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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
ENVIRONMENTAL DATA SERVICE
National Climatic Center
Federal Building
Asheville, N.C. 28801

INVOICE

DATE: August 13, 1980

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Attn: Mr. Walter Lawrence
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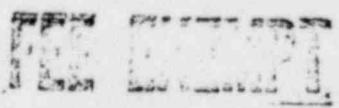
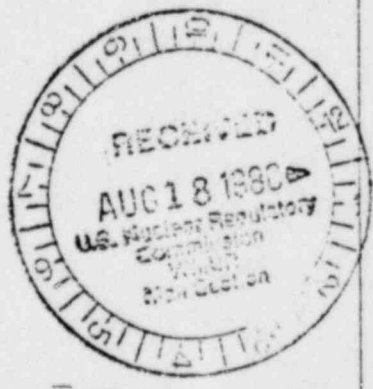
BELOW ATTACHMENT #1 ATTACHMENT #2 ATTACHMENT #3

STAR TABLETION
Spokane, Washington
1967-1971 Annual only

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
ENVIRONMENTAL DATA SERVICE

JOB NO. 13365 (W-1379)

SEASONAL & ANNUAL
WIND DISTRIBUTION BY PASQUILL STABILITY CLASSES (6)
(STAR PROGRAM)

Station: #24157, Spokane, Washington WBAS

Period: Jan. 1967 - Dec. 1971

Source: CD 144 (8 Obs/Day)

DATE Mar. 22, 1972

NATIONAL CLIMATIC CENTER
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JOB NO. 13365

SEASONAL & ANNUAL

WIND DISTRIBUTION BY PASQUILL STABILITY CLASSES (STAR PROGRAM) (6 Classes)
(8 Obs/Day)

Page 1 of 3

STATION: #24157, Spokane, Washington WBAS

PERIOD: Jan. 1967-Dec. 1971

Data are presented by stability classes and also combined for the period indicated; first, as a bivariate frequency distribution of wind direction vs. wind speed, and second, as normalized values (i.e., relative frequency). Stability classes used are based on Pasquill's class structure (see Journal of Applied Meteorology, February 1964), as follows:

Pasquill Stability Class	Identified in lower left corner in this tabulation as	Definition
1	A	Extremely Unstable
2	B	Unstable
3	C	Slightly Unstable
4	D	Neutral
5	E	Slightly Stable
6-7	F	Stable to Extremely Stable

Average wind speed in knots, to tenths, for each direction and each speed class. Overall average wind speed is computed by

$$\frac{\text{Sum of wind speed}}{\text{Number of occurrences}}$$

NUMBER OF OCCURRENCES: Number of DIR/SPD observations, plus number of calms (winds are tabulated to 16 points; speeds are in knots.)

RELATIVE FREQUENCY OF OCCURRENCES: $\frac{\text{Number of occurrences/stability class}}{\text{Total number of observations}}$

TOTAL NUMBER OF OBSERVATIONS: Number of observations in each, month, season, annual or period.

TOTAL RELATIVE FREQUENCY OF OBSERVATIONS: $\frac{\text{Total number of observations}}{\text{Total number of observations}} = 1.00000$

This normalized (relative frequency) table is self explanatory, except that the calm values have been distributed in the 0-3 speed category based on the number of observations in speed categories 0-3 and 4-6.

Example: Total Obs (N) = 3601 (DJF) $\frac{\text{Number of calms in "C" class (2)}}{N (3601)} = .0005554$ $\frac{.0005554}{(30) \text{ Number obs. in classes 1-3 and 4-6}} = .0000185$

From the South direction there are seven observations in the first two speed categories, hence $7(.0000185) = .0001295$. In the first category there are 2 observations. $2/3601 = .0005554$. When added together $.0005554 + .0001295 = .0006849$ the resultant (.000685) figure is placed in the South 0-3 category and .00389 in the South 4-6 category. This method is used to distribute the calms into the 0-3 speed category, by directions.

JOB NO.

A STABILITY CLASSIFICATION BASED ON HOURLY AIRPORT OBSERVATIONS

The following explanation of the Pasquill Stability classification has been extracted from an article by D. Bruce Turner in the February 1964 Journal of Applied Meteorology.

This system of classifying stability on an hourly basis for research in air pollution is based upon work accomplished by Dr. F. Pasquill of the British Meteorological Office (1961). Stability near the ground is dependent primarily upon net radiation and wind speed. Without the influence of clouds, insolation (incoming radiation) during the day is dependent upon solar altitude, which is a function of time of day and time of year. When clouds exist their cover and thickness decrease incoming and outgoing radiation. In this system insolation is estimated by solar altitude and modified for existing conditions of total cloud cover and cloud ceiling height. At night estimates of outgoing radiation are made by considering cloud cover. This stability classification system has been made completely objective so that an electronic computer can be used to compute stability classes. The stability classes are as follows: 1) Extremely unstable, 2) Unstable, 3) Slightly unstable, 4) Neutral, 5) Slightly stable, 6) Stable, 7) Extremely stable. Table A-1 gives the stability class as a function of wind speed and net radiation. The net radiation index ranges from 4, highest positive net radiation (directed toward the ground), to -2, highest negative net radiation (directed away from the earth). Instability occurs with high positive net radiation and low wind speed, stability with high negative net radiation and light winds, and neutral conditions with cloudy skies or high wind speeds.

The net radiation index used with wind speed to obtain stability class is determined by the following procedure:

- 1) If the total cloud cover is 10/10 and the ceiling is less than 7000 feet, use net radiation index equal to 0 (whether day or night).
- 2) For night-time (night is defined as the period from one hour before sunset to one hour after sunrise):
 - a) If total cloud cover $\leq 4/10$, use net radiation index equal to -2.
 - b) If total cloud cover $> 4/10$, use net radiation index equal to -1.
- 3) For daytime:
 - a) Determine the insolation class number as a function of solar altitude from Table A-2.
 - b) If total cloud cover $\leq 5/10$, use the net radiation index in Table A-1 corresponding to the insolation class number.
 - c) If cloud cover $> 5/10$, modify the insolation class number by following these six steps:
 - 1) Ceiling < 7000 ft, subtract 2.
 - 2) Ceiling ≥ 7000 ft but $< 16,000$ ft, subtract 1.
 - 3) Total cloud cover equal 10/10, subtract 1. (This will only apply to ceilings ≥ 7000 ft since cases with 10/10 coverage below 7000 ft are considered in item 1 above.)
 - 4) If insolation class number has not been modified by steps (1), (2), or (3) above, assume modified class number equal to insolation class number.
 - 5) If modified insolation class number is less than 1, let it equal 1.
 - 6) Use the net radiation index in Table A-1 corresponding to the modified insolation class number.

Since urban areas do not become as stable in the lower layers as non-urban areas, stability classes 5, 6 and 7 computed using the STAR program may be combined into a single class (5), or classes 6 and 7 may be combined and identified as class 6.

A STABILITY CLASSIFICATION BASED ON HOURLY AIRPORT OBSERVATIONS (CONT'D) (STAR PROGRAM)

TABLE A-1. STABILITY CLASS AS A FUNCTION OF NET RADIATION AND WIND SPEED

WIND SPEED (KNOTS)	NET RADIATION INDEX						
	4	3	2	1	0	-1	-2
0, 1	1	1	2	3	4	6	7
2, 3	1	2	2	3	4	6	7
4, 5	1	2	3	4	4	5	6
6	2	2	3	4	4	5	6
7	2	2	3	4	4	4	5
8, 9	2	3	3	4	4	4	5
10	3	3	4	4	4	4	5
11	3	3	4	4	4	4	4
≥ 12	3	4	4	4	4	4	4

TABLE A-2. INSOLATION AS A FUNCTION OF SOLAR ALTITUDE

SOLAR ALTITUDE (α)	INSOLATION	INSOLATION CLASS NUMBER
$60^\circ < \alpha$	Strong	4
$35^\circ < \alpha \leq 60^\circ$	Moderate	3
$15^\circ < \alpha \leq 35^\circ$	Slight	2
$\alpha \leq 15^\circ$	Weak	1

ANNUAL

FREQUENCY DISTRIBUTION

STATION #24157 SPOKANE, WASH. 67-71 8 URS

SPEED(KTS)

DIRECTION	1 - 3	4 - 6	7 - 10	11-16	17-21	GREATER THAN 21	AVG SPD	TOTAL
N	1	4	0	0	0	0	4.2	5
NNE	0	1	0	0	0	0	4.0	1
NE	2	3	0	0	0	0	3.8	5
ENE	2	1	0	0	0	0	3.3	3
E	1	2	0	0	0	0	4.0	3
ESE	0	3	0	0	0	0	4.7	3
SE	0	3	0	0	0	0	4.7	3
SSE	0	2	0	0	0	0	4.5	2
S	1	6	0	0	0	0	4.3	7
SSW	1	0	0	0	0	0	3.0	1
SW	0	3	0	0	0	0	4.7	3
WSW	0	1	0	0	0	0	4.0	1
W	0	1	0	0	0	0	5.0	1
WNW	1	0	0	0	0	0	3.0	1
NW	0	2	0	0	0	0	4.5	2
NNW	0	1	0	0	0	0	4.0	1
AVG	2.9	4.5	0.0	0.0	0.0	0.0	3.5	
TOTAL	9	33	0	0	0	0		

NUMBER OF OCCURRENCES OF A STABILITY = 50

NUMBER OF CALMS WITH A STABILITY = 8

ANNUAL RELATIVE FREQUENCY DISTRIBUTION STATION #24157 SPOKANE, WASH. 67-71 R. 005

SPEED(KTS)

DIRECTION	0 - 3	4 - 6	7 - 10	11 - 16	17 - 21	GREATER THAN 21	TOTAL
N	0.000134	0.000274	0.000000	0.000000	0.000000	0.000000	0.000408
NNE	0.000013	0.000068	0.000000	0.000000	0.000000	0.000000	0.000082
NE	0.000202	0.000205	0.000000	0.000000	0.000000	0.000000	0.000408
ENE	0.000176	0.000068	0.000000	0.000000	0.000000	0.000000	0.000245
E	0.000108	0.000137	0.000000	0.000000	0.000000	0.000000	0.000245
ESE	0.000013	0.000205	0.000000	0.000000	0.000000	0.000000	0.000245
SE	0.000039	0.000205	0.000000	0.000000	0.000000	0.000000	0.000245
SSE	0.000026	0.000137	0.000000	0.000000	0.000000	0.000000	0.000163
S	0.000160	0.000411	0.000000	0.000000	0.000000	0.000000	0.000571
SSW	0.000082	0.000000	0.000000	0.000000	0.000000	0.000000	0.000082
SW	0.000039	0.000205	0.000000	0.000000	0.000000	0.000000	0.000245
WSW	0.000013	0.000068	0.000000	0.000000	0.000000	0.000000	0.000082
W	0.000013	0.000068	0.000000	0.000000	0.000000	0.000000	0.000082
WNW	0.000082	0.000000	0.000000	0.000000	0.000000	0.000000	0.000082
NW	0.000026	0.000137	0.000000	0.000000	0.000000	0.000000	0.000163
NNW	0.000013	0.000068	0.000000	0.000000	0.000000	0.000000	0.000082
TOTAL	0.001164	0.002260	0.000000	0.000000	0.000000	0.000000	0.003424

RELATIVE FREQUENCY OF OCCURRENCE OF A STABILITY = 0.003424

RELATIVE FREQUENCY OF CALMS DISTRIBUTED ABOVE WITH A STABILITY = 0.000540

ANNUAL

FREQUENCY DISTRIBUTION

STATION #24157 SPOKANE, WASH. 67-71 8 DAS

SPEED(KTS)

DIRECTION	1 - 3	4 - 6	7 - 10	11-16	17-21	GREATER THAN 21	AVG SPD	TOTAL
N	5	18	7	0	0	0	5.3	30
NNE	6	17	12	0	0	0	5.5	35
NE	8	32	15	0	0	0	5.3	55
ENE	8	29	25	0	0	0	5.7	62
E	13	33	10	0	0	0	5.0	56
ESE	8	21	6	0	0	0	4.9	35
SE	12	13	5	0	0	0	4.5	30
SSE	6	18	4	0	0	0	5.0	28
S	14	34	19	0	0	0	5.2	67
SSW	7	17	18	0	0	0	5.7	42
SW	11	30	29	0	0	0	5.8	70
WSW	9	25	12	0	0	0	5.3	47
W	5	17	8	0	0	0	5.5	30
WNW	8	10	1	0	0	0	4.3	19
NW	6	9	4	0	0	0	4.5	19
NNW	1	5	2	0	0	0	5.4	8
AVG	2.9	5.1	7.3	0.0	0.0	0.0	5.2	
TOTAL	127	320	178	0	0	0		

NUMBER OF OCCURRENCES OF B STABILITY = 647

NUMBER OF CALMS WITH B STABILITY = 14

ANNUAL RELATIVE FREQUENCY DISTRIBUTION STATION #24157 SPOKANE, WASH, 67-71 8 OBS

DIRECTION	SPEED(KTS)							TOTAL
	0 - 3	4 - 6	7 - 10	11 - 16	17 - 21	GREATER THAN 21		
N	0.000391	0.001233	0.000479	0.000000	0.000000	0.000000	0.002103	
NNE	0.000459	0.001164	0.000322	0.000000	0.000000	0.000000	0.002446	
NE	0.000532	0.002192	0.001027	0.000000	0.000000	0.000000	0.003851	
NNE	0.000626	0.001986	0.001712	0.000000	0.000000	0.000000	0.004324	
E	0.000987	0.002260	0.000635	0.000000	0.000000	0.000000	0.003932	
ESE	0.000609	0.001436	0.000411	0.000000	0.000000	0.000000	0.002458	
SE	0.000875	0.000890	0.000342	0.000000	0.000000	0.000000	0.002107	
SSE	0.000462	0.001233	0.000274	0.000000	0.000000	0.000000	0.001968	
S	0.001060	0.002329	0.001301	0.000000	0.000000	0.000000	0.004690	
SSW	0.000930	0.001164	0.001233	0.000000	0.000000	0.000000	0.002927	
SW	0.000840	0.002055	0.001986	0.000000	0.000000	0.000000	0.004881	
WSW	0.000688	0.001712	0.000890	0.000000	0.000000	0.000000	0.003291	
W	0.000389	0.001164	0.000546	0.000000	0.000000	0.000000	0.002101	
WNW	0.000586	0.000685	0.000058	0.000000	0.000000	0.000000	0.001339	
NW	0.000443	0.000616	0.000274	0.000000	0.000000	0.000000	0.001333	
NNW	0.000091	0.000342	0.000137	0.000000	0.000000	0.000000	0.000561	
TOTAL	0.009657	0.022464	0.012191	0.000000	0.000000	0.000000		

RELATIVE FREQUENCY OF OCCURRENCE OF R STABILITY = 0.044312

RELATIVE FREQUENCY OF CALMS DISTRIBUTED ABOVE WITH B STABILITY = 0.000959

ANNUAL

FREQUENCY DISTRIBUTION

STATION #24157 SPOKANE, WASH. 67-71 & 1105

SPEED(KTS)

DIRECTION	1 - 3	4 - 6	7 - 10	11-16	17-21	GREATER THAN 21	AVG SPD	TOTAL
N	3	26	34	0	1	0	7.0	64
NNE	3	22	37	2	0	0	7.0	64
NE	6	49	116	8	0	0	7.5	179
ENE	8	55	152	7	1	0	7.4	223
E	4	59	61	3	0	0	6.7	127
ESE	3	23	36	1	0	0	6.7	63
SE	1	24	39	0	0	0	7.0	64
SSE	4	27	61	0	0	0	7.0	92
S	2	38	97	7	0	0	7.6	144
SSW	2	15	110	16	1	0	8.6	144
SW	4	24	92	29	1	1	8.8	151
WSW	4	27	81	14	0	0	7.9	126
W	3	22	35	1	0	0	6.8	61
WNW	2	16	13	0	0	0	6.3	31
WW	1	15	11	0	0	0	6.4	27
WNW	3	10	14	1	0	0	6.6	28
AVG	2.9	5.2	8.3	11.8	18.3	22.0	7.4	
TOTAL	53	452	919	89	4	1		

NUMBER OF OCCURRENCES OF C STABILITY • 1601

NUMBER OF CALMS WITH C STABILITY • 13

STATION #21137 SPOKANE, WASH. 67-71 8 005

ANNUAL RELATIVE FREQUENCY DISTRIBUTION

SPEED(KTS)

DIRECTION	0 - 3	4 - 6	7 - 10	11 - 16	17 - 21	GREATER THAN 21	TOTAL
N	0.000297	0.001781	0.002329	0.000000	0.000068	0.000000	0.004434
NNE	0.000250	0.001507	0.002334	0.000137	0.000000	0.000000	0.004427
NE	0.000508	0.003356	0.007945	0.000548	0.000000	0.000000	0.012356
ENE	0.000659	0.003767	0.010410	0.000479	0.000068	0.000000	0.015384
E	0.000385	0.004041	0.004178	0.000205	0.000000	0.000000	0.008809
ESE	0.000251	0.001575	0.002466	0.000068	0.000000	0.000000	0.004361
SE	0.000113	0.001644	0.002671	0.000000	0.000000	0.000000	0.004427
SSE	0.000329	0.001849	0.004178	0.000000	0.000000	0.000000	0.006356
S	0.000207	0.002603	0.006643	0.000479	0.000000	0.000000	0.009933
SSW	0.000167	0.001027	0.007534	0.001096	0.000068	0.000000	0.009892
SW	0.000323	0.001644	0.006301	0.001986	0.000068	0.000068	0.010391
WSW	0.000329	0.001849	0.005548	0.000959	0.000000	0.000000	0.006694
W	0.000250	0.001507	0.002397	0.000068	0.000000	0.000000	0.004222
WNW	0.000169	0.001096	0.000890	0.000000	0.000000	0.000000	0.002155
NW	0.000097	0.001027	0.000753	0.000000	0.000000	0.000000	0.001677
NNW	0.000228	0.000685	0.000959	0.000068	0.000000	0.000000	0.001941
TOTAL	0.004520	0.030957	0.067735	0.006095	0.000274	0.000068	

RELATIVE FREQUENCY OF OCCURRENCE OF C STABILITY = 0.109650

RELATIVE FREQUENCY OF CALMS DISTRIBUTED ABOVE WITH C STABILITY = 0.000890

ANNUAL

FREQUENCY DISTRIBUTION

STATION #24157 SPOKANE, WASH. 67-71 8 OBS

SPEED (KTS)

DIRECTION	1 - 3	4 - 6	7 - 10	11-16	17-21	GREATER THAN 21	AVG SPD	TOTAL
N	13	73	60	27	3	0	7.3	176
NNE	10	72	94	45	3	0	8.1	224
NE	16	136	281	72	12	1	8.1	518
ENE	26	154	342	86	13	0	8.1	621
E	35	120	93	28	3	0	6.6	279
ESE	15	71	82	15	0	0	6.9	183
SE	18	85	157	47	1	0	7.7	308
SSE	14	87	369	136	18	1	9.2	625
S	25	146	510	403	57	6	10.1	1147
SSW	9	82	382	631	167	17	12.1	1288
SW	9	73	371	666	262	79	13.2	1460
WSW	12	60	202	278	103	32	12.2	687
W	5	46	74	90	28	8	11.0	251
WW	6	22	24	34	4	0	9.2	90
NW	4	17	25	8	0	0	7.8	54
NNW	6	17	14	19	4	0	8.9	60
AVG	2.8	5.1	8.5	13.1	18.3	24.2	10.3	
TOTAL	223	1261	3080	2585	678	144		

NUMBER OF OCCURRENCES OF D STABILITY = 8056

NUMBER OF CALMS WITH D STABILITY = 85

STATION #24157 SPOKANE, WASH. 67-71 B UPS

RELATIVE FREQUENCY DISTRIBUTION

ANNUAL

SPEED(KTS)

DIRECTION	0 - 3	4 - 6	7 - 10	11 - 16	17 - 21	GREATER THAN 21	TOTAL
N	0.001220	0.005000	0.004109	0.001849	0.000205	0.000000	0.012391
NNE	0.001007	0.004931	0.006438	0.003042	0.000205	0.000000	0.015663
NE	0.001672	0.009314	0.019245	0.004931	0.000872	0.000068	0.036073
ENE	0.002487	0.010547	0.023423	0.005890	0.000890	0.000000	0.043237
E	0.003005	0.008219	0.006369	0.001918	0.000205	0.000000	0.019716
ESE	0.001365	0.004863	0.005616	0.001027	0.000000	0.000000	0.012671
SE	0.001627	0.005822	0.010783	0.003219	0.000060	0.000000	0.021478
SSE	0.001355	0.005958	0.025272	0.009314	0.001233	0.000068	0.043201
S	0.002383	0.009999	0.034929	0.027601	0.003904	0.000411	0.079227
SSW	0.000973	0.005616	0.026163	0.043216	0.011438	0.001164	0.088570
SW	0.000938	0.005000	0.023409	0.045613	0.017944	0.003411	0.100315
WSW	0.001104	0.004109	0.013835	0.019040	0.007054	0.002192	0.047334
W	0.000543	0.003150	0.005068	0.006164	0.001918	0.000548	0.017621
WNW	0.000521	0.001507	0.001644	0.002329	0.000274	0.000000	0.006274
NW	0.000356	0.001164	0.001712	0.000548	0.000000	0.000000	0.003781
NNW	0.000501	0.001164	0.000959	0.001301	0.000274	0.000000	0.004200
TOTAL	0.021094	0.086364	0.210944	0.177042	0.046435	0.009862	

RELATIVE FREQUENCY OF OCCURRENCE OF D STABILITY = 0.551743

RELATIVE FREQUENCY OF CALMS DISTRIBUTED ABOVE WITH D STABILITY = 0.005822

STATION #24157 SPOKANE, WASH., 67-71.8 OFS.

FREQUENCY DISTRIBUTION

ANNUAL

SPEED(KTS)

DIRECTION	1 - 3	4 - 6	7 - 10	11-16	17-21	GREATER THAN 21	AVG SPD	TOTAL
N	0	39	28	0	0	0	6.2	67
NNE	0	64	29	0	0	0	6.0	93
NE	0	100	101	0	0	0	6.6	201
ENE	0	131	123	0	0	0	6.4	254
E	0	76	38	0	0	0	5.9	114
ESE	0	51	7	0	0	0	5.2	58
SE	0	58	52	0	0	0	6.4	110
SSE	0	89	238	0	0	0	7.4	327
S	0	100	211	0	0	0	7.2	311
SSW	0	36	116	0	0	0	7.6	152
SW	0	60	179	0	0	0	7.6	239
WSW	0	42	119	0	0	0	7.4	161
W	0	35	29	0	0	0	6.4	64
WNW	0	16	14	0	0	0	6.6	30
NW	0	7	11	0	0	0	6.9	18
NNW	0	8	8	0	0	0	6.5	16
AVG	0.0	5.1	8.1	0.0	0.0	0.0	6.9	
TOTAL	0	912	1303	0	0	0		

NUMBER OF OCCURRENCES OF E STABILITY = 2215

NUMBER OF CALMS WITH E STABILITY = 0

ANNUAL RELATIVE FREQUENCY DISTRIBUTION STATION 24157 SPOKANE, WASH. 67-71 8 URS

SPEED(KTS)

DIRECTION	0 - 3	4 - 6	7 - 10	11 - 16	17 - 21	GREATER THAN 21	TOTAL
N	0.000000	0.002671	0.001918	0.000000	0.000000	0.000000	0.004589
NNE	0.000000	0.004383	0.001986	0.000000	0.000000	0.000000	0.006369
NE	0.000000	0.006849	0.006917	0.000000	0.000000	0.000000	0.013766
ENE	0.000000	0.008972	0.009424	0.000000	0.000000	0.000000	0.017396
E	0.000000	0.005205	0.002603	0.000000	0.000000	0.000000	0.007808
ESE	0.000000	0.003493	0.000479	0.000000	0.000000	0.000000	0.003972
SE	0.000000	0.003972	0.003561	0.000000	0.000000	0.000000	0.007534
SSE	0.000000	0.006095	0.016300	0.000000	0.000000	0.000000	0.022396
S	0.000000	0.006849	0.014451	0.000000	0.000000	0.000000	0.021300
SSW	0.000000	0.002466	0.007945	0.000000	0.000000	0.000000	0.010410
SW	0.000000	0.004109	0.012259	0.000000	0.000000	0.000000	0.016369
WSW	0.000000	0.002877	0.008150	0.000000	0.000000	0.000000	0.011027
W	0.000000	0.002397	0.001986	0.000000	0.000000	0.000000	0.004383
WNW	0.000000	0.001066	0.000959	0.000000	0.000000	0.000000	0.002055
NW	0.000000	0.000479	0.000753	0.000000	0.000000	0.000000	0.001233
NPN	0.000000	0.000548	0.000548	0.000000	0.000000	0.000000	0.001096
TOTAL	0.000000	0.062461	0.089240	0.000000	0.000000	0.000000	0.000000

RELATIVE FREQUENCY OF OCCURRENCE OF F STABILITY = 0.151702

RELATIVE FREQUENCY OF CALMS DISTRIBUTED ABOVE WITH E STABILITY = 0.000000

ANNUAL

FREQUENCY DISTRIBUTION

STATION #24157 SPOKANE, WASH. 67-71 8 1185

SPEED(KTS)

DIRECTION	1 - 3	4 - 6	7 - 10	11-16	17-21	GREATER THAN 21	AVG SPD	TOTAL
N	34	65	0	0	0	0	4.3	99
NNE	38	74	0	0	0	0	4.3	112
NE	40	123	0	0	0	0	4.5	163
ENE	33	149	0	0	0	0	4.7	182
E	53	90	0	0	0	0	4.1	143
ESE	27	50	0	0	0	0	3.9	77
SE	29	67	0	0	0	0	4.3	96
SSE	28	94	0	0	0	0	4.7	122
S	43	171	0	0	0	0	4.7	214
SSW	27	77	0	0	0	0	4.5	104
SW	35	102	0	0	0	0	4.6	137
WSW	42	90	0	0	0	0	4.4	132
W	32	57	0	0	0	0	4.3	89
WNW	24	20	0	0	0	0	3.9	44
W	9	16	0	0	0	0	4.4	25
NW	12	12	0	0	0	0	3.9	24
AVG	2.8	5.1	0.0	0.0	0.0	0.0	3.9	
TOTAL	506	1257	0	0	0	0		

NUMBER OF OCCURRENCES OF F STABILITY = 2032

NUMBER OF CALMS WITH F STABILITY = 269

ANNUAL RELATIVE FREQUENCY DISTRIBUTION STATION #24197 SPOKANE, WASH. 67-71 8 OBS

DIRECTION	SPEED(KTS)							TOTAL
	0 - 3	4 - 6	7 - 10	11 - 16	17 - 21	GREATER THAN 21		
N	0.003363	0.004452	0.000000	0.000000	0.000000	0.000000	0.007815	
NNE	0.003773	0.005068	0.000000	0.000000	0.000000	0.000000	0.008841	
NE	0.004443	0.006424	0.000000	0.000000	0.000000	0.000000	0.012067	
ENE	0.004162	0.010205	0.000000	0.000000	0.000000	0.000000	0.014367	
E	0.005124	0.006164	0.000000	0.000000	0.000000	0.000000	0.011288	
ESE	0.002654	0.003424	0.000000	0.000000	0.000000	0.000000	0.006078	
SE	0.002989	0.004589	0.000000	0.000000	0.000000	0.000000	0.007578	
SSE	0.003193	0.004438	0.000000	0.000000	0.000000	0.000000	0.009630	
S	0.005181	0.011712	0.000000	0.000000	0.000000	0.000000	0.016893	
SSW	0.002936	0.005274	0.000000	0.000000	0.000000	0.000000	0.008210	
SW	0.003829	0.004986	0.000000	0.000000	0.000000	0.000000	0.010815	
WSW	0.004256	0.006164	0.000000	0.000000	0.000000	0.000000	0.010420	
W	0.003122	0.003904	0.000000	0.000000	0.000000	0.000000	0.007026	
WNW	0.002104	0.001370	0.000000	0.000000	0.000000	0.000000	0.003473	
NW	0.000878	0.001096	0.000000	0.000000	0.000000	0.000000	0.001973	
NNW	0.001073	0.000822	0.000000	0.000000	0.000000	0.000000	0.001695	
TOTAL	0.053079	0.086090	0.000000	0.000000	0.000000	0.000000		

RELATIVE FREQUENCY OF OCCURRENCE OF F STABILITY = 0.139169

RELATIVE FREQUENCY OF CALMS DISTRIBUTED ABOVE WITH F STABILITY = 0.019423

ANNUAL

FREQUENCY DISTRIBUTION

STATION #24157 SPOKANE, WASH. 67-71 H OHS

SPEED(KTS)

DIRECTION	1 - 3	4 - 6	7 - 10	11-16	17-21	GREATER THAN 21	AVG SPD	TOTAL
N	56	225	129	27	4	0	6.3	441
NNE	57	250	172	47	3	0	6.6	529
NE	72	443	513	80	12	1	7.1	1121
ENE	77	519	642	93	14	0	7.1	1345
E	106	380	202	31	3	0	5.9	722
ESE	53	219	121	16	0	0	5.9	419
SE	60	250	253	47	1	0	6.7	611
SSE	52	317	672	136	10	1	8.0	1196
S	85	495	827	410	57	6	8.6	1890
SSW	46	227	626	647	168	17	10.8	1731
SW	59	292	671	695	263	80	11.4	2060
WSW	67	245	415	292	103	32	9.9	1154
W	45	178	146	91	28	8	8.3	496
WNW	41	84	52	34	4	0	6.9	215
NW	20	66	51	8	0	0	6.4	145
NNW	22	53	38	20	4	0	7.1	137
AVG	2.8	5.1	8.3	13.0	18.3	24.2	8.3	
TOTAL	910	4243	5550	2674	682	145		

TOTAL NUMBER OF OBSERVATIONS = 14601

TOTAL NUMBER OF CALMS = 389

ANNUAL RELATIVE FREQUENCY DISTRIBUTION STATION #24157 SPOKANE, WASH. 67-71.3 URS

DIRECTION	SPEED(KTS)							TOTAL
	0 - 3	4 - 6	7 - 10	11 - 16	17 - 21	GREATER THAN 21		
N	0.005286	0.015410	0.008835	0.001849	0.000274	0.000000	0.031654	
NNE	0.005489	0.017122	0.011780	0.003219	0.000205	0.000000	0.037615	
NE	0.007590	0.030340	0.035135	0.005479	0.000822	0.000000	0.079434	
ENE	0.008350	0.035546	0.043970	0.006369	0.000959	0.000000	0.095194	
E	0.009769	0.026026	0.013835	0.002123	0.000205	0.000000	0.051947	
ESE	0.005034	0.014999	0.009972	0.001096	0.000000	0.000000	0.030101	
SE	0.005710	0.017122	0.017328	0.003219	0.000068	0.000000	0.043447	
SSE	0.005466	0.021711	0.046024	0.009314	0.001233	0.000068	0.083817	
S	0.008816	0.033902	0.057325	0.028080	0.003904	0.000411	0.132437	
SSW	0.004560	0.015547	0.042874	0.044312	0.011506	0.001164	0.119963	
SW	0.005853	0.019999	0.045956	0.047599	0.018012	0.005479	0.142898	
WSW	0.006199	0.016780	0.028423	0.019999	0.007054	0.002192	0.080646	
W	0.004233	0.012191	0.009979	0.006232	0.001918	0.000548	0.035121	
WNW	0.003453	0.005753	0.003561	0.002329	0.000274	0.000000	0.015370	
NW	0.001814	0.004520	0.003493	0.000548	0.000000	0.000000	0.010375	
N'W	0.001894	0.003630	0.002803	0.001370	0.000274	0.000000	0.009770	
TOTAL	0.089514	0.290596	0.380111	0.183136	0.046709	0.009931		

TOTAL RELATIVE FREQUENCY OF OBSERVATIONS = 1.000000

TOTAL RELATIVE FREQUENCY OF CALMS DISTRIBUTED ABOVE = 0.026642