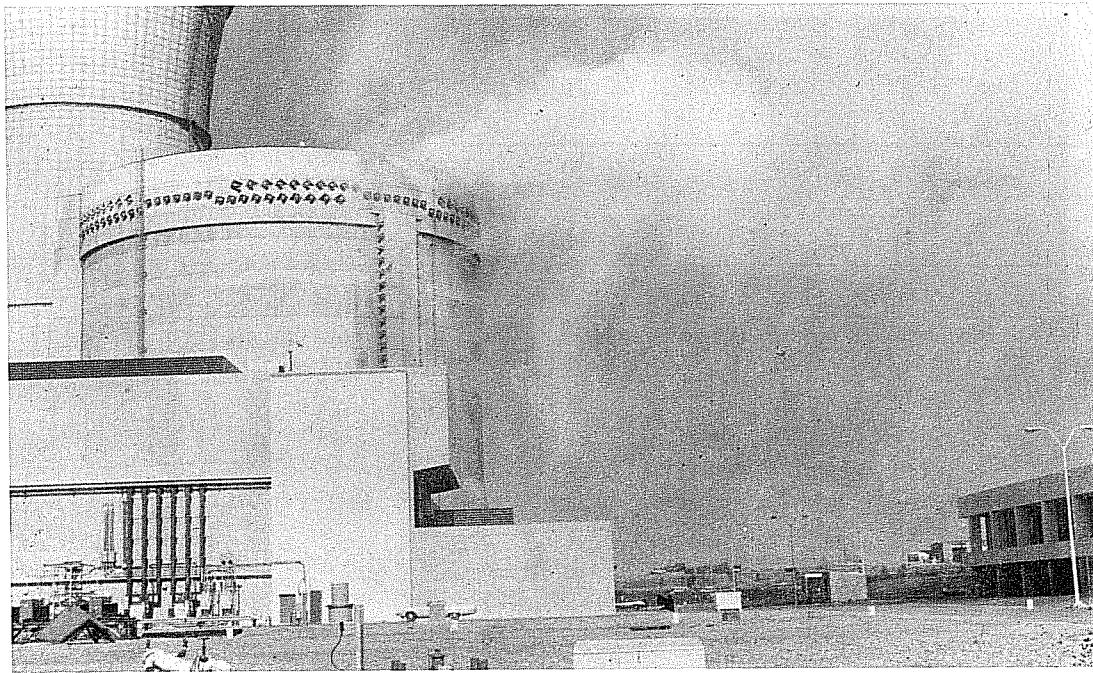


Figure 26. Visual plume released from roof of containment vessel under unstable conditions. Transient trapping of the plume in the building cavity is indicated. White samplers (see arrow) are on 100 m arc.

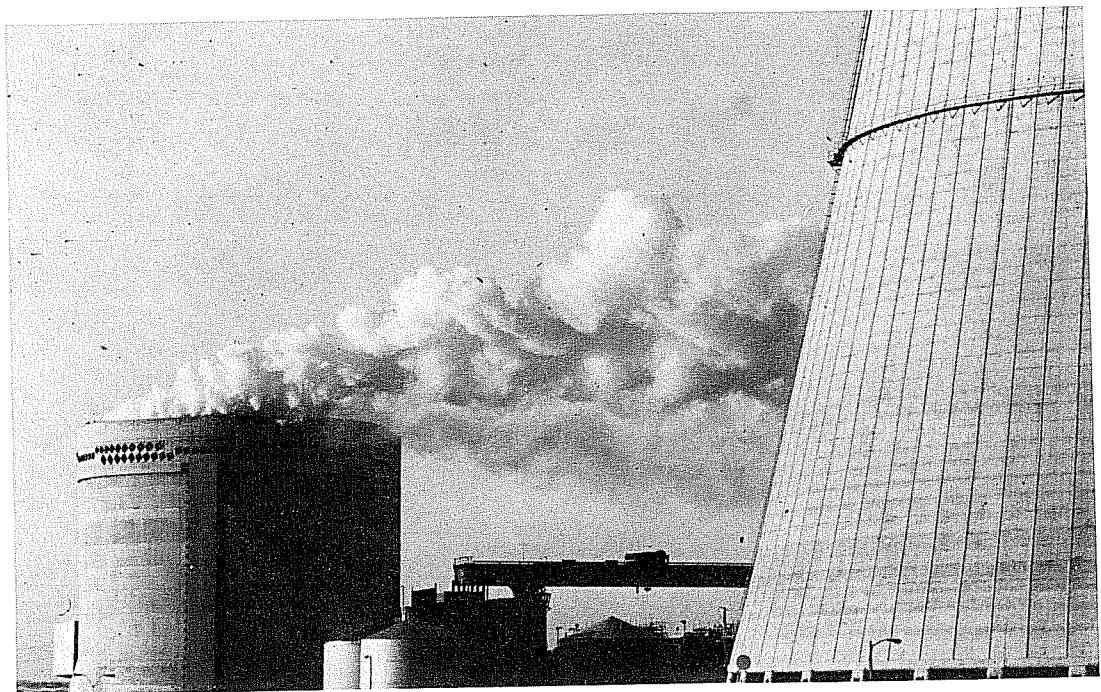


Figure 27. Typical rooftop release under stable conditions.
Plume remains aloft in stable flow.

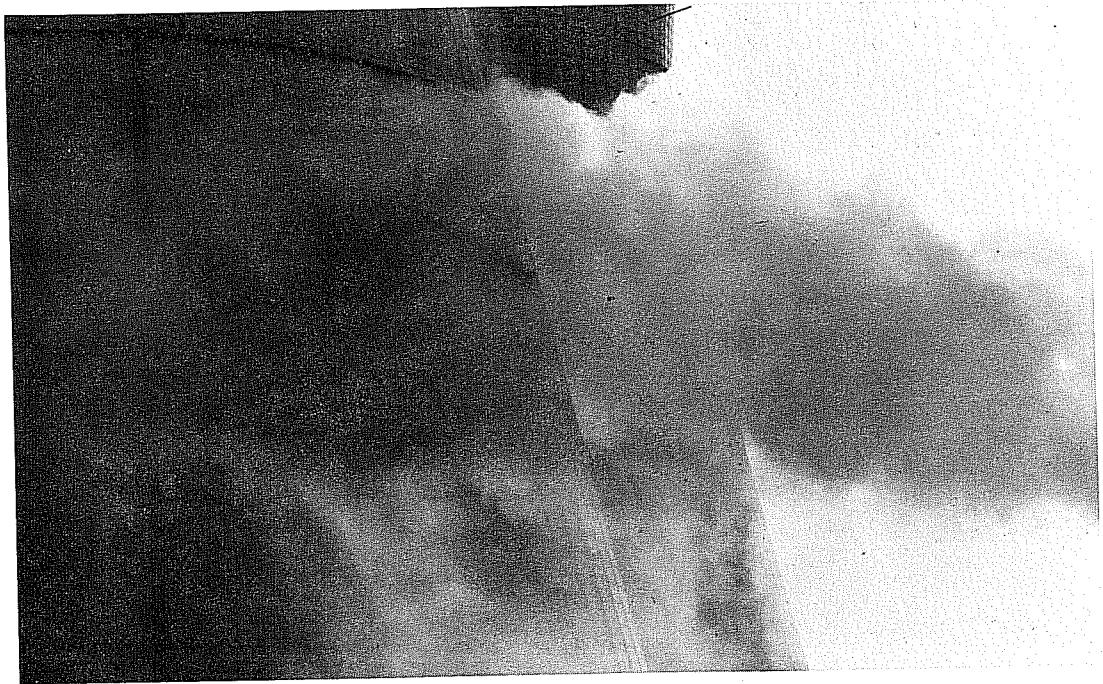


Figure 28. Roof release plume encounters cooling tower and encircles structure while passing downwind.

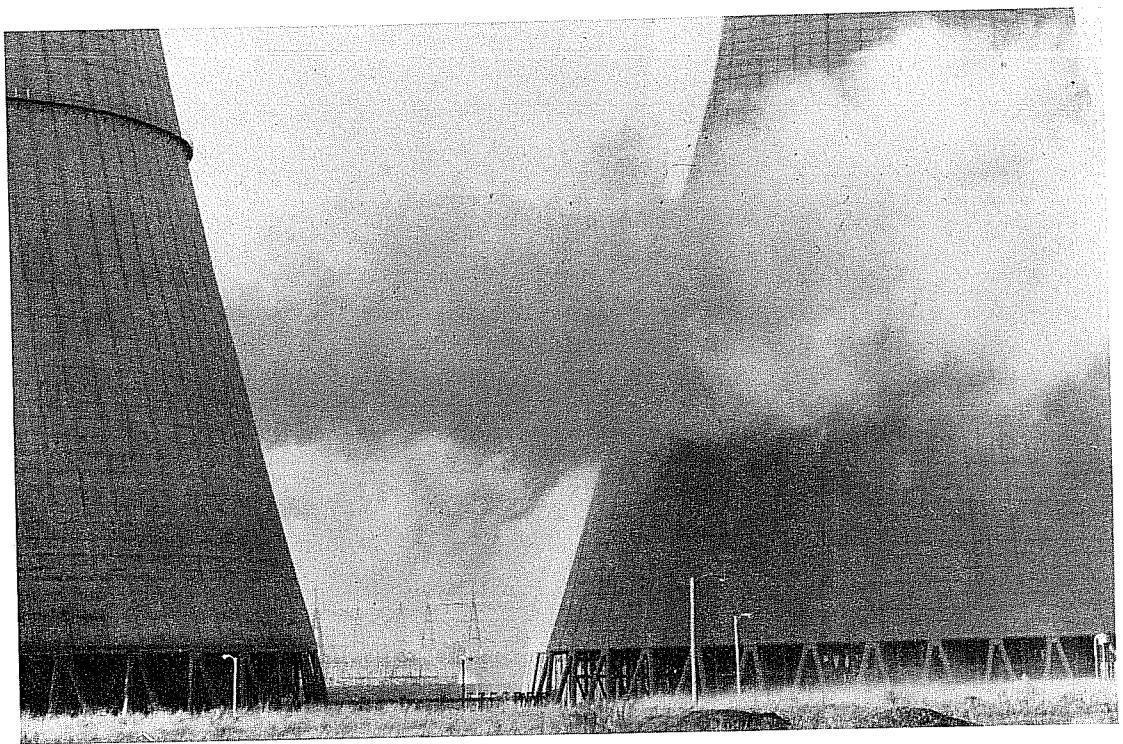


Figure 29. Roof release plume passes between hyperbolic cooling towers in stable flow.

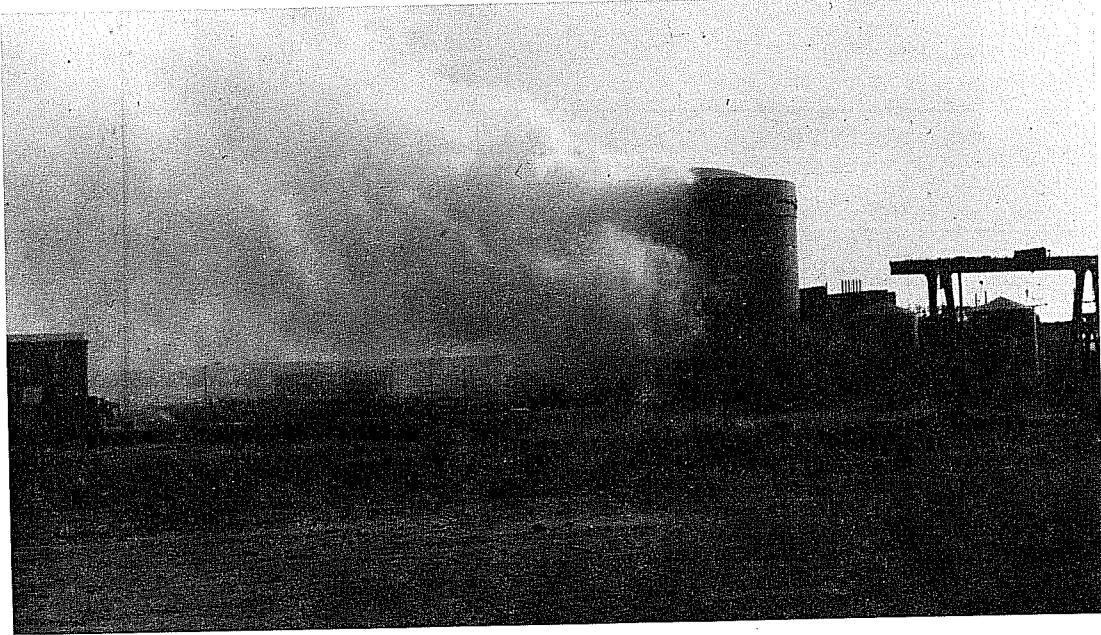


Figure 30. Surface smoke release from position 5 within building cavity. The smoke is drawn upward and swept downwind at rooftop level. Sampling tower may be seen at left.

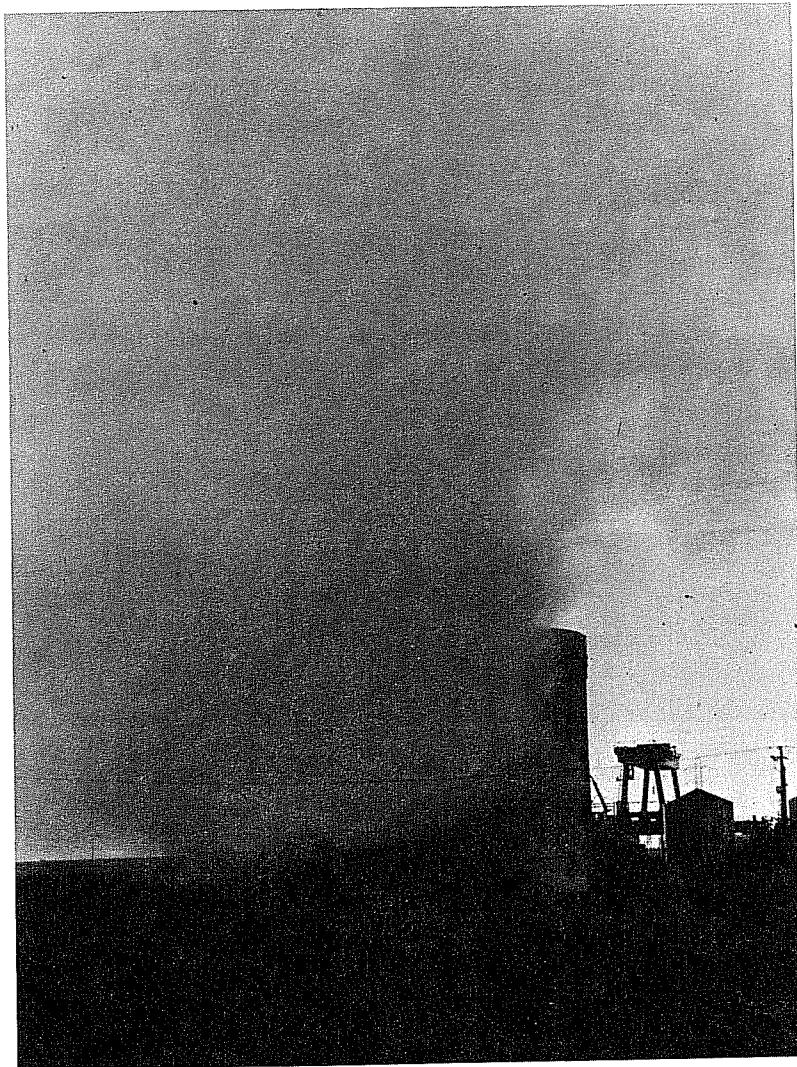


Figure 31. Visual plume released from surface position 5 under stable conditions. Plume remains aloft past the 200 m arc.

Figure 32 shows the ground-level release of oil fog from a position at the lateral edge of the building complex. A considerable amount of oil fog streams by the building without being captured within the wake cavity zone. Some plume mass is entrained within the cavity zone in the lee of the containment building and can be seen above the auxiliary building roof. Figure 33 shows small wisps of oil fog plume being drawn downward into the cavity zone in the lee of the containment building during strong stable conditions.

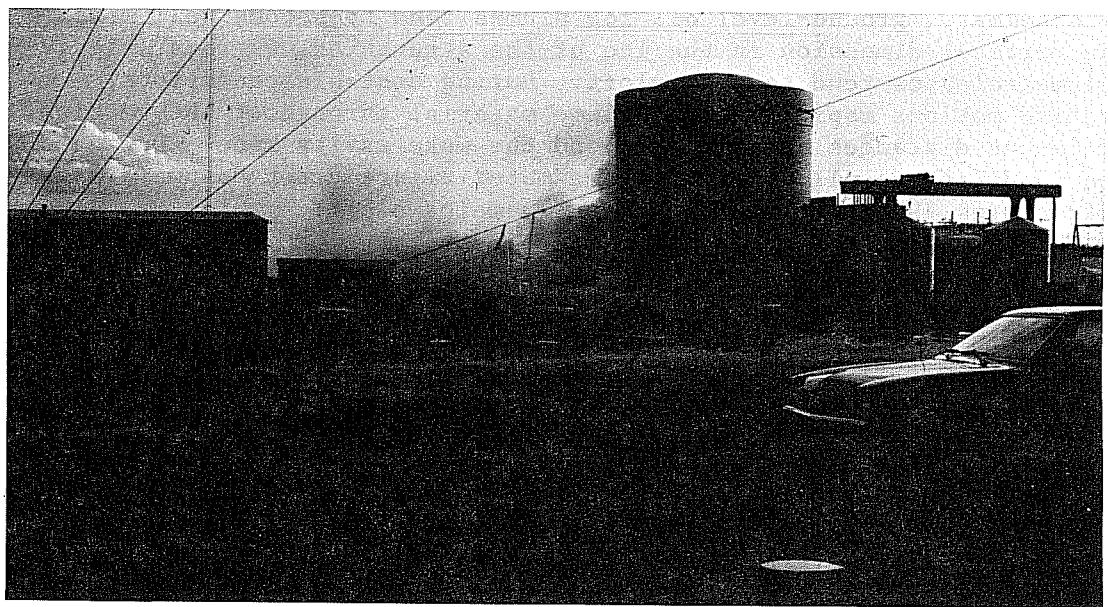


Figure 32. Surface smoke release from position 5 under stable conditions. Smoke is climbing the rear of containment building in building cavity and is mixing in turbulent wakes of nearby support buildings.

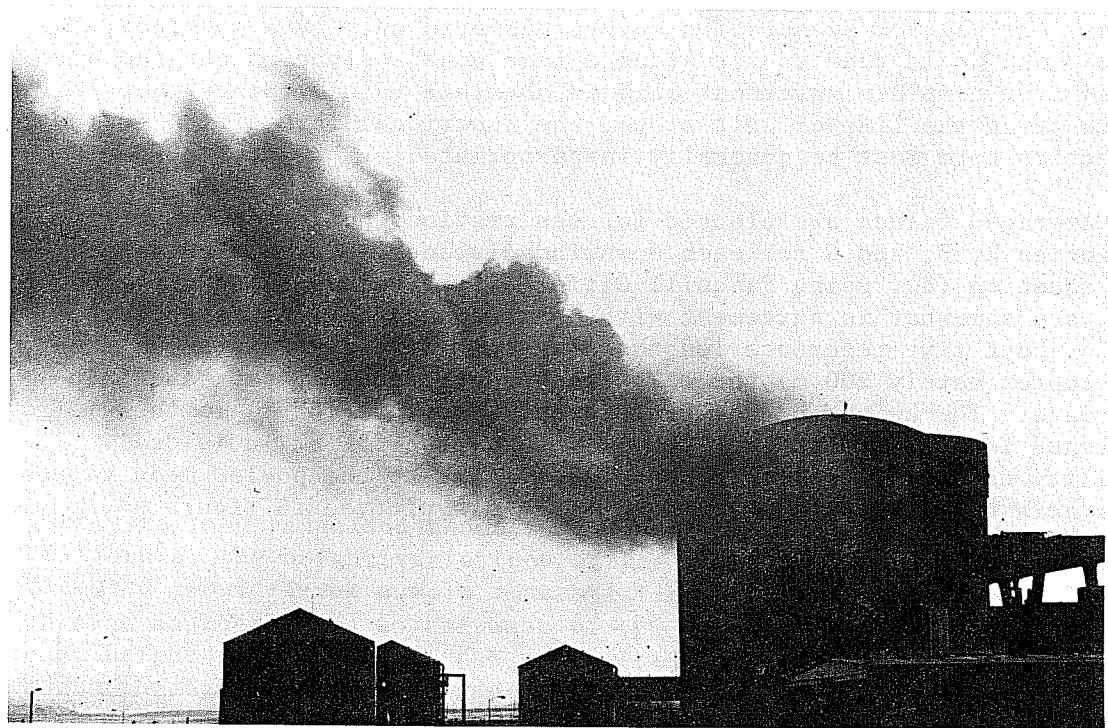


Figure 33. Visual plume released from roof under stable conditions.

In summary, ground-level oil fog plumes tend to become well mixed in the vertical dimension in the lee of the structures, whereas, elevated plume releases tend to stay aloft. During unstable conditions, convective motions rapidly spread plume material throughout the vertical direction at distances generally beyond the wake cavity zone. During stable conditions small wisps of plume material are drawn downward near the structures, but most plume material remains aloft.

4.5 Wake Dilutions Versus the "cA" Correction Term

A simple method which has been used to adjust plume diffusion estimates for an initial building wake dilution is described by equations (7) and (8). In essence, a plume cross-sectional area related to the cross-sectional area of the building is added to the turbulence-developed product of lateral and vertical sigma values.

Since this type of corrective technique has been utilized in the past, it is of interest to examine its success in describing the observed plume maximum concentrations. Calculated concentrations were formed using equation (8) and the appropriate values of Pasquill-Gifford sigma-y and sigma-z values. The area A was 2050 m², and the value of c was 0.5; these values correspond to those used in the Rancho Seco Safety Analysis calculations.

Figure 34 shows observed concentrations and the calculated concentrations including the cA term. It is evident that the building adjusted values from equation (8) have no real correspondence to observed values. If these concentration values differed only by a constant, the data points would tend to lie along a line with a slope of one and displaced from complete agreement only in absolute value. Since they fail to lie along the line of unit slope, the functional form of the area correction term must be generally inappropriate.

Averaged values are plotted for observations pooled for stability categories E, F, and G for each downwind distance. Calculated values from equation (8), using Pasquill-Gifford sigma values along with the cA term, are somewhat in agreement with measurements near the structure, within about five reference lengths downwind; at longer distances (beyond approximately 200 m) the calculations are probably poor and inappropriate. The height of the containment structure (43 m) is the reference length. Plots (not shown in this report) for individual stability categories follow a behavior similar to the pooled mean values for stable categories (E, F, and G) which are plotted in figure 34.

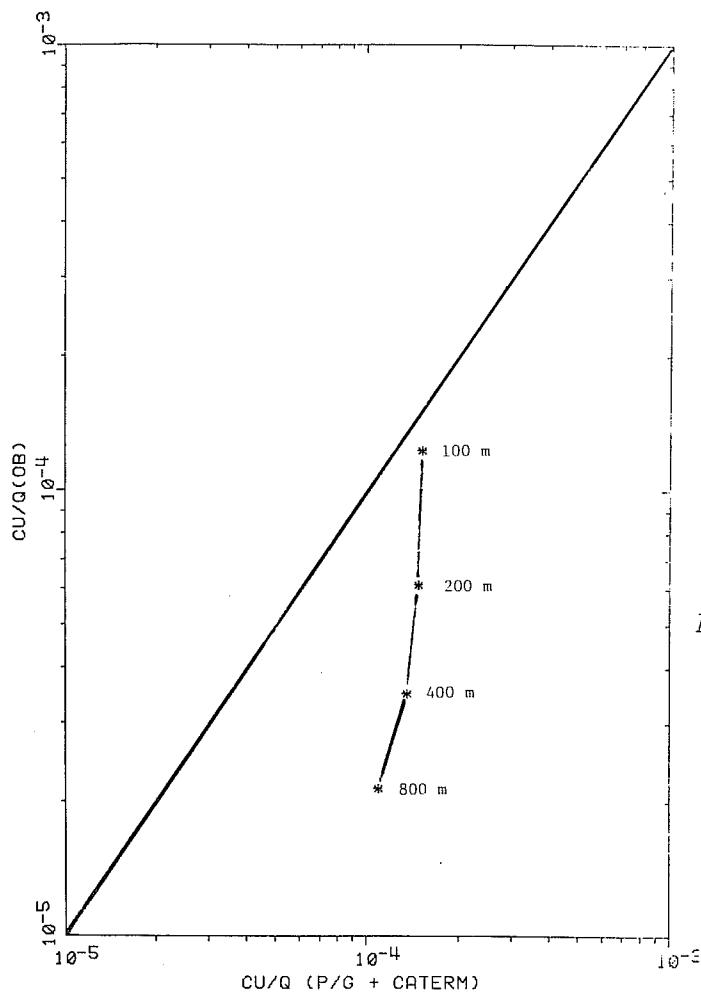


Figure 34. Comparison of averaged normalized maximum concentrations at each downwind arc and calculated normalized peak concentrations. Calculated values use Pasquill-Gifford sigma values plus an added term to incorporate an effect due to building cross-sectional area (equation 8). Stabilities D-F.

4.6 Effects of Topographic Height Variations Upon Sampled Concentration

Although the setting for the field measurement program was in the gently rolling rangeland about 30 miles south-southeast of Sacramento, California, the height variations of the topography significantly influenced ground-level sample concentrations. The areas to the northeast through southeast and to the west of the facility are regions of significant height increases. To the northwest, northeast, and especially the south through west, significant decreases in topographic heights exist. Figure 2 depicts these features. For example, 800 m to the west and east, the topography rises about 45 ft above the plant grade.

Since the gaseous tracer plumes became elevated, they could encounter elevated topography, flow aloft across samplers with greatly reduced ground-level concentrations, or stagnate in depressions depending on topographic height variations. All types of topographic effects occurred, often within the same test. Since most data were collected during low windspeed and strong temperature inversion conditions, with considerable horizontal plume meanderings, almost one-third of the sampled data included significant topographic influences.

Tracer releases from the containment top tended to pass aloft across the sampling arrays, except for small amounts of plume drawn downward by wake effects near the structures, and except for impact upon higher terrain. The cases of significant influences upon sampled tracer plume concentrations are summarized in Table 17. Ten tests had portions of the plumes significantly aloft over the ground-level samplers. Five tests showed significant impact upon elevated terrain. Four tests contained points or zones of stagnation in topographic depressions. Diffusion statistics and comparisons with Pasquill-Gifford expectations for these affected samples produce the greatest variabilities or "anomalies" of the test series results.

If the diffusion statistics from samples significantly influenced by topographic height variations are removed from the data set in Appendix D, it is possible to derive new mean values of ratios of observations with Pasquill-Gifford sigma-y and sigma-z values and the corresponding normalized concentrations. These values without large terrain influences may be compared with ratio values determined for the entire data set (Appendix D). Table 18 lists the mean values and their standard deviations for each treatment of topography. Student's t- and F-statistics comparing the mean values and variances were computed according to the guidelines of Appendix E and are listed in Table 19. The sigma-y ratio statistics, RY, (mean and variance) are slightly changed through removal of results based upon topographically-affected tracer sampling. At a 95% confidence level, the changes are not likely to be significant. The variance of the concentration ratios, RC, and the effective sigma-z (RZ) from the crosswind integrated concentrations are significantly less for the data set without topographically affected sampling values; the mean values of these ratios are not likely to be significantly different.

The physical implications of these statistics are several. Sigma-y values derived from lateral slices through the elevated plumes are generally equivalent. Since lateral turbulence intensity tends to be semi-constant with height, sigma-y (and thus RY) should not be seriously influenced by topographic height changes of sampling positions. Also, the frequently large angular spreadings (meanderings) of the plumes were probably enough to mask the spreadings caused by air flows being laterally deflected around topographic rises. However, a height-related

Table 17. Test Number and Location of Significant Topographic Effects

Test #	Plumes significantly aloft	
2	SF6 and F12	100, 200, 400 m arcs
3	SF6 and F12	100, 200, 400 m arcs
4	SF6	100, 200, 400, 800 m arcs
5	SF6 and F12	400 m arc
13	SF6	400, 800 m arcs
14	SF6	400, 800 m arcs
16	SF6	200, 400, 800 m arcs
18	SF6	800 m arc
23	SF6 and F12	400, 800 m arcs
6	F12	800 m arc
Test #	Plumes with significant impaction upon elevated terrain	
5	SF6 and F12	800 m to WNW
8	F12	800 m to WNW
11	F12	800 m to SE
14	SF6	800 m to WNW
15	F12	800 m to ESE
Test #	Plumes with significant stagnation in topographic depressions	
6	F12	800 m to NE
7	F12	400, 800 m to SW
15	SF6 and F12	800 m to S
17	F12	400, 800 m to SW

change of sigma-y near the structures has been discussed. This vertical variation was relatively small and most likely would be undetectable beyond the first few hundred meters downwind of the structures. The variability of sigma-z values and concentrations (and their ratios) with Pasquill-Gifford values are sensitive to terrain height effects; the estimates of average values of these ratios are probably useful but topographic effects introduce a definite degree of variability.

Table 18. Diffusion Parameter Ratios with Pasquill-Gifford Values
for Data Sets With and Without Topographic Influences

Ratio	No Terrain			Terrain		
	No. Obs.	Mean	Std. Dev.	No. Obs.	Mean	Std. Dev.
RY	125	6.21	3.49	166	5.70	3.36
RZ	125	34.1	74.2	166	48.9	124.7
RC	125	205.9	473.6	166	353.4	1113.3

Table 19. Results of Student's t Tests and F Tests for Differences
of Means and Variances

Ratio	t	Criteria (95%)	F	Criteria (95%)
RY	1.26	1.96	1.08	1.1 - 1.2
RZ	1.17	1.96	2.82	1.1 - 1.2
RC	1.38	1.96	5.53	1.1 - 1.2

Another point to be noticed is the relatively large values of standard deviations associated with RZ and RC, both with and without terrain-affected sampling data. Although topography contributes a discernible amount of variability in sigma-z and concentration values, other significant phenomena are even more important to these comparisons. Apparently physical phenomena, such as layering of the atmosphere into "stable slabs" at different heights, the fractional partitioning of the tracer mass within the downwind vertical wake of the structure, and the subsequent injection of tracer mass into quasi-horizontal planes of different turbulence and flow regimes, were among the most influential features affecting RZ and RC. The heights of plume material were definitely altered by the presence of the structures.

4.7 Effects of Cooling Tower Wake Flows Upon Tracer Concentrations

Some effects upon ground-sampled tracer concentrations were related to apparent flow perturbations generated by the two hyperbolic, natural-draught cooling towers. Examination of isopleth patterns of ground-level total integrated concentrations (figures C-1 through C-46) revealed apparent wake dilutions and downdraught maximums for tests 2, 3, 4, 8, 13, 16, and 18. The cooling tower wake imprint upon the ground-level concentration pattern is characteristically U-shaped, with the cooling tower or towers at the bottom of the U. Apparent downdraught maxima of concentration develop along each edge of the U, and a minimum, probably corresponding to the cavity zone, develops within the U. Tests 2 and 8 (Appendix C, figures C-3, -4, -15, and -16) provide fairly good illustrations of these effects.

The overall interpretation of ground-level concentrations (i.e., crosswind integrated concentrations and sigma-y values) are probably not severely distorted even when the observations are influenced by the cooling tower wakes. Because the horizontal wind meandering was relatively large, wake dilutions and spreadings were of lesser impact during these experiments than during more customary conditions (those conditions with meandering amounts usually associated with the Pasquill-Gifford sigma-y categories).

5. SUMMARY

A series of 23 paired gaseous tracer releases was conducted at the site of the Rancho Seco nuclear power plant during the fall of 1975. Sulfurhexafluoride (SF₆) and dichlorodifluoromethane (F12) were released for 1-hr intervals and collected by samplers placed on a surveyed grid located about the building complex. The test series was characterized by meteorological conditions with low windspeeds and a great variability in horizontal wind directions.

For ground-level releases, gaseous tracers were laterally dispersed about six times more than the expected amounts from Pasquill-Gifford curves of a sigma-y. Nearly two-thirds of the variance of sigma-y values was directly related to the observed variance of the horizontal wind direction (mostly meandering). The effective sigma-z values were 16 times greater than the corresponding values from the Pasquill-Gifford curves of sigma-z. The measured ground-level axial concentrations were about 75 times smaller than predicted by the Gaussian diffusion equation for a ground-level release when Pasquill-Gifford values of sigma-y and sigma-z were used.

The ratios of sigma-y to Pasquill-Gifford sigmas were somewhat larger for tracer releases near the ground than for elevated tracer releases. Sigma-z ratios and concentrations ratios increased as the tracer height of release increased, since smaller concentrations were sampled at ground-levels for the more elevated plume centerlines.

Beyond 100 to 200 m downwind, the Gaussian diffusion equation with a correction factor cA added to the denominator failed to account for building observed tracer dilutions downwind of the building complex. The systematic growth of differences between observed and calculated contractions at greater distances suggests that the use of the add-on cA term is functionally incorrect.

Systematic building wake cavity circulations distributed surface released tracers and oil fog vertically throughout the zone in the lee of the containment and auxiliary buildings. The result of this vertical flux of material is the vertical redistributing of material so that the center of plume mass occurred at a height different than expected for the actual heights of release. Ground-level released tracers were significantly elevated, whereas structure top releases were slightly lowered since a small fraction of the plume was influenced by the building wake and cavity.

Additional measurements need to be performed in the vicinity of a building complex to determine the actual plume axis heights and plume elevating effects due to wake cavity circulations. Vertical tracer mass distributions should also be measured.

A complete listing of sampled gaseous tracer concentrations is provided in Appendix A. Values for concentric sampling arcs are listed, along with the source strengths and wind speeds used for normalizations. Concentration data are also provided for a limited number of roof-top positioned samplers, ground-level sampling sites along building exterior walls, and the five towers to the north and northeast of the containment structure. Tower data were examined, and their qualitative information supported the observations of plumes often being layered in the vertical and elevated well above their ground-level heights of release. Because of the coarse spacing of samplers and the significant amount of missing samples, no further analyses of tower sampled tracers were pursued.

ACKNOWLEDGMENTS

The Sacramento Municipal Utility District, Sacramento, California, coordinated arrangements and granted access to the facility over which the field study measurements were collected. Appreciation is especially expressed to J. J. Mattimoe, Acting General Manager, and D. G. Raasch, Manager, Generation Engineering Department.

This experiment was a cooperative venture involving the complete staff of the Air Resources Laboratories Field Research Office. It could not have been successful without the unstinting help of all of the following staff personnel. F. E. White and Doug Forsyth set up the data acquisition for the towers and sensors upon which the whole experiment depended, surveyed the grid, and worked long hours servicing and maintaining equipment. Jill Wyatt supervised the gas analysis laboratory and its associated experiments, calibrations, and operations. Gail Cazier was responsible for initial programming of meteorological data reduction computations. Lloyd Feltman, Doug Steffen, David Kietzman, Elaine Putnam, Sandra Davis, and Denise Sharp were most helpful in accomplishing many necessary testing and analysis tasks. Lydia Thorngren assisted in tracer analyses.

REFERENCES

- Alder, H. L., and E. B. Roessler (1964): Introduction to Probability and Statistics. W. H. Freeman and Company, San Francisco, California, 313 pp.
- Gifford, F. A. (1961): Use of routine meteorological observations for estimating atmospheric dispersion. Nuclear Safety, 2 (4):47-51.
- Gifford, F. A. (1968): Diffusion in the lower layers of the atmosphere. In Meteorology and Atomic Energy 1968, D. H. Slade, ed., USAEC TID 24190, 65-116.
- Halitsky, J. (1968): Gas diffusion near buildings. In Meteorology and Atomic Energy 1968, D. H. Slade, ed., USAEC TID 24190, 221-255.
- Lovelock, J. E., R. J. Maggs, and E. R. Adlard (1971): Gas-phase coulometry by thermal electron attachment. Anal. Chem., 43:1962-1965.
- Pasquill, F. (1961): The estimation of the dispersion of windborne material. Meteorol. Mag., 90:33-49.
- Pasquill, F. (1974): Atmospheric Diffusion: The Dispersion of Windborne Material from Industrial and Other Sources. D. Van Nostrand Company, Ltd., London, England, 429 pp.
- Sagendorf, J. R., and C. R. Dickson (1974): Diffusion under low wind-speed, inversion conditions. NOAA Tech. Memo., ERL ARL-52, Air Resources Laboratories, Idaho Falls, Idaho.
- Wilson, R. G., G. E. Start, C. R. Dickson, and N. R. Ricks (1976): Diffusion under low windspeed conditions near Oak Ridge, Tennessee. NOAA Tech. Memo., ERL ARL-61, Air Resources Laboratories, Idaho Falls, Idaho.

APPENDIX A: Normalized Concentrations

This appendix contains a listing by test, arc, and gas of the normalized concentration value. Ground sampler positions are numbered 1-300 inclusive, roof samplers 401-403 and tower data 3x1-3x6 where x is the tower number 1-5. Miscellaneous samples 1-19 are those ground-level samples collected at positions along the walls of the containment, auxiliary, and turbine buildings. They are listed as miscellaneous because there was no consistent distance applicable to all samples of the group.

Table A-1 lists the source strength in gm/sec for each tracer and the average wind velocity at the release height. The release locations are given in the individual headings on each page of listed concentrations.

**Table A-1. Tracer Source Strengths and Wind Speeds
at Tracer Release Heights**

Test #	Source Strength (gm/sec)		Avg. Windspeed at release height (m/sec)	
	SF6	F12	SF6	F12
1	.1160	.9450	.67	1.03
2	.1100	1.0360	1.16	1.79
3	.1060	.9861	2.10	1.74
4	.1113	.9990	1.79	1.34
5	.1148	.9990	.89	.89
6	.1396	1.0309	3.08	2.82
7	.2434	1.1025	5.14	4.56
8	.1503	1.0170	2.46	.89
9	.2213	.9600	1.92	1.48
10	.2123	1.0135	4.87	2.95
11	.2326	1.0177	4.78	3.71
12	.2363	1.0758	1.70	1.25
13	.2133	1.0240	.85	.80
14	.2186	.9873	2.28	.89
15	.1980	1.0006	1.30	.80
16	.1794	1.0048	1.03	1.03
17	.2067	1.0630	1.97	1.97
18	.1758	.9660	.67	.67
19	.1780	.9860	1.07	1.07
20	.1890	1.0468	2.15	2.15
21	.1798	1.0155	2.25	2.25
22	.2116	1.0155	1.92	1.92
23	.1904	1.0437	.76	.76

SMUD TEST 1 NRC STAB A 10/7/75 1406-1505 PDT

GAS S AVERAGE WINDS: SPEED 0.7 M/S; DIRECTION 321. DEGREES
SOURCE STRENGTH 0.1160 GM/S RELEASED FROM CONTAINMENT

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
24.	64	3.90E-07	124	0.00E+00	184	0.00E+00	244	0.09E+00
30.	65	4.48E-06	125	8.27E-07	185	0.00E+00	245	0.00E+00
36.	66	1.22E-06	126	9.30E-07	186	0.00E+00	246	0.00E+00
42.	67	0.90E+00	127	1.83E-06	187	3.97E-07	247	0.00E+00
48.	68	0.00E+00	128	1.64E-06	188	6.13E-07	248	0.00E+00
54.	69	4.08E-06	129	2.27E-06	189	2.11E-06	249	1.51E-07
60.	70	6.80E-07	130	3.15E-06	190	1.66E-06	250	0.00E+00
66.	71	2.30E-06	131	0.00E+00	191	2.02E-06	251	2.27E-07
72.	72	2.42E-06	132	3.78E-06	192	9.35E-07	252	2.86E-07
78.	73	4.59E-07	133	3.56E-06	193	5.36E-06	253	2.20E-07
84.	74	2.07E-06	134	2.64E-06	194	1.02E-06	254	1.17E-07
90.	75	2.93E-06	135	2.87E-06	195	1.26E-06	255	0.00E+00
96.	76	2.57E-06	136	0.00E+00	196	1.92E-06	256	0.03E-07
102.	77	5.44E-06	137	6.52E-06	197	7.98E-07	257	2.86E-07
108.	78	7.56E-07	138	2.58E-06	198	1.04E-06	258	2.87E-07
114.	79	3.25E-06	139	5.31E-06	199	1.78E-06	259	0.00E+00
120.	80	2.50E-06	140	0.00E+00	200	3.47E-06	260	0.00E+00
126.	81	3.37E-06	141	3.98E-06	201	1.26E-05	261	8.43E-07
132.	82	1.95E-06	142	3.07E-06	202	6.26E-07	262	0.00E+00
138.	83	0.00E+00	143	2.53E-06	203	6.49E-07	263	0.00E+00
144.	84	0.00E+00	144	3.42E-06	204	0.00E+00	264	2.18E-06
150.	85	0.00E+00	145	3.07E-06	205	3.34E-07	265	0.00E+00
156.	86	0.00E+00	146	3.27E-06	206	5.00E-07	266	0.00E+00
162.	87	0.00E+00	147	5.53E-07	207	1.22E-06	267	1.38E-06
168.	88	6.11E-06	148	1.16E-06	208	0.00E+00	268	0.00E+00
174.	89	5.66E-07	149	0.00E+00	209	8.69E-07	269	0.00E+00
180.	90	4.38E-07	150	3.53E-07	210	8.08E-07	270	0.00E+00
198.	93	2.23E-06	153	0.00E+00	213	0.00E+00	273	0.00E+00
294.	109	3.05E-06	169	0.00E+00	229	0.00E+00	289	0.00E+00
312.	112	0.00E+00	172	0.00E+00	232	0.00E+00	292	4.20E-07
324.	114	0.00E+00	174	0.00E+00	234	0.00E+00	294	1.06E-06
336.	116	0.00E+00	176	0.00E+00	236	0.00E+00	296	5.37E-07
342.	117	0.00E+00	177	0.00E+00	237	0.00E+00	297	4.34E-07

TOWER SAMPLES

HEIGHT	TOWER 1		TOWER 2		TOWER 3	
	GLN	CONC	GLN	CONC	GLN	CONC
1.0	311	1.49E-06	321	2.27E-07	331	0.00E+00
30.0	312	5.16E-07	322	1.72E-07	332	4.53E-07
60.0	313	3.93E-07	323	0.00E+00	333	0.00E+00
90.0	314	2.27E-07	324	0.00E+00	334	2.27E-06
120.0	315	1.15E-07	325	0.00E+00	335	0.00E+00

SMUD TEST 1 NRC STAB A 10/7/75 1406-1505 PDT

GAS S AVERAGE WINDS: SPEED 0.7 M/S ; DIRECTION 321. DEGREES
SOURCE STRENGTH 0.1160 GM/S RELEASED FROM CONTAINMENT

TOWER SAMPLES

HEIGHT	TOWER 1		TOWER 2		TOWER 3	
	GLN	CONC	GLN	CONC	GLN	CONC
150.0	316	1.51E-07	326	2.29E-07	336	2.29E-07

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	0.00E+00	8	0.00E+00	15	0.00E+00	401	8.79E-06
2	0.00E+00	9	8.47E-06	16	0.00E+00	402	1.52E-06
3	3.74E-07	10	1.70E-07	17	0.00E+00	403	0.00E+00
4	1.28E-06	11	0.00E+00	18	0.00E+00	0	0.00E+00
5	0.00E+00	12	1.75E-07	19	0.00E+00	0	0.00E+00
6	4.70E-07	13	0.00E+00	0	0.00E+00	0	0.00E+00
7	1.84E-06	14	0.00E+00	0	0.00E+00	0	0.00E+00

GAS F AVERAGE WINDS: SPEED 1.0 M/S ; DIRECTION 296. DEGREES
SOURCE STRENGTH 0.9450 GM/S RELEASED FROM AUXILIARY

DOWNDRAFT DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
24.	64	0.00E+00	124	5.40E-07	184	0.00E+00	244	0.00E+00
30.	65	4.21E-06	125	5.26E-07	185	0.00E+00	245	0.00E+00
36.	66	0.00E+00	126	3.62E-06	186	1.75E-06	246	0.00E+00
42.	67	0.00E+00	127	0.00E+00	187	5.40E-07	247	0.00E+00
48.	68	0.00E+00	128	0.00E+00	188	6.31E-07	248	6.32E-07
54.	69	4.53E-06	129	4.11E-06	189	8.40E-07	249	1.38E-06
60.	70	3.01E-06	130	2.63E-06	190	7.60E-07	250	5.26E-07
66.	71	1.90E-06	131	1.05E-06	191	1.38E-06	251	5.40E-07
72.	72	3.57E-06	132	3.56E-06	192	1.05E-06	252	1.05E-06
78.	73	1.47E-06	133	4.86E-06	193	1.90E-05	253	1.38E-06
84.	74	2.74E-06	134	2.76E-06	194	1.05E-06	254	1.05E-06
90.	75	2.11E-06	135	2.00E-06	195	1.38E-06	255	0.00E+00
96.	76	2.74E-06	136	0.00E+00	196	1.05E-06	256	1.05E-06
102.	77	6.85E-06	137	1.29E-06	197	1.08E-06	257	1.58E-06
108.	78	4.11E-06	138	1.01E-06	198	0.00E+00	258	9.55E-06
114.	79	4.11E-06	139	2.79E-06	199	3.64E-06	259	1.83E-06
120.	80	4.65E-06	140	0.00E+00	200	1.11E-05	260	2.76E-06
126.	81	1.50E-06	141	1.14E-06	201	0.00E+00	261	5.27E-06
132.	82	1.26E-06	142	3.38E-06	202	2.73E-06	262	1.38E-06
138.	83	0.00E+00	143	0.00E+00	203	0.00E+00	263	4.04E-06
144.	84	0.00E+00	144	0.00E+00	204	0.00E+00	264	5.47E-06
150.	85	0.00E+00	145	2.20E-06	205	0.00E+00	265	6.85E-06

SMUD TEST 1 NRC STAB A 10/7/75 1406-1505 PDT

GAS F AVERAGE WINDS: SPEED 1.0 M/S ;DIRECTION 296. DEGREES
SOURCE STRENGTH 0.9450 GM/S RELEASED FROM AUXILIARY

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
156.	86	0.00E+00	146	3.82E-06	206	0.00E+00	266	1.76E-05
162.	87	0.00E+00	147	0.00E+00	207	0.00E+00	267	8.08E-06
168.	88	2.51E-05	148	3.57E-06	208	0.00E+00	268	1.38E-06
174.	89	0.00E+00	149	0.00E+00	209	0.00E+00	269	6.84E-06
180.	90	1.92E-06	150	0.00E+00	210	0.00E+00	270	6.74E-06
192.	92	8.97E-07	152	0.00E+00	212	0.00E+00	272	0.00E+00
198.	93	2.28E-05	153	0.00E+00	213	0.00E+00	273	0.00E+00
294.	109	4.09E-06	169	0.00E+00	229	0.00E+00	289	0.00E+00
300.	110	2.67E-06	170	0.00E+00	230	0.00E+00	290	0.00E+00
306.	111	3.01E-06	171	0.00E+00	231	0.00E+00	291	0.00E+00
318.	113	4.21E-06	173	0.00E+00	233	0.00E+00	293	0.00E+00
324.	114	4.69E-06	174	0.00E+00	234	0.00E+00	294	0.00E+00
330.	115	5.47E-06	175	0.00E+00	235	0.00E+00	295	0.00E+00
336.	116	4.69E-06	176	0.00E+00	236	0.00E+00	296	0.00E+00
342.	117	4.09E-06	177	0.00E+00	237	0.00E+00	297	1.80E-06
348.	118	3.81E-06	178	0.00E+00	238	0.00E+00	298	0.00E+00

TOWER SAMPLES

HEIGHT	TOWER 1		TOWER 2		TOWER 3	
	GLN	CONC	GLN	CONC	GLN	CONC
1.0	311	1.68E-06	321	5.40E-07	331	0.00E+00
30.0	312	2.76E-07	322	1.26E-06	332	5.46E-07
90.0	314	0.00E+00	324	1.37E-06	334	5.32E-07
120.0	315	6.32E-07	325	8.22E-07	335	0.00E+00
150.0	316	1.37E-06	326	1.05E-06	336	0.00E+00

MISCELLANEOUS SAMPLES

GROUP	GROUP 1		GROUP 2		GROUP 3		GROUP 4	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	0.00E+00	8	0.00E+00	15	0.00E+00	401	1.38E-06	
2	2.81E-06	9	0.00E+00	16	0.00E+00	402	8.81E-05	
3	0.00E+00	10	0.00E+00	17	5.40E-07	403	4.36E-05	
4	2.72E-06	11	1.09E-06	18	1.73E-06	0	0.00E+00	
5	0.00E+00	12	9.05E-06	19	0.00E+00	0	0.00E+00	
6	1.69E-06	13	1.38E-06	0	0.00E+00	0	0.00E+00	
7	4.41E-06	14	1.58E-06	0	0.00E+00	0	0.00E+00	

SMUD TEST 2 NRC STAB G 10/8/75 0633-0720 PDT

GAS S AVERAGE WINDS: SPEED 1.2 M/S ;DIRECTION 999. DEGREES
SOURCE STRENGTH 0.1100 GM/S RELEASED FROM CONTAINMENT

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
156.	86	2.65E-06	146	0.00E+00	206	0.00E+00	266	0.00E+00
204.	94	0.00E+00	154	2.03E-06	214	0.00E+00	274	0.00E+00
210.	95	0.00E+00	155	1.02E-06	215	0.00E+00	275	0.00E+00
216.	96	1.36E-06	156	0.00E+00	216	0.00E+00	276	0.00E+00
246.	101	8.95E-07	161	0.00E+00	221	1.52E-06	281	0.00E+00
252.	102	0.00E+00	162	0.00E+00	222	4.34E-06	282	0.00E+00
258.	103	2.70E-06	163	0.00E+00	223	0.00E+00	283	0.00E+00
264.	104	2.13E-06	164	2.91E-06	224	4.29E-06	284	0.00E+00
270.	105	2.50E-06	165	0.00E+00	225	8.76E-06	285	2.21E-07
276.	106	9.15E-06	166	0.00E+00	226	0.00E+00	286	3.38E-06
282.	107	2.52E-06	167	0.00E+00	227	1.29E-06	287	1.17E-06
288.	108	0.00E+00	168	0.00E+00	228	9.63E-07	288	0.00E+00
294.	109	0.00E+00	169	1.24E-05	229	2.42E-05	289	0.00E+00
300.	110	4.81E-07	170	7.82E-07	230	6.22E-06	290	7.51E-07
306.	111	3.10E-07	171	0.00E+00	231	1.55E-05	291	0.00E+00
312.	112	4.03E-07	172	0.00E+00	232	7.98E-06	292	5.35E-07
318.	113	6.72E-07	173	0.00E+00	233	0.00E+00	293	0.00E+00
324.	114	0.00E+00	174	3.15E-06	234	2.92E-06	294	0.00E+00
330.	115	7.66E-07	175	1.55E-06	235	2.07E-06	295	0.00E+00
336.	116	0.00E+00	176	4.17E-06	236	1.48E-06	296	0.00E+00
342.	117	0.00E+00	177	8.89E-06	237	5.43E-07	297	0.00E+00
348.	118	0.00E+00	178	0.00E+00	238	6.19E-07	298	0.00E+00
354.	119	0.00E+00	179	0.00E+00	239	1.76E-06	299	0.00E+00
360.	120	0.00E+00	180	0.00E+00	240	1.75E-06	300	0.00E+00

TOWER SAMPLES

HEIGHT	TOWER 1		TOWER 2	
	GLN	CONC	GLN	CONC
1.0	311	2.07E-06	321	6.70E-07
30.0	312	1.04E-06	322	0.00E+00
60.0	313	4.06E-07	323	0.00E+00
120.0	315	5.60E-07	325	0.00E+00

MISCELLANEOUS SAMPLES

GROUP	GROUP 1		GROUP 2		GROUP 3		GROUP 4	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	8.40E-07	8	0.00E+00	15	4.11E-06	401	0.00E+00	
2	0.00E+00	9	1.15E-06	16	1.40E-06	402	0.00E+00	
3	0.00E+00	10	0.00E+00	17	1.13E-06	403	0.00E+00	
4	0.00E+00	11	0.00E+00	18	2.35E-06	0	0.00E+00	
6	0.00E+00	13	5.14E-06	0	0.00E+00	0	0.00E+00	

SMUD TEST 2 NRC STAB G 10/8/75 0633-0720 PDT

GAS S AVERAGE WINDS: SPEED 1.2 M/S ; DIRECTION 999. DEGREES
SOURCE STRENGTH 0.1100 GM/S RELEASED FROM CONTAINMENT

MISCELLANEOUS SAMPLES

	GROUP 1	GROUP 2	GROUP 3	GROUP 4
	GLN	CONC	GLN	CONC
7	8.73E-07	14	4.86E-06	0 0.00E+00
				0 0.00E+00

GAS F AVERAGE WINDS: SPEED 1.8 M/S ; DIRECTION 161. DEGREES
SOURCE STRENGTH 1.0360 GM/S RELEASED FROM AUXILIARY

DOWNTWIND DISTANCE(ARC) SAMPLES

BEARING	100. M	200. M	400. M	800. M
	GLN	CONC	GLN	CONC
156.	86	4.64E-06	146	0.00E+00
180.	90	2.79E-06	150	0.00E+00
192.	92	0.00E+00	152	4.76E-06
216.	96	0.00E+00	156	1.44E-06
222.	97	0.00E+00	157	3.48E-06
228.	98	0.00E+00	158	2.49E-06
234.	99	0.00E+00	159	0.00E+00
240.	100	0.00E+00	160	4.16E-06
246.	101	2.97E-06	161	0.00E+00
252.	102	2.56E-06	162	0.00E+00
258.	103	3.96E-06	163	0.00E+00
264.	104	2.72E-06	164	2.49E-06
270.	105	4.63E-06	165	0.00E+00
276.	106	5.87E-06	166	0.00E+00
282.	107	3.43E-06	167	0.00E+00
288.	108	2.62E-06	168	4.33E-06
294.	109	2.41E-06	169	5.31E-06
300.	110	0.00E+00	170	4.49E-06
306.	111	0.00E+00	171	0.00E+00
312.	112	1.07E-06	172	0.00E+00
318.	113	0.00E+00	173	3.39E-06
324.	114	1.19E-06	174	4.57E-06
330.	115	0.00E+00	175	5.58E-06
336.	116	2.39E-06	176	4.05E-06
342.	117	0.00E+00	177	4.01E-06
348.	118	2.86E-06	178	3.71E-06
354.	119	2.96E-06	179	0.00E+00
360.	120	4.30E-06	180	0.00E+00

SMUD TEST 2 NRC STAB G 10/8/75 0633-0720 PDT

GAS F AVERAGE WINDS: SPEED 1.8 M/S ;DIRECTION 161. DEGREES
SOURCE STRENGTH 1.0360 GM/S RELEASED FROM AUXILIARY

TOWER SAMPLES

HEIGHT	TOWER 1		TOWER 2	
	GLN	CONC	GLN	CONC
1.0	311	6.50E-06	321	3.23E-06
60.0	313	0.00E+00	323	2.39E-06
90.0	314	0.00E+00	324	3.53E-06
120.0	315	0.00E+00	325	7.18E-06
150.0	316	0.00E+00	326	3.49E-06

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	0.00E+00	8	0.00E+00	15	6.96E-06	401	0.00E+00
2	0.00E+00	9	3.36E-06	16	1.95E-06	402	0.00E+00
4	0.00E+00	11	0.00E+00	18	3.81E-06	0	0.00E+00
6	0.00E+00	13	6.25E-06	0	0.00E+00	0	0.00E+00
7	2.14E-06	14	8.31E-06	0	0.00E+00	0	0.00E+00

SMUD TEST 3 NRC STAB G 10/14/75 0728-0829 PDT

GAS S AVERAGE WINDS: SPEED 2.1 M/S ;DIRECTION 128. DEGREES
SOURCE STRENGTH 0.1060 GM/S RELEASED FROM CONTAINMENT

DOWNDOWN DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
186.	91	0.00E+00	151	7.76E-06	211	0.00E+00	271	0.00E+00
192.	92	1.05E-06	152	8.40E-06	212	0.00E+00	272	0.00E+00
198.	93	0.00E+00	153	1.48E-06	213	0.00E+00	273	0.00E+00
228.	98	0.00E+00	158	1.07E-06	218	0.00E+00	278	0.00E+00
240.	100	0.00E+00	160	1.70E-06	220	0.00E+00	280	0.00E+00
246.	101	5.80E-06	161	1.82E-06	221	0.00E+00	281	0.00E+00
252.	102	6.14E-06	162	1.96E-06	222	2.92E-06	282	0.00E+00
258.	103	5.93E-06	163	1.40E-06	223	1.18E-05	283	0.00E+00
264.	104	7.43E-06	164	5.62E-05	224	0.00E+00	284	1.40E-06
270.	105	0.00E+00	165	1.64E-05	225	1.83E-05	285	1.03E-05
276.	106	0.00E+00	166	5.98E-06	226	4.73E-06	286	4.19E-05
282.	107	1.91E-06	167	0.00E+00	227	3.83E-05	287	4.76E-05
288.	108	0.00E+00	168	8.16E-07	228	1.39E-05	288	2.99E-06
294.	109	0.00E+00	169	2.61E-06	229	4.40E-06	289	2.26E-06
300.	110	0.00E+00	170	9.90E-07	230	0.00E+00	290	4.93E-06
330.	115	0.00E+00	175	0.00E+00	235	0.00E+00	295	1.24E-06
336.	116	0.00E+00	176	0.00E+00	236	0.00E+00	296	2.08E-06

SMUD TEST 3 NRC STAB G 10/14/75 0728-0829 PDT

GAS S AVERAGE WINDS: SPEED 2.1 M/S ;DIRECTION 128. DEGREES
SOURCE STRENGTH 0.1060 GM/S RELEASED FROM CONTAINMENT

BEARING	DOWNWIND DISTANCE(ARC) SAMPLES							
	100. M	200. M	400. M	800. M	GLN	CONC	GLN	CONC
342.	117	0.00E+00	177	8.34E-07	237	0.00E+00	297	0.00E+00
348.	118	0.00E+00	178	0.00E+00	238	0.00E+00	298	5.05E-06
360.	120	0.00E+00	180	0.00E+00	240	0.00E+00	300	3.72E-06

TOWER SAMPLES

HEIGHT	TOWER 1		TOWER 2		TOWER 3		TOWER 4	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
HEIGHT	TOWER 5		GLN	CONC				
120.0	355	5.93E-07						

MISCELLANEOUS SAMPLES

GROUP 1	GROUP 2	GROUP 3	GROUP 4
GLN	CONC	GLN	CONC
2	0.00E+00	9	1.20E-05
3	0.00E+00	10	1.18E-05
6	0.00E+00	13	2.68E-06
7	0.00E+00	14	1.09E-06

GAS F AVERAGE WINDS: SPEED 1.7 M/S ;DIRECTION 100. DEGREES
SOURCE STRENGTH 0.9861 GM/S RELEASED FROM AUXILIARY

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
6.	61	1.09E-04	121	0.00E+00	181	0.00E+00	241	0.00E+00
24.	64	1.25E-06	124	0.00E+00	184	0.00E+00	244	0.00E+00
30.	65	2.85E-06	125	0.00E+00	185	0.00E+00	245	0.00E+00
36.	66	1.33E-05	126	0.00E+00	186	0.00E+00	246	0.00E+00
186.	91	1.75E-06	151	6.47E-05	211	0.00E+00	271	0.00E+00
192.	92	5.66E-05	152	1.15E-05	212	0.00E+00	272	0.00E+00
198.	93	0.00E+00	153	1.22E-05	213	0.00E+00	273	0.00E+00
204.	94	0.00E+00	154	5.70E-06	214	0.00E+00	274	0.00E+00
210.	95	2.57E-06	155	0.00E+00	215	0.00E+00	275	0.00E+00
216.	96	4.55E-06	156	9.22E-06	216	0.00E+00	276	0.00E+00
222.	97	3.41E-06	157	2.00E-06	217	0.00E+00	277	0.00E+00
228.	98	0.00E+00	158	9.12E-06	218	0.00E+00	278	0.00E+00
234.	99	1.12E-06	159	1.14E-05	219	0.00E+00	279	0.00E+00
246.	101	1.50E-05	161	1.05E-04	221	8.48E-05	281	1.39E-06
252.	102	1.81E-05	162	1.08E-05	222	2.37E-06	282	2.38E-05

SMUD TEST 3 NRC STAB G 10/14/75 0728-0629 PDT

GAS F AVERAGE WINDS: SPEED 1.7 M/S ; DIRECTION 100. DEGREES
SOURCE STRENGTH 0.9861 GM/S RELEASED FROM AUXILIARY

BEARING	DOWNWIND DISTANCE(ARC) SAMPLES							
	100. M		200. M		400. M		800. M	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC	GLN
258.	103	1.06E-06	163	1.39E-05	223	2.70E-05	283	6.17E-06
264.	104	8.94E-06	164	1.19E-05	224	0.00E+00	284	5.40E-06
270.	105	4.70E-04	165	7.42E-06	225	6.06E-06	285	7.24E-06
276.	106	3.29E-06	166	4.68E-05	226	2.82E-06	286	1.61E-05
282.	107	3.67E-06	167	0.00E+00	227	1.36E-05	287	4.84E-05
288.	108	1.39E-05	168	1.15E-04	228	2.37E-06	288	1.34E-04
294.	109	1.71E-06	169	3.16E-04	229	8.75E-06	289	8.90E-06
300.	110	3.67E-05	170	3.79E-05	230	0.00E+00	290	5.88E-05
306.	111	0.00E+00	171	9.66E-07	231	1.54E-06	291	1.50E-06
312.	112	0.00E+00	172	0.00E+00	232	7.25E-05	292	0.00E+00
318.	113	1.82E-04	173	5.26E-06	233	2.91E-05	293	2.89E-06
324.	114	4.55E-06	174	6.92E-06	234	0.00E+00	294	0.00E+00
330.	115	1.36E-05	175	2.50E-04	235	3.70E-06	295	1.06E-05
336.	116	1.33E-05	176	0.00E+00	236	2.32E-05	296	1.45E-04
342.	117	7.38E-06	177	1.66E-05	237	2.49E-05	297	1.94E-05
348.	118	1.37E-06	178	1.91E-05	238	2.59E-05	298	2.88E-04
354.	119	5.69E-06	179	2.04E-05	239	1.67E-05	299	0.00E+00
360.	120	1.87E-06	180	0.00E+00	240	0.00E+00	300	1.21E-05

TOWER SAMPLES

HEIGHT	TOWER 1	TOWER 2	TOWER 3	TOWER 4
HEIGHT	GLN	CONC	GLN	CONC
HEIGHT TOWER 5				
GLN CONC				
1.0	351	7.53E-06		
30.0	352	3.14E-05		
120.0	355	1.87E-06		
150.0	356	5.70E-06		

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	2.85E-06	8	0.00E+00	15	0.00E+00	401	0.00E+00
2	2.25E-04	9	3.57E-06	16	0.00E+00	402	0.00E+00
3	0.00E+00	10	1.63E-05	17	0.00E+00	403	0.00E+00
4	0.00E+00	11	1.36E-05	18	1.71E-06	0	0.00E+00
5	0.00E+00	12	2.85E-06	19	0.00E+00	0	0.00E+00
6	0.00E+00	13	1.50E-06	0	0.00E+00	0	0.00E+00
7	1.71E-06	14	1.27E-04	0	0.00E+00	0	0.00E+00

SMUD TEST 4 NRC STAB G 10/15/75 0556-0658 PDT

GAS S AVERAGE WINDS: SPEED 1.8 M/S ; DIRECTION 29. DEGREES
SOURCE STRENGTH 0.1113 GM/S RELEASED FROM CONTAINMENT

DOWNTWIND DISTANCE (ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
150.	85	1.97E-06	145	0.00E+00	205	0.00E+00	265	0.00E+00
162.	87	1.38E-06	147	0.00E+00	207	0.00E+00	267	0.00E+00
168.	88	2.20E-06	148	0.00E+00	208	0.00E+00	268	0.00E+00
174.	89	2.34E-06	149	0.00E+00	209	0.00E+00	269	0.00E+00
192.	92	0.00E+00	152	0.00E+00	212	2.13E-06	272	0.00E+00
198.	93	0.00E+00	153	0.00E+00	213	1.03E-06	273	0.00E+00
204.	94	2.01E-06	154	0.00E+00	214	0.00E+00	274	0.00E+00
210.	95	2.62E-06	155	0.00E+00	215	0.00E+00	275	0.00E+00
216.	96	1.50E-06	156	0.00E+00	216	0.00E+00	276	2.25E-06
222.	97	1.58E-06	157	0.00E+00	217	8.46E-07	277	0.00E+00
228.	98	2.00E-06	158	0.00E+00	218	0.00E+00	278	0.00E+00
234.	99	2.70E-06	159	0.00E+00	219	0.00E+00	279	1.77E-06
240.	100	0.00E+00	160	0.00E+00	220	1.14E-06	280	0.00E+00
252.	102	2.04E-06	162	0.00E+00	222	2.96E-06	282	0.00E+00
258.	103	1.83E-06	163	0.00E+00	223	0.00E+00	283	0.00E+00
264.	104	2.37E-06	164	0.00E+00	224	0.00E+00	284	0.00E+00
270.	105	1.14E-06	165	0.00E+00	225	0.00E+00	285	0.00E+00
276.	106	1.29E-06	166	0.00E+00	226	2.03E-06	286	0.00E+00
282.	107	1.32E-06	167	0.00E+00	227	0.00E+00	287	0.00E+00
288.	108	2.04E-06	168	0.00E+00	228	0.00E+00	288	0.00E+00
294.	109	1.72E-06	169	0.00E+00	229	0.00E+00	289	0.00E+00
300.	110	2.18E-06	170	0.00E+00	230	0.00E+00	290	0.00E+00
312.	112	1.57E-06	172	0.00E+00	232	0.00E+00	292	0.00E+00
318.	113	1.94E-06	173	0.00E+00	233	0.00E+00	293	0.00E+00
324.	114	2.95E-06	174	0.00E+00	234	0.00E+00	294	0.00E+00
342.	117	2.74E-06	177	0.00E+00	237	0.00E+00	297	0.00E+00
348.	118	2.67E-06	178	0.00E+00	238	0.00E+00	298	0.00E+00
354.	119	2.54E-06	179	0.00E+00	239	0.00E+00	299	0.00E+00
360.	120	3.00E-06	180	0.00E+00	240	0.00E+00	300	0.00E+00

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	1.30E-06	8	3.22E-06	15	1.79E-06	401	8.07E-04
2	2.88E-05	9	1.13E-05	16	0.00E+00	402	1.41E-05
3	0.00E+00	10	1.97E-05	17	0.00E+00	403	1.23E-05
4	0.00E+00	11	8.35E-06	18	2.66E-06	0	0.00E+00
5	3.76E-06	12	2.11E-06	19	1.92E-06	0	0.00E+00
6	4.33E-06	13	1.39E-06	0	0.00E+00	0	0.00E+00
7	0.00E+00	14	1.54E-06	0	0.00E+00	0	0.00E+00

SMUD TEST 4 NRC STAB G 10/15/75 0556-0658 PDT

GAS F AVERAGE WINDS: SPEED 1.3 M/S ; DIRECTION 38. DEGREES
SOURCE STRENGTH 0.9990 GM/S RELEASED FROM GROUND 5

DOWNWIND DISTANCE (ARC) SAMPLES

BEARING	100. M	200. M	400. M	800. M				
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
150.	85	4.09E-06	145	0.00E+00	205	0.00E+00	265	0.00E+00
156.	86	2.73E-05	146	0.00E+00	206	0.00E+00	266	0.00E+00
162.	87	4.68E-05	147	0.00E+00	207	0.00E+00	267	0.00E+00
168.	88	1.87E-05	148	0.00E+00	208	0.00E+00	268	0.00E+00
174.	89	6.22E-05	149	0.00E+00	209	0.00E+00	269	0.00E+00
186.	91	0.00E+00	151	0.00E+00	211	0.00E+00	271	2.58E-06
192.	92	2.63E-06	152	0.00E+00	212	8.11E-06	272	4.36E-06
198.	93	0.00E+00	153	0.00E+00	213	1.88E-06	273	0.00E+00
204.	94	2.45E-06	154	0.00E+00	214	6.98E-06	274	0.00E+00
210.	95	1.86E-05	155	0.00E+00	215	0.00E+00	275	0.00E+00
216.	96	1.63E-05	156	0.00E+00	216	3.89E-06	276	1.81E-05
222.	97	1.59E-05	157	0.00E+00	217	5.89E-06	277	0.00E+00
228.	98	1.27E-05	158	0.00E+00	218	3.87E-06	278	0.00E+00
234.	99	6.05E-06	159	1.48E-06	219	0.00E+00	279	6.26E-06
240.	100	6.62E-06	160	0.00E+00	220	6.18E-06	280	0.00E+00
246.	101	5.37E-06	161	2.11E-06	221	0.00E+00	281	0.00E+00
252.	102	8.81E-06	162	0.00E+00	222	3.04E-06	282	0.00E+00
258.	103	1.16E-05	163	0.00E+00	223	0.00E+00	283	0.00E+00
264.	104	0.00E+00	164	0.00E+00	224	2.60E-06	284	0.00E+00
270.	105	8.83E-06	165	0.00E+00	225	0.00E+00	285	0.00E+00
276.	106	2.52E-05	166	0.00E+00	226	5.34E-06	286	0.00E+00
282.	107	1.44E-05	167	0.00E+00	227	2.56E-06	287	0.00E+00
288.	108	1.71E-05	168	2.59E-06	228	0.00E+00	288	0.00E+00
294.	109	1.58E-05	169	2.11E-06	229	1.28E-06	289	0.00E+00
300.	110	1.90E-05	170	0.00E+00	230	1.92E-06	290	0.00E+00
306.	111	8.97E-06	171	3.51E-06	231	0.00E+00	291	0.00E+00
312.	112	1.78E-05	172	0.00E+00	232	0.00E+00	292	0.00E+00
318.	113	2.17E-05	173	0.00E+00	233	0.00E+00	293	0.00E+00
324.	114	2.64E-05	174	0.00E+00	234	0.00E+00	294	0.00E+00
336.	116	2.98E-06	176	0.00E+00	236	0.00E+00	296	0.00E+00
342.	117	2.71E-05	177	0.00E+00	237	0.00E+00	297	0.00E+00
348.	118	2.80E-05	178	0.00E+00	238	0.00E+00	298	0.00E+00
354.	119	2.69E-05	179	0.00E+00	239	0.00E+00	299	0.00E+00
360.	120	2.80E-05	180	0.00E+00	240	0.00E+00	300	0.00E+00

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	4.66E-06	9	5.87E-05	15	2.27E-06	401	6.54E-04
2	0.00E+00	9	2.51E-05	16	0.00E+00	402	8.65E-05
3	0.00E+00	10	1.43E-05	17	3.27E-06	403	4.59E-04
4	0.00E+00	11	1.15E-05	18	1.02E-05	0	0.00E+00

SMUD TEST 4 NRC STAB G 10/15/75 0556-0658 PDT

GAS F AVERAGE WINDS: SPEED 1.3 M/S ;DIRECTION 38. DEGREES
SOURCE STRENGTH 0.9990 GM/S RELEASED FROM GROUND 5

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
5	2.75E-03	12	2.19E-06	19	1.13E-05	0	0.00E+00
6	1.20E-04	13	5.01E-06	0	0.00E+00	0	0.00E+00
7	6.27E-04	14	3.02E-06	0	0.00E+00	0	0.00E+00

SMUD TEST 5 NRC STAB G 10/16/75 0616-0716 PDT

GAS S AVERAGE WINDS: SPEED 0.9 M/S ;DIRECTION 71. DEGREES
SOURCE STRENGTH 0.1148 GM/S RELEASED FROM GROUND 5

DOWNDOWN DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
54.	69	1.51E-06	129	0.00E+00	189	0.00E+00	249	0.00E+00
60.	70	2.93E-06	130	0.00E+00	190	0.00E+00	250	0.00E+00
66.	71	2.87E-06	131	0.00E+00	191	0.00E+00	251	0.00E+00
72.	72	3.05E-06	132	0.00E+00	192	0.00E+00	252	0.00E+00
90.	75	2.74E-06	135	0.00E+00	195	0.00E+00	255	0.00E+00
138.	63	1.83E-05	143	0.00E+00	203	0.00E+00	263	0.00E+00
150.	85	8.10E-05	145	4.97E-07	205	0.00E+00	265	0.00E+00
156.	86	1.07E-04	146	0.00E+00	206	0.00E+00	266	0.00E+00
162.	87	1.49E-04	147	9.17E-07	207	0.00E+00	267	0.00E+00
168.	88	4.31E-05	148	3.33E-07	208	0.00E+00	268	0.00E+00
174.	89	1.40E-04	149	1.03E-05	209	0.00E+00	269	0.00E+00
180.	90	1.93E-04	150	0.00E+00	210	0.00E+00	270	0.00E+00
186.	91	0.00E+00	151	4.63E-05	211	0.00E+00	271	0.00E+00
192.	92	1.51E-04	152	4.39E-05	212	0.00E+00	272	4.93E-07
198.	93	1.60E-04	153	2.11E-05	213	0.00E+00	273	0.00E+00
204.	94	9.00E-05	154	2.22E-05	214	0.00E+00	274	0.00E+00
210.	95	7.21E-05	155	1.57E-05	215	0.00E+00	275	0.00E+00
216.	96	6.03E-05	156	6.44E-06	216	0.00E+00	276	0.00E+00
222.	97	3.46E-05	157	6.26E-06	217	0.00E+00	277	0.00E+00
228.	98	1.93E-05	158	5.14E-06	218	0.00E+00	278	0.00E+00
234.	99	7.82E-06	159	2.88E-06	219	0.00E+00	279	0.00E+00
240.	100	5.77E-06	160	2.03E-06	220	0.00E+00	280	0.00E+00
246.	101	6.86E-06	161	0.00E+00	221	0.00E+00	281	0.00E+00
252.	102	3.99E-06	162	0.00E+00	222	0.00E+00	282	0.00E+00
258.	103	2.52E-06	163	0.00E+00	223	0.00E+00	283	0.00E+00
270.	105	6.17E-07	165	0.00E+00	225	0.00E+00	285	0.00E+00
276.	106	1.69E-06	166	0.00E+00	226	0.00E+00	286	0.00E+00
282.	107	1.90E-06	167	0.00E+00	227	0.00E+00	287	0.00E+00
288.	108	2.36E-06	168	0.00E+00	228	0.00E+00	288	0.00E+00

SMUD TEST 5 NRC STAB G 10/16/75 0616-0716 PDT

GAS S AVERAGE WINDS: SPEED 0.9 M/S ; DIRECTION 71. DEGREES
SOURCE STRENGTH 0.1148 GM/S RELEASED FROM GROUND 5

DOWNWIND DISTANCE(ARC) SAMPLES								
BEARING	100. M	200. M	400. M	800. M	GLN	CONC	GLN	
294.	109	1.97E-06	169	0.00E+00	229	0.00E+00	289	0.00E+00
300.	110	1.37E-06	170	0.00E+00	230	3.10E-07	290	0.00E+00
306.	111	9.55E-07	171	0.00E+00	231	0.00E+00	291	0.00E+00
312.	112	9.18E-07	172	0.00E+00	232	0.00E+00	292	0.00E+00
318.	113	8.73E-07	173	0.00E+00	233	0.00E+00	293	0.00E+00
324.	114	1.17E-06	174	0.00E+00	234	0.00E+00	294	0.00E+00
342.	117	6.13E-07	177	0.00E+00	237	8.08E-07	297	0.00E+00
354.	119	3.42E-07	179	0.00E+00	239	0.00E+00	299	0.00E+00

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	3.58E-06	8	4.60E-04	15	1.06E-06	401	8.54E-04
2	2.65E-06	9	2.78E-04	16	9.17E-07	402	7.48E-04
3	4.98E-06	10	2.33E-04	17	9.72E-07	403	3.51E-04
4	9.02E-05	11	1.41E-04	18	0.00E+00	0	0.00E+00
5	0.00E+00	12	2.05E-05	19	2.81E-06	0	0.00E+00
6	7.78E-04	13	2.61E-06	0	0.00E+00	0	0.00E+00
7	0.00E+00	14	3.62E-06	0	0.00E+00	0	0.00E+00

GAS F AVERAGE WINDS: SPEED 0.9 M/S ; DIRECTION 71. DEGREES
SOURCE STRENGTH 0.9990 GM/S RELEASED FROM GROUND 5

DOWNWIND DISTANCE(ARC) SAMPLES								
BEARING	100. M	200. M	400. M	800. M	GLN	CONC	GLN	
54.	69	2.24E-06	129	0.00E+00	189	0.00E+00	249	0.00E+00
60.	70	4.05E-06	130	0.00E+00	190	0.00E+00	250	0.00E+00
66.	71	4.37E-06	131	0.00E+00	191	0.00E+00	251	0.00E+00
72.	72	3.66E-06	132	0.00E+00	192	0.00E+00	252	0.00E+00
84.	74	3.24E-06	134	0.00E+00	194	0.00E+00	254	0.00E+00
90.	75	3.35E-06	135	0.00E+00	195	0.00E+00	255	0.00E+00
108.	78	2.49E-07	138	0.00E+00	198	0.00E+00	258	0.00E+00
114.	79	2.39E-06	139	0.00E+00	199	0.00E+00	259	0.00E+00
120.	80	0.00E+00	140	1.91E-06	200	0.00E+00	260	0.00E+00
126.	81	5.82E-06	141	0.00E+00	201	0.00E+00	261	0.00E+00
132.	82	0.00E+00	142	4.03E-06	202	0.00E+00	262	0.00E+00
138.	83	1.92E-05	143	2.34E-06	203	0.00E+00	263	0.00E+00
144.	84	0.00E+00	144	4.01E-06	204	0.00E+00	264	0.00E+00
150.	85	8.46E-05	145	8.49E-06	205	0.00E+00	265	0.00E+00
156.	86	1.22E-04	146	5.08E-06	206	0.00E+00	266	0.00E+00

SMUD TEST 5 NRC STAB G 10/16/75 0616-0716 PDT

GAS F AVERAGE WINDS: SPEED 0.9 M/S ; DIRECTION 71. DEGREES
SOURCE STRENGTH 0.9990 GM/S RELEASED FROM GROUND 5

BEARING	DOWNWIND DISTANCE(ARC) SAMPLES							
	100. M	200. M	400. M	800. M				
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
162.	87	1.50E-04	147	0.00E+00	207	0.00E+00	267	0.00E+00
168.	88	4.95E-05	148	5.14E-06	208	0.00E+00	268	0.00E+00
174.	89	1.41E-04	149	1.39E-05	209	0.00E+00	269	0.00E+00
180.	90	2.29E-04	150	0.00E+00	210	0.00E+00	270	0.00E+00
186.	91	0.00E+00	151	4.89E-05	211	0.00E+00	271	1.42E-06
192.	92	1.76E-04	152	5.14E-05	212	1.52E-06	272	7.36E-06
198.	93	1.95E-04	153	2.62E-05	213	1.57E-06	273	4.83E-06
204.	94	9.51E-05	154	2.51E-05	214	1.16E-06	274	5.50E-06
210.	95	8.77E-05	155	1.85E-05	215	2.31E-06	275	8.56E-05
216.	96	6.40E-05	156	5.87E-06	216	0.00E+00	276	9.19E-05
222.	97	4.02E-05	157	7.44E-06	217	5.12E-06	277	3.62E-04
228.	98	2.15E-05	158	6.75E-06	218	1.28E-06	278	7.96E-05
234.	99	9.24E-06	159	5.69E-06	219	5.03E-06	279	4.24E-04
240.	100	8.49E-06	160	2.62E-06	220	2.09E-07	280	0.00E+00
246.	101	8.79E-06	161	2.65E-06	221	0.00E+00	281	8.91E-06
252.	102	2.43E-06	162	2.80E-06	222	6.98E-06	282	4.96E-06
258.	103	4.55E-06	163	0.00E+00	223	1.85E-06	283	3.91E-06
264.	104	0.00E+00	164	0.00E+00	224	4.90E-06	284	1.66E-05
270.	105	2.27E-06	165	0.00E+00	225	6.38E-07	285	5.58E-06
276.	106	2.00E-06	166	0.00E+00	226	6.35E-07	286	9.18E-04
282.	107	8.56E-07	167	0.00E+00	227	1.32E-06	287	1.09E-03
288.	108	3.48E-06	168	0.00E+00	228	1.34E-06	288	3.62E-06
294.	109	6.42E-07	169	0.00E+00	229	3.99E-07	289	5.95E-06
300.	110	2.27E-06	170	5.29E-06	230	8.24E-07	290	8.46E-05
306.	111	4.60E-07	171	3.46E-06	231	0.00E+00	291	3.00E-06
318.	113	1.55E-06	173	1.30E-06	233	1.27E-06	293	2.37E-06
324.	114	1.40E-06	174	4.76E-06	234	0.00E+00	294	3.11E-06
330.	115	2.39E-06	175	0.00E+00	235	0.00E+00	295	2.01E-06
336.	116	0.00E+00	176	0.00E+00	236	0.00E+00	296	1.79E-06
342.	117	1.15E-06	177	0.00E+00	237	6.16E-06	297	3.80E-06
348.	118	0.00E+00	178	0.00E+00	238	2.65E-06	298	2.47E-06
354.	119	0.00E+00	179	0.00E+00	239	5.27E-06	299	1.80E-06
360.	120	0.00E+00	180	0.00E+00	240	7.16E-07	300	0.00E+00

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	5.52E-06	8	4.40E-04	15	4.73E-07	401	2.17E-03
2	4.06E-06	9	2.69E-04	16	1.57E-06	402	8.23E-04
3	5.59E-06	10	2.33E-04	17	2.06E-06	403	4.29E-04
4	6.61E-05	11	1.66E-04	18	0.00E+00	0	0.00E+00
5	0.00E+00	12	2.21E-05	19	1.34E-05	0	0.00E+00

SMUD TEST 5 NRC STAB G 10/16/75 0616-0716 PDT

GAS F AVERAGE WINDS: SPEED 0.9 M/S ;DIRECTION 71. DEGREES
SOURCE STRENGTH 0.9990 GM/S RELEASED FROM GROUND 5

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
6	1.64E-03	13	1.78E-06	0	0.00E+00	0	0.00E+00
7	6.63E-07	14	4.55E-06	0	0.00E+00	0	0.00E+00

SMUD TEST 6 NRC STAB D 10/17/75 1847-1947 PDT

GAS S AVERAGE WINDS: SPEED 3.1 M/S ;DIRECTION 226. DEGREES
SOURCE STRENGTH 0.1396 GM/S RELEASED FROM AUXILIARY

DOWNDOWN DISTANCE(ARC) SAMPLES

BEARING	100. M	200. M	400. M	800. M				
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
6.	61	1.30E-05	121	0.00E+00	181	0.00E+00	241	0.00E+00
12.	62	6.10E-05	122	1.53E-05	182	0.00E+00	242	0.00E+00
18.	63	1.23E-04	123	0.00E+00	183	0.00E+00	243	0.00E+00
24.	64	1.98E-04	124	5.04E-05	184	8.08E-06	244	2.11E-06
30.	65	3.58E-04	125	8.90E-05	185	2.28E-05	245	1.20E-06
36.	66	4.34E-04	126	6.14E-05	186	3.59E-05	246	7.93E-06
42.	67	0.00E+00	127	3.96E-05	187	7.84E-05	247	1.07E-05
48.	68	5.89E-04	128	1.96E-04	188	5.86E-05	248	1.65E-05
54.	69	6.44E-04	129	2.20E-04	189	7.65E-05	249	7.58E-06
60.	70	5.94E-04	130	0.00E+00	190	6.64E-05	250	1.60E-05
66.	71	0.00E+00	131	0.00E+00	191	0.00E+00	251	9.39E-06
72.	72	4.68E-04	132	8.87E-05	192	1.75E-05	252	0.00E+00
78.	73	5.68E-04	133	3.56E-05	193	0.00E+00	253	0.00E+00
84.	74	2.93E-04	134	7.36E-06	194	0.00E+00	254	0.00E+00
90.	75	1.60E-04	135	0.00E+00	195	0.00E+00	255	0.00E+00
96.	76	8.27E-05	136	0.00E+00	196	0.00E+00	256	0.00E+00
102.	77	3.26E-05	137	0.00E+00	197	0.00E+00	257	0.00E+00
108.	78	5.74E-06	138	6.11E-05	198	0.00E+00	258	0.00E+00

TOWER SAMPLES

HEIGHT	TOWER 1	
	GLN	CONC
1.0	311	1.12E-04
30.0	312	6.47E-05
60.0	313	9.40E-06
90.0	314	1.23E-04
150.0	316	4.25E-05

SMUD TEST 6 NRC STAB D 10/17/75 1847-1947 PDT

GAS S AVERAGE WINDS: SPEED 3.1 M/S ; DIRECTION 226. DEGREES
SOURCE STRENGTH 0.1396 GM/S RELEASED FROM AUXILIARY

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	1.81E-04	8	0.00E+00	15	0.00E+00	401	1.59E-02
2	2.18E-04	9	0.00E+00	16	0.00E+00	402	9.20E-04
3	5.34E-04	10	0.00E+00	17	0.00E+00	403	2.87E-04
4	1.11E-03	11	0.00E+00	18	5.17E-07	0	0.00E+00
6	2.16E-04	13	0.00E+00	0	0.00E+00	0	0.00E+00
7	7.25E-05	14	0.00E+00	0	0.00E+00	0	0.00E+00

GAS F AVERAGE WINDS: SPEED 2.8 M/S ; DIRECTION 228. DEGREES
SOURCE STRENGTH 1.0309 GM/S RELEASED FROM GROUND 5

DOWNTWIND DISTANCE(ARC) SAMPLES

BEARING	100. M	200. M	400. M	800. M
	GLN	CONC	GLN	CONC
6.	61	8.09E-06	121	6.75E-05
12.	62	6.43E-05	122	1.72E-05
18.	63	1.25E-04	123	6.60E-05
24.	64	1.93E-04	124	8.18E-05
30.	65	3.11E-04	125	9.22E-05
36.	66	3.38E-04	126	1.61E-04
42.	67	0.00E+00	127	1.72E-04
48.	68	5.20E-04	128	1.89E-04
54.	69	4.96E-04	129	2.14E-04
60.	70	5.15E-04	130	0.00E+00
66.	71	0.00E+00	131	0.00E+00
72.	72	4.26E-05	132	1.01E-04
78.	73	4.48E-04	133	5.14E-05
84.	74	3.01E-04	134	1.88E-05
90.	75	1.70E-04	135	4.57E-05
96.	76	1.04E-04	136	2.39E-05
102.	77	3.67E-05	137	0.00E+00
108.	78	1.02E-05	138	4.97E-05
114.	79	3.29E-06	139	0.00E+00
120.	80	4.61E-05	140	0.00E+00
126.	81	9.94E-07	141	0.00E+00
138.	83	2.65E-06	143	0.00E+00
360.	120	0.00E+00	180	8.04E-05

SMUD TEST 6 NRC STAB D 10/17/75 1847-1947 PDT

GAS F AVERAGE WINDS: SPEED 2.8 M/S ;DIRECTION 228. DEGREES
SOURCE STRENGTH 1.0309 GM/S RELEASED FROM GROUND 5

TOWER SAMPLES

HEIGHT	TOWER 1
	GLN CONC
1.0	311 1.14E-04
30.0	312 5.39E-05
60.0	313 5.32E-05
90.0	314 1.12E-04
120.0	315 1.97E-05
150.0	316 4.27E-05

MISCELLANEOUS SAMPLES

GROUP 1	GROUP 2	GROUP 3	GROUP 4				
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	2.24E-04	8	1.57E-04	15	1.68E-06	401	0.00E+00
2	2.90E-04	9	4.40E-06	16	1.49E-05	402	0.00E+00
3	7.32E-04	10	8.19E-06	17	2.61E-06	403	0.00E+00
4	2.17E-03	11	2.53E-06	18	0.00E+00	0	0.00E+00
5	0.00E+00	12	9.49E-07	19	0.00E+00	0	0.00E+00
6	3.86E-04	13	1.79E-06	0	0.00E+00	0	0.00E+00
7	1.68E-04	14	0.00E+00	0	0.00E+00	0	0.00E+00

SMUD TEST 7 NRC STAB A 10/18/75 1244-1344 PDT

GAS S AVERAGE WINDS: SPEED 5.1 M/S ;DIRECTION 322. DEGREES
SOURCE STRENGTH 0.2434 GM/S RELEASED FROM AUXILIARY

DOWNTWIND DISTANCE(ARC) SAMPLES

BEARING	100. M	200. M	400. M	800. M				
	GLN	CONC	GLN	CONC	GLN	CONC		
96.	76	6.01E-06	136	0.00E+00	196	0.00E+00	256	0.00E+00
102.	77	1.58E-05	137	0.00E+00	197	3.05E-06	257	0.00E+00
108.	78	4.17E-05	138	1.26E-05	198	5.80E-06	258	0.00E+00
114.	79	6.95E-05	139	5.55E-05	199	1.22E-05	259	2.81E-06
120.	80	8.84E-05	140	7.59E-05	200	2.32E-05	260	4.98E-06
126.	81	8.78E-05	141	9.35E-05	201	3.45E-05	261	7.65E-06
132.	82	0.00E+00	142	1.04E-04	202	1.73E-06	262	1.76E-05
138.	83	2.03E-04	143	1.19E-04	203	5.47E-05	263	2.02E-05
144.	84	0.00E+00	144	1.27E-04	204	6.87E-05	264	1.42E-05
150.	85	0.00E+00	145	0.00E+00	205	1.14E-05	265	1.35E-05
156.	86	2.49E-04	146	1.36E-04	206	3.02E-05	266	7.25E-06
162.	87	2.86E-04	147	9.58E-05	207	1.12E-05	267	0.00E+00
168.	88	2.19E-04	148	5.30E-05	208	2.48E-06	268	0.00E+00
174.	89	1.73E-04	149	2.07E-05	209	2.25E-06	269	0.00E+00

SMUD TEST 7 NRC STAB A 10/18/75 1244-1344 PDT

GAS S AVERAGE WINDS: SPEED 5.1 M/S :DIRECTION 322. DEGREES
SOURCE STRENGTH 0.2434 GM/S RELEASED FROM AUXILIARY

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
180.	90	0.00E+00	150	3.71E-06	210	0.00E+00	270	0.00E+00
186.	91	6.08E-05	151	0.00E+00	211	0.00E+00	271	0.00E+00
192.	92	9.46E-06	152	0.00E+00	212	0.00E+00	272	0.00E+00
198.	93	2.47E-06	153	0.00E+00	213	0.00E+00	273	0.00E+00

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	0.00E+00	8	2.97E-05	15	0.00E+00	481	9.07E-03
2	0.00E+00	9	0.00E+00	16	0.00E+00	402	3.54E-03
3	5.46E-06	10	6.18E-05	17	0.00E+00	403	5.89E-06
4	9.24E-05	11	1.40E-05	18	0.00E+00	0	0.00E+00
5	1.26E-04	12	0.00E+00	19	2.50E-06	0	0.00E+00
6	1.21E-04	13	0.00E+00	0	0.00E+00	0	0.00E+00
7	1.68E-04	14	0.00E+00	0	0.00E+00	0	0.00E+00

GAS F AVERAGE WINDS: SPEED 4.6 M/S ;DIRECTION 342. DEGREES
SOURCE STRENGTH 1.1025 GM/S RELEASED FROM GROUND 5

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
66.	71	0.00E+00	131	0.00E+00	191	6.42E-06	251	0.00E+00
72.	72	6.08E-06	132	9.50E-06	192	0.00E+00	252	7.25E-06
78.	73	0.00E+00	133	1.48E-06	193	1.02E-05	253	0.00E+00
84.	74	0.00E+00	134	5.63E-06	194	0.00E+00	254	0.00E+00
90.	75	3.13E-06	135	7.97E-06	195	0.00E+00	255	3.21E-05
96.	76	2.21E-05	136	0.00E+00	196	9.86E-06	256	8.43E-06
102.	77	3.58E-05	137	0.00E+00	197	1.64E-05	257	0.00E+00
108.	78	7.22E-05	138	2.71E-05	198	1.39E-05	258	0.00E+00
114.	79	1.27E-04	139	6.36E-05	199	2.80E-05	259	9.74E-06
120.	80	1.47E-04	140	9.01E-05	200	2.62E-05	260	9.56E-06
126.	81	1.33E-04	141	1.15E-04	201	4.08E-05	261	2.43E-05
132.	82	0.00E+00	142	1.25E-04	202	1.93E-05	262	3.81E-05
138.	83	3.74E-04	143	1.48E-04	203	6.26E-05	263	4.04E-05
144.	84	0.00E+00	144	1.54E-04	204	7.15E-05	264	4.15E-05
150.	85	0.00E+00	145	0.00E+00	205	2.66E-05	265	2.48E-05
156.	86	5.66E-04	146	1.82E-04	206	3.87E-05	266	4.77E-05
162.	87	6.08E-04	147	1.50E-04	207	1.66E-05	267	0.00E+00
168.	88	5.80E-04	148	8.53E-05	208	2.17E-05	268	0.00E+00
174.	89	4.75E-04	149	3.16E-05	209	1.64E-05	269	1.15E-05

SMUD TEST 8 NRC STAB G 10/20/75 0604-0704 PDT

GAS F AVERAGE WINDS: SPEED .0.9 M/S ;DIRECTION 999. DEGREES
SOURCE STRENGTH 1.0170 GM/S RELEASED FROM GROUND 5

BEARING	DOWNWIND DISTANCE(ARC) SAMPLES					
	100. M	200. M	400. M	800. M		
GLN	CONC	GLN	CONC	GLN	CONC	
168.	88	4.33E-05	148	0.00E+00	208	0.00E+00
174.	89	9.77E-05	149	0.00E+00	209	0.00E+00
180.	90	2.69E-04	150	0.00E+00	210	0.00E+00
186.	91	1.07E-04	151	1.08E-05	211	0.00E+00
192.	92	6.34E-05	152	1.15E-05	212	1.32E-04
198.	93	1.83E-04	153	1.23E-05	213	5.94E-06
204.	94	1.17E-04	154	9.07E-05	214	1.58E-05
210.	95	0.00E+00	155	4.08E-05	215	0.00E+00
216.	96	0.00E+00	156	8.25E-04	216	2.41E-06
222.	97	1.24E-04	157	2.50E-04	217	5.39E-06
228.	98	4.71E-05	158	4.26E-05	218	5.29E-06
234.	99	7.44E-05	159	1.76E-03	219	4.70E-06
240.	100	7.50E-05	160	7.86E-04	220	1.06E-05
246.	101	7.06E-05	161	6.87E-04	221	1.50E-05
252.	102	7.47E-05	162	4.71E-05	222	0.00E+00
258.	103	7.51E-05	163	5.19E-05	223	2.01E-05
264.	104	8.54E-05	164	4.77E-05	224	2.87E-04
270.	105	6.40E-05	165	4.49E-05	225	3.60E-05
276.	106	7.90E-05	166	4.59E-05	226	0.00E+00
282.	107	8.00E-05	167	0.00E+00	227	0.00E+00
288.	108	5.63E-05	168	3.10E-05	228	2.79E-05
294.	109	4.47E-05	169	2.02E-05	229	1.36E-05
300.	110	3.76E-05	170	2.17E-05	230	3.10E-05
306.	111	3.16E-05	171	2.35E-05	231	2.01E-05
312.	112	2.95E-05	172	0.00E+00	232	5.55E-05
318.	113	2.42E-05	173	3.45E-05	233	6.03E-03
324.	114	2.85E-05	174	1.10E-05	234	2.47E-05
330.	115	2.64E-05	175	7.57E-06	235	2.94E-05
336.	116	1.83E-05	176	1.73E-03	236	4.40E-05
342.	117	3.40E-05	177	1.36E-05	237	4.06E-05
348.	118	8.69E-05	178	6.43E-06	238	4.13E-05
354.	119	8.95E-05	179	1.92E-05	239	0.00E+00
360.	120	1.05E-04	180	0.00E+00	240	4.48E-05
					300	8.20E-06

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	3.75E-04	8	1.76E-04	15	0.00E+00	401	0.00E+00
2	1.27E-03	9	1.35E-04	16	1.37E-04	402	0.00E+00
3	4.21E-03	10	1.09E-04	17	3.91E-04	403	1.01E-04
4	3.32E-03	11	9.89E-05	18	1.50E-04	0	0.00E+00
5	6.26E-05	12	7.62E-05	19	8.59E-05	0	0.00E+00

SMUD TEST 7 NRC STAB A 10/18/75 1244-1344 PDT

GAS F AVERAGE WINDS: SPEED 4.6 M/S ;DIRECTION 342. DEGREES
SOURCE STRENGTH 1.1025 GM/S RELEASED FROM GROUND 5

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
180.	90	0.00E+00	150	1.16E-05	210	2.85E-06	270	2.66E-05
186.	91	1.27E-04	151	0.00E+00	211	0.00E+00	271	9.43E-06
192.	92	2.25E-05	152	0.00E+00	212	0.00E+00	272	0.00E+00
198.	93	1.11E-05	153	0.00E+00	213	1.65E-05	273	1.21E-05
204.	94	0.00E+00	154	1.25E-06	214	1.30E-05	274	2.04E-05
210.	95	0.00E+00	155	2.76E-06	215	1.05E-05	275	1.09E-05
216.	96	0.00E+00	156	0.00E+00	216	8.78E-06	276	4.86E-06
222.	97	0.00E+00	157	3.37E-06	217	0.00E+00	277	0.00E+00
228.	98	0.00E+00	158	4.80E-06	218	1.71E-05	278	1.00E-05
234.	99	0.00E+00	159	6.20E-06	219	0.00E+00	279	1.40E-05
240.	100	0.00E+00	160	0.00E+00	220	9.71E-06	280	0.00E+00

MISCELLANEOUS SAMPLES

GROUP	GROUP 1		GROUP 2		GROUP 3		GROUP 4	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	0.00E+00		8	1.88E-04	15	1.06E-05	401	0.00E+00
2	2.55E-06		9	0.00E+00	16	0.00E+00	402	0.00E+00
3	1.04E-04		10	1.77E-04	17	0.00E+00	403	0.00E+00
4	9.42E-03		11	4.28E-05	18	0.00E+00	0	0.00E+00
5	1.34E-02		12	0.00E+00	19	1.26E-05	0	0.00E+00
6	4.70E-03		13	0.00E+00	0	0.00E+00	0	0.00E+00
7	2.03E-03		14	0.00E+00	0	0.00E+00	0	0.00E+00

SMUD TEST 8 NRC STAB G 10/20/75 0604-0704 PDT

GAS S AVERAGE WINDS: SPEED 2.5 M/S ;DIRECTION 110. DEGREES
SOURCE STRENGTH 0.1503 GM/S RELEASED FROM AUXILIARY

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
240.	100	9.87E-07	160	0.00E+00	220	0.00E+00	280	0.00E+00
246.	101	8.02E-05	161	0.00E+00	221	0.00E+00	281	0.00E+00
252.	102	1.37E-04	162	7.20E-07	222	0.00E+00	282	0.00E+00
258.	103	1.24E-04	163	1.28E-05	223	0.00E+00	283	0.00E+00
264.	104	1.12E-04	164	4.38E-05	224	1.06E-06	284	0.00E+00
270.	105	4.72E-05	165	4.11E-05	225	9.85E-06	285	2.40E-06
276.	106	7.45E-06	166	2.67E-05	226	0.00E+00	286	0.00E+00
282.	107	8.24E-06	167	0.00E+00	227	0.00E+00	287	1.96E-05
288.	108	9.84E-06	168	2.63E-05	228	1.19E-05	288	0.00E+00
294.	109	1.01E-05	169	1.44E-05	229	9.42E-06	289	0.00E+00
300.	110	1.44E-05	170	3.21E-05	230	2.31E-05	290	7.54E-06
306.	111	1.30E-05	171	4.30E-05	231	9.17E-05	291	8.20E-06
312.	112	4.36E-06	172	0.00E+00	232	3.48E-05	292	6.19E-06
318.	113	0.00E+00	173	6.47E-06	233	0.00E+00	293	0.00E+00

MISCELLANEOUS SAMPLES

GROUP	GROUP 1		GROUP 2		GROUP 3		GROUP 4	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
2	0.00E+00	9	0.00E+00	16	1.53E-05	402	0.00E+00	
3	0.00E+00	10	0.00E+00	17	1.05E-05	403	0.00E+00	
6	0.00E+00	13	1.41E-04	0	0.00E+00	0	0.00E+00	
7	0.00E+00	14	1.43E-04	0	0.00E+00	0	0.00E+00	

GAS F AVERAGE WINDS: SPEED 0.9 M/S ;DIRECTION 999. DEGREES
SOURCE STRENGTH 1.0170, GM/S RELEASED FROM GROUND 5

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
48.	68	1.03E-04	128	0.00E+00	168	0.00E+00	248	0.00E+00
54.	69	9.05E-05	129	0.00E+00	189	0.00E+00	249	0.00E+00
60.	70	6.25E-05	130	0.00E+00	190	0.00E+00	250	0.00E+00
72.	72	2.69E-05	132	0.00E+00	192	0.00E+00	252	0.00E+00
84.	74	2.32E-05	134	0.00E+00	194	0.00E+00	254	0.00E+00
96.	76	7.06E-05	136	0.00E+00	196	0.00E+00	256	0.00E+00
108.	78	1.77E-05	138	0.00E+00	198	0.00E+00	258	0.00E+00
120.	80	2.40E-05	140	0.00E+00	200	0.00E+00	260	0.00E+00
138.	83	4.73E-05	143	0.00E+00	203	0.00E+00	263	0.00E+00
144.	84	9.38E-05	144	0.00E+00	204	0.00E+00	264	0.00E+00
156.	86	1.25E-04	146	0.00E+00	206	0.00E+00	266	0.00E+00
162.	87	1.10E-04	147	0.00E+00	207	0.00E+00	267	0.00E+00

SMUD TEST 8 NRC STAB G 10/20/75 0604-0704 PDT

GAS F AVERAGE WINDS: SPEED 0.9 M/S ; DIRECTION 999. DEGREES
SOURCE STRENGTH 1.0170 GM/S RELEASED FROM GROUND 5

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
6	1.96E-04	13	7.80E-05	0	0.00E+00	0	0.00E+00
7	1.90E-04	14	8.61E-05	0	0.00E+00	0	0.00E+00

SMUD TEST 9 NRC STAB D 10/21/75 1043-1135 PDT

GAS S AVERAGE WINDS: SPEED 1.9 M/S ; DIRECTION 243. DEGREES
SOURCE STRENGTH 0.2213 GM/S RELEASED FROM CONTAINMENT

DOWNTWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
24.	64	4.65E-07	124	0.00E+00	184	0.00E+00	244	0.00E+00
30.	65	6.06E-06	125	2.04E-06	185	0.00E+00	245	0.00E+00
36.	66	1.25E-05	126	0.00E+00	186	0.00E+00	246	0.00E+00
42.	67	0.00E+00	127	5.97E-06	187	0.00E+00	247	0.00E+00
48.	68	3.42E-05	128	1.29E-05	188	5.91E-06	248	0.00E+00
54.	69	4.68E-05	129	0.00E+00	189	1.50E-05	249	4.02E-06
60.	70	5.84E-05	130	3.31E-05	190	1.10E-05	250	2.61E-06
66.	71	4.60E-05	131	2.72E-05	191	1.13E-05	251	0.00E+00
72.	72	2.77E-05	132	2.38E-05	192	1.43E-05	252	0.00E+00
78.	73	2.11E-05	133	0.00E+00	193	0.00E+00	253	1.92E-06
84.	74	1.76E-05	134	1.33E-05	194	0.00E+00	254	0.00E+00
90.	75	1.99E-05	135	1.58E-05	195	0.00E+00	255	1.05E-06
96.	76	0.00E+00	136	9.57E-06	196	0.00E+00	256	0.00E+00
102.	77	2.52E-05	137	9.62E-06	197	0.00E+00	257	0.00E+00
108.	78	1.41E-05	138	4.96E-06	198	0.00E+00	258	0.00E+00
114.	79	6.82E-06	139	2.13E-06	199	0.00E+00	259	0.00E+00
120.	80	3.39E-06	140	3.37E-07	200	0.00E+00	260	0.00E+00
126.	81	3.42E-06	141	0.00E+00	201	0.00E+00	261	0.00E+00

TOWER SAMPLES

HEIGHT	TOWER 1		TOWER 2		TOWER 3	
	GLN	CONC	GLN	CONC	GLN	CONC
1.0	311	2.47E-06	321	0.00E+00	331	0.00E+00
60.0	313	1.13E-05	323	0.00E+00	333	0.00E+00
90.0	314	8.52E-06	324	0.00E+00	334	0.00E+00
150.0	316	1.24E-05	326	0.00E+00	336	0.00E+00

SMUD TEST 9 NRC STAB D 10/21/75 1043-1135 PDT

GAS S AVERAGE WINDS: SPEED 1.9 M/S ;DIRECTION 243. DEGREES
SOURCE STRENGTH 0.2213 GM/S RELEASED FROM CONTAINMENT

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	4.15E-07	8	0.00E+00	15	0.00E+00	401	0.00E+00
2	2.45E-07	9	0.00E+00	16	0.00E+00	402	0.00E+00
3	2.80E-07	10	0.00E+00	17	0.00E+00	403	0.00E+00
4	1.92E-05	11	0.00E+00	18	0.00E+00	0	0.00E+00
5	6.13E-06	12	0.00E+00	19	0.00E+00	0	0.00E+00
6	7.82E-06	13	0.00E+00	0	0.00E+00	0	0.00E+00
7	4.70E-06	14	0.00E+00	0	0.00E+00	0	0.00E+00

GAS F AVERAGE WINDS: SPEED 1.5 M/S ;DIRECTION 240. DEGREES
SOURCE STRENGTH 0.9600 GM/S RELEASED FROM GROUND 5

DOWNTWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
6.	61	1.06E-06	121	0.00E+00	181	0.00E+00	241	6.38E-06
12.	62	3.09E-06	122	3.33E-06	182	0.00E+00	242	0.00E+00
18.	63	0.00E+00	123	3.39E-06	183	0.00E+00	243	4.30E-06
24.	64	2.77E-06	124	0.00E+00	184	0.00E+00	244	0.00E+00
30.	65	1.02E-05	125	5.92E-06	185	0.00E+00	245	0.00E+00
36.	66	1.07E-05	126	0.00E+00	186	1.23E-05	246	4.48E-06
42.	67	0.00E+00	127	1.86E-05	187	5.08E-06	247	6.85E-06
48.	68	3.17E-05	128	1.22E-05	188	1.04E-05	248	5.69E-06
54.	69	5.18E-05	129	0.00E+00	189	1.23E-05	249	1.24E-05
60.	70	8.22E-05	130	3.89E-05	190	1.41E-05	250	7.77E-06
66.	71	9.80E-05	131	3.15E-05	191	1.88E-05	251	5.08E-06
72.	72	9.36E-05	132	3.66E-05	192	2.04E-05	252	1.27E-05
78.	73	5.66E-05	133	0.00E+00	193	6.01E-06	253	5.71E-06
84.	74	1.07E-04	134	2.24E-05	194	6.50E-06	254	7.30E-06
90.	75	8.53E-05	135	2.31E-05	195	4.75E-06	255	0.00E+00
96.	76	0.00E+00	136	1.79E-05	196	9.46E-06	256	3.59E-06
102.	77	4.65E-05	137	1.63E-05	197	0.00E+00	257	0.00E+00
108.	78	2.68E-05	138	3.28E-06	198	4.75E-06	258	3.56E-06
114.	79	1.73E-05	139	8.69E-06	199	6.98E-06	259	3.85E-06
120.	80	6.25E-06	140	2.99E-06	200	5.04E-06	260	5.72E-06
126.	81	8.44E-06	141	2.76E-06	201	0.00E+00	261	0.00E+00
132.	82	0.00E+00	142	2.63E-06	202	0.00E+00	262	0.00E+00
138.	83	0.00E+00	143	3.02E-06	203	0.00E+00	263	0.00E+00
144.	84	0.00E+00	144	3.27E-06	204	0.00E+00	264	0.00E+00
150.	85	0.00E+00	145	4.28E-06	205	0.00E+00	265	0.00E+00
168.	88	0.00E+00	148	3.08E-06	208	0.00E+00	268	0.00E+00
180.	90	0.00E+00	150	4.24E-05	210	0.00E+00	270	0.00E+00

SMUD TEST 9 NRC STAB D 10/21/75 1043-1135 PDT

GAS F AVERAGE WINDS: SPEED 1.5 M/S ;DIRECTION 240. DEGREES
SOURCE STRENGTH 0.9600 GM/S RELEASED FROM GROUND 5

TOWER SAMPLES

HEIGHT	TOWER 1		TOWER 2		TOWER 3	
	GLN	CONC	GLN	CONC	GLN	CONC
1.0	311	6.57E-06	321	1.76E-06	331	8.61E-06
30.0	312	0.00E+00	322	1.00E-06	332	7.31E-06
60.0	313	5.94E-06	323	0.00E+00	333	9.85E-06
90.0	314	5.57E-06	324	0.00E+00	334	6.10E-06
120.0	315	2.69E-04	325	0.00E+00	335	1.71E-06
150.0	316	1.20E-05	326	1.64E-06	336	0.00E+00

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	6.37E-06	8	3.92E-06	15	0.00E+00	401	1.02E-04
2	2.63E-05	9	3.56E-06	16	7.33E-06	402	0.00E+00
3	1.28E-05	10	0.00E+00	17	7.70E-06	403	0.00E+00
4	1.30E-03	11	0.00E+00	18	7.69E-06	0	0.00E+00
5	8.66E-03	12	0.00E+00	19	4.27E-06	0	0.00E+00
6	1.93E-04	13	0.00E+00	0	0.00E+00	0	0.00E+00
7	1.23E-04	14	2.45E-06	0	0.00E+00	0	0.00E+00

SMUD TEST 10 NRC STAB F 10/22/75 0546-0646 PDT

GAS S AVERAGE WINDS: SPEED 4.9 M/S ;DIRECTION 999. DEGREES
SOURCE STRENGTH 0.2123 GM/S RELEASED FROM AUXILIARY

DOWNDOWN DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
66.	71	1.21E-06	131	0.00E+00	191	0.00E+00	251	0.00E+00
78.	73	1.43E-06	133	0.00E+00	193	0.00E+00	253	0.00E+00
144.	84	2.02E-06	144	0.00E+00	204	0.00E+00	264	0.00E+00
150.	85	3.15E-06	145	0.00E+00	205	0.00E+00	265	0.00E+00
156.	86	2.68E-05	146	1.04E-05	206	0.00E+00	266	0.00E+00
162.	87	1.28E-04	147	4.83E-05	207	1.70E-05	267	5.43E-06
168.	88	1.53E-04	148	0.00E+00	208	4.38E-05	268	3.11E-05
174.	89	0.00E+00	149	5.09E-05	209	9.81E-05	269	1.98E-05
180.	90	0.00E+00	150	2.37E-04	210	8.16E-05	270	2.05E-06
186.	91	4.55E-04	151	0.00E+00	211	2.01E-05	271	0.00E+00
192.	92	1.93E-04	152	9.91E-05	212	4.02E-06	272	0.00E+00
198.	93	3.97E-04	153	2.68E-05	213	0.00E+00	273	0.00E+00
204.	94	5.77E-05	154	0.00E+00	214	0.00E+00	274	0.00E+00
210.	95	1.12E-05	155	0.00E+00	215	0.00E+00	275	0.00E+00

SMUD TEST 10 NRC STAB F 10/22/75 0546-0646 PDT

GAS S AVERAGE WINDS: SPEED 4.9 M/S ; DIRECTION 999. DEGREES
SOURCE STRENGTH 0.2123 GM/S RELEASED FROM AUXILIARY

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
216.	96	7.21E-06	156	0.00E+00	216	0.00E+00	276	0.00E+00
222.	97	1.29E-06	157	0.00E+00	217	0.00E+00	277	0.00E+00

MISCELLANEOUS SAMPLES

	GROUP 1		GROUP 2		GROUP 3		GROUP 4	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	0.00E+00		8	6.67E-05	15	0.00E+00	401	1.83E-03
2	0.00E+00		9	4.47E-04	16	0.00E+00	402	1.30E-03
3	0.00E+00		10	4.36E-04	17	0.00E+00	403	1.67E-03
4	0.00E+00		11	6.57E-04	18	0.00E+00	0	0.00E+00
5	1.58E-05		12	1.37E-05	19	0.00E+00	0	0.00E+00
6	7.93E-06		13	0.00E+00	0	0.00E+00	0	0.00E+00
7	6.03E-06		14	0.00E+00	0	0.00E+00	0	0.00E+00

GAS F AVERAGE WINDS: SPEED 2.9 M/S ; DIRECTION 999. DEGREES
SOURCE STRENGTH 1.0135 GM/S RELEASED FROM GROUND 5

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
78.	73	2.71E-06	133	0.00E+00	193	0.00E+00	253	0.00E+00
84.	74	3.58E-06	134	0.00E+00	194	0.00E+00	254	0.00E+00
120.	80	7.88E-07	140	6.83E-06	200	0.00E+00	260	0.00E+00
126.	81	2.30E-06	141	3.90E-06	201	0.00E+00	261	0.00E+00
132.	82	0.00E+00	142	0.00E+00	202	1.09E-05	262	9.34E-06
138.	83	5.09E-05	143	5.73E-06	203	1.41E-05	263	9.33E-06
150.	85	6.73E-04	145	5.70E-06	205	5.11E-06	265	5.22E-06
156.	86	8.09E-04	146	1.26E-04	206	9.51E-06	266	0.00E+00
162.	87	1.41E-03	147	3.50E-04	207	5.97E-05	267	5.89E-06
168.	88	4.20E-04	148	0.00E+00	208	1.10E-04	268	4.42E-05
174.	89	0.00E+00	149	1.13E-04	209	1.29E-04	269	2.94E-05
180.	90	0.00E+00	150	2.43E-04	210	6.86E-05	270	3.28E-05
186.	91	2.61E-04	151	0.00E+00	211	0.00E+00	271	0.00E+00
192.	92	6.94E-05	152	2.49E-05	212	1.01E-05	272	1.32E-05
198.	93	1.40E-04	153	0.00E+00	213	0.00E+00	273	0.00E+00
204.	94	1.58E-05	154	0.00E+00	214	0.00E+00	274	3.21E-06
210.	95	0.00E+00	155	0.00E+00	215	1.31E-05	275	8.77E-06
222.	97	0.00E+00	157	0.00E+00	217	0.00E+00	277	3.98E-06
228.	98	8.67E-07	158	0.00E+00	218	1.17E-05	278	0.00E+00
234.	99	0.00E+00	159	3.16E-06	219	0.00E+00	279	0.00E+00
240.	100	3.52E-06	160	0.00E+00	220	0.00E+00	280	0.00E+00

SMUD TEST 10 NRC STAB F 10/22/75 0546-0646 PDT

GAS F AVERAGE WINDS: SPEED 2.9 M/S ; DIRECTION 999. DEGREES
SOURCE STRENGTH 1.0135 GM/S RELEASED FROM GROUND 5

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	0.00E+00	8	1.40E-04	15	1.32E-06	401	0.00E+00
2	0.00E+00	9	1.67E-04	16	0.00E+00	402	0.00E+00
3	6.42E-06	10	0.00E+00	17	1.80E-05	403	7.25E-04
4	1.32E-03	11	0.00E+00	18	6.13E-06	0	0.00E+00
5	6.12E-03	12	1.14E-05	19	2.40E-06	0	0.00E+00
6	5.38E-03	13	4.87E-06	0	0.00E+00	0	0.00E+00
7	4.09E-03	14	0.00E+00	0	0.00E+00	0	0.00E+00

SMUD TEST 11 NRC STAB E 10/22/75 0813-0913 PDT

GAS S AVERAGE WINDS: SPEED 4.8 M/S ; DIRECTION 320. DEGREES
SOURCE STRENGTH 0.2326 GM/S RELEASED FROM AUXILIARY

DOWNDOWN DISTANCE(ARC) SAMPLES

BEARING	100. M	200. M	400. M	800. M
	GLN	CONC	GLN	CONC
72.	72	0.00E+00	132	2.08E-06
120.	80	2.62E-06	140	1.89E-06
126.	81	8.38E-06	141	1.11E-05
132.	82	0.00E+00	142	1.07E-05
138.	83	9.50E-05	143	1.16E-05
144.	84	4.43E-05	144	7.42E-06
150.	85	1.43E-04	145	1.60E-04
156.	86	2.55E-04	146	5.10E-05
162.	87	3.07E-04	147	1.05E-04
168.	88	5.51E-05	148	4.89E-05
174.	89	1.87E-04	149	0.00E+00
180.	90	9.83E-05	150	8.83E-06
186.	91	6.52E-05	151	0.00E+00
192.	92	6.48E-06	152	0.00E+00
198.	93	6.69E-06	153	0.00E+00
210.	95	9.71E-07	155	0.00E+00

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	0.00E+00	8	2.81E-04	15	0.00E+00	401	7.64E-03
2	0.00E+00	9	2.32E-04	16	0.00E+00	402	2.99E-03
3	1.27E-05	10	1.43E-04	17	0.00E+00	403	2.19E-03
4	6.45E-05	11	5.78E-05	18	0.00E+00	0	0.00E+00

SMUD TEST 11 NRC STAB E 10/22/75 0813-0913 PDT

GAS S AVERAGE WINDS: SPEED 4.8 M/S ;DIRECTION 320. DEGREES
SOURCE STRENGTH 0.2326 GM/S RELEASED FROM AUXILIARY

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
5	1.60E-04	12	2.77E-06	19	0.00E+00	0	0.00E+00
6	3.01E-05	13	0.00E+00	0	0.00E+00	0	0.00E+00
7	8.19E-05	14	0.00E+00	0	0.00E+00	0	0.00E+00

GAS F AVERAGE WINDS: SPEED 3.7 M/S ;DIRECTION 310. DEGREES
SOURCE STRENGTH 1.0177 GM/S RELEASED FROM GROUND 5

DOWNTWIND DISTANCE(ARC) SAMPLES

BEARING	100. M	200. M	400. M	800. M
	GLN	CONC	GLN	CONC
48.	68	3.90E-05	128	0.00E+00
54.	69	4.38E-05	129	0.00E+00
60.	70	8.58E-06	130	0.00E+00
66.	71	1.27E-04	131	0.00E+00
72.	72	2.23E-05	132	3.08E-04
78.	73	6.41E-05	133	0.00E+00
84.	74	0.00E+00	134	0.00E+00
90.	75	1.08E-05	135	3.56E-04
96.	76	9.65E-06	136	3.32E-06
102.	77	3.62E-05	137	2.29E-04
108.	78	4.86E-05	138	4.73E-05
114.	79	8.82E-05	139	3.61E-04
120.	80	9.98E-05	140	5.96E-04
126.	81	1.08E-04	141	2.81E-05
132.	82	0.00E+00	142	2.21E-04
138.	83	4.09E-04	143	6.04E-04
144.	84	5.97E-04	144	4.13E-04
150.	85	7.53E-04	145	2.67E-04
156.	86	8.40E-04	146	7.95E-04
162.	87	7.52E-04	147	1.96E-04
168.	88	1.59E-04	148	4.60E-04
174.	89	4.92E-04	149	3.76E-05
180.	90	4.48E-04	150	5.82E-05
186.	91	2.44E-04	151	0.00E+00
192.	92	7.33E-05	152	0.00E+00
198.	93	4.38E-05	153	0.00E+00
210.	95	6.63E-05	155	0.00E+00
216.	96	9.33E-06	156	0.00E+00
222.	97	2.16E-04	157	0.00E+00
228.	98	8.23E-05	158	0.00E+00
240.	100	1.77E-04	160	0.00E+00

SMUD TEST 11 NRC STAB E 10/22/75 0813-0913 PDT

GAS F AVERAGE WINDS: SPEED 3.7 M/S ; DIRECTION 310. DEGREES
SOURCE STRENGTH 1.0177 GM/S RELEASED FROM GROUND 5

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	1.61E-05	8	1.48E-03	15	4.29E-05	401	0.00E+00
2	3.97E-04	9	6.87E-04	16	8.77E-05	402	0.00E+00
3	4.68E-05	10	4.13E-04	17	7.71E-05	403	0.00E+00
4	1.83E-02	11	1.55E-04	18	1.36E-04	0	0.00E+00
5	7.40E-03	12	1.89E-04	19	4.15E-04	0	0.00E+00
6	6.52E-03	13	2.65E-05	0	0.00E+00	0	0.00E+00
7	4.09E-03	14	2.06E-05	0	0.00E+00	0	0.00E+00

SMUD TEST 12 NRC STAB E 10/23/75 0607-0707 PDT

GAS S AVERAGE WINDS: SPEED 1.7 M/S ; DIRECTION 345. DEGREES
SOURCE STRENGTH 0.2363 GM/S RELEASED FROM AUXILIARY

DOWNDOWN DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
138.	83	2.61E-06	143	0.00E+00	203	0.00E+00	263	0.00E+00
144.	84	0.00E+00	144	5.75E-06	204	4.20E-06	264	2.71E-06
150.	85	0.00E+00	145	2.87E-06	205	0.00E+00	265	0.42E-06
156.	86	2.92E-05	146	1.20E-06	206	4.10E-06	266	6.89E-06
162.	87	0.00E+00	147	2.05E-05	207	9.65E-06	267	5.26E-06
168.	88	2.07E-05	148	2.79E-05	208	0.00E+00	268	2.30E-06
174.	89	1.10E-05	149	1.03E-05	209	7.33E-06	269	1.33E-06
180.	90	0.00E+00	150	1.74E-05	210	2.27E-07	270	5.29E-07
186.	91	2.48E-05	151	1.40E-05	211	1.17E-07	271	3.31E-07
192.	92	0.00E+00	152	5.21E-06	212	2.05E-06	272	0.00E+00
198.	93	1.45E-05	153	4.33E-05	213	0.00E+00	273	0.00E+00
204.	94	0.00E+00	154	2.69E-06	214	1.27E-06	274	0.00E+00
210.	95	1.63E-05	155	3.68E-06	215	0.00E+00	275	0.00E+00
216.	96	8.27E-06	156	0.00E+00	216	0.00E+00	276	0.00E+00
222.	97	0.00E+00	157	1.11E-05	217	5.43E-07	277	0.00E+00
228.	98	0.00E+00	158	2.41E-06	218	1.92E-07	278	0.00E+00
234.	99	1.64E-06	159	7.74E-06	219	5.64E-06	279	0.00E+00
240.	100	0.00E+00	160	9.57E-07	220	0.00E+00	280	0.00E+00
276.	106	0.00E+00	166	3.29E-07	226	0.00E+00	286	0.00E+00

SMUD TEST 12 NRC STAB E 10/23/75 0607-0707 PDT

GAS S AVERAGE WINDS: SPEED 1.7 M/S ;DIRECTION 345. DEGREES
SOURCE STRENGTH 0.2363 GM/S RELEASED FROM AUXILIARY

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	0.00E+00	8	7.35E-06	15	0.00E+00	401	4.84E-03
2	0.00E+00	9	5.37E-05	16	0.00E+00	402	1.28E-03
3	0.00E+00	10	6.58E-05	17	0.00E+00	403	3.21E-04
4	2.76E-06	11	3.67E-05	18	0.00E+00	0	0.00E+00
5	2.87E-06	12	9.61E-07	19	0.00E+00	0	0.00E+00
6	1.06E-06	13	7.69E-07	0	0.00E+00	0	0.00E+00
7	1.19E-06	14	0.00E+00	0	0.00E+00	0	0.00E+00

GAS F AVERAGE WINDS: SPEED 1.3 M/S ;DIRECTION 349. DEGREES
SOURCE STRENGTH 1.0758 GM/S RELEASED FROM GROUND 5

DOWNDOWN DISTANCE(ARC) SAMPLES

BEARING	100. M	200. M	400. M	800. M
	GLN	CONC	GLN	CONC
48.	68	1.76E-06	128	0.00E+00
72.	72	7.36E-07	132	0.00E+00
84.	74	3.63E-06	134	0.00E+00
90.	75	1.62E-06	135	0.00E+00
102.	77	1.22E-06	137	0.00E+00
114.	79	0.00E+00	139	1.93E-06
120.	80	4.28E-06	140	0.00E+00
126.	81	1.91E-06	141	1.03E-06
132.	82	0.00E+00	142	0.00E+00
138.	83	2.91E-05	143	2.62E-06
144.	84	2.07E-05	144	1.23E-05
150.	85	4.51E-05	145	0.00E+00
156.	86	1.59E-04	146	1.35E-06
162.	87	0.00E+00	147	2.40E-05
168.	88	1.19E-04	148	4.51E-05
174.	89	6.70E-05	149	5.55E-06
180.	90	6.13E-06	150	1.79E-05
186.	91	5.82E-05	151	9.78E-06
192.	92	3.73E-05	152	1.49E-06
198.	93	3.77E-05	153	4.78E-06
204.	94	2.33E-05	154	4.61E-06
210.	95	2.44E-05	155	0.00E+00
216.	96	1.63E-05	156	0.00E+00
222.	97	0.00E+00	157	2.76E-06
228.	98	5.07E-05	158	3.91E-06
234.	99	1.47E-05	159	5.00E-06
240.	100	1.63E-05	160	3.33E-06
258.	103	0.00E+00	163	1.08E-06

SMUD TEST 12 NRC STAB E 10/23/75 0607-0707 PDT

GAS F AVERAGE WINDS: SPEED 1.3 M/S ;DIRECTION 349. DEGREES
SOURCE STRENGTH 1.0758 GM/S RELEASED FROM GROUND 5

BEARING	DOWNWIND DISTANCE(ARC) SAMPLES							
	100. M	200. M	400. M	800. M	GLN	CONC	GLN	CONC
264.	104	0.00E+00	164	1.15E-06	224	0.00E+00	284	0.00E+00
276.	106	0.00E+00	166	2.14E-05	226	0.00E+00	286	0.00E+00
288.	108	0.00E+00	168	3.49E-07	228	0.00E+00	288	0.00E+00
306.	111	0.00E+00	171	3.77E-07	231	0.00E+00	291	0.00E+00

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	4.86E-05	8	6.31E-05	15	1.71E-05	401	0.00E+00
2	1.52E-04	9	2.21E-04	16	1.77E-05	402	0.00E+00
3	1.26E-03	10	1.82E-04	17	8.90E-05	403	3.01E-04
4	6.21E-03	11	8.35E-05	18	5.99E-05	0	0.00E+00
5	5.16E-05	12	1.97E-05	19	2.98E-05	0	0.00E+00
6	1.44E-03	13	6.05E-06	0	0.00E+00	0	0.00E+00
7	7.18E-04	14	2.47E-05	0	0.00E+00	0	0.00E+00

SMUD TEST 13 NRC STAB E 10/24/75 1822-1922 PDT

GAS S AVERAGE WINDS: SPEED 0.8 M/S ;DIRECTION 256. DEGREES
SOURCE STRENGTH 0.2133 GM/S RELEASED FROM AUXILIARY

DOWWNWIND DISTANCE(ARC) SAMPLES

GEARING	DOWWNWIND DISTANCE(ARC) SAMPLES							
	100. M	200. M	400. M	800. M	GLN	CONC	GLN	CONC
6.	61	0.00E+00	121	2.66E-06	181	0.00E+00	241	0.00E+00
12.	62	4.31E-07	122	2.16E-06	182	0.00E+00	242	0.00E+00
18.	63	1.10E-05	123	1.22E-06	183	1.31E-07	243	0.00E+00
24.	64	7.42E-06	124	9.06E-07	184	0.00E+00	244	0.00E+00
30.	65	1.63E-06	125	1.27E-06	185	0.00E+00	245	0.00E+00
36.	66	4.54E-06	126	8.05E-07	186	0.00E+00	246	0.00E+00
42.	67	0.00E+00	127	0.00E+00	187	0.00E+00	247	1.44E-07
48.	68	2.27E-06	128	4.39E-07	188	0.00E+00	248	0.00E+00
54.	69	1.32E-06	129	0.00E+00	189	0.00E+00	249	0.00E+00
60.	70	1.45E-06	130	0.00E+00	190	0.00E+00	250	0.00E+00
66.	71	8.79E-07	131	0.00E+00	191	0.00E+00	251	0.00E+00
72.	72	7.21E-07	132	0.00E+00	192	0.00E+00	252	0.00E+00
78.	73	0.00E+00	133	1.40E-07	193	0.00E+00	253	0.00E+00
84.	74	3.87E-07	134	0.00E+00	194	0.00E+00	254	0.00E+00
90.	75	1.71E-06	135	0.00E+00	195	0.00E+00	255	0.00E+00
102.	77	1.68E-06	137	4.28E-07	197	0.00E+00	257	0.00E+00

SMUD TEST 13 NRC STAB E 10/24/75 1822-1922 PDT

GAS S AVERAGE WINDS: SPEED 0.8 M/S :DIRECTION 256. DEGREES
SOURCE STRENGTH 0.2133 GM/S RELEASED FROM AUXILIARY

BEARING	DOWNWIND DISTANCE(ARC) SAMPLES							
	100. M		200. M		400. M		800. M	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC	
108.	78	0.00E+00	138	5.36E-07	198	0.00E+00	258	0.00E+00
114.	79	2.10E-07	139	4.92E-07	199	0.00E+00	259	0.00E+00
120.	80	2.15E-06	140	0.00E+00	200	0.00E+00	260	0.00E+00
138.	83	1.23E-06	143	1.47E-07	203	0.00E+00	263	0.00E+00
162.	87	0.00E+00	147	2.92E-07	207	0.00E+00	267	0.00E+00
168.	88	0.00E+00	148	1.55E-07	208	0.00E+00	268	0.00E+00
360.	120	0.00E+00	180	2.94E-06	240	0.00E+00	300	0.00E+00

TOWER SAMPLES

HEIGHT	TOWER 1		TOWER 2		TOWER 3		TOWER 4	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1.0	311	9.79E-07	321	2.61E-07	331	1.20E-05	341	2.12E-07
60.0	313	0.00E+00	323	0.00E+00	333	1.13E-05	343	0.00E+00
90.0	314	1.14E-05	324	0.00E+00	334	0.00E+00	344	0.00E+00

MISCELLANEOUS SAMPLES

GROUP	GROUP 1		GROUP 2		GROUP 3		GROUP 4	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	3.76E-06	8	8.46E-07	15	4.24E-07	401	8.26E-04	
2	5.45E-07	9	0.00E+00	16	0.00E+00	402	0.00E+00	
3	0.00E+00	10	4.72E-07	17	9.92E-07	403	1.90E-05	
4	6.33E-07	11	0.00E+00	18	1.87E-06	0	0.00E+00	
5	0.00E+00	12	0.00E+00	19	3.55E-06	0	0.00E+00	
6	3.52E-06	13	2.15E-07	0	0.00E+00	0	0.00E+00	
7	3.11E-06	14	0.00E+00	0	0.00E+00	0	0.00E+00	

GAS F AVERAGE WINDS: SPEED 0.8 M/S :DIRECTION 243. DEGREES
SOURCE STRENGTH 1.0240 GM/S RELEASED FROM GROUND 5

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
6.	61	5.90E-07	121	9.57E-05	181	4.16E-06	241	0.00E+00
12.	62	2.82E-05	122	9.22E-05	182	4.67E-06	242	0.00E+00
18.	63	4.02E-04	123	5.52E-05	183	9.94E-06	243	5.08E-06
24.	64	3.46E-04	124	3.68E-05	184	6.34E-06	244	0.00E+00
30.	65	1.07E-04	125	5.98E-05	185	4.95E-06	245	1.87E-06
36.	66	2.64E-04	126	4.07E-05	186	1.08E-05	246	0.00E+00
42.	67	0.00E+00	127	0.00E+00	187	6.58E-06	247	1.35E-06
48.	68	1.33E-04	128	2.30E-05	188	0.00E+00	248	0.09E-05

SMUD TEST 13 NRC STAB E 10/24/75 1822-1922 PDT

GAS F AVERAGE WINDS: SPEED 0.8 M/S ; DIRECTION 243. DEGREES
SOURCE STRENGTH 1.0240 GM/S RELEASED FROM GROUND 5

BEARING	DOWNWIND DISTANCE(ARC) SAMPLES							
	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
54.	69	1.48E-04	129	0.00E+00	189	0.00E+00	249	0.00E+00
60.	70	1.12E-04	130	0.00E+00	190	5.84E-07	250	2.45E-07
66.	71	9.87E-05	131	0.00E+00	191	0.00E+00	251	9.54E-07
72.	72	1.35E-04	132	4.29E-05	192	0.00E+00	252	3.91E-07
78.	73	2.50E-05	133	5.72E-05	193	1.13E-06	253	7.63E-07
84.	74	4.92E-05	134	2.23E-05	194	1.14E-06	254	0.00E+00
90.	75	1.07E-04	135	1.94E-05	195	7.22E-07	255	8.65E-07
96.	76	3.91E-05	136	0.00E+00	196	0.00E+00	256	0.00E+00
102.	77	1.12E-04	137	3.24E-05	197	0.00E+00	257	0.00E+00
108.	78	5.37E-06	138	1.86E-05	198	1.09E-06	258	5.91E-07
114.	79	1.05E-05	139	3.72E-05	199	0.00E+00	259	0.00E+00
120.	80	1.09E-04	140	2.14E-05	200	2.68E-06	260	0.00E+00
126.	81	7.60E-06	141	8.63E-06	201	4.69E-06	261	2.83E-06
132.	82	0.00E+00	142	4.05E-06	202	9.92E-06	262	0.00E+00
138.	83	1.05E-04	143	4.14E-05	203	6.54E-06	263	2.19E-06
144.	84	0.00E+00	144	0.00E+00	204	9.48E-07	264	0.00E+00
150.	85	0.00E+00	145	0.00E+00	205	0.00E+00	265	1.31E-05
156.	86	0.00E+00	146	2.59E-05	206	3.66E-06	266	0.00E+00
162.	87	0.00E+00	147	3.49E-05	207	1.65E-06	267	0.00E+00
168.	88	0.00E+00	148	3.20E-05	208	4.91E-06	268	1.70E-06
174.	89	0.00E+00	149	1.45E-05	209	4.86E-06	269	3.41E-06
180.	90	0.00E+00	150	0.00E+00	210	1.23E-06	270	1.79E-05
360.	120	0.00E+00	180	1.06E-04	240	0.00E+00	300	0.00E+00

TOWER SAMPLES

HEIGHT	TOWER 1		TOWER 2		TOWER 3		TOWER 4	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1.0	311	4.52E-05	321	1.66E-05	331	5.41E-06	341	8.50E-06
30.0	312	9.18E-04	322	1.15E-06	332	2.19E-06	342	1.69E-06
60.0	313	0.00E+00	323	0.00E+00	333	1.72E-05	343	5.56E-06
90.0	314	7.68E-06	324	0.00E+00	334	7.45E-07	344	1.46E-06
120.0	315	9.69E-06	325	0.00E+00	335	0.00E+00	345	6.59E-07
150.0	316	4.05E-07	326	1.04E-06	336	2.56E-06	346	2.08E-06

MISCELLANEOUS SAMPLES

GROUP	GROUP 1		GROUP 2		GROUP 3		GROUP 4	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	1.04E-04	8	1.54E-04	15	1.15E-05	401	1.69E-03	
2	2.33E-05	9	1.05E-04	16	4.26E-06	402	0.00E+00	
3	2.09E-05	10	9.85E-05	17	2.01E-05	403	1.60E-04	
4	5.81E-05	11	0.00E+00	18	4.10E-05	0	0.00E+00	

SMUD TEST 13 NRC STAB E 10/24/75 1822-1922 PDT

GAS F AVERAGE WINDS: SPEED 0.8 M/S ; DIRECTION 243. DEGREES
SOURCE STRENGTH 1.0240 GM/S RELEASED FROM GROUND 5

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
5	0.00E+00	12	2.36E-05	19	7.33E-05	0	0.00E+00
6	1.25E-04	13	7.80E-06	0	0.00E+00	0	0.00E+00
7	1.25E-04	14	0.00E+00	0	0.00E+00	0	0.00E+00

SMUD TEST 14 NRC STAB G 10/24/75 2350-0050 PDT

GAS S AVERAGE WINDS: SPEED 2.3 M/S ; DIRECTION 121. DEGREES
SOURCE STRENGTH 0.2186 GM/S RELEASED FROM AUXILIARY

DOWNDOWN DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
6.	61	0.00E+00	121	2.60E-07	181	0.00E+00	241	0.00E+00
12.	62	3.60E-06	122	0.00E+00	182	0.00E+00	242	0.00E+00
24.	64	6.59E-07	124	0.00E+00	184	0.00E+00	244	0.00E+00
30.	65	3.20E-07	125	8.49E-08	185	0.00E+00	245	0.00E+00
36.	66	2.96E-06	126	0.00E+00	186	0.00E+00	246	0.00E+00
48.	68	3.18E-06	128	0.00E+00	188	0.00E+00	248	0.00E+00
54.	69	1.75E-06	129	2.95E-07	189	0.00E+00	249	0.00E+00
60.	70	1.78E-07	130	1.62E-06	190	0.00E+00	250	0.00E+00
66.	71	1.63E-06	131	0.00E+00	191	0.00E+00	251	0.00E+00
72.	72	7.28E-07	132	0.00E+00	192	0.00E+00	252	0.00E+00
78.	73	2.29E-06	133	0.00E+00	193	0.00E+00	253	0.00E+00
84.	74	2.87E-06	134	0.00E+00	194	0.00E+00	254	0.00E+00
90.	75	8.09E-07	135	0.00E+00	195	0.00E+00	255	0.00E+00
96.	76	6.34E-06	136	0.00E+00	196	0.00E+00	256	0.00E+00
102.	77	4.31E-06	137	0.00E+00	197	0.00E+00	257	0.00E+00
108.	78	2.35E-06	138	0.00E+00	198	0.00E+00	258	0.00E+00
114.	79	1.65E-06	139	0.00E+00	199	0.00E+00	259	0.00E+00
120.	80	1.74E-06	140	0.00E+00	200	0.00E+00	260	0.00E+00
138.	83	1.23E-06	143	0.00E+00	203	0.00E+00	263	0.00E+00
150.	85	1.64E-06	145	0.00E+00	205	0.00E+00	265	0.00E+00
168.	88	1.77E-06	148	0.00E+00	208	0.00E+00	268	0.00E+00
240.	100	1.40E-06	160	8.42E-07	220	0.00E+00	280	0.00E+00
252.	102	3.40E-05	162	0.00E+00	222	0.00E+00	282	0.00E+00
258.	103	3.86E-05	163	4.55E-07	223	0.00E+00	283	0.00E+00
264.	104	5.44E-05	164	9.48E-06	224	0.00E+00	284	0.00E+00
270.	105	0.00E+00	165	2.83E-05	225	0.00E+00	285	0.00E+00
276.	106	1.63E-05	166	9.33E-07	226	0.00E+00	286	0.00E+00
282.	107	1.05E-05	167	0.00E+00	227	0.00E+00	287	0.00E+00
288.	108	7.56E-06	168	4.26E-05	228	3.59E-05	288	4.92E-06

SMUD TEST 14 NRC STAB G 10/24/75 2350-0050 PDT

GAS S AVERAGE WINDS: SPEED 2.3 M/S ;DIRECTION 121. DEGREES
SOURCE STRENGTH 0.2186 GM/S RELEASED FROM AUXILIARY

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M	200. M	400. M	800. M
	GLN	CONC	GLN	CONC
294.	109	3.59E-06	169	3.03E-05
300.	110	1.81E-06	170	2.21E-05
306.	111	0.00E+00	171	1.44E-05
312.	112	7.70E-07	172	0.00E+00
318.	113	5.63E-07	173	3.79E-06
324.	114	0.00E+00	174	9.08E-07
			229	6.98E-05
			230	1.25E-04
			231	4.19E-05
			232	2.32E-05
			233	9.50E-06
			234	1.15E-06
			289	7.64E-06
			290	0.00E+00
			291	4.42E-06
			292	0.00E+00
			293	0.00E+00
			294	0.00E+00

TOWER SAMPLES

HEIGHT	TOWER 1
	GLN CONC
30.0	312 4.40E-07
120.0	315 6.74E-07

MISCELLANEOUS SAMPLES

GROUP 1	GROUP 2	GROUP 3	GROUP 4
GLN	CONC	GLN	CONC
1	2.72E-06	8	0.00E+00
2	2.37E-06	9	0.00E+00
3	2.54E-06	10	0.00E+00
4	6.29E-07	11	0.00E+00
5	1.24E-05	12	0.00E+00
6	0.00E+00	13	1.61E-05
7	1.24E-06	14	8.08E-06
		15	4.39E-06
		16	4.44E-06
		17	0.00E+00
		18	2.96E-06
		19	1.54E-05
		0	0.00E+00

GAS F AVERAGE WINDS: SPEED 0.9 M/S ;DIRECTION 109. DEGREES
SOURCE STRENGTH 0.9873 GM/S RELEASED FROM GROUND 5

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M	200. M	400. M	800. M
	GLN	CONC	GLN	CONC
6.	61	2.09E-06	121	4.12E-05
12.	62	2.85E-05	122	4.57E-05
18.	63	8.01E-05	123	2.70E-05
24.	64	1.29E-04	124	1.03E-05
30.	65	6.86E-07	125	1.91E-05
36.	66	2.66E-05	126	9.26E-06
42.	67	0.00E+00	127	7.25E-06
48.	68	5.17E-05	128	5.20E-06
54.	69	2.47E-05	129	3.75E-06
60.	70	3.43E-06	130	4.63E-05
			181	0.00E+00
			182	0.00E+00
			183	0.00E+00
			184	0.00E+00
			185	0.00E+00
			186	0.00E+00
			187	0.00E+00
			188	0.00E+00
			189	0.00E+00
			190	0.00E+00
			241	0.00E+00
			242	0.00E+00
			243	0.00E+00
			244	0.00E+00
			245	0.00E+00
			246	0.00E+00
			247	0.00E+00
			248	0.00E+00
			249	0.00E+00
			250	0.00E+00

SMUD TEST 14 NRC STAB G 10/24/75 2350-0050 PDT

GAS F AVERAGE WINDS: SPEED 0.9 M/S ; DIRECTION 109. DEGREES
SOURCE STRENGTH 0.9873 GM/S RELEASED FROM GROUND 5

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M	200. M	400. M	800. M
	GLN	CONC	GLN	CONC
66.	71	1.55E-05	131	4.34E-06
72.	72	2.92E-06	132	0.00E+00
78.	73	1.76E-05	133	0.00E+00
84.	74	2.84E-05	134	0.00E+00
90.	75	3.62E-06	135	0.00E+00
96.	76	3.46E-05	136	0.00E+00
102.	77	5.18E-05	137	0.00E+00
108.	78	8.39E-06	138	0.00E+00
114.	79	1.29E-05	139	0.00E+00
120.	80	2.83E-06	140	0.00E+00
126.	81	2.51E-05	141	0.00E+00
138.	83	5.60E-06	143	0.00E+00
144.	84	1.24E-05	144	0.00E+00
150.	85	1.61E-05	145	0.00E+00
156.	86	3.04E-06	146	0.00E+00
162.	87	2.04E-05	147	0.00E+00
168.	88	2.34E-05	148	0.00E+00
174.	89	1.56E-05	149	0.00E+00
180.	90	1.85E-05	150	0.00E+00
192.	92	1.24E-05	152	0.00E+00
198.	93	1.97E-05	153	2.26E-06
204.	94	8.82E-06	154	4.55E-06
210.	95	1.20E-05	155	1.35E-06
216.	96	1.20E-05	156	5.69E-06
222.	97	6.21E-06	157	4.89E-06
228.	98	1.44E-06	158	1.99E-06
234.	99	1.78E-06	159	5.80E-06
240.	100	1.04E-05	160	6.72E-06
246.	101	6.99E-05	161	3.82E-06
252.	102	9.90E-05	162	5.49E-06
258.	103	8.90E-05	163	0.00E+00
264.	104	1.05E-04	164	8.10E-06
270.	105	0.00E+00	165	6.31E-06
276.	106	1.46E-04	166	6.77E-06
282.	107	1.32E-04	167	0.00E+00
288.	108	1.19E-04	168	6.45E-05
294.	109	3.03E-05	169	3.67E-05
300.	110	8.91E-06	170	4.32E-05
306.	111	0.00E+00	171	2.93E-05
312.	112	1.15E-05	172	0.00E+00
318.	113	4.04E-05	173	3.09E-05
324.	114	4.14E-05	174	7.18E-06
330.	115	2.85E-05	175	5.49E-06
			235	1.25E-05
			295	3.33E-06

SMUD TEST 14 NRC STAB G 10/24/75 2350-0050 PDT

GAS F AVERAGE WINDS: SPEED 0.9 M/S ; DIRECTION 109. DEGREES
SOURCE STRENGTH 0.9873 GM/S RELEASED FROM GROUND 5

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M	200. M	400. M	800. M
	GLN	CONC	GLN	CONC
336.	116	2.61E-05	176	7.11E-06
342.	117	4.49E-05	177	5.43E-06
348.	118	3.39E-05	178	4.99E-06
354.	119	4.76E-05	179	1.34E-05
360.	120	8.20E-05	180	3.63E-05
			236	1.24E-05
			237	4.00E-06
			238	0.00E+00
			239	6.43E-06
			299	0.00E+00
			300	0.00E+00

TOWER SAMPLES

HEIGHT	TOWER 1	
	GLN	CONC
1.0	311	2.81E-06
30.0	312	1.82E-04
60.0	313	4.37E-07
90.0	314	3.70E-07
120.0	315	4.36E-05

MISCELLANEOUS SAMPLES

GROUP 1	GROUP 2	GROUP 3	GROUP 4
GLN	CONC	GLN	CONC
1	6.54E-04	8	0.00E+00
2	1.46E-03	9	0.00E+00
3	2.77E-03	10	1.03E-05
4	3.91E-03	11	7.27E-06
5	6.03E-04	12	5.30E-06
6	0.00E+00	13	5.41E-05
7	2.86E-05	14	3.19E-05
		15	1.20E-04
		16	2.09E-04
		17	5.63E-06
		18	2.72E-04
		19	4.25E-05
		0	0.00E+00
		0	0.00E+00
		0	0.00E+00

SMUD TEST 15 NRC STAB D 10/25/75 1711-1811 PDT

GAS S AVERAGE WINDS: SPEED 1.3 M/S ;DIRECTION 357. DEGREES
SOURCE STRENGTH 0.1980 GM/S RELEASED FROM AUXILIARY

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
96.	76	8.51E-07	136	6.54E-07	196	0.00E+00	256	0.00E+00
102.	77	0.00E+00	137	6.97E-07	197	0.00E+00	257	0.00E+00
108.	78	0.00E+00	138	1.12E-06	198	0.00E+00	258	0.00E+00
114.	79	0.00E+00	139	2.15E-07	199	0.00E+00	259	0.00E+00
120.	80	0.00E+00	140	2.75E-06	200	1.53E-06	260	0.00E+00
126.	81	1.33E-06	141	4.49E-06	201	0.00E+00	261	2.16E-06
132.	82	0.00E+00	142	7.16E-06	202	0.00E+00	262	1.11E-06
138.	83	5.68E-06	143	1.01E-05	203	7.14E-06	263	1.47E-06
144.	84	8.93E-06	144	1.15E-05	204	7.45E-06	264	5.28E-06
150.	85	3.29E-06	145	1.03E-05	205	5.75E-06	265	7.64E-06
156.	86	0.00E+00	146	7.75E-06	206	2.20E-06	266	9.17E-07
162.	87	1.04E-05	147	8.75E-06	207	0.00E+00	267	9.57E-07
168.	88	4.08E-06	148	7.38E-06	208	8.34E-07	268	0.00E+00
180.	90	1.70E-05	150	1.18E-06	210	0.00E+00	270	4.08E-07
186.	91	1.49E-05	151	8.22E-06	211	0.00E+00	271	1.38E-07
192.	92	5.40E-07	152	2.62E-07	212	0.00E+00	272	0.00E+00
198.	93	8.83E-06	153	0.00E+00	213	0.00E+00	273	0.00E+00
204.	94	3.40E-07	154	8.52E-06	214	0.00E+00	274	5.10E-07
210.	95	8.73E-06	155	1.12E-05	215	4.87E-06	275	0.00E+00
216.	96	0.00E+00	156	4.31E-06	216	1.36E-06	276	2.12E-06
222.	97	8.72E-07	157	2.67E-06	217	0.00E+00	277	0.00E+00
228.	98	0.00E+00	158	1.32E-06	218	1.23E-06	278	0.00E+00
234.	99	0.00E+00	159	0.00E+00	219	8.28E-07	279	0.00E+00
240.	100	0.00E+00	160	0.00E+00	220	3.02E-07	280	0.00E+00

MISCELLANEOUS SAMPLES

GROUP 1	GROUP 2	GROUP 3	GROUP 4
GLN	CONC	GLN	CONC
1	0.00E+00	8	1.90E-05
2	0.00E+00	9	0.00E+00
3	0.00E+00	10	2.52E-05
4	0.00E+00	11	9.29E-06
5	2.23E-06	12	4.42E-07
7	4.66E-07	14	0.00E+00
		15	0.00E+00
		16	0.00E+00
		17	0.00E+00
		18	0.00E+00
		19	6.58E-06
		0	0.00E+00
		0	0.00E+00

SMUD TEST 15 NRC STAB D 10/25/75 1711-1811 PDT

GAS F AVERAGE WINDS: SPEED 0.8 M/S ; DIRECTION 339. DEGREES
SOURCE STRENGTH 1.0006 GM/S RELEASED FROM GROUND 5

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
48.	68	2.44E-06	128	0.00E+00	188	0.00E+00	248	0.00E+00
54.	69	1.78E-06	129	0.00E+00	189	0.00E+00	249	0.00E+00
66.	71	8.26E-07	131	0.00E+00	191	0.00E+00	251	0.00E+00
72.	72	0.00E+00	132	1.45E-05	192	0.00E+00	252	2.47E-06
78.	73	1.15E-06	133	0.00E+00	193	0.00E+00	254	2.39E-06
84.	74	0.00E+00	134	1.76E-05	194	0.00E+00	255	2.56E-06
90.	75	0.00E+00	135	0.00E+00	195	0.00E+00	256	0.00E+00
96.	76	7.34E-06	136	1.84E-06	196	1.97E-06	258	1.25E-06
108.	78	0.00E+00	138	3.10E-06	198	2.37E-07	259	1.56E-06
114.	79	0.00E+00	139	2.52E-06	199	1.11E-06	260	1.86E-06
120.	80	2.84E-06	140	1.62E-05	200	2.54E-06	261	1.34E-06
126.	81	3.24E-06	141	2.05E-06	201	7.34E-07	262	0.00E+00
132.	82	0.00E+00	142	3.95E-05	202	8.95E-07	263	0.00E+00
138.	83	3.45E-05	143	1.20E-05	203	3.20E-06	264	6.25E-06
144.	84	4.73E-05	144	5.99E-06	204	6.33E-06	265	7.37E-06
150.	85	1.30E-05	145	1.38E-05	205	5.80E-06	266	0.00E+00
156.	86	0.00E+00	146	5.28E-06	206	1.63E-06	267	0.00E+00
162.	87	4.93E-05	147	1.19E-05	207	0.00E+00	268	2.19E-06
168.	88	4.32E-05	148	1.06E-05	208	3.04E-06	269	0.00E+00
174.	89	0.00E+00	149	2.45E-06	209	0.00E+00	270	1.11E-06
180.	90	5.47E-05	150	1.85E-06	210	1.50E-06	271	3.46E-06
186.	91	5.22E-05	151	0.00E+00	211	4.86E-07	272	4.87E-06
192.	92	4.40E-06	152	0.00E+00	212	2.65E-06	273	8.05E-06
198.	93	3.82E-05	153	0.00E+00	213	1.85E-06	274	2.61E-06
204.	94	0.00E+00	154	2.95E-05	214	5.09E-07	275	1.46E-06
210.	95	2.53E-06	155	1.19E-05	215	1.26E-06	276	6.37E-07
216.	96	0.00E+00	156	3.25E-05	216	1.20E-06	277	0.00E+00
222.	97	0.00E+00	157	7.90E-06	217	0.00E+00	278	8.55E-07
228.	98	0.00E+00	158	1.08E-06	218	0.00E+00	279	0.00E+00
240.	100	0.00E+00	160	0.00E+00	220	0.00E+00	280	1.17E-06

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	1.22E-06	8	1.36E-04	15	1.11E-05	401	1.59E-03
2	1.64E-05	9	1.41E-06	16	0.00E+00	402	2.82E-04
3	3.60E-05	10	4.94E-05	17	0.00E+00	403	0.00E+00
4	4.00E-03	11	1.61E-05	18	0.00E+00	0	0.00E+00
5	1.66E-03	12	0.00E+00	19	7.68E-06	0	0.00E+00
6	9.15E-04	13	0.00E+00	0	0.00E+00	0	0.00E+00
7	5.49E-04	14	0.00E+00	0	0.00E+00	0	0.00E+00

SMUD TEST 16 NRC STAB E 10/27/75 1700-1800 PST

GAS S AVERAGE WINDS: SPEED 1.0 M/S ; DIRECTION 227. DEGREES
SOURCE STRENGTH 8.1794 GM/S RELEASED FROM GROUND 17

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
6.	61	1.20E-06	121	9.06E-06	181	5.89E-06	241	0.00E+00
12.	62	1.20E-06	122	1.02E-05	182	3.65E-06	242	0.00E+00
18.	63	3.66E-06	123	9.65E-06	183	3.92E-06	243	0.00E+00
24.	64	0.00E+00	124	0.00E+00	184	1.24E-06	244	0.00E+00
30.	65	6.10E-07	125	6.05E-06	185	3.00E-06	245	0.00E+00
36.	66	1.79E-06	126	6.47E-06	186	2.90E-06	246	0.00E+00
42.	67	0.00E+00	127	1.54E-06	187	1.08E-06	247	0.00E+00
48.	68	1.46E-06	128	1.90E-06	188	0.00E+00	248	0.00E+00
54.	69	1.57E-06	129	0.00E+00	189	0.00E+00	249	0.00E+00
60.	70	2.16E-06	130	2.09E-06	190	0.00E+00	250	0.00E+00
66.	71	0.00E+00	131	1.41E-06	191	0.00E+00	251	0.00E+00
72.	72	2.02E-06	132	0.00E+00	192	0.00E+00	252	0.00E+00
78.	73	3.43E-06	133	0.00E+00	193	0.00E+00	253	0.00E+00
84.	74	4.11E-06	134	0.00E+00	194	0.00E+00	254	0.00E+00
90.	75	3.94E-06	135	7.27E-07	195	0.00E+00	255	0.00E+00
96.	76	3.90E-06	136	0.00E+00	196	0.00E+00	256	0.00E+00
114.	79	7.41E-07	139	0.00E+00	199	0.00E+00	259	0.00E+00
216.	96	4.11E-06	156	0.00E+00	216	0.00E+00	276	0.00E+00
234.	99	3.26E-07	159	0.00E+00	219	0.00E+00	279	0.00E+00
240.	100	3.22E-07	160	0.00E+00	220	0.00E+00	280	0.00E+00
246.	101	2.00E-07	161	0.00E+00	221	0.00E+00	281	0.00E+00
252.	102	6.33E-07	162	0.00E+00	222	0.00E+00	282	0.00E+00
258.	103	3.62E-07	163	0.00E+00	223	0.00E+00	283	0.00E+00
264.	104	4.82E-07	164	0.00E+00	224	0.00E+00	284	0.00E+00
270.	105	2.76E-07	165	0.00E+00	225	0.00E+00	285	0.00E+00
276.	106	3.58E-07	166	0.00E+00	226	0.00E+00	286	0.00E+00
282.	107	1.62E-07	167	0.00E+00	227	0.00E+00	287	0.00E+00
288.	108	2.65E-07	168	0.00E+00	228	0.00E+00	288	0.00E+00
294.	109	3.08E-07	169	0.00E+00	229	0.00E+00	289	0.00E+00
312.	112	3.12E-07	172	0.00E+00	232	0.00E+00	292	0.00E+00
318.	113	1.32E-06	173	0.00E+00	233	0.00E+00	293	0.00E+00
324.	114	1.73E-06	174	0.00E+00	234	0.00E+00	294	0.00E+00
330.	115	2.11E-07	175	0.00E+00	235	0.00E+00	295	0.00E+00
336.	116	1.40E-07	176	0.00E+00	236	0.00E+00	296	0.00E+00
342.	117	1.87E-06	177	3.31E-06	237	0.00E+00	297	0.00E+00
348.	118	3.18E-06	178	6.25E-06	238	7.49E-07	298	0.00E+00
354.	119	2.71E-06	179	3.75E-06	239	2.95E-06	299	0.00E+00
360.	120	2.77E-06	180	3.62E-06	240	4.03E-06	300	0.00E+00

SMUD TEST 16 NRC STAB E 10/27/75 1708-1808 PST

GAS S AVERAGE WINDS: SPEED 1.0 M/S ; DIRECTION 227. DEGREES
SOURCE STRENGTH 0.1794 GM/S RELEASED FROM GROUND 17

TOWER SAMPLES

HEIGHT	TOWER 1		TOWER 2		TOWER 3		TOWER 4	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
30.0	312	3.58E-05	322	0.00E+00	332	0.00E+00	342	0.00E+00
60.0	313	1.04E-04	323	0.00E+00	333	0.00E+00	343	0.00E+00
90.0	314	1.29E-04	324	0.00E+00	334	0.00E+00	344	0.00E+00
150.0	316	3.80E-05	326	0.00E+00	336	0.00E+00	346	0.00E+00
HEIGHT	TOWER 5		GLN	CONC				
1.0	351	6.62E-07						
60.0	353	4.87E-07						

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	5.47E-06	6	3.35E-06	15	0.00E+00	401	2.56E-03
2	4.49E-04	9	3.22E-06	16	0.00E+00	402	5.81E-04
3	9.55E-05	10	5.80E-06	17	0.00E+00	403	1.37E-03
4	7.15E-05	11	4.80E-06	18	0.00E+00	0	0.00E+00
5	1.03E-05	12	0.00E+00	19	0.00E+00	0	0.00E+00
6	1.48E-05	13	0.00E+00	0	0.00E+00	0	0.00E+00
7	5.51E-06	14	0.00E+00	0	0.00E+00	0	0.00E+00

GAS F AVERAGE WINDS: SPEED 1.0 M/S ; DIRECTION 227. DEGREES
SOURCE STRENGTH 1.0048 GM/S RELEASED FROM GROUND 5

DOWNDOWN DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
6.	61	3.89E-05	121	7.62E-05	181	3.05E-05	241	0.00E+00
12.	62	2.51E-05	122	8.89E-05	182	1.86E-05	242	0.00E+00
18.	63	5.29E-05	123	6.14E-05	183	1.60E-05	243	0.00E+00
24.	64	0.00E+00	124	0.00E+00	184	6.62E-06	244	0.00E+00
30.	65	7.63E-06	125	3.98E-05	185	1.22E-05	245	0.00E+00
36.	66	1.62E-05	126	4.11E-05	186	1.68E-05	246	0.00E+00
42.	67	0.00E+00	127	7.48E-06	187	3.11E-06	247	0.00E+00
48.	68	5.01E-06	128	5.37E-06	188	0.00E+00	248	0.00E+00
54.	69	3.90E-06	129	0.00E+00	189	1.20E-06	249	0.00E+00
60.	70	4.87E-06	130	1.83E-05	190	0.00E+00	250	0.00E+00
66.	71	5.34E-06	131	1.05E-06	191	0.00E+00	251	0.00E+00
72.	72	2.45E-06	132	0.00E+00	192	0.00E+00	252	0.00E+00
78.	73	1.03E-05	133	8.12E-07	193	0.00E+00	253	0.00E+00
84.	74	9.35E-06	134	0.00E+00	194	0.00E+00	254	0.00E+00
90.	75	1.95E-05	135	1.68E-06	195	0.00E+00	255	0.00E+00

SMUD TEST 16 NRC STAB E 10/27/75 1708-1808 PST

GAS F AVERAGE WINDS: SPEED 1.0 M/S ; DIRECTION 227. DEGREES
SOURCE STRENGTH 1.0048 GM/S RELEASED FROM GROUND 5

BEARING	DOWNWIND DISTANCE(ARC) SAMPLES							
	100. M		200. M		400. M		800. M	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC	
96.	76	2.06E-05	136	0.00E+00	196	1.99E-06	256	0.00E+00
102.	77	1.07E-05	137	0.00E+00	197	0.00E+00	257	0.00E+00
114.	79	1.45E-06	139	0.00E+00	199	1.99E-06	259	0.00E+00
120.	80	9.94E-07	140	0.00E+00	200	0.00E+00	260	0.00E+00
162.	87	1.39E-06	147	0.00E+00	207	0.00E+00	267	0.00E+00
192.	92	2.07E-06	152	0.00E+00	212	0.00E+00	272	0.00E+00
210.	95	9.39E-07	155	0.00E+00	215	0.00E+00	275	0.00E+00
222.	97	2.80E-06	157	0.00E+00	217	0.00E+00	277	0.00E+00
240.	100	3.10E-07	160	0.00E+00	220	0.00E+00	280	0.00E+00
246.	101	1.81E-06	161	0.00E+00	221	0.00E+00	281	0.00E+00
252.	102	5.31E-06	162	0.00E+00	222	0.00E+00	282	0.00E+00
258.	103	5.38E-06	163	0.00E+00	223	0.00E+00	283	0.00E+00
264.	104	5.70E-06	164	0.00E+00	224	0.00E+00	284	0.00E+00
270.	105	4.96E-06	165	0.00E+00	225	0.00E+00	285	0.00E+00
276.	106	5.87E-06	166	0.00E+00	226	0.00E+00	286	0.00E+00
282.	107	3.52E-06	167	0.00E+00	227	0.00E+00	287	0.00E+00
288.	108	1.94E-06	158	0.00E+00	228	0.00E+00	288	0.00E+00
294.	109	4.66E-06	169	0.00E+00	229	0.00E+00	289	0.00E+00
300.	110	3.56E-06	170	0.00E+00	230	0.00E+00	290	0.00E+00
306.	111	0.00E+00	171	0.00E+00	231	1.28E-06	291	0.00E+00
312.	112	4.98E-06	172	0.00E+00	232	0.00E+00	292	0.00E+00
318.	113	2.42E-05	173	0.00E+00	233	3.43E-06	293	9.15E-07
324.	114	3.36E-05	174	0.00E+00	234	9.08E-07	294	0.00E+00
330.	115	9.53E-06	175	1.38E-05	235	0.00E+00	295	0.00E+00
336.	116	4.39E-06	176	0.00E+00	236	0.00E+00	296	4.84E-06
342.	117	4.44E-05	177	1.65E-05	237	3.66E-06	297	0.00E+00
348.	118	7.27E-05	178	4.59E-05	238	5.94E-06	298	0.00E+00
354.	119	7.91E-05	179	6.11E-05	239	1.55E-05	299	1.37E-06
360.	120	9.39E-05	180	4.37E-05	240	3.19E-05	300	0.00E+00

TOWER SAMPLES

HEIGHT	TOWER 1		TOWER 2		TOWER 3		TOWER 4	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
30.0	312	1.53E-03	322	0.00E+00	332	0.00E+00	342	0.00E+00
60.0	313	6.54E-05	323	0.00E+00	333	0.00E+00	343	0.00E+00
90.0	314	1.66E-04	324	0.00E+00	334	0.00E+00	344	0.00E+00
150.0	316	3.24E-05	326	0.00E+00	336	0.00E+00	346	0.00E+00

SMUD TEST 16 NRC STAB E 10/27/75 1708-1908 PST

GAS F AVERAGE WINDS: SPEED 1.0 M/S ; DIRECTION 227. DEGREES
SOURCE STRENGTH 1.0048 GM/S RELEASED FROM GROUND 5

TOWER SAMPLES

HEIGHT	TOWER 5
GLN	CONC
1.0	351 4.39E-06
60.0	353 2.15E-06
90.0	354 1.42E-07
150.0	356 1.23E-06

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	2.38E-04	8	1.15E-05	15	7.65E-06	401	0.00E+00
2	9.06E-04	9	4.07E-06	16	0.00E+00	402	0.00E+00
3	3.17E-03	10	1.32E-06	17	0.00E+00	403	0.00E+00
4	3.12E-03	11	0.00E+00	18	2.50E-06	0	0.00E+00
5	5.56E-03	12	1.39E-06	19	4.89E-06	0	0.00E+00
6	4.65E-05	13	1.64E-06	0	0.00E+00	0	0.00E+00
7	3.42E-05	14	0.00E+00	0	0.00E+00	0	0.00E+00

SMUD TEST 17 NRC STAB G 10/27/75 2205-2305 PST

GAS S AVERAGE WINDS: SPEED 2.0 M/S ; DIRECTION 50. DEGREES
SOURCE STRENGTH 0.2067 GM/S RELEASED FROM GROUND 17

DOWNDOWN DISTANCE(ARC) SAMPLES

BEARING	100. M	200. M	400. M	600. M
	GLN	CONC	GLN	CONC
96.	76	2.75E-06	136	0.00E+00
144.	84	2.68E-06	144	0.00E+00
150.	85	4.34E-06	145	0.00E+00
156.	86	3.81E-05	146	0.00E+00
168.	88	8.15E-07	148	0.00E+00
174.	89	3.38E-06	149	0.00E+00
180.	90	5.07E-06	150	0.00E+00
186.	91	7.73E-06	151	0.00E+00
192.	92	5.42E-06	152	0.00E+00
198.	93	3.86E-06	153	4.93E-06
204.	94	8.94E-05	154	7.02E-06
210.	95	8.76E-05	155	3.45E-05
216.	96	8.52E-05	156	4.58E-06
222.	97	2.28E-05	157	7.16E-05
228.	98	0.00E+00	159	8.52E-05
234.	99	7.97E-08	159	5.06E-04

SMUD TEST 17 NRC STAB G 10/27/75 2205-2305 PST

GAS S AVERAGE WINDS: SPEED 2.0 M/S ; DIRECTION 50. DEGREES
SOURCE STRENGTH 0.2067 GM/S RELEASED FROM GROUND 17

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
240.	100	2.39E-06	160	7.02E-04	220	4.51E-04	280	2.12E-05
246.	101	1.07E-03	161	2.68E-05	221	1.11E-04	281	0.00E+00
252.	102	1.23E-03	162	1.64E-04	222	1.71E-07	282	0.00E+00
258.	103	4.04E-04	163	6.29E-06	223	5.93E-07	283	4.23E-06
264.	104	1.25E-03	164	0.00E+00	224	1.39E-05	284	2.66E-07
270.	105	1.13E-03	165	7.31E-05	225	0.00E+00	285	0.00E+00
276.	106	1.17E-03	166	4.37E-06	226	9.30E-06	286	0.00E+00
282.	107	1.20E-03	167	0.00E+00	227	0.00E+00	287	0.00E+00
288.	108	6.15E-04	168	0.00E+00	228	0.00E+00	288	0.00E+00
294.	109	2.49E-04	169	0.00E+00	229	0.00E+00	289	0.00E+00
300.	110	3.32E-06	170	0.00E+00	230	0.00E+00	290	0.00E+00
306.	111	1.01E-06	171	0.00E+00	231	0.00E+00	291	0.00E+00
318.	113	1.61E-06	173	0.00E+00	233	0.00E+00	293	0.00E+00
324.	114	3.32E-07	174	0.00E+00	234	0.00E+00	294	0.00E+00
330.	115	1.37E-06	175	0.00E+00	235	0.00E+00	295	0.00E+00
348.	118	4.67E-07	178	0.00E+00	238	0.00E+00	298	0.00E+00
354.	119	4.21E-06	179	0.00E+00	239	0.00E+00	299	0.00E+00

MISCELLANEOUS SAMPLES

GROUP	GROUP 1		GROUP 2		GROUP 3		GROUP 4	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	7.63E-07	8	1.14E-05	15	4.25E-03	401	2.78E-05	
2	2.85E-06	9	5.07E-05	16	0.00E+00	402	1.00E-06	
3	6.70E-07	10	7.72E-05	17	5.91E-04	403	2.47E-05	
4	8.24E-07	11	4.57E-05	18	1.50E-07	0	0.00E+00	
5	0.00E+00	12	1.14E-05	19	4.11E-05	0	0.00E+00	
6	0.00E+00	13	1.45E-03	0	0.00E+00	0	0.00E+00	
7	4.16E-06	14	1.59E-05	0	0.00E+00	0	0.00E+00	

GAS F AVERAGE WINDS: SPEED 2.0 M/S ; DIRECTION 50. DEGREES
SOURCE STRENGTH 1.0630 GM/S RELEASED FROM GROUND 5

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
60.	70	1.87E-06	130	0.00E+00	190	0.00E+00	250	0.00E+00
66.	71	5.00E-06	131	0.00E+00	191	0.00E+00	251	0.00E+00
72.	72	2.01E-05	132	0.00E+00	192	0.00E+00	252	0.00E+00
84.	74	1.07E-05	134	0.00E+00	194	0.00E+00	254	0.00E+00
96.	76	1.71E-05	136	0.00E+00	196	0.00E+00	256	0.00E+00
114.	79	1.01E-05	139	3.92E-06	199	0.00E+00	259	0.00E+00

SMUD TEST 17 NRC STAB G 10/27/75 2205-2305 PST

GAS F AVERAGE WINDS: SPEED 2.0 M/S ; DIRECTION 50. DEGREES
SOURCE STRENGTH 1.0630 GM/S RELEASED FROM GROUND 5

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M	200. M	400. M	800. M				
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
120.	80	0.00E+00	140	6.99E-06	200	0.00E+00	260	0.00E+00
126.	81	8.15E-06	141	0.00E+00	201	0.00E+00	261	0.00E+00
132.	82	0.00E+00	142	3.90E-06	202	0.00E+00	262	0.00E+00
138.	83	4.57E-06	143	7.65E-06	203	0.00E+00	263	0.00E+00
144.	84	6.53E-04	144	2.68E-06	204	0.00E+00	264	0.00E+00
150.	85	2.51E-04	145	1.02E-06	205	0.00E+00	265	0.00E+00
156.	86	4.99E-05	146	0.00E+00	206	0.00E+00	266	0.00E+00
162.	87	4.31E-04	147	2.07E-05	207	0.00E+00	267	0.00E+00
168.	88	4.13E-04	148	7.25E-05	208	0.00E+00	268	0.00E+00
174.	89	3.92E-04	149	4.62E-05	209	0.00E+00	269	0.00E+00
180.	90	4.27E-04	150	2.70E-04	210	0.00E+00	270	0.00E+00
186.	91	4.49E-04	151	6.42E-05	211	0.00E+00	271	9.38E-06
192.	92	1.69E-04	152	1.21E-05	212	4.53E-05	272	0.00E+00
198.	93	3.73E-04	153	2.10E-04	213	9.29E-05	273	0.00E+00
204.	94	9.73E-05	154	1.70E-04	214	1.35E-04	274	0.00E+00
210.	95	1.02E-04	155	2.15E-05	215	8.82E-05	275	1.70E-05
216.	96	8.99E-05	156	1.15E-05	216	1.56E-04	276	2.18E-05
222.	97	1.15E-04	157	0.00E+00	217	8.74E-05	277	6.60E-05
228.	98	0.00E+00	158	3.04E-05	218	1.80E-05	278	9.34E-06
234.	99	0.00E+00	159	0.00E+00	219	3.99E-06	279	3.48E-05
240.	100	1.70E-06	160	0.00E+00	220	0.00E+00	280	4.68E-05
246.	101	0.00E+00	161	0.00E+00	221	0.00E+00	281	1.18E-06
258.	103	0.00E+00	163	1.52E-06	223	1.46E-06	283	1.21E-05
264.	104	0.00E+00	164	1.19E-06	224	0.00E+00	284	0.00E+00
276.	106	0.00E+00	166	2.67E-06	226	0.00E+00	286	7.67E-06
282.	107	0.00E+00	167	0.00E+00	227	1.06E-06	287	1.11E-05
288.	108	0.00E+00	168	0.00E+00	228	1.07E-06	288	2.03E-06
294.	109	0.00E+00	169	0.00E+00	229	1.31E-06	289	1.11E-06
300.	110	6.00E-06	170	2.44E-06	230	1.28E-07	290	1.11E-06
306.	111	0.00E+00	171	1.83E-06	231	0.00E+00	291	0.00E+00
318.	113	3.91E-06	173	0.00E+00	233	0.00E+00	293	0.00E+00
348.	118	8.03E-06	178	0.00E+00	238	0.00E+00	298	0.00E+00
354.	119	1.14E-05	179	0.00E+00	239	0.00E+00	299	0.00E+00

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	3.53E-06	8	7.25E-04	15	0.00E+00	401	5.04E-04
2	7.26E-06	9	6.36E-04	16	3.86E-02	402	2.60E-04
3	1.69E-05	10	4.45E-04	17	0.00E+00	403	1.23E-04
4	1.24E-04	11	4.51E-04	18	0.00E+00	0	0.00E+00
5	0.00E+00	12	1.74E-05	19	2.35E-05	0	0.00E+00

SMUD TEST 17 NRC STAB G 10/27/75 2205-2305 PST

GAS F AVERAGE WINDS: SPEED 2.0 M/S ; DIRECTION 50. DEGREES
SOURCE STRENGTH 1.0630 GM/S RELEASED FROM GROUND 5

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
6	3.95E-03	13	0.00E+00	0	0.00E+00	0	0.00E+00
7	1.82E-03	14	2.35E-05	0	0.00E+00	0	0.00E+00

SMUD TEST 18 NRC STAB F 10/28/75 1812-1912 PST

GAS S AVERAGE WINDS: SPEED 0.7 M/S ; DIRECTION 251. DEGREES
SOURCE STRENGTH 0.1758 GM/S RELEASED FROM GROUND 17

DOWNTWIND DISTANCE(ARC) SAMPLES

BEARING	100. M	200. M	400. M	800. M
	GLN	CONC	GLN	CONC
6.	61	3.64E-07	121	0.00E+00
12.	62	0.00E+00	122	3.77E-06
18.	63	5.13E-06	123	0.00E+00
24.	64	4.41E-06	124	0.00E+00
30.	65	2.51E-07	125	0.00E+00
36.	66	1.25E-07	126	7.74E-07
42.	67	0.00E+00	127	2.17E-06
48.	68	0.00E+00	128	2.11E-06
54.	69	1.99E-06	129	0.00E+00
60.	70	1.98E-06	130	1.45E-06
66.	71	3.37E-06	131	1.20E-06
72.	72	2.13E-06	132	6.97E-07
78.	73	1.91E-06	133	6.44E-07
84.	74	1.87E-05	134	7.58E-07
90.	75	1.49E-06	135	5.87E-07
96.	76	1.33E-06	136	0.00E+00
102.	77	7.56E-07	137	0.00E+00
108.	78	1.18E-06	138	1.28E-07
114.	79	2.02E-06	139	5.02E-07
120.	80	6.00E-07	140	0.00E+00
126.	81	1.89E-06	141	0.00E+00
138.	83	4.24E-06	143	0.00E+00
144.	84	3.42E-06	144	3.62E-07
150.	85	2.35E-07	145	5.59E-07
156.	86	5.22E-07	145	3.92E-07
162.	87	2.99E-06	147	0.00E+00
168.	88	4.45E-07	148	0.00E+00
174.	89	0.00E+00	149	3.06E-07
180.	90	1.11E-06	150	2.32E-07
186.	91	1.18E-06	151	1.37E-07

SMUD TEST 18 NRC STAB F 10/28/75 1812-1912 PST

GAS S AVERAGE WINDS: SPEED 0.7 M/S ; DIRECTION 251. DEGREES
SOURCE STRENGTH 0.1758 GM/S RELEASED FROM GROUND 17

BEARING	DOWNWIND DISTANCE(ARC)				SAMPLES	
	100. M	200. M	400. M	800. M	GLN	CONC
192.	92	0.00E+00	152	0.00E+00	212	6.73E-08
198.	93	4.64E-07	153	0.00E+00	213	0.00E+00
204.	94	5.14E-06	154	0.00E+00	214	0.00E+00
210.	95	5.68E-06	155	2.93E-06	215	0.00E+00
216.	96	0.00E+00	156	3.76E-06	216	0.00E+00
222.	97	4.13E-06	157	6.84E-06	217	0.00E+00
228.	98	5.99E-05	158	0.00E+00	218	0.00E+00
234.	99	7.56E-06	159	0.00E+00	219	0.00E+00
240.	100	0.00E+00	160	2.27E-06	220	1.00E-06
246.	101	2.77E-06	161	0.00E+00	221	4.82E-07
252.	102	1.64E-05	162	2.56E-06	222	0.00E+00
258.	103	1.25E-05	163	3.41E-06	223	1.65E-07
264.	104	7.51E-06	164	3.14E-06	224	1.25E-07
270.	105	2.09E-05	165	4.07E-06	225	9.45E-07
276.	106	1.55E-05	166	9.47E-06	226	4.34E-07
282.	107	9.08E-06	167	0.00E+00	227	2.46E-07
288.	108	2.30E-05	168	1.06E-05	228	2.56E-07
294.	109	1.50E-05	169	9.05E-06	229	0.00E+00
300.	110	2.19E-05	170	6.46E-06	230	0.00E+00
306.	111	1.67E-05	171	1.11E-06	231	0.00E+00
312.	112	1.09E-05	172	0.00E+00	232	0.00E+00
318.	113	7.07E-06	173	0.00E+00	233	0.00E+00
324.	114	1.23E-05	174	9.35E-07	234	0.00E+00
330.	115	4.24E-06	175	0.00E+00	235	4.14E-07
336.	116	4.44E-06	176	2.44E-07	236	5.43E-07
342.	117	7.22E-06	177	5.67E-06	237	8.27E-07
348.	118	8.02E-06	178	4.15E-06	238	6.44E-07
354.	119	6.49E-06	179	5.35E-06	239	2.12E-06
360.	120	6.31E-06	180	3.80E-06	240	1.06E-06
					300	0.00E+00

TOWER SAMPLES

HEIGHT	TOWER 1		TOWER 2		TOWER 3		TOWER 4	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1.0	311	2.87E-06	321	6.91E-08	331	0.00E+00	341	0.00E+00
30.0	312	1.81E-06	322	3.81E-06	332	1.31E-07	342	0.00E+00
60.0	313	9.95E-05	323	1.96E-06	333	4.07E-07	343	1.81E-08
90.0	314	1.63E-04	324	9.50E-07	334	1.50E-06	344	0.00E+00
120.0	315	0.00E+00	325	3.52E-07	335	9.50E-07	345	0.00E+00
150.0	316	2.23E-06	326	8.24E-07	336	0.00E+00	346	0.00E+00

SMUD TEST 18 MRC STAB F 10/28/75 1812-1912 PST

GAS S AVERAGE WINDS: SPEED 0.7 M/S ;DIRECTION 251. DEGREES
SOURCE STRENGTH 0.1758 GM/S RELEASED FROM GROUND 17

TOWER SAMPLES

HEIGHT TOWER 5

	GLN	CONC
1.0	351	6.83E-07
30.0	352	1.61E-07

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	6.26E-06	8	0.00E+00	15	1.27E-05	401	1.99E-03
2	1.93E-04	9	0.00E+00	16	4.80E-05	402	1.37E-04
3	6.43E-05	10	3.25E-06	17	0.00E+00	403	1.11E-03
4	6.94E-05	11	3.65E-06	18	7.29E-07	0	0.00E+00
5	4.35E-07	12	1.17E-06	19	4.71E-06	0	0.00E+00
6	5.01E-06	13	0.00E+00	0	0.00E+00	0	0.00E+00
7	4.70E-06	14	1.68E-05	0	0.00E+00	0	0.00E+00

GAS F AVERAGE WINDS: SPEED 0.7 M/S ;DIRECTION 251. DEGREES
SOURCE STRENGTH 0.5660 GM/S RELEASED FROM GROUND 5

DOWNTWIND DISTANCE(ARC) SAMPLES

BEARING	100. M	200. M	400. M	800. M
	GLN	CONC	GLN	CONC
6.	61	3.05E-05	121	3.90E-07
12.	62	0.00E+00	122	1.27E-05
18.	63	4.63E-05	123	0.00E+00
24.	64	4.30E-05	124	6.85E-07
30.	65	5.43E-06	125	9.76E-07
36.	66	4.65E-06	126	4.44E-06
42.	67	0.00E+00	127	5.77E-06
48.	68	2.85E-06	128	7.73E-06
54.	69	4.21E-05	129	7.29E-07
60.	70	3.93E-05	130	8.11E-06
66.	71	2.70E-05	131	7.42E-06
72.	72	3.61E-05	132	8.82E-06
78.	73	5.69E-05	133	8.56E-06
84.	74	4.99E-05	134	1.12E-05
90.	75	3.74E-05	135	9.66E-06
96.	76	3.88E-05	136	5.26E-06
102.	77	3.19E-06	137	2.10E-06
108.	78	1.00E-05	138	2.95E-06
114.	79	4.59E-05	139	9.85E-06
120.	80	5.06E-06	140	1.76E-05
126.	81	2.20E-05	141	1.32E-05

SMUD TEST 18 NRC STAB F 10/28/75 1812-1912 PST

GAS F AVERAGE WINDS: SPEED 0.7 M/S ; DIRECTION 251. DEGREES
SOURCE STRENGTH 0.9660 GM/S RELEASED FROM GROUND 5

BEARING	DOWNWIND DISTANCE(ARC) SAMPLES							
	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
132.	82	0.00E+00	142	9.79E-06	202	2.50E-06	262	0.00E+00
138.	83	4.97E-05	143	9.75E-06	203	0.00E+00	263	0.00E+00
144.	84	5.03E-05	144	1.64E-05	204	0.00E+00	264	0.00E+00
150.	85	5.87E-06	145	1.20E-05	205	6.30E-07	265	0.00E+00
156.	86	8.05E-06	146	1.05E-05	206	0.00E+00	266	0.00E+00
162.	87	1.12E-04	147	1.50E-06	207	1.33E-06	267	0.00E+00
168.	88	5.53E-05	148	3.17E-06	208	0.00E+00	268	0.00E+00
174.	89	2.53E-05	149	5.93E-06	209	0.00E+00	269	0.00E+00
180.	90	1.27E-04	150	3.81E-06	210	0.00E+00	270	0.00E+00
186.	91	7.00E-05	151	1.60E-06	211	1.63E-07	271	0.00E+00
192.	92	0.00E+00	152	4.71E-06	212	2.19E-06	272	0.00E+00
198.	93	1.64E-05	153	6.01E-06	213	8.80E-07	273	0.00E+00
204.	94	4.47E-05	154	0.00E+00	214	0.00E+00	274	0.00E+00
210.	95	3.99E-05	155	7.77E-06	215	2.37E-06	275	0.00E+00
216.	96	0.00E+00	156	1.17E-05	216	0.00E+00	276	0.00E+00
222.	97	2.44E-05	157	1.98E-05	217	1.32E-06	277	0.00E+00
228.	98	2.83E-05	158	0.00E+00	218	0.00E+00	278	0.00E+00
234.	99	2.26E-05	159	4.05E-06	219	0.00E+00	279	0.00E+00
240.	100	1.69E-06	160	1.62E-06	220	1.81E-06	280	0.00E+00
246.	101	3.53E-06	161	1.21E-06	221	7.12E-07	281	0.00E+00
252.	102	1.65E-05	162	4.57E-06	222	0.00E+00	282	0.00E+00
258.	103	1.21E-05	163	2.66E-06	223	0.00E+00	283	0.00E+00
264.	104	9.51E-06	164	2.42E-06	224	0.00E+00	284	0.00E+00
270.	105	2.12E-05	165	2.62E-06	225	1.69E-06	285	0.00E+00
276.	106	1.62E-05	166	4.28E-06	226	6.66E-08	286	0.00E+00
282.	107	6.73E-06	167	0.00E+00	227	0.00E+00	287	0.00E+00
288.	108	2.41E-05	168	4.47E-06	228	6.57E-07	288	0.00E+00
294.	109	1.49E-05	169	2.88E-06	229	7.79E-07	289	0.00E+00
300.	110	2.24E-05	170	1.52E-06	230	0.00E+00	290	0.00E+00
306.	111	2.42E-05	171	2.03E-06	231	3.03E-06	291	0.00E+00
312.	112	2.22E-05	172	0.00E+00	232	0.00E+00	292	8.94E-07
318.	113	1.52E-05	173	0.00E+00	233	1.05E-06	293	0.00E+00
324.	114	3.36E-05	174	2.67E-06	234	0.00E+00	294	1.35E-06
330.	115	2.72E-05	175	2.11E-06	235	1.79E-06	295	2.03E-06
336.	116	3.73E-05	176	0.00E+00	236	0.00E+00	296	0.00E+00
342.	117	4.25E-05	177	0.00E+00	237	2.16E-06	297	1.25E-06
348.	118	5.34E-05	178	7.11E-06	238	2.70E-06	298	0.00E+00
354.	119	4.97E-05	179	1.31E-05	239	6.45E-06	299	6.09E-07
360.	120	5.72E-05	180	1.62E-05	240	2.87E-06	300	0.00E+00

SMUD TEST 18 NRC STAB F 10/28/75 1812-1912 PST

GAS F AVERAGE WINDS: SPEED 0.7 M/S ; DIRECTION 251. DEGREES
SOURCE STRENGTH 0.9660 GM/S RELEASED FROM GROUND 5

TOWER SAMPLES

HEIGHT	TOWER 1		TOWER 2		TOWER 3		TOWER 4	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1.0	311	9.19E-06	321	2.64E-06	331	0.00E+00	341	0.00E+00
30.0	312	3.98E-05	322	1.31E-05	332	1.06E-05	342	0.00E+00
60.0	313	8.89E-05	323	1.76E-05	333	1.05E-05	343	0.00E+00
90.0	314	1.56E-04	324	2.18E-06	334	7.75E-06	344	0.00E+00
120.0	315	0.00E+00	325	0.00E+00	335	2.50E-06	345	0.00E+00
150.0	316	6.21E-06	326	9.98E-06	336	0.00E+00	346	0.00E+00
HEIGHT	TOWER 5		GLN	CONC				

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	2.77E-05	8	1.23E-06	15	1.41E-05	401	0.00E+00
2	1.78E-04	9	3.33E-06	16	2.43E-05	402	0.00E+00
3	2.52E-04	10	7.41E-05	17	0.00E+00	403	0.00E+00
4	2.11E-03	11	4.93E-05	18	1.10E-06	0	0.00E+00
5	2.49E-03	12	4.78E-07	19	2.51E-05	0	0.00E+00
6	1.70E-04	13	0.00E+00	0	0.00E+00	0	0.00E+00
7	1.67E-04	14	1.81E-05	0	0.00E+00	0	0.00E+00

SMUD TEST 19 NRC STAB E 10/29/75 1532-1632 PST

GAS S AVERAGE WINDS: SPEED 1.1 M/S ; DIRECTION 239. DEGREES
SOURCE STRENGTH 0.1780 GM/S RELEASED FROM GROUND 17

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M	200. M	400. M	800. M
	GLN CONC	GLN CONC	GLN CONC	GLN CONC
6.	61 0.00E+00	121 6.59E-08	181 0.00E+00	241 4.10E-07
12.	62 0.00E+00	122 7.22E-07	182 0.00E+00	242 6.07E-07
18.	63 0.00E+00	123 6.42E-07	183 3.57E-07	243 4.97E-07
24.	64 4.25E-07	124 7.80E-07	184 0.00E+00	244 0.00E+00
30.	65 7.49E-07	125 4.55E-07	185 9.51E-07	245 0.00E+00
36.	66 1.01E-06	126 8.44E-07	186 5.38E-07	246 0.00E+00
42.	67 0.00E+00	127 0.00E+00	187 7.19E-07	247 0.00E+00
48.	68 3.14E-06	128 0.00E+00	188 1.05E-06	248 0.00E+00
54.	69 3.14E-06	129 8.28E-07	189 1.41E-06	249 5.05E-07
60.	70 3.31E-06	130 1.64E-06	190 1.51E-06	250 0.00E+00
66.	71 5.17E-06	131 1.50E-06	191 2.78E-06	251 4.68E-06
72.	72 6.04E-06	132 8.67E-06	192 8.36E-06	252 6.20E-06
78.	73 7.85E-06	133 1.15E-05	193 7.34E-07	253 7.41E-06
84.	74 9.39E-06	134 1.69E-05	194 1.80E-05	254 0.00E+00
90.	75 0.00E+00	135 1.91E-05	195 0.00E+00	255 7.05E-06
96.	76 1.14E-05	136 1.64E-05	196 2.39E-05	256 1.61E-06
102.	77 3.42E-06	137 9.68E-06	197 1.10E-06	257 0.00E+00
108.	78 3.12E-05	138 0.00E+00	198 0.00E+00	258 0.00E+00
114.	79 4.23E-05	139 5.10E-06	199 7.01E-06	259 0.00E+00
120.	80 6.83E-05	140 8.05E-07	200 6.72E-07	260 0.00E+00
126.	81 3.84E-05	141 1.39E-07	201 0.00E+00	261 0.00E+00
132.	82 0.00E+00	142 3.12E-07	202 2.77E-06	262 0.00E+00
138.	83 9.91E-05	143 9.91E-07	203 2.56E-06	263 0.00E+00
144.	84 0.00E+00	144 4.21E-07	204 1.73E-06	264 0.00E+00
150.	85 9.49E-05	145 4.23E-07	205 0.00E+00	265 0.00E+00
156.	86 9.54E-05	146 4.59E-07	206 0.00E+00	266 0.00E+00
162.	87 1.03E-04	147 2.75E-07	207 0.00E+00	267 0.00E+00
168.	88 8.35E-05	148 1.80E-07	208 0.00E+00	268 0.00E+00
174.	89 5.20E-05	149 5.87E-07	209 0.00E+00	269 0.00E+00
180.	90 2.63E-05	150 1.17E-07	210 0.00E+00	270 0.00E+00
186.	91 1.04E-05	151 0.00E+00	211 0.00E+00	271 0.00E+00
192.	92 5.13E-06	152 0.00E+00	212 0.00E+00	272 0.00E+00
204.	94 1.24E-05	154 0.00E+00	214 0.00E+00	274 0.00E+00
210.	95 1.19E-05	155 0.00E+00	215 0.00E+00	275 0.00E+00
216.	96 7.43E-06	156 0.00E+00	216 0.00E+00	276 0.00E+00
222.	97 9.29E-07	157 0.00E+00	217 0.00E+00	277 0.00E+00
276.	106 2.05E-07	166 0.00E+00	226 0.00E+00	286 0.00E+00
294.	109 9.31E-07	169 0.00E+00	229 0.00E+00	289 0.00E+00
312.	112 1.80E-07	172 0.00E+00	232 0.00E+00	292 0.00E+00
318.	113 3.54E-07	173 0.00E+00	233 0.00E+00	293 0.00E+00

SMUD TEST 19 NRC STAB E 10/29/75 1532-1632 PST

GAS S AVERAGE WINDS: SPEED 1.1 M/S ; DIRECTION 239. DEGREES
SOURCE STRENGTH 0.1720 GM/S RELEASED FROM GROUND 17

TOWER SAMPLES

HEIGHT	TOWER 1		TOWER 2		TOWER 3	
	GLN	CONC	GLN	CONC	GLN	CONC
30.0	312	9.10E-06	322	0.00E+00	332	1.44E-06
60.0	313	1.18E-05	323	0.00E+00	333	2.29E-06
90.0	314	1.28E-05	324	8.76E-07	334	0.00E+00
120.0	315	1.47E-05	325	9.38E-06	335	1.95E-06
150.0	316	1.54E-05	326	0.00E+00	336	3.66E-06

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	1.51E-06	8	1.66E-04	15	0.00E+00	401	3.05E-04
2	3.56E-03	9	4.91E-05	16	9.06E-07	402	3.47E-04
3	5.87E-04	10	1.53E-05	17	0.00E+00	403	1.46E-04
4	0.00E+00	11	9.40E-06	18	0.00E+00	0	0.00E+00
5	3.09E-04	12	0.00E+00	19	0.00E+00	0	0.00E+00
6	3.08E-04	13	0.00E+00	0	0.00E+00	0	0.00E+00
7	2.70E-04	14	0.00E+00	0	0.00E+00	0	0.00E+00

GAS F AVERAGE WINDS: SPEED 1.1 M/S ; DIRECTION 239. DEGREES
SOURCE STRENGTH 0.9860 GM/S RELEASED FROM GROUND 5

DOWNDOWN DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
6.	61	1.30E-06	121	0.00E+00	181	0.00E+00	241	1.62E-06
12.	62	0.00E+00	122	2.94E-06	182	0.00E+00	242	0.00E+00
18.	63	0.00E+00	123	2.99E-06	183	0.00E+00	243	2.81E-06
24.	64	1.63E-06	124	5.66E-06	184	0.00E+00	244	0.00E+00
30.	65	2.74E-06	125	1.89E-06	185	1.92E-06	245	2.92E-06
36.	66	2.97E-06	126	3.44E-06	186	0.00E+00	246	1.44E-06
42.	67	0.00E+00	127	0.00E+00	187	2.19E-06	247	2.02E-06
48.	68	4.67E-06	128	0.00E+00	188	0.00E+00	248	0.00E+00
54.	69	1.58E-06	129	1.00E-06	189	2.41E-06	249	0.00E+00
60.	70	3.91E-06	130	3.98E-06	190	1.96E-06	250	0.00E+00
66.	71	5.61E-06	131	2.39E-06	191	2.98E-06	251	5.19E-06
72.	72	4.84E-06	132	7.41E-06	192	7.71E-06	252	1.36E-05
78.	73	5.60E-06	133	7.49E-06	193	0.00E+00	253	1.42E-05
84.	74	1.02E-05	134	1.22E-05	194	1.36E-05	254	0.00E+00
90.	75	2.87E-06	135	1.55E-05	195	0.00E+00	255	1.42E-05
96.	76	1.10E-05	136	5.15E-06	196	2.12E-05	256	3.90E-06
102.	77	0.20E-06	137	7.94E-06	197	0.00E+00	257	0.00E+00
108.	78	1.53E-05	138	0.00E+00	198	0.00E+00	258	0.00E+00

SMUD TEST 19 NRC STAB E 10/29/75 1532-1632 PST

GAS F AVERAGE WINDS: SPEED 1.1 M/S ; DIRECTION 239. DEGREES
SOURCE STRENGTH 0.9960 GM/S RELEASED FROM GROUND 5

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M	200. M	400. M	800. M
	GLN	CONC	GLN	CONC
114.	79	2.01E-05	139	3.00E-06
120.	80	2.93E-05	140	1.75E-06
126.	81	4.37E-05	141	0.00E+00
132.	82	0.00E+00	142	2.13E-06
138.	83	4.02E-05	143	2.26E-06
144.	84	0.00E+00	144	1.42E-06
150.	85	1.00E-04	145	5.57E-06
156.	86	1.15E-04	146	1.03E-05
162.	87	1.27E-04	147	4.69E-06
168.	88	1.21E-04	148	1.35E-06
174.	89	8.12E-05	149	2.41E-06
180.	90	2.77E-05	150	2.68E-06
186.	91	1.46E-05	151	0.00E+00
192.	92	7.94E-06	152	0.00E+00
204.	94	1.19E-05	154	0.00E+00
210.	95	1.13E-05	155	0.00E+00
216.	96	4.92E-06	156	0.00E+00
222.	97	1.70E-06	157	0.00E+00
234.	99	2.99E-07	159	0.00E+00
246.	101	4.16E-06	161	0.00E+00
258.	103	1.91E-05	163	0.00E+00
276.	106	4.55E-07	166	0.00E+00
282.	107	4.31E-06	167	0.00E+00
294.	109	2.33E-06	169	0.00E+00
312.	112	1.58E-06	172	0.00E+00
318.	113	5.89E-07	173	0.00E+00
342.	117	1.49E-06	177	0.00E+00
354.	119	1.86E-06	179	0.00E+00
360.	120	0.00E+00	180	2.42E-06

TOWER SAMPLES

HEIGHT	TOWER 1		TOWER 2	
	GLN	CONC	GLN	CONC
30.0	312	4.15E-05	322	0.00E+00
60.0	313	2.83E-05	323	1.15E-04
90.0	314	3.94E-05	324	3.55E-06
120.0	315	3.55E-05	325	1.58E-05
150.0	316	3.58E-05	326	0.00E+00

SMUD TEST 19 NRC STAB E 10/29/75 1532-1632 PST

GAS F AVERAGE WINDS: SPEED 1.1 M/S ; DIRECTION 239. DEGREES
SOURCE STRENGTH 0.9860 GM/S RELEASED FROM GROUND 5

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	3.07E-06	8	2.10E-04	15	3.97E-06	401	6.59E-04
2	0.00E+00	9	5.15E-05	16	4.19E-07	402	0.00E+00
3	2.71E-04	10	1.33E-05	17	0.00E+00	403	8.22E-05
4	0.00E+00	11	1.01E-05	18	1.29E-06	0	0.00E+00
5	4.75E-03	12	6.49E-07	19	0.00E+00	0	0.00E+00
6	1.27E-03	13	3.40E-06	0	0.00E+00	0	0.00E+00
7	7.07E-04	14	0.00E+00	0	0.00E+00	0	0.00E+00

SMUD TEST 20 NRC STAB G 10/29/75 1844-1944 PST

GAS S AVERAGE WINDS: SPEED 2.1 M/S ; DIRECTION 999. DEGREES
SOURCE STRENGTH 0.1890 GM/S RELEASED FROM GROUND 17

DOWNTWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
6.	61	1.27E-06	121	0.00E+00	181	0.00E+00	241	0.00E+00
12.	62	2.50E-07	122	0.00E+00	182	0.00E+00	242	0.00E+00
18.	63	4.91E-07	123	0.00E+00	183	0.00E+00	243	0.00E+00
24.	64	1.16E-07	124	0.00E+00	184	0.00E+00	244	0.00E+00
144.	84	5.93E-07	144	0.00E+00	204	0.00E+00	264	0.00E+00
150.	85	4.95E-07	145	0.00E+00	205	0.00E+00	265	0.00E+00
162.	87	7.47E-07	147	0.00E+00	207	0.00E+00	267	0.00E+00
168.	88	5.33E-07	148	0.00E+00	208	0.00E+00	268	0.00E+00
180.	90	4.47E-07	150	0.00E+00	210	0.00E+00	270	0.00E+00
192.	92	4.94E-07	152	3.70E-07	212	0.00E+00	272	0.00E+00
198.	93	0.00E+00	153	7.08E-07	213	0.00E+00	273	0.00E+00
216.	96	0.00E+00	156	3.00E-06	216	2.54E-07	276	0.00E+00
222.	97	0.00E+00	157	3.36E-06	217	0.00E+00	277	0.00E+00
240.	100	3.78E-05	160	0.00E+00	220	0.00E+00	280	0.00E+00
246.	101	8.66E-04	161	6.99E-06	221	0.00E+00	281	0.00E+00
252.	102	1.38E-03	162	0.00E+00	222	0.00E+00	282	0.00E+00
258.	103	1.11E-03	163	4.54E-05	223	2.72E-05	283	0.00E+00
264.	104	1.34E-03	164	1.62E-05	224	3.89E-05	284	0.00E+00
270.	105	1.28E-03	165	2.12E-04	225	4.17E-05	285	1.09E-05
276.	106	1.00E-03	166	2.24E-05	226	3.85E-05	286	1.21E-05
282.	107	8.71E-04	167	0.00E+00	227	2.70E-05	287	0.00E+00
288.	108	2.86E-04	168	3.36E-05	228	2.14E-05	288	1.30E-05
294.	109	6.17E-05	169	9.95E-06	229	0.00E+00	289	0.00E+00
300.	110	1.21E-06	170	2.95E-06	230	3.22E-06	290	1.14E-06
306.	111	0.00E+00	171	1.42E-06	231	0.00E+00	291	0.00E+00

SMUD TEST 20 NRC STAB G 10/29/75 1844-1944 PST

GAS S AVERAGE WINDS: SPEED 2.1 M/S ; DIRECTION 999. DEGREES
SOURCE STRENGTH 0.1890 GM/S RELEASED FROM GROUND 17

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M	200. M	400. M	800. M
	GLN	CONC	GLN	CONC
318.	113	8.24E-07	173	0.00E+00
324.	114	0.00E+00	174	2.92E-07
336.	116	0.00E+00	176	1.87E-06
348.	118	4.52E-07	178	0.00E+00
354.	119	6.11E-06	179	0.00E+00
			233	0.00E+00
			234	0.00E+00
			236	0.00E+00
			238	0.00E+00
			239	0.00E+00
			293	0.00E+00
			294	0.00E+00
			296	0.00E+00
			298	0.00E+00
			299	0.00E+00

MISCELLANEOUS SAMPLES

GROUP 1	GROUP 2	GROUP 3	GROUP 4
GLN	CONC	GLN	CONC
1	0.00E+00	8	0.00E+00
2	9.76E-05	9	0.00E+00
3	3.53E-06	10	3.25E-07
4	0.00E+00	11	1.01E-06
5	0.00E+00	12	0.00E+00
6	6.26E-07	13	1.67E-03
7	9.14E-07	14	1.97E-03
		15	3.13E-03
		16	3.36E-03
		17	0.00E+00
		18	0.00E+00
		19	2.38E-06
		0	0.00E+00
		0	0.00E+00
		0	0.00E+00

GAS F AVERAGE WINDS: SPEED 2.1 M/S ; DIRECTION 999. DEGREES
SOURCE STRENGTH 1.0468 GM/S RELEASED FROM GROUND 5

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M	200. M	400. M	800. M
	GLN	CONC	GLN	CONC
6.	61	3.84E-05	121	0.00E+00
12.	62	3.25E-05	122	0.00E+00
18.	63	3.98E-05	123	0.00E+00
24.	64	2.87E-05	124	0.00E+00
30.	65	3.35E-05	125	0.00E+00
144.	84	8.76E-05	144	0.00E+00
150.	85	7.66E-05	145	0.00E+00
162.	87	9.97E-05	147	0.00E+00
168.	88	1.14E-04	148	0.00E+00
174.	89	9.56E-05	149	0.00E+00
180.	90	1.02E-04	150	0.00E+00
192.	92	7.32E-05	152	1.69E-06
198.	93	0.00E+00	153	8.86E-05
204.	94	8.32E-05	154	1.56E-04
210.	95	0.00E+00	155	1.25E-04
216.	96	6.41E-05	156	1.62E-04
222.	97	5.73E-05	157	2.42E-04
228.	98	5.60E-05	158	3.05E-04
			210	0.00E+00
			212	2.40E-05
			213	0.00E+00
			214	0.00E+00
			215	0.00E+00
			216	1.34E-05
			217	1.03E-05
			218	0.00E+00
			241	0.00E+00
			242	0.00E+00
			243	0.00E+00
			244	0.00E+00
			245	0.00E+00
			264	0.00E+00
			265	0.00E+00
			267	0.00E+00
			268	0.00E+00
			269	0.00E+00
			270	0.00E+00
			272	0.00E+00
			273	0.00E+00
			274	0.00E+00
			275	0.00E+00
			276	0.00E+00
			277	0.00E+00
			278	0.00E+00

SMUD TEST 20 NRC STAB G 10/29/75 1844-1944 PST

GAS F AVERAGE WINDS: SPEED 2.1 M/S ; DIRECTION 999. DEGREES
SOURCE STRENGTH 1.0468 GM/S RELEASED FROM GROUND 5

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
234.	99	5.62E-05	159	2.21E-04	219	1.43E-06	279	0.00E+00
240.	100	6.37E-05	160	0.00E+00	220	1.05E-05	280	0.00E+00
246.	101	0.00E+00	161	2.92E-05	221	2.95E-05	281	0.00E+00
252.	102	0.00E+00	162	3.57E-06	222	0.00E+00	282	3.32E-06
258.	103	0.00E+00	163	6.68E-05	223	1.32E-05	283	1.78E-06
264.	104	0.00E+00	164	9.29E-06	224	3.80E-05	284	5.13E-06
270.	105	0.00E+00	165	1.44E-04	225	6.27E-05	285	1.46E-05
276.	106	2.06E-04	166	4.91E-05	226	3.43E-05	286	7.57E-06
282.	107	0.00E+00	167	0.00E+00	227	9.10E-05	287	4.31E-06
288.	108	2.57E-04	168	1.47E-04	228	5.99E-05	288	3.00E-05
294.	109	2.27E-04	169	1.16E-04	229	4.31E-06	289	0.00E+00
300.	110	1.25E-04	170	8.27E-05	230	1.80E-05	290	5.96E-06
306.	111	8.90E-05	171	4.34E-05	231	1.09E-05	291	0.00E+00
312.	112	6.92E-05	172	0.00E+00	232	5.16E-06	292	0.00E+00
318.	113	4.91E-05	173	2.90E-05	233	4.11E-06	293	0.00E+00
324.	114	1.09E-05	174	5.00E-06	234	5.55E-06	294	0.00E+00
330.	115	2.79E-05	175	7.16E-06	235	0.00E+00	295	0.00E+00
336.	116	0.00E+00	176	5.53E-06	236	0.00E+00	296	0.00E+00
342.	117	3.10E-05	177	4.68E-06	237	2.25E-06	297	0.00E+00
348.	118	3.29E-05	178	0.00E+00	238	3.32E-06	298	0.00E+00
354.	119	5.66E-05	179	0.00E+00	239	1.66E-06	299	0.00E+00
360.	120	7.12E-05	180	0.00E+00	240	0.00E+00	300	0.00E+00

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
2	3.03E-03	9	1.41E-04	16	0.00E+00	402	0.00E+00
3	5.88E-03	10	9.61E-05	17	0.00E+00	403	0.00E+00
4	7.43E-03	11	2.16E-06	18	5.79E-04	0	0.00E+00
5	6.02E-04	12	0.00E+00	19	4.81E-04	0	0.00E+00
6	4.57E-04	13	0.00E+00	0	0.00E+00	0	0.00E+00
7	3.19E-04	14	0.00E+00	0	0.00E+00	0	0.00E+00

SMUD TEST 21 NRC STAB G 10/29/75 2127-2227 PST
 GAS S AVERAGE WINDS: SPEED 2.2 M/S DIRECTION 262. DEGREES
 SOURCE STRENGTH 0.1798 GM/S RELEASED FROM GROUND 17

DOWNDOWN DISTANCE(ARC) SAMPLES

BEARING	GLN	100. M	CONC	GLN	200. M	CONC	GLN	400. M	CONC	GLN	800. M	CONC
6.	61	1.55E-05	121	9.61E-05	122	3.75E-06	123	3.29E-06	124	4.92E-06	125	0.00E+00
12.	62	4.96E-07	122	0.00E+00	123	0.00E+00	124	0.00E+00	125	0.00E+00	126	0.00E+00
18.	63	9.12E-06	123	0.00E+00	124	0.00E+00	125	0.00E+00	126	0.00E+00	127	0.00E+00
24.	64	1.92E-05	124	0.00E+00	125	0.00E+00	126	0.00E+00	127	0.00E+00	128	0.00E+00
30.	65	2.96E-05	125	0.00E+00	126	0.00E+00	127	0.00E+00	128	0.00E+00	129	0.00E+00
36.	66	6.51E-05	126	0.00E+00	127	0.00E+00	128	0.00E+00	129	0.00E+00	130	0.00E+00
42.	67	0.00E+00	127	0.00E+00	128	0.00E+00	129	0.00E+00	130	0.00E+00	131	0.00E+00
48.	68	1.27E-04	128	0.00E+00	129	0.00E+00	130	0.00E+00	131	0.00E+00	132	0.00E+00
54.	69	2.03E-04	129	0.00E+00	130	0.00E+00	131	0.00E+00	132	0.00E+00	133	0.00E+00
60.	70	2.43E-04	130	0.00E+00	131	0.00E+00	132	0.00E+00	133	0.00E+00	134	0.00E+00
66.	71	3.22E-04	131	0.00E+00	132	0.00E+00	133	0.00E+00	134	0.00E+00	135	0.00E+00
72.	72	4.38E-04	132	0.00E+00	133	0.00E+00	134	0.00E+00	135	0.00E+00	136	0.00E+00
78.	73	4.69E-04	133	0.00E+00	134	0.00E+00	135	0.00E+00	136	0.00E+00	137	0.00E+00
84.	74	5.01E-04	134	0.00E+00	135	0.00E+00	136	0.00E+00	137	0.00E+00	138	0.00E+00
90.	75	4.19E-04	135	0.00E+00	136	0.00E+00	137	0.00E+00	138	0.00E+00	139	0.00E+00
96.	76	0.00E+00	136	0.00E+00	137	0.00E+00	138	0.00E+00	139	0.00E+00	140	0.00E+00
102.	77	0.00E+00	137	0.00E+00	138	0.00E+00	139	0.00E+00	140	0.00E+00	141	0.00E+00
108.	78	2.87E-05	138	0.00E+00	139	0.00E+00	140	0.00E+00	141	0.00E+00	142	0.00E+00
114.	79	1.35E-04	139	0.00E+00	140	0.00E+00	141	0.00E+00	142	0.00E+00	143	0.00E+00
120.	80	9.88E-06	140	0.00E+00	141	0.00E+00	142	0.00E+00	143	0.00E+00	144	0.00E+00
126.	81	3.68E-05	141	0.00E+00	142	0.00E+00	143	0.00E+00	144	0.00E+00	145	0.00E+00
128.	103	6.03E-06	143	0.00E+00	144	0.00E+00	145	0.00E+00	146	0.00E+00	147	0.00E+00
264.	104	2.59E-06	145	0.00E+00	146	0.00E+00	147	0.00E+00	148	0.00E+00	149	0.00E+00
270.	105	9.80E-07	146	0.00E+00	147	0.00E+00	148	0.00E+00	149	0.00E+00	150	0.00E+00
276.	106	1.26E-06	147	0.00E+00	148	0.00E+00	149	0.00E+00	150	0.00E+00	151	0.00E+00
282.	107	1.37E-06	148	0.00E+00	149	0.00E+00	150	0.00E+00	151	0.00E+00	152	0.00E+00
312.	112	1.13E-06	152	0.00E+00	153	0.00E+00	154	0.00E+00	155	0.00E+00	156	0.00E+00
318.	113	1.07E-06	153	0.00E+00	154	0.00E+00	155	0.00E+00	156	0.00E+00	157	0.00E+00
324.	114	6.84E-07	154	0.00E+00	155	0.00E+00	156	0.00E+00	157	0.00E+00	158	0.00E+00
330.	115	0.00E+00	155	0.00E+00	156	0.00E+00	157	0.00E+00	158	0.00E+00	159	0.00E+00
336.	116	0.00E+00	156	0.00E+00	157	0.00E+00	158	0.00E+00	159	0.00E+00	160	0.00E+00
342.	117	1.39E-06	157	0.00E+00	158	0.00E+00	159	0.00E+00	160	0.00E+00	161	0.00E+00
348.	118	1.02E-05	158	0.00E+00	159	0.00E+00	160	0.00E+00	161	0.00E+00	162	0.00E+00
354.	119	9.36E-06	159	0.00E+00	160	0.00E+00	161	0.00E+00	162	0.00E+00	163	0.00E+00
360.	120	8.86E-06	160	0.00E+00	161	0.00E+00	162	0.00E+00	163	0.00E+00	164	0.00E+00

SMUD TEST 21 NRC STAB G 10/29/75 2127-2227 PST

GAS S AVERAGE WINDS: SPEED 2.2 M/S ; DIRECTION 262. DEGREES
SOURCE STRENGTH 0.1796 GM/S RELEASED FROM GROUND 17

TOWER SAMPLES

HEIGHT	TOWER 1		TOWER 2		TOWER 3		TOWER 4	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1.0	311	4.02E-06	321	2.81E-06	331	0.00E+00	341	0.00E+00
30.0	312	1.04E-05	322	0.00E+00	332	9.94E-07	342	0.00E+00
60.0	313	0.00E+00	323	1.18E-06	333	0.00E+00	343	0.00E+00
90.0	314	7.54E-06	324	1.82E-06	334	2.50E-07	344	1.16E-06
120.0	315	8.15E-06	325	2.80E-06	335	0.00E+00	345	0.00E+00
150.0	316	6.73E-06	326	0.00E+00	336	0.00E+00	346	4.30E-07

HEIGHT TOWER 5
GLN CONC

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	0.00E+00	8	0.00E+00	15	1.22E-05	401	1.92E-05
2	5.74E-04	9	0.00E+00	16	2.33E-04	402	1.79E-06
3	8.18E-04	10	0.00E+00	17	0.00E+00	403	2.09E-06
4	2.47E-04	11	0.00E+00	18	3.46E-05	0	0.00E+00
5	0.00E+00	12	0.00E+00	19	3.13E-05	0	0.00E+00
6	4.41E-05	13	0.00E+00	0	0.00E+00	0	0.00E+00
7	2.24E-05	14	5.54E-07	0	0.00E+00	0	0.00E+00

GAS F AVERAGE WINDS: SPEED 2.2 M/S ; DIRECTION 262. DEGREES
SOURCE STRENGTH 1.0155 GM/S RELEASED FROM GROUND 5

DOWNTWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
6.	61	5.20E-05	121	1.49E-05	181	8.39E-06	241	0.00E+00
12.	62	0.00E+00	122	1.13E-05	182	0.00E+00	242	2.57E-06
18.	63	1.29E-05	123	1.13E-05	183	1.33E-05	243	0.00E+00
24.	64	4.42E-05	124	1.58E-05	184	3.08E-06	244	0.00E+00
30.	65	5.07E-05	125	0.00E+00	185	0.00E+00	245	0.00E+00
36.	66	6.11E-05	126	1.49E-05	186	0.00E+00	246	0.00E+00
42.	67	0.00E+00	127	2.44E-05	187	1.42E-05	247	0.00E+00
48.	68	4.48E-05	128	0.00E+00	188	0.00E+00	248	0.00E+00
54.	69	8.77E-05	129	0.00E+00	189	0.00E+00	249	2.21E-06
60.	70	1.47E-04	130	1.08E-05	190	1.69E-05	250	8.71E-06
66.	71	1.52E-04	131	6.44E-06	191	1.99E-05	251	7.83E-06
72.	72	2.54E-04	132	5.97E-05	192	1.46E-05	252	8.64E-06
78.	73	3.40E-04	133	8.69E-05	193	2.32E-05	253	6.64E-06
84.	74	4.25E-04	134	0.00E+00	194	4.02E-05	254	0.00E+00
90.	75	4.23E-04	135	5.51E-05	195	3.09E-05	255	1.52E-05

SMUD TEST 21 NRC STAB G 10/29/75 2127-2227 PST

GAS F AVERAGE WINDS: SPEED 2.2 M/S ; DIRECTION 262. DEGREES
SOURCE STRENGTH 1.0155 GM/S RELEASED FROM GROUND 5

BEARING	DOWNWIND DISTANCE(ARC)				SAMPLES	
	100. M	200. M	400. M	800. M	GLN	CONC
96.	76	6.62E-06	136	1.32E-04	196	4.59E-05
102.	77	1.20E-06	137	9.91E-05	197	6.73E-06
108.	78	5.45E-05	138	8.29E-05	198	9.17E-06
114.	79	2.70E-04	139	0.00E+00	199	0.00E+00
120.	80	1.61E-05	140	0.00E+00	200	7.11E-06
126.	81	9.32E-05	141	0.00E+00	201	0.00E+00
138.	83	3.47E-06	143	0.00E+00	203	0.00E+00
246.	101	6.18E-06	161	0.00E+00	221	0.00E+00
252.	102	5.12E-06	162	0.00E+00	222	0.00E+00
258.	103	4.27E-06	163	0.00E+00	223	0.00E+00
264.	104	2.82E-06	164	0.00E+00	224	0.00E+00
270.	105	2.93E-06	165	0.00E+00	225	0.00E+00
282.	107	2.02E-06	167	0.00E+00	227	0.00E+00
288.	108	3.77E-06	168	0.00E+00	228	0.00E+00
300.	110	0.00E+00	170	0.00E+00	230	2.81E-06
312.	112	2.16E-06	172	0.00E+00	232	0.00E+00
318.	113	3.90E-06	173	2.42E-06	233	0.00E+00
324.	114	2.42E-06	174	4.28E-06	234	0.00E+00
330.	115	2.84E-06	175	3.97E-06	235	0.00E+00
336.	116	1.11E-06	176	6.25E-06	236	0.00E+00
342.	117	6.39E-06	177	5.50E-06	237	0.00E+00
348.	118	5.34E-06	178	2.28E-06	238	8.48E-06
354.	119	1.31E-05	179	0.00E+00	239	1.01E-05
360.	120	2.43E-05	180	6.94E-06	240	6.26E-06
					300	4.33E-06

TOWER SAMPLES

HEIGHT	TOWER 1		TOWER 2		TOWER 3		TOWER 4	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1.0	311	6.54E-06	321	1.55E-05	331	1.23E-06	341	4.25E-06
30.0	312	9.57E-06	322	0.00E+00	332	0.00E+00	342	7.16E-06
60.0	313	0.00E+00	323	8.28E-07	333	0.00E+00	343	4.52E-06
90.0	314	4.27E-06	324	6.27E-06	334	2.04E-05	344	4.74E-06
120.0	315	6.45E-06	325	2.27E-06	335	0.00E+00	345	1.34E-05
150.0	316	1.31E-05	326	0.00E+00	336	0.00E+00	346	1.69E-06
HEIGHT	TOWER 5		GLN	CONC				
1.0	351	8.68E-06						
60.0	353	3.72E-06						
120.0	355	7.92E-06						
150.0	356	3.28E-06						

SMUD TEST 21 NRC STAB G 10/29/75 2127-2227 PST

GAS F AVERAGE WINDS: SPEED 2.2 M/S ; DIRECTION 262. DEGREES
SOURCE STRENGTH 1.0155 GM/S RELEASED FROM GROUND 5

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	0.00E+00	8	4.92E-06	15	0.00E+00	401	1.60E-04
2	7.30E-04	9	0.00E+00	16	0.00E+00	402	2.47E-06
3	1.81E-03	10	0.00E+00	17	0.00E+00	403	3.29E-05
4	8.68E-03	11	0.00E+00	18	3.42E-06	0	0.00E+00
5	0.00E+00	12	4.70E-06	19	2.23E-05	0	0.00E+00
6	4.56E-04	13	7.59E-06	0	0.00E+00	0	0.00E+00
7	3.68E-04	14	0.00E+00	0	0.00E+00	0	0.00E+00

SMUD TEST 22 NRC STAB D 10/30/75 1523-1623 PST

GAS S AVERAGE WINDS: SPEED 1.9 M/S ; DIRECTION 999. DEGREES
SOURCE STRENGTH 0.2116 GM/S RELEASED FROM GROUND 17

DOWNTWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
120.	80	0.00E+00	140	3.76E-06	200	0.00E+00	260	0.00E+00
156.	86	4.84E-07	146	0.00E+00	206	0.00E+00	266	0.00E+00
162.	87	2.21E-06	147	5.79E-07	207	0.00E+00	267	0.00E+00
168.	88	1.97E-06	148	7.90E-07	208	0.00E+00	268	0.00E+00
174.	89	1.12E-05	149	1.06E-06	209	5.90E-07	269	0.00E+00
180.	90	0.00E+00	150	4.21E-07	210	0.00E+00	270	3.82E-07
186.	91	5.73E-06	151	1.07E-05	211	0.00E+00	271	0.00E+00
192.	92	6.38E-05	152	3.20E-05	212	0.00E+00	272	2.02E-06
198.	93	4.22E-05	153	3.45E-05	213	6.58E-06	273	0.00E+00
204.	94	2.48E-04	154	6.51E-05	214	1.77E-05	274	0.00E+00
210.	95	0.00E+00	155	5.87E-05	215	1.86E-05	275	1.91E-06
216.	96	1.83E-04	156	7.18E-05	216	0.00E+00	276	0.00E+00
222.	97	1.73E-04	157	9.36E-05	217	0.00E+00	277	0.00E+00
228.	98	2.47E-04	158	2.12E-04	218	1.41E-05	278	2.56E-06
234.	99	1.33E-06	159	7.84E-05	219	2.30E-06	279	1.75E-06
240.	100	2.30E-04	160	2.62E-04	220	4.73E-06	280	0.00E+00
246.	101	4.81E-04	161	3.49E-07	221	0.00E+00	281	0.00E+00
252.	102	4.46E-06	162	4.19E-06	222	0.00E+00	282	0.00E+00
258.	103	1.44E-05	163	0.00E+00	223	0.00E+00	283	0.00E+00
264.	104	2.97E-04	164	3.26E-06	224	0.00E+00	284	0.00E+00
270.	105	1.15E-04	165	8.89E-07	225	0.00E+00	285	0.00E+00
276.	106	9.34E-06	166	0.00E+00	226	0.00E+00	286	0.00E+00
282.	107	3.09E-05	167	0.00E+00	227	0.00E+00	287	0.00E+00
294.	109	1.34E-04	169	0.00E+00	229	0.00E+00	289	0.00E+00
306.	111	5.92E-05	171	0.00E+00	231	0.00E+00	291	0.00E+00

SMUD TEST 22 NRC STAB D 10/30/75 1523-1623 PST

GAS S AVERAGE WINDS: SPEED 1.9 M/S ;DIRECTION 999. DEGREES
SOURCE STRENGTH 0.2116 GM/S RELEASED FROM GROUND 17

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
312.	112	1.15E-04	172	0.00E+00	232	0.00E+00	292	0.00E+00
318.	113	2.34E-04	173	0.00E+00	233	0.00E+00	293	0.00E+00
324.	114	1.84E-04	174	0.00E+00	234	0.00E+00	294	0.00E+00
330.	115	7.34E-07	175	0.00E+00	235	0.00E+00	295	0.00E+00
342.	117	1.03E-05	177	0.00E+00	237	0.00E+00	297	0.00E+00
348.	118	1.28E-05	178	0.00E+00	238	0.00E+00	298	0.00E+00
354.	119	2.91E-07	179	0.00E+00	239	0.00E+00	299	0.00E+00
360.	120	8.79E-07	180	0.00E+00	240	0.00E+00	300	0.00E+00

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	1.14E-06	8	1.21E-04	15	6.73E-05	401	1.38E-04
2	6.80E-07	9	1.47E-04	16	6.92E-04	402	6.49E-05
3	7.36E-07	10	2.17E-05	17	0.00E+00	403	3.37E-05
4	0.00E+00	11	2.42E-04	18	1.07E-06	0	0.00E+00
5	0.00E+00	12	2.03E-04	19	3.11E-06	0	0.00E+00
6	0.00E+00	13	5.99E-07	0	0.00E+00	0	0.00E+00

GAS F AVERAGE WINDS: SPEED 1.9 M/S ;DIRECTION 999. DEGREES
SOURCE STRENGTH 1.0155 GM/S RELEASED FROM GROUND 5

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
114.	79	0.00E+00	139	3.33E-06	199	0.00E+00	259	0.00E+00
120.	80	0.00E+00	140	6.21E-06	200	0.00E+00	260	0.00E+00
126.	81	0.00E+00	141	1.43E-06	201	0.00E+00	261	0.00E+00
132.	82	0.00E+00	142	0.00E+00	202	0.00E+00	262	1.23E-06
138.	83	0.00E+00	143	1.57E-06	203	7.96E-07	263	2.50E-06
144.	84	1.40E-05	144	1.28E-06	204	0.00E+00	264	0.00E+00
150.	85	1.03E-04	145	0.00E+00	205	0.00E+00	265	1.34E-06
156.	86	1.79E-04	146	6.38E-06	206	0.00E+00	266	1.71E-06
162.	87	1.83E-04	147	2.94E-05	207	7.84E-07	267	3.24E-06
168.	88	2.98E-05	148	3.71E-05	208	3.66E-06	268	0.00E+00
174.	89	2.56E-04	149	1.99E-05	209	1.26E-05	269	5.56E-06
180.	90	0.00E+00	150	4.18E-06	210	2.20E-06	270	5.91E-06
186.	91	3.37E-05	151	5.84E-05	211	0.00E+00	271	0.00E+00
192.	92	2.64E-04	152	2.30E-05	212	1.49E-06	272	4.29E-06
198.	93	2.55E-04	153	3.36E-05	213	1.20E-05	273	0.00E+00
204.	94	1.48E-04	154	6.15E-05	214	2.73E-06	274	0.00E+00

SMUD TEST 22 NRC STAB D 10/30/75 1523-1623 PST

GAS F AVERAGE WINDS: SPEED 1.9 M/S ;DIRECTION 999. DEGREES
SOURCE STRENGTH 1.0155 GM/S RELEASED FROM GROUND 5

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
210.	95	0.00E+00	155	1.00E-04	215	2.02E-05	275	3.67E-06
216.	96	0.00E+00	156	5.08E-05	216	0.00E+00	276	0.00E+00
222.	97	0.00E+00	157	2.22E-05	217	0.00E+00	277	0.00E+00
228.	98	0.00E+00	158	0.00E+00	218	7.08E-06	278	0.00E+00
234.	99	2.62E-06	159	0.00E+00	219	3.10E-06	279	0.00E+00
240.	100	0.00E+00	160	0.00E+00	220	2.35E-06	280	0.00E+00
252.	102	6.65E-06	162	0.00E+00	222	0.00E+00	282	0.00E+00
264.	104	0.00E+00	164	1.06E-06	224	0.00E+00	284	0.00E+00
282.	107	1.23E-05	167	0.00E+00	227	0.00E+00	287	0.00E+00
288.	108	2.48E-06	168	0.00E+00	228	0.00E+00	288	0.00E+00
300.	110	0.00E+00	170	2.10E-06	230	0.00E+00	290	0.00E+00
336.	116	2.01E-06	176	0.00E+00	236	0.00E+00	296	0.00E+00
348.	118	3.99E-07	178	0.00E+00	238	0.00E+00	298	0.00E+00

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	0.00E+00	8	4.77E-04	15	0.00E+00	401	1.51E-03
2	0.00E+00	9	4.32E-04	16	0.00E+00	402	1.54E-03
3	0.00E+00	10	3.25E-05	17	0.00E+00	403	8.72E-04
4	1.36E-03	11	1.41E-04	18	2.75E-06	0	0.00E+00
5	1.92E-03	12	8.15E-05	19	0.00E+00	0	0.00E+00
7	9.19E-04	14	0.00E+00	0	0.00E+00	0	0.00E+00

SMUD TEST 23 NRC STAB F 10/31/75 1916-2016 PST

GAS S AVERAGE WINDS: SPEED 0.8 M/S ;DIRECTION 329. DEGREES
SOURCE STRENGTH 0.1904 GM/S RELEASED FROM GROUND 17

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
48.	68	6.03E-07	128	0.00E+00	188	0.00E+00	248	0.00E+00
54.	69	6.80E-07	129	0.00E+00	189	0.00E+00	249	0.00E+00
60.	70	2.83E-06	130	0.00E+00	190	0.00E+00	250	0.00E+00
84.	74	4.12E-07	134	0.00E+00	194	0.00E+00	254	0.00E+00
96.	76	6.33E-07	136	0.00E+00	196	0.00E+00	256	0.00E+00
108.	78	3.58E-07	138	0.00E+00	198	0.00E+00	258	0.00E+00
120.	80	1.33E-06	140	0.00E+00	200	0.00E+00	260	0.00E+00
126.	81	4.02E-06	141	0.00E+00	201	0.00E+00	261	0.00E+00

SMUD TEST 23 NRC STAB F 10/31/75 1916-2016 PST

GAS S AVERAGE WINDS: SPEED 0.8 M/S ; DIRECTION 329. DEGREES
SOURCE STRENGTH 0.1904 GM/S RELEASED FROM GROUND 17

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M		200. M		400. M		800. M	
	GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
138.	83	9.07E-06	143	0.00E+00	203	0.00E+00	263	0.00E+00
144.	84	1.67E-05	144	2.14E-06	204	0.00E+00	264	0.00E+00
150.	85	0.00E+00	145	5.42E-06	205	3.20E-07	265	0.00E+00
156.	86	1.79E-05	146	0.00E+00	206	1.35E-06	266	5.00E-07
162.	87	1.77E-05	147	1.04E-05	207	7.48E-07	267	0.00E+00
168.	88	1.97E-05	148	6.92E-06	208	4.34E-07	268	0.00E+00
174.	89	2.54E-05	149	4.25E-06	209	0.00E+00	269	0.00E+00
180.	90	0.00E+00	150	4.90E-06	210	0.00E+00	270	0.00E+00
186.	91	1.57E-05	151	3.37E-06	211	0.00E+00	271	0.00E+00
192.	92	1.58E-05	152	1.68E-06	212	0.00E+00	272	0.00E+00
198.	93	2.29E-05	153	2.07E-06	213	0.00E+00	273	0.00E+00
204.	94	2.25E-05	154	9.00E-07	214	0.00E+00	274	0.00E+00
210.	95	1.80E-05	155	4.66E-06	215	0.00E+00	275	0.00E+00
216.	96	1.13E-05	156	4.74E-06	216	0.00E+00	276	0.00E+00
222.	97	1.54E-05	157	6.25E-06	217	0.00E+00	277	0.00E+00
228.	98	1.93E-05	158	7.80E-06	218	4.79E-07	278	0.00E+00
234.	99	2.55E-05	159	1.12E-05	219	1.19E-06	279	0.00E+00
240.	100	4.09E-05	160	1.78E-05	220	0.00E+00	280	0.00E+00
246.	101	1.56E-04	161	2.97E-05	221	0.00E+00	281	0.00E+00
252.	102	2.84E-04	162	2.25E-06	222	0.00E+00	282	0.00E+00
258.	103	2.51E-04	163	0.00E+00	223	0.00E+00	283	0.00E+00
264.	104	2.80E-04	164	0.00E+00	224	0.00E+00	284	0.00E+00
270.	105	0.00E+00	165	2.52E-05	225	0.00E+00	285	0.00E+00
276.	106	4.13E-04	166	3.00E-05	226	0.00E+00	286	0.00E+00
282.	107	4.27E-04	167	0.00E+00	227	0.00E+00	287	0.00E+00
288.	108	3.61E-04	168	4.08E-06	228	0.00E+00	288	0.00E+00
294.	109	1.60E-04	169	0.00E+00	229	0.00E+00	289	0.00E+00
300.	110	4.55E-05	170	6.53E-06	230	0.00E+00	290	0.00E+00
306.	111	3.17E-05	171	1.44E-06	231	0.00E+00	291	0.00E+00
312.	112	6.73E-05	172	0.00E+00	232	0.00E+00	292	0.00E+00
324.	114	8.24E-05	174	0.00E+00	234	0.00E+00	294	0.00E+00
342.	117	8.84E-06	177	0.00E+00	237	0.00E+00	297	0.00E+00
348.	118	4.00E-06	178	0.00E+00	238	0.00E+00	298	0.00E+00
354.	119	4.41E-06	179	0.00E+00	239	0.00E+00	299	0.00E+00
360.	120	3.62E-06	180	0.00E+00	240	0.00E+00	300	0.00E+00

SMUD TEST 23 NRC STAB F 10/31/75 1916-2016 PST

GAS S AVERAGE WINDS: SPEED 0.8 M/S ;DIRECTION 329. DEGREES
SOURCE STRENGTH 0.1904 GM/S RELEASED FROM GROUND 17

MISCELLANEOUS SAMPLES

GROUP 1		GROUP 2		GROUP 3		GROUP 4	
GLN	CONC	GLN	CONC	GLN	CONC	GLN	CONC
1	5.50E-05	8	2.93E-05	15	6.76E-04	401	0.00E+00
2	4.65E-05	9	2.91E-05	16	2.24E-03	402	6.09E-05
3	7.48E-05	10	2.38E-05	17	0.00E+00	403	3.65E-05
4	4.82E-05	11	2.58E-05	18	1.33E-04	0	0.00E+00
5	6.07E-06	12	3.33E-05	19	7.87E-05	0	0.00E+00
6	2.48E-05	13	1.94E-04	0	0.00E+00	0	0.00E+00
7	2.22E-05	14	4.40E-04	0	0.00E+00	0	0.00E+00

GAS F AVERAGE WINDS: SPEED 0.8 M/S ;DIRECTION 329. DEGREES
SOURCE STRENGTH 1.0437 GM/S RELEASED FROM GROUND 5

DOWNDOWN DISTANCE(ARC) SAMPLES

BEARING	100. M	200. M	400. M	800. M
	GLN	CONC	GLN	CONC
66.	71	5.40E-05	131	0.00E+00
78.	73	0.00E+00	133	3.25E-07
84.	74	0.00E+00	134	3.98E-06
90.	75	0.00E+00	135	7.87E-06
96.	76	0.00E+00	136	2.05E-06
102.	77	4.14E-05	137	5.09E-06
108.	78	6.03E-06	138	9.26E-06
114.	79	1.26E-06	139	0.00E+00
120.	80	1.02E-06	140	0.00E+00
126.	81	9.45E-06	141	0.00E+00
132.	82	0.00E+00	142	0.00E+00
138.	83	6.57E-05	143	0.00E+00
144.	84	1.21E-04	144	5.17E-06
150.	85	0.00E+00	145	5.07E-06
156.	86	1.36E-04	146	6.14E-06
162.	87	1.54E-04	147	4.15E-05
168.	88	1.50E-04	148	3.69E-05
174.	89	1.51E-04	149	2.20E-05
180.	90	0.00E+00	150	3.32E-05
186.	91	1.05E-04	151	1.90E-05
192.	92	1.10E-04	152	1.12E-05
198.	93	1.21E-04	153	1.39E-05
204.	94	1.27E-04	154	1.75E-05
210.	95	1.31E-04	155	1.19E-05
216.	96	2.51E-05	156	1.27E-05
222.	97	6.91E-05	157	1.79E-05
228.	98	1.09E-04	158	1.72E-05
234.	99	1.05E-04	159	1.95E-05

SMUD TEST 23 NRC STAB F 10/31/75 1916-2016 PST

GAS F AVERAGE WINDS: SPEED 0.8 M/S ;DIRECTION 329. DEGREES
SOURCE STRENGTH 1.0437 GM/S RELEASED FROM GROUND 5

DOWNWIND DISTANCE(ARC) SAMPLES

BEARING	100. M	200. M	400. M	800. M
	GLN	CONC	GLN	CONC
240.	100	9.94E-05	160	2.57E-05
252.	102	0.00E+00	162	1.17E-05
264.	104	0.00E+00	164	3.26E-06
294.	109	0.00E+00	169	8.75E-06
300.	110	0.00E+00	170	5.28E-06
306.	111	0.00E+00	171	3.61E-06
348.	118	1.52E-06	178	0.00E+00
354.	119	4.04E-06	179	0.00E+00
			230	0.00E+00
			229	0.00E+00
			222	0.00E+00
			224	0.00E+00
			289	0.00E+00
			290	0.00E+00
			291	0.00E+00
			298	0.00E+00
			299	0.00E+00

MISCELLANEOUS SAMPLES

GROUP 1	GLN	CONC	GROUP 2	GLN	CONC	GROUP 3	GLN	CONC	GROUP 4	GLN	CONC
	1	0.00E+00		8	3.03E-04		15	0.00E+00		401	0.00E+00
	2	5.73E-05		9	2.10E-04		16	0.00E+00		402	4.63E-04
	3	8.05E-04		10	2.11E-04		17	0.00E+00		403	3.58E-04
	4	2.12E-03		11	1.74E-04		18	9.07E-05		0	0.00E+00
	5	6.09E-04		12	1.23E-04		19	0.00E+00		0	0.00E+00
	6	1.27E-03		13	0.00E+00		0	0.00E+00		0	0.00E+00
	7	6.19E-04		14	0.00E+00		0	0.00E+00		0	0.00E+00



APPENDIX B: Supplemental Meteorological Data

The data are listed in table B-1. Instruments mounted on tower 2 (location T2 in fig. 3) provided aspirated temperatures ($^{\circ}$ F) at five heights. In accordance with NRC suggested procedures, temperature differences were determined between the 10 m and 46 m heights. Stability categories were assigned according to NRC criteria (table 1) following conversions of observed temperature differences to $^{\circ}$ C per 100 m.

Wind data (summarized in table 3) may be used with these temperature data for computation of additional meteorological parameters such as Richardson Number. The derivation of these parameters is left to the interested researcher.

Table B-1. Rancho Seco Tower Temperatures and Stability Categories

Test #	Time	Temperature ($^{\circ}$ F)					$\Delta T/\Delta Z$ [*]	STAB
		4 m	10 m	16 m	32 m	46 m		
1	1405-1255	66.5	66.4	65.6	65.0	65.0	-2.16	A
2	0620-0525	46.3	47.9	49.4	51.6	52.0	6.33	G
3	0726-0629	49.1	50.9	51.8	53.2	53.6	4.17	G
4	0556-0446	51.2	53.2	53.9	57.6	58.6	8.33	G
5	0616-0506	52.6	54.5	56.2	58.0	58.9	6.79	G
6	1847-1741	65.9	66.0	66.1	65.9	65.6	-0.62	D
7	1243-1138	72.3	71.7	71.2	70.6	70.2	-2.31	A
8	0601-0458	57.0	58.1	60.3	65.2	66.4	12.81	G
9	1033-0932	66.9	66.9	66.4	65.8	65.6	-1.54	C
10	0544-0437	50.4	51.5	52.8	53.6	53.8	3.88	F
11	0812-0708	52.0	51.4	51.4	51.1	51.2	-0.3	E
12	0605-0502	42.1	41.8	42.4	42.0	42.1	0.46	E
13	1822-1710	57.8	59.5	60.1	60.9	59.9	+.62	E
14	2350-2242	49.1	50.3	51.4	55.1	55.8	8.49	G
15	1709-1603	60.2	60.4	60.4	60.1	59.9	-.77	D
16	1808-1650	57.2	58.5	59.3	59.3	59.2	1.08	E
17	2302-2151	43.4	44.8	46.4	49.7	51.6	10.49	G
18	1912-1744	57.0	59.3	60.4	61.0	60.9	2.47	F
19	1630-1523	65.4	66.4	66.7	66.5	66.6	0.31	E
(20)**	(1944-1839)	(57.8)	(59.5)	(61.5)	(64.3)	(65.4)	(9.10)	G
21	2226-2120	55.4	55.8	56.6	58.1	58.9	4.78	G
22	1622-1516	59.4	59.3	59.0	58.7	58.8	-.77	D
23	2013-1909	52.7	53.7	54.5	55.2	55.8	.3.24	F

** Data are based upon initial magnetic tape processing at Davis, Calif. It was not possible to process tape at later dates.

* Temperature at 46 m minus temperature at 10 m times $100/(46-10)$
 $\times 5/9$ yields $^{\circ}$ C per 100 m.

APPENDIX C: Concentration Isopleths By Gas for Each Test

Units are m^{-2} . Appendix A lists the individual values of concentration that form the basis for these isopleths. Figure 2 of the text depicts the site topography, which was considered during the isopleth analyses. Appendix B lists the temperature measurements that formed the basis for designating a stability category.

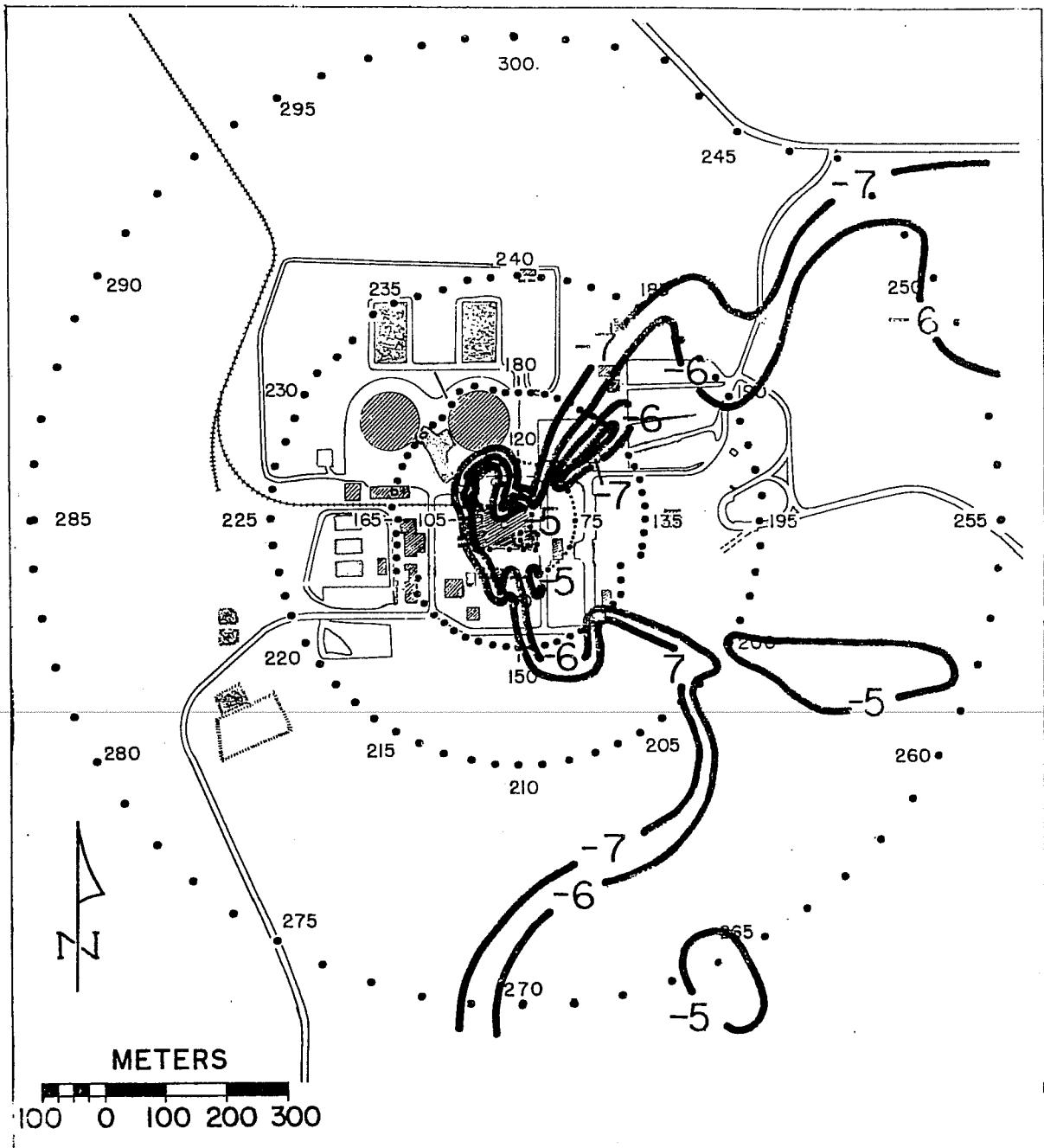


Figure C-1. Concentration isopleths (\bar{x}_u/Q in negative powers of ten) for F12, test 1. Tracer was released at auxiliary building roof under NRC stability category A. Mean tower wind at release height was from 296 degrees at 1.0 mps.

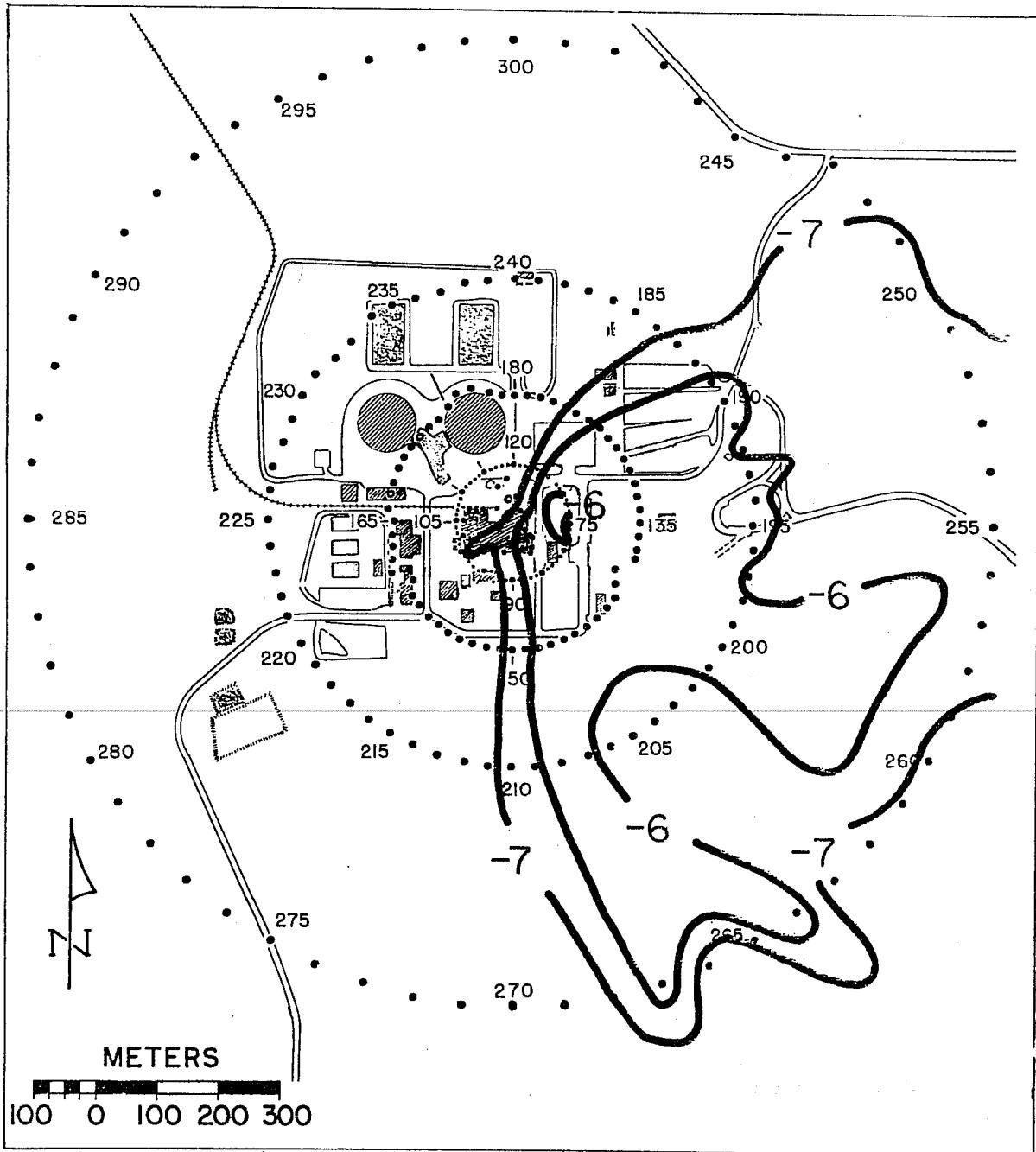


Figure C-2. Concentration isopleths ($\bar{x}u/Q$ in negative powers of ten) for SF₆, test 1. Tracer was released at containment vessel roof under NRC stability category A. Mean tower wind at release height was from 321 degrees at 0.7 mps.

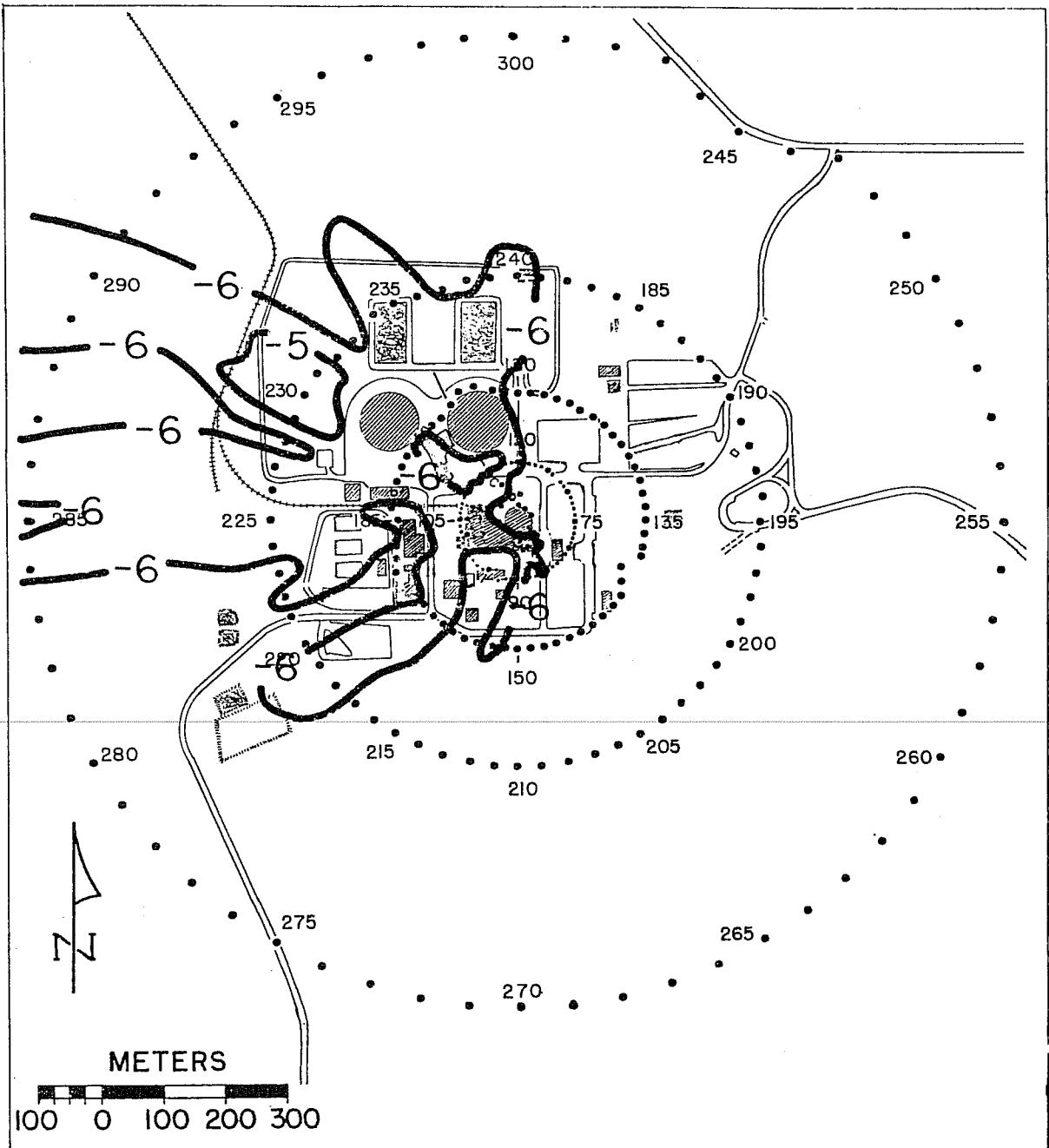


Figure C-3. Concentration isopleths ($\bar{x}u/Q$ in negative powers of ten) for F12, test 2. Tracer was released at auxiliary building roof under NRC stability category G. Mean tower wind at release height was from 161 degrees at 1.8 mps.

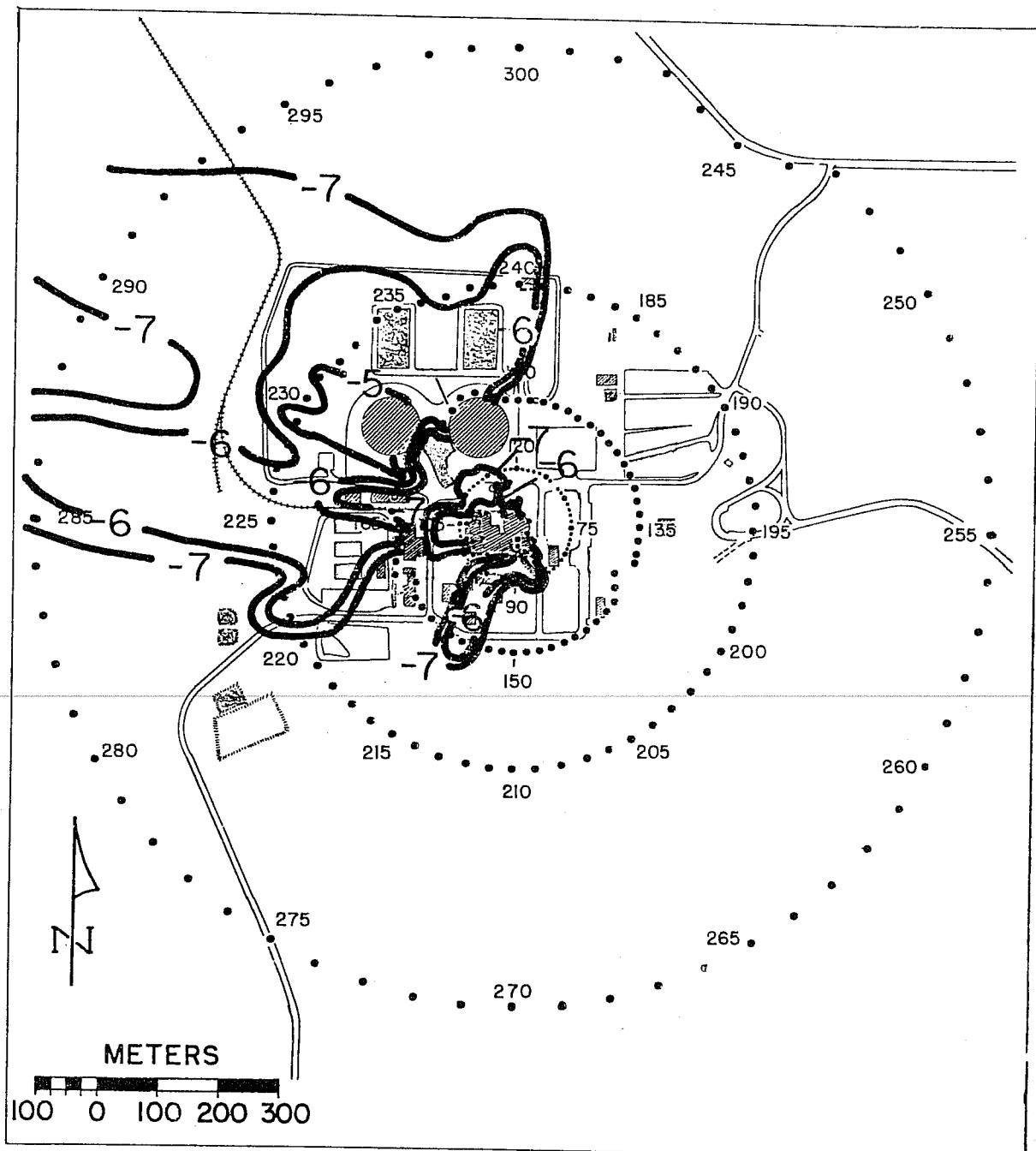


Figure C-4. Concentration isopleths ($\bar{x}u/Q$ in negative powers of ten) for SF6, test 2. Tracer was released at containment vessel roof under NRC stability category G. Mean tower wind at release height was from 161 degrees at 1.2 mps.

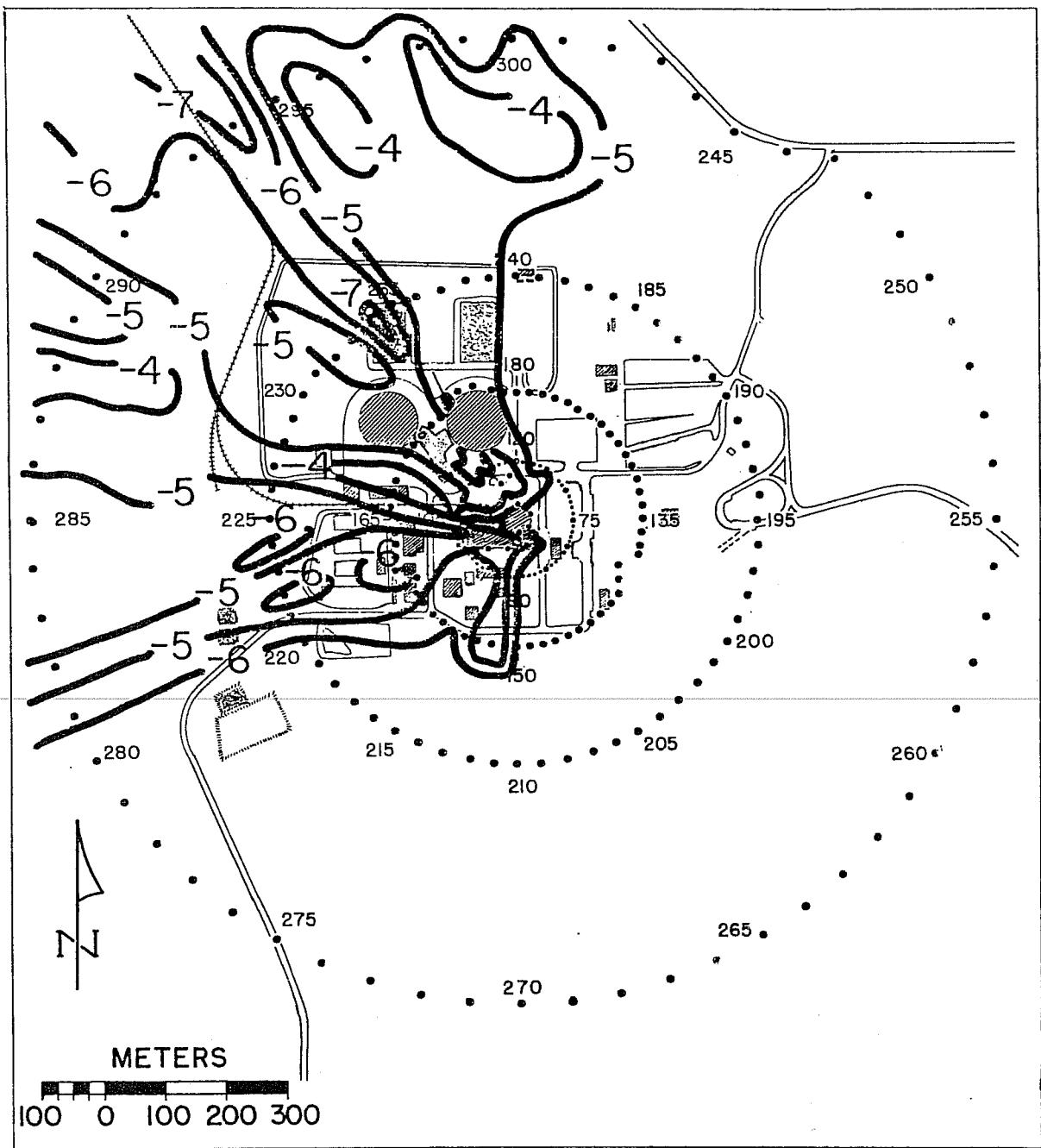


Figure C-5. Concentration isopleths (\bar{x}_u/Q in negative powers of ten) for F12, test 3. Tracer was released at auxiliary building roof under NRC stability category G. Mean tower wind at release height was from 100 degrees at 1.7 mps.

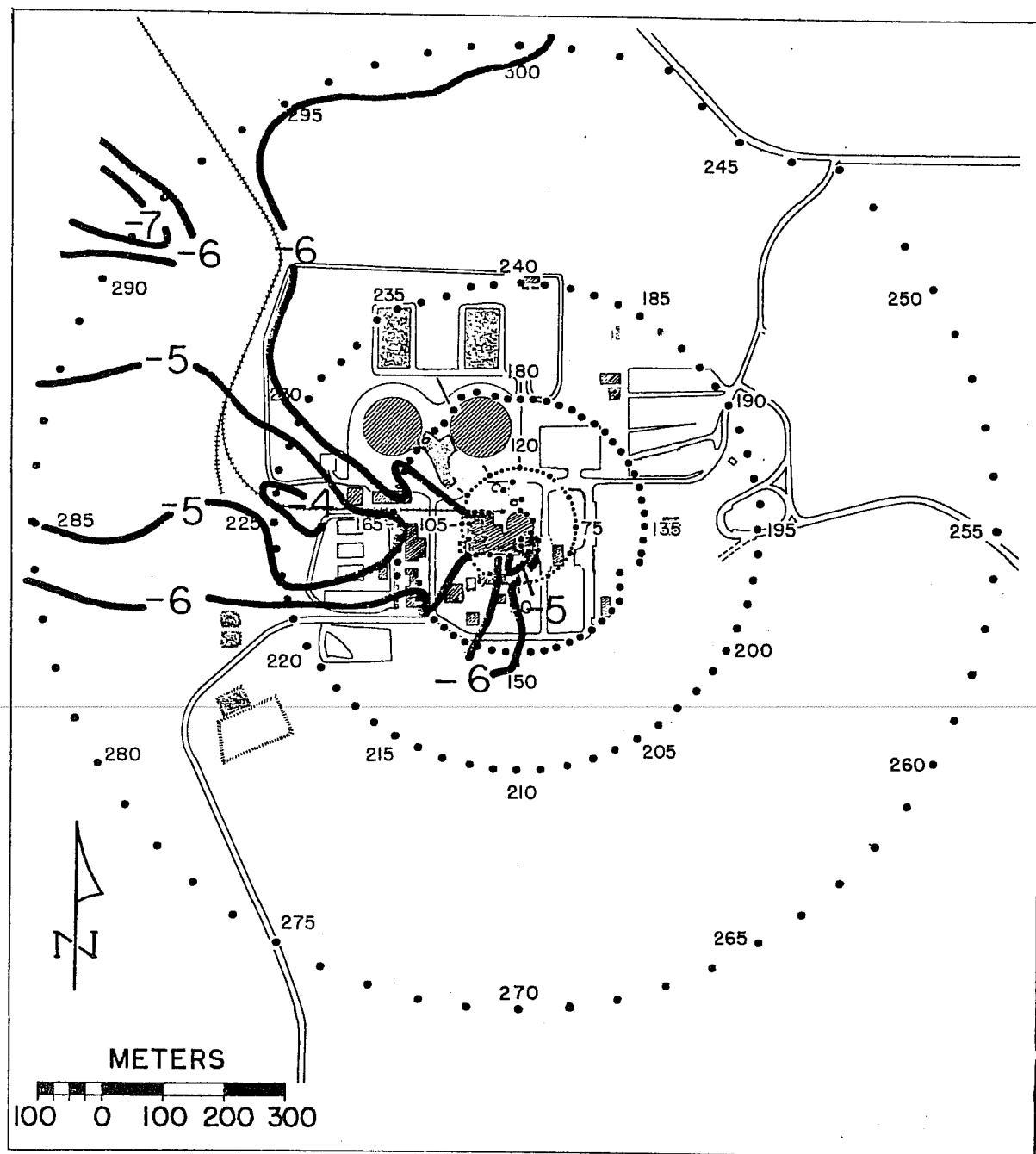


Figure C-6. Concentration isopleths (\bar{x}_u/Q in negative powers of ten) for SF6, test 3. Tracer was released at containment vessel roof under NRC stability category G. Mean tower wind at release height was from 128 degrees at 2.1 mps.

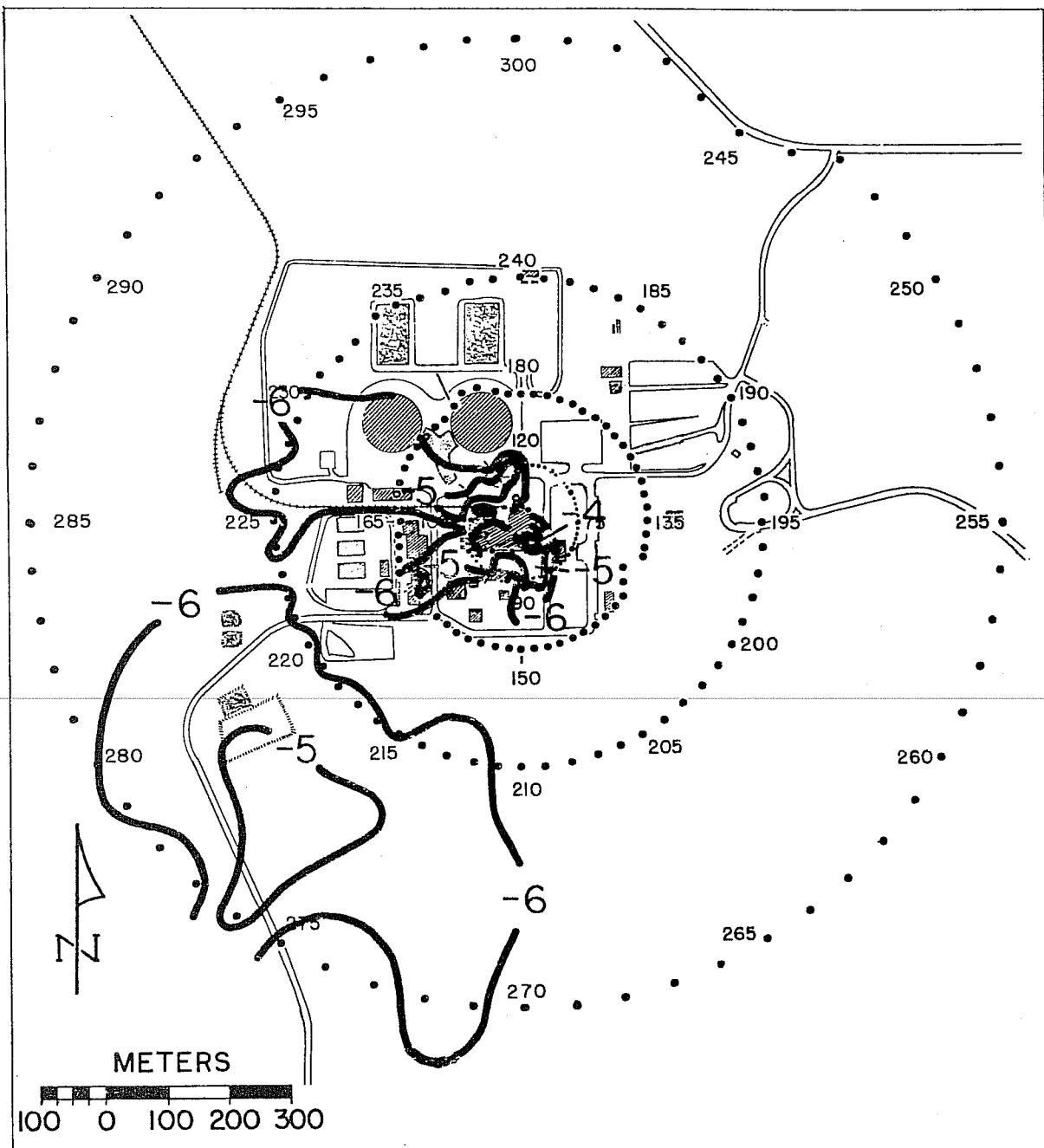


Figure C-7. Concentration isopleths ($\bar{x}u/Q$ in negative powers of ten) for F12, test 4. Tracer was released from surface position G5 under NRC stability category G. Mean tower wind at release height was from 038 degrees at 1.3 mps.

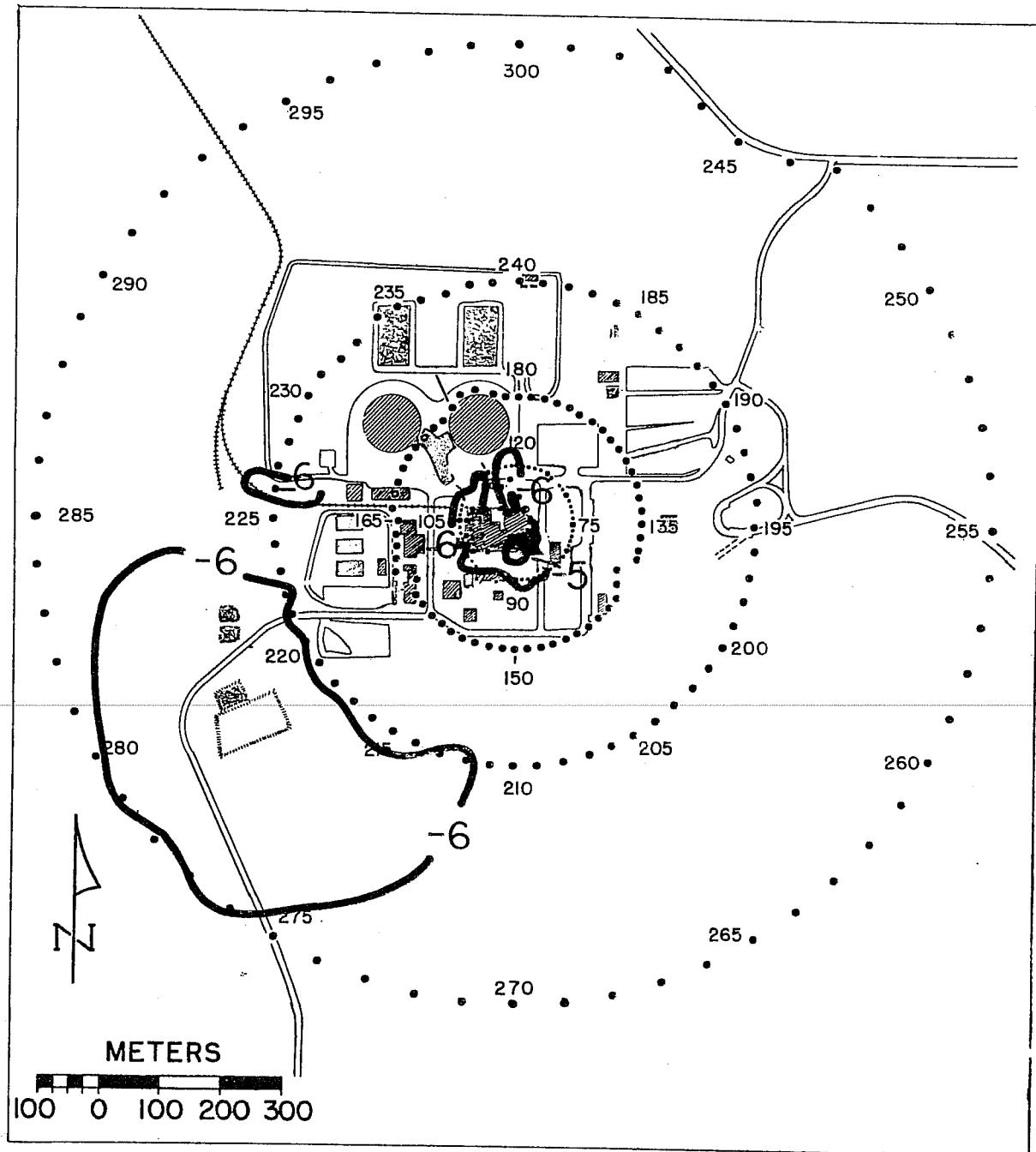


Figure C-8. Concentration isopleths ($x\bar{u}/Q$ in negative powers of ten) for SF₆, test 4. Tracer was released at containment vessel roof under NRC stability category G. Mean tower wind at release height was from 029 degrees at 1.8 mps.

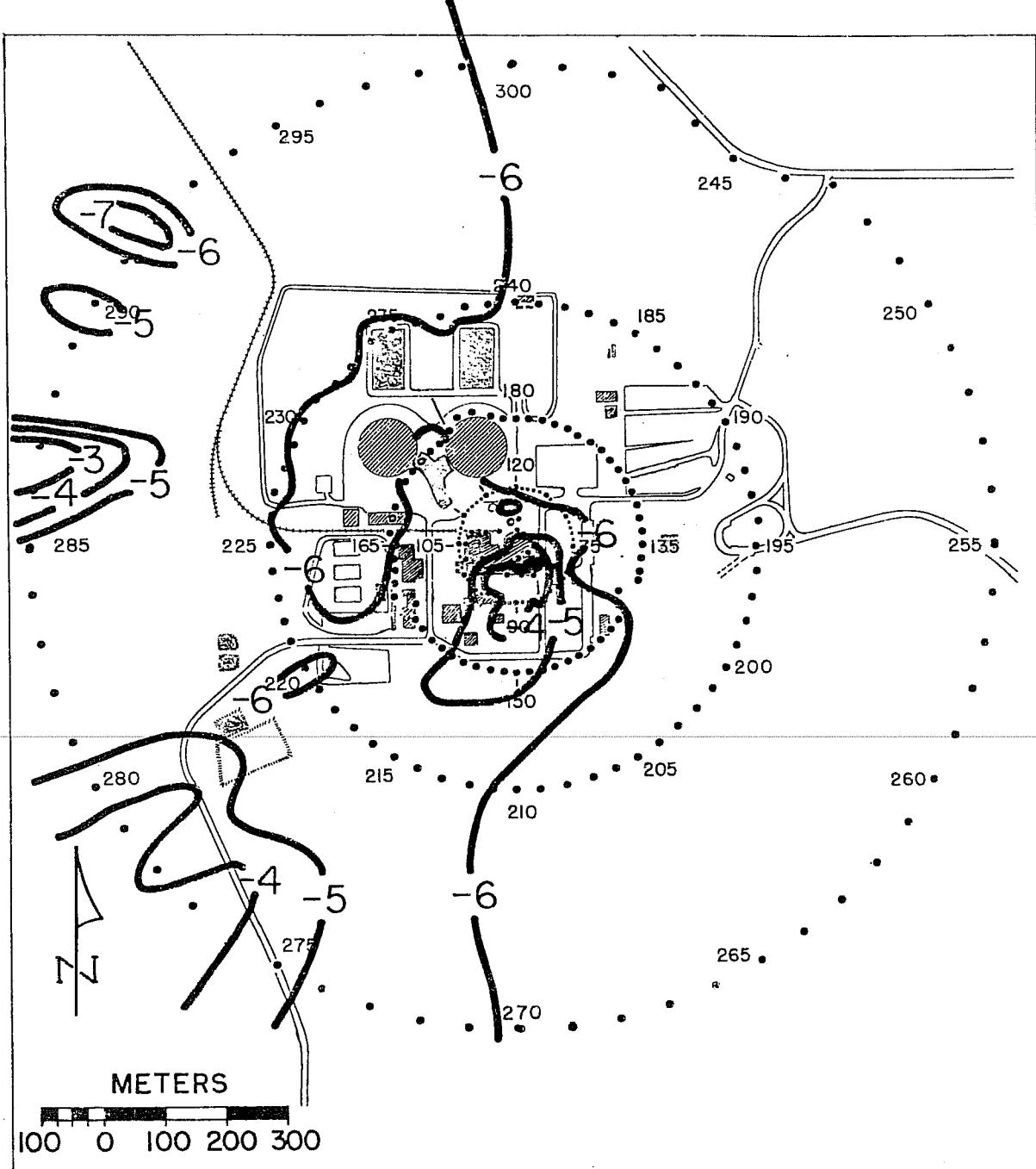


Figure C-9. Concentration isopleths ($\bar{x}u/Q$ in negative powers of ten) for F12, test 5. Tracer was released at surface position G5 under NRC stability category G. Mean tower wind at release height was from 071 degrees at 0.9 mps.

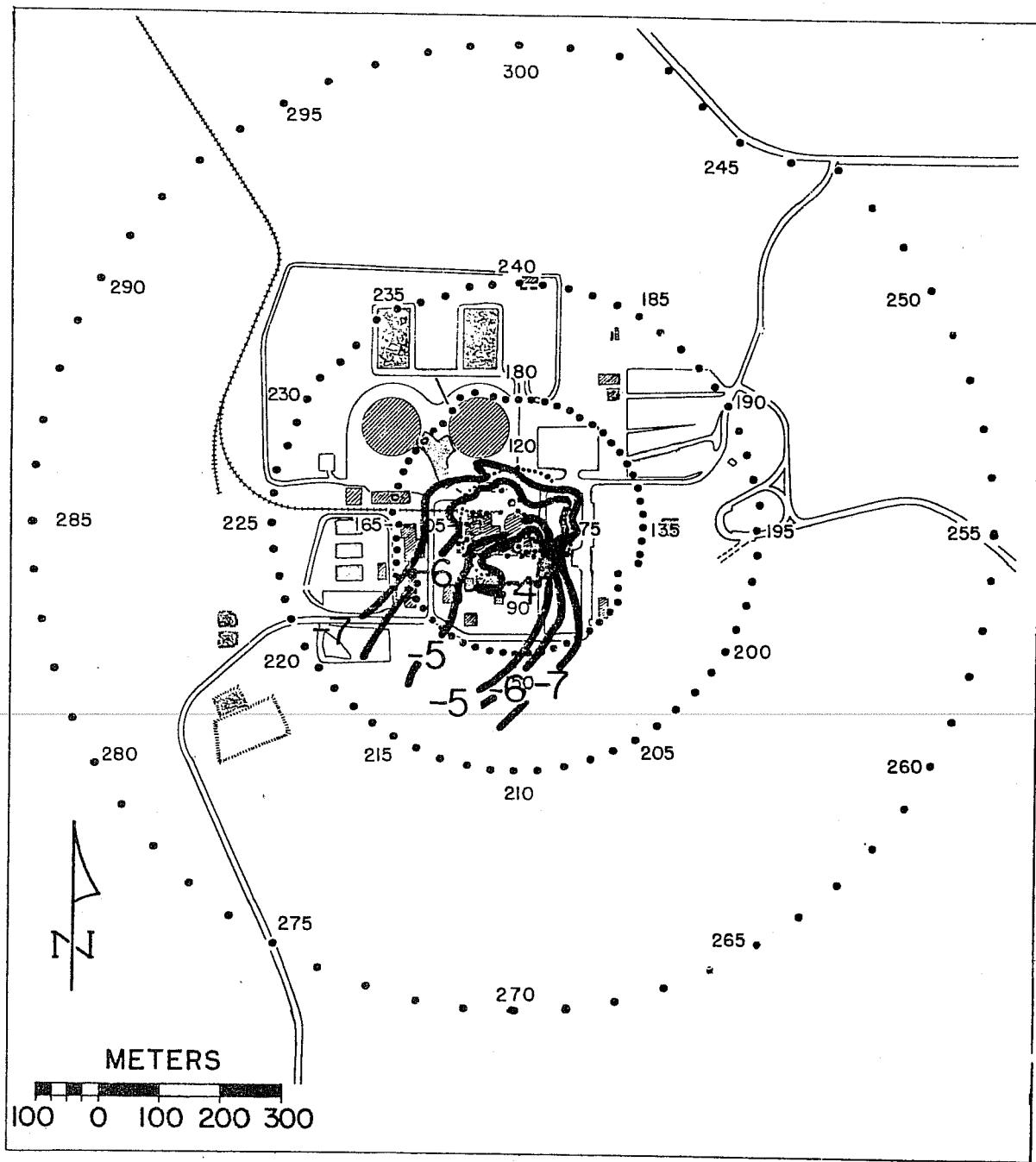


Figure C-10. Concentration isopleths (\bar{x}_u/Q in negative powers of ten) for SF6, test 5. Tracer was released at surface position G5 under NRC stability category G. Mean tower wind at release height was from 071 degrees at 0.9 mps.

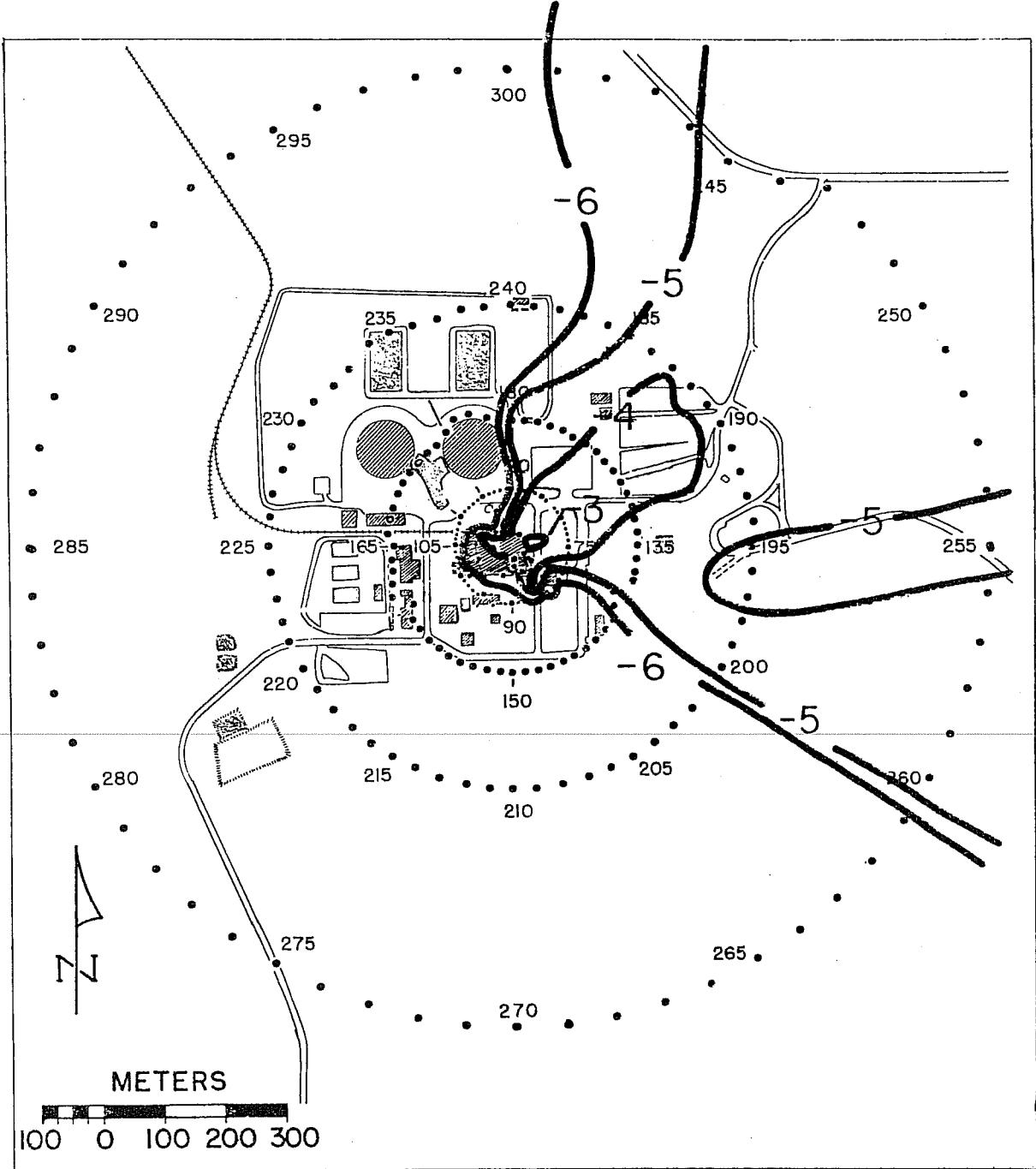


Figure C-11. Concentration isopleths ($\bar{x}u/Q$) in negative powers of ten) for F12, test 6. Tracer was released at surface position G5 under NRC stability category D. Mean tower wind at release height was from 228 degrees at 2.8 mps.

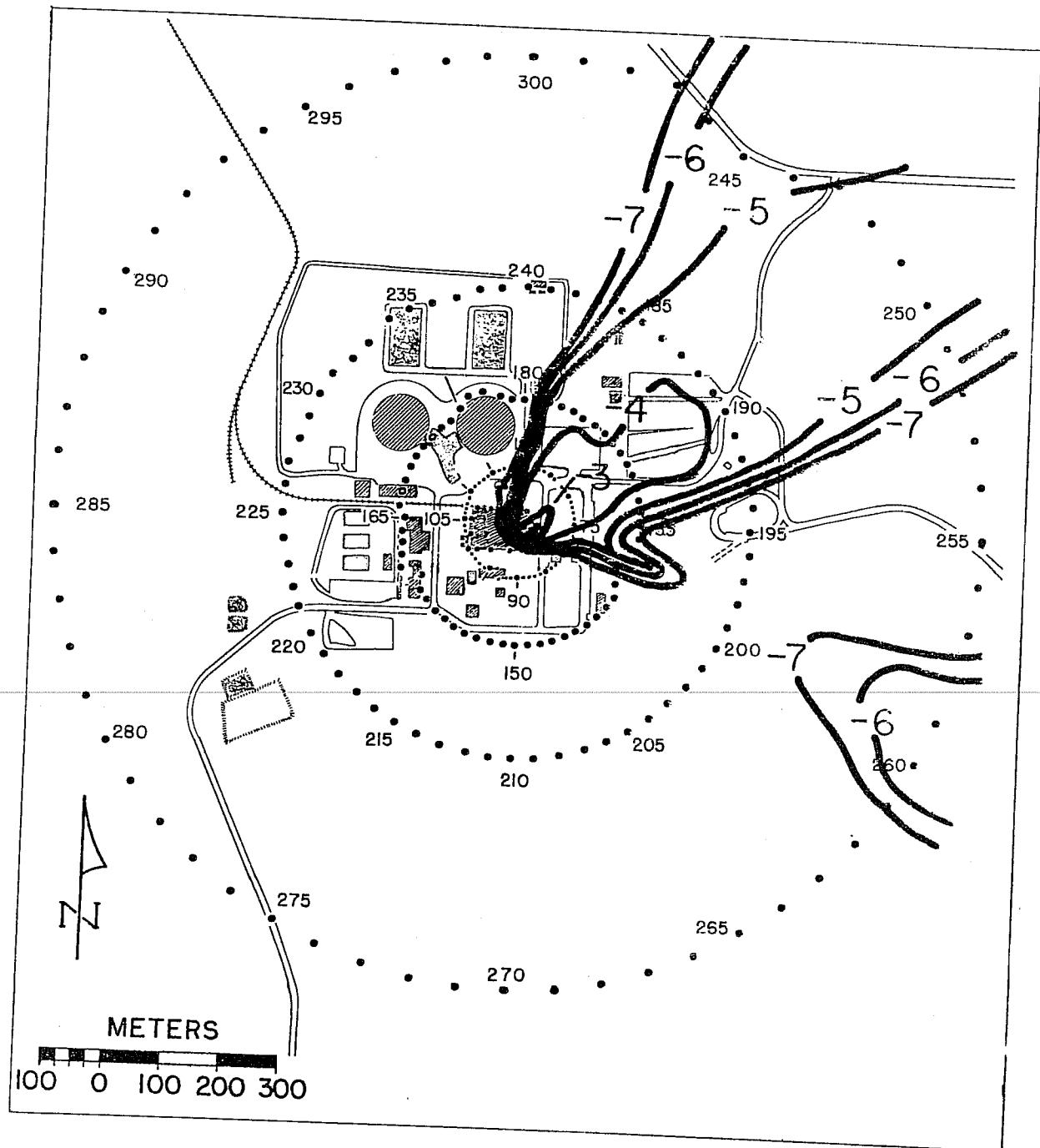


Figure C-12. Concentration isopleths (\bar{x}_u/Q in negative powers of ten) for SF₆, test 6. Tracer was released at auxiliary building roof under NRC stability category D. Mean tower wind at release height was from 226 degrees at 3.1 mps.

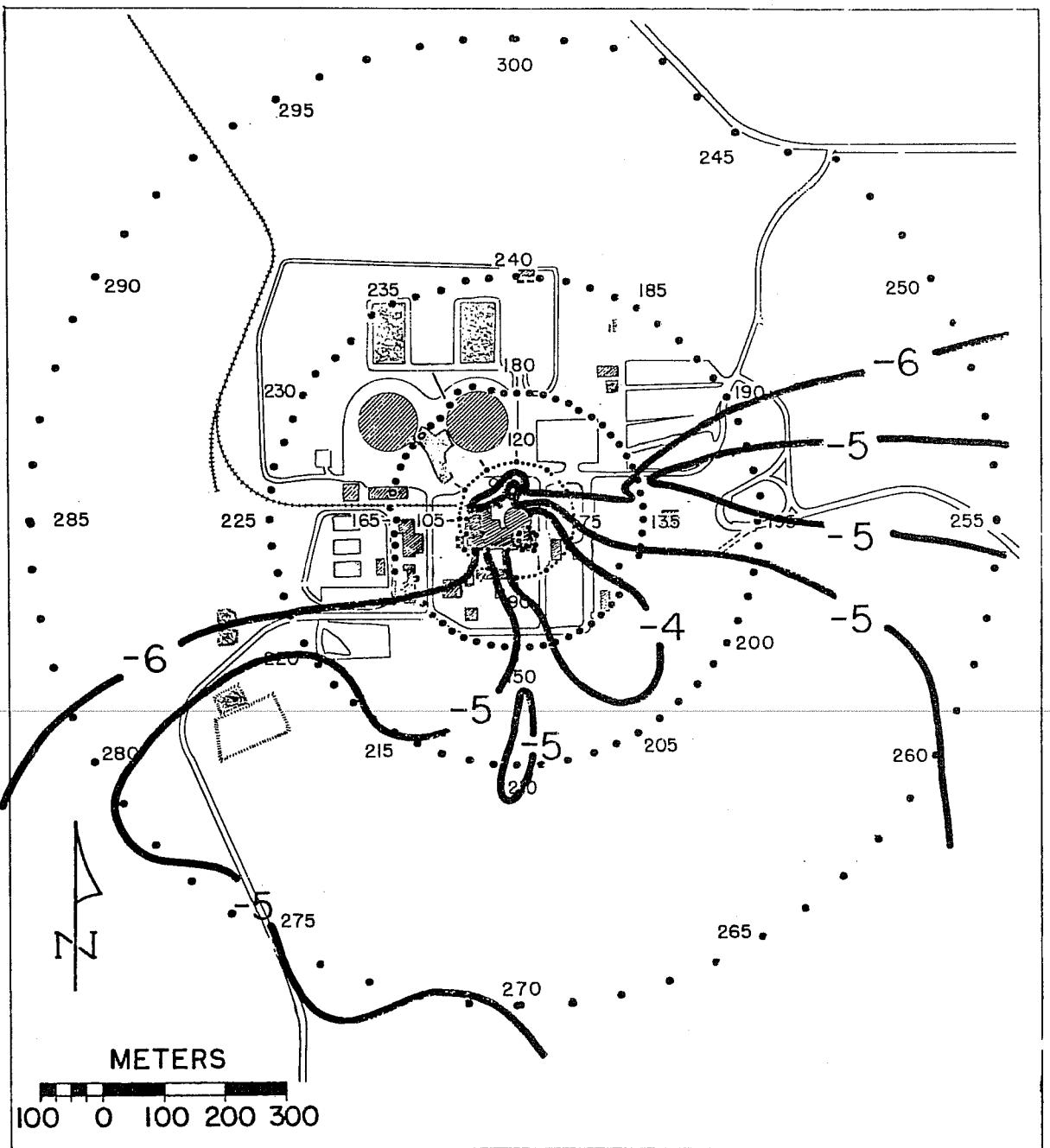


Figure C-13. Concentration isopleths ($X\bar{u}/Q$ in negative powers of ten) for F12, test 7. Tracer was released at surface position G5 under NRC stability category A. Mean tower wind at release height was from 342 degrees at 4.6 mps.

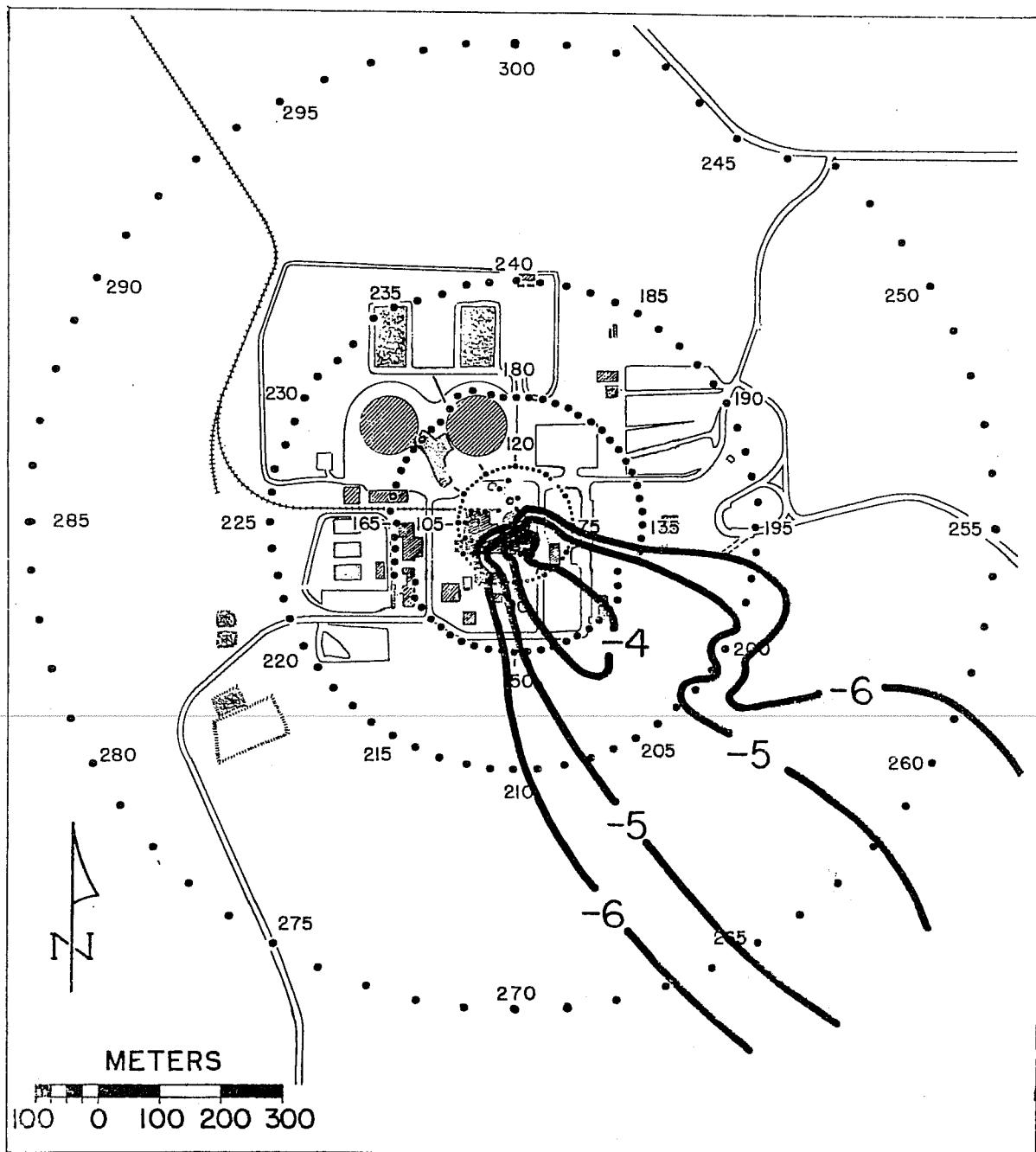


Figure C-14. Concentration isopleths ($X\bar{u}/Q$ in negative powers of ten) for SF6, test 7. Tracer was released at auxiliary building roof under NRC stability category A. Mean tower wind at release height was from 322 degrees at 5.1 mps.

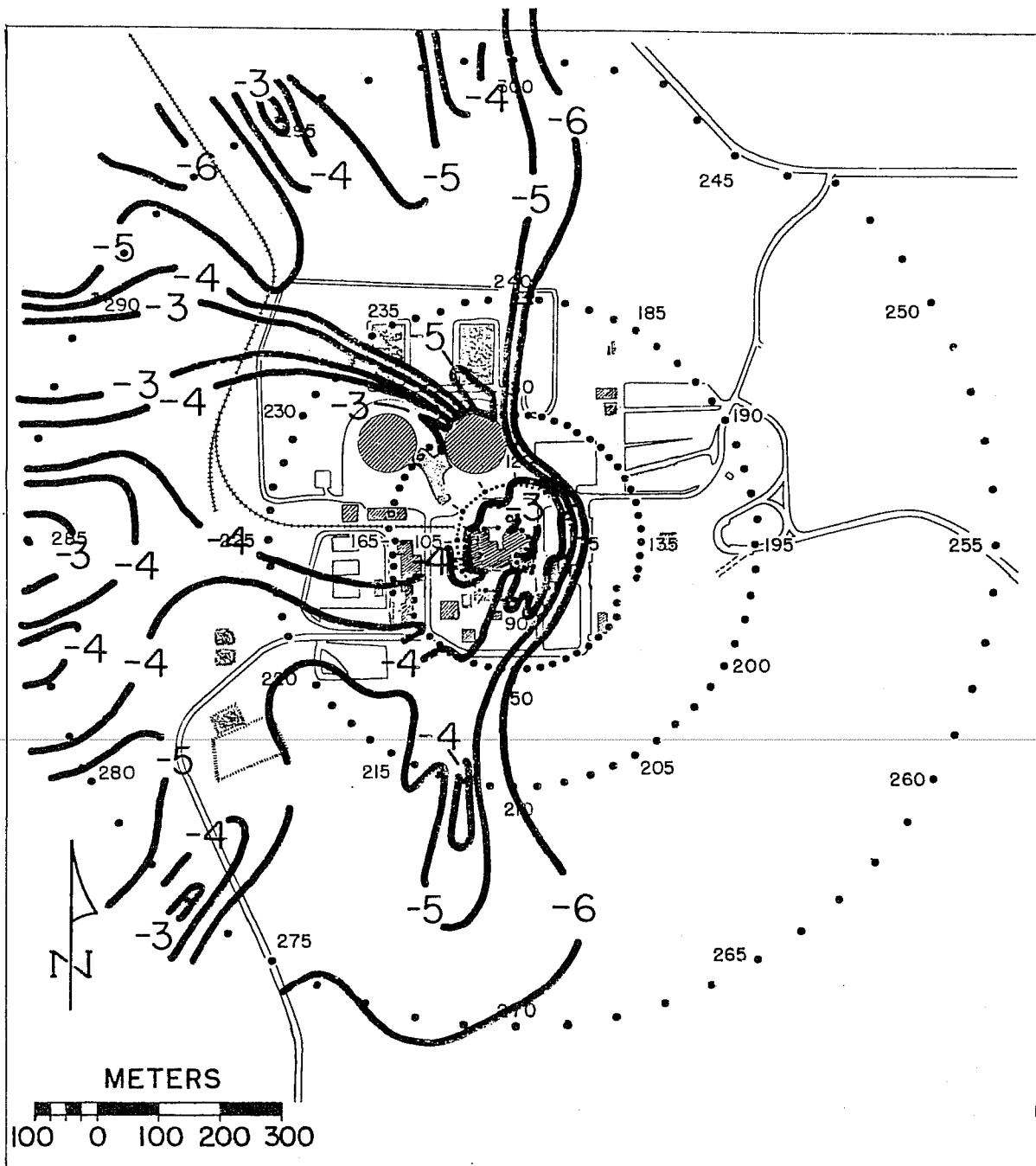


Figure C-15. Concentration isopleths ($X\bar{u}/Q$ in negative powers of ten) for F12, test 8. Tracer was released at surface position G5 under NRC stability category G. Mean tower wind at release height was from 110 degrees at 0.9 mps.

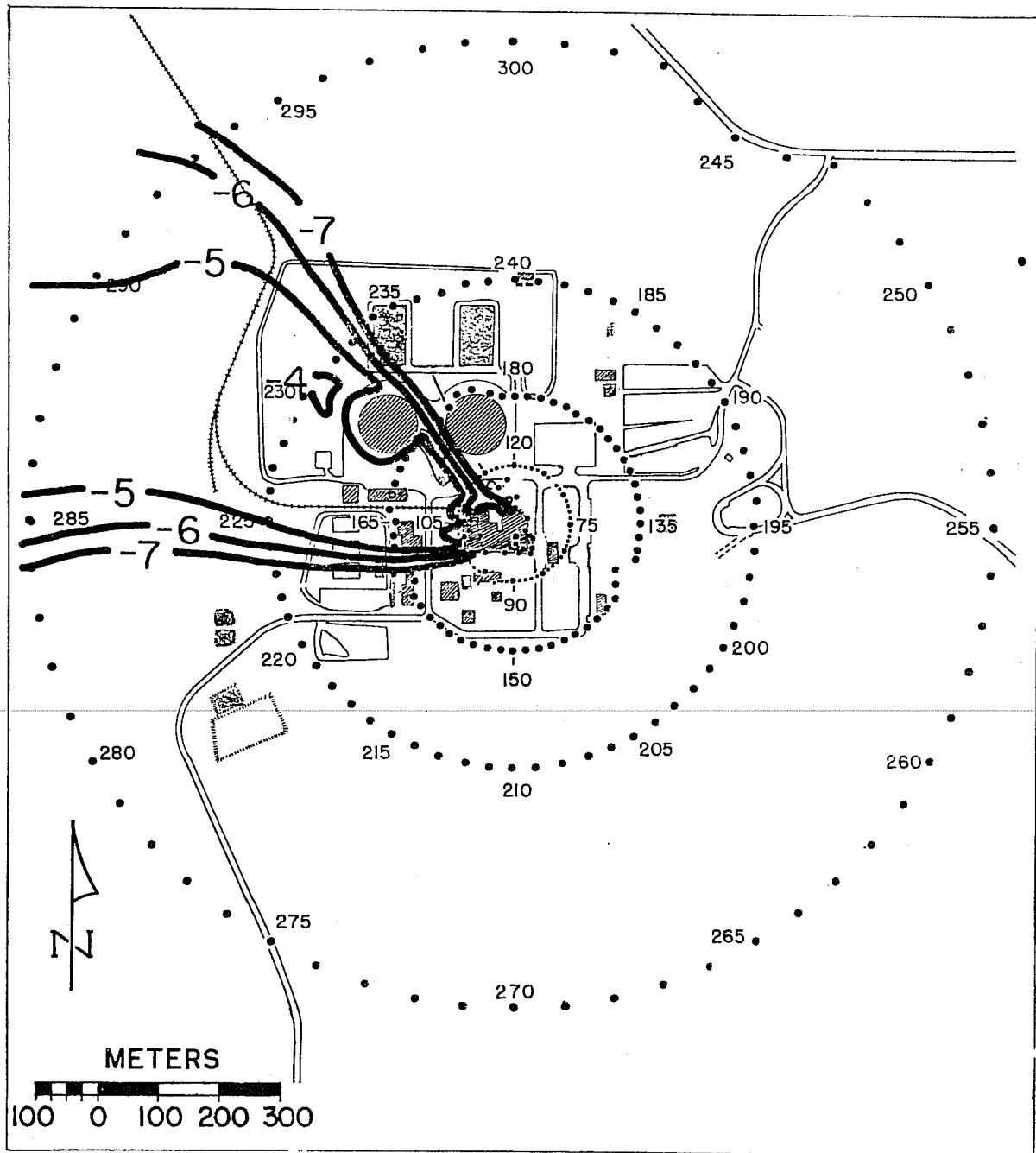


Figure C-16. Concentration isopleths (\bar{X}_u/Q in negative powers of ten) for SF6, test 8. Tracer was released at auxiliary building roof under NRC stability category G. Mean tower wind at release height was from 110 degrees at 2.5 mps.

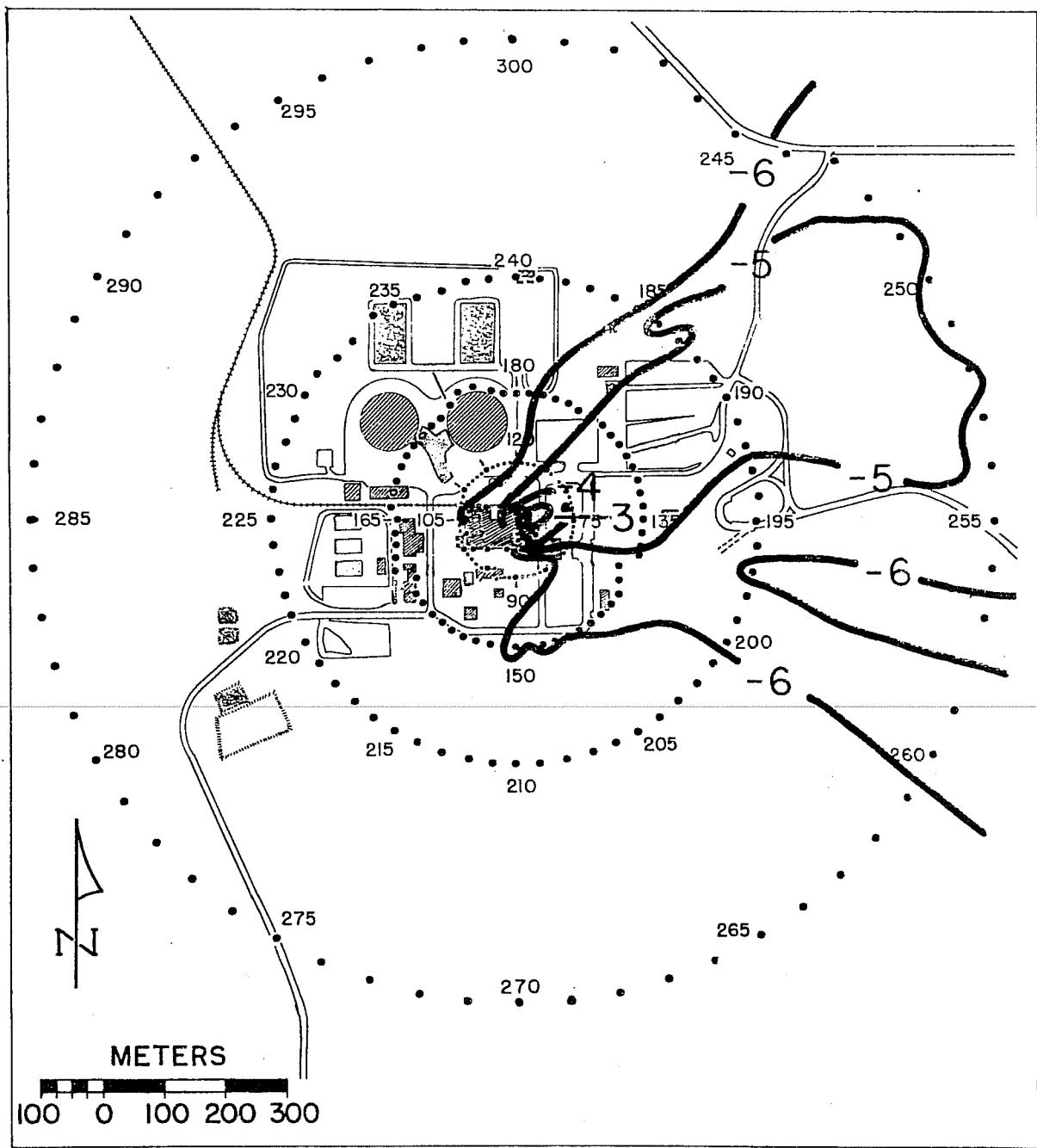


Figure C-17. Concentration isopleths ($X\bar{u}/Q$ in negative powers of ten) for F12, test 9. Tracer was released at surface position G5 under NRC stability category D. Mean tower wind at release height was from 240 degrees at 1.5 mps.

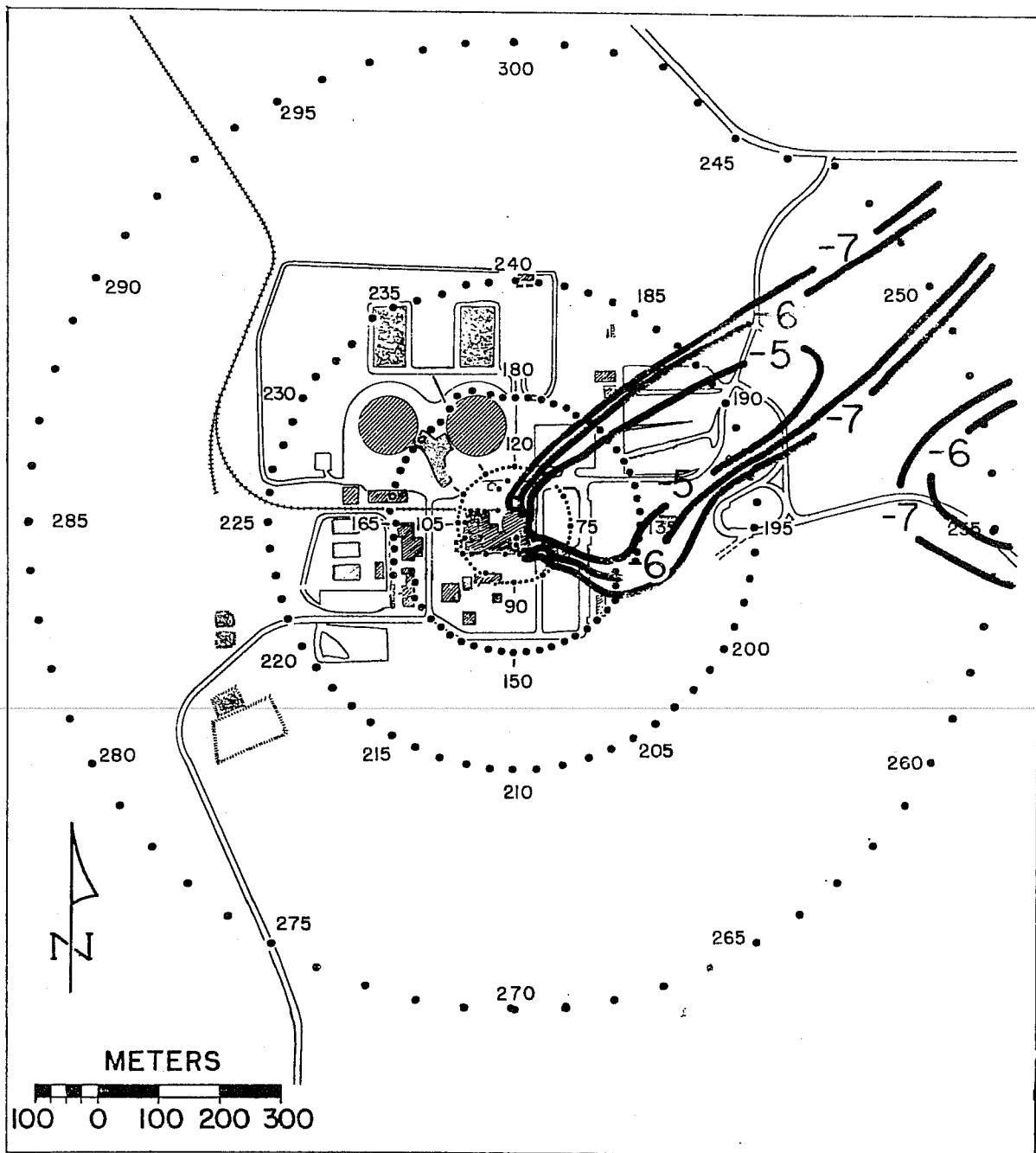


Figure C-18. Concentration isopleths ($X\bar{u}/Q$ in negative powers of ten) for SF6, test 9. Tracer was released at containment vessel roof under NRC stability category D. Mean tower wind at release height was from 243 degrees at 1.9 mps.

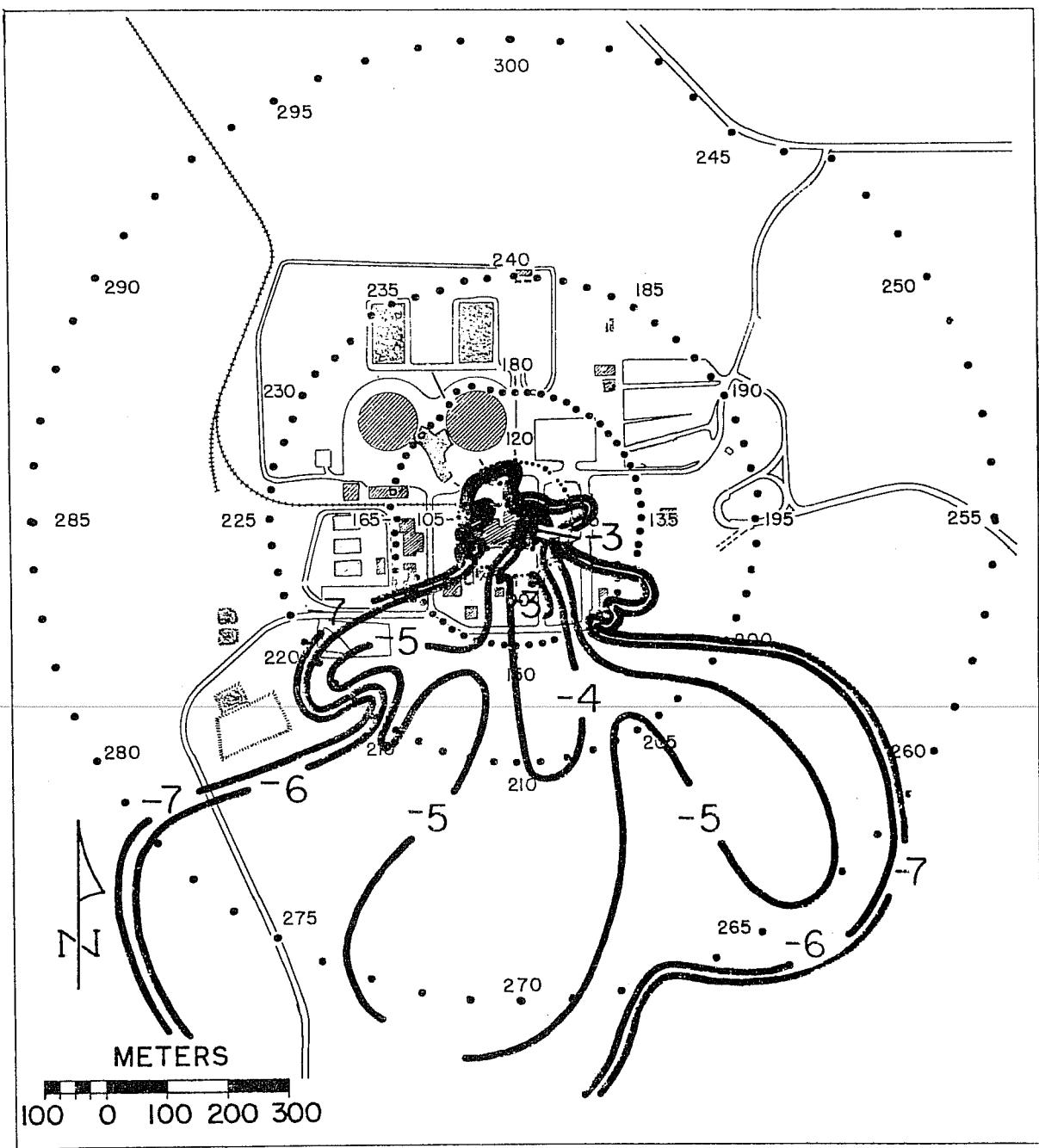


Figure C-19. Concentration isopleths ($X\bar{u}/Q$ in negative powers of ten) for F12, test 10. Tracer was released at surface position G5 under NRC stability category F. Mean tower wind at release height was from 330 degrees at 3.0 mps.

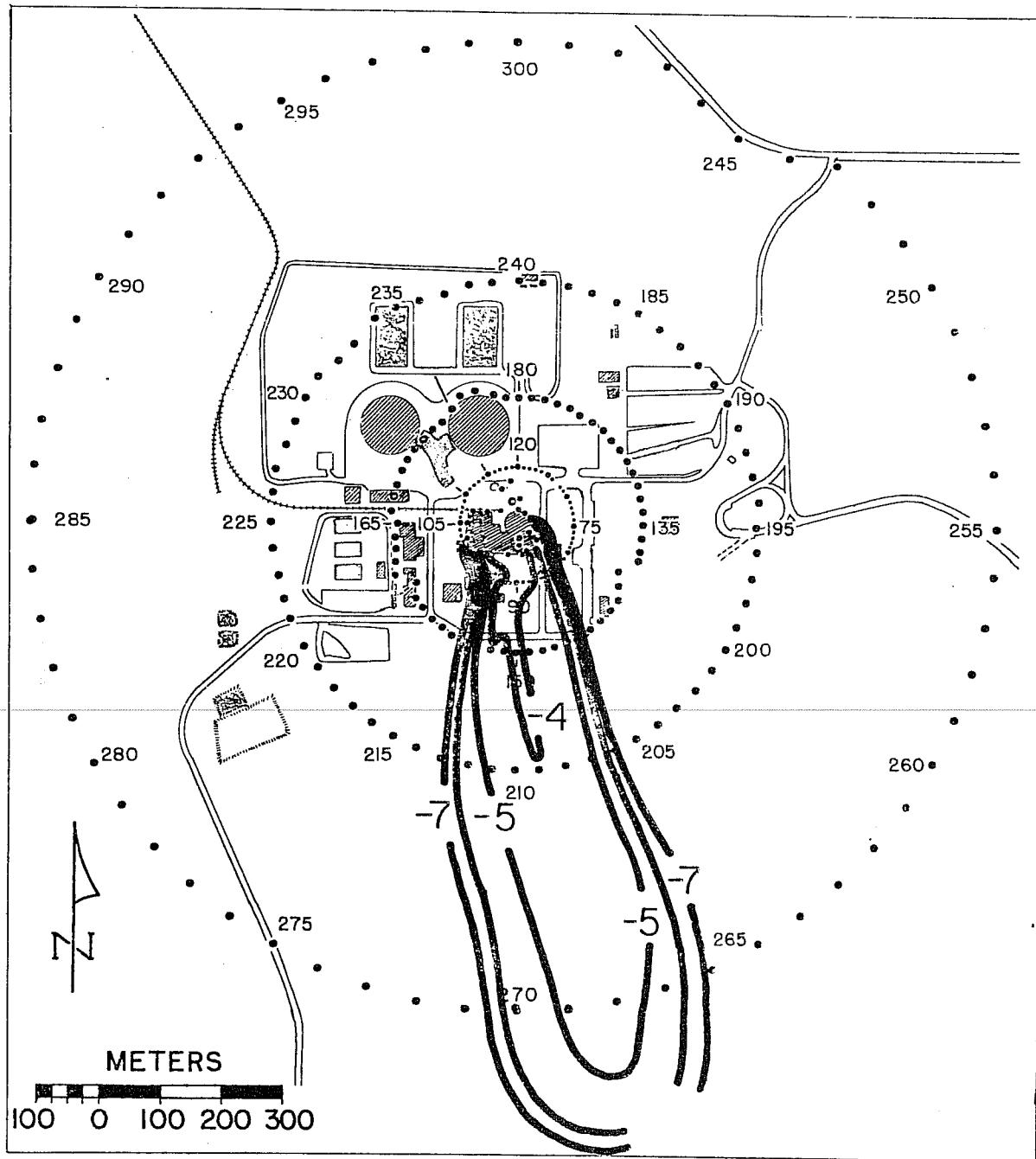


Figure C-20. Concentration isopleths (\bar{X}_u/Q in negative powers of ten) for SF6, test 10. Tracer was released at auxiliary building roof under NRC stability category F. Mean tower wind at release height was from 346 degrees at 4.9 mps.

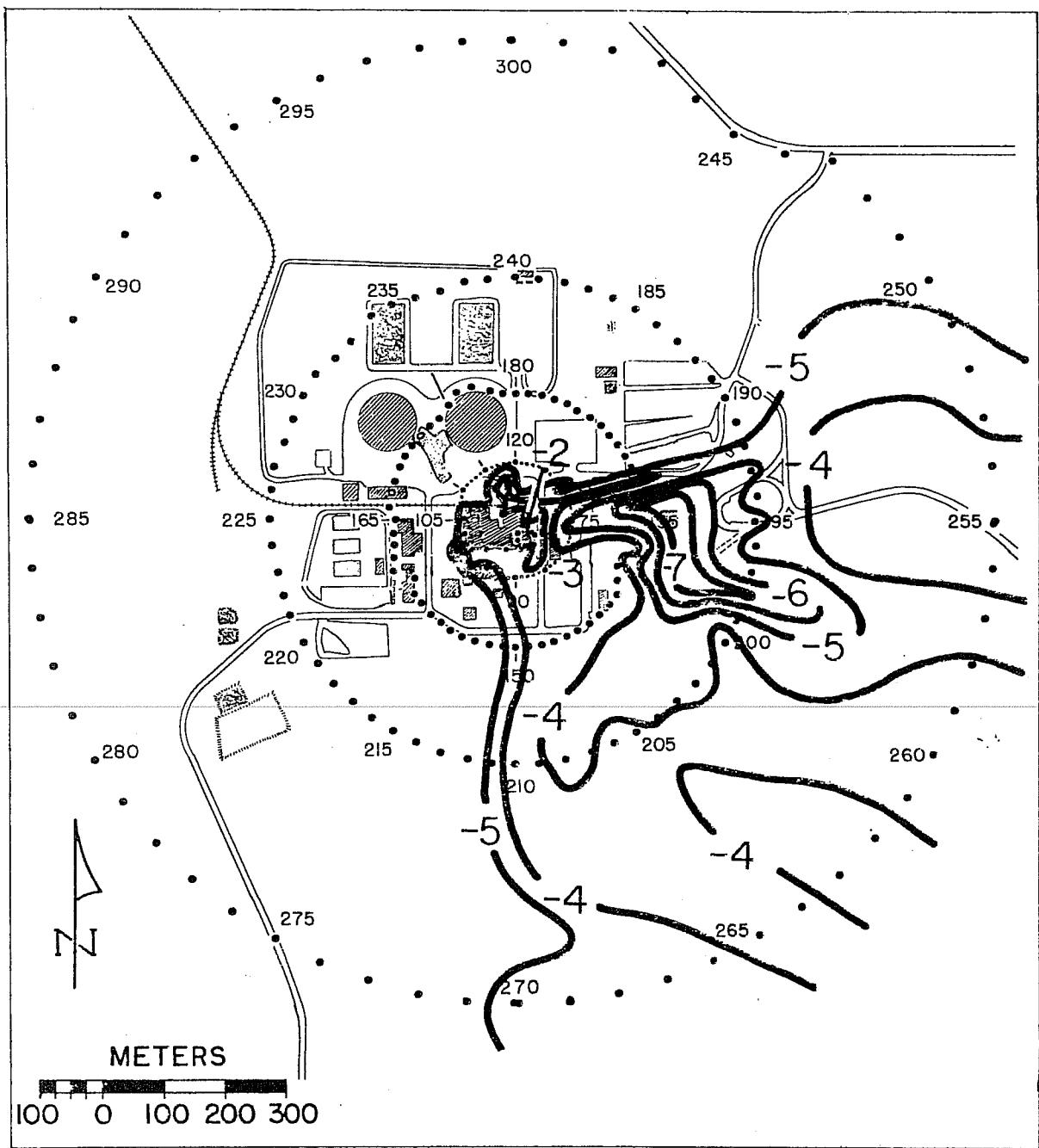


Figure C-21. Concentration isopleths (xu/Q in negative powers of ten) for F12, test 11. Tracer was released at surface position G5 under NRC stability category E. Mean tower wind at release height was from 310 degrees at 3.7 mps.

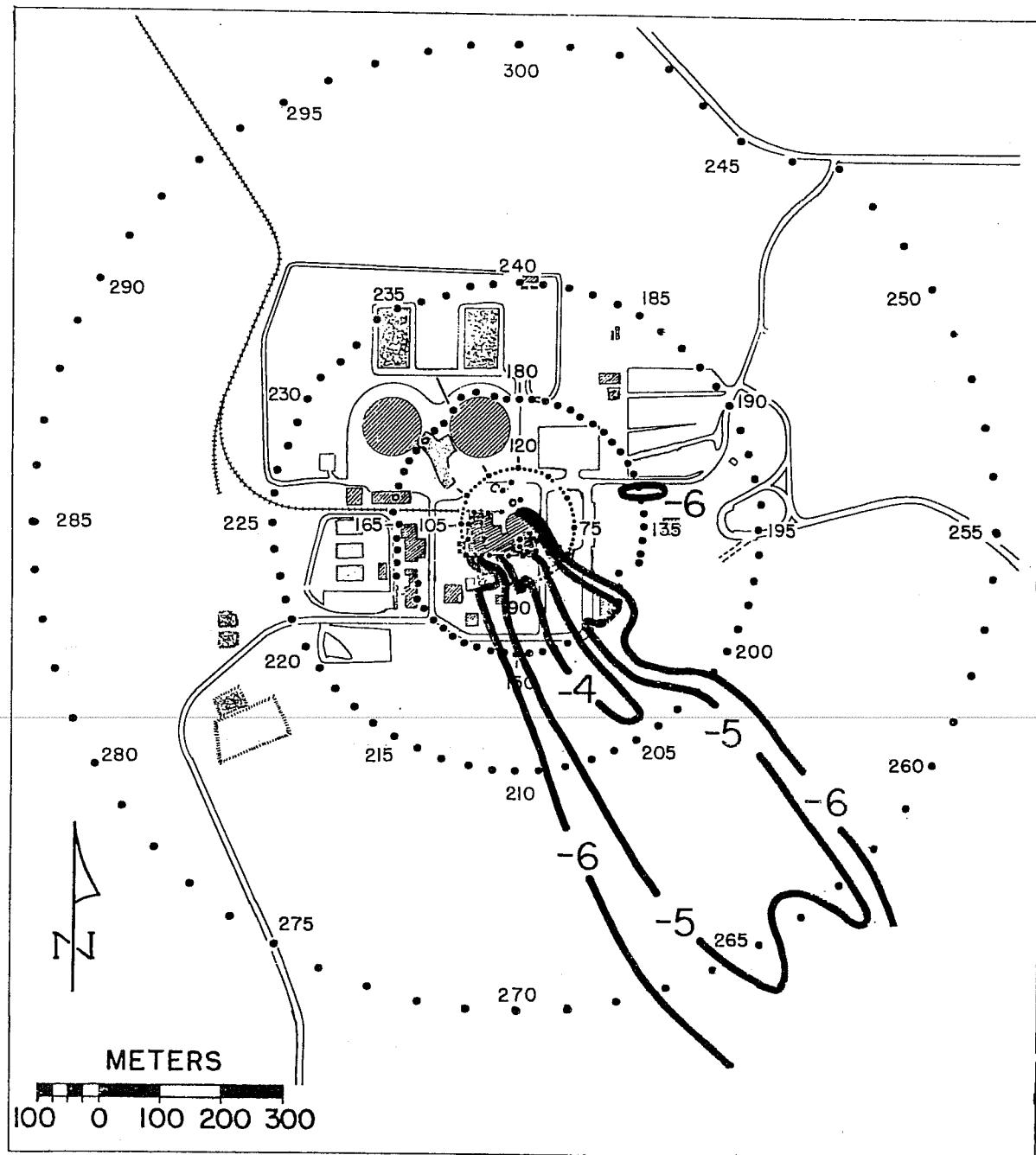


Figure C-22. Concentration isopleths (\bar{x}/Q in negative powers of ten) for SF₆, test 11. Tracer was released at auxiliary building roof under NRC stability category E. Mean tower wind at release height was from 320 degrees at 4.8 mps.

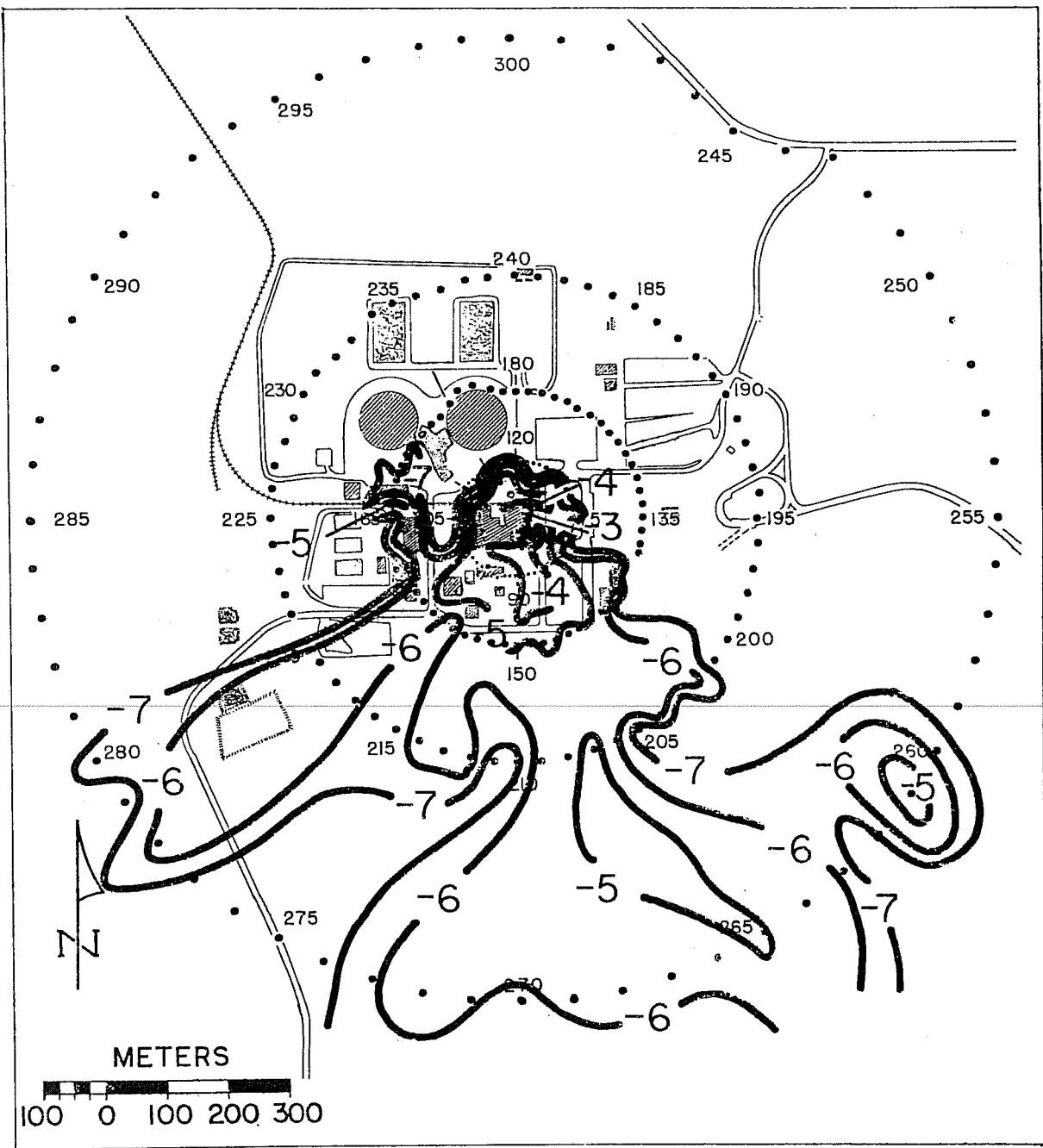


Figure C-23. Concentration isopleths ($X\bar{u}/Q$ in negative powers of ten) for F12, test 12. Tracer was released at surface position G5 under NRC stability category E. Mean tower wind at release height was from 349 degrees at 1.3 mps.

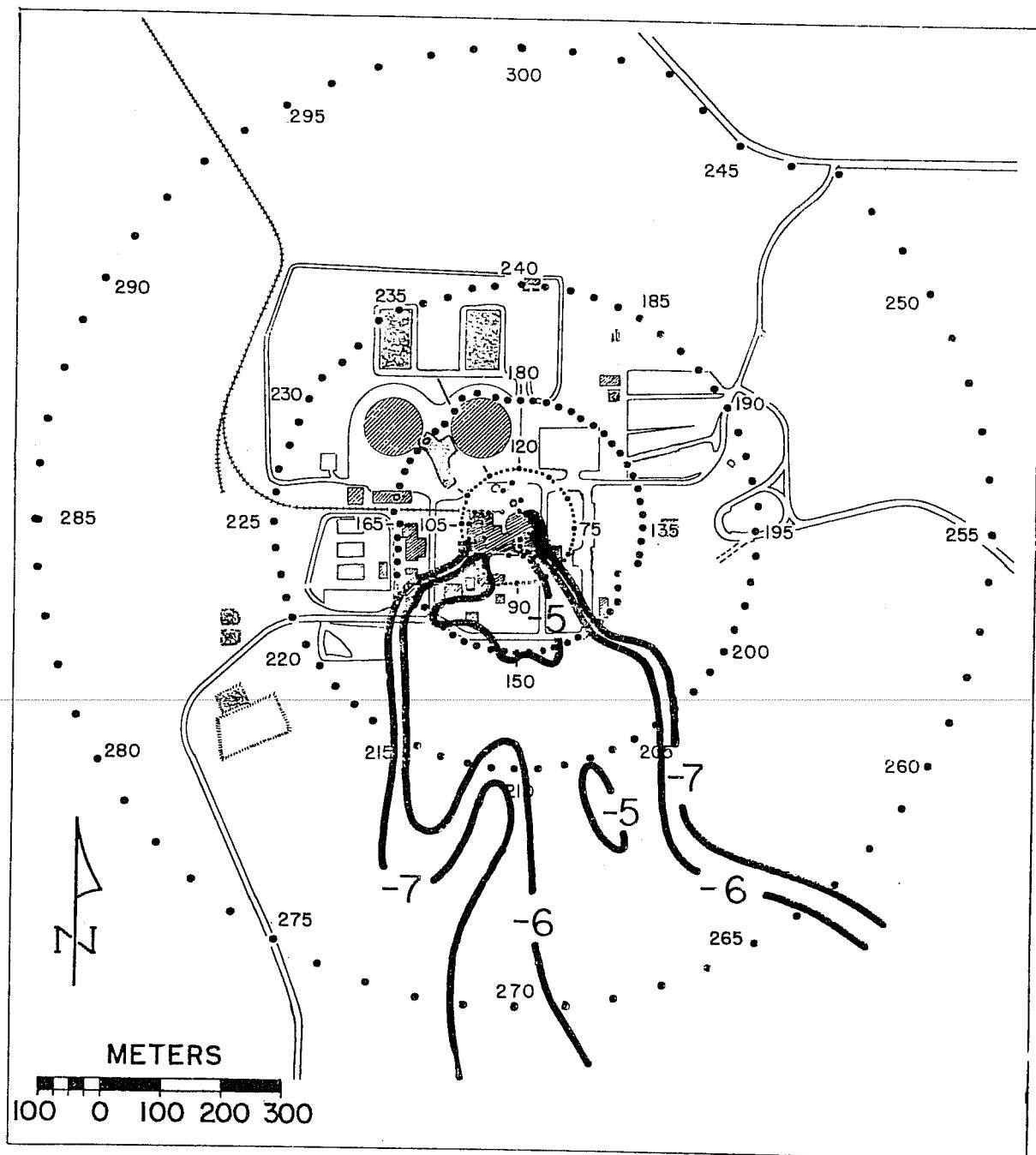


Figure C-24. Concentration isopleths ($\bar{x}u/Q$ in negative powers of ten) for SF₆, test 12. Tracer was released at auxiliary building roof under NRC stability category E. Mean tower wind at release height was from 345 degrees at 1.7 mps.

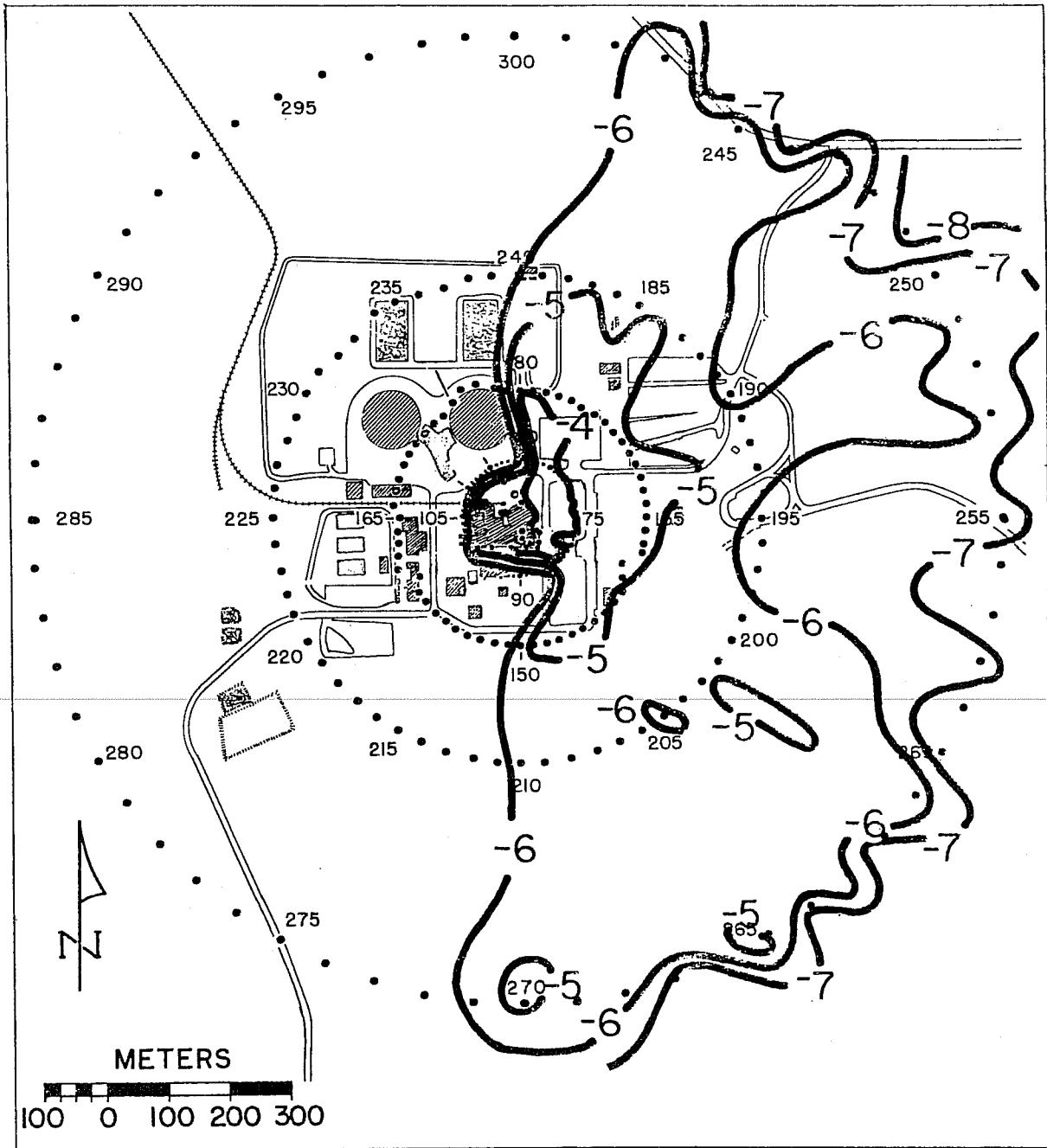


Figure C-25. Concentration isopleths (\bar{x}_u/Q in negative powers of ten) for F12, test 13. Tracer was released at surface position G5 under NRC stability category E. Mean tower wind at release height was from 243 degrees at 0.8 mps.

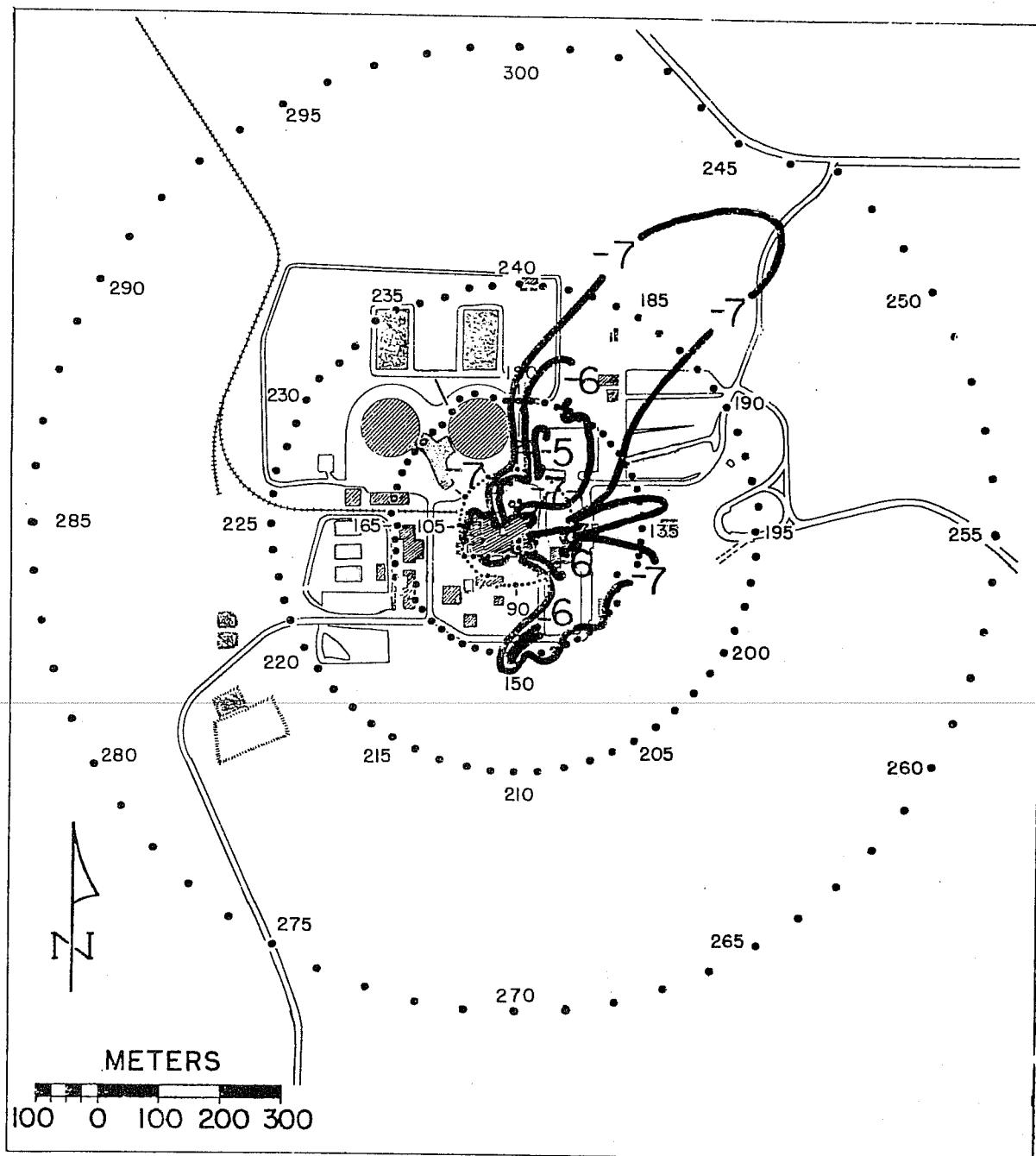


Figure C-26. Concentration isopleths ($\bar{x}u/Q$ in negative powers of ten) for SF₆, test 13. Tracer was released at auxiliary building roof under NRC stability category E. Mean tower wind at release height was from 256 degrees at 0.9 mps.

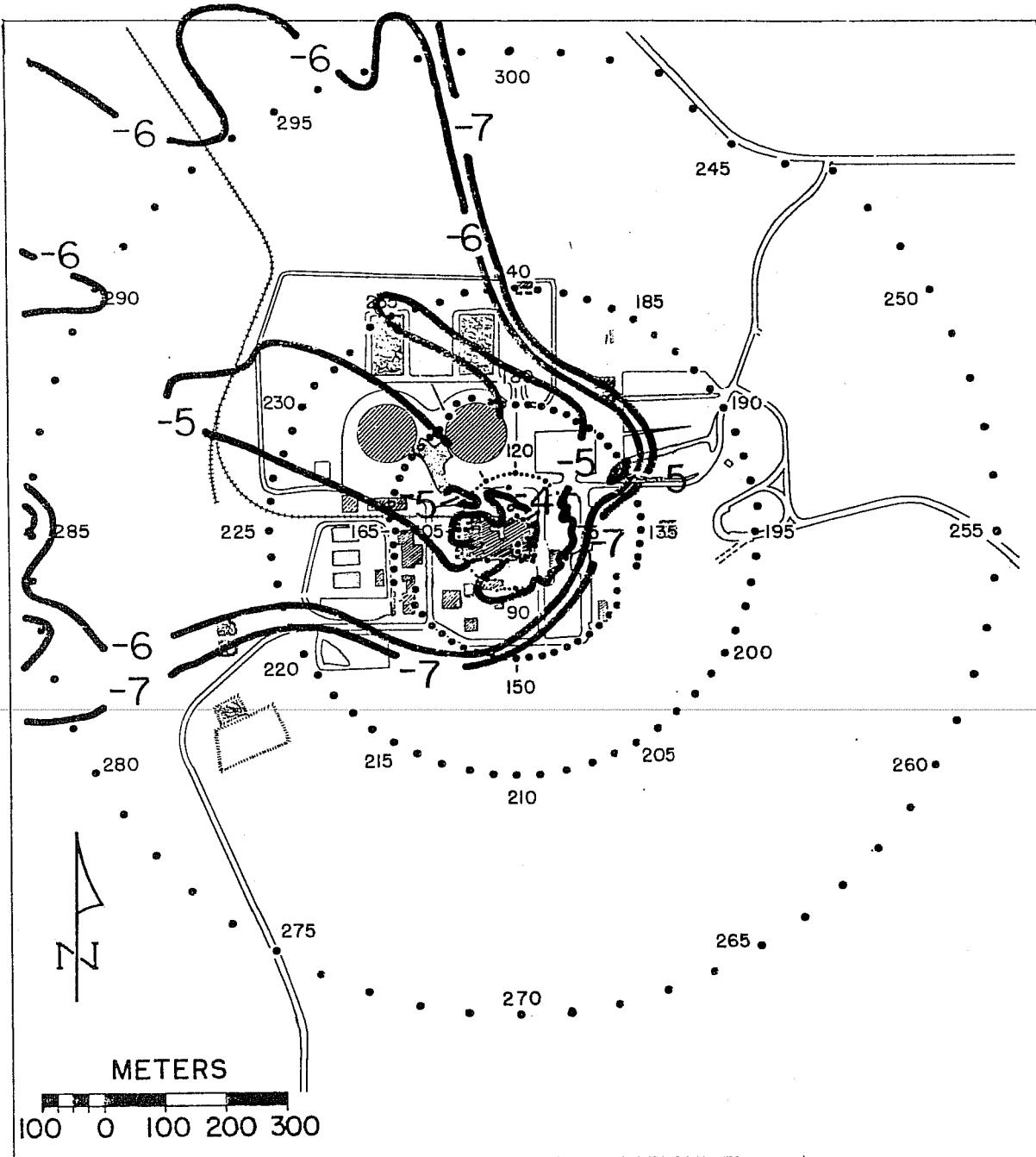


Figure C-27. Concentration isopleths ($\bar{x}u/Q$ in negative powers of ten) for F12, test 14. Tracer was released at surface position G5 under NRC stability category G. Mean tower wind at release height was from 109 degrees at 0.9 mps.

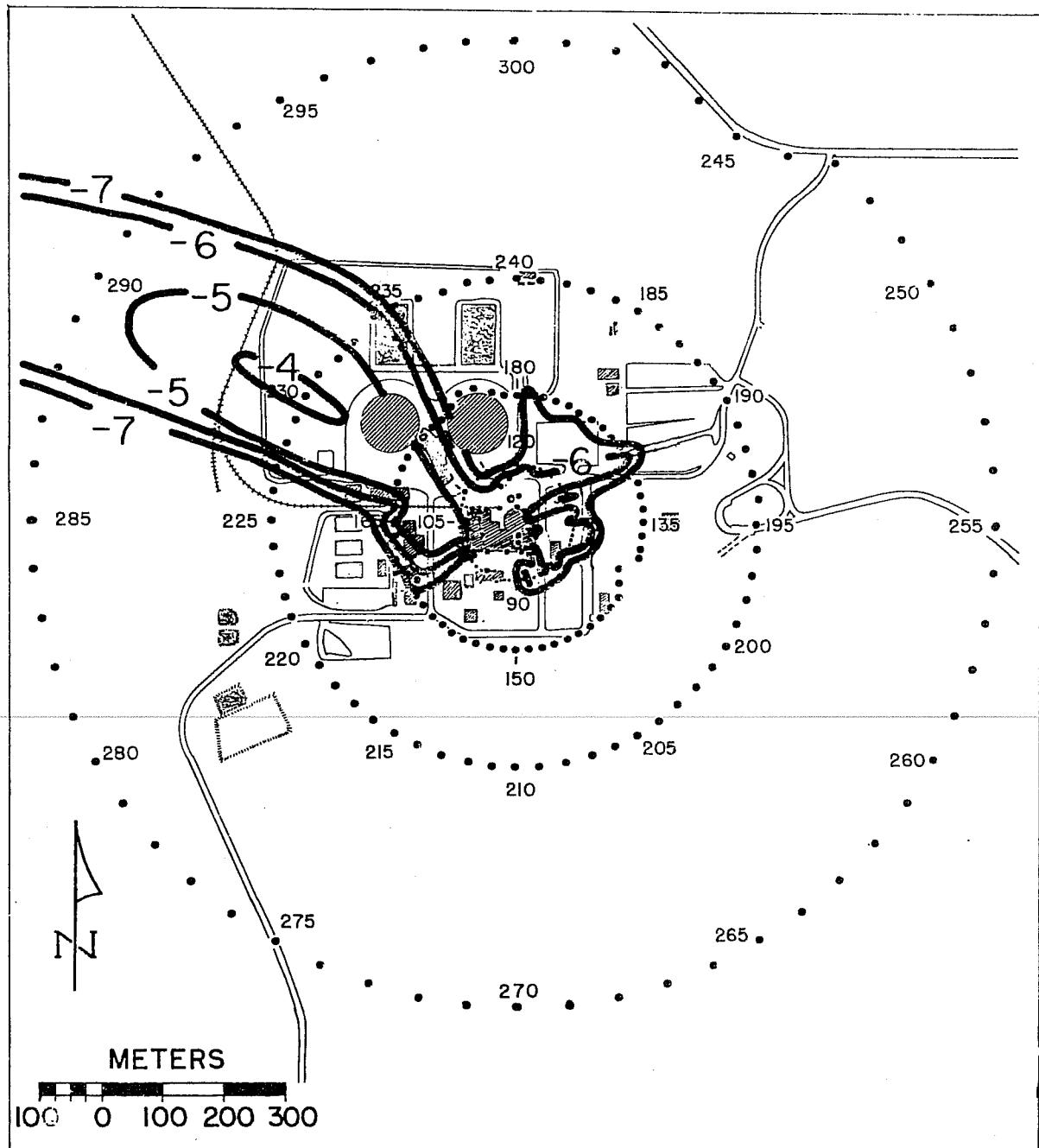


Figure C-28. Concentration isopleths (\bar{x}_u/Q in negative powers of ten) for SF6, test 14. Tracer was released at auxiliary building roof under NRC stability category G. Mean tower wind at release height was from 121 degrees at 2.3 mps.

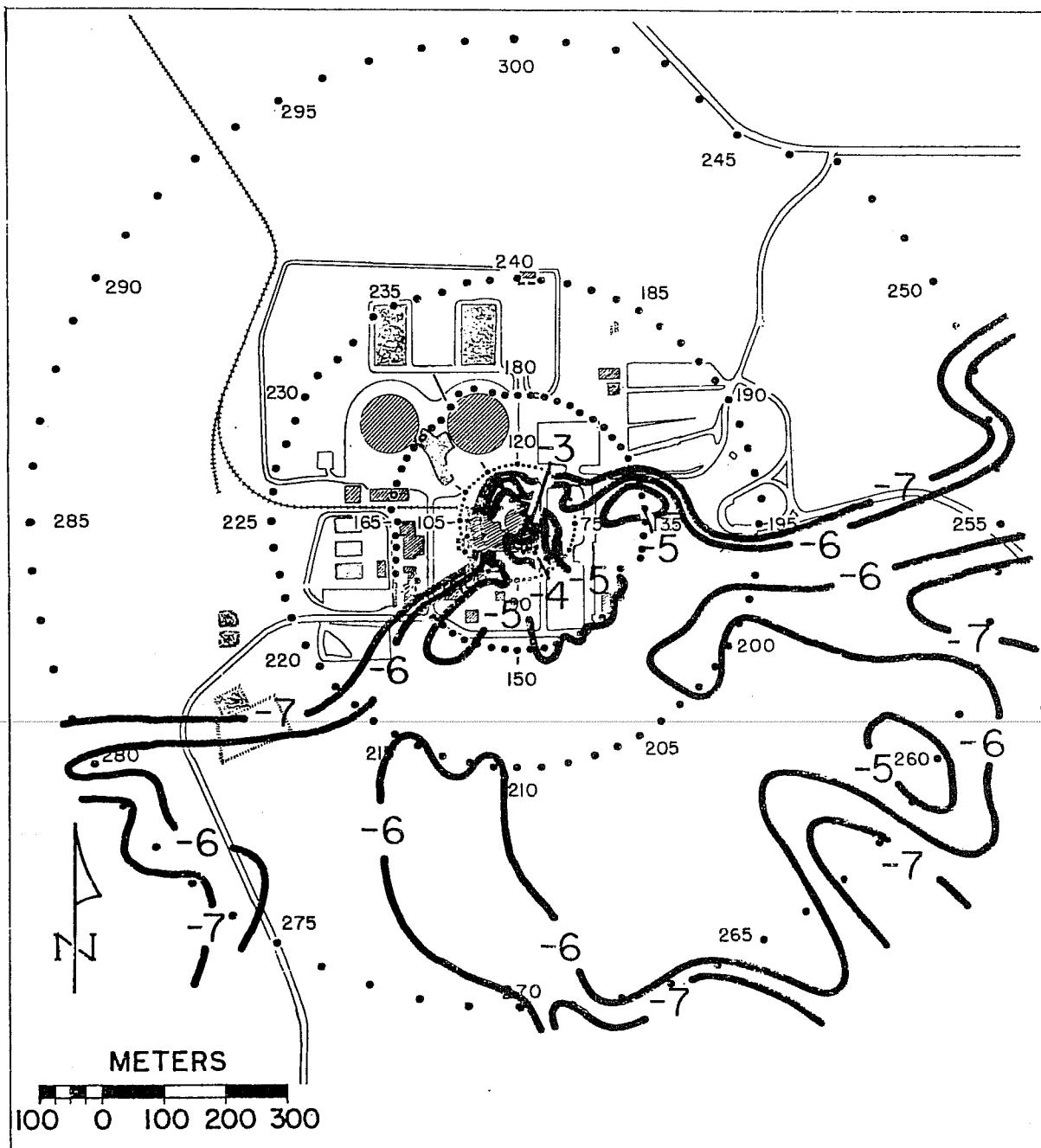


Figure C-29. Concentration isopleths ($\bar{x}u/Q$ in negative powers of ten) for F12, test 15. Tracer was released at surface position G5 under NRC stability category D. Mean tower wind at release height was from 339 degrees at 0.8 mps.

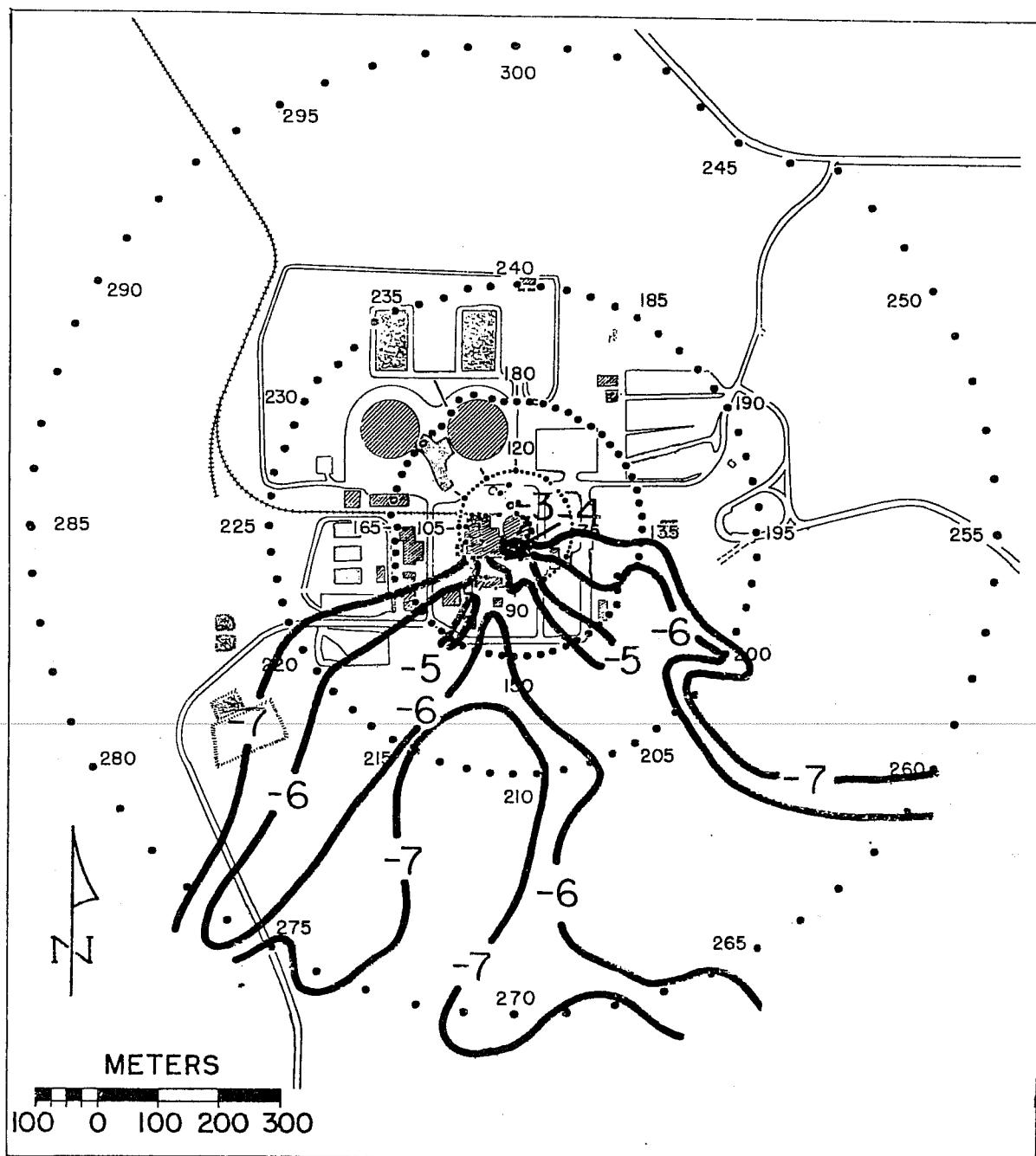


Figure C-30. Concentration isopleths ($X\bar{u}/Q$ in negative powers of ten) for SF₆, test 15. Tracer was released at auxiliary building roof under NRC stability category D. Mean tower wind at release height was from 357 degrees at 1.3 mps.

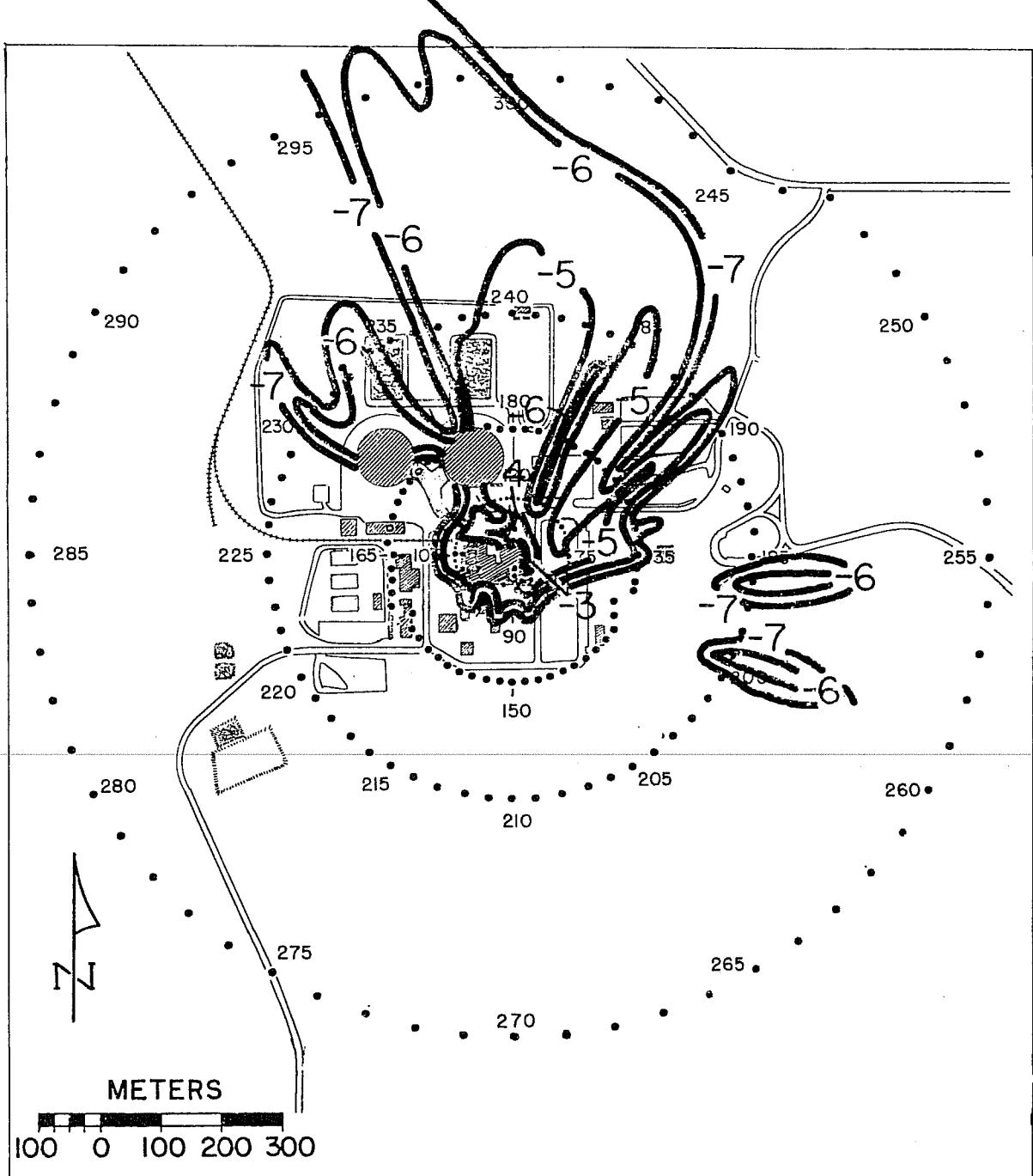


Figure C-31. Concentration isopleths ($X\bar{u}/Q$ in negative powers of ten) for F12, test 16. Tracer was released at surface position G5 under NRC stability category E. Mean tower wind at release height was from 227 degrees at 1.0 mps.

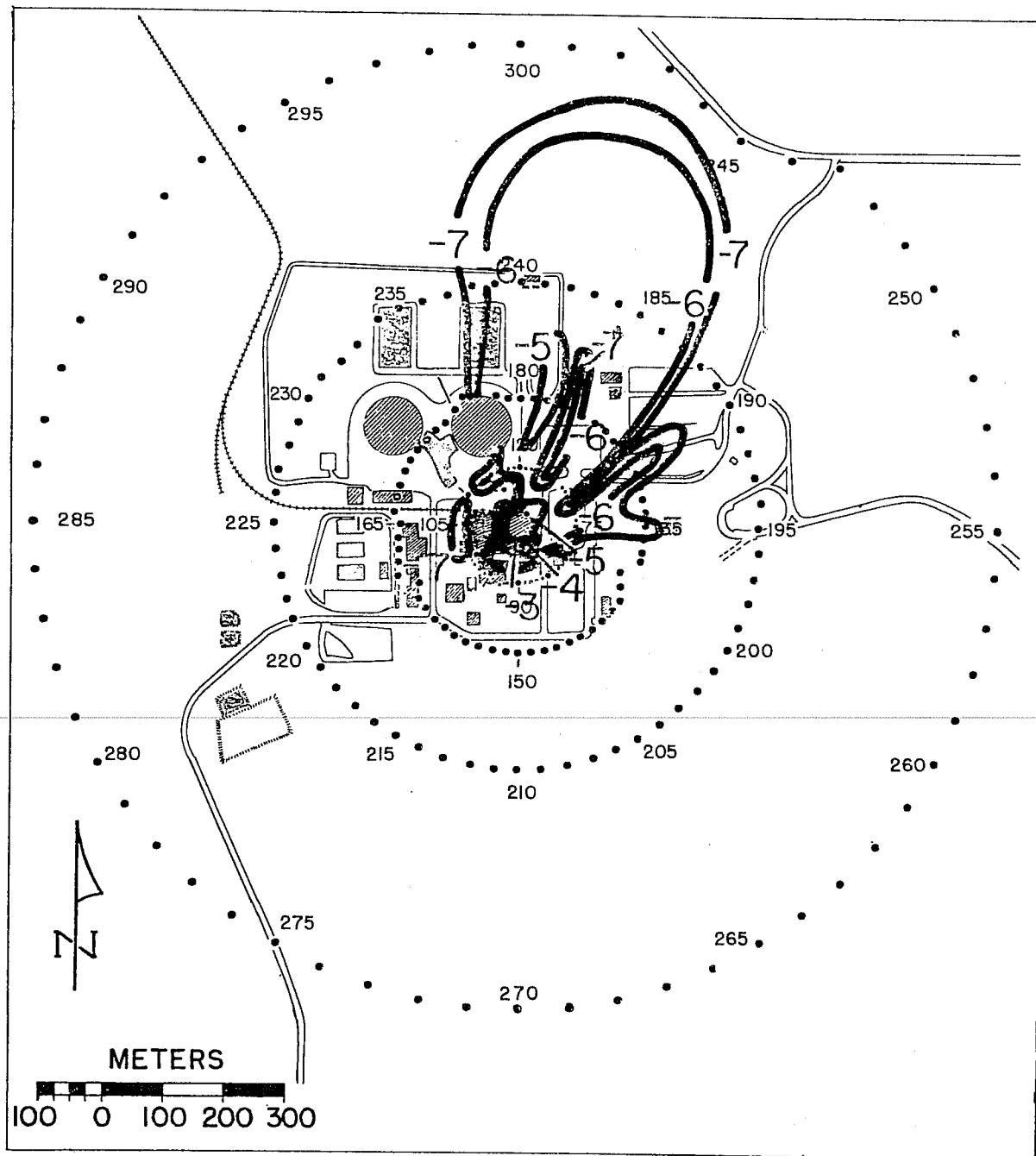


Figure C-32. Concentration isopleths ($x\bar{u}/Q$ in negative powers of ten) for SF₆, test 16. Tracer was released at surface position G17 under NRC stability category E. Mean tower wind at release height was from 227 degrees at 1.0 mps.

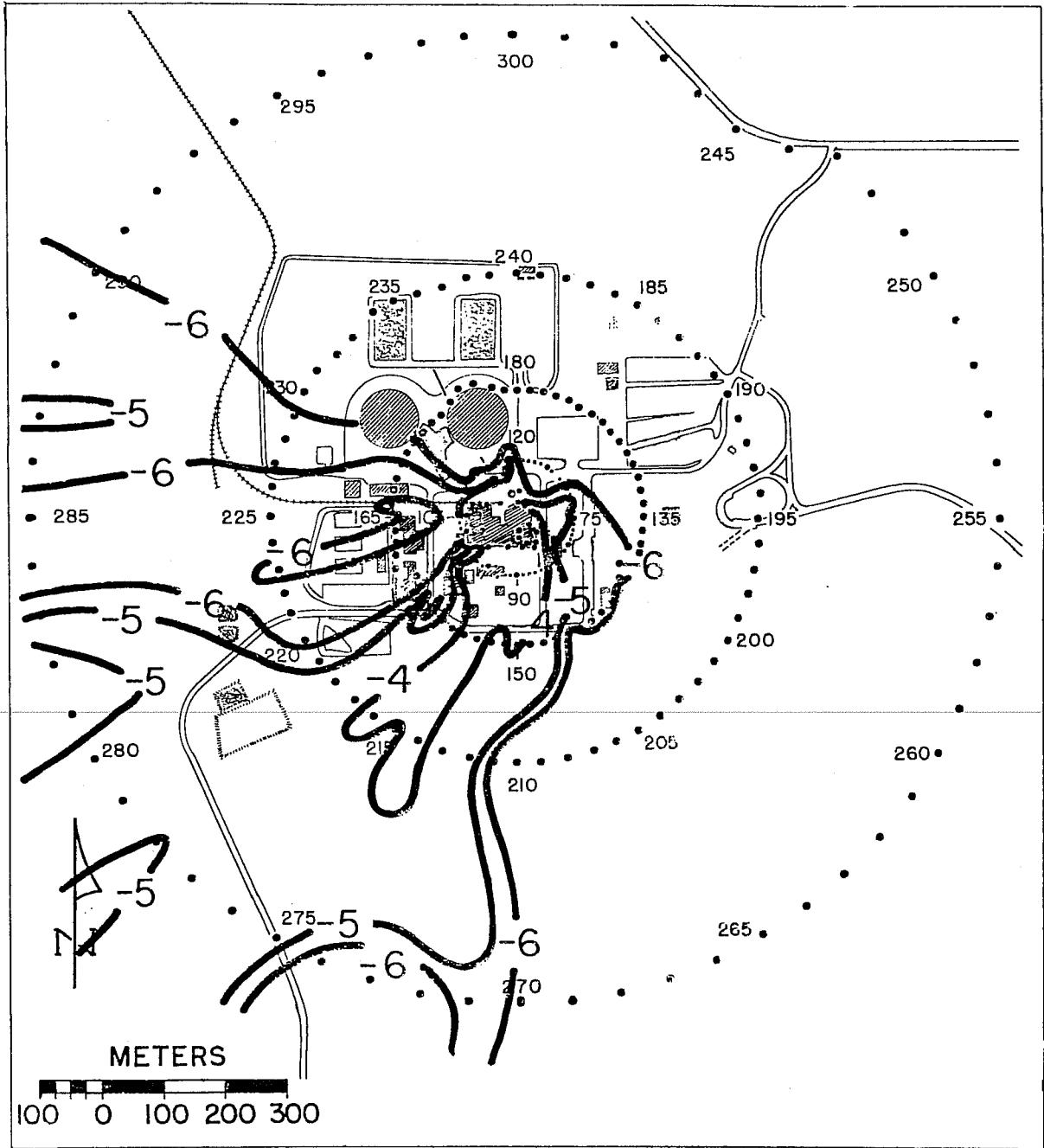


Figure C-33. Concentration isopleths (\bar{x}_u/Q in negative powers of ten) for F12, test 17. Tracer was released at surface position G5 under NRC stability category G. Mean tower wind at release height was from 050 degrees at 2.0 mps.

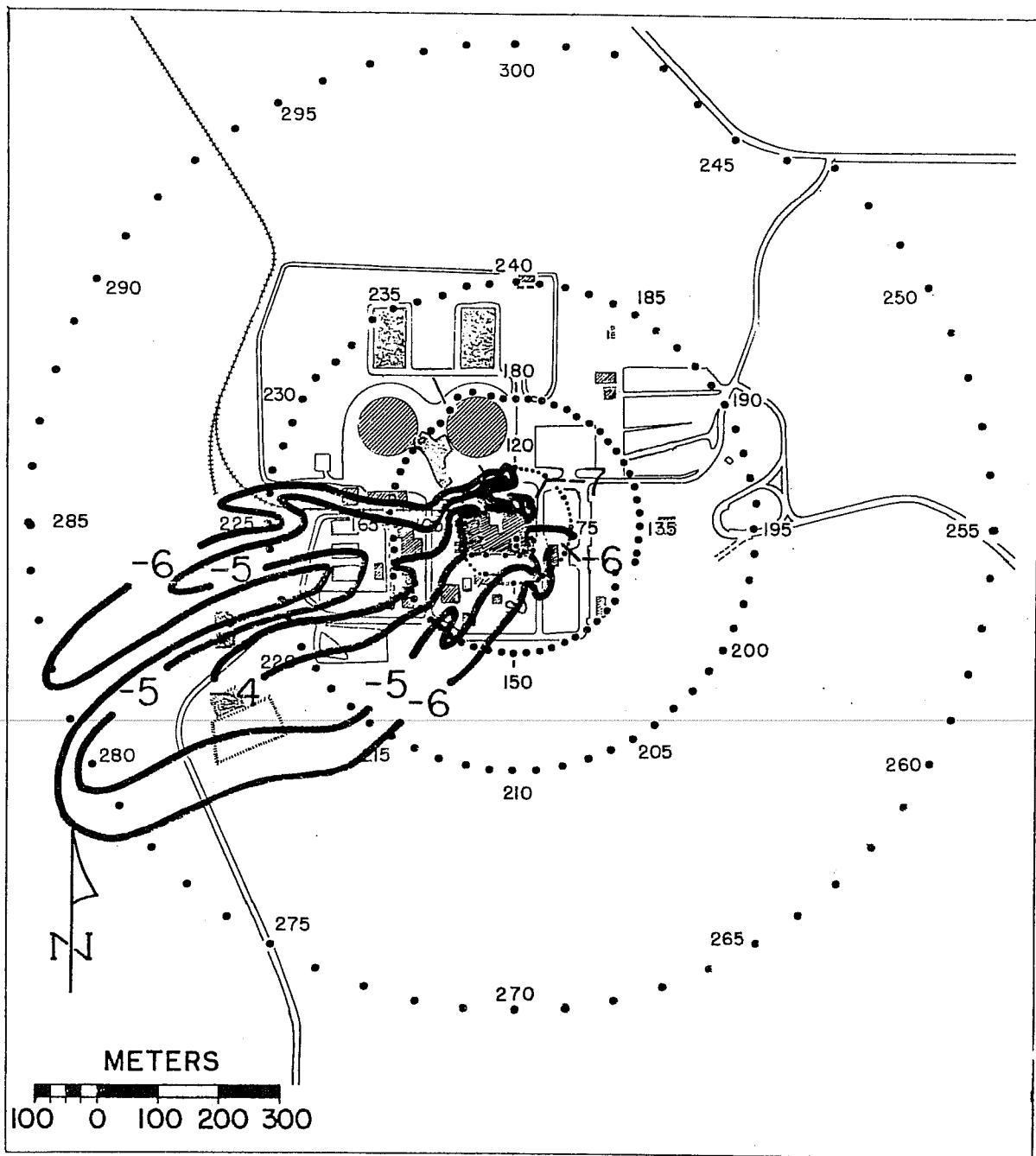


Figure C-34. Concentration isopleths ($\bar{x}u/Q$ in negative powers of ten) for SF6, test 17. Tracer was released at surface position G17 under NRC stability category G. Mean tower wind at release height was from 050 degrees at 2.0 mps.

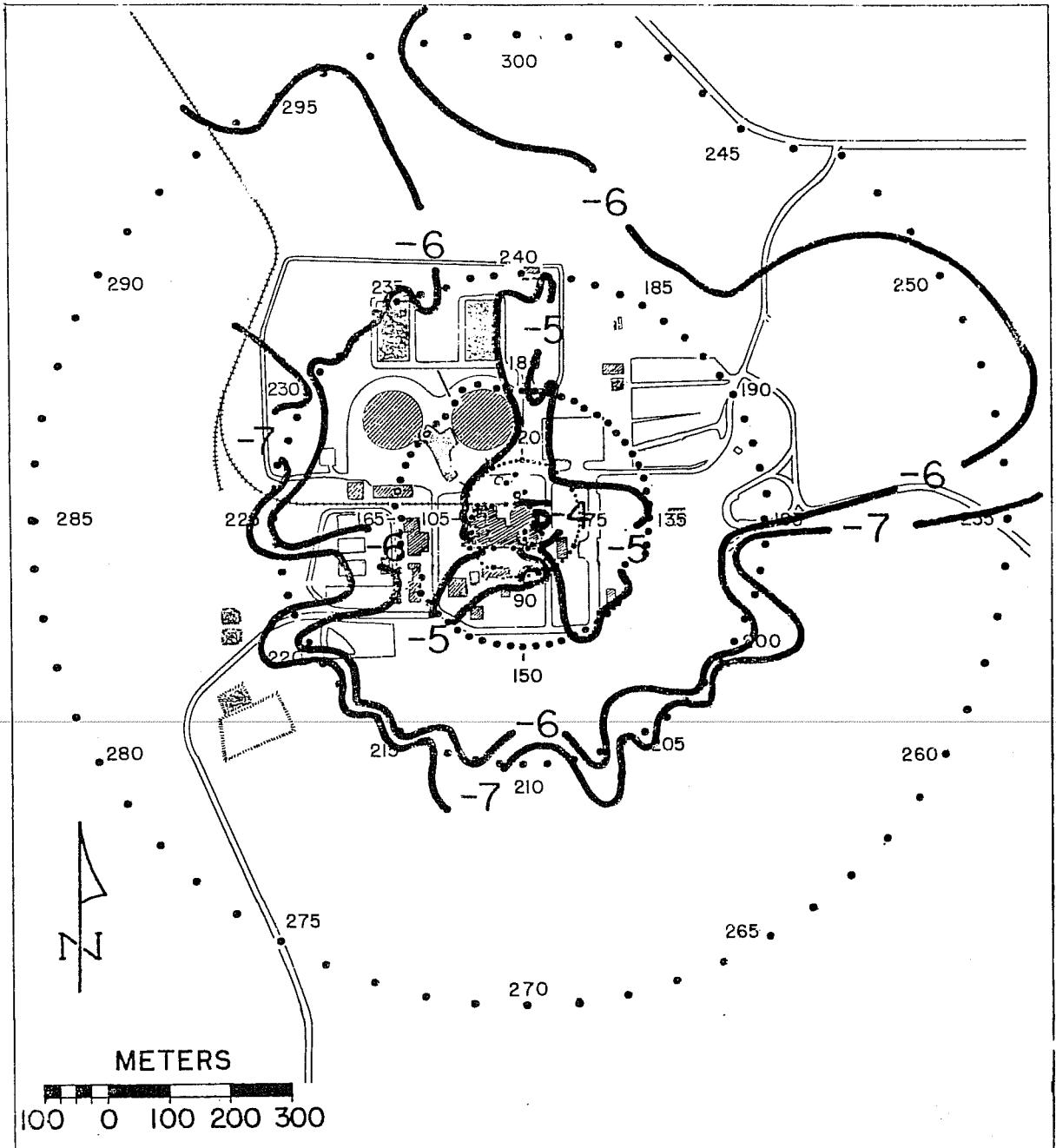


Figure C-35. Concentration isopleths ($\bar{x}u/Q$ in negative powers of ten) for F12, test 18. Tracer was released at surface position G5 under NRC stability category F. Mean tower wind at release height was from 251 degrees at 0.7 mps.

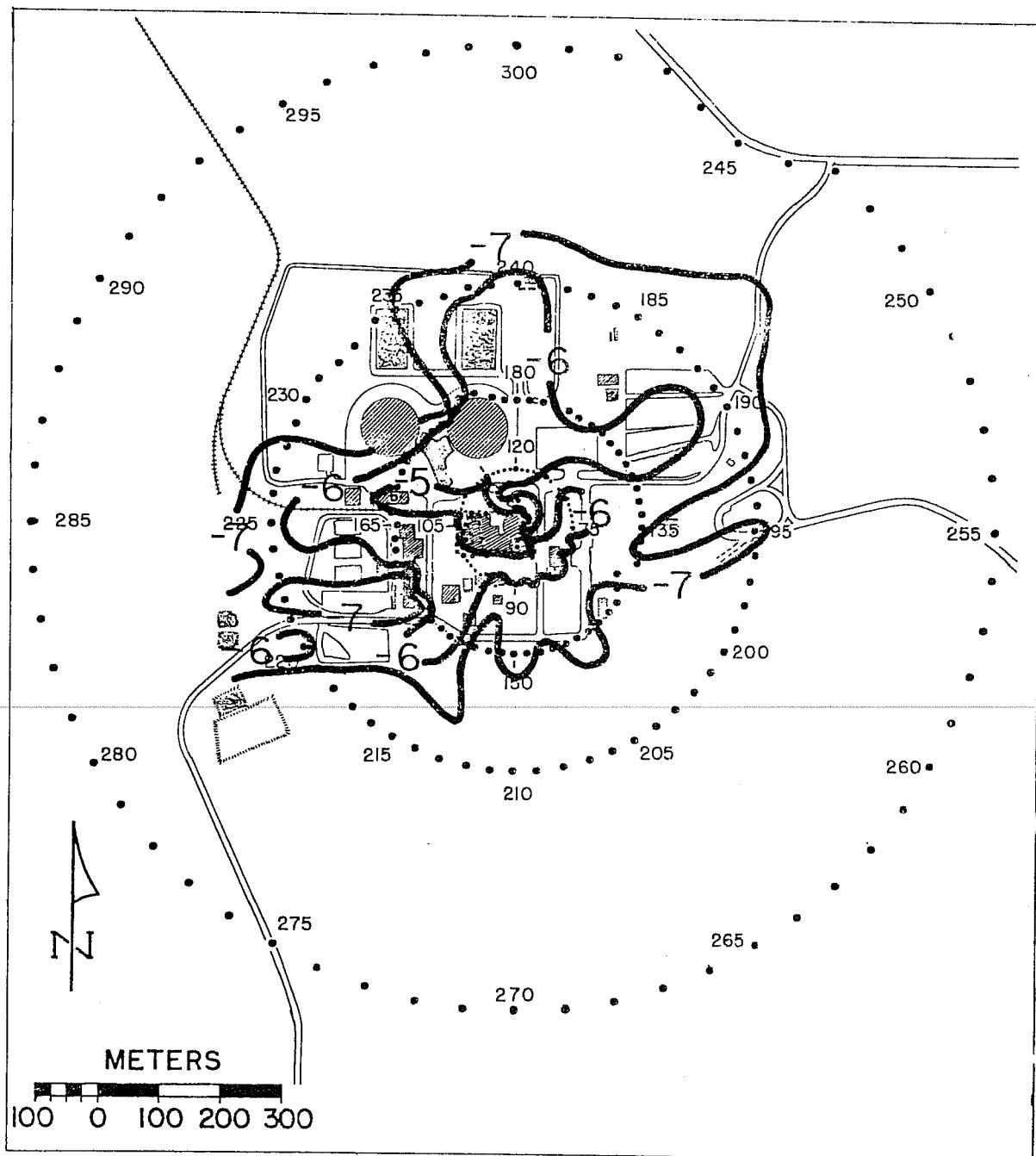


Figure C-36. Concentration isopleths (\bar{x}_u/Q in negative powers of ten) for SF6, test 18. Tracer was released at surface position G17 under NRC stability category F. Mean tower wind at release height was from 251 degrees at 0.7 mps.

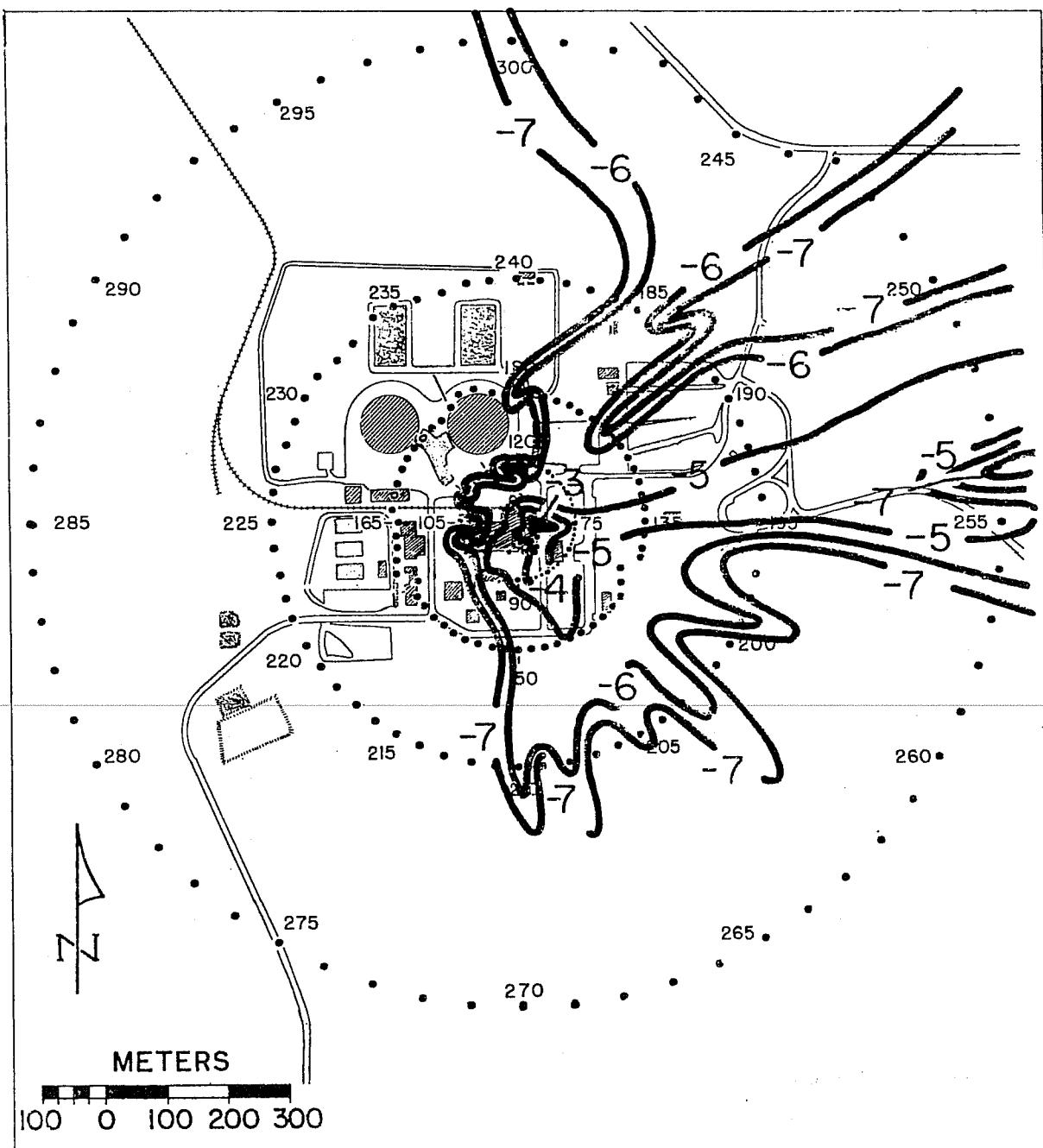


Figure C-37. Concentration isopleths ($x\bar{u}/Q$ in negative powers of ten) for F12, test 19. Tracer was released at surface position G5 under NRC stability category E. Mean tower wind at release height was from 239 degrees at 1.1 mps.

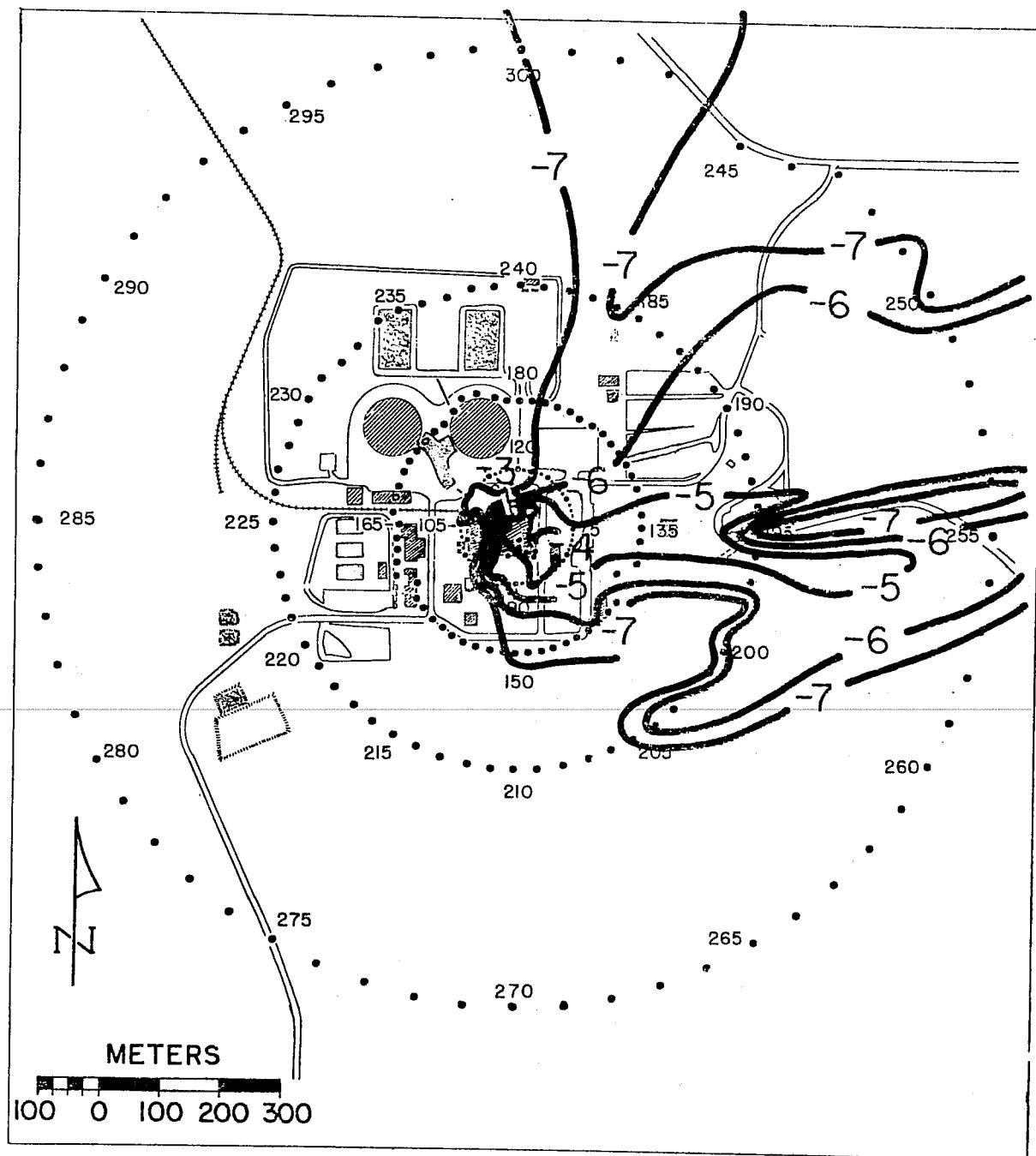


Figure C-38. Concentration isopleths (\bar{x}_u/Q in negative powers of ten) for SF₆, test 19. Tracer was released at surface position G17 under NRC stability category E. Mean tower wind at release height was from 239 degrees at 1.1 mps.

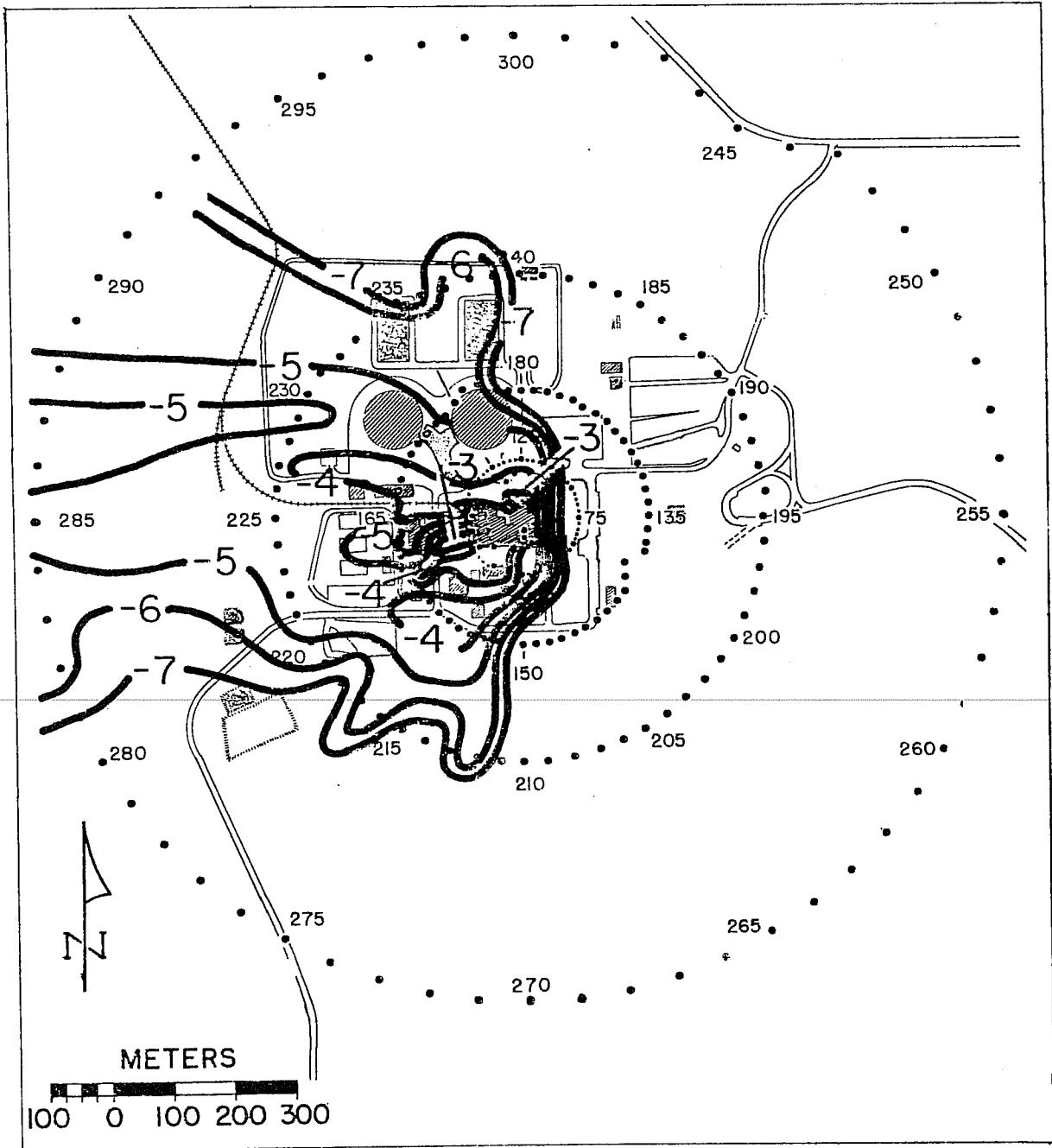


Figure C-39. Concentration isopleths (xu/Q in negative powers of ten) for F12, test 20. Tracer was released at surface position G5 under NRC stability category G. Mean tower wind speed at release height was 2.2 mps.

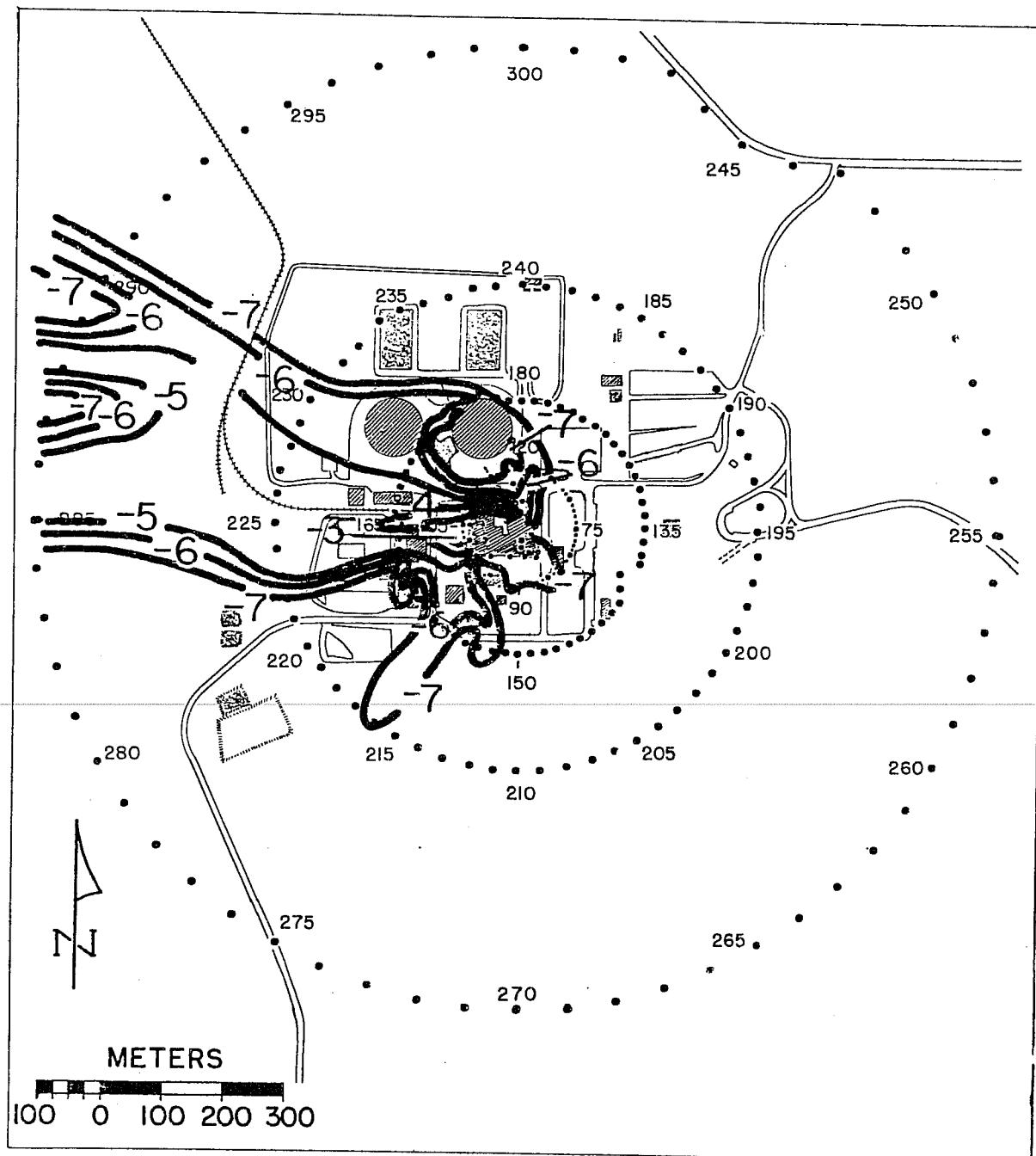


Figure C-40. Concentration isopleths ($\bar{x}u/Q$ in negative powers of ten) for SF6, test 20. Tracer was released at surface position G17 under NRC stability category G. Mean tower wind speed at release height was 2.2 mps.

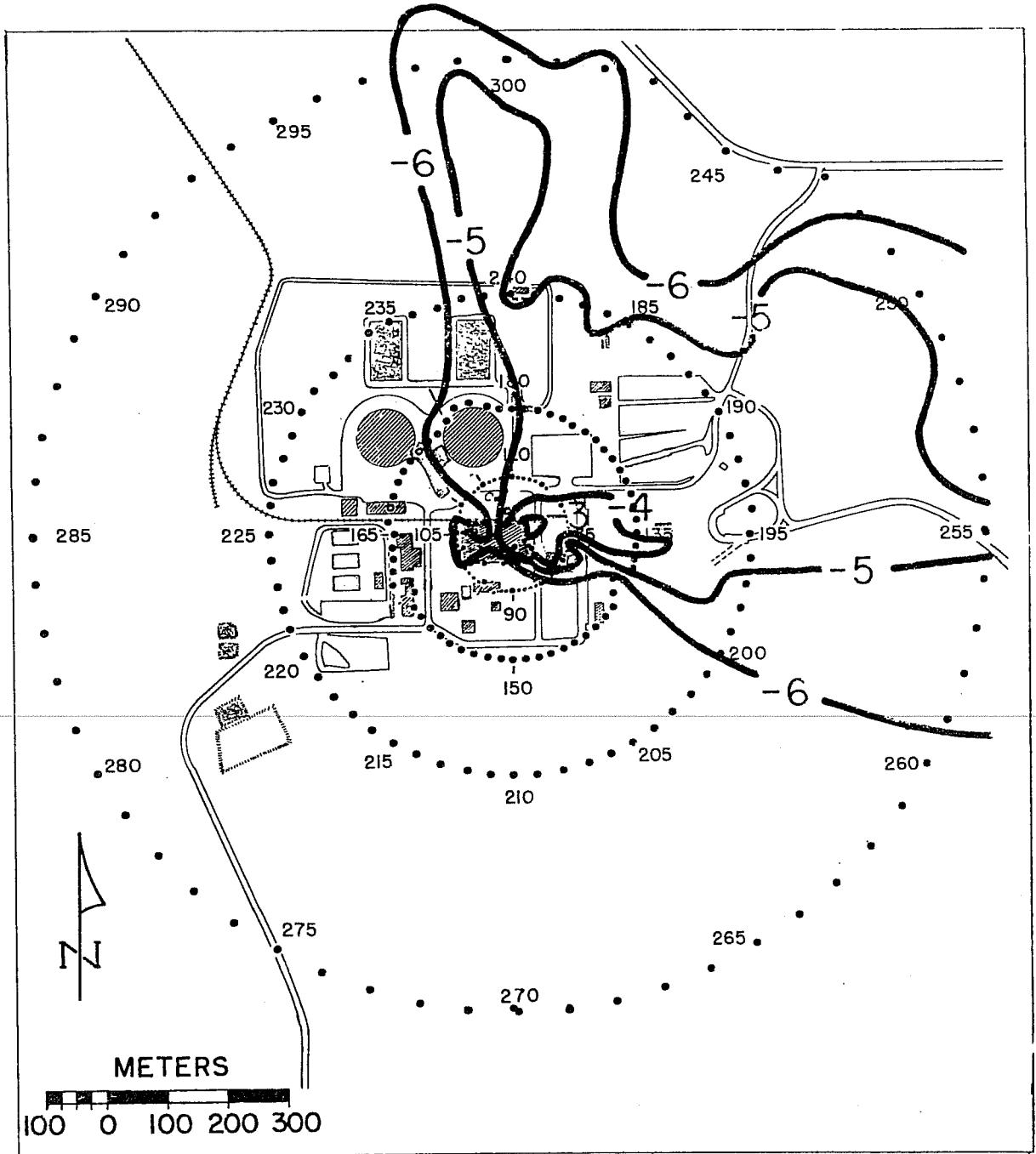


Figure C-41. Concentration isopleths ($\bar{x}u/Q$ in negative powers of ten) for F12, test 21. Tracer was released at surface position G5 under NRC stability category G. Mean tower wind at release height was from 262 degrees at 2.3 mps.

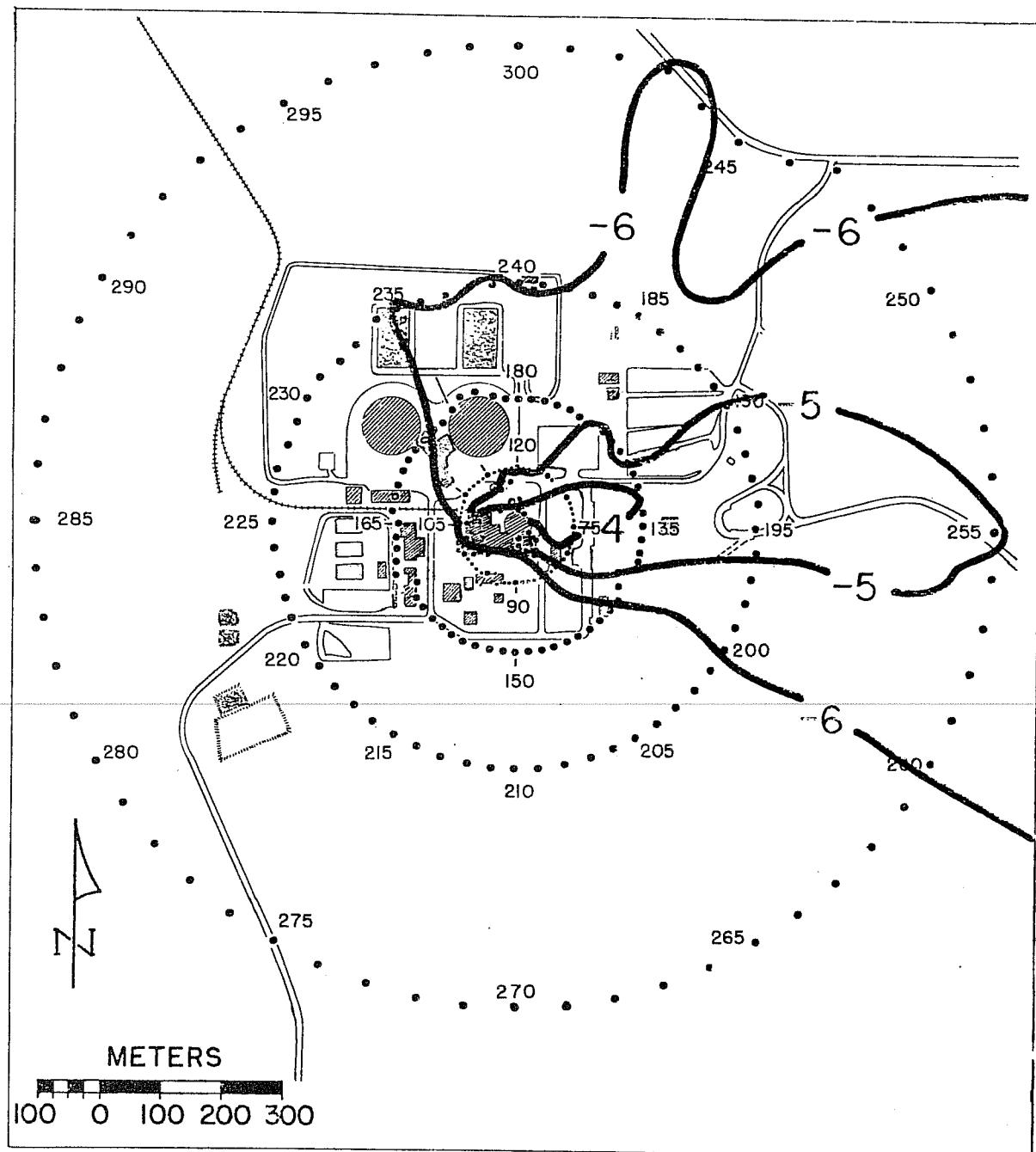


Figure C-42. Concentration isopleths (\bar{x}_u/Q in negative powers of ten) for SF₆, test 21. Tracer was released at surface position G17 under NRC stability category G. Mean tower wind at release height was from 262 degrees at 2.3 mps.

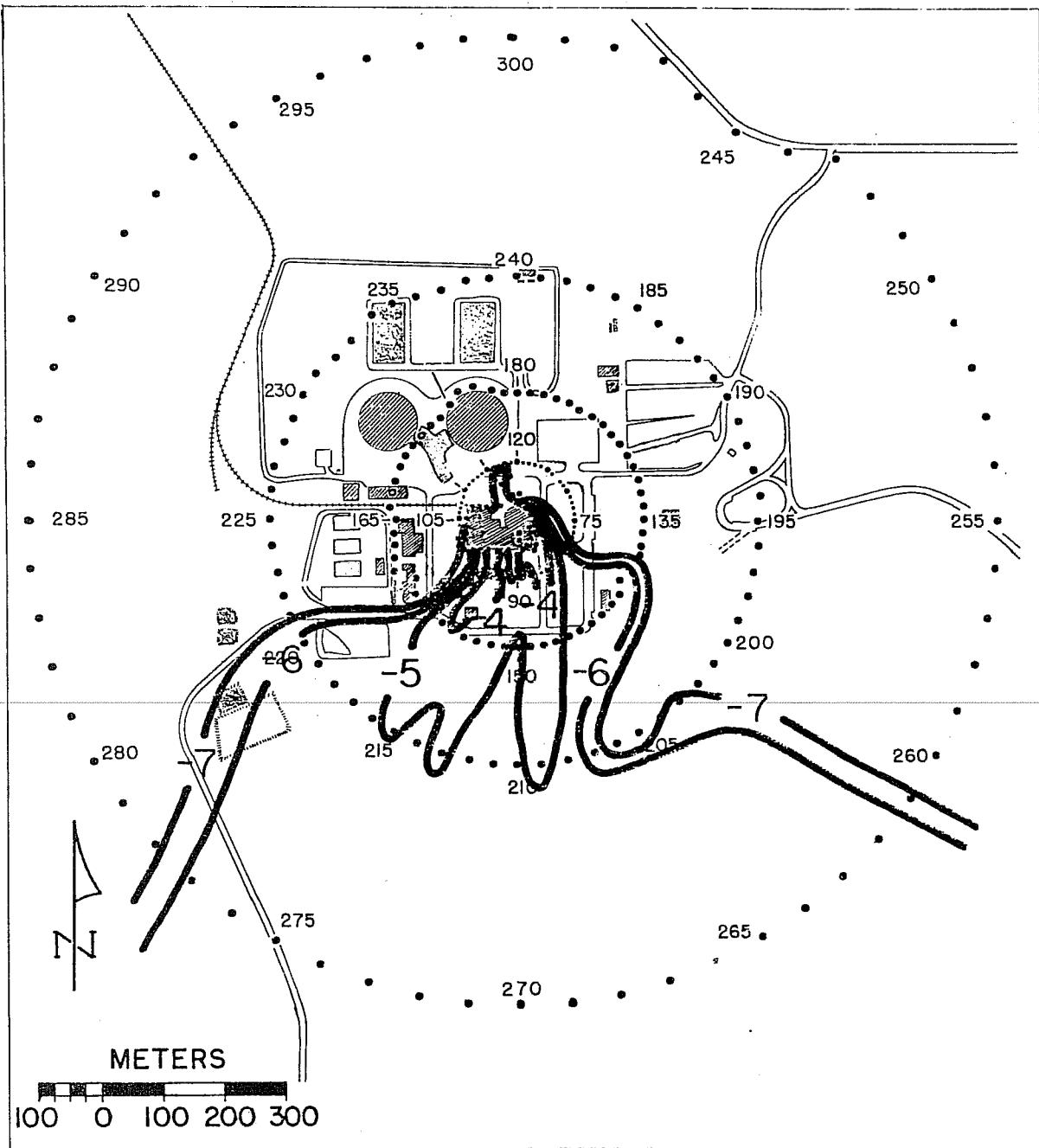


Figure C-43. Concentration isopleths ($\bar{x}u/Q$ in negative powers of ten) for F12, test 22. Tracer was released at surface position G5 under NRC stability category D. Mean tower wind at release height was from 024 degrees at 1.9 mps.

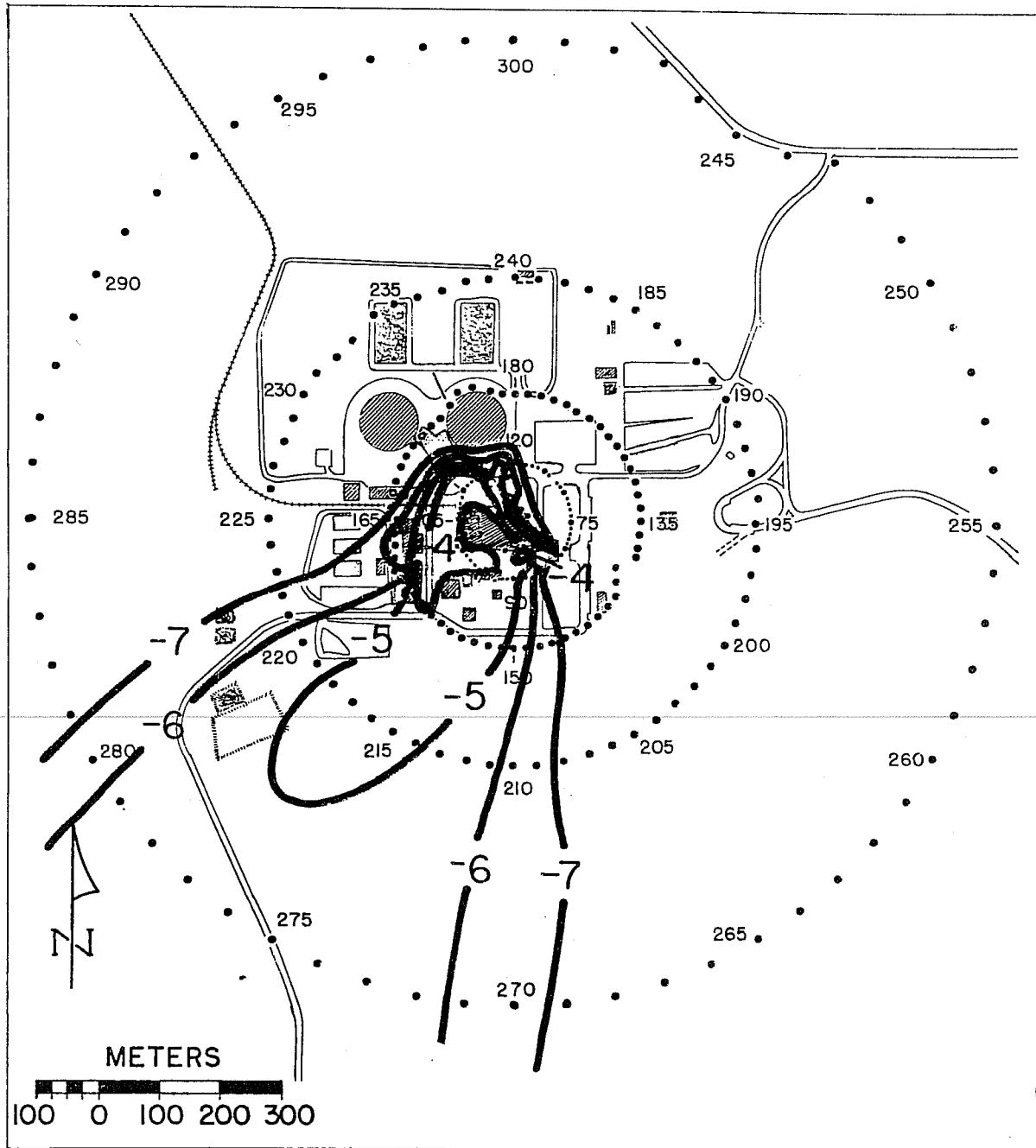


Figure C-44. Concentration isopleths ($\chi \bar{u}/Q$ in negative powers of ten) for SF₆, test 22. Tracer was released at surface position G17 under NRC stability category D. Mean tower wind at release height was from 024 degrees at 1.9 mps.

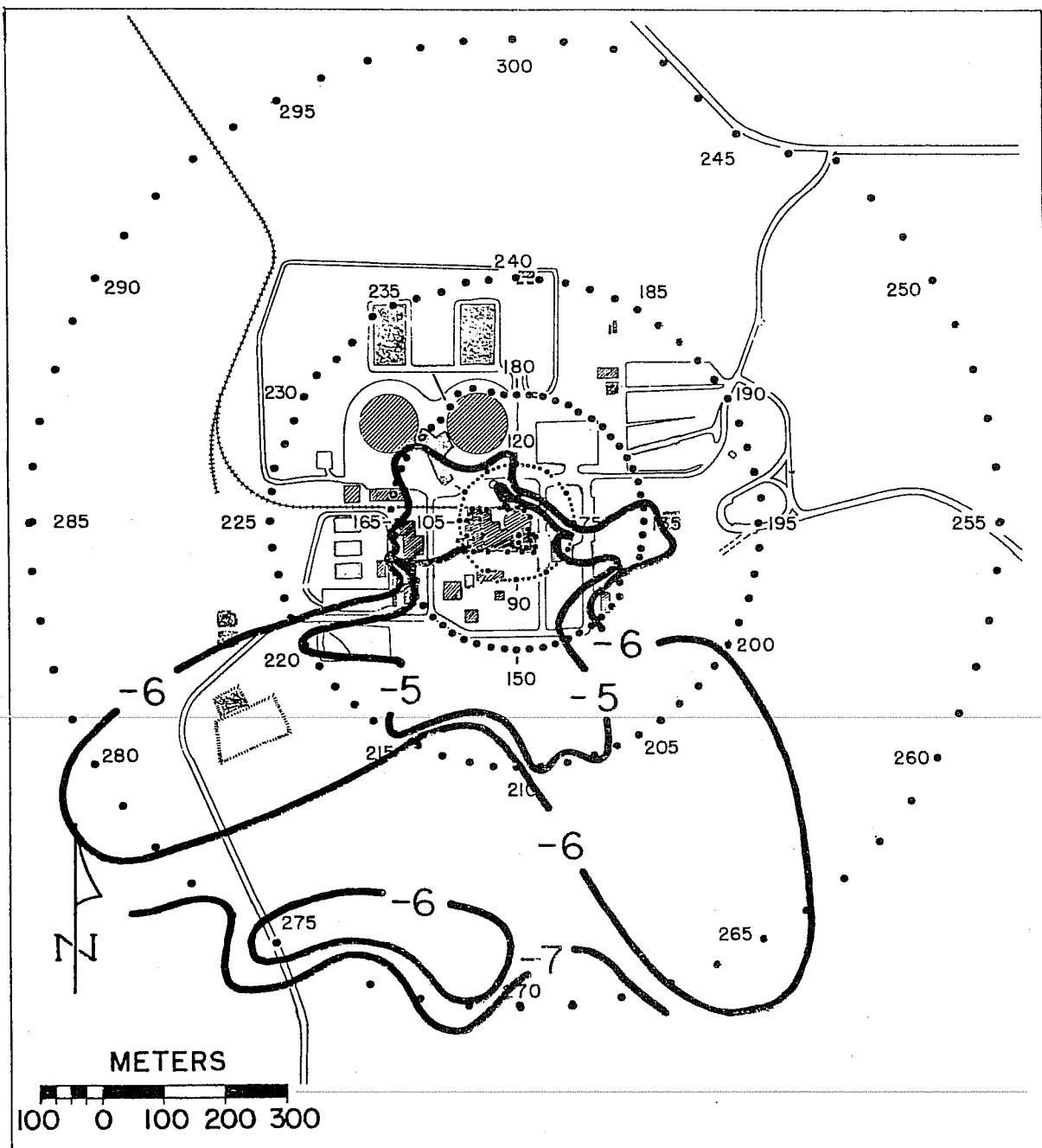


Figure C-45. Concentration isopleths (\bar{x}_u/Q in negative powers of ten) for F12, test 23. Tracer was released at surface position G5 under NRC stability category F. Mean tower wind at release height was from 329 degrees at 0.8 mps.

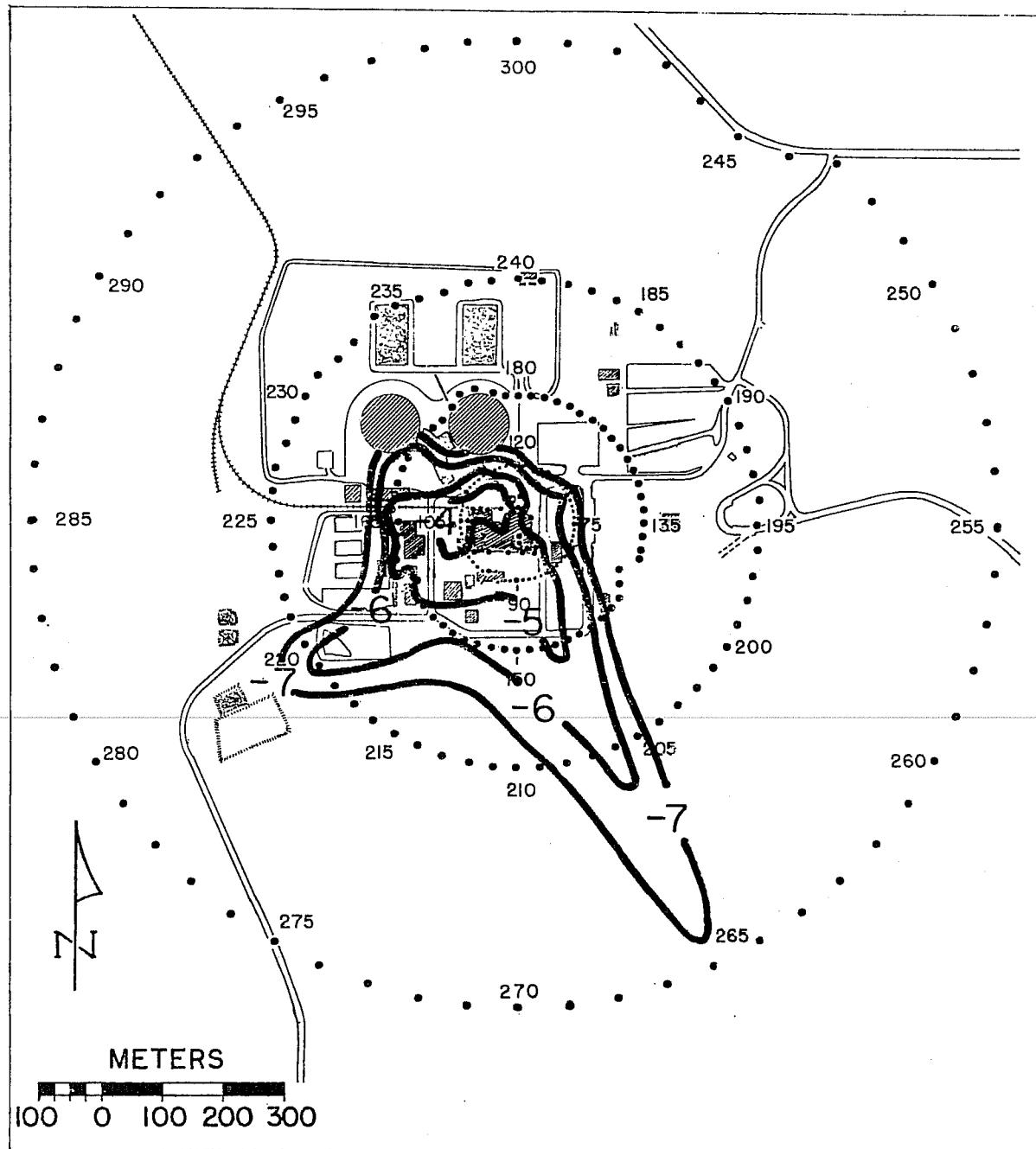
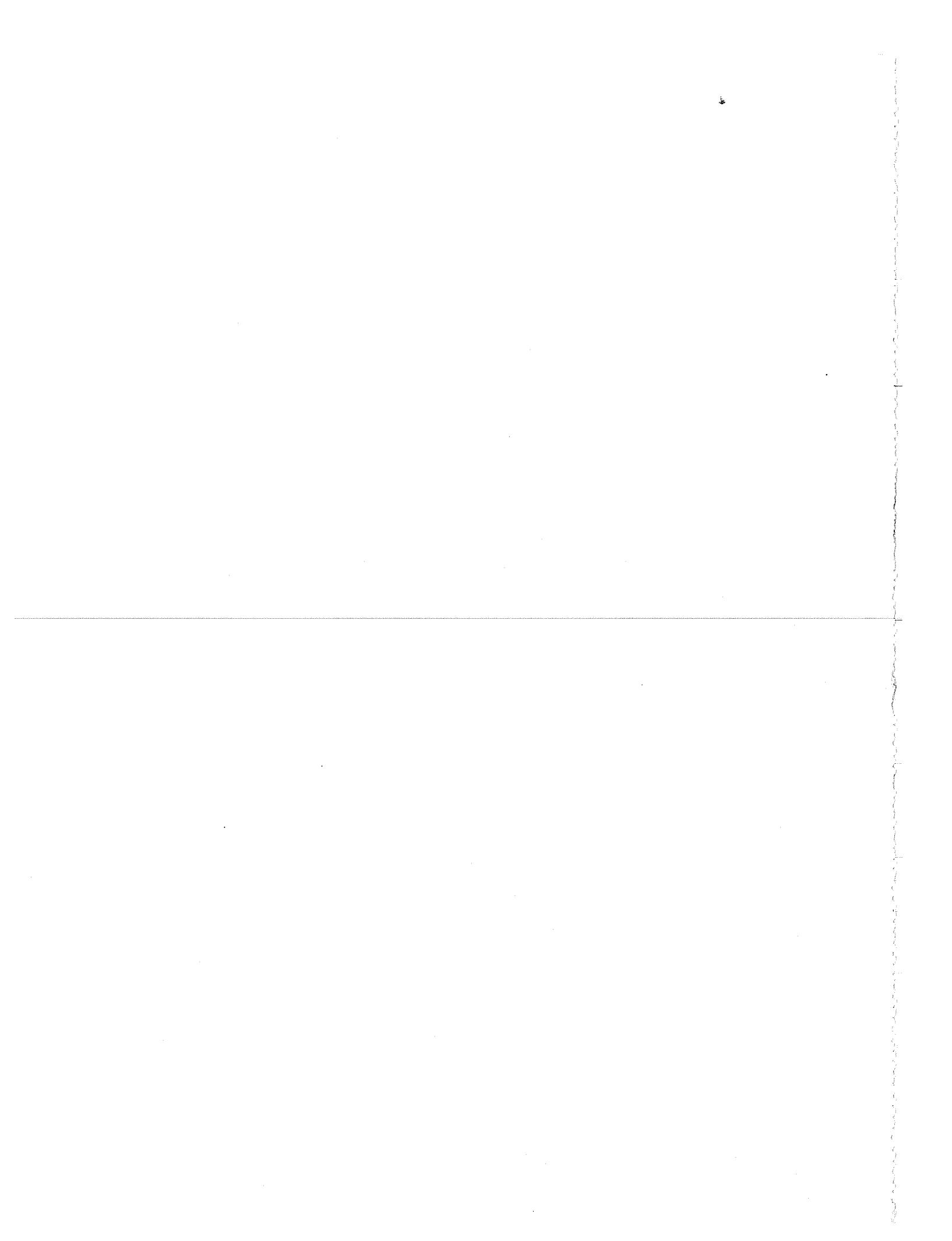


Figure C-46. Concentration isopleths ($\chi u/Q$ in negative powers of ten) for SF6, test 23. Tracer was released at surface position G17 under NRC stability category F. Mean tower wind at release height was from 329 degrees at 0.8 mps.



APPENDIX D: Complete Listing of Meteorological and Diffusion Parameters

This array is the basis for the statistical plots and summaries presented in the results section. Data are provided for each tracer gas (1 = SF6, 2 = F12) and each sampling arc (1 = 100 m, 2 = 200 m, 3 = 400 m, and 4 = 800 m) by each test. The identification code IDENT allows unique description of each subset of information within the listed array.

Definitions of Meteorological and Diffusion Parameters

IDENT	Identification of data segment composed of four digits in form ttag where tt is the test number, a the arc number, and g the gas number.
STAB 1-7	NRC stability categories 1 = A, 2 = B, etc.
SY	Sigma-y as measured by spread of plume.
SZ CIC	Sigma-z as determined from the crosswind integrated concentration. Equation 3 in text.
SZ IMP	Sigma-z as calculated from the diffusion equation using measured concentration and sigma-y.
RC P/OB	Ratio of concentration: Pasquill/observed.
RY M/P	Ratio of sigma-y measured/Pasquill.
RZC M/P	Ratio of sigma-z CIC/Pasquill.
RZI M/P	Ratio of sigma-z implied/Pasquill.
HR	Height of release (meters).
X(M)	Downwind distance (meters).
C U/Q	Chi u/Q maximum (also from $1/\pi(SY^*SZ\ IMP)$).
SA16/SAP	Sigma theta of 16 meter bivane/sigma theta for the stability class.
SYA/SY	Sigma-y from sigma theta/sigma-y measured.

RANCHO SECO DIFF. STATISTICS FROM DATA3

X(M):1=100,2=200,3=400,4=800; GASES:1=SF6,2=F12; ALL TESTS

VARIABLE LABELS...

	IDENT. RC P/DB X (M)	STAB 1-7 RY M/P CU/Q	SY RZC M/P SA16/SAP	SZ CIC RZI M/P SYA/SY	SZ IMP HR
1	1.11000E+02 1.36600E+02 1.00000E+02	1.00000E+00 1.24000E+00 6.11000E-06	3.36000E+01 7.07200E+01 3.02000E+00	9.97200E+02 1.09960E+02 1.12618E+02	1.55050E+03 4.30000E+01
2	2.11000E+02 3.56700E+03 1.00000E+02	7.00000E+00 6.12000E+00 9.15000E-06	2.45000E+01 1.28490E+02 1.29200E+01	2.96800E+02 6.14680E+02 6.60752E+01	1.41990E+03 4.30000E+01
3	3.11000E+02 4.39200E+03 1.00000E+02	7.00000E+00 3.68000E+00 7.43000E-06	1.47000E+01 1.06104E+03 7.84000E+00	2.45100E+03 1.26163E+03 6.68253E+01	2.91440E+03 4.30000E+01
4	4.11000E+02 1.08800E+04 1.00000E+02	7.00000E+00 9.59000E+00 3.00000E-06	3.83000E+01 5.82250E+02 2.72000E+00	1.34500E+03 1.19927E+03 8.89840E+00	2.77030E+03 4.30000E+01
5	5.11000E+02 1.69100E+02 1.00000E+02	7.00000E+00 8.35000E+00 1.93000E-04	3.34000E+01 2.02200E+01 2.27600E+01	4.67000E+01 2.13800E+01 8.53823E+01	4.94000E+01 4.00000E+00
6	6.11000E+02 1.31100E+01 1.00000E+02	4.00000E+00 2.99000E+00 6.44000E-04	2.39000E+01 2.86000E+00 1.72000E+00	1.33000E+01 4.45000E+00 3.60689E+01	2.07000E+01 1.85000E+01
7	7.11000E+02 2.92000E+00 1.00000E+02	1.00000E+00 9.00000E-01 2.86000E-04	2.56000E+01 2.45000E+00 6.12000E-01	3.45000E+01 3.06000E+00 2.97217E+01	4.31000E+01 1.85000E+01
8	8.11000E+02 2.38200E+02 1.00000E+02	7.00000E+00 3.65000E+00 1.37000E-04	1.46000E+01 5.89200E+01 7.60000E+00	1.36100E+02 6.88900E+01 6.52233E+01	1.59100E+02 1.85000E+01
9	9.11000E+02 1.44600E+02 1.00000E+02	4.00000E+00 2.84000E+00 5.84000E-05	2.27000E+01 4.26900E+01 2.65000E+00	1.98500E+02 5.16400E+01 5.85089E+01	2.40100E+02 4.30000E+01
10	1.01100E+03 7.17200E+01 1.00000E+02	6.00000E+00 5.38000E+00 4.55000E-04	2.15000E+01 1.55800E+01 4.12000E+00	3.60000E+01 1.40900E+01 2.40105E+01	3.25000E+01 1.85000E+01

RANCHO SECO DIFF. STATISTICS FROM DATA3

X(M): 1=100, 2=200, 3=400, 4=800; GASES: 1=SF6, 2=F12; ALL TESTS

VARIABLE LABELS...

	IDENT. RC P/OB X (M)	STAB 1-7 RY M/P CU/Q	SY RZC M/P SA16/SAP	SZ CIC RZI M/P SYA/SY	SZ IMP HR
11	1.11100E+03 4.74300E+01 1.00000E+02	5.00000E+00 3.43000E+00 3.07000E-04	2.09000E+01 1.55100E+01 3.14000E+00	5.43000E+01 1.41700E+01 3.76492E+01	4.96000E+01 1.85000E+01
12	1.21100E+03 5.16400E+02 1.00000E+02	5.00000E+00 3.62000E+00 2.82000E-05	2.21000E+01 9.72000E+01 4.42000E+00	3.40200E+02 1.45930E+02 5.01190E+01	5.10800E+02 1.85000E+01
13	1.31100E+03 1.32400E+03 1.00000E+02	5.00000E+00 3.75000E+00 1.10000E-05	2.29000E+01 4.71710E+02 5.64000E+00	1.65100E+03 3.61040E+02 6.17186E+01	1.26360E+03 1.85000E+01
14	1.41100E+03 5.99900E+02 1.00000E+02	7.00000E+00 1.41000E+01 5.44000E-05	5.64000E+01 1.36970E+02 3.92000E+00	3.16400E+02 4.49100E+01 8.70860E+00	1.03800E+02 1.85000E+01
15	1.51100E+03 4.96700E+02 1.00000E+02	4.00000E+00 3.89000E+00 1.70000E-05	3.11000E+01 1.45070E+02 3.98000E+00	6.74600E+02 1.29480E+02 6.41394E+01	6.02100E+02 1.85000E+01
16	1.61100E+03 3.54300E+03 1.00000E+02	5.00000E+00 7.10000E+00 4.11000E-06	4.33000E+01 4.28000E+02 4.70000E+00	1.49800E+03 5.11030E+02 2.72006E+01	1.78860E+03 4.00000E+00
17	1.71100E+03 2.61100E+01 1.00000E+02	7.00000E+00 9.20000E+00 1.25000E-03	3.68000E+01 3.84000E+00 3.68000E+00	8.90000E+00 3.00000E+00 1.25297E+01	6.90000E+00 4.00000E+00
18	1.81100E+03 1.41900E+03 1.00000E+02	6.00000E+00 1.49000E+01 2.30000E-05	5.96000E+01 1.08100E+02 1.42400E+01	2.49700E+02 1.00570E+02 2.99368E+01	2.32300E+02 4.00000E+00
19	1.91100E+03 1.41400E+02 1.00000E+02	5.00000E+00 5.25000E+00 1.03000E-04	3.20000E+01 2.17100E+01 6.42000E+00	7.60000E+01 2.75900E+01 5.02756E+01	9.66000E+01 4.00000E+00
20	2.01100E+03 2.36500E+01 1.00000E+02	7.00000E+00 8.58000E+00 1.38000E-03	3.43000E+01 3.97000E+00 0.00000E+00	9.20000E+00 2.91000E+00 0.00000E+00	6.70000E+00 4.00000E+00

RANCHO SECO DIFF. STATISTICS FROM DATA3

X(M): 1=100, 2=200, 3=400, 4=800; GASES: 1=SF6, 2=F12; ALL TESTS

VARIABLE LABELS...

	IDENT. RC P/DB X (M)	STAB 1-7 RY M/P CU/Q	SY RZC M/P SA16/SAP	SZ CIC RZI M/P SYA/SY	SZ IMP HR
21	2.11100E+03 6.51400E+01 1.00000E+02	7.00000E+00 1.26500E+01 5.01000E-04	5.06000E+01 9.39000E+00 1.86000E+01	2.17000E+01 5.44000E+00 4.60580E+01	1.26000E+01 4.00000E+00
22	2.21100E+03 2.10600E+01 1.00000E+02	4.00000E+00 4.10000E+00 4.01000E-04	3.28000E+01 5.29000E+00 2.00000E+00	2.46000E+01 5.20000E+00 3.05604E+01	2.42000E+01 4.00000E+00
23	2.31100E+03 7.64300E+01 1.00000E+02	6.00000E+00 1.35800E+01 4.27000E-04	5.43000E+01 9.74000E+00 0.00000E+00	2.25000E+01 5.94000E+00 0.00000E+00	1.37000E+01 4.00000E+00
24	1.12000E+02 9.22500E+01 1.00000E+02	1.00000E+00 1.52000E+00 9.05000E-06	4.11000E+01 2.70100E+01 3.02000E+00	3.80800E+02 6.06900E+01 9.20677E+01	8.55800E+02 1.85000E+01
25	2.12000E+02 5.55900E+03 1.00000E+02	7.00000E+00 6.72000E+00 6.08000E-04	2.69000E+01 1.14000E+00 1.29200E+01	1.30800E+02 1.14000E+00 6.01800E+01	1.61000E+01 1.85000E+01
26	3.12000E+02 6.94300E+01 1.00000E+02	7.00000E+00 8.73000E+00 5.47000E-05	3.49000E+01 3.35300E+01 7.84000E+00	5.34000E+01 3.12900E+01 2.81470E+01	1.45500E+02 1.85000E+01
27	4.12000E+02 5.24700E+02 1.00000E+02	7.00000E+00 9.52000E+00 1.07000E-04	3.81000E+01 2.02400E+01 2.72000E+00	1.24700E+02 2.17600E+01 8.94510E+00	1.01200E+02 1.85000E+01
28	5.12000E+02 1.42500E+02 1.00000E+02	7.00000E+00 8.55000E+00 2.64000E-04	3.42000E+01 9.14000E+00 2.27600E+01	4.07000E+01 1.41700E+01 8.33851E+01	6.59000E+01 4.00000E+00
29	6.12000E+02 1.62400E+01 1.00000E+02	4.00000E+00 2.65000E+00 5.20000E-04	2.12000E+01 3.83000E+00 1.72000E+00	1.78000E+01 6.21000E+00 4.06626E+01	2.89000E+01 4.00000E+00
30	7.12000E+02 1.37000E+00 1.00000E+02	1.00000E+00 1.21000E+00 9.39000E-05	3.26000E+01 3.06000E+01 6.12000E-01	1.61000E+01 1.63600E+01 2.35221E+01	5.73000E+01 4.00000E+00

RANCHO SECO DIFF. STATISTICS FROM DATA3

X(M) : 1=100, 2=200, 3=400, 4=800; GASES: 1=SF6, 2=F12; ALL TESTS

VARIABLE LABELS...

	IDENT. RC P/DB X (M)	STAB 1-7 RY M/P CU/Q	SY R2C M/P SA16/SAP	SZ CIC R2I M/P SYA/SY	SZ IMP HR
31	8.12000E+02 1.21300E+02 1.00000E+02	7.00000E+00 1.00000E+01 4.02000E-04	4.32000E+01 8.43000E+00 7.60000E+00	2.07000E+01 9.71000E+00 2.20431E+01	3.40000E+01 4.00000E+00
32	9.12000E+02 7.89100E+01 1.00000E+02	4.00000E+00 3.68000E+00 1.27000E-04	2.94000E+01 2.15100E+01 2.65000E+00	9.41000E+01 1.98400E+01 4.51753E+01	6.94000E+01 4.00000E+00
33	1.01200E+03 2.31400E+01 1.00000E+02	6.00000E+00 4.82000E+00 1.59000E-04	1.93000E+01 2.30300E+01 4.12000E+00	1.50000E+01 1.40900E+01 2.67474E+01	4.93000E+01 4.00000E+00
34	1.11200E+03 1.73400E+01 1.00000E+02	5.00000E+00 6.02000E+00 8.40000E-04	3.67000E+01 3.26000E+00 3.14000E+00	1.14000E+01 2.95000E+00 2.14405E+01	1.03000E+01 4.00000E+00
35	1.21200E+03 9.15800E+01 1.00000E+02	5.00000E+00 6.66000E+00 1.27000E-04	4.06000E+01 1.77900E+01 4.42000E+00	8.06000E+01 2.31300E+01 2.72915E+01	5.34000E+01 4.00000E+00
36	1.31200E+03 3.62200E+01 1.00000E+02	5.00000E+00 3.82000E+00 1.54000E-04	2.33000E+01 1.35500E+01 5.64000E+00	2.95000E+01 2.38000E+01 6.06590E+01	5.50000E+01 4.00000E+00
37	1.41200E+03 2.23500E+02 1.00000E+02	7.00000E+00 1.34000E+01 1.41000E-03	5.36000E+01 6.49000E+00 3.92000E+00	3.69000E+01 5.06000E+00 9.16350E+00	1.17000E+01 4.00000E+00
38	1.51200E+03 1.54400E+02 1.00000E+02	4.00000E+00 5.00000E+00 2.29000E-04	4.00000E+01 1.76200E+01 3.98000E+00	1.55900E+02 1.75900E+01 4.98684E+01	4.06000E+01 4.00000E+00
39	1.61200E+03 1.55100E+02 1.00000E+02	5.00000E+00 9.71000E+00 6.22000E-05	5.92000E+01 5.39800E+01 4.70000E+00	1.07100E+02 5.81800E+01 1.98952E+01	1.34300E+02 4.00000E+00
40	1.71200E+03 4.99800E+01 1.00000E+02	7.00000E+00 7.63000E+00 5.87000E-06	3.05000E+01 5.66200E+01 3.68000E+00	1.76000E+01 8.72670E+02 1.51179E+01	2.01590E+03 4.00000E+00

RANCHO SECO DIFF. STATISTICS FROM DATA3

X(M):1=100,2=200,3=400,4=800; GASES:1=SF6,2=F12; ALL TESTS

VARIABLE LABELS...

	IDENT. RC P/DB X (M)	STAB 1-7 RY M/P CU/Q	SY RZC M/P SA16/SAP	SZ CIC RZI M/P SYA/SY	SZ IMP HR
41	1.81200E+03 2.57000E+02 1.00000E+02	6.00000E+00 1.17200E+01 6.53000E-04	4.69000E+01 7.62000E+00 1.42400E+01	4.11000E+01 6.92000E+00 3.80434E+01	1.60000E+01 4.00000E+00
42	1.91200E+03 1.14700E+02 1.00000E+02	5.00000E+00 5.92000E+00 4.70000E-04	3.61000E+01 2.31200E+01 6.42000E+00	7.53000E+01 8.40000E+00 4.45656E+01	1.94000E+01 4.00000E+00
43	2.01200E+03 1.27000E+02 1.00000E+02	7.00000E+00 8.90000E+00 4.24000E-04	3.56000E+01 1.15200E+01 0.09000E+00	2.10000E+01 6.26000E+00 0.00000E+00	1.45000E+01 4.00000E+00
44	2.11200E+03 7.69700E+01 1.00000E+02	7.00000E+00 1.29800E+01 1.46000E-04	5.19000E+01 1.59700E+01 1.86000E+01	2.66000E+01 1.76100E+01 4.49043E+01	4.07000E+01 4.00000E+00
45	2.21200E+03 3.19800E+01 1.00000E+02	4.00000E+00 2.29000E+00 2.69000E-04	1.83000E+01 8.96000E+00 2.00000E+00	4.25000E+01 1.18600E+01 5.47749E+01	2.74000E+01 4.00000E+00
46	2.31200E+03 2.11900E+02 1.00000E+02	6.00000E+00 9.40000E+00 2.57000E-04	3.76000E+01 9.09000E+00 0.00000E+00	3.13000E+01 1.50600E+01 0.00000E+00	3.48000E+01 4.00000E+00
47	1.21000E+02 3.28700E+01 2.00000E+02	1.00000E+00 1.16000E+00 6.52000E-06	5.86000E+01 1.89700E+01 3.02000E+00	5.57700E+02 2.83400E+01 1.16392E+02	8.33100E+02 4.30000E+01
48	2.21000E+02 8.19400E+02 2.00000E+02	7.00000E+00 5.97000E+00 1.24000E-05	4.54000E+01 1.45360E+02 1.29200E+01	5.88700E+02 1.39610E+02 6.42720E+01	5.65400E+02 4.30000E+01
49	3.21000E+02 1.80800E+02 2.00000E+02	7.00000E+00 7.87000E+00 5.62000E-05	5.98000E+01 1.03950E+02 7.84000E+00	4.21000E+02 2.33900E+01 2.96094E+01	9.47000E+01 4.30000E+01
50	4.21000E+02 0.00000E+00 2.00000E+02	7.00000E+00 0.00000E+00 0.00000E+00	0.00000E+00 0.00000E+00 2.72000E+00	0.00000E+00 0.00000E+00 0.00000E+00	0.00000E+00 4.30000E+01

RANCHO SECO DIFF. STATISTICS FROM DATA3

X(M) : 1=100, 2=200, 3=400, 4=800; GASES: 1=SF6, 2=F12; ALL TESTS

VARIABLE LABELS...

	IDENT. RC P/DB X (M)	STAB 1-7 RY M/P CU/Q	SY RZC M/P SA16/SAP	SZ CIC RZI M/P SYA/SY	SZ IMP HR
51	5.21000E+02 2.19500E+02 2.00000E+02	7.00000E+00 5.92000E+00 4.63000E-05	4.50000E+01 4.12000E+00 2.27600E+01	1.86000E+02 3.77200E+01 7.27060E+01	1.52800E+02 4.00000E+00
52	6.21000E+02 1.10800E+01 2.00000E+02	4.00000E+00 2.99000E+00 2.20000E-04	4.57000E+01 3.71000E+00 1.72000E+00	3.16000E+01 3.72000E+00 3.40007E+01	3.17000E+01 1.85000E+01
53	7.21000E+02 1.58000E+00 2.00000E+02	1.00000E+00 8.10000E-01 1.36000E-04	4.11000E+01 1.27000E+00 6.12000E-01	3.73000E+01 1.94000E+00 3.36298E+01	5.69000E+01 1.85000E+01
54	8.21000E+02 2.32000E+02 2.00000E+02	7.00000E+00 5.51000E+00 4.38000E-05	4.19000E+01 3.31900E+01 7.60000E+00	1.34400E+02 4.28300E+01 4.09652E+01	1.73400E+02 1.85000E+01
55	9.21000E+02 7.36500E+01 2.00000E+02	4.00000E+00 2.78000E+00 3.31000E-05	4.26000E+01 2.25900E+01 2.65000E+00	1.92000E+02 2.65600E+01 5.61968E+01	2.25700E+02 4.30000E+01
56	1.02100E+03 4.28700E+01 2.00000E+02	6.00000E+00 4.96000E+00 2.37000E-04	3.77000E+01 1.49100E+01 4.12000E+00	6.04000E+01 8.80000E+00 2.46815E+01	3.56000E+01 1.85000E+01
57	1.12100E+03 2.72900E+01 2.00000E+02	5.00000E+00 3.82000E+00 1.60000E-04	4.36000E+01 1.22200E+01 3.14000E+00	7.76000E+01 7.19000E+00 3.25303E+01	4.56000E+01 1.85000E+01
58	1.22100E+03 1.56500E+02 2.00000E+02	5.00000E+00 3.45000E+00 2.79000E-05	3.93000E+01 4.16900E+01 4.42000E+00	2.64700E+02 4.57200E+01 5.08013E+01	2.90300E+02 1.85000E+01
59	1.32100E+03 1.48500E+03 2.00000E+02	5.00000E+00 3.88000E+00 2.94000E-06	4.42000E+01 4.20630E+02 5.64000E+00	2.67100E+03 3.85750E+02 5.76371E+01	2.44950E+03 1.85000E+01
60	1.42100E+03 2.36500E+02 2.00000E+02	7.00000E+00 1.74200E+01 4.26000E-05	1.32400E+02 5.76300E+01 3.92000E+00	2.33400E+02 1.39400E+01 6.68670E+00	5.64000E+01 1.85000E+01

RANCHO SECO DIFF. STATISTICS FROM DATA3

X(M): 1=100, 2=200, 3=400, 4=800; GASES: 1=SF6, 2=F12; ALL TESTS

VARIABLE LABELS...

	IDENT. RC P/DB X (M)	STAB 1-7 RY M/P CU/Q	SY RZC M/P SA16/SAP	SZ CIC RZI M/P SYA/SY	SZ IMP HR
71	2.22000E+02 1.82100E+03 2.00000E+02	7.00000E+00 8.90000E+00 5.58000E-06	6.76000E+01 9.92200E+01 1.29200E+01	4.01600E+02 2.08400E+02 4.31649E+01	8.43900E+02 1.85000E+01
72	3.22000E+02 3.21500E+01 2.00000E+02	7.00000E+00 9.73000E+00 3.16000E-04	7.39000E+01 6.42000E+00 7.84000E+00	2.50000E+01 3.37000E+00 2.39600E+01	1.36000E+01 1.85000E+01
73	4.22000E+02 2.89500E+03 2.00000E+02	7.00000E+00 6.33000E+00 3.51000E-06	4.81000E+01 3.07600E+02 2.72000E+00	1.24600E+03 4.65500E+02 1.27714E+01	1.88540E+03 1.85000E+01
74	5.22000E+02 1.97700E+02 2.00000E+02	7.00000E+00 6.97000E+00 5.14000E-05	5.30000E+01 3.15000E+01 2.27600E+01	1.27700E+02 2.89000E+01 9.69865E+01	1.16800E+02 4.00000E+00
75	6.22000E+02 1.13900E+01 2.00000E+02	4.00000E+00 3.12000E+00 2.14000E-04	4.78000E+01 2.55000E+00 1.72000E+00	2.17000E+01 3.66090E+00 3.25069E+01	3.11000E+01 4.00000E+00
76	7.22000E+02 1.18000E+00 2.00000E+02	1.00000E+00 1.04000E+00 1.82000E-04	5.23000E+01 9.00000E-01 6.12000E-01	2.65000E+01 1.14000E+00 2.64280E+01	3.34000E+01 4.00000E+00
77	8.22000E+02 5.77000E+00 2.00000E+02	7.00000E+00 5.14000E+00 1.76000E-03	3.91000E+01 1.75000E+00 7.60000E+00	7.10000E+00 1.14000E+00 4.38987E+01	4.60000E+00 4.00000E+00
78	9.22000E+02 5.75000E+01 2.00000E+02	4.00000E+00 4.01000E+00 4.24000E-05	6.13000E+01 1.18100E+01 2.65000E+00	1.00400E+02 1.44100E+01 3.90536E+01	1.22500E+02 4.00000E+00
79	1.02200E+03 2.90300E+01 2.00000E+02	6.00000E+00 6.87000E+00 3.50000E-04	5.22000E+01 8.17000E+00 4.12000E+00	3.31000E+01 4.30000E+00 1.78255E+01	1.74000E+01 4.00000E+00
80	1.12200E+03 5.49000E+00 2.00000E+02	5.00000E+00 4.71000E+00 7.95000E-04	5.37000E+01 1.12000E+00 3.14000E+00	7.10000E+00 1.17000E+00 2.64120E+01	7.50000E+00 4.00000E+00

RANCHO SECO DIFF. STATISTICS FROM DATA3

X(M) : 1=100, 2=200, 3=400, 4=800; GASES: 1=SF6, 2=F12; ALL TESTS

VARIABLE LABELS...

	IDENT. RC P/OB X (M)	STAB 1-7 RY M/P CU/Q	SY RZC M/P SA16/SAP	SZ CIC RZI M/P SYA/SY	SZ IMP HR
91	2.22200E+03 2.43800E+01 2.00000E+02	4.00000E+00 4.52000E+00 1.00000E-04	6.92000E+01 9.10000E+00 2.00000E+00	7.74000E+01 5.41000E+00 2.61095E+01	4.60000E+01 4.00000E+00
92	2.32200E+03 2.44800E+02 2.00000E+02	6.00000E+00 9.68000E+00 4.15000E-05	7.36000E+01 2.05000E+01 0.00000E+00	8.31000E+01 2.57000E+01 0.00000E+00	1.04200E+02 4.00000E+00
93	1.31000E+02 8.65000E+00 4.00000E+02	1.00000E+00 1.13000E+00 5.36000E-06	1.06000E+02 9.00000E+00 3.02000E+00	6.57000E+02 7.67000E+00 1.15982E+02	5.60300E+02 4.30000E+01
94	2.31000E+02 1.26200E+02 4.00000E+02	7.00000E+00 6.39000E+00 2.42000E-05	9.33000E+01 2.62100E+01 1.29200E+01	1.86100E+02 1.98600E+01 5.63730E+01	1.41000E+02 4.30000E+01
95	3.31000E+02 7.97200E+01 4.00000E+02	7.00000E+00 5.01000E+00 3.83000E-05	7.32000E+01 2.31100E+01 7.84000E+00	1.64100E+02 1.59900E+01 4.36009E+01	1.13500E+02 4.30000E+01
96	4.31000E+02 1.03100E+03 4.00000E+02	7.00000E+00 7.42000E+00 2.96000E-06	1.08400E+02 1.73240E+02 2.72000E+00	1.23000E+03 1.39720E+02 1.02148E+01	9.92000E+02 4.30000E+01
97	5.31000E+02 3.77900E+03 4.00000E+02	7.00000E+00 0.00000E+00 4.63000E-05	0.00000E+00 4.61200E+01 2.27600E+01	0.00000E+00 2.15200E+01 0.00000E+00	1.52000E+02 4.00000E+00
98	6.31000E+02 9.08000E+00 4.00000E+02	4.00000E+00 2.61000E+00 7.84000E-05	7.56000E+01 3.08000E+00 1.72000E+00	4.75000E+01 3.49000E+00 3.70473E+01	5.37000E+01 1.85000E+01
99	7.31000E+02 6.80000E-01 4.00000E+02	1.00000E+00 9.20000E-01 6.87000E-05	8.65000E+01 1.10000E+00 6.12000E-01	8.03000E+01 7.30000E-01 2.88022E+01	5.36000E+01 1.85000E+01
100	8.31000E+02 3.33000E+01 4.00000E+02	7.00000E+00 6.63000E+00 9.17000E-05	9.68000E+01 1.26300E+01 7.60000E+00	8.97000E+01 5.05000E+00 3.19616E+01	3.59000E+01 1.85000E+01

RANCHO SECO DIFF. STATISTICS FROM DATA3

X(M):1=100,2=200,3=400,4=800;GASES:1=SF6,2=F12;ALL TESTS

VARIABLE LABELS...

	IDENT. RC P/OB X (M)	STAB 1-7 RY M/P CU/Q	SY RZC M/P SA16/SAP	SZ CIC RZI M/P SYA/SY	SZ IMP HR
141	3.41000E+02 2.02200E+01 8.00000E+02	7.00000E+00 5.14000E+00 4.76000E-05	1.41400E+02 5.94000E+00 7.84000E+00	7.13000E+01 3.94000E+00 4.06848E+01	4.73000E+01 4.30000E+01
142	4.41000E+02 4.27800E+02 8.00000E+02	7.00000E+00 3.73000E+00 2.25000E-06	1.02500E+02 1.36500E+02 2.72000E+00	1.63800E+03 1.15020E+02 1.94720E+01	1.38020E+03 4.30000E+01
143	5.41000E+02 1.95300E+03 8.00000E+02	7.00000E+00 0.00000E+00 4.90000E-07	0.00000E+00 0.00000E+00 2.27600E+01	0.00000E+00 0.00000E+00 0.00000E+00	0.00000E+00 4.00000E+00
144	6.41000E+02 1.31100E+01 8.00000E+02	4.00000E+00 2.89000E+00 1.65000E-06	1.60300E+02 5.87000E+00 1.72000E+00	1.55600E+02 4.54000E+00 3.14935E+01	1.20300E+02 1.85000E+01
145	7.41000E+02 3.30000E-01 8.00000E+02	1.00000E+00 8.70000E-01 2.02000E-05	1.50400E+02 4.20000E-01 6.12000E-01	1.15200E+02 3.80000E-01 2.98586E+01	1.04800E+02 1.85000E+01
146	8.41000E+02 4.91100E+01 8.00000E+02	7.00000E+00 4.98000E+00 1.96000E-05	1.37000E+02 1.08600E+01 7.60000E+00	1.30300E+02 9.88000E+00 4.07060E+01	1.18500E+02 1.85000E+01
147	9.41000E+02 5.38200E+01 8.00000E+02	4.00000E+00 2.08000E+00 4.02000E-06	1.15600E+02 2.47500E+01 2.65000E+00	6.55900E+02 2.58500E+01 6.72843E+01	6.85000E+02 4.30000E+01
148	1.04100E+03 3.09500E+01 8.00000E+02	6.00000E+00 3.29000E+00 3.11000E-05	9.04000E+01 1.50700E+01 4.12000E+00	1.80800E+02 9.43000E+00 3.34422E+01	1.13200E+02 1.85000E+01
149	1.14100E+03 2.73900E+01 8.00000E+02	5.00000E+00 2.37000E+00 1.56000E-05	9.69000E+01 1.11800E+01 3.14000E+00	2.03500E+02 1.15700E+01 4.75556E+01	2.10600E+02 1.85000E+01
150	1.24100E+03 5.07400E+01 8.00000E+02	5.00000E+00 2.42000E+00 8.42000E-06	9.89000E+01 1.94900E+01 4.42000E+00	3.54800E+02 2.10000E+01 6.55876E+01	3.82200E+02 1.85000E+01

RANCHO SECO DIFF. STATISTICS FROM DATA3

X(M) : 1=100, 2=200, 3=400, 4=800; GASES: 1=SF6, 2=F12; ALL TESTS

VARIABLE LABELS...

	IDENT. RC P/DB X (M)	STAB 1-7 RY M/P CU/Q	SY RZC M/P SA16/SAP	SZ CIC RZI M/P SYA/SY	SZ IMP HR
151	1.34100E+03 2.96700E+03 8.00000E+02	5.00000E+00 0.00000E+00 1.40000E-07	0.00000E+00 0.00000E+00 5.64000E+00	0.00000E+00 0.00000E+00 0.00000E+00	0.00000E+00 1.85000E+01
152	1.44100E+03 1.26000E+02 8.00000E+02	7.00000E+00 3.60000E+00 7.64000E-06	1.01200E+02 1.25100E+01 3.92000E+00	4.35300E+02 3.43100E+01 2.84231E+01	4.11700E+02 1.85000E+01
153	1.54100E+03 2.83200E+01 8.00000E+02	4.00000E+00 2.85000E+00 7.64000E-06	1.58100E+02 1.55400E+01 3.98000E+00	4.11700E+02 9.94000E+00 7.38885E+01	2.63500E+02 1.85000E+01
154	1.64100E+03 0.00000E+00 8.00000E+02	5.00000E+00 0.00000E+00 0.00000E+00	0.00000E+00 0.00000E+00 4.70000E+00	0.00000E+00 0.00000E+00 0.00000E+00	0.00000E+00 4.00000E+00
155	1.74100E+03 4.54100E+01 8.00000E+02	7.00000E+00 3.51000E+00 2.17000E-05	9.66000E+01 1.88800E+01 3.68000E+00	2.26600E+02 1.26500E+01 2.79535E+01	1.51800E+02 4.00000E+00
156	1.84100E+03 3.37800E+03 8.00000E+02	6.00000E+00 0.00000E+00 2.80000E-07	0.00000E+00 0.00000E+00 1.42480E+01	0.00000E+00 0.00000E+00 0.00000E+00	0.00000E+00 4.00000E+00
157	1.94100E+03 5.76600E+01 8.00000E+02	5.00000E+00 6.38000E+00 7.41000E-06	2.60900E+02 1.42900E+01 6.42000E+00	2.60000E+02 9.05000E+00 3.61124E+01	1.64600E+02 4.00000E+00
158	2.04100E+03 7.40500E+01 8.00000E+02	7.00000E+00 3.67000E+00 1.30000E-05	1.00900E+02 1.53500E+01 0.00000E+00	1.84200E+02 2.02200E+01 0.00000E+00	2.42700E+02 4.00000E+00
159	2.14100E+03 7.89000E+01 8.00000E+02	7.00000E+00 6.14000E+00 1.22000E-05	1.68800E+02 3.62800E+01 1.86000E+01	1.50100E+02 1.28800E+01 8.08549E+01	1.54600E+02 4.00000E+00
160	2.24100E+03 8.45100E+01 8.00000E+02	4.00000E+00 3.09000E+00 2.56000E-06	1.71500E+02 2.42000E+01 2.00000E+00	6.41300E+02 2.73600E+01 3.42288E+01	7.25000E+02 4.00000E+00

RANCHO SECO DIFF. STATISTICS FROM DATA3

X(M) : 1=100, 2=200, 3=400, 4=800; GASES: 1=SF6, 2=F12; ALL TESTS

VARIABLE LABELS...

	IDENT. RC P/DB X (M)	STAB 1-7 RY M/P CU/Q	SY RZC M/P SA16/SAP	SZ CIC RZI M/P SYA/SY	SZ IMP HR
161	2.34100E+03 1.92500E+03 8.00000E+02	6.00000E+00 0.00000E+00 5.00000E-07	0.00000E+00 0.00000E+00 0.00000E+00	0.00000E+00 0.00000E+00 0.00000E+00	0.00000E+00 4.00000E+00
162	1.42000E+02 3.50000E-01 8.00000E+02	1.00000E+00 1.69000E+00 1.90000E-05	2.92500E+02 4.00000E-01 3.02000E+00	1.10900E+02 2.10000E-01 7.57612E+01	5.23000E+01 1.85000E+01
163	2.42000E+02 2.46200E+02 8.00000E+02	7.00000E+00 4.90000E+00 3.91000E-06	1.34900E+02 4.48600E+01 1.29200E+01	5.38300E+02 5.02900E+01 7.02775E+01	6.03500E+02 1.85000E+01
164	3.42000E+02 3.34000E+00 8.00000E+02	7.00000E+00 9.02000E+00 2.88000E-04	2.70200E+02 1.17000E+00 7.84000E+00	1.40000E+01 3.40000E-01 2.12910E+01	4.10000E+00 1.85000E+01
165	4.42000E+02 5.31000E+01 8.00000E+02	7.00000E+00 5.81000E+00 1.81000E-05	1.59900E+02 9.88000E+00 2.72000E+00	1.18600E+02 9.17000E+00 1.24821E+01	1.10000E+02 1.85000E+01
166	5.42000E+02 8.80000E-01 8.00000E+02	7.00000E+00 8.01000E+00 1.09000E-03	2.20200E+02 2.20000E-01 2.27600E+01	2.70000E+00 1.10000E-01 7.58439E+01	1.30000E+00 4.00000E+00
167	6.42000E+02 2.14000E+00 8.00000E+02	4.00000E+00 4.33000E+00 1.01000E-04	2.40600E+02 6.10000E-01 1.72000E+00	1.61000E+01 4.90000E-01 2.09825E+01	1.31000E+01 4.00000E+00
168	7.42000E+02 1.40000E-01 8.00000E+02	1.00000E+00 1.39000E+00 4.77000E-05	2.40400E+02 7.00000E-02 6.12000E-01	1.89000E+01 1.00000E-01 1.86802E+01	2.78000E+01 4.00000E+00
169	8.42000E+02 4.60000E-01 8.00000E+02	7.00000E+00 9.15000E+00 2.00000E-03	2.51500E+02 7.00000E-02 7.60000E+00	8.00000E-01 5.00000E-02 2.21739E+01	6.00000E-01 4.00000E+00
170	9.42000E+02 1.70300E+01 8.00000E+02	4.00000E+00 3.83000E+00 1.27000E-05	2.12600E+02 3.11000E+00 2.65000E+00	8.23000E+01 4.45000E+00 3.65854E+01	1.17900E+02 4.00000E+00

RANCHO SECO DIFF. STATISTICS FROM DATA3

X(M):1=100,2=200,3=400,4=800; GASES:1=SF6,2=F12; ALL TESTS

VARIABLE LABELS...

	IDENT. RC P/OB X (M)	STAB 1-7 RY M/P CU/Q	SY RZC M/P SA16/SAP	SZ CIC RZI M/P SYA/SY	SZ IMP HR
171	1.04200E+03 2.17600E+01 8.00000E+02	6.00000E+00 6.58000E+00 4.42000E-05	1.80900E+02 3.98000E+00 4.12000E+00	4.78000E+01 3.32000E+00 1.67118E+01	3.90000E+01 4.00000E+00
172	1.14200E+03 7.80000E-01 8.00000E+02	5.00000E+00 4.43000E+00 5.45000E-04	1.81200E+02 1.90000E-01 3.14000E+00	3.50000E+00 1.80000E-01 2.54312E+01	3.20000E+00 4.00000E+00
173	1.24200E+03 2.04400E+01 8.00000E+02	5.00000E+00 3.54000E+00 2.09000E-05	1.44700E+02 6.83000E+00 4.42000E+00	1.24300E+02 5.78000E+00 4.46280E+01	1.05300E+02 4.00000E+00
174	1.34200E+03 2.38700E+01 8.00000E+02	5.00000E+00 8.29000E+00 1.79000E-05	3.38900E+02 6.69000E+00 5.64000E+00	1.21700E+02 2.68000E+00 2.44232E+01	5.25000E+01 4.00000E+00
175	1.44200E+03 1.55800E+02 8.00000E+02	7.00000E+00 6.85000E+00 6.18000E-05	1.89300E+02 1.54300E+01 3.92000E+00	1.85100E+02 2.26800E+01 1.51950E+01	2.72100E+02 4.00000E+00
176	1.54200E+03 1.16300E+01 8.00000E+02	4.00000E+00 4.21000E+00 1.86000E-05	2.33400E+02 3.98000E+00 3.90000E+00	1.05400E+02 2.77000E+00 5.00504E+01	7.33000E+01 4.00000E+00
177	1.64200E+03 8.82700E+01 8.00000E+02	5.00000E+00 3.26000E+00 4.84000E-06	1.33200E+02 3.18800E+01 4.70000E+00	5.80200E+02 2.71300E+01 5.17832E+01	4.93700E+02 4.00000E+00
178	1.74200E+03 1.45900E+01 8.00000E+02	7.00000E+00 6.26000E+00 6.60000E-05	1.72200E+02 2.51000E+00 3.68000E+00	3.01000E+01 2.33000E+00 1.56812E+01	2.80000E+01 4.00000E+00
179	1.84200E+03 3.83500E+02 8.00000E+02	6.00000E+00 9.12000E+00 2.51000E-06	2.50900E+02 2.51300E+01 1.42400E+01	3.01600E+02 4.21200E+01 4.16461E+01	5.05400E+02 4.00000E+00
180	1.94200E+03 3.00900E+01 8.00000E+02	5.00000E+00 5.99000E+00 1.42000E-05	2.45100E+02 5.76000E+00 6.42000E+00	1.04800E+02 5.03000E+00 3.84404E+01	9.15000E+01 4.00000E+00

RANCHO SECO DIFF. STATISTICS FROM DATA3

X(M) : 1=100, 2=200, 3=400, 4=800; GASES: 1=SF6, 2=F12; ALL TESTS

VARIABLE LABELS...

	IDENT. RC P/OB X (M)	STAB 1-7 RY M/P CU/Q	SY RZC M/P SA16/SAP	SZ CIC RZI M/P SYA/SY	SZ IMP HR
181	2.04200E+03 3.12500E+01 8.00000E+02	7.00000E+00 6.15000E+00 3.08000E-05	1.69100E+02 9.90000E+00 0.00000E+00	1.18800E+02 5.09000E+00 0.00000E+00	6.11000E+01 4.00000E+00
182	2.14200E+03 6.33300E+01 8.00000E+02	7.00000E+00 9.91000E+00 1.52000E-05	2.72600E+02 7.42000E+00 1.86000E+01	8.90000E+01 6.40000E+00 5.00672E+01	7.68000E+01 4.00000E+00
183	2.24200E+03 3.66100E+01 8.00000E+02	4.00000E+00 3.67000E+00 5.91000E-06	2.03800E+02 7.42000E+00 2.00000E+00	1.96700E+02 9.97000E+00 2.88039E+01	2.64230E+03 4.00000E+00
184	2.34200E+03 2.50700E+02 8.00000E+02	6.00000E+00 8.06000E+00 3.84000E-06	2.21700E+02 3.25700E+01 0.00000E+00	3.90800E+02 3.11600E+01 0.00000E+00	3.73900E+02 4.00000E+00

APPENDIX E: Tests of Means and Standard Deviations

Student's t-Test

$$t = (\bar{X} - \bar{Y}) / \sigma \sqrt{(1/n_1 + 1/n_2)}$$

where

$$\sigma = [(n_1 s_x^2 + n_2 s_y^2) / (n_1 + n_2 - 2)]^{1/2}$$

and $s_1 = s_2 = \sigma$ is assumed

H_0 : Sample means are from populations having the same means

H_1 : Sample means are from populations having different means

F Test

$$F = s_x^2 / s_y^2$$

where

$$s_x = [(X - \bar{X})^2 / (n_1 - 1)]^{1/2} \quad \text{and}$$

$$s_y = [(Y - \bar{Y})^2 / (n_2 - 1)]^{1/2}$$

H_0 : Standard deviations are from populations having the same standard deviations.

H_1 : Standard deviations are from populations having different standard deviations.

For the calculated t (or F) statistic greater than the t (or F) value for 5% significance, hypothesis 1 (H_1) is accepted. Otherwise, with t (or F) less than or equal to the reference value, hypothesis 0 (H_0) is accepted (there is no significant difference). The statistic values for 5% levels of significance may be extracted from standard tables of t and F by use of the number of degrees of freedom for the particular populations being examined.

Reference: Alder and Roessler, (1964).

RANCHO SECO DIFF. STATISTICS FROM DATA3

X(M): 1=100, 2=200, 3=400, 4=800; GASES: 1=SF6, 2=F12; ALL TESTS

VARIABLE LABELS...

	IDENT. RC P/DB X (M)	STAB 1-7 RY M/P CU/Q	SY RZC M/P SA16/SAP	SZ CIC RZI M/P SYA/SY	SZ IMP HR
61	1.52100E+03 2.12000E+02 2.00000E+02	4.00000E+00 3.80000E+00 1.15000E-05	5.82000E+01 4.40600E+01 3.98000E+00	3.74500E+02 5.59500E+01 6.17782E+01	4.75600E+02 1.85000E+01
62	1.62100E+03 4.28000E+02 2.00000E+02	5.00000E+00 3.47000E+00 1.02000E-05	3.95000E+01 8.04700E+01 4.70000E+00	5.11000E+02 3.07200E+01 5.37460E+01	7.90000E+02 4.00000E+00
63	1.72100E+03 1.44700E+01 2.00000E+02	7.00000E+00 5.72000E+00 7.02000E-04	4.35000E+01 5.80000E+00 3.68000E+00	2.35000E+01 2.57000E+00 1.91062E+01	1.04000E+01 4.00000E+00
64	1.82100E+03 9.58600E+02 2.00000E+02	6.00000E+00 1.49100E+01 1.06000E-05	1.13300E+02 7.19000E+01 1.42400E+01	2.91200E+02 6.54400E+01 2.83854E+01	2.65000E+02 4.00000E+00
65	1.92100E+03 2.28600E+02 2.00000E+02	5.00000E+00 5.05000E+00 1.91000E-05	5.76000E+01 5.93500E+01 6.42000E+00	3.76900E+02 4.55600E+01 5.03452E+01	2.89300E+02 4.00000E+00
66	2.02100E+03 4.79300E+01 2.00000E+02	7.00000E+00 7.59000E+00 2.12000E-04	5.77000E+01 1.93800E+01 0.00000E+00	7.85000E+01 6.42000E+00 0.00000E+00	2.60000E+01 4.00000E+00
67	2.12100E+03 8.75900E+01 2.00000E+02	7.00000E+00 1.13600E+01 1.16000E-04	8.63000E+01 1.39300E+01 1.86000E+01	5.64000E+01 7.85000E+00 4.86763E+01	3.18000E+01 4.00000E+00
68	2.22100E+03 9.30000E+00 2.00000E+02	4.00000E+00 3.61000E+00 2.62000E-04	5.52000E+01 5.55000E+00 2.00000E+00	4.72000E+01 2.59000E+00 3.27315E+01	2.20000E+01 4.00000E+00
69	2.32100E+03 3.38700E+02 2.00000E+02	6.00000E+00 9.38000E+00 3.00000E-05	7.13000E+01 3.99000E+01 0.00000E+00	1.61600E+02 3.67400E+01 0.00000E+00	1.48800E+02 4.00000E+00
70	1.22000E+02 8.54600E+00 2.00000E+02	1.00000E+00 1.26000E+00 2.51000E-05	6.34000E+01 2.07000E+01 3.02000E+00	6.08100E+02 6.80000E+00 1.07580E+02	2.00000E+02 1.85000E+01

RANCHO SECO DIFF. STATISTICS FROM DATA3

X(M):1=100,2=200,3=400,4=800;GASES:1=SF6,2=F12;ALL TESTS

VARIABLE LABELS...

	IDENT. RC P/DB X (M)	STAB 1-7 RY M/P CU/Q	SY RZC M/P SA16/SAP	SZ CIC RZI M/P SYA/SY	SZ IMP HR
81	1.22200E+03 9.68000E+01 2.00000E+02	5.00000E+00 5.09000E+00 4.51000E-05	5.80000E+01 3.29000E+01 4.42000E+00	2.08900E+02 1.92000E+01 3.44222E+01	1.21700E+02 4.00000E+00
82	1.32200E+03 4.11900E+01 2.00000E+02	5.00000E+00 5.04000E+00 1.06000E-04	5.74000E+01 5.24000E+00 5.64000E+00	3.33000E+01 8.24000E+00 4.43826E+01	5.23000E+01 4.00000E+00
83	1.42200E+03 1.57500E+02 2.00000E+02	7.00000E+00 1.38200E+01 6.45000E-05	1.05000E+02 1.40000E+01 3.92000E+00	5.68000E+01 1.16000E+01 8.43160E+00	4.70000E+01 4.00000E+00
84	1.52200E+03 6.17200E+01 2.00000E+02	4.00000E+00 4.36000E+00 3.95000E-05	6.67000E+01 1.68100E+01 3.98000E+00	1.42900E+02 1.42100E+01 5.39054E+01	1.20900E+02 4.00000E+00
85	1.62200E+03 4.91100E+01 2.00000E+02	5.00000E+00 3.50000E+00 8.89000E-05	3.99000E+01 1.05500E+01 4.70000E+00	6.70000E+01 1.41300E+01 5.32072E+01	8.97000E+01 4.00000E+00
86	1.72200E+03 3.76300E+01 2.00000E+02	7.00000E+00 6.90000E+00 2.70000E-04	5.24000E+01 9.63000E+00 3.68000E+00	3.90000E+01 5.56000E+00 1.58610E+01	2.25000E+01 4.00000E+00
87	1.82200E+03 5.13200E+02 2.00000E+02	6.00000E+00 1.18700E+01 1.98000E-05	9.02000E+01 2.61000E+01 1.42400E+01	1.05900E+02 4.40000E+01 3.56548E+01	1.78200E+02 4.00000E+00
88	1.92200E+03 2.81700E+02 2.00000E+02	5.00000E+00 5.93000E+00 1.55000E-05	6.76000E+01 4.59500E+01 6.42000E+00	2.91800E+02 4.78400E+01 4.28976E+01	3.03800E+02 4.00000E+00
89	2.02200E+03 3.33100E+01 2.00000E+02	7.00000E+00 6.17000E+00 3.05000E-04	4.69000E+01 4.10000E+00 0.00000E+00	1.66000E+01 5.49000E+00 0.00000E+00	2.23000E+01 4.00000E+00
90	2.12200E+03 7.75600E+01 2.00000E+02	7.00000E+00 1.12900E+01 1.31000E-04	8.58000E+01 1.26000E+01 1.86000E+01	5.12000E+01 6.99000E+00 4.89599E+01	2.83000E+01 4.00000E+00