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February 28, 1994

PG&E Letter No. HBL-94-011



U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Re: Docket No. 50-133, OL-DPR-7
Humboldt Bay Power Plant, Unit 3
Semiannual Radioactive Effluent Release Report

Gentlemen:

Enclosed is the Humboldt Bay Power Plant Unit 3 Semiannual Radioactive Effluent Release Report covering the period July 1 through December 31, 1993. This report is required by Section VII.H.3 of the Humboldt Bay Unit 3 Technical Specifications and 10 CFR 50.36a(a)(2).

Sincerely,

A handwritten signature in cursive script that reads 'James A. Sexton'.

James A. Sexton

cc: Edgar Bailey, DHS
Larry Bell
Stu Brown
Randall C. Parker
Kenneth E. Perkins
Humboldt Distribution (w/o enc.)

Enclosure

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ENCLOSURE

HUMBOLDT BAY POWER PLANT
UNIT 3

SEMIANNUAL RADIOACTIVE
EFFLUENT RELEASE REPORT

July 1 through December 31, 1993

PACIFIC GAS AND ELECTRIC COMPANY

HUMBOLDT BAY POWER PLANT

DOCKET NO. 50-133

LICENSE NO. DPR-7

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

JULY 1, 1993 THROUGH DECEMBER 31, 1993

TABLE OF CONTENTS

INTRODUCTION	2
I. SUPPLEMENTAL INFORMATION	3
II. GASEOUS AND LIQUID EFFLUENTS	6
Table 1 - Gaseous Effluents - Summation of All Releases . . .	7
Table 2 - Gaseous Effluents - Nuclides Released	8
Table 3 - Liquid Effluents - Summation of All Releases . . .	9
Table 4 - Liquid Effluents - Nuclides Released	10
III. SOLID RADIOACTIVE WASTE SHIPMENTS	11
Table 5 - Solid Waste and Irradiated Fuel Shipments	12
IV. RADIOLOGICAL IMPACT ON MAN	13
Table 6 - Radiation Dose for Maximally Exposed Individuals .	14
V. METEOROLOGICAL DATA	15
Table 7 - Percent of Time for Each Wind Speed and Direction for the Period April 1962 Through June 1967 Recorded at the 250 Foot Elevation	16

HUMBOLDT BAY POWER PLANT
SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT 1993

INTRODUCTION

This report summarizes the gaseous and liquid effluent radioactive releases from Humboldt Bay Power Plant Unit 3 for the third and fourth quarters of 1993. The report includes calculated potential radiation doses from these radioactive effluents, as well as a summary of shipments of solid radioactive waste. The information is reported as required by Section VII.H.3 of the License Technical Specifications, and it is presented in the general format of Regulatory Guide 1.21, Appendix B.

The plant effluent releases during the report period were well below Technical Specification limits.

The Unit was last operated on July 2, 1976. Due to the long decay time since operation, short-lived radionuclides are neither expected nor reported.

I. SUPPLEMENTAL INFORMATION

A. Regulatory Limits

1. Gaseous Effluents

a. Noble Gas Release Rate Limit

The noble gas release rate limit is based on the Maximum Permissible Concentrations of 10 CFR 20, divided by an atmospheric dispersion factor of $1.4E-6$ seconds per cubic meter. This dispersion factor is the annual average dispersion factor for the sector with the least favorable atmospheric dispersion.

b. Iodine Release Rate Limit

Due to the long decay time since the Unit was shutdown, the license does not define an iodine release limit.

c. Particulate Release Rate Limit

The radioactive particulate release rate limit is based on the Maximum Permissible Concentrations of 10 CFR 20, divided by a dispersion factor of $1.4E-6$ seconds per cubic meter. This dispersion factor is the annual average dispersion factor for the sector with the least favorable atmospheric dispersion.

2. Liquid Effluents

a. Concentration Limit

Site liquid effluent radioactivity concentrations are limited to the Maximum Permissible Concentrations of 10 CFR 20.

B. Maximum Permissible Concentrations

1. Gaseous Effluents

Maximum permissible concentrations for gaseous effluents are taken from 10 CFR 20, Appendix B, Table II, Column I.

2. Liquid Effluents

Maximum permissible concentrations for liquid effluents are taken from 10 CFR 20, Appendix B, Table II, Column II.

C. Measurements and Approximations of Total Radioactivity

1. Gaseous Effluents

a. Fission and Activation Gases

All ventilation and system vents are routed to the Unit 3 stack. The gaseous activity released from the stack is monitored by an off-line monitor equipped with a beta scintillator, with its response calibrated for Kr-85.

The "less than" value reported for Kr-85 is based on the estimated sensitivity of the stack Kr-85 monitor.

b. Iodines

Due to the long decay time since operation (shutdown July 2, 1976), no detectable releases of radioactive iodines can be expected. Therefore, the license does not require that these radionuclides be monitored.

c. Particulates

Radioactive particulates released from the plant stack are monitored by continuous sample collection on particulate filters. Filter papers are removed from the stack sampling system weekly. After decaying 48 hours, they are analyzed for gross alpha (internal proportional counter) and for the concentration of gamma-emitting nuclides (intrinsic germanium detector).

All statistically significant peaks are identified. Filters for each quarter are analyzed for radioactive strontium-90 (the only strontium present).

The estimated error of the reported particulate release values is based on uncertainty in sample flow rate, stack flow rate, detector calibration, and typical sample counting statistics.

2. Liquid Effluents

a. Batch Releases

All normal liquid releases were collected, filtered, and analyzed before discharge (on a batch basis) through the liquid radwaste process monitor. Analysis of weekly composite samples from the plant intake and the plant effluent canal did not detect any significant additional release of radioactive liquids during the report period.

Samples from liquid waste batches were counted for gamma spectrum and gross beta radioactivity. All statistically important peaks were identified. Quarterly composites of all batches were analyzed for gross alpha, tritium, and radioactive strontium (Sr-90).

The error of the reported release values is estimated based on uncertainty in sample volume, batch volume, detector calibration, and typical sample counting statistics.

D. Batch Release Statistics

1. Liquid

a. Number of batch releases	32
b. Total time period for batch releases	8.58E3 minutes
c. Maximum time period for a batch release	5.51E2 minutes
d. Average time period for a batch release	2.68E2 minutes
e. Minimum time period for a batch release	1.80E2 minutes

2. Gaseous

a. Number of batch releases	0
b. Total time period for batch releases	N/A
c. Maximum time period for a batch release	N/A
d. Average time period for a batch release	N/A
e. Minimum time period for a batch release	N/A

II. GASEOUS AND LIQUID EFFLUENTS

A. Gaseous Effluents

Table 1 summarizes the total quantities of radioactive gaseous effluents. Table 2 presents the quantities of each of the nuclides determined to be released.

B. Liquid Effluents

Table 3 summarizes the total quantities of radioactive liquid effluents. Table 4 presents the quantities of each of the nuclides determined to be released.

HUMBOLDT BAY POWER PLANT
SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT 1993

TABLE 1
GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

Units	Third Quarter	Fourth Quarter	Est. Total Error, %
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A. Fission & Activation Gases

1. Total release	Ci	<1.15E1	<1.15E1	5.00E1
2. Average release rate	$\mu\text{Ci}/\text{sec}$	<1.45E0	<1.45E0	
3. Percent of applicable limit	%	<6.76E-4	<6.76E-4	

B. Iodines

1. Total release	Ci	**	**	**
2. Average release rate	$\mu\text{Ci}/\text{sec}$	**	**	
3. Percent of applicable limit	%	**	**	

C. Particulates

1. Total release	Ci	1.69E-5	1.92E-5	3.00E1
2. Average release rate	$\mu\text{Ci}/\text{sec}$	2.12E-6	2.42E-6	
3. Percent of applicable limit	%	1.17E-6	1.10E-6	
4. Applicable limit (mixture MPC)	$\mu\text{Ci}/\text{cc}$	2.54E-10	3.09E-10	
5. Gross alpha radioactivity	Ci	6.41E-7	1.11E-6	

D. Tritium

1. Total release	Ci	<8.93E-3	<8.93E-3	5.00E1
2. Average release rate	$\mu\text{Ci}/\text{sec}$	<1.12E-3	<1.12E-3	

Note: ** No release can be expected due to the decay time since shutdown. Accordingly, no release is reported.

HUMBOLDT BAY POWER PLANT
SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT 1993

TABLE 2
GASEOUS EFFLUENTS - NUCLIDES RELEASED

Nuclides Released	Unit	Third Quarter	Fourth Quarter
		Continuous Mode	Continuous Mode

1. Fission Gasses

Krypton-85	Ci	<1.15E1	<1.15E1
Unidentified	Ci	**	**
Total for period	Ci	<1.15E1	<1.15E1

2. Iodines

Unidentified	Ci	**	**
Total for period	Ci	**	**

3. Particulates

Strontium-89	Ci	**	**
Strontium-90	Ci	8.30E-7	3.31E-7
Yttrium-90	Ci	8.30E-7	3.31E-7
Cesium-137	Ci	8.99E-6	7.95E-6
Cobalt-60	Ci	6.22E-6	1.06E-5
Unidentified	Ci	<1.18E-6	<1.27E-6
Total for period	Ci	1.69E-5	1.92E-5

Note: ** No release can be expected due to the decay time since shutdown. Accordingly, no release is reported.

HUMBOLDT BAY POWER PLANT
SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT 1993

TABLE 3
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	Units	Third Quarter	Fourth Quarter	Est. Total Error, %
A. Fission & Activation Products				
1. Total release (not including tritium, gases, alpha)	Ci	2.79E-3	2.29E-3	1.50E1
2. Average diluted concentration	μCi/ml	1.67E-10	1.22E-10	
3. Percent of applicable limit	%	2.89E-3	2.18E-3	
4. Applicable limit (Mixture MPC)	μCi/ml	5.77E-6	5.61E-6	
B. Tritium				
1. Total release	Ci	1.02E-4	2.83E-4	1.50E1
2. Average diluted concentration	μCi/ml	6.12E-12	1.51E-11	
3. Percent of applicable limit	%	2.04E-7	5.02E-7	
C. Dissolved And Entrained Gasses				
1. Total release	Ci	**	**	**
D. Gross Alpha Radioactivity				
1. Total release	Ci	<1.55E-5	9.33E-6	2.00E1
E. Volume of waste released (prior to dilution)				
	Liters	3.65E5	4.30E5	1.00E1
F. Volume of dilution water				
	Liters	1.68E10	1.88E10	1.50E1

Note: ** No release can be expected due to the decay time since shutdown. Accordingly, no release is reported.

HUMBOLDT BAY POWER PLANT
SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT 1993

TABLE 4
LIQUID EFFLUENTS - NUCLIDES RELEASED

Nuclides Released	Unit	Third Quarter	Fourth Quarter
		Batch Mode	Batch Mode
Strontium-89	Ci	**	**
Strontium-90	Ci	1.05E-4	8.96E-5
Yttrium-90	Ci	1.05E-4	8.96E-5
Cesium-134	Ci	1.75E-6	1.13E-6
Cesium-137	Ci	2.57E-3	2.10E-3
Cobalt-60	Ci	1.45E-5	1.48E-5
Unidentified	Ci	<3.76E-6	<4.45E-6
Total for period (above)	Ci	2.79E-3	2.29E-3
Xenon-133	Ci	**	**
Xenon-135	Ci	**	**

Note: ** No release can be expected due to the decay time since shutdown.
Accordingly, no release is reported.

III. SOLID RADIOACTIVE WASTE

Table 3 summarizes the shipment of solid radioactive waste made during the report period.

HUMBOLDT BAY POWER PLANT
SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT 1993

TABLE 5
SOLID WASTE AND IRRADIATED FUEL SHIPMENTS
SECOND HALF OF 1993

A. Solid Waste Shipped Offsite For Burial Or Disposal

1. Type of Waste	Unit	6-Month Period	Est. Total Error, %
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a. Spent resins, filter sludges, evaporator bottoms, etc.	Cubic Meter	None	N/A
	Ci	N/A	N/A

b. Dry compressible waste, contaminated equipment, etc.	Cubic Meter	None	N/A
	Ci	N/A	N/A

c. Irradiated components, control rods, etc.	Cubic Meter	None	N/A
	Ci	N/A	N/A

d. Other (absorbed liquid)	Cubic Meter	None	N/A
	Ci	N/A	N/A

2. Solid Waste Disposition	Number of Shipments	Mode of Transportation	Destination
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None	N/A	N/A
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B. Irradiated Fuel Shipments

1. Irradiated Fuel Disposition	Number of Shipments	Mode of Transportation	Destination
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None	N/A	N/A
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IV. RADIOLOGICAL IMPACT ON MAN

A comparison of calculated doses from various paths has shown that the offsite doses are primarily due to direct radiation and to the consumption of aquatic foods. Maximum doses to individuals (for the maximally exposed organs and age groups) are summarized in Table 6. These doses comply with 40 CFR 190 as there are no other uranium fuel cycle facilities within 8 km of the Humboldt Bay Power Plant.

- A. Doses to the average individual in the population from all receiving-water-related pathways were calculated for releases, based on the guidance of Regulatory Guide 1.109. The results were 0.003 mrem/yr (total body) for the Adult age group, and 0.005 mrem/yr for the bone of the Child age group.
- B. Total body doses to the average individual in the population from gaseous effluents to a distance of 50 miles from the site are not calculated, but this dose is less than the total body dose to an average individual present at the maximally exposed location. For an average individual at the maximally exposed location, the total body dose (calculated with the same dispersion and deposition parameters as were used to calculate maximum exposure) was less than 0.001 mrem/yr.
- C. Total body doses (to the average individual in unrestricted areas from direct radiation from the facility) are based on TLD results of stations at the site boundary, using the shoreline occupancy factors given in Regulatory Guide 1.109 for the highest average potential individual (Teenage group). For this group, direct radiation would result in an exposure of 0.03 mrem/yr.

HUMBOLDT BAY POWER PLANT
SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT 1993

TABLE 6
RADIATION DOSE FOR MAXIMALLY EXPOSED INDIVIDUALS

Dose Source	Annual Dose, milli-REM (8)				
	First Quarter 1993	Second Quarter 1993	Third Quarter 1993	Fourth Quarter 1993	Four Quarter Average
Liquid Effluents					
Water-related Pathways (1)	0.01(5) 0.01(6)	0.01(5) 0.02(6)	0.01(5) 0.02(6)	0.01(5) 0.02(6)	0.01(5) 0.02(6)
Airborne Effluents					
Iodines & Particulates (2)	<0.01(7) <0.01(6)	<0.01(7) <0.01(6)	<0.01(7) <0.01(6)	<0.01(7) 0.01(6)	<0.01(7) <0.01(6)
Noble Gases (3)	-	-	-	-	-
Direct Radiation (4)	0.04	<0.01	0.03	<0.01	0.02

Notes

1. Maximum total body and organ doses to individuals in unrestricted areas from receiving-water-related exposure pathways were calculated from the average concentrations of liquid releases detected during the report period, following the applicable portions of Regulatory Guide 1.109.
2. Maximum total body and organ doses to individuals in unrestricted areas from airborne-particulate-related exposure pathways were calculated from the average concentrations of airborne particulate releases detected during the report period, following the applicable portions of Regulatory Guide 1.109.
3. Total body and skin doses to potentially exposed individuals located at the point of maximum offsite ground-level concentrations of radioactive gaseous effluents were not calculated because there were no detected releases of radioactive noble gases, and because the doses would be less than 0.005 mrem/yr at the level at which the releases could be detected.
4. Total body doses (to the maximum individual in the population) are based on TLD results of stations at the site boundary, using the shoreline occupancy factors of Regulatory Guide 1.109 for the maximum potential individual (Teen age group).
5. Total body (Adult age group).
6. Bone (Child age group).
7. Total body (Child age group).
8. The dose shown for each quarter is calculated on an annual basis for four identical quarters.

V. METEOROLOGICAL DATA

The meteorological data logging system was removed from service in 1967. Therefore, the information specified by Regulatory Guide 1.21, Appendix B, Section F, is not available.

Table 7 summarizes the cumulative joint frequency distribution of wind speed, direction, and atmospheric stability for the period April 1962 through June 1967, when the meteorological data logging system was in service.

TABLE 7
PERCENT OF TIME FOR EACH WIND SPEED AND DIRECTION
FOR THE PERIOD APRIL 1962 THROUGH JUNE 1967
RECORDED AT THE 250 FOOT ELEVATION

Pasquill Stability Class C							
Wind Direction (Degrees)	Wind Speed (mph)						Total
	0-3	4-7	8-12	13-18	19-24	>24	
0	0.02	0.06	0.05	0.03	0.02	0.01	0.20
10	0.02	0.03	0.04	0.03	0.01	0.00	0.13
20	0.03	0.03	0.01	0.01	0.00	0.00	0.08
30	0.02	0.02	0.00	0.00	0.00	0.00	0.04
40	0.00	0.01	0.00	0.01	0.00	0.00	0.02
50	0.01	0.01	0.00	0.00	0.00	0.00	0.02
60	0.01	0.01	0.00	0.00	0.00	0.00	0.03
70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	0.01	0.00	0.00	0.00	0.00	0.00	0.01
90	0.00	0.00	0.00	0.00	0.00	0.00	0.01
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.01
120	0.01	0.01	0.01	0.01	0.00	0.00	0.03
130	0.01	0.01	0.00	0.01	0.00	0.00	0.03
140	0.00	0.01	0.01	0.00	0.01	0.00	0.02
150	0.00	0.01	0.01	0.02	0.01	0.00	0.06
160	0.00	0.01	0.01	0.01	0.01	0.00	0.04
170	0.00	0.00	0.02	0.02	0.02	0.01	0.07
180	0.00	0.01	0.02	0.02	0.00	0.00	0.05
190	0.01	0.01	0.01	0.01	0.01	0.00	0.04
200	0.00	0.02	0.02	0.02	0.00	0.01	0.09
210	0.02	0.03	0.06	0.02	0.01	0.00	0.13
220	0.01	0.02	0.08	0.04	0.03	0.02	0.19
230	0.01	0.06	0.12	0.14	0.05	0.02	0.39
240	0.01	0.09	0.22	0.15	0.02	0.03	0.51
250	0.02	0.18	0.26	0.10	0.02	0.00	0.58
260	0.02	0.13	0.24	0.04	0.01	0.00	0.44
270	0.02	0.16	0.22	0.02	0.01	0.00	0.42
280	0.02	0.13	0.11	0.01	0.00	0.00	0.27
290	0.02	0.10	0.10	0.01	0.01	0.00	0.24
300	0.01	0.09	0.06	0.00	0.00	0.00	0.15
310	0.01	0.04	0.06	0.01	0.00	0.00	0.12
320	0.01	0.03	0.05	0.01	0.01	0.01	0.12
330	0.01	0.03	0.03	0.01	0.02	0.01	0.11
340	0.01	0.04	0.04	0.03	0.02	0.01	0.15
350	0.01	0.02	0.06	0.07	0.05	0.01	0.22

Rows may not sum to exact total due to rounding off.

TABLE 7 (Cont.)
 PERCENT OF TIME FOR EACH WIND SPEED AND DIRECTION
 FOR THE PERIOD APRIL 1962 THROUGH JUNE 1967
 RECORDED AT THE 250 FOOT ELEVATION

Pasquill Stability Class D							
Wind Direction (Degrees)	Wind Speed (mph)						Total
	0-3	4-7	8-12	13-18	19-24	>24	
0	0.11	0.34	0.78	0.85	0.49	0.48	3.05
10	0.04	0.27	0.52	0.46	0.38	0.27	1.95
20	0.05	0.21	0.32	0.19	0.16	0.11	1.04
30	0.06	0.20	0.16	0.08	0.03	0.04	0.58
40	0.05	0.11	0.05	0.02	0.00	0.01	0.23
50	0.03	0.05	0.08	0.00	0.01	0.00	0.16
60	0.04	0.08	0.04	0.00	0.00	0.00	0.15
70	0.04	0.02	0.01	0.01	0.00	0.00	0.08
80	0.02	0.04	0.00	0.01	0.00	0.00	0.07
90	0.01	0.04	0.03	0.00	0.00	0.00	0.09
100	0.02	0.01	0.02	0.00	0.00	0.00	0.05
110	0.00	0.03	0.01	0.00	0.00	0.00	0.06
120	0.02	0.03	0.03	0.02	0.01	0.00	0.11
130	0.01	0.03	0.02	0.02	0.01	0.00	0.10
140	0.02	0.03	0.02	0.04	0.01	0.01	0.13
150	0.03	0.03	0.03	0.09	0.03	0.02	0.23
160	0.01	0.04	0.05	0.10	0.04	0.01	0.26
170	0.02	0.05	0.12	0.16	0.04	0.01	0.40
180	0.04	0.08	0.12	0.13	0.03	0.01	0.40
190	0.02	0.07	0.09	0.06	0.03	0.02	0.28
200	0.05	0.10	0.17	0.11	0.02	0.01	0.46
210	0.05	0.12	0.20	0.08	0.04	0.01	0.51
220	0.05	0.14	0.14	0.12	0.05	0.02	0.51
230	0.03	0.14	0.17	0.11	0.06	0.02	0.53
240	0.08	0.22	0.21	0.06	0.03	0.01	0.61
250	0.08	0.17	0.13	0.04	0.01	0.00	0.43
260	0.08	0.22	0.13	0.02	0.01	0.00	0.47
270	0.12	0.21	0.11	0.03	0.01	0.00	0.49
280	0.05	0.20	0.11	0.04	0.00	0.00	0.40
290	0.04	0.22	0.11	0.02	0.00	0.00	0.39
300	0.10	0.21	0.21	0.02	0.01	0.00	0.53
310	0.08	0.28	0.19	0.03	0.02	0.01	0.60
320	0.07	0.25	0.33	0.09	0.04	0.01	0.80
330	0.06	0.21	0.35	0.16	0.09	0.03	0.90
340	0.07	0.24	0.50	0.47	0.17	0.08	1.53
350	0.07	0.30	0.82	0.86	0.49	0.33	2.87

Rows may not sum to exact total due to rounding off.

TABLE 7 (Cont.)
 PERCENT OF TIME FOR EACH WIND SPEED AND DIRECTION
 FOR THE PERIOD APRIL 1962 THROUGH JUNE 1967
 RECORDED AT THE 250 FOOT ELEVATION

Pasquill Stability Class E							
Wind Direction (Degrees)	Wind Speed (mph)						Total
	0-3	4-7	8-12	13-18	19-24	>24	
0	1.04	1.06	2.00	1.84	0.82	0.10	6.86
10	0.17	0.80	1.55	0.90	0.36	0.10	3.78
20	0.30	0.83	1.26	0.47	0.13	0.00	2.99
30	0.37	0.73	0.64	0.19	0.01	0.00	1.94
40	0.21	0.60	0.47	0.02	0.00	0.00	1.31
50	0.18	0.56	0.28	0.02	0.00	0.00	1.05
60	0.21	0.54	0.19	0.00	0.00	0.00	0.93
70	0.19	0.44	0.07	0.00	0.00	0.00	0.81
80	0.20	0.41	0.07	0.00	0.00	0.00	0.68
90	0.27	0.47	0.17	0.01	0.00	0.00	0.82
100	0.17	0.24	0.06	0.01	0.00	0.00	0.49
110	0.20	0.31	0.10	0.00	0.00	0.00	0.60
120	0.18	0.31	0.19	0.01	0.02	0.00	0.70
130	0.14	0.25	0.08	0.08	0.03	0.03	0.72
140	0.09	0.22	0.21	0.23	0.22	0.25	1.21
150	0.09	0.24	0.22	0.45	0.52	0.46	2.08
160	0.05	0.22	0.25	0.62	0.44	0.21	1.79
170	0.04	0.26	0.43	0.73	0.23	0.09	1.89
180	0.26	0.32	0.45	0.43	0.20	0.02	1.77
190	0.15	0.26	0.37	0.35	0.15	0.02	1.20
200	0.22	0.48	0.47	0.26	0.18	0.06	1.77
210	0.20	0.44	0.58	0.18	0.05	0.04	0.60
220	0.20	0.40	0.55	0.15	0.14	0.03	1.37
230	0.23	0.43	0.40	0.14	0.13	0.05	1.39
240	0.24	0.39	0.23	0.15	0.13	0.01	1.24
250	0.21	0.32	0.16	0.03	0.01	0.01	0.84
260	0.24	0.31	0.17	0.03	0.00	0.00	0.85
270	0.35	0.35	0.13	0.12	0.01	0.00	0.97
280	0.19	0.30	0.15	0.01	0.01	0.01	0.67
290	0.19	0.33	0.17	0.01	0.01	0.01	0.81
300	0.21	0.37	0.16	0.01	0.00	0.01	0.88
310	0.20	0.47	0.29	0.02	0.00	0.00	0.98
320	0.20	0.59	0.65	0.12	0.01	0.05	1.72
330	0.22	0.87	0.98	0.35	0.02	0.02	2.45
340	0.20	0.88	1.55	0.74	0.01	0.00	3.48
350	0.19	1.02	2.02	1.41	0.55	0.13	5.22

Rows may not sum to exact total due to rounding off.

TABLE 7 (Cont.)
 PERCENT OF TIME FOR EACH WIND SPEED AND DIRECTION
 FOR THE PERIOD APRIL 1962 THROUGH JUNE 1967
 RECORDED AT THE 250 FOOT ELEVATION

Pasquill Stability Class F							
Wind Direction (Degrees)	Wind Speed (mph)						Total
	0-3	4-7	8-12	13-18	19-24	>24	
0	0.42	0.08	0.03	0.00	0.00	0.00	0.53
10	0.05	0.06	0.05	0.01	0.00	0.00	0.18
20	0.05	0.09	0.08	0.03	0.00	0.00	0.24
30	0.12	0.11	0.10	0.04	0.00	0.00	0.37
40	0.07	0.13	0.10	0.03	0.01	0.00	0.34
50	0.09	0.13	0.06	0.00	0.00	0.00	0.27
60	0.14	0.19	0.07	0.01	0.00	0.00	0.40
70	0.11	0.22	0.08	0.00	0.00	0.00	0.40
80	0.10	0.22	0.07	0.00	0.00	0.00	0.40
90	0.14	0.25	0.07	0.00	0.00	0.00	0.46
100	0.11	0.29	0.09	0.01	0.01	0.00	0.51
110	0.13	0.31	0.13	0.02	0.00	0.00	0.59
120	0.15	0.33	0.18	0.03	0.00	0.00	0.69
130	0.10	0.23	0.14	0.02	0.00	0.00	0.50
140	0.10	0.22	0.11	0.09	0.02	0.00	0.54
150	0.12	0.19	0.10	0.07	0.03	0.02	0.52
160	0.08	0.15	0.16	0.08	0.01	0.00	0.47
170	0.07	0.15	0.14	0.07	0.00	0.00	0.43
180	0.16	0.26	0.13	0.02	0.00	0.00	0.56
190	0.12	0.18	0.13	0.02	0.00	0.01	0.46
200	0.13	0.25	0.18	0.02	0.00	0.00	0.58
210	0.18	0.32	0.20	0.02	0.00	0.01	0.73
220	0.14	0.28	0.09	0.02	0.00	0.00	0.54
230	0.18	0.24	0.07	0.01	0.01	0.00	0.50
240	0.19	0.19	0.05	0.02	0.00	0.00	0.45
250	0.15	0.16	0.01	0.00	0.00	0.00	0.32
260	0.17	0.10	0.01	0.00	0.00	0.00	0.29
270	0.18	0.09	0.01	0.00	0.00	0.00	0.28
280	0.10	0.04	0.01	0.00	0.00	0.00	0.15
290	0.11	0.05	0.01	0.00	0.00	0.00	0.16
300	0.13	0.07	0.00	0.00	0.00	0.00	1.19
310	0.07	0.05	0.01	0.00	0.00	0.00	0.13
320	0.09	0.05	0.03	0.00	0.00	0.00	0.17
330	0.09	0.09	0.01	0.00	0.00	0.00	0.19
340	0.06	0.10	0.03	0.01	0.00	0.00	0.20
350	0.07	0.09	0.05	0.01	0.00	0.00	0.21

Rows may not sum to exact total due to rounding off.