TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401

830 Power Building

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Director of Nuclear Reactor Regulation
Attention: Mr. S. A. Varga, Chief
Branch No. 4
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Varga:

In the Matter of the Application) Docket Nos. 50-390
Tennessee Valley Authority) 50-391

Your letter to Godwin Williams, Jr., dated September 30, 1977, requested a comparative analysis of temporary and permanent meteorological data for the Watts Bar Nuclear Plant and a data tape of the concurrent data from the temporary and permanent meteorological towers. The data tape was submitted by my letter to you dated October 25, 1977. Enclosed is the comparative analysis of data from the temporary and permanent facilities.

Very truly yours,

J E Gilleland

J. E. Gilleland
Assistant Manager of Power

Enclosure (5)

REGULATORY DOCKET FILE COPY

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WATTS BAR NUCLEAR PLANT - DATA COMPARISON - TEMPORARY AND PERMANENT METEOROLOGICAL FACILITIES

Summary

Data from the temporary facility at the Watts Bar Nuclear Plant site formed the basis for the characterization of atmospheric dispersion in the site area at the construction permit stage. Based on 1 year of data (July 1, 1971, through June 28, 1972) from the temporary facility, it was concluded in the preliminary safety analysis report (PSAR) that " . . . the Watts Bar site area provides a somewhat more limited range of atmospheric conditions for the transport and dispersion of radioactive plant emissions than was expected." However, due to the lack of adequate comparative data from the site vicinity, a determination as to the representativeness of these data could not be made. Subsequent atmospheric dispersion calculations, based on data from the onsite permanent meteorological facility, show that dispersion conditions at the plant site are indeed better than those indicated by the data collected at the temporary facility. Placement of the temporary tower in a situation not representative of overall site area conditions is regarded as the primary cause of data discrepancies between the temporary and permanent facilities.

Description of Meteorological Facilities

The locations of the permanent and temporary meteorological facilities are shown in figure 1. The temporary meteorological facility consisted of a 40-m tower, instrumented at the 10- and 40-m levels with wind and temperature sensors. The data were logged by a NOVA digital data processing system. The facility was located about 730 m west-southwest of the plant, and had a base elevation of 219.5 m mean sea level (MSL). The temporary facility was located in an open field with a general south through southeast slope. The

nearest trees consisted of a mature hardwood stand which followed the ridge line in the northwest through northeast sectors about 90 m to the north of the tower. Construction activity in the vicinity of the temporary tower may have exerted some influence on local atmospheric conditions during the overlap period. The temporary meteorological facility was removed in September 1973 to accommodate increased construction activity in the area.

The permanent meteorological facility, which began operation in June 1973, consists of a 91-m tower, instrumented at the 10-, 46-, and 91-m levels with wind and temperature sensors. Temperature, wind speed, and wind direction instruments are identical to those that were in operation at the temporary facility. The data are logged on a NOVA digital data processing system. The facility is located about 800 m south-southwest of the plant in a well exposed, relatively large level area, and has a base elevation of 216.7 m MSL. Meteorological data collected at the permanent facility are considered to be representative of conditions at the plant site.

Data Comparison

Joint percentage frequency distributions of wind speed by wind direction, based on concurrent data from the 10-m level at the temporary and permanent meteorological facilities for the period June 1 through September 11, 1973, are presented in tables 1 and 2, respectively. These distributions show that about 45 percent of the valid wind speed observations are less than 1.5 mph at the temporary facility, as compared to about 20 percent at the permanent facility. The frequency of occurrence of west-northwest and northwest wind directions for wind speeds between 0.6 mph and 1.4 mph at the temporary tower is about 13.6 percent. By comparison, the frequency of occurrence of these same wind directions for this wind speed interval at the permanent tower is only about 3.0 percent.

An explanation of these differences may be obtained from a comparison of the joint percentage frequencies of wind direction and wind speed by atmospheric stability class (A-G) for the temporary and permanent towers (tables 3 through 16) and their respective locations. At the temporary tower the most frequent wind directions (10-m level), for stable atmospheric conditions (E, F, and G) and light wind speeds (<1.5 mph), approximate the downslope direction at the point at which the tower was located. On the other hand, information from the permanent tower shows no detectable local effect on winds during light wind speed and stable atmospheric conditions (10-m winds and 10- to 46-m temperature difference). For wind speeds greater than 1.4 mph at the 10-m level, wind direction frequencies exhibit a similar pattern at both towers. Therefore, the primary difference between the wind direction frequency distributions, considering all wind speeds, for the two locations, is the increased frequency of occurrence of west-northwest and northwest wind directions for light wind conditions at the temporary tower.

Frequency distributions of wind speed by atmospheric stability class for the temporary and permanent towers are given in tables 17 and 18, respectively. The sensitivity of the stability distribution to tower placement is apparent from comparison of these tables. The temporary and permanent towers recorded stable (E, F, and G) conditions for about 78.4 percent and 61.9 percent of the total valid stability observations, respectively. Unstable conditions (A, B, and C) totaled about 1.9 percent and 9.1 percent at the temporary and permanent towers, respectively.

One-hour average χ/Q distributions, calculated for a distance of 1,100 m* for the concurrent temporary and permanent tower data records, are presented in tables 19 and 20. The substantial increase in the frequency

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*The distance from the outer edge of the release envelope to the exclusion area boundary is assumed to be 1,100 m, which is considered to be the minimum distance. Since the exclusion boundary is nearly circular, only this distance was used.

of larger χ/Q's based on temporary tower data in comparison to the χ/Q's calculated from the permanent tower data reflects the higher frequency of occurrence of light wind speeds and stable atmospheric conditions at the temporary tower.

By late summer 1973, construction activities had modified ground cover and, to a lesser extent, local terrain in the temporary tower area. The effect of these modifications on the data used in the comparative analysis is not known.

Representativeness of Overlap Data Period to Long-Term Conditions

Meteorological data from the National Weather Service (NWS) station at Chattanooga, Tennessee (located about 70 km southwest of the site) are used to determine the representativeness of the 3-month onsite data period used in the temporary versus permanent comparison to longer-term conditions. Section 2.3 of the Watts Bar Final Safety Analysis Report uses meteorological data from Chattanooga in the description of site region meteorology. The representativeness of Chattanooga data to site conditions is also discussed in that section.

Direct comparison of stability class distributions from the onsite facilities and Chattanooga may give misleading information due to the differences in classification techniques. However, data exclusively from Chattanooga can be used to determine the representativeness of the 3-month period used in the preceding comparison for approximating longer-term conditions at the site. Wind speed, wind direction, and atmospheric stability occurrence frequencies for the concurrent 3 months (June 1-September 11, 1973) and 13 years (1960 through 1972) of record for this 3-month period from the Chattanooga NWS station are presented in table 21. Stabilities for the two NWS data sets were calculated using the standard "STAR" program.

As seen in table 21, the two data sets agree reasonably well. Although individual stability classes show some variation, total stable (E, F, and G) and unstable (A, B, and C) classes for the 3-month and 13-year periods are in good agreement. The wind speed distributions for the two data sets for the 3-month period show an increase in the frequency of winds in the 4-7 mph category at the expense of primarily the 8-12 mph category. The most apparent difference in the wind direction frequency distributions for the two data sets is an increase in the frequency of west through north wind directions, and a decrease in the frequency of north-northeast through east-southeast wind directions for the 3-month period.

Conclusions

Wind speed, wind direction, and temperature sensors and data processing equipment and procedures were identical at the temporary and permanent facilities for the overlap period. The temporary tower was located in a field with higher terrain in the northwest through northeast sectors. Also, construction activities in the immediate vicinity of the temporary tower, during the overlap period, may have exerted some influence on local atmospheric conditions. The permanent tower is located on a broad, level, well exposed field. Meteorological data gathered at the permanent facility are considered to represent conditions in the plant site area. Therefore, the dispersion of gaseous releases from the plant should be better quantified by meteorological data from the permanent facility.

Data collected at the temporary and permanent facilities (for the period June 1 through September 11, 1973) indicate some marked differences in local meteorological conditions. The temporary facility recorded more hours of stable atmospheric conditions and wind speeds less than 1.5 mph than the permanent facility during the overlap period. Data from the temporary facility also show a higher frequency of occurrence of west-northwest

and northwest wind directions for the combination of low wind speed and stable atmospheric conditions. These data tend to support the suspected effect of the temporary tower environ on the meteorological measurements.

The greater occurrence of light wind speeds and stable atmospheric conditions in the temporary tower data is reflected in a substantial increase in the frequency of larger χ/Q's based on this data, compared to the χ/Q distribution from permanent tower data. Therefore, the temporary tower meteorological record, which formed the basis for preparation of the final environmental statement and PSAR, should provide conservative estimates of actual site area dispersion.

Comparison of data from Chattanooga, concurrent to the overlap period for the temporary and permanent onsite facilities, to long-term averages show that conditions for the period are probably within the range of annual synoptic variability.

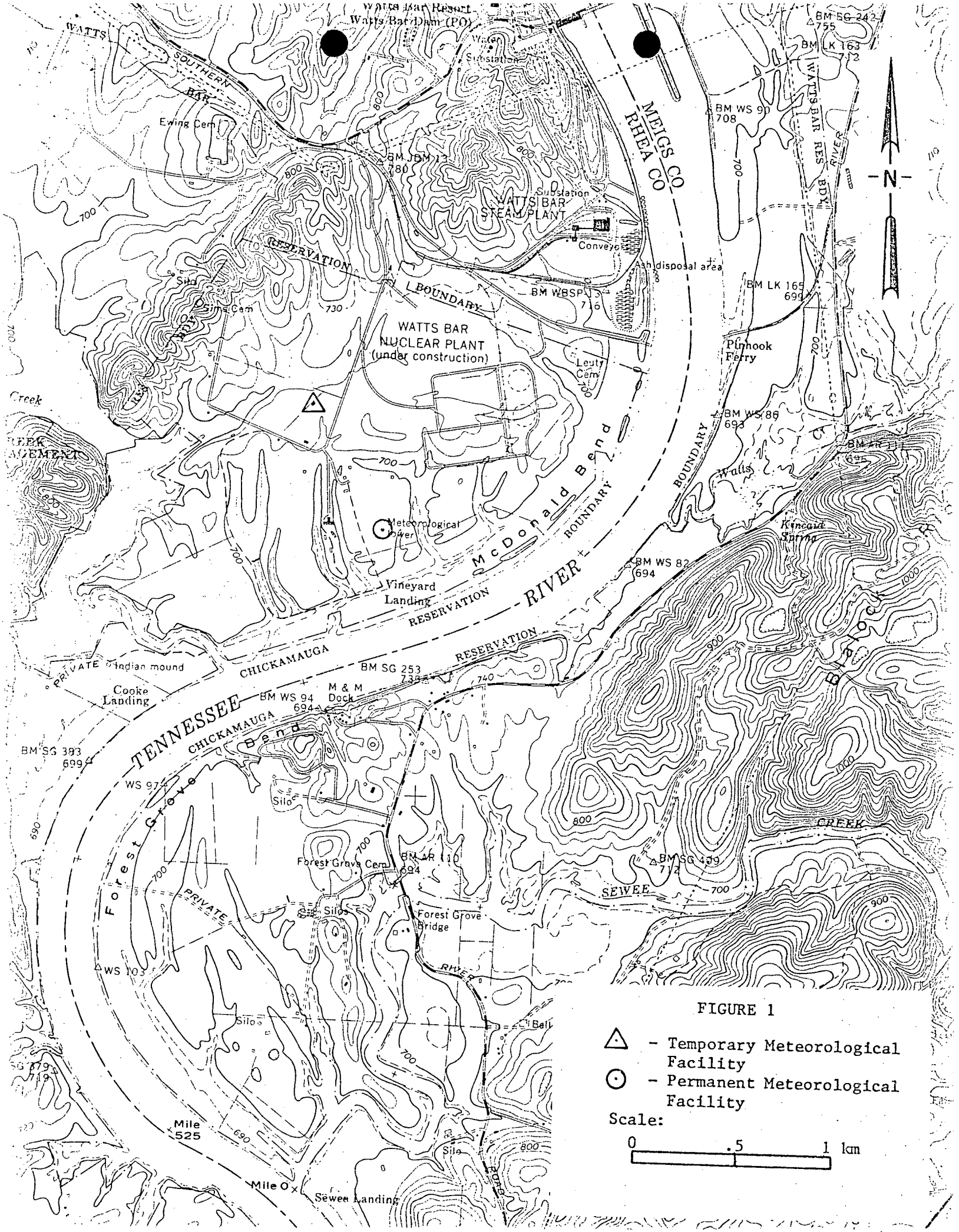

FIGURE 1

△ - Temporary Meteorological Facility

⊙ - Permanent Meteorological Facility

Scale:

0 .5 1 km

TABLE 1

PERCENTAGE FREQUENCIES OF WIND SPEED

BY WIND DIRECTION - DISREGARDING STABILITY CLASS

WATTS BAR TEMPORARY METEOROLOGICAL FACILITY

JUN 1, 73 - SEP 11, 73

WIND DIRECTION	WIND SPEED (MPH) 0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	≥24.5	TOTAL
N	1.58	1.17	0.71	0.10	0.0	0.0	0.0	0.0	3.56
NNE	0.76	1.63	1.17	0.41	0.10	0.0	0.0	0.0	4.07
NE	1.02	1.58	1.27	0.51	0.05	0.0	0.0	0.0	4.43
ENE	0.87	1.83	1.17	0.20	0.25	0.0	0.0	0.0	4.32
E	0.71	1.68	0.71	0.10	0.05	0.0	0.0	0.0	3.25
ESE	1.22	0.71	0.25	0.10	0.0	0.0	0.0	0.0	2.28
SE	1.58	0.66	0.31	0.15	0.0	0.0	0.0	0.0	2.70
SSE	1.22	1.83	0.66	0.05	0.10	0.0	0.0	0.0	3.86
S	1.38	2.60	2.04	0.41	0.15	0.0	0.0	0.0	6.58
SSW	1.48	2.65	3.16	2.34	0.46	0.05	0.0	0.0	10.14
SW	1.68	3.21	2.24	1.17	0.15	0.0	0.0	0.15	8.60
WSW	1.12	1.02	0.76	0.15	0.0	0.0	0.0	0.0	3.05
W	3.01	2.09	0.97	0.20	0.05	0.0	0.0	0.0	6.32
WNW	5.61	1.99	0.41	0.20	0.15	0.0	0.0	0.0	8.36
NW	8.00	1.94	0.92	0.25	0.0	0.0	0.0	0.0	11.11
NNW	3.98	2.04	1.07	0.10	0.0	0.0	0.0	0.0	7.19
SUBTOTAL	35.22	28.63	17.82	6.44	1.51	0.05	0.0	0.15	89.82

TOTAL HOURS OF VALID WIND OBSERVATIONS	1962
TOTAL HOURS OF OBSERVATIONS	2458
RECOVERABILITY PERCENTAGE	79.8
TOTAL HOURS CALM	198

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF JOINT VALID OBSERVATIONS

METEOROLOGICAL FACILITY: 0.73 KM WSW OF WATTS BAR NUCLEAR PLANT
WIND SPEED AND DIRECTION MEASURED AT THE 10.00 METER LEVEL

DATE PRINTED: 10/18/77

TABLE 2

PERCENTAGE FREQUENCIES OF WIND SPEED

BY WIND DIRECTION - DISREGARDING STABILITY CLASS

WATTS BAR PERMANENT METEOROLOGICAL FACILITY

JUN 1, 73 - SEP 11, 73

IND ECTION	WIND SPEED(MPH) 0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	≥24.5	IOIAL
N	1.29	2.03	1.09	0.89	0.20	0.0	0.0	0.0	5.50
NNE	0.94	1.93	2.03	1.24	1.09	0.0	0.0	0.0	7.23
NE	1.58	2.47	2.47	1.09	0.74	0.0	0.0	0.0	8.35
ENE	1.04	2.62	0.94	0.49	0.25	0.0	0.0	0.0	5.34
E	1.34	3.56	1.43	0.25	0.15	0.0	0.0	0.0	6.73
ESE	0.99	1.58	0.54	0.10	0.15	0.0	0.0	0.0	3.36
SE	0.59	1.83	0.64	0.15	0.0	0.0	0.0	0.0	3.21
SSE	1.39	1.98	1.09	0.25	0.25	0.0	0.0	0.0	4.96
S	1.24	2.47	1.04	0.15	0.30	0.0	0.0	0.0	5.70
SSW	0.84	4.75	3.51	2.42	1.98	0.05	0.0	0.0	13.55
SW	0.59	3.12	3.91	2.57	0.84	0.0	0.0	0.0	11.03
WSW	1.09	2.57	1.14	0.25	0.10	0.0	0.0	0.0	5.15
W	1.29	2.87	0.64	0.20	0.10	0.0	0.0	0.0	5.10
WNW	1.04	2.52	0.40	0.20	0.10	0.0	0.0	0.0	4.26
NW	1.93	2.77	0.20	0.30	0.15	0.0	0.0	0.0	5.35
NNW	1.93	2.42	0.30	0.54	0.0	0.0	0.0	0.0	5.19
ITOTAL	19.11	41.99	21.37	11.09	6.40	0.05	0.0	0.0	100.01

)TAL HOURS OF VALID WIND OBSERVATIONS 2021
)TAL HOURS OF OBSERVATIONS 2472
:COVEABILITY PERCENTAGE 81.8
)TAL HOURS CALM 0

.L COLUMNS AND CALM TOTAL 100 PERCENT OF JOINT VALID OBSERVATIONS

:TEOROLOGICAL FACILITY: 0.8 KM SSW OF WATTS BAR NUCLEAR PLANT
IND SPEED AND DIRECTION MEASURED AT THE 10.00 METER LEVEL

DATE PRINTED: 10/18/77

TABLE 3

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED FOR

STABILITY CLASS A (DELTA T<=1.9 C/100 M)
WATTS BAR TEMPORARY METEOROLOGICAL FACILITY

JUN 1, 73 - SEP 11, 73

WIND DIRECTION	WIND SPEED (MPH) 0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.05
NE	0.0	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.05
ENE	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.05
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.05
S	0.0	0.11	0.05	0.05	0.0	0.0	0.0	0.0	0.21
SSW	0.0	0.0	0.16	0.11	0.0	0.0	0.0	0.0	0.27
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.05
NW	0.0	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.05
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	0.0	0.26	0.36	0.16	0.0	0.0	0.0	0.0	0.78

TAL HOURS OF VALID STABILITY OBSERVATIONS 1890
TAL HOURS OF STABILITY CLASS A 16
TAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS A 15
TAL HOURS CALM 0

L COLUMNS AND CALM TOTAL 100 PERCENT OF JOINT VALID OBSERVATIONS

TEOROLOGICAL FACILITY: 0.73 KM WSW OF WATTS BAR NUCLEAR PLANT
ABILITY BASED ON LAPSE RATE MEASURED BETWEEN 10.00 AND 40.00 METERS
ND SPEED AND DIRECTION MEASURED AT THE 10.00 METER LEVEL

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TABLE 4

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED FOR

STABILITY CLASS B (-1.9< DELTA-T<=-1.7 C/100 M)
WATTS BAR TEMPORARY METEOROLOGICAL FACILITY

JUN 1, 73 - SEP 11, 73

WIND DIRECTION	WIND SPEED (MPH) 0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	≥=24.5	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.05
NE	0.0	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.05
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.05	0.0	0.0	0.0	0.0	0.05
ESE	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.05
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.05	0.05	0.0	0.0	0.0	0.0	0.0	0.10
BTOTAL	0.0	0.15	0.10	0.05	0.0	0.0	0.0	0.0	0.30

OTAL HOURS OF VALID STABILITY OBSERVATIONS 1890
OTAL HOURS OF STABILITY CLASS B 6
OTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS B 6
OTAL HOURS CALM 0

LL COLUMNS AND CALM TOTAL 100 PERCENT OF JOINT VALID OBSERVATIONS

ETEOROLOGICAL FACILITY: 0.73 KM WSW OF WATTS BAR NUCLEAR PLANT
TABILITY BASED ON LAPSE RATE MEASURED BETWEEN 10.00 AND 40.00 METERS
IND SPEED AND DIRECTION MEASURED AT THE 10.00 METER LEVEL

DATE PRINTED: 10/18/77

TABLE 5

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED FOR

STABILITY CLASS C (-1.7< DELTA-T<=-1.5 C/100 M)
WATTS BAR TEMPORARY METEOROLOGICAL FACILITY

JUN 1, 73 - SEP 11, 73

WIND DIRECTION	WIND SPEED(MPH) 0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.05	0.0	0.0	0.0	0.05
NE	0.0	0.0	0.16	0.0	0.0	0.0	0.0	0.0	0.16
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.05	0.05	0.0	0.0	0.0	0.0	0.10
SW	0.0	0.11	0.05	0.0	0.0	0.0	0.0	0.0	0.16
WSW	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.05
W	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.05
WNW	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.05
NW	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.05
NNW	0.0	0.0	0.11	0.05	0.0	0.0	0.0	0.0	0.16
UBTOTAL	0.0	0.31	0.37	0.10	0.05	0.0	0.0	0.0	0.83

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 1890
TOTAL HOURS OF STABILITY CLASS C 17
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS C 16
TOTAL HOURS CALM 0

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF JOINT VALID OBSERVATIONS

METEOROLOGICAL FACILITY: 0.73 KM WSW OF WATTS BAR NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 10.00 AND 40.00 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 10.00 METER LEVEL

DATE PRINTED: 10/18/77

TABLE 6

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED FOR

STABILITY CLASS D (-1.5< DELTA-T<=-0.5 C/100 M)
WATTS BAR TEMPORARY METEOROLOGICAL FACILITY

JUN 1, 73 - SEP 11, 73

WIND DIRECTION	WIND SPEED (MPH) 0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.05	0.22	0.44	0.0	0.0	0.0	0.0	0.0	0.71
NNE	0.05	0.44	0.38	0.38	0.0	0.0	0.0	0.0	1.25
NE	0.0	0.44	0.71	0.38	0.0	0.0	0.0	0.0	1.53
ENE	0.11	0.66	0.88	0.05	0.0	0.0	0.0	0.0	1.70
E	0.22	0.55	0.33	0.05	0.0	0.0	0.0	0.0	1.15
ESE	0.16	0.16	0.0	0.05	0.0	0.0	0.0	0.0	0.37
SE	0.05	0.11	0.22	0.05	0.0	0.0	0.0	0.0	0.43
SSE	0.11	0.49	0.0	0.0	0.0	0.0	0.0	0.0	0.60
S	0.05	0.49	1.10	0.27	0.16	0.0	0.0	0.0	2.07
SSW	0.05	0.38	1.04	1.04	0.27	0.0	0.0	0.0	2.78
SW	0.16	0.44	0.88	0.55	0.05	0.0	0.0	0.0	2.08
WSW	0.05	0.05	0.22	0.05	0.0	0.0	0.0	0.0	0.37
W	0.16	0.44	0.38	0.05	0.0	0.0	0.0	0.0	1.03
WNW	0.05	0.44	0.11	0.05	0.05	0.0	0.0	0.0	0.70
NW	0.16	0.22	0.33	0.11	0.0	0.0	0.0	0.0	0.82
NNW	0.05	0.49	0.77	0.05	0.0	0.0	0.0	0.0	1.36
BTOTAL	1.48	6.02	7.79	3.13	0.53	0.0	0.0	0.0	18.95

OTAL HOURS OF VALID STABILITY OBSERVATIONS 1890
OTAL HOURS OF STABILITY CLASS D 378
OTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS D 354
OTAL HOURS CALM 6

LL COLUMNS AND CALM TOTAL 100 PERCENT OF JOINT VALID OBSERVATIONS

ETEOROLOGICAL FACILITY: 0.73 KM WSW OF WATTS BAR NUCLEAR PLANT
TABILITY BASED ON LAPSE RATE MEASURED BETWEEN 10.00 AND 40.00 METERS
IND SPEED AND DIRECTION MEASURED AT THE 10.00 METER LEVEL

DATE PRINTED: 10/18/77

TABLE 7

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED FOR

STABILITY CLASS E (-0.5< DELTA-T<= 1.5 C/100 M)
WATTS BAR TEMPORARY METEOROLOGICAL FACILITY

JUN 1, 73 - SEP 11, 73

WIND DIRECTION	WIND SPEED(MPH) 0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.55	0.71	0.27	0.11	0.0	0.0	0.0	0.0	1.64
NNE	0.38	0.66	0.71	0.05	0.0	0.0	0.0	0.0	1.80
NE	0.22	0.82	0.33	0.11	0.05	0.0	0.0	0.0	1.53
ENE	0.49	1.15	0.33	0.16	0.27	0.0	0.0	0.0	2.40
E	0.33	0.99	0.38	0.0	0.05	0.0	0.0	0.0	1.75
ESE	0.44	0.44	0.16	0.0	0.0	0.0	0.0	0.0	1.04
SE	0.82	0.60	0.11	0.11	0.0	0.0	0.0	0.0	1.64
SSE	0.33	1.04	0.60	0.05	0.11	0.0	0.0	0.0	2.13
S	0.77	1.86	0.93	0.11	0.0	0.0	0.0	0.0	3.67
SSW	0.93	2.14	1.97	1.26	0.22	0.0	0.0	0.0	6.52
SW	0.71	2.35	1.20	0.66	0.11	0.0	0.0	0.05	5.08
WSW	0.38	0.93	0.60	0.11	0.0	0.0	0.0	0.0	2.02
W	1.31	1.15	0.66	0.16	0.05	0.0	0.0	0.0	3.33
WNW	1.66	0.99	0.33	0.16	0.11	0.0	0.0	0.0	3.45
NW	1.53	0.93	0.49	0.16	0.0	0.0	0.0	0.0	3.11
NNW	1.42	1.26	0.22	0.0	0.0	0.0	0.0	0.0	2.90
SUBTOTAL	12.47	18.02	9.29	3.21	0.97	0.0	0.0	0.05	44.01

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 1890
TOTAL HOURS OF STABILITY CLASS E 872
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS E 845
TOTAL HOURS CALM 40

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF JOINT VALID OBSERVATIONS

METEOROLOGICAL FACILITY: 0.73 KM WSW OF WATTS BAR NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 10.00 AND 40.00 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 10.00 METER LEVEL

DATE PRINTED: 10/18/77

TABLE 3

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED FOR

STABILITY CLASS F (1.5< DELTA-T<= 4.0 C/100 M)
WATTS BAR TEMPORARY METEOROLOGICAL FACILITY

JUN 1, 73 - SEP 11, 73

WIND DIRECTION	WIND SPEED (MPH) 0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	≥=24.5	TOTAL
N	0.49	0.22	0.05	0.0	0.0	0.0	0.0	0.0	0.76
NNE	0.27	0.33	0.11	0.0	0.0	0.0	0.0	0.0	0.71
NE	0.49	0.16	0.0	0.0	0.0	0.0	0.0	0.0	0.65
ENE	0.0	0.11	0.05	0.0	0.0	0.0	0.0	0.0	0.16
E	0.11	0.11	0.0	0.0	0.0	0.0	0.0	0.0	0.22
ESE	0.22	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.27
SE	0.55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.55
SSE	0.49	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.54
S	0.49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.49
SSW	0.22	0.27	0.0	0.0	0.0	0.0	0.0	0.0	0.49
SW	0.49	0.33	0.05	0.0	0.0	0.0	0.0	0.0	0.87
WSW	0.55	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.60
W	1.15	0.44	0.0	0.0	0.0	0.0	0.0	0.0	1.59
WNW	2.57	0.22	0.0	0.0	0.0	0.0	0.0	0.0	2.79
NW	4.33	0.60	0.05	0.0	0.0	0.0	0.0	0.0	4.98
NNW	1.31	0.11	0.0	0.0	0.0	0.0	0.0	0.0	1.42
TOTAL	13.73	3.05	0.31	0.0	0.0	0.0	0.0	0.0	17.09

TAL HOURS OF VALID STABILITY OBSERVATIONS 1890
TAL HOURS OF STABILITY CLASS F 399
TAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS F 390
TAL HOURS CALM 77

L COLUMNS AND CALM TOTAL 100 PERCENT OF JOINT VALID OBSERVATIONS

TEOROLOGICAL FACILITY: 0.73 KM WSW OF WATTS BAR NUCLEAR PLANT
ABILITY BASED ON LAPSE RATE MEASURED BETWEEN 10.00 AND 40.00 METERS
ND SPEED AND DIRECTION MEASURED AT THE 10.00 METER LEVEL

DATE PRINTED: 10/18/77

TABLE 7

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)
WATTS BAR TEMPORARY METEOROLOGICAL FACILITY

JUN 1, 73 - SEP 11, 73

WIND DIRECTION	WIND SPEED (MPH) 0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	≥24.5	TOTAL
N	0.55	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.60
NNE	0.05	0.22	0.0	0.0	0.0	0.0	0.0	0.0	0.27
NE	0.38	0.16	0.0	0.05	0.0	0.0	0.0	0.0	0.59
ENE	0.27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.27
E	0.11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.11
ESE	0.11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.11
SE	0.16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.16
SSE	0.11	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.16
S	0.05	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.10
SSW	0.22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.22
SW	0.16	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.21
WSW	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.05
W	0.49	0.11	0.0	0.0	0.0	0.0	0.0	0.0	0.60
WNW	1.20	0.33	0.0	0.0	0.0	0.0	0.0	0.0	1.53
NW	2.19	0.16	0.0	0.0	0.0	0.0	0.0	0.0	2.35
NNW	1.15	0.16	0.0	0.0	0.0	0.0	0.0	0.0	1.31
BTOTAL	7.25	1.29	0.05	0.05	0.0	0.0	0.0	0.0	8.64

OTAL HOURS OF VALID STABILITY OBSERVATIONS 1890
OTAL HOURS OF STABILITY CLASS G 202
OTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS G 200
OTAL HOURS CALM 41

LL COLUMNS AND CALM TOTAL 100 PERCENT OF JOINT VALID OBSERVATIONS

ETEOROLOGICAL FACILITY: 0.73 KM WSW OF WATTS BAR NUCLEAR PLANT
TABILITY BASED ON LAPSE RATE MEASURED BETWEEN 10.00 AND 40.00 METERS
IND SPEED AND DIRECTION MEASURED AT THE 10.00 METER LEVEL

DATE PRINTED: 10/18/77

TABLE 10

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED FOR

STABILITY CLASS A (DELTA T<=1.9 C/100 M)
WATTS BAR PERMANENT METEOROLOGICAL FACILITY

JUN 1, 73 - SEP 11, 73

WIND DIRECTION	WIND SPEED (MPH) 0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.0	0.0	0.0	0.15	0.0	0.0	0.0	0.0	0.15
NNE	0.0	0.0	0.05	0.05	0.05	0.0	0.0	0.0	0.15
NE	0.0	0.0	0.10	0.0	0.0	0.0	0.0	0.0	0.10
ENE	0.0	0.0	0.05	0.05	0.05	0.0	0.0	0.0	0.15
E	0.0	0.0	0.10	0.0	0.0	0.0	0.0	0.0	0.10
ESE	0.0	0.10	0.0	0.0	0.0	0.0	0.0	0.0	0.10
SE	0.0	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.05
SSE	0.0	0.05	0.05	0.05	0.05	0.0	0.0	0.0	0.20
S	0.0	0.05	0.05	0.0	0.05	0.0	0.0	0.0	0.15
SSW	0.0	0.05	0.20	0.05	0.30	0.0	0.0	0.0	0.60
SW	0.0	0.0	0.20	0.40	0.10	0.0	0.0	0.0	0.70
WSW	0.0	0.0	0.0	0.05	0.0	0.0	0.0	0.0	0.05
W	0.0	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.05
WNW	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.05
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BTOTAL	0.0	0.30	0.90	0.80	0.60	0.0	0.0	0.0	2.60

OTAL HOURS OF VALID STABILITY OBSERVATIONS 2199
OTAL HOURS OF STABILITY CLASS A 71
OTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS A 52
OTAL HOURS CALM 0

L COLUMNS AND CALM TOTAL 100 PERCENT OF JOINT VALID OBSERVATIONS

ETEOROLOGICAL FACILITY: 0.8 KM SSW OF WATTS BAR NUCLEAR PLANT
TABILITY BASED ON LAPSE RATE MEASURED BETWEEN 10.00 AND 46.00 METERS
IND SPEED AND DIRECTION MEASURED AT THE 10.00 METER LEVEL

DATE PRINTED: 10/18/77

TABLE 11

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED FOR

STABILITY CLASS B (-1.9< DELTA-T<=-1.7 C/100 M)
WATTS BAR PERMANENT METEOROLOGICAL FACILITY

JUN 1, 73 - SEP 11, 73

WIND DIRECTION	WIND SPEED(MPH) 0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.0	0.0	0.15	0.0	0.0	0.0	0.0	0.0	0.15
NNE	0.0	0.0	0.0	0.10	0.05	0.0	0.0	0.0	0.15
NE	0.0	0.15	0.05	0.0	0.05	0.0	0.0	0.0	0.25
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.10	0.0	0.0	0.0	0.0	0.0	0.10
ESE	0.0	0.05	0.10	0.0	0.0	0.0	0.0	0.0	0.15
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.05	0.0	0.0	0.0	0.0	0.0	0.05
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.05	0.10	0.05	0.0	0.0	0.0	0.20
SW	0.0	0.0	0.10	0.25	0.0	0.0	0.0	0.0	0.35
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.05	0.0	0.0	0.0	0.0	0.05
STOTAL	0.0	0.20	0.60	0.50	0.15	0.0	0.0	0.0	1.45

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2199
TOTAL HOURS OF STABILITY CLASS B 32
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS B 29
TOTAL HOURS CALM 0

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF JOINT VALID OBSERVATIONS

METEOROLOGICAL FACILITY: 0.8 KM SSW OF WATTS BAR NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 10.00 AND 46.00 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 10.00 METER LEVEL

DATE PRINTED: 10/18/77

TABLE 12

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED FOR

STABILITY CLASS C (-1.7< DELTA-T<=-1.5 C/100 M)
WATTS BAR PERMANENT METEOROLOGICAL FACILITY

JUN 1, 73 - SEP 11, 73

NO CTION	WIND SPEED (MPH) 0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	≥24.5	TOTAL
N	0.0	0.0	0.0	0.15	0.05	0.0	0.0	0.0	0.20
NNE	0.0	0.05	0.05	0.10	0.15	0.0	0.0	0.0	0.35
NE	0.0	0.10	0.20	0.0	0.05	0.0	0.0	0.0	0.35
ENE	0.0	0.05	0.05	0.10	0.05	0.0	0.0	0.0	0.25
E	0.0	0.0	0.15	0.05	0.05	0.0	0.0	0.0	0.25
ESE	0.0	0.10	0.15	0.0	0.10	0.0	0.0	0.0	0.35
SE	0.0	0.10	0.10	0.0	0.0	0.0	0.0	0.0	0.20
SSE	0.0	0.05	0.15	0.0	0.0	0.0	0.0	0.0	0.20
S	0.0	0.10	0.25	0.0	0.0	0.0	0.0	0.0	0.35
SSW	0.0	0.15	0.10	0.20	0.35	0.0	0.0	0.0	0.80
SW	0.0	0.05	0.45	0.35	0.15	0.0	0.0	0.0	1.00
WSW	0.0	0.0	0.20	0.0	0.05	0.0	0.0	0.0	0.25
W	0.0	0.05	0.05	0.0	0.0	0.0	0.0	0.0	0.10
WNW	0.0	0.05	0.05	0.0	0.0	0.0	0.0	0.0	0.10
NW	0.0	0.0	0.0	0.0	0.10	0.0	0.0	0.0	0.10
NNW	0.0	0.05	0.0	0.10	0.0	0.0	0.0	0.0	0.15
OTAL	0.0	0.90	1.95	1.05	1.10	0.0	0.0	0.0	5.00

AL HOURS OF VALID STABILITY OBSERVATIONS	2199
AL HOURS OF STABILITY CLASS C	107
AL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS C	100
AL HOURS CALM	0

COLUMNS AND CALM TOTAL 100 PERCENT OF JOINT VALID OBSERVATIONS

EOROLOGICAL FACILITY: 0.8 KM SSW OF WATTS BAR NUCLEAR PLANT
BILITY BASED ON LAPSE RATE MEASURED BETWEEN 10.00 AND 46.00 METERS
D SPEED AND DIRECTION MEASURED AT THE 10.00 METER LEVEL

DATE PRINTED: 10/18/77

TABLE 13

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED FOR

STABILITY CLASS D (-1.5< DELTA-T<=-0.5 C/100 M)
WATTS BAR PERMANENT METEOROLOGICAL FACILITY

JUN 1, 73 - SEP 11, 73

IND ECTION	WIND SPEED(MPH) 0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	≥=24.5	TOTAL
N	0.05	0.05	0.50	0.40	0.05	0.0	0.0	0.0	1.05
NNE	0.0	0.20	0.75	0.45	0.40	0.0	0.0	0.0	1.80
NE	0.05	0.60	1.25	0.80	0.55	0.0	0.0	0.0	3.25
ENE	0.0	0.65	0.50	0.25	0.10	0.0	0.0	0.0	1.50
E	0.10	1.05	0.85	0.15	0.10	0.0	0.0	0.0	2.25
ESE	0.0	0.30	0.20	0.05	0.0	0.0	0.0	0.0	0.55
SE	0.0	0.95	0.35	0.10	0.0	0.0	0.0	0.0	1.40
SSE	0.0	0.70	0.70	0.15	0.20	0.0	0.0	0.0	1.75
S	0.10	0.75	0.45	0.05	0.20	0.0	0.0	0.0	1.55
SSW	0.05	1.10	1.96	1.20	0.80	0.05	0.0	0.0	5.16
SW	0.0	1.00	2.01	1.10	0.50	0.0	0.0	0.0	4.61
WSW	0.0	0.35	0.45	0.15	0.05	0.0	0.0	0.0	1.00
W	0.05	0.50	0.35	0.10	0.0	0.0	0.0	0.0	1.00
WNW	0.0	0.40	0.25	0.0	0.0	0.0	0.0	0.0	0.65
NW	0.0	0.25	0.10	0.15	0.0	0.0	0.0	0.0	0.50
NNW	0.20	0.15	0.15	0.25	0.0	0.0	0.0	0.0	0.75
TOTAL	0.60	9.00	10.82	5.35	2.95	0.05	0.0	0.0	28.77

TAL HOURS OF VALID STABILITY OBSERVATIONS 2199
TAL HOURS OF STABILITY CLASS D 642
TAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS D 575
TAL HOURS CALM 0

COLUMNS AND CALM TOTAL 100 PERCENT OF JOINT VALID OBSERVATIONS

TEOROLOGICAL FACILITY: 0.8 KM SSW OF WATTS BAR NUCLEAR PLANT
ABILITY BASED ON LAPSE RATE MEASURED BETWEEN 10.00 AND 46.00 METERS
ND SPEED AND DIRECTION MEASURED AT THE 10.00 METER LEVEL

DATE PRINTED: 10/18/77

TABLE 14

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED FOR

STABILITY CLASS E (-0.5< DELTA-T<= 1.5 C/100 M)
WATTS BAR PERMANENT METEOROLOGICAL FACILITY

JUN 1, 73 - SEP 11, 73

WIND DIRECTION	WIND SPEED(MPH) 0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	≥24.5	TOTAL
N	0.40	0.75	0.30	0.20	0.10	0.0	0.0	0.0	1.75
NNE	0.30	0.85	1.00	0.50	0.45	0.0	0.0	0.0	3.10
NE	0.25	0.60	0.75	0.30	0.10	0.0	0.0	0.0	2.00
ENE	0.45	0.70	0.30	0.05	0.05	0.0	0.0	0.0	1.55
E	0.35	1.61	0.25	0.05	0.0	0.0	0.0	0.0	2.26
ESE	0.30	0.60	0.05	0.05	0.05	0.0	0.0	0.0	1.05
SE	0.35	0.45	0.15	0.05	0.0	0.0	0.0	0.0	1.00
SSE	0.55	0.95	0.05	0.05	0.0	0.0	0.0	0.0	1.60
S	0.60	1.61	0.30	0.10	0.05	0.0	0.0	0.0	2.66
SSW	0.35	2.16	1.15	0.90	0.50	0.0	0.0	0.0	5.06
SW	0.30	1.35	1.10	0.45	0.10	0.0	0.0	0.0	3.30
WSW	0.30	1.05	0.50	0.05	0.0	0.0	0.0	0.0	1.90
W	0.40	1.10	0.10	0.05	0.10	0.0	0.0	0.0	1.75
WNW	0.25	1.00	0.05	0.20	0.10	0.0	0.0	0.0	1.60
NW	0.55	1.15	0.05	0.10	0.05	0.0	0.0	0.0	2.20
NNW	0.75	1.05	0.10	0.10	0.0	0.0	0.0	0.0	2.00
SUBTOTAL	6.75	16.98	6.20	3.20	1.65	0.0	0.0	0.0	34.78

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2199
TOTAL HOURS OF STABILITY CLASS E 766
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS E 695
TOTAL HOURS CALM 0

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF JOINT VALID OBSERVATIONS

METEOROLOGICAL FACILITY: 0.8 KM SSW OF WATTS BAR NUCLEAR PLANT
STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 10.00 AND 46.00 METERS
WIND SPEED AND DIRECTION MEASURED AT THE 10.00 METER LEVEL

DATE PRINTED: 10/18/77

TABLE 15

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED FOR

STABILITY CLASS F (1.5< DELTA-T<= 4.0 C/100 M)
WATTS BAR PERMANENT METEOROLOGICAL FACILITY

JUN 1, 73 - SEP 11, 73

WIND DIRECTION	WIND SPEED(MPH) 0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.60	0.85	0.05	0.0	0.0	0.0	0.0	0.0	1.50
NNE	0.60	0.65	0.20	0.0	0.0	0.0	0.0	0.0	1.45
NE	0.85	0.80	0.0	0.0	0.0	0.0	0.0	0.0	1.65
ENE	0.40	0.90	0.0	0.0	0.0	0.0	0.0	0.0	1.30
E	0.50	0.80	0.0	0.0	0.0	0.0	0.0	0.0	1.30
ESE	0.40	0.45	0.05	0.0	0.0	0.0	0.0	0.0	0.90
SE	0.20	0.20	0.0	0.0	0.0	0.0	0.0	0.0	0.40
SSE	0.65	0.15	0.10	0.0	0.0	0.0	0.0	0.0	0.90
S	0.50	0.30	0.0	0.0	0.0	0.0	0.0	0.0	0.80
SSW	0.30	1.05	0.10	0.0	0.0	0.0	0.0	0.0	1.45
SW	0.25	0.75	0.0	0.05	0.0	0.0	0.0	0.0	1.05
WSW	0.40	1.00	0.0	0.0	0.0	0.0	0.0	0.0	1.40
W	0.65	0.80	0.10	0.05	0.0	0.0	0.0	0.0	1.60
WNW	0.55	0.75	0.05	0.0	0.0	0.0	0.0	0.0	1.35
NW	0.90	1.05	0.05	0.05	0.0	0.0	0.0	0.0	2.05
NNW	0.55	1.10	0.05	0.0	0.0	0.0	0.0	0.0	1.70
IRTOTAL	8.30	11.60	0.75	0.15	0.0	0.0	0.0	0.0	20.80

OTAL HOURS OF VALID STABILITY OBSERVATIONS 2199
OTAL HOURS OF STABILITY CLASS F 451
OTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS F 416
OTAL HOURS CALM 0

LL COLUMNS AND CALM TOTAL 100 PERCENT OF JOINT VALID OBSERVATIONS

ETEOROLOGICAL FACILITY: 0.8 KM SSW OF WATTS BAR NUCLEAR PLANT
TABILITY BASED ON LAPSE RATE MEASURED BETWEEN 10.00 AND 46.00 METERS
IND SPEED AND DIRECTION MEASURED AT THE 10.00 METER LEVEL

DATE PRINTED: 10/18/77

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)
WATTS BAR PERMANENT METEOROLOGICAL FACILITY

JUN 1, 73 - SEP 11, 73

WIND IRECTION	WIND SPEED(MPH) 0.5-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	≥24.5	IOTAL
N	0.25	0.30	0.0	0.0	0.0	0.0	0.0	0.0	0.55
NNE	0.05	0.15	0.0	0.0	0.0	0.0	0.0	0.0	0.20
NE	0.45	0.20	0.0	0.0	0.0	0.0	0.0	0.0	0.65
ENE	0.20	0.30	0.0	0.0	0.0	0.0	0.0	0.0	0.50
E	0.40	0.15	0.0	0.0	0.0	0.0	0.0	0.0	0.55
ESE	0.25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.25
SE	0.05	0.15	0.0	0.0	0.0	0.0	0.0	0.0	0.20
SSE	0.15	0.10	0.0	0.0	0.0	0.0	0.0	0.0	0.25
S	0.05	0.15	0.0	0.0	0.0	0.0	0.0	0.0	0.20
SSW	0.15	0.20	0.0	0.0	0.0	0.0	0.0	0.0	0.35
SW	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.05
WSW	0.35	0.15	0.0	0.0	0.0	0.0	0.0	0.0	0.50
W	0.20	0.40	0.0	0.0	0.0	0.0	0.0	0.0	0.60
WNW	0.20	0.25	0.0	0.0	0.0	0.0	0.0	0.0	0.45
NW	0.15	0.30	0.0	0.0	0.0	0.0	0.0	0.0	0.45
NNW	0.45	0.10	0.0	0.0	0.0	0.0	0.0	0.0	0.55
JBTOTAL	3.40	2.90	0.0	0.0	0.0	0.0	0.0	0.0	6.30

OTAL HOURS OF VALID STABILITY OBSERVATIONS 2199
OTAL HOURS OF STABILITY CLASS G 130
OTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS G 126
OTAL HOURS CALM 0

.L COLUMNS AND CALM TOTAL 100 PERCENT OF JOINT VALID OBSERVATIONS

:TEOROLOGICAL FACILITY: 0.8 KM SSW OF WATTS BAR NUCLEAR PLANT
'ABILITY BASED ON LAPSE RATE MEASURED BETWEEN 10.00 AND 46.00 METERS
.ND SPEED AND DIRECTION MEASURED AT THE 10.00 METER LEVEL

DATE PRINTED: 10/18/77

PERCENTAGE FREQUENCIES OF WIND SPEED FOR
DIFFERENT STABILITY CLASSES

WATTS BAR TEMPORARY METEOROLOGICAL FACILITY

JUN 1, 73 - SEP 11, 73

ND SPEED (MPH)	STABILITY CLASS A	B	C	D	E	F	G
CALM	0.0	0.0	0.0	0.33	2.19	4.22	2.25
.6- 1.4	0.0	0.0	0.0	1.48	12.47	13.73	7.25
.5- 3.4	0.26	0.15	0.31	6.02	18.02	3.05	1.29
.5- 5.4	0.36	0.10	0.37	7.79	9.29	0.31	0.05
.5- 7.4	0.16	0.05	0.10	3.13	3.21	0.0	0.05
.5-12.4	0.0	0.0	0.05	0.53	0.97	0.0	0.0
5-18.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-24.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
>=24.5	0.0	0.0	0.0	0.0	0.05	0.0	0.0
TOTAL	0.78	0.30	0.83	19.28	46.20	21.31	10.89

TAL HOURS OF VALID STABILITY OBSERVATIONS 1890
TAL HOURS OF VALID WIND DIRECTION-WIND SPEED STABILITY OBSERVATIONS 1826
TAL HOURS OF OBSERVATIONS 2458
INT RECOVERABILITY PERCENTAGE 74.3

TEOROLOGICAL FACILITY: 0.73 KM WSW OF WATTS BAR NUCLEAR PLANT
ABILITY BASED ON LAPSE RATE MEASURED BETWEEN 10.00 AND 40.00 METERS
ND SPEED AND DIRECTION MEASURED AT THE 10.00 METER LEVEL

DATE PRINTED: 10/18/77

PERCENTAGE FREQUENCIES OF WIND SPEED FOR
DIFFERENT STABILITY CLASSES

WATTS BAR PERMANENT METEOROLOGICAL FACILITY

JUN 1, 73 - SEP 11, 73

D SPEED MPH)	STABILITY CLASS A	B	C	D	E	F	G
CALM	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6- 1.4	0.0	0.0	0.0	0.60	6.75	8.30	3.40
5- 3.4	0.30	0.20	0.90	9.00	16.98	11.60	2.90
5- 5.4	0.90	0.60	1.95	10.82	6.20	0.75	0.0
5- 7.4	0.80	0.50	1.05	5.35	3.20	0.15	0.0
5-12.4	0.60	0.15	1.10	2.95	1.65	0.0	0.0
5-18.4	0.0	0.0	0.0	0.05	0.0	0.0	0.0
5-24.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
>=24.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	2.60	1.45	5.00	28.77	34.78	20.80	6.30

TAL HOURS OF VALID STABILITY OBSERVATIONS 2199
TAL HOURS OF VALID WIND DIRECTION-WIND SPEED STABILITY OBSERVATIONS 1993
TAL HOURS OF OBSERVATIONS 2472
INT RECOVERABILITY PERCENTAGE 80.6

EOROLOGICAL FACILITY: 0.8 KM SSW OF WATTS BAR NUCLEAR PLANT
BILITY BASED ON LAPSE RATE MEASURED BETWEEN 10.00 AND 46.00 METERS
ID SPEED AND DIRECTION MEASURED AT THE 10.00 METER LEVEL

DATE PRINTED: 10/18/77

TABLE 19

ATMOSPHERIC DISPERSION FACTORS FREQUENCY DISTRIBUTION — DATE PRINTED: 10/21/77

CALCULATED 1-HOUR-AVERAGE ATMOSPHERIC DISPERSION FACTORS
AT 1100 METERS

WATTS BAR NUCLEAR PLANT

(BASED ON DATA COLLECTED AT THE TEMPORARY METEOROLOGICAL FACILITY FROM JUN 1, 1973 THROUGH SEP 10, 1973)

ATMOSPHERIC DISPERSION FACTORS (SEC/M3)	FREQUENCY (NO. OF OBSERVATIONS)	PERCENT	CUMULATIVE PERCENT
0.400E-02 - 0.499E-02	41	2.26	2.26
0.300E-02 - 0.399E-02	122	6.71	8.97
0.100E-02 - 0.199E-02	279	15.35	24.33
0.900E-03 - 0.999E-03	20	1.10	25.43
0.800E-03 - 0.899E-03	29	1.60	27.02
0.700E-03 - 0.799E-03	20	1.10	28.12
0.600E-03 - 0.699E-03	63	3.47	31.59
0.500E-03 - 0.599E-03	86	4.73	36.32
0.400E-03 - 0.499E-03	84	4.62	40.95
0.300E-03 - 0.399E-03	85	4.68	45.62
0.200E-03 - 0.299E-03	141	7.76	53.38
0.100E-03 - 0.199E-03	363	19.98	73.36
0.900E-04 - 0.999E-04	62	3.41	76.77
0.800E-04 - 0.899E-04	57	3.14	79.91
0.700E-04 - 0.799E-04	56	3.08	82.99
0.600E-04 - 0.699E-04	99	5.45	88.44
0.500E-04 - 0.599E-04	68	3.74	92.18
0.400E-04 - 0.499E-04	61	3.36	95.54
0.300E-04 - 0.399E-04	40	2.20	97.74
0.200E-04 - 0.299E-04	11	0.61	98.35
0.100E-04 - 0.199E-04	8	0.44	98.79
0.900E-05 - 0.999E-05	2	0.11	98.90
0.800E-05 - 0.899E-05	2	0.11	99.01
0.700E-05 - 0.799E-05	1	0.06	99.06
0.600E-05 - 0.699E-05	1	0.06	99.12
0.400E-05 - 0.499E-05	1	0.06	99.17
0.200E-05 - 0.299E-05	1	0.06	99.23
0.100E-05 - 0.199E-05	5	0.28	99.50
<= 0.999E-06	9	0.50	100.00
TOTALS	1817	100.00	

PERCENT OF THE POSSIBLE 2448 HOURLY OBSERVATIONS WHICH WERE VALID = 74.22

5TH PERCENTILE= 0.259E-02 SEC/M3, 50TH PERCENTILE= 0.244E-03 SEC/M3, AVERAGE= 0.670E-03 SEC/M3

METEOROLOGICAL FACILITY: 0.73 KM WSW OF WATTS BAR NUCLEAR PLANT

STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 10.00 AND 40.00 METERS

WIND SPEED AND DIRECTION MEASURED AT THE 10.00 METER LEVEL

TABLE 20

ATMOSPHERIC DISPERSION FACTORS FREQUENCY DISTRIBUTION — DATE PRINTED: 10/17/77

CALCULATED 1-HOUR-AVERAGE ATMOSPHERIC DISPERSION FACTORS
AT 1100 METERS

WATTS BAR NUCLEAR PLANT

(BASED ON DATA COLLECTED AT THE PERMANENT METEOROLOGICAL FACILITY FROM JUN 1, 1973 THROUGH SEP 10, 1973)

ATMOSPHERIC DISPERSION FACTORS (SEC/M3)	FREQUENCY (NO. OF OBSERVATIONS)	PERCENT	CUMULATIVE PERCENT
0.200E-02 - 0.299E-02	3	0.15	0.15
0.100E-02 - 0.199E-02	82	4.16	4.31
0.900E-03 - 0.999E-03	25	1.27	5.58
0.800E-03 - 0.899E-03	35	1.78	7.36
0.700E-03 - 0.799E-03	40	2.03	9.39
0.600E-03 - 0.699E-03	85	4.31	13.71
0.500E-03 - 0.599E-03	94	4.77	18.48
0.400E-03 - 0.499E-03	103	5.23	23.71
0.300E-03 - 0.399E-03	140	7.11	30.81
0.200E-03 - 0.299E-03	203	10.30	41.12
0.100E-03 - 0.199E-03	330	16.75	57.87
0.900E-04 - 0.999E-04	62	3.15	61.02
0.800E-04 - 0.899E-04	57	2.89	63.91
0.700E-04 - 0.799E-04	81	4.11	68.02
0.600E-04 - 0.699E-04	115	5.84	73.86
0.500E-04 - 0.599E-04	110	5.58	79.44
0.400E-04 - 0.499E-04	96	4.87	84.31
0.300E-04 - 0.399E-04	97	4.92	89.24
0.200E-04 - 0.299E-04	65	3.30	92.54
0.100E-04 - 0.199E-04	54	2.74	95.28
0.900E-05 - 0.999E-05	5	0.25	95.53
0.800E-05 - 0.899E-05	6	0.30	95.84
0.700E-05 - 0.799E-05	5	0.25	96.09
0.600E-05 - 0.699E-05	7	0.36	96.45
0.500E-05 - 0.599E-05	5	0.25	96.70
0.400E-05 - 0.499E-05	7	0.36	97.06
0.300E-05 - 0.399E-05	4	0.20	97.26
0.200E-05 - 0.299E-05	2	0.10	97.36
0.100E-05 - 0.199E-05	15	0.76	98.12
<= 0.999E-06	37	1.88	100.00
TOTALS	1970	100.00	

PERCENT OF THE POSSIBLE 2448 HOURLY OBSERVATIONS WHICH WERE VALID = 80.47

5TH PERCENTILE= 0.946E-03 SEC/M3, 50TH PERCENTILE= 0.147E-03 SEC/M3, AVERAGE= 0.271E-03 SEC/M3

METEOROLOGICAL FACILITY: 0.8 KM SSW OF WATTS BAR NUCLEAR PLANT

STABILITY BASED ON LAPSE RATE MEASURED BETWEEN 10.00 AND 46.00 METERS

WIND SPEED AND DIRECTION MEASURED AT THE 10.00 METER LEVEL

Table 21

Frequency Distributions of Stability, Wind Speed, and Wind Direction for Chattanooga[a]

Percent Occurrence of Atmospheric Stability

Stability Class	A	B	C	D	E	F	G
Long-Term[b]	3.4	15.7	14.6	23.8	10.5	16.1	16.1
Short-Term[c]	2.7	17.6	14.2	21.0	13.7	19.2	11.6

Percent Occurrence of Various Wind Speed Classes

Wind Speed Class (mph)	0-3	4-7	8-12	13-18	19-24	>24
Long-Term	39.3	34.6	21.4	4.3	0.2	0.04
Short-Term	38.1	40.8	17.6	3.4	0.1	0.0

Percent Occurrence of Wind Directions

Wind Direction	N	NNE	NE	ENE	E	ESE	SE	SSE
Long-Term	8.8	8.5	7.9	4.2	3.4	2.5	4.8	8.8
Short-Term	10.7	6.8	5.1	2.8	2.7	1.9	5.1	6.1

	S	SSW	SW	WSW	W	WNW	NW	NNW
Long-Term	17.3	7.3	4.8	3.9	4.4	4.3	4.0	4.6
Short-Term	19.0	7.5	4.1	3.8	6.7	5.0	5.8	7.0

a. Chattanooga National Weather Service Station, Lovell Field. Station elevation is 665 feet MSL.

b. Long-term period of record, June 1 - September 11, 1960 through 1972.

c. Short-term period of record, June 1, 1973 through September 11, 1973.