830 Power Building

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

May 17, 1976

Regulatory File Cy

RECEIVED MAY 24 1976 U.S. NUCLEAR REGULATORY COMMISSION Mail Section

Director of Nuclear Reactor Regulation
Attention: Mr. Voss A. Moore, Assistant Director
Environmental Projects
U.S. Nuclear Regulatory Commission
Washington, DC 20555

DOCKETED USNRC MAY 24 1976

Dear Mr. Moore:

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

Enclosed for your review and information is the TVA response to D. R. Muller's letter dated October 6, 1975, requesting information pertaining to Appendix I of 10 CFR 50. The letter gave two options for complying--TVA has chosen to provide the information in Enclosure II of the letter.

The responses to items A.1 through A.5 will be provided by July 1, 1976. Item B.2.e of Enclosure II requested information about wind trajectories out to 50 miles from the plant. This information is not available at this time but will be submitted by July 1, 1976.

Also enclosed is a computer tape which is in partial response to item B.1.b. This tape contains the hourly meteorological data from the Watts Bar site from the period of July 1, 1973, to June 30, 1975.

Very truly yours,

J. E. Gilleland

J. E. Gilleland
Assistant Manager of Power

Enclosures (25)

5194

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JUN 15 1976
U.S. NUCLEAR REGULATORY COMMISSION
Mail Section

WATTS BAR NUCLEAR PLANT

50 - 390
50 - 391

APPENDIX I INFORMATION

50-390/391

Rec'd w/ltr dtd
5-17-76

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USNRC
JUN 24 1976
U.S. NUCLEAR REGULATORY COMMISSION
Mail Section

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5194-A

A.8 Provide estimates of radionuclide concentrations and travel times at use locations identified in 5, above annually and for the time periods used to identify water use, flow fields and release rates. Describe the transport model(s) used, input data and parameters, sources of data and parameters, techniques and results of both laboratory and field calibration and verification studies, and the results of sensitivity analyses.

Response A.8

Models and assumptions used to calculate the potential doses to the population expected to reside within 50 miles of the Watts Bar Nuclear Plant are listed in the Watts Bar Nuclear Plant Environmental Statement. They are found in sections 2.4.2 and 8.2.2, and Appendix E. The doses due to tritium are normalized to 1 curie. These doses should be multiplied by 1150, the estimated number of curies that will be released annually in liquid effluents.

Location	Average Annual River Flow (ml/year)	Travel Time (Days)
Dayton	1.3 (+16)*	1.0
Savannah Utility District	1.6 (+16)	2.5
Atlas Chemical Industries	1.6 (+16)	3.6
Farmers Chemical Corp.	1.6 (+16)	3.6
E. I. DuPont	3.1 (+16)	3.8
Chattanooga	3.2 (+16)	4.0
South Pittsburg	3.4 (+16)	6.8
Bridgeport	3.4 (+16)	7.0

*1.3 (+16) = 1.3×10^{16}

a. The radionuclide concentrations at the locations listed above can be calculated by decaying the radionuclide amounts listed in Table F-1

of the Watts Bar Final Environmental Statement by the number of days listed above under Travel Time then dividing by the average annual river flows listed above. The flows were calculated using the average of measured river velocities and the river cross sections at the gauge locations.

b. The transport times were calculated using the average of measured river velocities for the Tennessee River for the time period from 1899 to 1968 at various locations along the river. It is assumed that the radionuclides travel at the same rate as the river.

A.9 Discuss the importance of sorption of radionuclides by both suspended and bottom sediments on or as pathways to man. Consider the potential for ingestion, direct contact, and transfer to the aquatic food chain. Provide estimates of concentrations of radionuclides for these pathways. Describe the models used to estimate sediment uptake, buildup, and transport of radionuclides on and by sediments. Provide the bases for the models, parameters, and input. Describe the results of model verification and sensitivity analyses. Provide estimates of the effects on radionuclide concentrations at the users identified in 5, above.

Response A.9

The sorption of radionuclides by sediments is considered when estimating the doses to individuals and population from shoreline activities. The model used to estimate the concentration of radionuclides in sediment is listed in WASH-1248, Final Environmental Statement on "As Low As Practicable," Volume 2, pages F-23 through F-26.

The annual doses from shoreline activities are calculated assuming an individual spends 500 hours per year on shorelines just below the Watts Bar Nuclear Plant. The population dose is calculated assuming shoreline visits along the Tennessee River from Watts Bar Nuclear Plant to Paducah, Kentucky, year 2000 number of visits, a shoreline width factor of 0.2, and 5 hours per visit. The number of visits are:

Tennessee River Reach	Number of Shoreline Visits - Year 2000
528.0 - 499.0	1.59 (5)*
499.0 - 484.5	7.29 (5)
484.5 - 471.0	1.46 (6)
471.0 - 452.0	3.28 (4)
452.0 - 424.7	5.21 (4)
424.7 - 417.5	1.79 (4)
417.5 - 392.0	1.39 (5)
392.0 - 373.0	1.24 (6)

*1.59 (5) = 1.59×10^5

373.0 - 349.0	2.91 (6)
349.0 - 294.0	1.06 (6)
294.0 - 274.9	1.40 (6)
274.9 - 259.4	1.04 (6)
259.4 - 217.4	5.97 (5)
217.4 - 206.7	5.21 (5)
206.7 - 165.0	1.61 (5)
165.0 - 121.0	3.20 (5)
121.0 - 76.0	6.41 (5)
76.0 - 22.4	6.89 (6)

The doses are:

	Total Body	Skin
Maximum Individual Dose	3.9 (-2)	4.5 (-2) mrem
Population Dose	7.8 (-1)	9.0 (-1) man-rem

A.10 Discuss the potential for the release of liquid radionuclide effluents to the ground water regime as a significant pathway to man. If significant, identify the locations and withdrawal rates of users, and interfaces with surface waters. Provide estimates of radionuclide concentrations and travel times at the locations identified. Describe the transport models used, input data and parameters, source and bases for the data and parameters, techniques and results of both laboratory and field calibration and verification studies, and the results of sensitivity analysis.

Response A.10

The effects of liquid radionuclide effluents in the groundwater are discussed in section 8.2.2 of the Watts Bar Nuclear Plant Environmental Statement.

NRC Request B.1. Provide the following information from the onsite meteorological program.

NRC Item B.1.a. Monthly and annual wind speed and direction data, in joint frequency form, at all heights of measurement representative of wind characteristics for points of effluent release to, and transport within, the atmosphere.

TVA Response B.1.a. Monthly and annual joint frequency summaries of wind speed and wind direction for both 33 and 300 feet (10 and 91 meters) above-ground at the onsite meteorological facility for the two-year period, July 1, 1973, through June 30, 1975, are attached.

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JULY (73,74)

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	1.33	1.24	0.50	1.16	0.33	0.0	0.0	0.0	4.56
NNE	1.08	1.49	1.08	0.66	0.75	0.0	0.0	0.0	5.06
NE	1.08	2.32	1.16	1.82	1.08	0.08	0.0	0.0	7.54
ENE	0.91	2.24	0.83	0.75	0.0	0.0	0.0	0.0	4.73
E	1.24	3.23	1.00	0.75	0.58	0.0	0.0	0.0	6.80
ESE	0.83	1.24	0.50	0.25	0.08	0.0	0.0	0.0	2.90
SE	0.41	0.83	0.41	0.08	0.0	0.0	0.0	0.0	1.73
SSE	1.49	2.24	1.16	0.17	0.0	0.0	0.0	0.0	5.06
S	0.91	2.49	1.41	0.17	0.17	0.0	0.0	0.0	5.15
SSW	1.49	4.31	6.55	2.99	2.07	0.0	0.0	0.0	17.41
SW	0.91	3.81	4.73	3.23	0.83	0.0	0.0	0.0	13.51
WSW	1.58	2.32	0.58	0.08	0.08	0.0	0.0	0.0	4.64
W	2.24	2.49	0.50	0.08	0.08	0.0	0.0	0.0	5.39
WNW	1.41	1.91	0.41	0.25	0.0	0.0	0.0	0.0	3.98
NW	2.99	2.24	0.17	0.0	0.08	0.0	0.0	0.0	5.48
NNW	3.07	1.41	0.75	0.41	0.33	0.0	0.0	0.0	5.97
SUBTOTAL	22.97	35.81	21.74	12.85	6.46	0.08	0.0	0.0	99.91

CALM = 0.08

1206 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1488 TOTAL HOURS = 81.05 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT

WIND INSTRUMENTS 33 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JULY (73,74)

WIND DIRECTION	WIND SPEED(MPH) 0.4-1.4	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	0.23	0.62	1.01	0.62	0.93	0.46	0.0	0.0	3.87
NNE	0.08	1.24	3.25	1.62	3.48	1.16	0.0	0.0	10.83
NE	0.15	1.78	2.09	1.93	3.48	0.62	0.0	0.0	10.05
ENE	0.0	2.17	2.17	1.01	1.39	0.23	0.0	0.0	6.97
E	0.08	0.93	2.09	0.62	1.16	0.15	0.0	0.0	5.03
ESE	0.08	0.46	0.77	0.39	0.23	0.0	0.0	0.0	1.93
SE	0.15	0.70	0.70	0.31	0.15	0.08	0.0	0.0	2.09
SSE	0.0	0.62	0.77	0.15	0.08	0.0	0.0	0.0	1.62
S	0.08	1.16	1.24	0.54	0.46	0.0	0.0	0.0	3.48
SSW	0.15	2.24	3.40	2.17	2.09	0.08	0.0	0.0	10.13
SW	0.08	3.02	6.03	5.57	9.51	1.01	0.0	0.0	25.22
WSW	0.0	2.01	3.02	1.55	2.40	0.0	0.0	0.0	8.98
W	0.23	1.31	1.01	0.62	0.39	0.15	0.0	0.0	3.71
WNW	0.08	0.46	0.85	0.08	0.23	0.0	0.0	0.0	1.70
NW	0.15	1.01	0.70	0.15	0.15	0.08	0.0	0.0	2.24
NNW	0.15	1.08	0.46	0.15	0.15	0.08	0.0	0.0	2.07
SUBTOTAL	1.69	20.81	29.56	17.48	26.28	4.10	0.0	0.0	99.92

CALM = 0.08

1293 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1488 TOTAL HOURS = 86.90 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
WIND INSTRUMENTS 300 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

AUGUST (73,74)

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	2.06	2.20	1.51	0.69	0.41	0.0	0.0	0.0	6.87
NNE	1.17	2.06	1.78	1.24	1.44	0.0	0.0	0.0	7.69
NE	1.10	2.81	1.58	1.17	0.96	0.07	0.0	0.0	7.69
ENE	0.89	2.61	1.37	0.27	0.41	0.0	0.0	0.0	5.55
E	1.51	2.47	1.51	0.27	0.07	0.0	0.0	0.0	5.83
ESE	0.34	1.24	0.69	0.0	0.14	0.0	0.0	0.0	2.41
SE	0.41	1.24	1.03	0.07	0.14	0.0	0.0	0.0	2.89
SSE	0.82	2.20	1.24	0.69	0.14	0.0	0.0	0.0	5.09
S	1.37	3.29	2.33	0.48	0.96	0.0	0.0	0.0	8.43
SSW	1.17	3.98	3.64	3.91	3.57	0.0	0.0	0.0	16.27
SW	0.89	2.54	1.99	1.17	0.48	0.0	0.0	0.0	7.07
WSW	0.89	1.58	0.75	0.0	0.0	0.0	0.0	0.0	3.22
W	1.92	2.68	0.48	0.27	0.0	0.0	0.0	0.0	5.35
WNW	0.82	1.85	0.21	0.07	0.0	0.0	0.0	0.0	2.95
NW	2.13	3.16	0.75	0.27	0.07	0.0	0.0	0.0	6.38
NNW	2.26	2.40	0.41	1.10	0.0	0.0	0.0	0.0	6.17
SUBTOTAL	19.75	38.31	21.27	11.67	8.79	0.07	0.0	0.0	99.86

CALM = 0.14

1457 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1488 TOTAL HOURS = 97.92 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT

WIND INSTRUMENTS 33 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

AUGUST (73,74)

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	0.27	1.23	1.57	1.50	1.71	0.41	0.0	0.0	6.69
NNE	0.34	2.26	3.49	2.60	2.60	1.37	0.14	0.07	12.87
NE	0.55	3.42	5.13	3.15	3.63	0.34	0.0	0.0	16.22
ENE	0.07	1.78	2.05	1.64	1.30	0.0	0.07	0.07	6.98
E	0.0	1.44	0.75	0.34	0.21	0.07	0.0	0.0	2.81
ESE	0.14	0.41	0.89	0.14	0.14	0.07	0.0	0.0	1.79
SE	0.21	0.68	0.62	0.27	0.07	0.07	0.0	0.0	1.92
SSE	0.0	0.89	0.75	0.27	0.68	0.07	0.0	0.14	2.80
S	0.14	0.62	0.75	0.75	0.27	0.07	0.0	0.07	2.67
SSW	0.21	1.78	2.74	1.98	3.28	1.85	0.07	0.07	11.98
SW	0.07	1.44	4.17	3.83	6.36	2.87	0.14	0.0	18.88
WSW	0.07	1.03	1.23	1.37	1.23	0.27	0.0	0.07	5.27
W	0.14	0.75	0.62	0.27	0.34	0.21	0.0	0.0	2.33
WNW	0.07	0.89	0.34	0.14	0.27	0.0	0.0	0.0	1.71
NW	0.14	0.75	0.34	0.07	0.62	0.0	0.0	0.0	1.92
NNW	0.21	1.23	0.41	0.55	0.62	0.14	0.0	0.0	3.16
SUBTOTAL	2.63	20.60	25.85	18.87	23.33	7.81	0.42	0.49	100.00

CALM = 0.07

1462 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1488 TOTAL HOURS = 98.25 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
WIND INSTRUMENTS 300 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

SEPT. (73,74)

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	2.13	2.83	1.42	1.49	0.50	0.0	0.0	0.0	8.37
NNE	1.35	2.69	2.13	1.49	3.26	0.07	0.0	0.0	10.99
NE	1.35	4.11	3.83	1.70	1.49	0.0	0.0	0.0	12.48
ENE	1.49	5.67	1.28	0.71	0.0	0.0	0.0	0.0	9.15
E	0.92	2.69	1.35	0.14	0.07	0.0	0.0	0.0	5.17
ESE	0.92	1.28	0.21	0.07	0.0	0.0	0.0	0.0	2.48
SE	0.28	1.06	0.21	0.14	0.0	0.0	0.0	0.0	1.69
SSE	1.13	1.91	0.78	0.21	0.50	0.0	0.0	0.0	4.53
S	0.43	2.34	1.63	0.99	0.85	0.0	0.0	0.0	6.24
SSW	0.71	2.98	3.12	2.55	1.35	0.0	0.0	0.0	10.71
SW	0.28	1.56	1.70	0.57	0.07	0.0	0.0	0.0	4.18
WSW	0.99	1.84	0.57	0.0	0.0	0.0	0.0	0.0	3.40
W	0.57	1.20	0.35	0.50	0.07	0.0	0.0	0.0	2.69
WNW	0.57	1.56	0.28	0.21	0.28	0.0	0.0	0.0	2.90
NW	1.42	2.76	0.50	0.50	0.71	0.0	0.0	0.0	5.89
NNW	1.84	3.97	0.99	1.06	1.20	0.0	0.0	0.0	9.06
SUBTOTAL	16.38	40.45	20.35	12.33	10.35	0.07	0.0	0.0	99.93

CALM = 0.07

1411 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1440 TOTAL HOURS = 97.99 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT

WIND INSTRUMENTS 33 FEET ABOVE GROUND

TABLE 2.3

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

SEPT. (73,74)

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	0.14	1.05	0.84	2.17	2.10	1.26	0.07	0.0	7.63
NNE	0.14	1.96	2.59	3.08	4.76	2.31	0.0	0.0	14.84
NE	0.07	2.73	5.25	5.11	5.60	1.75	0.14	0.0	20.65
ENE	0.07	1.68	2.38	2.73	0.91	0.14	0.0	0.0	7.91
E	0.07	1.61	1.12	0.56	0.35	0.0	0.0	0.0	3.71
ESE	0.14	0.63	0.35	0.21	0.14	0.0	0.0	0.0	1.47
SE	0.28	0.63	0.70	0.07	0.49	0.0	0.0	0.0	2.17
SSE	0.0	1.26	0.42	0.21	0.56	0.14	0.0	0.0	2.59
S	0.07	1.47	1.47	0.42	0.70	0.07	0.0	0.0	4.20
SSW	0.14	1.47	2.73	1.96	2.94	0.98	0.0	0.0	10.22
SW	0.07	1.33	3.15	2.94	3.64	1.68	0.07	0.0	12.88
WSW	0.21	1.05	0.98	0.49	0.28	0.07	0.07	0.0	3.15
W	0.0	0.35	0.56	0.21	0.14	0.07	0.21	0.0	1.54
WNW	0.07	0.28	0.0	0.07	0.42	0.14	0.0	0.0	0.98
NW	0.07	0.42	0.28	0.28	1.05	0.21	0.0	0.0	2.31
NNW	0.14	0.70	0.42	0.49	1.12	0.84	0.0	0.0	3.71
SUBTOTAL	1.68	18.62	23.24	21.00	25.20	9.66	0.56	0.0	99.96

CALM = 0.0

1428 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1440 TOTAL HOURS = 99.17 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
WIND INSTRUMENTS 300 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

OCTOBER (73,74)

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	2.31	2.22	0.89	0.80	0.98	0.09	0.0	0.0	7.29
NNE	2.66	1.69	1.69	1.15	2.93	0.18	0.0	0.0	10.30
NE	1.33	2.04	1.78	0.89	1.60	0.0	0.0	0.0	7.64
ENE	2.58	3.55	1.15	0.27	0.09	0.0	0.0	0.0	7.64
E	1.95	2.49	0.53	0.0	0.0	0.0	0.0	0.0	4.97
ESE	0.27	0.89	0.27	0.0	0.0	0.0	0.0	0.0	1.43
SE	0.71	1.07	0.09	0.0	0.0	0.0	0.0	0.0	1.87
SSE	0.89	2.04	0.36	0.18	0.0	0.0	0.0	0.0	3.47
S	0.62	2.49	1.07	0.44	0.71	0.0	0.0	0.0	5.33
SSW	0.36	2.66	3.46	1.60	1.51	0.0	0.0	0.0	9.59
SW	0.36	2.31	1.69	0.71	0.36	0.0	0.0	0.0	5.43
WSW	1.07	1.24	1.15	0.44	0.27	0.0	0.0	0.0	4.17
W	2.04	2.31	0.53	0.0	1.07	0.0	0.0	0.0	5.95
WNW	2.93	1.78	0.18	0.44	0.71	0.0	0.0	0.0	6.04
NW	4.26	2.93	1.07	0.71	0.27	0.0	0.0	0.0	9.24
NNW	2.49	2.13	0.80	0.71	1.33	0.0	0.0	0.0	7.46
SUBTOTAL	26.83	33.84	16.71	8.34	11.83	0.27	0.0	0.0	97.82

CALM = 2.22

1126 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1488 TOTAL HOURS = 75.67 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT

WIND INSTRUMENTS 33 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

OCTOBER (73,74)

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	0.34	0.34	1.36	0.61	1.70	1.56	0.20	0.0	6.11
NNE	0.27	3.05	3.93	1.90	3.39	2.37	0.34	0.0	15.25
NE	0.47	4.21	6.24	4.27	3.46	1.02	0.0	0.0	19.67
ENE	0.07	1.83	2.10	0.81	0.75	0.14	0.0	0.0	5.70
E	0.14	1.42	1.09	0.41	0.14	0.0	0.0	0.0	3.20
ESE	0.0	0.68	0.61	0.07	0.07	0.0	0.0	0.0	1.43
SE	0.07	0.54	0.0	0.07	0.07	0.0	0.0	0.0	0.75
SSE	0.14	0.88	0.20	0.07	0.07	0.07	0.0	0.0	1.43
S	0.07	1.15	0.95	0.34	0.68	0.0	0.0	0.0	3.19
SSW	0.07	3.12	3.05	1.49	3.05	0.81	0.0	0.0	11.59
SW	0.27	2.37	4.68	3.53	4.07	0.88	0.27	0.0	16.07
WSW	0.41	0.95	1.22	0.68	0.34	0.61	0.0	0.0	4.21
W	0.14	0.68	1.02	0.27	0.41	0.75	0.14	0.0	3.41
WNW	0.20	0.47	0.0	0.20	0.61	0.27	0.14	0.0	1.89
NW	0.27	0.47	0.27	0.14	0.75	0.27	0.0	0.0	2.17
NNW	0.34	0.88	0.54	0.47	1.29	0.34	0.0	0.0	3.86
SUBTOTAL	3.27	23.04	27.26	15.33	20.85	9.09	1.09	0.0	99.93

CALM = 0.07

1474 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1488 TOTAL HOURS = 99.06 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
WIND INSTRUMENTS 300 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

NOVEMBER (73,74)

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	0.89	1.63	1.11	0.52	0.96	0.15	0.0	0.0	5.26
NNE	1.48	2.15	1.63	1.41	2.74	0.0	0.0	0.0	9.41
NE	0.96	2.44	1.56	1.56	1.41	0.15	0.0	0.0	8.08
ENE	1.04	2.59	1.41	0.44	0.52	0.0	0.0	0.0	6.00
E	0.89	2.37	0.74	0.15	0.0	0.0	0.0	0.0	4.15
ESE	0.59	0.81	0.07	0.0	0.07	0.0	0.0	0.0	1.54
SE	0.30	0.67	0.30	0.07	0.15	0.0	0.0	0.0	1.49
SSE	0.22	0.67	0.37	0.0	0.30	0.37	0.0	0.0	1.93
S	0.15	1.70	1.11	0.52	0.44	0.22	0.0	0.0	4.14
SSW	0.52	2.89	3.48	2.30	3.33	3.11	0.30	0.0	15.93
SW	0.44	1.85	1.63	2.59	2.67	0.44	0.0	0.0	9.62
WSW	0.30	2.74	0.74	0.44	0.37	0.0	0.0	0.0	4.59
W	1.78	2.67	0.67	1.11	1.70	0.07	0.0	0.0	8.00
WNW	1.41	1.48	0.74	0.52	0.89	0.37	0.0	0.0	5.41
NW	1.41	2.37	0.81	0.52	1.19	0.07	0.0	0.0	6.37
NNW	1.48	2.89	0.59	1.19	1.48	0.07	0.0	0.0	7.70
SUBTOTAL	13.86	31.92	16.96	13.34	18.22	5.02	0.30	0.0	99.62

CALM = 0.37

1350 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1440 TOTAL HOURS = 93.75 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT

WIND INSTRUMENTS 33 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

NOVEMBER (73,74)

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	0.35	0.28	0.63	0.42	1.27	1.27	0.0	0.0	4.22
NNE	0.35	0.85	0.99	1.27	2.82	1.62	0.14	0.0	8.04
NE	0.14	1.76	2.68	2.04	4.86	1.55	0.0	0.0	13.03
ENE	0.35	0.85	1.27	0.92	1.62	0.42	0.07	0.0	5.50
E	0.0	1.20	1.27	0.78	2.18	0.42	0.0	0.0	5.85
ESE	0.0	0.56	0.56	0.35	0.42	0.07	0.0	0.0	1.96
SE	0.14	0.28	0.28	0.14	0.0	0.07	0.0	0.0	0.91
SSE	0.35	1.06	0.42	0.0	0.28	0.14	0.07	0.0	2.32
S	0.14	0.78	0.42	0.21	0.35	0.42	0.35	0.0	2.67
SSW	0.07	1.41	1.69	1.06	2.33	1.97	1.06	0.35	9.94
SW	0.0	1.13	2.18	2.47	6.27	5.07	1.97	0.49	19.58
WSW	0.14	0.85	1.41	2.11	3.74	2.47	0.42	0.0	11.14
W	0.0	0.63	0.70	0.56	0.85	0.70	0.07	0.0	3.51
WNW	0.07	0.28	0.35	0.0	0.85	1.69	0.63	0.07	3.94
NW	0.0	0.49	0.42	0.28	0.85	1.13	0.42	0.0	3.59
NNW	0.07	0.35	0.21	0.35	1.48	1.20	0.07	0.0	3.73
SUBTOTAL	2.17	12.76	15.48	12.96	30.17	20.21	5.27	0.91	99.93

CALM = 0.0

1419 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1440 TOTAL HOURS = 98.54 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
WIND INSTRUMENTS 300 FEET ABOVE GROUND

TABLE 2.3

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

DECEMBER (73,74)

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	0.72	1.59	1.22	0.72	1.44	0.58	0.0	0.0	6.27
NNE	0.58	2.23	0.50	1.59	2.45	0.43	0.0	0.0	7.78
NE	1.22	3.96	1.66	1.08	1.01	0.0	0.0	0.0	8.93
ENE	0.36	3.03	1.37	0.94	0.14	0.0	0.0	0.0	5.84
E	0.58	1.73	0.72	0.36	0.36	0.0	0.0	0.0	3.75
ESE	0.36	0.94	0.07	0.14	0.0	0.0	0.0	0.0	1.51
SE	0.07	0.86	0.29	0.0	0.0	0.0	0.0	0.0	1.22
SSE	0.65	1.95	0.14	0.14	0.22	0.0	0.0	0.0	3.10
S	0.50	2.02	0.86	0.36	0.36	0.29	0.0	0.0	4.39
SSW	0.50	2.74	3.39	2.31	1.95	0.36	0.0	0.0	11.25
SW	0.29	2.16	2.23	2.23	2.45	0.86	0.22	0.0	10.44
WSW	0.50	1.30	2.16	1.22	0.94	0.36	0.07	0.0	6.55
W	0.65	2.95	1.87	2.02	2.16	0.43	0.0	0.0	10.08
WNW	0.72	1.73	0.72	1.15	1.37	0.22	0.0	0.0	5.91
NW	1.01	2.59	0.58	1.08	0.86	0.29	0.0	0.0	6.41
NNW	2.02	2.31	0.43	0.58	0.86	0.07	0.0	0.0	6.27
SUBTOTAL	10.73	34.09	18.21	15.92	16.57	3.89	0.29	0.0	99.70

CALM = 0.29

1388 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1488 TOTAL HOURS = 93.28 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT

WIND INSTRUMENTS 33 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

DECEMBER (73,74)

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	0.14	0.35	0.35	0.28	1.35	0.57	0.07	0.0	3.11
NNE	0.28	0.85	1.06	1.70	1.49	1.21	0.57	0.07	7.23
NE	0.43	0.99	2.13	1.63	3.69	2.48	0.35	0.0	11.70
ENE	0.28	1.06	0.85	0.85	1.92	0.07	0.0	0.0	5.03
E	0.14	1.49	1.70	0.92	2.13	0.21	0.0	0.0	6.59
ESE	0.07	0.85	0.50	0.71	0.57	0.07	0.0	0.0	2.77
SE	0.28	0.35	0.35	0.07	0.0	0.0	0.0	0.0	1.05
SSE	0.0	0.71	0.14	0.07	0.07	0.07	0.0	0.0	1.06
S	0.21	0.85	0.43	0.43	0.21	0.14	0.14	0.0	2.41
SSW	0.07	0.99	1.63	0.78	1.56	1.21	0.28	0.0	6.52
SW	0.07	1.35	1.70	3.05	5.54	2.70	1.70	0.14	16.25
WSW	0.0	0.85	1.77	1.56	4.83	3.26	0.64	0.21	13.12
W	0.07	1.56	0.71	0.99	2.34	1.85	0.57	0.21	8.30
WNW	0.28	0.85	0.35	0.71	2.77	1.70	0.21	0.07	6.94
NW	0.14	0.57	0.14	0.57	1.70	0.71	0.28	0.0	4.11
NNW	0.07	0.21	0.50	0.43	1.14	0.85	0.35	0.07	3.62
SUBTOTAL	2.53	13.88	14.31	14.75	31.31	17.10	5.16	0.77	99.81

CALM = 0.07

1409 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1488 TOTAL HOURS = 94.69 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
WIND INSTRUMENTS 300 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JANUARY (74,75)

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	0.56	1.88	0.77	0.91	1.95	0.07	0.0	0.0	6.14
NNE	0.49	1.95	1.18	1.04	1.32	0.14	0.0	0.0	6.12
NE	0.56	1.88	1.46	0.97	1.18	0.0	0.0	0.0	6.05
ENE	0.42	2.58	1.11	0.84	0.70	0.0	0.0	0.0	5.65
E	0.28	2.44	1.81	1.32	0.91	0.0	0.0	0.0	6.76
ESE	0.49	1.11	0.70	0.21	0.21	0.0	0.0	0.0	2.72
SE	0.28	1.67	0.42	0.14	0.0	0.0	0.0	0.0	2.51
SSE	0.28	1.74	0.14	0.0	0.07	0.28	0.21	0.0	2.72
S	0.07	1.39	0.84	0.56	0.63	0.21	0.0	0.0	3.70
SSW	0.21	2.09	2.09	1.81	4.53	1.32	0.0	0.0	12.05
SW	0.07	2.99	2.23	2.58	2.02	1.25	0.0	0.0	11.14
WSW	0.28	2.37	3.48	2.65	2.92	1.25	0.0	0.0	12.95
W	0.56	2.44	1.25	0.56	0.49	0.21	0.0	0.0	5.51
WNW	0.28	2.16	0.77	0.28	0.42	0.0	0.0	0.0	3.91
NW	0.63	2.65	0.42	0.28	0.70	0.07	0.0	0.0	4.75
NNW	1.39	1.60	0.91	0.70	2.23	0.14	0.0	0.0	6.97
SUBTOTAL	6.85	32.94	19.58	14.85	20.28	4.94	0.21	0.0	99.65

CALM = 0.42

1436 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1488 TOTAL HOURS = 96.51 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT

WIND INSTRUMENTS 33 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JANUARY (74,75)

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	0.14	0.20	0.27	0.07	1.56	2.31	0.20	0.0	4.75
NNE	0.07	1.09	1.15	1.02	1.29	1.22	0.14	0.0	5.98
NE	0.0	1.22	1.70	1.02	3.05	1.22	0.07	0.0	8.28
ENE	0.0	1.42	1.22	1.76	1.56	0.41	0.0	0.0	6.37
E	0.20	0.81	1.97	1.36	1.76	0.34	0.0	0.0	6.44
ESE	0.07	0.47	0.61	0.61	0.47	0.0	0.0	0.0	2.23
SE	0.14	0.88	0.68	0.07	0.07	0.0	0.0	0.0	1.84
SSE	0.20	0.61	0.27	0.07	0.07	0.0	0.07	0.0	1.29
S	0.0	0.34	0.20	0.0	0.14	0.0	0.14	0.34	1.16
SSW	0.0	0.20	1.29	1.29	2.44	2.44	1.09	0.0	8.75
SW	0.0	0.88	2.04	2.71	6.17	4.68	3.05	0.27	19.80
WSW	0.0	1.15	1.90	2.51	7.67	4.00	0.95	0.34	18.52
W	0.0	0.54	1.22	1.22	1.42	0.41	0.61	0.61	6.03
WNW	0.0	0.47	0.27	0.68	0.47	0.41	0.07	0.0	2.37
NW	0.0	0.54	0.07	0.27	1.15	0.61	0.14	0.0	2.78
NNW	0.0	0.54	0.47	0.34	0.95	0.81	0.27	0.0	3.38
SUBTOTAL	0.82	11.36	15.33	15.00	30.24	18.86	6.80	1.56	99.97

CALM = 0.0

1474 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1488 TOTAL HOURS = 99.06 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
WIND INSTRUMENTS 300 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURSENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

FEBUARY (74,75)

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	0.39	2.02	1.01	0.78	1.24	0.0	0.0	0.0	5.44
NNE	0.70	2.64	1.71	1.94	1.63	0.0	0.0	0.0	8.62
NE	0.70	3.18	1.47	1.09	2.09	0.0	0.0	0.0	8.53
ENE	0.39	1.55	0.93	0.47	0.39	0.0	0.0	0.0	3.73
E	0.31	1.32	0.85	0.85	0.70	0.0	0.0	0.0	4.03
ESE	0.08	0.54	0.31	0.23	0.0	0.0	0.0	0.0	1.16
SE	0.31	0.78	0.39	0.08	0.08	0.0	0.0	0.0	1.64
SSE	0.23	0.62	0.70	0.39	0.31	0.08	0.08	0.0	2.41
S	0.16	1.32	1.01	0.39	0.08	0.62	0.08	0.0	3.66
SSW	0.23	1.86	2.87	1.32	3.10	2.79	0.08	0.0	12.25
SW	0.16	2.09	3.33	2.25	3.41	1.01	0.08	0.0	12.33
WSW	0.16	1.55	1.94	2.02	1.63	1.24	0.08	0.0	8.62
W	0.39	1.40	1.63	1.01	1.01	0.31	0.08	0.0	5.83
WNW	0.62	2.17	0.62	0.93	1.47	0.31	0.16	0.0	6.28
NW	0.85	3.26	1.01	0.93	1.47	0.16	0.0	0.0	7.68
NNW	0.70	1.47	1.86	1.24	2.25	0.31	0.0	0.0	7.83
SUBTOTAL	6.38	27.77	21.64	15.92	20.86	6.83	0.64	0.0	100.04

CALM = 0.08

1290 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1344 TOTAL HOURS = 95.98 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT

WIND INSTRUMENTS 33 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

FEBUARY (74,75)

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	0.70	0.30	0.99	1.99	1.29	0.10	0.0	5.37
NNE	0.10	0.40	2.48	2.48	4.67	0.79	0.0	0.0	10.92
NE	0.10	0.99	1.19	0.79	3.97	1.69	0.0	0.0	8.73
ENE	0.10	0.60	0.70	0.99	1.69	0.20	0.0	0.0	4.28
E	0.0	0.70	0.30	1.19	0.60	0.0	0.0	0.0	2.79
ESE	0.0	0.40	0.60	0.30	0.20	0.0	0.0	0.0	1.50
SE	0.0	0.20	0.10	0.20	0.10	0.0	0.0	0.0	0.60
SSE	0.0	0.40	0.40	0.10	0.40	0.30	0.0	0.0	1.60
S	0.0	0.60	0.50	0.40	0.40	0.10	0.50	0.30	2.80
SSW	0.0	0.89	1.49	1.69	4.47	2.78	2.28	0.60	14.20
SW	0.0	0.89	2.18	2.09	7.05	3.97	2.09	0.10	18.37
WSW	0.0	0.10	1.09	2.18	3.28	1.29	1.49	0.0	9.43
W	0.0	0.20	0.60	0.89	2.09	1.29	0.20	0.0	5.27
WNW	0.0	0.30	0.50	0.79	1.79	0.99	0.10	0.0	4.47
NW	0.10	0.20	0.0	0.50	1.89	1.09	0.10	0.0	3.88
NNW	0.0	0.60	0.30	0.79	2.09	1.99	0.10	0.0	5.87
SUBTOTAL	0.40	8.17	12.73	16.37	36.68	17.77	6.96	1.00	100.08

CALM = 0.0

1007 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1344 TOTAL HOURS = 74.93 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
WIND INSTRUMENTS 300 FEET ABOVE GROUND

TABLE 2.3

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

MARCH (74,75)

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	0.54	1.63	1.02	2.04	1.50	0.20	0.0	0.0	6.93
NNE	0.48	2.31	1.90	0.95	1.56	0.14	0.0	0.0	7.34
NE	0.95	3.06	1.84	1.50	2.58	0.14	0.0	0.0	10.07
ENE	0.61	2.65	1.16	0.68	0.07	0.14	0.0	0.0	5.31
E	0.54	1.43	0.68	0.14	0.14	0.0	0.0	0.0	2.93
ESE	0.27	0.68	0.20	0.14	0.0	0.0	0.0	0.0	1.29
SE	0.20	0.68	0.27	0.20	0.34	0.0	0.0	0.0	1.69
SSE	0.07	0.61	0.48	0.14	0.27	0.0	0.0	0.0	1.57
S	0.27	1.16	0.61	0.14	0.88	0.27	0.0	0.0	3.33
SSW	0.27	1.50	2.04	2.38	6.66	3.06	0.07	0.0	15.98
SW	0.20	1.22	2.38	2.72	3.74	1.22	0.0	0.07	11.55
WSW	0.20	1.36	0.61	0.20	0.75	0.27	0.07	0.0	3.46
W	0.20	1.36	0.82	0.48	0.75	0.41	0.41	0.20	4.63
WNW	0.68	2.18	0.95	0.41	1.09	0.27	0.27	0.0	5.85
NW	1.43	2.45	1.29	1.36	2.38	0.82	0.0	0.0	9.73
NNW	0.82	1.90	0.88	1.84	2.52	0.27	0.0	0.0	8.23
SUBTOTAL	7.73	26.18	17.13	15.32	25.23	7.21	0.82	0.27	99.89

CALM = 0.14

1471 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1488 TOTAL HOURS = 98.86 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT

WIND INSTRUMENTS 33 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

MARCH (74,75)

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	0.14	0.95	1.09	1.90	1.63	0.0	0.0	5.71
NNE	0.14	1.36	2.58	2.72	4.21	0.68	0.0	0.0	11.69
NE	0.0	0.0	1.22	2.17	3.13	0.68	0.0	0.0	7.20
ENE	0.0	0.14	1.09	0.54	0.68	0.0	0.14	0.0	2.59
E	0.0	0.41	0.41	0.27	0.68	0.14	0.0	0.0	1.91
ESE	0.0	0.54	0.14	0.0	0.54	0.0	0.0	0.0	1.22
SE	0.0	0.54	0.41	0.14	0.82	0.54	0.14	0.0	2.59
SSE	0.0	0.82	0.41	0.0	1.36	0.14	0.0	0.0	2.73
S	0.0	0.41	0.82	0.54	1.77	2.58	2.17	0.0	8.29
SSW	0.0	0.41	1.22	2.85	4.35	5.16	3.67	0.14	17.80
SW	0.0	0.41	0.54	0.82	1.49	1.63	0.68	0.54	6.11
WSW	0.0	0.54	0.41	0.0	0.54	0.27	1.36	0.68	3.80
W	0.0	0.95	0.14	0.14	0.95	1.22	0.27	0.82	4.49
WNW	0.14	0.41	0.41	0.41	2.31	2.45	0.27	0.27	6.67
NW	0.0	0.27	0.68	0.95	4.08	2.72	0.95	0.14	9.79
NNW	0.0	0.95	0.54	0.95	3.53	1.22	0.27	0.0	7.46
SUBTOTAL	0.28	8.30	11.97	13.59	32.34	21.06	9.92	2.59	100.05

CALM = 0.0

736 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1488 TOTAL HOURS = 49.46 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
WIND INSTRUMENTS 300 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

APRIL (74,75)

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	0.84	0.91	1.61	1.47	0.21	0.0	0.0	5.53
NNE	0.98	1.82	1.61	1.68	2.31	0.14	0.0	0.0	8.54
NE	0.77	2.94	0.91	0.70	1.05	0.07	0.0	0.0	6.44
ENE	0.77	1.61	0.84	0.49	0.49	0.0	0.0	0.0	4.20
E	0.91	2.38	1.54	0.21	0.07	0.0	0.0	0.0	5.11
ESE	0.28	0.56	0.42	0.0	0.0	0.0	0.0	0.0	1.26
SE	0.49	0.35	0.35	0.0	0.0	0.0	0.0	0.0	1.19
SSE	0.35	1.40	0.49	0.07	0.21	0.0	0.0	0.0	2.52
S	0.63	0.91	0.91	0.35	1.40	0.49	0.07	0.0	4.76
SSW	0.63	1.89	2.24	2.59	9.51	4.90	1.54	0.0	23.30
SW	0.63	1.12	2.03	1.54	1.33	0.56	0.35	0.0	7.56
WSW	0.91	1.33	0.42	0.07	0.28	0.07	0.0	0.0	3.08
W	0.42	1.47	0.77	0.70	0.70	0.49	0.0	0.0	4.55
WNW	1.47	0.56	0.49	0.14	1.12	0.49	0.0	0.0	4.27
NW	1.54	1.33	0.98	1.54	2.45	0.70	0.0	0.0	8.54
NNW	2.03	1.68	0.98	1.33	2.45	0.07	0.0	0.0	8.54
SUBTOTAL	13.30	22.19	15.89	13.02	24.84	8.19	1.96	0.0	99.39

CALM = 0.70

1430 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1440 TOTAL HOURS = 99.31 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT

WIND INSTRUMENTS 33 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

APRIL (74,75)

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	0.09	0.91	1.83	0.73	3.20	3.11	0.0	0.0	9.87
NNE	0.27	1.01	2.29	2.10	5.40	2.65	1.10	0.0	14.82
NE	0.09	1.01	2.20	1.65	3.84	1.46	0.82	0.0	11.07
ENE	0.27	0.37	1.19	0.73	1.19	0.46	0.18	0.0	4.39
E	0.09	0.64	0.73	0.91	0.64	0.0	0.0	0.0	3.01
ESE	0.0	0.64	0.73	0.46	0.09	0.27	0.0	0.0	2.19
SE	0.0	0.18	0.27	0.09	0.18	0.0	0.0	0.0	0.72
SSE	0.18	0.82	0.37	0.18	0.27	0.18	0.0	0.0	2.00
S	0.09	0.37	0.64	1.19	0.27	1.37	0.27	0.09	4.29
SSW	0.0	0.64	1.10	1.83	1.92	3.02	1.56	0.91	10.98
SW	0.09	0.37	0.55	1.74	5.95	5.67	1.92	1.19	17.48
WSW	0.0	0.46	0.73	0.73	1.10	0.46	0.09	0.18	3.75
W	0.0	0.09	0.46	0.46	0.82	0.18	0.09	0.27	2.37
WNW	0.0	0.0	0.27	0.18	0.64	0.64	0.64	0.09	2.46
NW	0.0	0.18	0.37	0.37	1.37	2.38	0.91	0.0	5.58
NNW	0.0	0.37	0.37	0.46	1.37	2.10	0.18	0.0	4.85
SUBTOTAL	1.17	8.06	14.10	13.81	28.25	23.95	7.76	2.73	99.83

CALM = 0.09

1093 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1440 TOTAL HOURS = 75.90 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
WIND INSTRUMENTS 300 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

MAY (74,75)

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	1.51	1.85	1.10	0.96	0.62	0.07	0.0	0.0	6.11
NNE	0.62	2.40	2.67	0.96	1.03	0.0	0.0	0.0	7.68
NE	0.75	2.46	1.85	1.44	1.57	0.0	0.0	0.0	8.07
ENE	0.75	3.97	1.44	0.62	0.34	0.0	0.0	0.0	7.12
E	1.16	1.92	1.10	0.62	0.07	0.0	0.0	0.0	4.87
ESE	0.14	0.82	0.41	0.07	0.0	0.0	0.0	0.0	1.44
SE	0.41	0.96	0.55	0.07	0.0	0.0	0.0	0.0	1.99
SSE	0.68	2.46	1.23	0.0	0.0	0.0	0.0	0.0	4.37
S	1.03	3.35	1.85	0.82	0.14	0.0	0.0	0.0	7.19
SSW	0.75	4.45	4.31	3.29	2.19	0.82	0.0	0.0	15.81
SW	1.30	2.74	2.60	2.12	1.71	0.14	0.0	0.0	10.61
WSW	2.05	1.64	0.21	0.27	0.07	0.0	0.0	0.0	4.24
W	2.46	2.05	0.62	0.21	0.0	0.07	0.0	0.0	5.41
WNW	1.03	1.37	0.62	0.55	0.55	0.0	0.0	0.0	4.12
NW	1.30	2.33	0.62	0.82	0.82	0.14	0.0	0.0	6.03
NNW	2.53	1.30	0.48	0.07	0.41	0.14	0.0	0.0	4.93
SUBTOTAL	18.47	36.07	21.66	12.89	9.52	1.38	0.0	0.0	99.99

CALM = 0.07

1461 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1488 TOTAL HOURS = 98.19 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT

WIND INSTRUMENTS 33 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

MAY (74,75)

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	0.69	0.90	1.04	1.04	0.21	0.0	0.0	3.88
NNE	0.07	0.83	1.38	1.11	2.98	0.48	0.0	0.0	6.85
NE	0.0	1.38	3.25	3.53	4.71	0.48	0.0	0.0	13.35
ENE	0.21	1.38	1.94	2.28	3.46	0.21	0.0	0.0	9.48
E	0.07	0.76	1.04	1.18	0.48	0.14	0.0	0.0	3.67
ESE	0.0	0.76	0.83	0.55	0.14	0.07	0.0	0.0	2.35
SE	0.0	0.62	0.28	0.07	0.21	0.0	0.0	0.0	1.18
SSE	0.0	0.83	0.83	0.14	0.07	0.0	0.0	0.0	1.87
S	0.07	1.18	0.76	0.97	0.69	0.28	0.0	0.0	3.95
SSW	0.07	1.66	2.63	1.66	3.25	1.38	0.0	0.0	10.65
SW	0.14	2.01	3.88	3.25	7.75	2.84	0.97	0.0	20.84
WSW	0.07	2.21	2.01	1.94	2.98	1.45	0.42	0.07	11.15
W	0.0	0.62	0.76	0.28	0.62	0.21	0.0	0.0	2.49
WNW	0.07	0.97	0.42	0.21	0.48	0.14	0.0	0.0	2.29
NW	0.07	0.62	0.28	0.35	1.04	0.97	0.21	0.0	3.54
NNW	0.07	0.35	0.21	0.14	1.04	0.35	0.28	0.0	2.44
SUBTOTAL	0.91	16.87	21.40	18.70	30.94	9.21	1.88	0.07	99.98

CALM = 0.07

1445 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1488 TOTAL HOURS = 97.11 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
WIND INSTRUMENTS 300 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JUNE (74,75)

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	2=24.5	TOTAL
N	1.19	0.91	0.77	1.34	1.19	0.0	0.0	0.0	5.40
NNE	0.70	1.48	1.62	1.48	3.02	0.49	0.0	0.0	8.79
NE	0.56	1.62	1.19	0.84	1.05	0.0	0.0	0.0	5.26
ENE	0.63	2.95	1.12	0.07	0.14	0.07	0.0	0.0	4.98
E	0.63	1.12	0.63	0.07	0.0	0.0	0.0	0.0	2.45
ESE	0.07	0.35	0.21	0.0	0.14	0.0	0.0	0.0	0.77
SE	0.35	0.77	0.35	0.07	0.0	0.0	0.0	0.0	1.54
SSE	0.56	2.25	0.63	0.21	0.28	0.0	0.0	0.0	3.93
S	1.19	4.08	3.09	1.41	1.41	0.07	0.0	0.0	11.25
SSW	0.77	4.15	4.99	2.53	4.50	0.70	0.0	0.0	17.64
SW	0.91	3.51	2.46	2.04	0.84	0.0	0.0	0.0	9.76
WSW	1.26	1.90	0.56	0.35	0.07	0.0	0.0	0.0	4.14
W	1.55	1.55	0.84	0.56	0.28	0.0	0.0	0.0	4.78
WNW	1.62	2.11	0.91	1.12	0.91	0.0	0.0	0.0	6.67
NW	2.11	1.83	0.63	1.12	0.98	0.0	0.0	0.0	6.67
NNW	2.39	1.48	0.77	0.63	0.35	0.0	0.0	0.0	5.62
SUBTOTAL	16.49	32.06	20.77	13.84	15.16	1.33	0.0	0.0	99.65

CALM = 0.28

1423 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1440 TOTAL HOURS = 98.82 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT

WIND INSTRUMENTS 33 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JUNE (74,75)

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	0.28	0.63	0.42	0.70	1.48	0.35	0.0	0.0	3.86
NNE	0.0	1.41	1.20	1.55	4.08	1.41	0.35	0.0	10.00
NE	0.07	1.34	2.60	2.25	5.84	0.84	0.0	0.0	12.94
ENE	0.0	0.98	0.84	0.70	0.63	0.0	0.0	0.0	3.15
E	0.0	0.91	0.70	0.28	0.0	0.0	0.0	0.07	1.96
ESE	0.0	0.49	0.56	0.0	0.14	0.0	0.0	0.0	1.19
SE	0.07	0.63	0.63	0.0	0.07	0.0	0.0	0.0	1.40
SSE	0.07	0.49	0.63	0.35	0.14	0.0	0.0	0.0	1.68
S	0.07	0.91	0.63	0.70	1.13	0.21	0.0	0.0	3.65
SSW	0.14	0.84	3.66	2.18	3.02	1.62	0.14	0.0	11.60
SW	0.21	1.83	4.57	4.08	5.98	4.57	1.05	0.14	22.43
WSW	0.14	0.84	2.18	1.90	3.31	2.11	0.07	0.0	10.55
W	0.14	1.13	0.49	0.91	1.27	0.63	0.0	0.0	4.57
WNW	0.0	0.70	0.84	0.21	1.05	0.77	0.0	0.0	3.57
NW	0.0	0.35	0.77	0.49	1.55	0.91	0.0	0.0	4.07
NNW	0.21	0.63	0.42	0.56	1.05	0.35	0.0	0.0	3.22
SUBTOTAL	1.40	14.11	21.14	16.86	30.74	13.77	1.61	0.21	99.84

CALM = 0.07

1422 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 1440 TOTAL HOURS = 98.75 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
WIND INSTRUMENTS 300 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JUL 1, 73 - JUN 30, 75

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	1.16	1.73	1.03	1.09	1.06	0.12	0.0	0.0	6.19
NNE	0.99	2.09	1.64	1.30	2.03	0.13	0.0	0.0	8.18
NE	0.94	2.75	1.70	1.23	1.42	0.04	0.0	0.0	8.08
ENE	0.88	2.92	1.17	0.55	0.28	0.02	0.0	0.0	5.82
E	0.89	2.12	1.05	0.41	0.24	0.0	0.0	0.0	4.71
ESE	0.38	0.87	0.34	0.09	0.05	0.0	0.0	0.0	1.73
SE	0.35	0.91	0.40	0.08	0.06	0.0	0.0	0.0	1.80
SSE	0.60	1.67	0.64	0.18	0.19	0.06	0.02	0.0	3.36
S	0.61	2.21	1.40	0.56	0.68	0.18	0.01	0.0	5.65
SSW	0.63	2.95	3.48	2.49	3.77	1.45	0.17	0.0	14.94
SW	0.54	2.31	2.40	1.98	1.68	0.47	0.05	0.01	9.44
WSW	0.85	1.76	1.09	0.64	0.62	0.27	0.02	0.0	5.25
W	1.21	2.04	0.86	0.63	0.68	0.17	0.04	0.02	5.65
WNW	1.09	1.73	0.58	0.50	0.74	0.14	0.04	0.0	4.82
NW	1.70	2.48	0.74	0.77	1.02	0.19	0.0	0.0	6.90
NNW	1.90	2.05	0.81	0.91	1.29	0.09	0.0	0.0	7.05
SUBTOTAL	14.72	32.59	19.33	13.41	15.81	3.33	0.35	0.03	99.57

CALM = 0.38

16449 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 17520 TOTAL HOURS = 93.89 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT

WIND INSTRUMENTS 33 FEET ABOVE GROUND

TABLE 2.3-

PERCENT OCCURRENCE OF WIND SPEED
FOR ALL WIND DIRECTIONS

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JUL 1, 73 - JUN 30, 75

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	0.18	0.61	0.86	0.84	1.64	1.15	0.06	0.0	5.34
NNE	0.18	1.40	2.17	1.88	3.31	1.46	0.23	0.01	10.64
NE	0.19	1.86	3.14	2.55	4.16	1.18	0.11	0.0	13.19
ENE	0.12	1.26	1.53	1.29	1.46	0.19	0.03	0.01	5.89
E	0.07	1.07	1.15	0.74	0.88	0.13	0.0	0.01	4.05
ESE	0.04	0.58	0.61	0.33	0.26	0.04	0.0	0.0	1.86
SE	0.12	0.54	0.43	0.12	0.16	0.04	0.01	0.0	1.42
SSE	0.08	0.79	0.47	0.14	0.29	0.08	0.01	0.01	1.87
S	0.08	0.85	0.73	0.53	0.55	0.33	0.21	0.06	3.34
SSW	0.08	1.37	2.30	1.69	2.82	1.77	0.67	0.15	10.85
SW	0.09	1.49	3.14	3.14	5.94	3.14	1.15	0.21	18.30
WSW	0.10	1.05	1.56	1.48	2.75	1.44	0.40	0.11	8.89
W	0.06	0.75	0.72	0.58	0.95	0.61	0.18	0.13	3.98
WNW	0.08	0.53	0.38	0.29	0.92	0.69	0.16	0.03	3.08
NW	0.08	0.51	0.35	0.34	1.21	0.81	0.21	0.01	3.52
NNW	0.11	0.65	0.40	0.45	1.21	0.79	0.12	0.01	3.74
SUBTOTAL	1.66	15.31	19.94	16.39	28.51	13.85	3.55	0.75	99.96

CALM = 0.04

15662 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF 17520 TOTAL HOURS = 89.39 PERCENT

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
WIND INSTRUMENTS AT 300 FEET ABOVE GROUND

NRC Item B.1.b. Monthly and annual joint frequencies of wind direction and speed by atmospheric stability class at heights and intervals relevant to atmospheric transport of effluents.

TVA Response B.1.b. Summaries of annual joint frequencies of wind direction and wind speed by atmospheric stability class (Pasquill A-G) for the 33-foot wind level and the 33- to 150-foot vertical temperature gradient (ΔT) interval and for the 300-foot wind level and the 33- to 300-foot ΔT interval are attached. The data period is July 1, 1973, through June 30, 1975.

Five sets of tables of joint frequencies of wind direction and wind speed by atmospheric stability class for the same two-year period have been prepared from either 33-foot wind and 33- to 150-foot ΔT data or 300-foot wind and 33- to 300-foot ΔT data, depending on the release point(s) and/or the magnitude of the 300-foot wind speed for each hour, and are included with the response to NRC Item C-9.

Monthly summaries are not considered to be necessary in the TVA calculations of annual doses for the critical dose pathways identified with the Watts Bar Nuclear Plant. However, a magnetic tape of the hourly data from the onsite meteorological facility for the two-year period defined above will be provided under separate cover. The Staff may utilize the hourly data to generate any summaries they believe they may need.

TABLE 2.3-

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED
FOR DIFFERENT STABILITY CLASSES

STABILITY CLASS A
DELTA T<=-1.9 DEG. C/100M

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JUL 1, 73 - JUN 30, 75

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	0.01	0.0	0.04	0.01	0.0	0.0	0.0	0.06
NNE	0.0	0.0	0.03	0.04	0.11	0.01	0.0	0.0	0.19
NE	0.0	0.04	0.04	0.03	0.11	0.0	0.0	0.0	0.22
ENE	0.01	0.02	0.02	0.01	0.03	0.0	0.0	0.0	0.09
E	0.0	0.06	0.04	0.01	0.01	0.0	0.0	0.0	0.12
ESE	0.01	0.02	0.0	0.0	0.01	0.0	0.0	0.0	0.04
SE	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.01
SSE	0.0	0.03	0.04	0.01	0.02	0.0	0.0	0.0	0.10
S	0.0	0.03	0.06	0.01	0.07	0.0	0.0	0.0	0.17
SSW	0.01	0.01	0.10	0.14	0.34	0.09	0.01	0.0	0.70
SW	0.0	0.01	0.06	0.15	0.15	0.02	0.0	0.0	0.39
WSW	0.01	0.01	0.06	0.01	0.03	0.02	0.0	0.0	0.14
W	0.0	0.01	0.03	0.0	0.03	0.02	0.0	0.0	0.09
WNW	0.0	0.01	0.01	0.01	0.01	0.01	0.0	0.0	0.05
NW	0.0	0.0	0.01	0.01	0.05	0.02	0.0	0.0	0.09
NNW	0.0	0.01	0.01	0.01	0.09	0.02	0.0	0.0	0.14
SUBTOTAL	0.04	0.27	0.52	0.48	1.07	0.21	0.01	0.0	2.60

CALM = 0.0

409 STABILITY CLASS A OCCURRENCES OUT OF TOTAL 16297 VALID TEMPERATURE DIFFERENCE READINGS

397 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF TOTAL 409 STABILITY CLASS A OCCURRENCES

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
TEMPERATURE INSTRUMENTS 33 AND 150 FEET ABOVE GROUND
WIND INSTRUMENTS 33 FEET ABOVE GROUND

TABLE 2.3-

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED
FOR DIFFERENT STABILITY CLASSES

STABILITY CLASS B
-1.9< DELTA-T<=-1.7 DEG. C/100M

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JUL 1, 73 - JUN 30, 75

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	0.01	0.04	0.04	0.06	0.03	0.0	0.0	0.18
NNE	0.0	0.03	0.07	0.10	0.19	0.01	0.0	0.0	0.40
NE	0.0	0.03	0.12	0.08	0.13	0.01	0.0	0.0	0.37
ENE	0.0	0.04	0.04	0.04	0.06	0.01	0.0	0.0	0.19
E	0.0	0.05	0.07	0.04	0.01	0.0	0.0	0.0	0.17
ESE	0.0	0.02	0.05	0.0	0.01	0.0	0.0	0.0	0.08
SE	0.0	0.01	0.02	0.01	0.01	0.0	0.0	0.0	0.05
SSE	0.01	0.01	0.09	0.01	0.0	0.0	0.0	0.0	0.12
S	0.01	0.04	0.11	0.06	0.08	0.01	0.0	0.0	0.31
SSW	0.0	0.04	0.20	0.29	0.37	0.15	0.01	0.0	1.06
SW	0.0	0.01	0.18	0.15	0.08	0.03	0.0	0.0	0.45
WSW	0.0	0.01	0.03	0.02	0.03	0.01	0.0	0.0	0.10
W	0.0	0.01	0.03	0.02	0.03	0.01	0.01	0.0	0.11
WNW	0.0	0.02	0.0	0.01	0.07	0.01	0.0	0.0	0.11
NW	0.0	0.0	0.01	0.03	0.05	0.02	0.0	0.0	0.11
NNW	0.0	0.01	0.04	0.04	0.08	0.01	0.0	0.0	0.18
SUBTOTAL	0.02	0.34	1.10	0.94	1.26	0.31	0.02	0.0	3.99

CALM = 0.0

638 STABILITY CLASS B OCCURRENCES OUT OF TOTAL 16297 VALID TEMPERATURE DIFFERENCE READINGS

621 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF TOTAL 638 STABILITY CLASS B OCCURRENCES

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
TEMPERATURE INSTRUMENTS 33 AND 150 FEET ABOVE GROUND
WIND INSTRUMENTS 33 FEET ABOVE GROUND

TABLE 2.3-

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED
FOR DIFFERENT STABILITY CLASSES

STABILITY CLASS C
-1.7< DELTA-T<=-1.5 DEG. C/100M

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JUL 1, 73 - JUN 30, 75

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	0.02	0.0	0.03	0.04	0.0	0.0	0.0	0.09
NNE	0.0	0.04	0.13	0.03	0.06	0.01	0.0	0.0	0.27
NE	0.0	0.04	0.09	0.05	0.13	0.01	0.0	0.0	0.32
ENE	0.0	0.03	0.04	0.04	0.03	0.0	0.0	0.0	0.14
E	0.0	0.04	0.04	0.03	0.01	0.0	0.0	0.0	0.12
ESE	0.0	0.03	0.03	0.01	0.01	0.0	0.0	0.0	0.08
SE	0.0	0.01	0.03	0.0	0.0	0.0	0.0	0.0	0.04
SSE	0.0	0.04	0.06	0.01	0.0	0.01	0.0	0.0	0.12
S	0.0	0.03	0.13	0.05	0.03	0.02	0.0	0.0	0.26
SSW	0.0	0.06	0.20	0.17	0.14	0.08	0.01	0.0	0.66
SW	0.0	0.02	0.08	0.10	0.04	0.03	0.0	0.0	0.27
WSW	0.0	0.03	0.03	0.01	0.01	0.01	0.0	0.0	0.09
W	0.0	0.03	0.01	0.03	0.04	0.0	0.01	0.0	0.12
WNW	0.0	0.01	0.01	0.02	0.03	0.01	0.0	0.0	0.08
NW	0.0	0.0	0.02	0.04	0.11	0.01	0.0	0.0	0.18
NNW	0.0	0.0	0.01	0.06	0.06	0.0	0.0	0.0	0.13
SUBTOTAL	0.0	0.43	0.91	0.68	0.74	0.19	0.02	0.0	2.97

CALM = 0.0

486 STABILITY CLASS C OCCURRENCES OUT OF TOTAL 16297 VALID TEMPERATURE DIFFERENCE READINGS

468 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF TOTAL 486 STABILITY CLASS C OCCURRENCES

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
TEMPERATURE INSTRUMENTS 33 AND 150 FEET ABOVE GROUND
WIND INSTRUMENTS 33 FEET ABOVE GROUND

TABLE 2.3-

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED
FOR DIFFERENT STABILITY CLASSES

STABILITY CLASS D
-1.5< DELTA-T<=-0.5 DEG. C/100M

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JUL 1, 73 - JUN 30, 75

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	0.20	0.37	0.56	0.60	0.08	0.0	0.0	1.86
NNE	0.04	0.43	0.69	0.65	1.22	0.08	0.0	0.0	3.11
NE	0.04	0.54	0.82	0.72	0.72	0.02	0.0	0.0	2.86
ENE	0.04	0.53	0.49	0.31	0.11	0.01	0.0	0.0	1.49
E	0.08	0.60	0.55	0.25	0.09	0.0	0.0	0.0	1.57
ESE	0.04	0.27	0.16	0.05	0.02	0.0	0.0	0.0	0.54
SE	0.0	0.34	0.22	0.05	0.04	0.0	0.0	0.0	0.65
SSE	0.02	0.55	0.30	0.08	0.06	0.01	0.01	0.0	1.03
S	0.03	0.69	0.65	0.24	0.24	0.01	0.01	0.0	1.87
SSW	0.03	0.91	1.48	0.67	1.36	0.54	0.06	0.0	5.25
SW	0.03	0.65	1.13	0.69	0.58	0.12	0.02	0.01	3.23
WSW	0.03	0.27	0.37	0.23	0.16	0.13	0.0	0.0	1.19
W	0.01	0.36	0.27	0.27	0.30	0.09	0.01	0.0	1.31
WNW	0.03	0.20	0.27	0.32	0.47	0.09	0.02	0.0	1.40
NW	0.04	0.21	0.29	0.43	0.68	0.11	0.0	0.0	1.76
NNW	0.08	0.18	0.23	0.48	0.74	0.06	0.0	0.0	1.77
SUBTOTAL	0.59	6.93	8.29	6.20	7.39	1.35	0.13	0.01	30.89

CALM = 0.01

5002 STABILITY CLASS D OCCURRENCES OUT OF TOTAL 16297 VALID TEMPERATURE DIFFERENCE READINGS

4867 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF TOTAL 5002 STABILITY CLASS D OCCURRENCES

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
TEMPERATURE INSTRUMENTS 33 AND 150 FEET ABOVE GROUND
WIND INSTRUMENTS 33 FEET ABOVE GROUND

TABLE 2.3-

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED
FOR DIFFERENT STABILITY CLASSES

STABILITY CLASS E
-0.5< DELTA-T<= 1.5 DEG. C/100M

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JUL 1, 73 - JUN 30, 75

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	0.32	0.58	0.50	0.39	0.29	0.01	0.0	0.0	2.09
NNE	0.23	0.81	0.66	0.46	0.49	0.03	0.0	0.0	2.68
NE	0.16	0.99	0.57	0.37	0.24	0.01	0.0	0.0	2.34
ENE	0.25	1.12	0.51	0.13	0.03	0.01	0.0	0.0	2.05
E	0.34	0.77	0.27	0.07	0.09	0.0	0.0	0.0	1.54
ESE	0.12	0.33	0.09	0.03	0.01	0.0	0.0	0.0	0.58
SE	0.12	0.28	0.10	0.02	0.01	0.0	0.0	0.0	0.53
SSE	0.27	0.64	0.13	0.08	0.11	0.04	0.01	0.0	1.28
S	0.24	0.98	0.44	0.22	0.26	0.14	0.01	0.0	2.29
SSW	0.29	1.26	1.36	0.99	1.64	0.62	0.09	0.0	6.25
SW	0.15	0.96	0.77	0.79	0.77	0.19	0.04	0.0	3.67
WSW	0.29	0.73	0.46	0.28	0.23	0.06	0.01	0.0	2.06
W	0.44	0.77	0.36	0.27	0.27	0.04	0.0	0.0	2.15
WNW	0.32	0.73	0.23	0.16	0.16	0.03	0.01	0.0	1.64
NW	0.50	0.93	0.32	0.27	0.15	0.02	0.0	0.0	2.19
NNW	0.56	0.77	0.39	0.29	0.25	0.01	0.0	0.0	2.27
SUBTOTAL	4.60	12.65	7.16	4.82	5.00	1.21	0.17	0.0	35.61

CALM = 0.06

5813 STABILITY CLASS E OCCURRENCES OUT OF TOTAL 16297 VALID TEMPERATURE DIFFERENCE READINGS

5618 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF TOTAL 5813 STABILITY CLASS E OCCURRENCES

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
TEMPERATURE INSTRUMENTS 33 AND 150 FEET ABOVE GROUND
WIND INSTRUMENTS 33 FEET ABOVE GROUND

TABLE 2.3-

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED
FOR DIFFERENT STABILITY CLASSES

STABILITY CLASS F
1.5< DELTA-T<= 4.0 DEG. C/100M

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JUL 1, 73 - JUN 30, 75

WIND DIRECTION	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	TOTAL
N	0.43	0.62	0.09	0.02	0.0	0.0	0.0	0.0	1.16
NNE	0.43	0.56	0.08	0.0	0.0	0.0	0.0	0.0	1.07
NE	0.38	0.72	0.06	0.01	0.01	0.0	0.0	0.0	1.18
ENE	0.27	0.81	0.08	0.01	0.0	0.0	0.0	0.0	1.17
E	0.22	0.44	0.06	0.0	0.0	0.0	0.0	0.0	0.72
ESE	0.12	0.15	0.01	0.0	0.0	0.0	0.0	0.0	0.28
SE	0.09	0.11	0.01	0.0	0.0	0.0	0.0	0.0	0.21
SSE	0.20	0.27	0.04	0.0	0.01	0.0	0.0	0.0	0.52
S	0.23	0.32	0.03	0.0	0.01	0.0	0.0	0.0	0.59
SSW	0.13	0.56	0.20	0.10	0.05	0.0	0.0	0.0	1.04
SW	0.22	0.53	0.18	0.11	0.03	0.01	0.0	0.0	1.08
WSW	0.31	0.49	0.06	0.04	0.0	0.0	0.0	0.0	0.90
W	0.51	0.57	0.06	0.01	0.01	0.0	0.0	0.0	1.16
WNW	0.44	0.49	0.04	0.0	0.01	0.0	0.0	0.0	0.98
NW	0.72	0.85	0.06	0.02	0.01	0.0	0.0	0.0	1.66
NNW	0.82	0.78	0.06	0.01	0.0	0.0	0.0	0.0	1.67
SUBTOTAL	5.52	8.27	1.12	0.33	0.14	0.01	0.0	0.0	15.39

CALM = 0.17

2540 STABILITY CLASS F OCCURRENCES OUT OF TOTAL 16297 VALID TEMPERATURE DIFFERENCE READINGS

2449 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF TOTAL 2540 STABILITY CLASS F OCCURRENCES

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
TEMPERATURE INSTRUMENTS 33 AND 150 FEET ABOVE GROUND
WIND INSTRUMENTS 33 FEET ABOVE GROUND

TABLE 2.3-

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED
FOR DIFFERENT STABILITY CLASSES

STABILITY CLASS G
DELTA T > 4.0 DEG. C/100M

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JUL 1, 73 - JUN 30, 75

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	0.34	0.25	0.0	0.0	0.0	0.0	0.0	0.0	0.59
NNE	0.30	0.23	0.0	0.0	0.0	0.0	0.0	0.0	0.53
NE	0.36	0.45	0.0	0.0	0.0	0.0	0.0	0.0	0.81
ENE	0.34	0.42	0.01	0.0	0.0	0.0	0.0	0.0	0.77
E	0.27	0.18	0.01	0.0	0.01	0.0	0.0	0.0	0.47
ESE	0.09	0.06	0.0	0.0	0.0	0.0	0.0	0.0	0.15
SE	0.14	0.11	0.0	0.0	0.0	0.0	0.0	0.0	0.25
SSE	0.12	0.15	0.0	0.0	0.0	0.0	0.0	0.0	0.27
S	0.13	0.20	0.02	0.0	0.0	0.0	0.0	0.0	0.35
SSW	0.18	0.17	0.03	0.0	0.0	0.0	0.0	0.0	0.38
SW	0.16	0.13	0.04	0.0	0.0	0.0	0.0	0.0	0.33
WSW	0.23	0.22	0.0	0.0	0.0	0.0	0.0	0.0	0.45
W	0.29	0.35	0.02	0.0	0.0	0.0	0.0	0.0	0.66
WNW	0.34	0.27	0.01	0.0	0.0	0.0	0.0	0.0	0.62
NW	0.49	0.47	0.02	0.0	0.0	0.0	0.0	0.0	0.98
NNW	0.48	0.30	0.02	0.0	0.0	0.0	0.0	0.0	0.80
SUBTOTAL	4.26	3.96	0.18	0.0	0.01	0.0	0.0	0.0	8.41

CALM = 0.13

1409 STABILITY CLASS G OCCURRENCES OUT OF TOTAL 16297 VALID TEMPERATURE DIFFERENCE READINGS

1338 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF TOTAL 1409 STABILITY CLASS G OCCURRENCES

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
TEMPERATURE INSTRUMENTS 33 AND 150 FEET ABOVE GROUND
WIND INSTRUMENTS 33 FEET ABOVE GROUND

TABLE 2.3-

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED
FOR DIFFERENT STABILITY CLASSES *

STABILITY CLASS A
DELTA T<=-1.9 DEG. C/100M

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JUL 1, 73 - JUN 30, 75

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	0.01	0.01	0.0	0.01	0.0	0.03
NNE	0.0	0.0	0.0	0.01	0.02	0.03	0.0	0.0	0.06
NE	0.0	0.01	0.01	0.01	0.05	0.01	0.0	0.0	0.09
ENE	0.0	0.01	0.01	0.0	0.02	0.0	0.0	0.0	0.04
E	0.0	0.01	0.01	0.0	0.01	0.0	0.0	0.0	0.03
ESE	0.0	0.0	0.01	0.01	0.01	0.0	0.0	0.0	0.03
SE	0.0	0.01	0.01	0.0	0.01	0.0	0.0	0.0	0.03
SSE	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.01
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.02	0.0	0.01	0.01	0.0	0.01	0.0	0.05
SW	0.0	0.02	0.01	0.05	0.05	0.01	0.01	0.0	0.15
WSW	0.0	0.01	0.01	0.02	0.03	0.01	0.0	0.0	0.08
W	0.0	0.01	0.01	0.0	0.0	0.01	0.01	0.0	0.04
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	0.01	0.0	0.0	0.01
NNW	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.01
SUBTOTAL	0.0	0.10	0.09	0.12	0.23	0.08	0.04	0.0	0.66

CALM = 0.0

95 STABILITY CLASS A OCCURRENCES OUT OF TOTAL 16327 VALID TEMPERATURE DIFFERENCE READINGS

94 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF TOTAL 95 STABILITY CLASS A OCCURRENCES

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
TEMPERATURE INSTRUMENTS 33 AND 300 FEET ABOVE GROUND
WIND INSTRUMENTS AT 300 FEET ABOVE GROUND

TABLE 2.3-

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED
FOR DIFFERENT STABILITY CLASSES *

STABILITY CLASS B
-1.9< DELTA-T<=-1.7 DEG. C/100M

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JUL 1, 73 - JUN 30, 75

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	0.02	0.02	0.03	0.01	0.0	0.0	0.08
NNE	0.0	0.01	0.02	0.03	0.07	0.05	0.0	0.0	0.18
NE	0.0	0.01	0.03	0.04	0.05	0.04	0.0	0.0	0.17
ENE	0.01	0.01	0.06	0.02	0.02	0.01	0.0	0.0	0.13
E	0.0	0.02	0.02	0.0	0.0	0.0	0.0	0.0	0.04
ESE	0.0	0.02	0.01	0.01	0.01	0.0	0.0	0.0	0.05
SE	0.0	0.0	0.0	0.01	0.01	0.0	0.0	0.0	0.02
SSE	0.0	0.02	0.01	0.0	0.01	0.0	0.0	0.0	0.04
S	0.0	0.01	0.01	0.0	0.0	0.0	0.0	0.0	0.02
SSW	0.0	0.01	0.03	0.01	0.05	0.02	0.01	0.0	0.13
SW	0.0	0.01	0.07	0.03	0.15	0.05	0.03	0.0	0.34
WSW	0.0	0.0	0.02	0.01	0.04	0.03	0.01	0.0	0.11
W	0.0	0.0	0.0	0.0	0.01	0.0	0.01	0.01	0.03
WNW	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.01
NW	0.0	0.0	0.0	0.0	0.01	0.0	0.01	0.0	0.02
NNW	0.0	0.0	0.0	0.0	0.01	0.01	0.01	0.0	0.03
SUBTOTAL	0.01	0.12	0.30	0.18	0.47	0.23	0.08	0.01	1.40

CALM = 0.0

215 STABILITY CLASS B OCCURRENCES OUT OF TOTAL 16327 VALID TEMPERATURE DIFFERENCE READINGS

205 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF TOTAL 215 STABILITY CLASS B OCCURRENCES

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
TEMPERATURE INSTRUMENTS 33 AND 300 FEET ABOVE GROUND
WIND INSTRUMENTS AT 300 FEET ABOVE GROUND

TABLE 2.3-

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED
FOR DIFFERENT STABILITY CLASSES *

STABILITY CLASS C
-1.7< DELTA-T<=-1.5 DEG. C/100M

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JUL 1, 73 - JUN 30, 75

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	0.01	0.02	0.07	0.10	0.06	0.0	0.0	0.26
NNE	0.0	0.01	0.02	0.08	0.27	0.13	0.0	0.0	0.51
NE	0.0	0.02	0.19	0.06	0.25	0.07	0.0	0.0	0.59
ENE	0.0	0.01	0.08	0.11	0.10	0.01	0.01	0.0	0.32
E	0.0	0.07	0.05	0.05	0.07	0.0	0.0	0.0	0.24
ESE	0.0	0.03	0.03	0.01	0.01	0.0	0.0	0.0	0.08
SE	0.0	0.01	0.03	0.01	0.01	0.0	0.0	0.0	0.06
SSE	0.0	0.01	0.02	0.01	0.01	0.01	0.0	0.0	0.06
S	0.0	0.01	0.04	0.01	0.02	0.01	0.01	0.0	0.10
SSW	0.0	0.03	0.08	0.05	0.12	0.13	0.02	0.01	0.44
SW	0.0	0.01	0.12	0.15	0.35	0.21	0.07	0.03	0.94
WSW	0.0	0.01	0.06	0.04	0.16	0.04	0.01	0.01	0.33
W	0.0	0.02	0.04	0.01	0.04	0.03	0.01	0.01	0.16
WNW	0.0	0.01	0.0	0.0	0.03	0.01	0.0	0.0	0.05
NW	0.0	0.01	0.01	0.01	0.05	0.05	0.03	0.0	0.16
NNW	0.0	0.01	0.01	0.03	0.04	0.08	0.01	0.0	0.18
SUBTOTAL	0.0	0.28	0.80	0.70	1.63	0.84	0.17	0.06	4.48

CALM = 0.01

721 STABILITY CLASS C OCCURRENCES OUT OF TOTAL 16327 VALID TEMPERATURE DIFFERENCE READINGS

673 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF TOTAL 721 STABILITY CLASS C OCCURRENCES

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
TEMPERATURE INSTRUMENTS 33 AND 300 FEET ABOVE GROUND
WIND INSTRUMENTS AT 300 FEET ABOVE GROUND

TABLE 2.3-

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED
FOR DIFFERENT STABILITY CLASSES *

STABILITY CLASS D
-1.5< DELTA-T<=-0.5 DEG. C/100M

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JUL 1, 73 - JUN 30, 75

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	0.02	0.11	0.23	0.30	0.68	0.77	0.04	0.0	2.15
NNE	0.03	0.39	0.52	0.60	1.45	0.97	0.17	0.01	4.14
NE	0.01	0.54	1.01	0.96	1.78	0.84	0.05	0.0	5.19
ENE	0.02	0.56	0.59	0.59	0.85	0.16	0.02	0.0	2.79
E	0.02	0.44	0.50	0.40	0.47	0.08	0.0	0.01	1.92
ESE	0.0	0.27	0.33	0.19	0.14	0.02	0.0	0.0	0.95
SE	0.05	0.21	0.19	0.05	0.09	0.03	0.01	0.0	0.63
SSE	0.01	0.30	0.21	0.05	0.16	0.05	0.01	0.0	0.79
S	0.01	0.33	0.38	0.26	0.21	0.13	0.11	0.04	1.47
SSW	0.0	0.52	1.03	0.75	1.11	0.80	0.34	0.14	4.69
SW	0.03	0.60	1.60	1.34	2.58	1.59	0.64	0.17	8.55
WSW	0.02	0.36	0.72	0.62	1.03	0.64	0.17	0.07	3.63
W	0.0	0.24	0.26	0.32	0.46	0.35	0.10	0.07	1.80
WNW	0.01	0.16	0.21	0.11	0.66	0.54	0.13	0.02	1.84
NW	0.03	0.11	0.15	0.12	0.83	0.62	0.15	0.01	2.02
NNW	0.02	0.17	0.11	0.21	0.73	0.48	0.10	0.01	1.83
SUBTOTAL	0.28	5.31	8.04	6.87	13.23	8.07	2.04	0.55	44.39

CALM = 0.01

7407 STABILITY CLASS D OCCURRENCES OUT OF TOTAL 16327 VALID TEMPERATURE DIFFERENCE READINGS

6621 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF TOTAL 7407 STABILITY CLASS D OCCURRENCES

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
TEMPERATURE INSTRUMENTS 33 AND 300 FEET ABOVE GROUND
WIND INSTRUMENTS AT 300 FEET ABOVE GROUND

TABLE 2.3-

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED
FOR DIFFERENT STABILITY CLASSES *

STABILITY CLASS E
-0.5< DELTA-T<= 1.5 DEG. C/100M

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JUL 1, 73 - JUN 30, 75

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	0.07	0.22	0.21	0.19	0.53	0.27	0.01	0.0	1.50
NNE	0.05	0.47	0.66	0.56	0.86	0.32	0.01	0.0	2.93
NE	0.07	0.54	0.92	0.82	1.26	0.15	0.01	0.0	3.77
ENE	0.03	0.38	0.38	0.28	0.31	0.01	0.01	0.0	1.40
E	0.02	0.29	0.23	0.13	0.25	0.05	0.0	0.0	0.97
ESE	0.04	0.15	0.12	0.04	0.06	0.03	0.0	0.0	0.44
SE	0.05	0.16	0.08	0.03	0.03	0.01	0.0	0.0	0.36
SSE	0.05	0.26	0.13	0.07	0.07	0.03	0.0	0.0	0.61
S	0.02	0.24	0.13	0.13	0.21	0.17	0.09	0.01	1.00
SSW	0.05	0.36	0.62	0.52	0.97	0.68	0.27	0.0	3.47
SW	0.04	0.37	0.68	0.98	1.81	1.01	0.26	0.03	5.18
WSW	0.02	0.40	0.40	0.33	0.74	0.56	0.12	0.03	2.60
W	0.03	0.21	0.19	0.11	0.29	0.20	0.04	0.01	1.08
WNW	0.03	0.16	0.09	0.10	0.19	0.12	0.03	0.0	0.72
NW	0.02	0.17	0.15	0.11	0.30	0.11	0.01	0.0	0.87
NNW	0.05	0.22	0.16	0.10	0.25	0.13	0.01	0.0	0.92
SUBTOTAL	0.64	4.60	5.15	4.50	8.13	3.85	0.87	0.08	27.82

CALM = 0.01

4496 STABILITY CLASS E OCCURRENCES OUT OF TOTAL 16327 VALID TEMPERATURE DIFFERENCE READINGS

4152 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF TOTAL 4496 STABILITY CLASS E OCCURRENCES

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
TEMPERATURE INSTRUMENTS 33 AND 300 FEET ABOVE GROUND
WIND INSTRUMENTS AT 300 FEET ABOVE GROUND

TABLE 2.3-

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED
FOR DIFFERENT STABILITY CLASSES *

STABILITY CLASS F
1.5< DELTA-T<= 4.0 DEG. C/100M

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JUL 1, 73 - JUN 30, 75

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	0.07	0.22	0.27	0.19	0.19	0.01	0.0	0.0	0.95
NNE	0.07	0.41	0.74	0.52	0.62	0.01	0.04	0.0	2.41
NE	0.05	0.60	0.84	0.60	0.66	0.01	0.03	0.0	2.79
ENE	0.05	0.23	0.30	0.20	0.09	0.0	0.0	0.0	0.87
E	0.03	0.17	0.19	0.13	0.09	0.0	0.0	0.0	0.61
ESE	0.01	0.06	0.09	0.05	0.01	0.0	0.0	0.0	0.22
SE	0.02	0.09	0.09	0.02	0.02	0.0	0.0	0.0	0.24
SSE	0.02	0.19	0.09	0.03	0.02	0.0	0.0	0.0	0.35
S	0.02	0.21	0.13	0.14	0.09	0.03	0.0	0.0	0.62
SSW	0.04	0.31	0.50	0.30	0.38	0.13	0.01	0.0	1.67
SW	0.02	0.42	0.49	0.49	0.83	0.22	0.03	0.0	2.50
WSW	0.04	0.24	0.28	0.23	0.49	0.03	0.0	0.0	1.31
W	0.03	0.21	0.13	0.05	0.06	0.01	0.0	0.0	0.49
WNW	0.05	0.17	0.05	0.04	0.03	0.01	0.0	0.0	0.35
NW	0.03	0.17	0.03	0.06	0.05	0.02	0.0	0.0	0.36
NNW	0.05	0.20	0.09	0.08	0.09	0.01	0.0	0.0	0.52
SUBTOTAL	0.60	3.90	4.31	3.13	3.72	0.49	0.11	0.0	16.26

CALM = 0.01

2563 STABILITY CLASS F OCCURRENCES OUT OF TOTAL 16327 VALID TEMPERATURE DIFFERENCE READINGS

2421 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF TOTAL 2563 STABILITY CLASS F OCCURRENCES

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
TEMPERATURE INSTRUMENTS 33 AND 300 FEET ABOVE GROUND
WIND INSTRUMENTS AT 300 FEET ABOVE GROUND

TABLE 2.3-

JOINT PERCENTAGE FREQUENCIES OF WIND DIRECTION AND WIND SPEED
FOR DIFFERENT STABILITY CLASSES *

STABILITY CLASS G
DELTA T > 4.0 DEG. C/100M

WATTS BAR NUCLEAR PLANT METEOROLOGICAL FACILITY*

JUL 1, 73 - JUN 30, 75

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	0.03	0.05	0.13	0.07	0.02	0.01	0.0	0.0	0.31
NNE	0.03	0.14	0.19	0.09	0.07	0.01	0.01	0.0	0.54
NE	0.05	0.21	0.20	0.13	0.13	0.02	0.01	0.0	0.75
ENE	0.01	0.05	0.07	0.03	0.02	0.0	0.0	0.0	0.18
E	0.0	0.10	0.07	0.01	0.01	0.0	0.0	0.0	0.19
ESE	0.0	0.05	0.02	0.01	0.02	0.0	0.0	0.0	0.10
SE	0.01	0.05	0.03	0.01	0.0	0.0	0.0	0.0	0.10
SSE	0.01	0.04	0.03	0.0	0.03	0.0	0.0	0.0	0.11
S	0.03	0.07	0.05	0.01	0.03	0.0	0.0	0.0	0.19
SSW	0.0	0.16	0.09	0.13	0.22	0.05	0.0	0.0	0.65
SW	0.01	0.09	0.26	0.20	0.32	0.06	0.03	0.0	0.97
WSW	0.02	0.04	0.07	0.11	0.09	0.01	0.0	0.0	0.34
W	0.0	0.07	0.03	0.03	0.0	0.0	0.0	0.0	0.13
WNW	0.0	0.03	0.01	0.03	0.01	0.0	0.0	0.0	0.08
NW	0.01	0.06	0.01	0.01	0.01	0.01	0.0	0.0	0.11
NNW	0.0	0.08	0.04	0.03	0.02	0.0	0.0	0.0	0.17
SUBTOTAL	0.21	1.29	1.30	0.90	1.00	0.17	0.05	0.0	4.92

CALM = 0.01

830 STABILITY CLASS G OCCURRENCES OUT OF TOTAL 16327 VALID TEMPERATURE DIFFERENCE READINGS

737 VALID WIND DIRECTION - WIND SPEED READINGS OUT OF TOTAL 830 STABILITY CLASS G OCCURRENCES

ALL COLUMNS AND CALM TOTAL 100 PERCENT OF NET VALID READINGS

*METEOROLOGICAL FACILITY LOCATED 0.5 MILE SSW OF WATTS BAR NUCLEAR PLANT
TEMPERATURE INSTRUMENTS 33 AND 300 FEET ABOVE GROUND
WIND INSTRUMENTS AT 300 FEET ABOVE GROUND

NRC Item B.1.c. Total precipitation by month, number of hours with precipitation, rainfall rate distributions and monthly precipitation wind roses.

TVA Response B.1.c. Monthly precipitation records for the TVA rain gauge station at Watts Bar Dam are shown in attached table 2.3-4, which will be presented in the Watts Bar Nuclear Plant FSAR. The second attached table summarizes monthly and annual frequencies of hourly observations of measurable precipitation for a 10-year period, 1951-1960, at McGhee Tyson Airport near Knoxville, Tennessee. These frequencies show percentages of time which are conservative, since precipitation certainly was not falling continuously during every hour in which measurable precipitation occurred.

As in the case of the Appendix I meteorological information for the Hartsville Nuclear Plants, rainfall rate distributions and monthly precipitation wind roses are not presented. TVA is following the precedent set by the agreements with the NRC on Hartsville made at the October 16, 1975, meeting in Bethesda.

TABLE 2.3-4

PRECIPITATION DATA (INCHES)*

Month	Avg. No. of Days With 0.01 Inch or More	Monthly Average**	Extreme Monthly Maximum	Extreme Monthly Minimum	Maximum In 24 Hrs.
January	11	5.30	11.67	2.12	5.31[b]
February	10	5.34	9.79	0.74	3.50
March	11	5.62	11.35	2.28	5.00
April	10	4.56	8.66	1.28	2.81
May	9	3.57	7.48	0.56	2.00
June	9	3.81	9.13	0.90	3.73
July	10	5.14	12.13	0.53	4.80
August	9	3.20	7.13	0.52	3.19
September	7	3.69	14.78[a]	0.45	3.58
October	6	2.90	7.91	0.00	3.05
November	8	4.13	14.06	0.94	4.63
December	10	5.31	12.08	0.47	4.15
Annual	110	52.57			

*TVA raingage station 421, Watts Bar Dam, Tennessee, located on roof of Control Building at Watts Bar Dam; period of record, September 1939-December 1975.

**30-year average (1941-1970) corresponding to current period for Climatological Standard Normals in use by the National Oceanic and Atmospheric Administration.

a. September 1957.

b. January 1946.

Frequencies of Measurable Hourly Precipitation Amounts

McGhee Tyson Airport, Knoxville, Tennessee*

Month	Frequency (Hours) in 10-Year Period	Percentage Frequency**
January	778	10.5
February	764	11.2
March	774	10.4
April	518	7.2
May	417	5.6
June	327	4.5
July	307	4.1
August	238	3.2
September	378	5.3
October	382	5.1
November	559	7.8
December	710	9.7
Annual	613	7.0

*U. S. Department of Commerce, 1963. "Decennial Census of United States Climate, Summary of Hourly Observations, Knoxville, Tennessee," Climatography of the United States No. 82-40, Weather Bureau (Period of Record, 1951-1960).

**Nearest one-tenth percent.

NRC Request B.2. Provide the following information, concerning regional meteorological conditions characterizing atmospheric transport processes within 50 miles of the plant, for as many relevant stations as practicable or necessary to define these transport processes within the region:

NRC Item B.2.a. Wind speed and direction data at all height(s) at which wind characteristic data are applicable or have been measured.

TVA Response B.2.a. Detailed data will not be provided since there is a lack of sufficient grid points, or locations of appropriate meteorological data sources. A general narrative describing apparent airflow patterns within a 50-mile radius of the Watts Bar Nuclear Plant site will be presented in response to NRC Item B.2.e.

NRC Item B.2.b. Atmospheric stability data as defined by vertical temperature gradient or other well-documented parameters that have been substantiated by diffusion test data.

TVA Response B.2.b. There are insufficient sources of atmospheric stability data in the area within 50 miles of the Watts Bar site, and the maximum impact location for the most critical dose pathway (iodine-grass-cow-milk-infant thyroid) is less than five miles from the nuclear plant. Therefore, the data contained in the two-year tables of joint frequencies of onsite wind direction and wind speed by atmospheric stability class and/or the onsite hourly data tape discussed in TVA response B.1.b. should be used for the area(s) of concern.

NRC Item B.2.c. Monthly mixing height data.

TVA Response B.2.c. Seasonal and annual morning mixing height data based on Holzworth (1972) are presented for the Watts Bar area in the attached table. Monthly mixing height data were not readily available.

Mean Morning Mixing Heights (Meters) for the Lower Atmosphere in the Watts Bar Nuclear Plant Area*

Period	Height
Winter	500
Spring	550
Summer	450
Autumn	350
Annual	450

*Based on Holzworth, G. C., January 1972. Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States, EPA, Research Triangle Park, North Carolina.

NRC Item B.2.d. Total precipitation by month, number of hours with precipitation, rainfall rate distributions and monthly precipitation wind roses.

TVA Response B.2.d. The same information provided in TVA response B.1.c. applies to this item.

NRC Item B.2.e. Describe airflow trajectory regimes of importance in transporting effluents to a distance of 50 miles from the plant, including airflow reversals.

TVA Response B.2.e. A general discussion of airflow patterns based on available sources of concurrent wind data applicable to the area within a 50-mile radius of the Watts Bar Nuclear Plant site is expected to be provided by the end of May 1976.

B.3.a A map showing the detailed topographic features (as modified by the plant) on a large scale within a 5-mile radius of the plant, and a smaller scale map showing topography within a 50-mile radius of the plant.

Response

Enclosed are four 7.5 minute topographical maps of the area around the plant. Also enclosed is a 1:250,000 scale topographic map. These and other maps are available from the U.S. Geological Survey, Washington, DC 20242.

B.3.b A plot of the maximum topographic elevations versus distance from the center of the plant in each of the sixteen 22 1/2 degree cardinal compass point sectors (centered on true north, etc.), radiating from the center of the plant, to a distance of 50 miles.

Response

Attached are ground profiles for each of the sixteen 22 1/2 degree sectors for a distance of 10 miles.

NRC Request B.4. Provide the following information concerning meteorological data:

NRC Item B.4.a. The identity of the sources of meteorological data used in the atmospheric transport models to assess the dispersion of gaseous effluents from the plant to a distance of 50 miles, and a description of the locations and elevations of all observations and the frequency and duration of the measurements made at each station.

TVA Response B.4.a. The source of meteorological data used to assess the dispersion of gaseous effluents from the plant is the onsite meteorological facility. A detailed description of the monitoring program at this facility is presented in the attached draft material to be included in the Watts Bar FSAR section 2.3. All data for the two-year period, July 1973-June 1975, span each hour, except for ambient temperature, dewpoint, and vertical temperature gradient (ΔT) prior to January 31, 1975, at 1300 local time. The temperature, dewpoint, and ΔT data from May 23, 1973, to January 31, 1975, consist of instantaneous, end-of-the-hour readings. Hour-averaging, as described in the attachment, was instituted in early 1975 to fulfill a TVA commitment to comply with Regulatory Guide 1.23 and the NRC Staff's request to provide data averaged over a minimum period of 15 minutes for each hour.

Meteorological Measurement Program

Onsite meteorological facilities have been in operation since June 1971, when a temporary 130-foot instrumented tower was installed. The temporary facility had a Nova digital data processing system for collection of temperature, wind direction, and wind speed data at levels 30 and 130 feet aboveground. It was located slightly less than one-half mile west-southwest of the Unit 1 reactor building location at 720 feet MSL. The permanent meteorological facility, with a 300-foot (91-meter) instrumented tower and digital data processing system, began operation in late May 1973. Its location is about one-half mile south-southwest of the Unit 1 reactor at 711 feet MSL. The temporary facility was decommissioned in September 1973.

The instrumentation and the data processing system were described in detail in section 2.6 of the Watts Bar PSAR and was quite similar to the comparable equipment at the permanent facility. Since the FSAR dispersion meteorology data base was collected exclusively by the permanent facility, only that facility is described in detail in this section.

Permanent Meteorological Facility

The data collection and processing by a high-speed digital computer system includes (1) wind direction and wind speed at 10 and 91 meters; (2) temperature at one, 10, 46, and 91 meters; (3) dew point at one meter; and (4) solar radiation, atmospheric pressure, and rainfall at one meter. A new dew point system will be installed in 1976 to measure dew point at one, 10, and 91 meters. Also, wind sensors will be added at 46 meters in 1976. Descriptive information for the instrumentation follows.

Sensor	Height (meters)	Description
Wind Direction	10 and 91*	Climet Instruments, Inc., Model 012-11, Bivane: Horizontal, calibrated range, electrical 0-539°, mechanical 0-360° continuous; data recording range 0-540° (0-4.8v); linearity ± 0.5%; accuracy ± 3°. Vertical, calibrated range, electrical -60° to +60° (0-1.6v), mechanical ± 60° from horizontal; data recording range ± 60°; accuracy ± 1°. Both horizontal and vertical damping ratio 0.6.
Wind Speed	10 and 91*	Climet Instruments, Inc., Model 011-1; starting threshold, 0.6 mph; operating range, 0-110 mph; calibrated range, 0.6-90 mph; data recording range, 0-99.9 mph; accuracy within ± 1 percent or 0.15 mph, whichever is greater from 0.6 to 90 mph.
Temperature	1, 10, 46, and 91	Aerodet (ARI Industries, Inc.), Model R-22.3-E50, RTD (platinum wire Resistance Temperature Detector); mounted in motor-fan aspirated solar radiation shield, Climet Instruments, Inc., Model 016-1 at the 60- and 110-meter levels and Model 016-2 at the 1- and 10-meter levels. Data recording range, -9.9° F to 99.9° F; RTD accuracy ± 0.06° F; aspirated shield maximum radiation error, 0° F to +0.2° F.
Dew Point (Present)	1	Climet Instruments, Inc., Model 016-2, temperature and dew point shield, containing Honeywell, Inc., lithium chloride dew cell bobbin, Model SSP129Z019, with Aerodet (ARI Industries, Inc.) Model R-22.3-3E50 resistance detector. Data logger system operating range, -9.9° F to 99.9° F; dew point accuracy within ± 3.6° F.
Dew Point (Future)	1, 10, and 91	EG & G, Inc., Model 440 Dew Point Hygrometer, thermo-electrically cooled stainless steel mirror, cooled to dew point, optically sensed, controlled to the dew point; mirror surface temperature sensed by platinum RTD; sensor range, -50° F to +140° F; data recording range, 0° F to 100° F; accuracy ± 0.7° F, sensitivity, ± 0.1° F.

*To be installed at 46 meters in 1976. Wind direction at that level will be horizontal only, not a bivane.

Sensor	Height (meters)	Description
Solar Radiation	1	Epply Laboratories, 180° Pyranometer, Model 8-48; calibrated range, 0 to 2 gm-cal $cm^{-2}min^{-1}$; data recording range, 0.0 to 3.0 gm-cal $cm^{-2}min^{-1}$; linearity, ± 1% from 0 to 2 gm-cal $cm^{-2}min^{-1}$; response time, 4 seconds; cosine response, ± 2% from 10° to 90°; sensitivity, near 7.5 mv per gm-cal $cm^{-2}min^{-1}$; typical output, 0-14 mv.
Rainfall	1	Belfort Instrument Co., Model 5915-12; spring weighing and potentiometer output type; calibrated range, 0 to 9.9 inches; data recording range, 0 to 9.99 inches; accuracy, ± 0.5% (± 0.06 inch); sensitivity, 0.01 inch.
Atmospheric Pressure	1	H. E. Sostman and Co., Model 2014-28/32-HAL; pressure transducer; potentiometer output; operating range, 28 to 32 inches Hg.; data recording range, 28.00 to 32.00 inches Hg.; accuracy, ± 0.06 inch Hg.

Data Acquisition System. The Data Acquisition System is located at the Environmental Data Station and consists of the meteorological tower and sensors, cables, reed-relay scanner, DVM (analog voltage and ohms to digital converter), mini-computer (NOVA 1200 by Data General Corporation) with 32-k memory, teletype ASR33 printer and paper tape punch, and various interface devices to send selected data into the plant control room. Beginning in 1976, this system will also collect water temperature data and radiological monitor data from remote stations by UHF radio telemetering. All meteorological sensor outputs are measured periodically during each hour by the data system for an hourly readout on the teletype. Strip-chart recorders are also used to record wind speed and wind direction data. Horizontal wind direction is read each five seconds (720 per hour); wind speed and solar radiation are read each 15 seconds (240 per hour); and temperatures are read each minute (60 per hour). Dew point is read each minute (60 per hour) at present. For the new dew point system, the levels (1, 10, and 91 meters) will be switched sequentially to give between 15 and 20 consecutive

readings (one each minute) per hour for each level. Rainfall, barometric pressure, and wind direction sensor supply voltage are read each hour (one per hour).

Prevailing horizontal wind direction for each hour is computed as the average direction in the 23-degree sector (among 360 overlapping sectors) that has the highest number of valid readings during the hour. Horizontal wind direction persistence percentage for a given hour is computed as the number of readings in the 23-degree sector computed above divided by the total number of valid readings obtained in that one-hour period multiplied by 100.

The data collected on paper tapes is transferred offsite to magnetic tapes for storage and for use in analysis of onsite meteorological conditions.

Data Recording and Display

Data recording and display at the instrument building (environmental data station) consists of hourly teletypewriter printouts and paper punch tape entries. Selected meteorological data, along with other environmental data, will be remoted from the meteorological facility over telephone cable for operational display in the reactor control room. The meteorological data will include 10- and 46-meter wind direction and wind speed; 10- to 46-meter and 10- to 91-meter vertical temperature gradients (ΔT's); and 10-meter temperature and dew point. These data are to be displayed in digital form with 1-minute updating.

Instrument Servicing, Maintenance, and Calibration

The meteorological equipment at the environmental data station (EDS) is serviced, maintained, and calibrated by electrical engineer, electrical engineering associate, and senior instrument mechanic personnel. Daily checks

are made on the operation of the systems Monday through Friday to ensure that all equipment is in good working order. On Saturday, Sunday, and holidays, visits are made when there is chance of equipment malfunction resulting from severe storms. All sensors and signal conditioning units are exchanged or calibrated in-place each four months, or more frequently when necessary, except for the rain gauge, which is calibrated each six months. The equipment is checked and calibrated by standard calibration procedures, which are described in a copy of the station operation manual kept at the EDS.

2.3. Operational Meteorological Program. The operational phase of the meteorological program includes those procedures and responsibilities related to activities beginning with the initial fuel loading and continuing through the life of the plant. The meteorological data collection program will be continuous without major interruptions and, with the new dew point system, conform to the standards given in the AEC (now NRC) Regulatory Guides 1.21 and 1.23. The basic objective will be to maintain a continuous surveillance (by digital or analog record) of the meteorological parameters involved in the atmospheric dispersion of radioactive effluent releases and to have the data available at any time for assessing the relative concentrations and doses resulting from accidental or routine releases. If required, a special meteorological program can be established for controlled scheduling of effluent releases during favorable atmospheric dispersion conditions.

As yet, the meteorological monitoring program requirements to be included in the Operational Quality Assurance Program have not been fully defined. However, special meteorological data and records will be provided for use in routine and special assessments and report preparation on ambient

levels of effluent releases and their related environmental impact. Such meteorological information will be particularly relevant for analyzing the "effects and consequences" of operational accidents given in Chapter 15, Accident Analysis, of the NRC Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants.

NRC Item B.4.b. A description of the onsite pre-operational and operational meteorological programs including the instruments, performance specifications, calibration and maintenance procedures, data output and recording systems and locations, and data analysis procedures.

TVA Response B.4.b. A description of the Watts Bar Nuclear Plant onsite meteorological monitoring program is attached to the response to NRC Item B.4.a.

NRC Item B.4.c. A detailed description of any model(s) to derive estimates of basic meteorological parameters, such as atmospheric stability, and information concerning the validity and accuracy of the model(s).

TVA Response B.4.c. The classification of atmospheric stability presented in table 2 of NRC Regulatory Guide 1.23, based on vertical temperature gradient (ΔT), was utilized for all dispersion calculations which required stability data.

B.5 Provide the following information concerning concentration evaluations:

a. Estimates of relative concentrations (χ/Q) and or deposition (D/Q) at points of potential maximum concentration outside the site boundary, at points estimated maximum individual exposure, and at points within a radial grid of sixteen 22-1/2 degree sectors (centered on true north, etc.) and extending to a distance of 50 miles from the plant. A set of data points should be located within each sector at increments of .25 mile to a distance of 1 mile, at increments of .5 mile from a distance of 1 to 5 miles, at increments of 3.5 miles from a distance of 5 to 10 miles, and at increments of 5 miles thereafter to a distance of 50 miles.

b. Estimates of χ/Q for noble gas effluents and, if applicable, χ/Q depleted by deposition and D/Q for iodine effluents at each of these grid points, as well as averages of these χ/Q and/or D/Q values between all adjacent grid points along the radials.

c. A detailed description of the model(s) and the model assumption(s) used to determine the air concentrations and/or deposition, and information concerning the validity and accuracy of the model(s) and assumptions, and the identity of the meteorological data used.

Response B.5

Estimates of normalized concentration (χ/Q) and normalized deposition rates (D/Q) for each type of release (i.e., the auxiliary building, the turbine building, and the reactor building) at points where actual and potential dose pathways exist are listed in Tables B.1 through B.6. Annual average air and ground concentrations and deposition rates at the point of maximum offsite exposure (NNE sector, distance of 1,200 m, elevation of 22 meters) are provided in Tables B.7 through B.9. Gaseous plume depletion is calculated according to the methodology of Draft Regulatory Guide 1.DD, September 23, 1975.

A detailed description of the models and assumptions used to determine air and ground concentrations is included in the response to Question C.9. The joint frequency distributions of the meteorological data are also included in the response to C.9. A description of the methodology used in compiling the JFD's from hourly data for elevated releases and ground-level releases is included in the response to Question C.9.

TABLE B.1

DATA ON POINTS OF INTEREST NEAR WATTS BAR

Distances (D), Elevations (E), Normalized Concentrations[1] (χ/Q's) and Normalized Deposition Rates[1] (D/Q)

	Site Boundary				Nearest Residence				Sector Peaks			
Sector	D (m)	E (m)	χ/Q (s/m^3)	D/Q ($1/m^2$)	D (m)	E (m)	χ/Q (s/m^3)	D/Q ($1/m^2$)	D (m)	E (m)	χ/Q (s/m^3)	D/Q ($1/m^2$)
N	1,200	71	2.7E-6	8.5E-9	6,640	4	2.3E-7	4.1E-10	1,340	71	2.3E-6	7.0E-9
NNE	1,200	22	4.2E-6	2.2E-8	3,200	22	9.8E-7	4.0E-9	1,280	14	3.2E-6	2.0E-8
NE	1,200	4	3.3E-6	1.4E-8	2,590	4	1.1E-6	3.5E-9	2,560	5	1.1E-6	3.6E-9
ENE	1,200	-9	2.9E-6	7.2E-9	2,290	-2	1.2E-6	2.3E-9	2,990	4	7.9E-7	1.5E-9
E	1,200	-9	3.8E-6	8.2E-9	2,040	-9	1.8E-6	3.2E-9	2,800	28	1.1E-6	1.9E-9
ESE	1,200	-9	3.4E-6	7.2E-9	1,800	-2	1.9E-6	3.5E-9	1,590	28	2.2E-6	4.3E-9
SE	1,200	-9	5.2E-6	1.0E-8	1,400	-2	4.1E-6	7.8E-9	1,680	74	3.2E-6	5.6E-9
SSE	1,200	-9	5.2E-6	1.0E-8	1,550	4	3.5E-6	6.5E-9	1,860	42	2.8E-6	4.7E-9
S	1,200	-9	3.6E-6	8.8E-9	1,550	4	2.5E-6	5.6E-9	1,460	5	2.7E-6	6.2E-9
SSW	1,200	-9	3.8E-6	1.2E-8	1,770	-9	2.1E-6	6.0E-9	1,890	13	1.9E-6	5.4E-9
SW	1,200	-9	4.1E-6	1.2E-8	2,160	-9	1.8E-6	4.2E-9	3,570	62	8.7E-7	1.7E-9
WSW	1,200	-2	3.8E-6	8.6E-9	2,710	22	1.2E-6	2.1E-9	2,740	36	1.2E-6	2.0E-9
W	1,200	10	3.0E-6	6.9E-9	1,950	-9	1.5E-6	2.9E-9	1,740	30	1.7E-6	3.6E-9
WNW	1,200	46	1.2E-6	2.6E-9	1,740	4	6.7E-7	1.3E-9	1,490	59	8.4E-7	1.7E-9
NW	1,200	46	1.2E-6	2.6E-9	1,800	16	6.6E-7	1.2E-9	1,460	36	9.0E-7	1.8E-9
NNW	1,200	28	2.1E-6	5.0E-9	2,350	22	7.7E-7	1.5E-9	1,585	24	1.4E-6	3.1E-9

1. Turbine building releases.

TABLE B.2

DATA ON POINTS OF INTEREST NEAR WATTS BAR

Distances (D), Elevations (E), Normalized Concentrations[1] (χ/Q's) and Normalized Deposition Rates[1] (D/Q)

	Site Boundary				Nearest Residence				Sector Peaks			
Sector	D (m)	E (m)	χ/Q (s/m^3)	D/Q ($1/m^2$)	D (m)	E (m)	χ/Q (s/m^3)	D/Q ($1/m^2$)	D (m)	E (m)	χ/Q (s/m^3)	D/Q ($1/m^2$)
N	1,200	71	9.9E-7	1.5E-9	6,640	4	6.6E-8	1.1E-10	1,340	71	8.3E-7	1.3E-9
NNE	1,200	22	1.1E-6	6.3E-9	3,200	22	4.4E-7	1.3E-9	1,280	14	8.3E-7	5.7E-9
NE	1,200	4	8.9E-7	7.3E-9	2,590	4	6.2E-7	2.4E-9	2,560	5	6.3E-7	2.4E-9
ENE	1,200	-9	4.7E-7	2.9E-9	2,290	-2	3.5E-7	1.1E-9	2,990	4	2.9E-7	7.5E-10
E	1,200	-9	2.5E-7	1.6E-9	2,040	-9	2.0E-7	7.6E-10	2,800	28	2.0E-7	4.7E-10
ESE	1,200	-9	2.1E-7	1.5E-9	1,800	-2	1.7E-7	8.7E-10	1,590	28	2.8E-7	1.0E-9
SE	1,200	-9	2.3E-7	2.0E-9	1,400	-2	2.0E-7	1.6E-9	1,680	74	4.4E-7	1.2E-9
SSE	1,200	-9	2.3E-7	1.9E-9	1,550	4	2.0E-7	1.3E-9	1,860	42	4.4E-7	9.8E-10
S	1,200	-9	3.0E-7	2.1E-9	1,550	4	2.6E-7	1.4E-9	1,460	5	2.7E-7	1.6E-9
SSW	1,200	-9	5.7E-7	3.9E-9	1,770	-9	5.2E-7	2.3E-9	1,890	13	5.5E-7	2.1E-9
SW	1,200	-9	7.3E-7	4.4E-9	2,160	-9	6.3E-7	1.9E-9	3,570	62	6.5E-7	8.5E-10
WSW	1,200	-2	3.6E-7	2.2E-9	2,710	22	3.1E-7	7.2E-10	2,740	36	3.7E-7	7.1E-10
W	1,200	10	2.5E-7	1.4E-9	1,950	-9	2.2E-7	7.5E-10	1,740	30	3.8E-7	8.9E-10
WNW	1,200	46	4.9E-7	6.8E-10	1,740	4	1.1E-7	4.4E-10	1,490	59	3.5E-7	5.3E-10
NW	1,200	46	4.9E-7	4.7E-10	1,800	16	1.2E-7	2.9E-10	1,460	36	2.8E-7	3.7E-10
NNW	1,200	28	3.0E-7	7.2E-10	2,350	22	1.4E-7	2.8E-10	1,585	24	2.1E-7	5.0E-10

1. Containment (reactor) building releases.

TABLE B.3

DATA ON POINTS OF INTEREST NEAR WATTS BAR

Distances (D), Elevations (E), Normalized Concentrations[1] (χ/Q's) and Normalized Deposition Rates[1] (D/Q)

	Site Boundary				Nearest Residence				Sector Peaks			
Sector	D (m)	E (m)	χ/Q (s/m^3)	D/Q ($1/m^2$)	D (m)	E (m)	χ/Q (s/m^3)	D/Q ($1/m^2$)	D (m)	E (m)	χ/Q (s/m^3)	D/Q ($1/m^2$)
N	1,200	71	1.3E-6	3.5E-9	6,640	4	1.0E-7	2.1E-10	1,340	71	1.1E-7	2.9E-9
NNE	1,200	22	2.4E-6	1.4E-8	3,200	22	7.0E-7	2.6E-9	1,280	14	1.9E-6	1.2E-8
NE	1,200	4	1.6E-6	8.8E-9	2,590	4	8.1E-7	2.6E-9	2,560	5	8.3E-7	2.7E-9
ENE	1,200	-9	1.0E-6	3.9E-9	2,290	-2	5.4E-7	1.4E-9	2,990	4	4.2E-7	9.1E-10
E	1,200	-9	7.7E-7	3.3E-9	2,040	-9	4.3E-7	1.4E-9	2,800	28	3.6E-7	8.1E-10
ESE	1,200	-9	6.5E-7	2.8E-9	1,800	-2	4.0E-9	1.4E-9	1,590	28	5.7E-7	1.8E-9
SE	1,200	-9	8.3E-7	3.7E-9	1,400	-2	6.7E-7	2.9E-9	1,680	74	7.3E-7	2.1E-9
SSE	1,200	-9	8.9E-7	3.9E-9	1,550	4	6.4E-7	2.5E-9	1,860	42	7.3E-7	1.9E-9
S	1,200	-9	9.1E-7	4.2E-9	1,550	4	6.7E-7	2.7E-9	1,460	5	7.2E-7	3.0E-9
SSW	1,200	-9	1.4E-6	6.9E-9	1,770	-9	9.7E-7	3.6E-9	1,890	13	9.8E-7	3.2E-9
SW	1,200	-9	1.5E-6	5.9E-9	2,160	-9	9.8E-7	2.3E-9	3,570	62	6.9E-7	1.0E-9
WSW	1,200	-2	9.4E-7	3.3E-9	2,710	22	4.9E-7	9.3E-10	2,740	36	5.2E-7	9.1E-10
W	1,200	10	6.2E-7	2.2E-9	1,950	-9	3.9E-7	1.1E-9	1,740	30	6.0E-7	1.3E-9
WNW	1,200	46	5.5E-7	8.9E-10	1,740	4	2.0E-7	5.3E-10	1,490	59	4.0E-7	6.6E-10
NW	1,200	46	6.1E-7	7.7E-10	1,800	16	2.3E-7	4.3E-10	1,460	36	4.4E-7	5.7E-10
NNW	1,200	28	6.8E-7	1.5E-9	2,350	22	2.7E-7	5.3E-10	1,585	24	4.4E-7	9.9E-10

1. Auxiliary building releases.

TABLE B.4 NORMALIZED CONCENTRATIONS[1] AND DEPOSITION RATES[1] AT SECTOR ANNULI TO 50 MILES

AVERAGE ANNUAL CHI-OVER-Q VALUES (S/M**3)

SECTOR	1305.	2414.	4023.	5633.	7242.	12070.	24140.	40234.	56327.	72420.
N	2.37E-06	9.61E-07	4.64E-07	2.90E-07	2.05E-07	1.02E-07	4.04E-08	2.07E-08	1.34E-08	9.69E-09
NNE	3.71E-06	1.48E-06	7.05E-07	4.37E-07	3.08E-07	1.51E-07	5.94E-08	3.02E-08	1.94E-08	1.40E-08
NE	2.88E-06	1.16E-06	5.60E-07	3.49E-07	2.47E-07	1.22E-07	4.84E-08	2.47E-08	1.60E-08	1.16E-08
ENE	2.60E-06	1.07E-06	5.27E-07	3.33E-07	2.37E-07	1.19E-07	4.81E-08	2.49E-08	1.62E-08	1.18E-08
E	3.38E-06	1.41E-06	6.94E-07	4.39E-07	3.13E-07	1.58E-07	6.39E-08	3.31E-08	2.16E-08	1.57E-08
ESE	3.01E-06	1.26E-06	6.23E-07	3.95E-07	2.82E-07	1.43E-07	5.79E-08	3.00E-08	1.96E-08	1.43E-08
SE	4.58E-06	1.92E-06	9.52E-07	6.04E-07	4.32E-07	2.19E-07	8.89E-08	4.62E-08	3.02E-08	2.20E-08
SSE	4.58E-06	1.92E-06	9.49E-07	6.01E-07	4.30E-07	2.18E-07	8.81E-08	4.58E-08	2.99E-08	2.18E-08
S	3.20E-06	1.33E-06	6.57E-07	4.16E-07	2.97E-07	1.50E-07	6.06E-08	3.14E-08	2.05E-08	1.49E-08
SSW	3.34E-06	1.37E-06	6.71E-07	4.23E-07	3.01E-07	1.51E-07	6.04E-08	3.12E-08	2.03E-08	1.47E-08
SW	3.62E-06	1.50E-06	7.38E-07	4.66E-07	3.32E-07	1.67E-07	6.74E-08	3.48E-08	2.27E-08	1.65E-08
WSW	3.33E-06	1.38E-06	6.82E-07	4.31E-07	3.08E-07	1.55E-07	6.27E-08	3.25E-08	2.12E-08	1.54E-08
W	2.61E-06	1.07E-06	5.24E-07	3.30E-07	2.35E-07	1.18E-07	4.71E-08	2.43E-08	1.58E-08	1.14E-08
WNW	1.02E-06	4.18E-07	2.04E-07	1.28E-07	9.08E-08	4.54E-08	1.82E-08	9.34E-09	6.07E-09	4.40E-09
NW	1.07E-06	4.40E-07	2.17E-07	1.37E-07	9.78E-08	4.92E-08	1.98E-08	1.02E-08	6.66E-09	4.83E-09
NNW	1.82E-06	7.44E-07	3.61E-07	2.26E-07	1.61E-07	8.01E-08	3.20E-08	1.64E-08	1.07E-08	7.73E-09

AVERAGE ANNUAL D-OVER-Q VALUES (1/M**2)

SECTOR	1305.	2414.	4023.	5633.	7242.	12070.	24140.	40234.	56327.	72420.
N	7.34E-09	2.48E-09	1.00E-09	5.49E-10	3.51E-10	1.40E-10	3.89E-11	1.42E-11	7.26E-12	4.46E-12
NNE	1.93E-08	6.52E-09	2.63E-09	1.44E-09	9.20E-10	3.68E-10	1.02E-10	3.73E-11	1.91E-11	1.17E-11
NE	1.18E-08	4.00E-09	1.62E-09	8.85E-10	5.66E-10	2.26E-10	6.27E-11	2.29E-11	1.17E-11	7.19E-12
ENE	6.21E-09	2.10E-09	8.49E-10	4.64E-10	2.97E-10	1.19E-10	3.29E-11	1.20E-11	6.14E-12	3.77E-12
E	7.06E-09	2.39E-09	9.65E-10	5.28E-10	3.38E-10	1.35E-10	3.74E-11	1.37E-11	6.99E-12	4.29E-12
ESE	6.15E-09	2.08E-09	8.41E-10	4.60E-10	2.94E-10	1.18E-10	3.26E-11	1.19E-11	6.09E-12	3.74E-12
SE	8.80E-09	2.98E-09	1.20E-09	6.58E-10	4.21E-10	1.68E-10	4.66E-11	1.71E-11	8.70E-12	5.35E-12
SSE	8.79E-09	2.97E-09	1.20E-09	6.57E-10	4.20E-10	1.68E-10	4.66E-11	1.70E-11	8.70E-12	5.34E-12
S	7.60E-09	2.57E-09	1.04E-09	5.68E-10	3.63E-10	1.45E-10	4.03E-11	1.47E-11	7.52E-12	4.62E-12
SSW	1.04E-08	3.51E-09	1.42E-09	7.76E-10	4.96E-10	1.98E-10	5.50E-11	2.01E-11	1.03E-11	6.31E-12
SW	1.02E-08	3.45E-09	1.39E-09	7.62E-10	4.87E-10	1.95E-10	5.40E-11	1.98E-11	1.01E-11	6.19E-12
WSW	7.42E-09	2.51E-09	1.01E-09	5.55E-10	3.55E-10	1.42E-10	3.94E-11	1.44E-11	7.35E-12	4.51E-12
W	5.93E-09	2.01E-09	8.11E-10	4.44E-10	2.84E-10	1.13E-10	3.14E-11	1.15E-11	5.87E-12	3.60E-12
WNW	2.21E-09	7.47E-10	3.02E-10	1.65E-10	1.06E-10	4.22E-11	1.17E-11	4.28E-12	2.18E-12	1.34E-12
NW	2.19E-09	7.42E-10	3.00E-10	1.64E-10	1.05E-10	4.19E-11	1.16E-11	4.25E-12	2.17E-12	1.33E-12
NNW	4.33E-09	1.47E-09	5.92E-10	3.24E-10	2.07E-10	8.28E-11	2.30E-11	8.40E-12	4.29E-12	2.63E-12

1. For Turbine building releases.

TABLE B.5 NORMALIZED CONCENTRATIONS[1] AND DEPOSITION RATES[1] AT SECTOR ANNULI TO 50 MILES

AVERAGE ANNUAL CHI-OVER-Q VALUES (S/M**3)

SECTOR	1305.	2414.	4023.	5633.	7242.	12070.	24140.	40234.	56327.	72420.
N	8.65E-07	3.22E-07	1.50E-07	9.23E-08	6.50E-08	3.08E-08	1.20E-08	6.11E-09	3.95E-09	2.85E-09
NNE	8.05E-07	5.20E-07	3.99E-07	2.32E-07	1.63E-07	7.97E-08	3.01E-08	1.53E-08	9.84E-09	7.10E-09
NE	8.63E-07	6.59E-07	4.31E-07	3.69E-07	2.22E-07	1.08E-07	4.22E-08	2.14E-08	1.38E-08	9.95E-09
ENE	4.24E-07	3.41E-07	2.84E-07	1.74E-07	1.22E-07	5.95E-08	2.33E-08	1.19E-08	7.66E-09	5.54E-09
E	2.23E-07	3.12E-07	1.45E-07	8.93E-08	6.28E-08	2.97E-08	1.16E-08	5.89E-09	3.80E-09	2.74E-09
ESE	1.85E-07	2.07E-07	9.45E-08	5.77E-08	4.02E-08	1.95E-08	7.57E-09	3.83E-09	2.46E-09	1.77E-09
SE	5.01E-07	2.45E-07	1.13E-07	6.88E-08	4.81E-08	2.34E-08	9.14E-09	4.64E-09	2.99E-09	2.16E-09
SSE	2.04E-07	3.02E-07	1.41E-07	8.66E-08	6.07E-08	2.97E-08	1.16E-08	5.89E-09	3.81E-09	2.75E-09
S	2.78E-07	2.13E-07	2.11E-07	1.24E-07	8.66E-08	4.24E-08	1.66E-08	8.49E-09	5.50E-09	3.98E-09
SSW	5.08E-07	4.74E-07	3.17E-07	2.31E-07	2.09E-07	9.06E-08	3.56E-08	1.82E-08	1.18E-08	8.53E-09
SW	6.52E-07	5.62E-07	5.42E-07	3.29E-07	2.31E-07	1.13E-07	4.43E-08	2.26E-08	1.46E-08	1.06E-08
WSW	3.64E-07	4.41E-07	2.30E-07	1.51E-07	1.10E-07	4.57E-08	1.70E-08	8.63E-09	5.56E-09	4.01E-09
W	2.25E-07	2.67E-07	1.50E-07	1.06E-07	6.54E-08	3.07E-08	1.19E-08	6.05E-09	3.90E-09	2.81E-09
WNW	4.04E-07	1.54E-07	8.10E-08	4.65E-08	3.15E-08	1.52E-08	5.90E-09	2.98E-09	1.92E-09	1.38E-09
NW	3.19E-07	1.50E-07	8.21E-08	4.92E-08	3.41E-08	1.60E-08	6.22E-09	3.16E-09	2.03E-09	1.47E-09
NNW	2.34E-07	2.15E-07	1.01E-07	6.23E-08	4.39E-08	2.03E-08	7.92E-09	4.03E-09	2.60E-09	1.88E-09

AVERAGE ANNUAL D-OVER-Q VALUES (1/M**2)

SECTOR	1305.	2414.	4023.	5633.	7242.	12070.	24140.	40234.	56327.	72420.
N	1.30E-09	5.29E-10	2.30E-10	1.35E-10	9.45E-11	4.86E-11	1.84E-11	7.69E-12	4.23E-12	2.73E-12
NNE	5.50E-09	2.11E-09	8.96E-10	5.18E-10	3.56E-10	1.76E-10	6.45E-11	2.66E-11	1.45E-11	9.30E-12
NE	6.50E-09	2.62E-09	1.13E-09	6.62E-10	4.64E-10	2.41E-10	9.27E-11	3.91E-11	2.15E-11	1.38E-11
ENE	2.58E-09	1.04E-09	4.53E-10	2.69E-10	1.92E-10	1.04E-10	4.14E-11	1.74E-11	9.58E-12	6.20E-12
E	1.43E-09	5.85E-10	2.54E-10	1.48E-10	1.02E-10	5.13E-11	1.93E-11	8.12E-12	4.48E-12	2.89E-12
ESE	1.36E-09	5.39E-10	2.31E-10	1.33E-10	9.05E-11	4.42E-11	1.63E-11	6.84E-12	3.77E-12	2.43E-12
SE	1.79E-09	6.94E-10	2.93E-10	1.67E-10	1.13E-10	5.37E-11	1.93E-11	8.11E-12	4.45E-12	2.86E-12
SSE	1.64E-09	6.45E-10	2.75E-10	1.59E-10	1.08E-10	5.31E-11	1.96E-11	8.22E-12	4.53E-12	2.92E-12
S	1.84E-09	7.22E-10	3.09E-10	1.81E-10	1.28E-10	6.73E-11	2.61E-11	1.09E-11	5.99E-12	3.87E-12
SSW	3.47E-09	1.39E-09	5.98E-10	3.53E-10	2.50E-10	1.33E-10	5.21E-11	2.18E-11	1.21E-11	7.82E-12
SW	3.90E-09	1.61E-09	7.00E-10	4.17E-10	2.98E-10	1.63E-10	6.48E-11	2.73E-11	1.51E-11	9.83E-12
WSW	2.01E-09	8.55E-10	3.75E-10	2.19E-10	1.52E-10	7.71E-11	2.94E-11	1.25E-11	6.97E-12	4.51E-12
W	1.27E-09	5.44E-10	2.40E-10	1.42E-10	9.93E-11	5.16E-11	2.00E-11	8.55E-12	4.75E-12	3.07E-12
WNW	6.16E-10	2.75E-10	1.23E-10	7.19E-11	4.99E-11	2.52E-11	9.63E-12	4.17E-12	2.32E-12	1.50E-12
NW	4.23E-10	1.89E-10	8.50E-11	5.04E-11	3.53E-11	1.81E-11	6.97E-12	2.98E-12	1.67E-12	1.09E-12
NNW	6.40E-10	2.71E-10	1.20E-10	7.10E-11	5.01E-11	2.63E-11	1.01E-11	4.28E-12	2.38E-12	1.54E-12

1. For Containment building releases.

TABLE B.6 NORMALIZED CONCENTRATIONS[1] AND DEPOSITION RATES[1] AT SECTOR ANNULI TO 50 MILES

AVERAGE ANNUAL CHI-OVER-Q VALUES (S/M**3)

SECTOR	1305.	2414.	4023.	5633.	7242.	12070.	24140.	40234.	56327.	72420.
N	1.12E-06	4.28E-07	2.00E-07	1.24E-07	8.72E-08	4.30E-08	1.65E-08	8.38E-09	5.41E-09	3.90E-09
NNE	1.86E-06	9.18E-07	5.11E-07	3.11E-07	2.18E-07	1.07E-07	4.10E-08	2.07E-08	1.33E-08	9.61E-09
NE	1.48E-06	8.76E-07	5.23E-07	3.66E-07	2.37E-07	1.16E-07	4.48E-08	2.27E-08	1.47E-08	1.06E-08
ENE	8.77E-07	5.18E-07	3.22E-07	1.99E-07	1.40E-07	6.92E-08	2.69E-08	1.38E-08	8.91E-09	6.44E-09
E	6.74E-07	4.51E-07	2.14E-07	1.34E-07	9.46E-08	4.58E-08	1.81E-08	9.23E-09	5.98E-09	4.32E-09
ESE	5.71E-07	3.28E-07	1.56E-07	9.67E-08	6.84E-08	3.39E-08	1.32E-08	6.76E-09	4.37E-09	3.16E-09
SE	1.07E-06	4.28E-07	2.04E-07	1.27E-07	9.01E-08	4.46E-08	1.77E-08	9.08E-09	5.89E-09	4.27E-09
SSE	7.76E-07	4.95E-07	2.35E-07	1.46E-07	1.03E-07	5.13E-08	2.04E-08	1.05E-08	6.78E-09	4.92E-09
S	8.05E-07	4.33E-07	2.75E-07	1.69E-07	1.19E-07	5.86E-08	2.31E-08	1.18E-08	7.67E-09	5.56E-09
SSW	1.17E-06	7.70E-07	4.50E-07	3.09E-07	2.40E-07	1.02E-07	4.02E-08	2.05E-08	1.33E-08	9.60E-09
SW	1.33E-06	8.49E-07	5.83E-07	3.57E-07	2.51E-07	1.24E-07	4.83E-08	2.47E-08	1.60E-08	1.16E-08
WSW	8.84E-07	6.15E-07	3.09E-07	1.99E-07	1.44E-07	6.18E-08	2.38E-08	1.22E-08	7.87E-09	5.69E-09
W	5.40E-07	3.89E-07	2.00E-07	1.17E-07	8.08E-08	3.89E-08	1.52E-08	7.75E-09	5.00E-09	3.61E-09
WNW	4.81E-07	1.95E-07	9.83E-08	5.46E-08	3.77E-08	1.85E-08	7.21E-09	3.66E-09	2.36E-09	1.70E-09
NW	5.19E-07	2.14E-07	1.06E-07	6.17E-08	4.36E-08	2.10E-08	8.23E-09	4.19E-09	2.71E-09	1.96E-09
NNW	5.50E-07	2.90E-07	1.37E-07	8.54E-08	6.03E-08	2.88E-08	1.13E-08	5.78E-09	3.73E-09	2.70E-09

AVERAGE ANNUAL D-OVER-Q VALUES (1/M**2)

SECTOR	1305.	2414.	4023.	5633.	7242.	12070.	24140.	40234.	56327.	72420.
N	3.02E-09	1.09E-09	4.61E-10	2.65E-10	1.80E-10	8.57E-11	2.93E-11	1.14E-11	6.00E-12	3.70E-12
NNE	1.20E-08	4.26E-09	1.77E-09	1.00E-09	6.72E-10	3.08E-10	1.02E-10	3.93E-11	2.05E-11	1.26E-11
NE	7.72E-09	2.92E-09	1.25E-09	7.38E-10	5.19E-10	2.69E-10	1.00E-10	4.01E-11	2.12E-11	1.31E-11
ENE	3.39E-09	1.27E-09	5.49E-10	3.27E-10	2.33E-10	1.25E-10	4.78E-11	1.91E-11	1.01E-11	6.23E-12
E	2.33E-09	1.03E-09	4.35E-10	2.50E-10	1.70E-10	8.08E-11	2.77E-11	1.08E-11	5.68E-12	3.50E-12
ESE	2.45E-09	8.71E-10	3.64E-10	2.07E-10	1.39E-10	6.48E-11	2.17E-11	8.40E-12	4.39E-12	2.71E-12
SE	3.23E-09	1.14E-09	4.72E-10	2.66E-10	1.78E-10	8.09E-11	2.66E-11	1.03E-11	5.37E-12	3.31E-12
SSE	3.37E-09	1.19E-09	4.94E-10	2.81E-10	1.89E-10	8.80E-11	2.95E-11	1.14E-11	5.95E-12	3.67E-12
S	3.64E-09	1.29E-09	5.37E-10	3.10E-10	2.13E-10	1.05E-10	3.71E-11	1.45E-11	7.57E-12	4.66E-12
SSW	5.98E-09	2.15E-09	9.12E-10	5.34E-10	3.75E-10	1.94E-10	7.14E-11	2.81E-11	1.48E-11	9.08E-12
SW	5.18E-09	1.95E-09	8.48E-10	5.12E-10	3.73E-10	2.09E-10	8.17E-11	3.27E-11	1.73E-11	1.06E-11
WSW	2.87E-09	1.11E-09	4.86E-10	2.88E-10	2.02E-10	1.04E-10	3.88E-11	1.56E-11	8.30E-12	5.13E-12
W	1.94E-09	7.50E-10	3.28E-10	1.95E-10	1.37E-10	7.14E-11	2.66E-11	1.07E-11	5.70E-12	3.52E-12
WNW	7.90E-10	3.25E-10	1.46E-10	8.74E-11	6.19E-11	3.25E-11	1.23E-11	5.04E-12	2.70E-12	1.67E-12
NW	6.79E-10	2.70E-10	1.21E-10	7.27E-11	5.20E-11	2.78E-11	1.05E-11	4.23E-12	2.25E-12	1.39E-12
NNW	1.34E-09	5.04E-10	2.18E-10	1.28E-10	8.88E-11	4.47E-11	1.61E-11	6.38E-12	3.37E-12	2.08E-12

1. For Auxiliary building releases.

TABLE B.7 MAXIMUM OFFSITE CONCENTRATIONS AND DEPOSITION RATES FOR RELEASES FROM THE TURBINE BUILDING

	NUCLIDE	AIR CONCENTRATIONS (UCI/CM**3)	DEPOSITION RATES (UCI/S/M**2)	GND CONCENTRATIONS (UCI/M**2)
1	TRITIUM	7.02E-11	0.0	0.0
2	KR-85M	1.88E-13	0.0	0.0
3	KR-85	1.66E-13	0.0	0.0
4	KR-87	9.01E-14	0.0	0.0
5	KR-88	3.30E-13	0.0	0.0
6	KR-89	7.70E-16	0.0	0.0
7	XE-131M	1.44E-13	0.0	0.0
8	XE-133M	3.18E-13	0.0	0.0
9	XE-133	2.44E-11	0.0	0.0
10	XE-135M	1.23E-14	0.0	0.0
11	XE-135	5.72E-13	0.0	0.0
12	XE-137	1.92E-15	0.0	0.0
13	XE-138	4.09E-14	0.0	0.0
14	BR-84	1.52E-18	0.0	0.0
15	BR-85	2.68E-21	0.0	0.0
16	I-131	1.01E-15	6.52E-12	3.92E-06
17	I-132	2.56E-16	1.74E-12	2.06E-08
18	I-133	1.48E-15	9.58E-12	9.74E-07
19	I-134	4.23E-17	3.12E-13	1.40E-09
20	I-135	5.73E-16	3.75E-12	1.28E-07
21	RB-88	1.36E-13	5.57E-10	8.60E-07
22	CS-134	7.01E-18	4.50E-14	4.20E-06
23	CS-136	3.93E-18	2.52E-14	4.09E-08
24	CS-137	5.81E-18	3.73E-14	2.83E-05
25	CR-51	3.99E-20	2.56E-16	8.87E-10
26	MN-54	4.98E-20	3.20E-16	1.21E-08
27	FE-59	5.99E-20	3.84E-16	2.15E-09
28	CO-58	9.97E-19	6.40E-15	5.69E-08
29	CO-60	2.99E-20	1.92E-16	4.55E-08
30	SR-89	1.50E-19	5.39E-16	3.49E-09
31	SR-90	9.33E-22	5.99E-18	4.44E-09
32	SR-91	9.57E-21	6.23E-17	3.13E-12
33	Y-90	9.05E-22	5.80E-18	1.93E-12
34	Y-91M	4.80E-21	3.01E-17	1.30E-13
35	Y-91	2.10E-19	1.35E-15	9.87E-09
36	Y-93	3.87E-21	2.51E-17	1.34E-12
37	ZR-95	9.32E-21	5.98E-17	4.85E-10
38	NB-95	9.31E-21	5.97E-17	2.61E-10
39	MO-99	1.57E-17	1.01E-13	3.52E-08
40	TC-99M	1.14E-17	7.26E-14	2.26E-09
41	RU-106	9.32E-22	5.98E-18	2.74E-10
42	TE-132	2.27E-18	1.46E-14	5.89E-09
43	BA-140	2.32E-20	1.49E-16	2.37E-10
44	LA-140	1.56E-20	1.00E-16	2.10E-11
45	CE-144	4.66E-21	2.99E-17	1.06E-09
46	PR-143	4.64E-21	2.98E-17	5.05E-11
47	PR-144	3.89E-21	2.31E-17	3.45E-14
48	NP-239	1.34E-19	8.63E-16	2.53E-10
49	RB-89	6.85E-16	5.24E-12	6.99E-09
50	CS-135	4.77E-24	1.42E-20	1.57E-11
51	CS-136	1.30E-14	6.11E-11	1.71E-07
52	NB-95M	5.50E-25	1.61E-21	7.55E-16
53	TC-99	1.91E-27	5.58E-24	6.16E-15

AVERAGE ANNUAL CHI-OVER-Q = 4.22E-06 S/M**3
AVERAGE ANNUAL D-OVER-Q = 2.24E-08 1/M**2

TABLE B.8 MAXIMUM OFFSITE CONCENTRATIONS AND DEPOSITION RATES FOR RELEASES FROM THE CONTAINMENT BUILDING

	NUCLIDE	AIR CONCENTRATIONS (UCI/CM**3)	DEPOSITION RATES (UCI/S/M**2)	GND CONCENTRATIONS (UCI/M**2)
1	C-14	2.76E-13	0.0	0.0
2	AR-41	7.92E-13	0.0	0.0
3	KR-85M	7.82E-14	0.0	0.0
4	KR-85	1.74E-11	0.0	0.0
5	KR-87	2.47E-14	0.0	0.0
6	KR-88	1.16E-13	0.0	0.0
7	KR-89	3.99E-17	0.0	0.0
8	XE-131M	9.07E-13	0.0	0.0
9	XE-133M	5.61E-13	0.0	0.0
10	XE-133	8.34E-11	0.0	0.0
11	XE-135M	1.58E-15	0.0	0.0
12	XE-135	3.36E-13	0.0	0.0
13	XE-137	1.12E-16	0.0	0.0
14	XE-138	5.15E-15	0.0	0.0
15	BR-84	1.29E-19	0.0	0.0
16	BR-85	5.73E-22	0.0	0.0
17	I-131	4.09E-16	2.48E-12	1.49E-06
18	I-132	1.13E-17	7.09E-14	8.40E-10
19	I-133	1.08E-16	6.54E-13	6.65E-08
20	I-134	2.96E-18	1.95E-14	8.76E-11
21	I-135	2.87E-17	1.76E-13	5.99E-09
22	RB-88	4.32E-14	1.64E-10	2.53E-07
23	CS-134	3.47E-19	2.10E-15	1.96E-07
24	CS-136	8.64E-20	5.24E-16	8.49E-10
25	CS-137	2.55E-19	1.54E-15	1.17E-06
26	CR-51	8.44E-21	5.12E-17	1.77E-10
27	MN-54	1.01E-20	6.11E-17	2.31E-09
28	FE-59	1.05E-20	6.35E-17	3.56E-10
29	CO-58	2.87E-21	1.74E-17	1.55E-10
30	CO-60	1.00E-20	6.07E-17	1.44E-08
31	SR-89	7.46E-21	3.37E-17	2.18E-10
32	SR-90	1.40E-22	8.48E-19	6.28E-10
33	SR-91	3.80E-22	2.32E-18	1.17E-13
34	Y-90	1.55E-22	9.39E-19	3.12E-13
35	Y-91M	2.39E-22	1.46E-18	6.30E-15
36	Y-91	2.29E-20	1.39E-16	1.02E-09
37	Y-93	7.86E-23	4.80E-19	2.57E-14
38	ZR-95	6.97E-22	4.23E-18	3.43E-11
39	NB-95	7.07E-22	4.29E-18	1.87E-11
40	MO-99	9.67E-19	5.87E-15	2.04E-09
41	TC-99M	9.18E-19	5.57E-15	1.74E-10
42	RU-106	1.36E-22	8.22E-19	3.76E-11
43	TE-132	6.60E-20	4.01E-16	1.62E-10
44	BA-140	1.43E-21	8.67E-18	1.38E-11
45	LA-140	1.50E-21	9.11E-18	1.91E-12
46	CE-144	4.42E-22	2.68E-18	9.49E-11
47	PR-143	3.63E-22	2.20E-18	3.73E-12
48	PR-144	4.42E-22	2.68E-18	4.01E-15
49	NP-239	2.28E-21	1.38E-17	4.05E-12
50	RB-89	3.12E-17	1.93E-13	2.57E-10
51	CS-135	1.98E-24	6.09E-21	6.72E-12
52	CS-138	1.36E-15	5.56E-12	1.55E-08
53	NB-95M	2.53E-26	7.73E-23	3.62E-17
54	TC-99	9.16E-29	2.80E-25	3.09E-16

AVERAGE ANNUAL CHI-OVER-Q = 1.09E-06 S/M**3
AVERAGE ANNUAL D-OVER-Q = 6.26E-09 1/M**2

TABLE B.9 MAXIMUM OFFSITE CONCENTRATIONS AND DEPOSITION RATES FOR

RELEASES FROM THE AUXILIARY BUILDING

	NUCLIDE	AIR CONCENTRATIONS (UCI/CM**3)	DEPOSITION RATES (UCI/S/M**2)	GND CONCENTRATIONS (UCI/M**2)
1	KR-85M	1.62E-13	0.0	0.0
2	KR-85	1.47E-13	0.0	0.0
3	KR-87	7.83E-14	0.0	0.0
4	KR-88	2.89E-13	0.0	0.0
5	KR-89	2.68E-16	0.0	0.0
6	XE-131M	1.28E-13	0.0	0.0
7	XE-133M	2.80E-13	0.0	0.0
8	XE-133	2.18E-11	0.0	0.0
9	XE-135M	8.22E-15	0.0	0.0
10	XE-135	5.08E-13	0.0	0.0
11	XE-137	7.40E-16	0.0	0.0
12	XE-138	2.65E-14	0.0	0.0
13	BR-84	1.98E-17	0.0	0.0
14	BR-85	1.05E-19	0.0	0.0
15	I-131	3.02E-15	1.97E-11	1.18E-05
16	I-132	1.05E-15	7.08E-12	8.39E-08
17	I-133	4.32E-15	2.83E-11	2.87E-06
18	I-134	3.95E-16	2.82E-12	1.27E-08
19	I-135	2.15E-15	1.42E-11	4.82E-07
20	RB-88	1.04E-13	4.21E-10	6.51E-07
21	CS-134	3.72E-20	2.42E-16	2.26E-08
22	CS-136	1.95E-20	1.27E-16	2.05E-10
23	CS-137	2.76E-20	1.79E-16	1.36E-07
24	CR-51	1.33E-21	8.67E-18	3.00E-11
25	MN-54	1.10E-21	7.17E-18	2.71E-10
26	FE-59	1.43E-21	9.33E-18	5.23E-11
27	CO-58	3.58E-22	2.33E-18	2.07E-11
28	CO-60	1.06E-21	6.91E-18	1.64E-09
29	SR-89	2.59E-20	7.86E-17	5.10E-10
30	SR-90	1.47E-23	9.59E-20	7.11E-11
31	SR-91	9.82E-22	6.46E-18	3.24E-13
32	Y-90	2.54E-23	1.65E-19	5.51E-14
33	Y-91M	6.08E-22	3.98E-18	1.72E-14
34	Y-91	2.95E-21	1.92E-17	1.41E-10
35	Y-93	1.97E-22	1.29E-18	6.91E-14
36	ZR-95	8.85E-23	5.77E-19	4.67E-12
37	NB-95	7.37E-23	4.80E-19	2.09E-12
38	MO-99	6.70E-19	4.37E-15	1.52E-09
39	TC-99M	6.02E-19	3.92E-15	1.22E-10
40	RU-106	1.47E-23	9.59E-20	4.39E-12
41	TE-132	4.02E-20	2.62E-16	1.06E-10
42	BA-140	3.25E-22	2.12E-18	3.38E-12
43	LA-140	2.27E-22	1.48E-18	3.10E-13
44	CE-144	4.86E-23	3.16E-19	1.12E-11
45	PR-143	7.36E-23	4.80E-19	8.13E-13
46	PR-144	5.07E-23	3.34E-19	5.00E-16
47	NP-239	1.79E-21	1.17E-17	3.42E-12
48	RB-89	2.09E-16	1.44E-12	1.92E-09
49	CS-135	3.03E-24	9.66E-21	1.07E-11
50	CS-138	6.85E-15	3.04E-11	8.48E-08
51	NB-95M	3.46E-27	1.09E-23	5.10E-18
52	TC-99	6.50E-29	2.05E-25	2.26E-16

AVERAGE ANNUAL CHI-OVER-Q = 2.38E-06 S/M**3
AVERAGE ANNUAL D-OVER-Q = 1.39E-08 1/M**2

C.1 If there is a prior knowledge that the current 50-mile population age distribution may be significantly different from the U.S. population distribution, then furnish the current age distribution of the 50-mile population (e.g., 0-12, 12-18, >18).

Response C.1

Population age distributions within the 50-mile radius of Watts Bar Nuclear Plant are not believed to be significantly different from the U.S. population distribution.

C.2 Provide in tabular form, the distances from the centerline of the first operational reactor for each of the sixteen sectors described in Section 2.1.3 of R.G. 4.2, Rev. 1, to the nearest vegetable garden (greater than 500 ft^2) out to a distance of 5 miles.

Response C.2

For purposes of radiological dose calculations, TVA assumes that the nearest resident in each sector has a vegetable garden. The distance to and elevation of each residence (and vegetable garden) from the center of the nuclear plant is given in Table B.1.

C.3 Tabulate, for each compass point sector radiating from the center of the plant, the location of the nearest existing milk producing animals (cows and goats) within 5 miles of the site.

Response C.3

The location and elevation of nearby milk cows which produce milk for both fluid consumption and processing (butter, cheese, etc.) have been determined. The critical exposure pathway for individuals from milk production in the area is the consumption of unprocessed milk. This pathway is critical because of the minimum decay time between milk production and consumption. Detailed data on dairy animals which produce milk for home consumption are indicated in Table C.2.

The dairies which produce milk for commercial processing should not be considered as a critical pathway to man. This milk is transported to processing plants and is diluted with milk produced in other regions. In order to perform realistic dose calculations for commercially processed milk, dilution factors, decay factors, and consumption factors should be considered. However, all the dairies located near the Watts Bar Nuclear Plant produce some milk for home consumption.

County agents from the Agricultural Extension Services indicated that there were not any milk goats within 15 miles of the nuclear plant.

C.4 Provide data on annual meat (kg/yr), milk (liters/yr) and truck farming production (kg/yr) and distribution within a 50-mile radius from the reactor. Provide the data by sectors in the same manner indicated in Sections 2.1.3.1 and 2.1.3.2 of R.G. 4.2, Rev. 1.

Response C.4

Annual milk production data within a 50-mile radius for each sector annuli are tabulated in Table C.3. Data on annual meat production are not available for a 50-mile radius from the nuclear plant center. TVA assumes that enough meat is produced in each sector annuli to supply the needs of that region. Truck farming of fresh vegetables in the area is very limited, and data on production are not available. TVA assumes that enough fresh vegetables are produced at each residence to provide for annual consumption by all members of that household. The Watts Bar population distribution is given in Table C.1.

C.5 Furnish information on type, quantity, and yield (kg/m^2) of crops grown.

Response C.5

Information on the type, quantity, and yield of crops grown near the Watts Bar Nuclear Plant are given below.

Crop Type	Average Yield (kg/m^2)
Corn	.40
Tobacco	.23
Wheat	.20
All hay yields mowed	.63

C.6 Provide information on grazing season (give dates), feeding regimes for cattle (such as grazing practices, green chop feeding, corn and grass silage feeding and hay feeding) pasture grass density (kg/m^2) and yield statistics (kg/m^2) for harvested forage crops for beef and dairy cattle feeding.

Response C.6

The main grazing season is April 1 through November 1. The basic pasture is fescue and ladino clover with some clover-orchardgrass. During the summer months, the pasture produces approximately 0.4 kg/m^2 of fresh forage. If harvested for hay, the pasture produces approximately 0.6 kg/m^2 of air-dried equivalent hay.

The beef farmer will feed hay to beef cattle during the winter months near the barn at a rate of 4-7 kg/d. The farmer normally sells calves at 425 to 450 pounds in September-October as feeders for finishing in the Corn Belt or Western States.

C.7 Determine and indicate in tabular format the present and projected commercial fish and shellfish catch (in lbs/yr) from contiguous waters within 50 miles of the plant discharge. Report the catch by total landings and by principal species, indicating the relative amounts used as human food. Indicate the location of principal fishing areas and ports of landing associated with these contiguous waters and relate these locations to harvest by species.

Response C.7

The models and assumptions used to calculate the doses to man from the ingestion of fish are listed in Appendix E of the Watts Bar Nuclear Plant Environmental Statement. The number of acres per reach used to calculate the population dose are:

Tennessee River Reach	Acres Per Reach
528.0 - 499.0	8.9 (3)*
499.0 - 484.5	1.2 (4)
484.5 - 471.0	1.4 (4)
471.0 - 452.0	3.3 (3)
452.0 - 424.7	7.7 (3)
424.7 - 417.5	6.7 (3)
417.5 - 392.0	1.4 (4)
392.0 - 373.0	2.0 (4)
373.0 - 349.0	2.7 (4)
349.0 - 294.0	2.7 (4)
294.0 - 274.9	4.0 (4)
274.9 - 259.4	1.6 (4)
259.4 - 217.4	3.5 (4)
217.4 - 206.7	8.6 (3)
206.7 - 165.0	1.6 (4)
165.0 - 121.0	1.6 (4)
121.0 - 76.0	4.8 (4)
76.0 - 22.4	8.0 (4)

C.8 Identify any additional exposure pathways specific to the region around the site which could contribute 10 percent or more to either individual or population doses.

Response C.8

TVA staff have not identified any additional exposure pathways specific to the region around the site which contribute 10 percent or more to either individual or population doses.

C.9 Annual Population Doses - Calculate, using the information provided in response to questions 1-8 above and any other necessary supporting data, the annual total-body man-rem and the annual man thyroid-rem to the population expected to reside in the 50-mile region at the midpoint of plant operation as well as the annual total body man-rem and the annual man thyroid-rem received by the U.S. population at the same time from all liquid and gaseous exposure pathways. Provide as an appendix to your response a description of the models and assumptions used in these calculations.

Response C.9

A description of the models and assumptions used in liquid exposure pathway calculations are given in the environmental statement. Population doses resulting from the liquid exposure pathway are given also in the environmental statement.

Doses from gaseous effluents to the population expected to reside within the 50-mile region in the year 2020 are provided in Table C.4. Doses were calculated using the methods and dose factors provided in Draft Regulatory Guides 1.AA and 1.DD (modified as required based on a working paper for Regulatory Guide 1.111).

The straight-line trajectory model described in Draft Regulatory Guide 1.DD was used to calculate ground-level air concentrations and dry deposition rates. All releases were assumed to be continuous. Releases known to be periodic, e.g., those during containment purging and waste gas decay tank venting, are expected to occur with sufficient frequency to be treated as continuous releases for purposes of dose calculations.

All releases from the turbine building were assumed to disperse as predicted by the building wake model. Releases from the containment building and auxiliary building vents were treated as partly elevated and partly ground-level depending on the ratio $Wo/\bar{u}$ of vent effluent velocity to ambient wind speed as recommended in Draft Regulatory Guide 1.DD.

Ambient wind speeds $\bar{u}$ at 150 feet above plant grade were determined by linear interpolation of hourly wind speed values measured by the onsite meteorological instruments at 300 feet and 33 feet.

The split-level dispersion approach was implemented using a model that requires for each effluent vent two complete average-annual joint-frequency distributions (JFD's), the summation of which accounts for the total period of record. The JFD's (given in Tables C.5 through C.9) were constructed from hourly data for wind speeds, direction, and temperature gradients. Information describing the mode of release, i.e., either elevated or ground level, is contained in the JFD's. For example, in a given hourly period when the ratio $Wo/\bar{u}$ is between 1.0 and 5.0, the release is treated as partly elevated and partly ground level. The hourly contribution to the appropriate JFD is weighted according to the equations in 1.DD.

The JFD's for the ground-level portions of the releases were constructed using Pasquill-Gifford stability classes determined from temperature measurements at the 33-foot and 150-foot levels and wind speeds and directions measured at the 33-foot level. The JFD's for the elevated portions of the releases were constructed using stability classes determined from the 33-foot and 150-foot temperature measurements, wind directions measured at the 300-foot level, and wind speeds at the 150-foot level as calculated using linear interpolation between values measured at the 300-foot and 33-foot levels. (Wind speeds and directions were not measured at the 150-foot level.)

Effective release heights for the elevated portions of the releases were calculated using methods recommended by the NRC. For conditions when the effective release heights were greater than 100 meters, the releases

were treated as equal to 100 meters for purposes of determining plume retention fractions and deposition rates. Air concentrations and deposition rates were calculated considering radioactive decay and buildup during transit.

Average-annual air concentrations were used in calculating beta and gamma doses to air. Nuclide data given in Table C.10 list the beta and gamma energies per disintegration. Gamma doses were calculated with 2π geometry (accounting for a semi-infinite source) and beta doses were calculated with 4π geometry.

Total body and thyroid doses from submersion, ground concentrations, and ingestion were calculated using dose commitment factors and dose factors listed in Draft Regulatory Guide 1.AA. Dose factors for inhalation were based on average individual inhalation rates[a] of 1,400; 5,500; 8,000; and 8,100; m^3/y for infant, child, teen, and adult respectively.

Population doses were based on the current U.S. population distribution of:

Category	Ages	Fraction
Infant	<2	.034
Child	2--12	.211
Teen	13--18	.134
Adult	>19	.621

a. "Report of the Task Group on Reference Man," ICRP Publication 23, Pergamon Press, New York, 1975.

TABLE C.1 WATTS BAR POPULATION DISTRIBUTION (YEAR 2020)

POPULATION WITHIN EACH SECTOR ELEMENT*

SECTOR	1305.	2414.	4023.	5633.	7242.	12070.	24140.	40234.	56327.	72420.
N	0.	0.	10.	0.	0.	465.	1845.	340.	1390.	3230.
NNE	0.	0.	10.	5.	10.	130.	11615.	23995.	9650.	760.
NE	0.	5.	80.	60.	20.	520.	2575.	17435.	26670.	75210.
ENE	0.	10.	25.	65.	70.	365.	2065.	9690.	32545.	138325.
E	0.	0.	10.	55.	50.	405.	8835.	6450.	6290.	13220.
ESE	5.	5.	10.	40.	55.	400.	3670.	12985.	3485.	220.
SE	0.	0.	15.	30.	25.	335.	36425.	14350.	1385.	4355.
SSE	0.	5.	10.	25.	15.	425.	5470.	4810.	4210.	7895.
S	0.	35.	25.	15.	150.	1785.	1150.	25850.	59075.	6290.
SSW	5.	15.	10.	45.	15.	435.	1155.	19970.	26010.	183595.
SW	5.	10.	10.	20.	0.	340.	3240.	8550.	38040.	227660.
WSW	10.	20.	65.	35.	30.	820.	14820.	1005.	7545.	5060.
W	10.	10.	10.	35.	40.	450.	595.	4105.	1390.	1400.
WNW	5.	35.	25.	70.	65.	155.	590.	3505.	4935.	28240.
NW	0.	15.	40.	85.	125.	2440.	870.	2605.	5420.	7700.
NNW	0.	0.	0.	65.	25.	2125.	690.	16935.	4485.	4115.

MAXIMUM ELEVATIONS ABOVE PLANT GRADE**

SECTOR	1305.	2414.	4023.	5633.	7242.	12070.	24140.	40234.	56327.	72420.
N	71.	71.	71.	71.	71.	80.	500.	500.	500.	500.
NNE	13.	13.	49.	66.	66.	66.	500.	500.	500.	500.
NE	0.	5.	8.	39.	91.	91.	500.	500.	500.	500.
ENE	0.	4.	78.	83.	83.	89.	500.	500.	500.	500.
E	0.	56.	65.	65.	65.	98.	500.	500.	500.	500.
ESE	0.	86.	86.	86.	86.	86.	500.	500.	500.	500.
SE	37.	84.	84.	84.	84.	127.	500.	500.	500.	500.
SSE	0.	42.	94.	94.	95.	95.	500.	500.	500.	500.
S	5.	5.	49.	80.	80.	127.	500.	500.	500.	500.
SSW	0.	13.	13.	13.	37.	103.	500.	500.	500.	500.
SW	0.	0.	62.	91.	91.	91.	500.	500.	500.	500.
WSW	5.	37.	37.	37.	37.	66.	500.	500.	500.	500.
W	0.	30.	30.	43.	72.	348.	500.	500.	500.	500.
WNW	43.	37.	37.	71.	107.	353.	500.	500.	500.	500.
NW	36.	36.	39.	54.	60.	290.	500.	500.	500.	500.
NNW	24.	56.	56.	56.	56.	240.	500.	500.	500.	500.

*Distances given in meters to the centers of sector annuli (0-1, 1-2, 2-3, 3-4, 4-5, 5-10, 10-20, 20-30, 40-50 miles.

**Elevations given in meters with respect to plant grade.

TABLE C.2

DATA ON DAIRIES PRODUCING MILK FOR DIRECT FLUID MILK CONSUMPTION

					Normalized Concentrations (X/Q's)			Normalized Deposition Rates (D/Q's)		
Sector	Distance	Elevation[1]	Consumer[2]	FF[3]	TB(s/m^3)	AB(s/m^3)	RB(s/m^3)	TB(1/m^2)	B(1/m^2)	RB(1/m^2)
NE	3,510	4	A	.33	6.8E-7	6.0E-7	4.8E-7	2.1E-9	1.6E-9	1.4E-9
NE	3,350	4	A	.48	7.3E-7	6.3E-7	5.0E-7	2.3E-9	1.7E-9	1.5E-9
ESE	5,940	10	A	.30	3.7E-7	1.0E-7	5.9E-8	4.2E-10	1.9E-10	1.2E-10
SE	4,570	10	A	.30	8.0E-7	1.7E-7	8.0E-8	9.6E-10	3.8E-10	2.4E-10
SSE	4,570	10	A	.30	8.0E-7	1.9E-7	9.4E-8	9.6E-10	4.0E-10	2.2E-10
S	2,620	-2	A	.40	1.2E-6	3.9E-7	2.0E-7	2.2E-9	1.1E-9	6.3E-10
SSW	2,260	-2	A,T,C	.33	1.5E-6	7.5E-7	4.4E-7	3.9E-9	2.4E-9	1.5E-9
SSW	2,230	-9	A,T,C	.33	1.5E-6	7.9E-7	4.7E-7	4.0E-9	2.5E-9	1.6E-9
SW	2,260	-9	A,T,C	.33	1.6E-6	9.4E-7	6.2E-7	3.9E-9	2.2E-9	1.8E-9
SW	2,260	-2	A,T,C	.33	1.6E-6	9.0E-7	5.8E-7	3.9E-9	2.2E-9	1.8E-9
W	8,990	34	A	.17	1.8E-7	7.1E-8	5.8E-8	1.9E-10	1.0E-10	7.5E-11
WNW	2,070	10	A	.40	5.2E-7	1.8E-7	1.1E-7	9.8E-10	4.1E-10	3.5E-10
WNW	8,990	34	A	.17	6.8E-8	3.5E-8	3.0E-8	7.2E-11	4.7E-11	3.7E-11
WNW	7,620	34	A	.23	8.5E-8	4.3E-8	3.6E-8	9.6E-11	5.8E-11	4.7E-11
NW	2,070	10	A	.40	5.5E-7	1.9E-7	1.0E-7	9.7E-10	3.4E-10	2.4E-10
NW	7,620	34	A	.23	9.1E-8	4.8E-8	3.7E-8	9.6E-11	4.9E-11	3.3E-11

1. Elevation in meters with respect to plant grade.
2. Consumers classified as adults (A), teens (T), children (C), or infants (I).
3. Factor accounting for the fraction of animal feed obtained from fresh forage.

TABLE C.3

ANNUAL MILK PRODUCTION (MILLIONS OF POUNDS)

	Range (miles)									
	0-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
N	0.0	1.06E-2	1.76E-2	2.46E-2	3.17E-2	2.64E-1	8.28E-1	1.12E+0	1.43E+0	2.43E+0
NNE	0.0	1.23E-2	2.04E-2	2.85E-2	3.68E-2	3.07E-1	6.03E+0	4.53E+0	1.39E+0	2.20E+0
NE	0.0	2.37E-2	3.94E-2	5.50E-2	7.10E-2	5.91E-1	5.98E+0	9.66E+0	1.24E+1	3.50E+0
ENE	0.0	4.68E-2	7.79E-2	1.09E-1	1.40E-1	1.17E+0	1.07E+1	1.07E+1	1.09E+1	3.24E+0
E	0.0	7.84E-2	1.31E-1	1.82E-1	2.35E-1	1.96E+0	1.96E+1	7.67E+0	1.44E+1	6.65E+0
ESE	0.0	1.23E-1	2.04E-1	2.85E-1	3.68E-1	3.07E+0	1.26E+1	7.45E+0	7.60E+0	3.98E+0
SE	0.0	1.06E-1	1.77E-1	2.46E-1	3.18E-1	2.65E+0	1.22E+1	1.57E+1	5.38E+0	4.98E+0
SSE	0.0	6.78E-2	1.13E-1	1.57E-1	2.03E-1	2.99E+0	7.31E+0	1.61E+1	3.81E+0	4.67E+0
S	0.0	3.92E-2	6.53E-2	9.11E-2	1.18E-1	9.79E-1	1.64E+1	9.77E+0	1.17E+0	5.03E+0
SSW	0.0	1.58E-2	2.63E-2	3.66E-2	4.73E-2	3.94E-1	1.84E+0	6.41E+0	5.25E+0	8.21E+0
SW	0.0	1.06E-2	1.76E-2	2.96E-2	3.17E-2	2.64E-1	9.19E-1	1.50E+0	2.84E+0	2.59E+0
WSW	0.0	1.06E-2	1.76E-2	2.46E-2	3.17E-2	2.64E-1	7.81E-1	1.36E+0	2.39E+0	2.08E+0
W	0.0	1.06E-2	1.76E-2	2.46E-2	3.17E-2	2.64E-1	1.36E+0	1.61E+0	2.71E+0	7.06E+0
WNW	0.0	1.06E-2	1.76E-2	2.46E-2	3.17E-2	2.64E-1	9.13E-1	3.48E+0	5.73E+0	1.10E+1
NW	0.0	1.06E-2	1.76E-2	2.46E-2	3.17E-2	2.64E-1	9.72E-1	2.33E+0	5.40E+0	5.11E+0
NNW	0.0	1.06E-2	1.76E-2	2.46E-2	3.17E-2	2.64E-1	1.14E+0	1.66E+0	2.00E+0	3.83E+0

TABLE C.4 WATTS BAR POPULATION DOSES FROM GASEOUS EFFLUENTS

WATTS BAR NUCLEAR PLANT RADIOLOGICAL IMPACT ASSESSMENT FOR GASEOUS EFFLUENTS 03/22/76
FSAR AND ENCLOSURE 2 CALCULATIONS
SUMMATION OF POPULATION DOSES

	THYROID				TOTAL BODY			
	INFANT	CHILD	TEEN	ADULT	INFANT	CHILD	TEEN	ADULT
SUBMERSION	6.19E-03	3.86E-02	2.46E-02	1.14E-01	6.19E-03	3.86E-02	2.46E-02	1.14E-01
GROUND	3.41E-05	2.13E-04	1.35E-04	6.28E-04	3.41E-05	2.13E-04	1.35E-04	6.28E-04
INHALATION	1.89E-02	2.33E-01	9.89E-02	4.98E-01	7.41E-03	1.17E-01	5.57E-02	3.26E-01
COW MILK	1.90E 00	4.91E 00	1.30E 00	5.20E 00	3.47E-03	1.16E-02	2.82E-03	9.94E-03
BEEF INGESTION	0.0	9.03E-02	3.60E-02	2.39E-01	0.0	2.17E-04	8.23E-05	5.01E-04
VEG INGESTION	0.0	3.02E-01	1.07E-01	6.38E-01	0.0	7.13E-04	2.34E-04	1.24E-03
TOTALS	1.92E 00	5.57E 00	1.57E 00	6.69E 00	1.71E-02	1.69E-01	8.36E-02	4.52E-01
GRAND TOTALS				1.58E 01 MAN-REM				7.21E-01 MAN-REM

TABLE C.5 JOINT FREQUENCY DISTRIBUTION FOR RELEASES FROM THE TURBINE BUILDING

WATTS BAR NUCLEAR PLANT TURBINE BUILDING ** JFD FOR GROUND-LEVEL RELEASES 03/18/76

STABILITY CLASS A

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.0	0.010	0.0	0.040	0.010	0.0	0.0	0.0	0.060
NNE	0.0	0.0	0.0	0.030	0.040	0.110	0.010	0.0	0.0	0.190
NE	0.0	0.0	0.040	0.040	0.030	0.110	0.0	0.0	0.0	0.219
ENE	0.0	0.010	0.020	0.020	0.010	0.030	0.0	0.0	0.0	0.090
E	0.0	0.0	0.060	0.040	0.010	0.010	0.0	0.0	0.0	0.120
ESE	0.0	0.010	0.020	0.0	0.0	0.010	0.0	0.0	0.0	0.040
SE	0.0	0.0	0.0	0.010	0.0	0.0	0.0	0.0	0.0	0.010
SSE	0.0	0.0	0.030	0.040	0.010	0.020	0.0	0.0	0.0	0.100
S	0.0	0.0	0.030	0.060	0.010	0.070	0.0	0.0	0.0	0.170
SSW	0.0	0.010	0.010	0.100	0.140	0.339	0.090	0.010	0.0	0.698
SW	0.0	0.0	0.010	0.060	0.150	0.150	0.020	0.0	0.0	0.389
WSW	0.0	0.010	0.010	0.060	0.010	0.030	0.020	0.0	0.0	0.140
W	0.0	0.0	0.010	0.030	0.0	0.030	0.020	0.0	0.0	0.090
WNW	0.0	0.0	0.010	0.010	0.010	0.010	0.010	0.0	0.0	0.050
NW	0.0	0.0	0.0	0.010	0.010	0.050	0.020	0.0	0.0	0.090
NNW	0.0	0.0	0.010	0.010	0.010	0.090	0.020	0.0	0.0	0.140
TOTALS	0.0	0.040	0.269	0.519	0.479	1.068	0.210	0.010	0.0	2.594

STABILITY CLASS B

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.0	0.010	0.040	0.040	0.060	0.030	0.0	0.0	0.180
NNE	0.0	0.0	0.030	0.070	0.100	0.190	0.010	0.0	0.0	0.399
NE	0.0	0.0	0.030	0.120	0.080	0.130	0.010	0.0	0.0	0.369
ENE	0.0	0.0	0.040	0.040	0.040	0.060	0.010	0.0	0.0	0.190
E	0.0	0.0	0.050	0.070	0.040	0.010	0.0	0.0	0.0	0.170
ESE	0.0	0.0	0.020	0.050	0.0	0.010	0.0	0.0	0.0	0.080
SE	0.0	0.0	0.010	0.020	0.010	0.010	0.0	0.0	0.0	0.050
SSE	0.0	0.010	0.010	0.090	0.010	0.0	0.0	0.0	0.0	0.120
S	0.0	0.010	0.040	0.110	0.060	0.080	0.010	0.0	0.0	0.309
SSW	0.0	0.0	0.040	0.200	0.289	0.369	0.150	0.010	0.0	1.058
SW	0.0	0.0	0.010	0.180	0.150	0.080	0.030	0.0	0.0	0.449
WSW	0.0	0.0	0.010	0.030	0.020	0.030	0.010	0.0	0.0	0.100
W	0.0	0.0	0.010	0.030	0.020	0.030	0.010	0.010	0.0	0.110
WNW	0.0	0.0	0.020	0.0	0.010	0.070	0.010	0.0	0.0	0.110
NW	0.0	0.0	0.0	0.010	0.030	0.050	0.020	0.0	0.0	0.110
NNW	0.0	0.0	0.010	0.040	0.040	0.080	0.010	0.0	0.0	0.180
TOTALS	0.0	0.020	0.339	1.097	0.938	1.257	0.309	0.020	0.0	3.981

TABLE C.5 (CONTINUED)

WATTS BAR NUCLEAR PLANT TURBINE BUILDING ** JFD FOR GROUND-LEVEL RELEASES 03/18/76

STABILITY CLASS C

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.0	0.020	0.0	0.030	0.040	0.0	0.0	0.0	0.090
NNE	0.0	0.0	0.040	0.130	0.030	0.060	0.010	0.0	0.0	0.269
NE	0.0	0.0	0.040	0.090	0.050	0.130	0.010	0.0	0.0	0.319
ENE	0.0	0.0	0.030	0.040	0.040	0.030	0.0	0.0	0.0	0.140
E	0.0	0.0	0.040	0.040	0.030	0.010	0.0	0.0	0.0	0.120
ESE	0.0	0.0	0.030	0.030	0.010	0.010	0.0	0.0	0.0	0.080
SE	0.0	0.0	0.010	0.030	0.0	0.0	0.0	0.0	0.0	0.040
SSE	0.0	0.0	0.040	0.060	0.010	0.0	0.010	0.0	0.0	0.120
S	0.0	0.0	0.030	0.130	0.050	0.030	0.020	0.0	0.0	0.259
SSW	0.0	0.0	0.060	0.200	0.170	0.140	0.080	0.010	0.0	0.658
SW	0.0	0.0	0.020	0.080	0.100	0.040	0.030	0.0	0.0	0.269
WSW	0.0	0.0	0.030	0.030	0.010	0.010	0.010	0.0	0.0	0.090
W	0.0	0.0	0.030	0.010	0.030	0.040	0.0	0.010	0.0	0.120
WNW	0.0	0.0	0.010	0.010	0.020	0.030	0.010	0.0	0.0	0.080
NW	0.0	0.0	0.0	0.020	0.040	0.110	0.010	0.0	0.0	0.180
NNW	0.0	0.0	0.0	0.010	0.060	0.060	0.0	0.0	0.0	0.130
TOTALS	0.0	0.0	0.429	0.908	0.678	0.738	0.190	0.020	0.0	2.963

STABILITY CLASS D

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.001	0.050	0.200	0.369	0.559	0.599	0.080	0.0	0.0	1.857
NNE	0.001	0.040	0.429	0.688	0.649	1.217	0.080	0.0	0.0	3.104
NE	0.001	0.040	0.539	0.818	0.718	0.718	0.020	0.0	0.0	2.854
ENE	0.001	0.040	0.529	0.489	0.309	0.110	0.010	0.0	0.0	1.488
E	0.001	0.080	0.599	0.549	0.249	0.090	0.0	0.0	0.0	1.567
ESE	0.001	0.040	0.269	0.160	0.050	0.020	0.0	0.0	0.0	0.540
SE	0.0	0.0	0.339	0.219	0.050	0.040	0.0	0.0	0.0	0.649
SSE	0.0	0.020	0.549	0.299	0.080	0.060	0.010	0.010	0.0	1.028
S	0.001	0.030	0.688	0.649	0.239	0.239	0.010	0.010	0.0	1.867
SSW	0.001	0.030	0.908	1.477	0.868	1.357	0.539	0.060	0.0	5.239
SW	0.001	0.030	0.649	1.127	0.688	0.579	0.120	0.020	0.010	3.224
WSW	0.001	0.030	0.269	0.369	0.229	0.160	0.130	0.0	0.0	1.188
W	0.0	0.010	0.359	0.269	0.269	0.299	0.090	0.010	0.0	1.307
WNW	0.001	0.030	0.200	0.269	0.319	0.469	0.090	0.020	0.0	1.398
NW	0.001	0.040	0.210	0.289	0.429	0.678	0.110	0.0	0.0	1.757
NNW	0.001	0.080	0.180	0.229	0.479	0.738	0.060	0.0	0.0	1.767
TOTALS	0.013	0.589	6.914	8.271	6.186	7.373	1.347	0.130	0.010	30.832

TABLE C.5 (CONTINUED)

WATTS BAR NUCLEAR PLANT TURBINE BUILDING ** JFD FOR GROUND-LEVEL RELEASES 03/18/76

STABILITY CLASS G

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.010	0.339	0.249	0.0	0.0	0.0	0.0	0.0	0.0	0.599
NNE	0.009	0.299	0.229	0.0	0.0	0.0	0.0	0.0	0.0	0.538
NE	0.011	0.359	0.449	0.0	0.0	0.0	0.0	0.0	0.0	0.819
ENE	0.010	0.339	0.419	0.010	0.0	0.0	0.0	0.0	0.0	0.778
E	0.008	0.269	0.180	0.010	0.0	0.010	0.0	0.0	0.0	0.477
ESE	0.003	0.090	0.060	0.0	0.0	0.0	0.0	0.0	0.0	0.153
SE	0.004	0.140	0.110	0.0	0.0	0.0	0.0	0.0	0.0	0.253
SSE	0.004	0.120	0.150	0.0	0.0	0.0	0.0	0.0	0.0	0.273
S	0.004	0.130	0.200	0.020	0.0	0.0	0.0	0.0	0.0	0.353
SSW	0.005	0.180	0.170	0.030	0.0	0.0	0.0	0.0	0.0	0.384
SW	0.005	0.160	0.130	0.040	0.0	0.0	0.0	0.0	0.0	0.334
WSW	0.007	0.229	0.219	0.0	0.0	0.0	0.0	0.0	0.0	0.456
W	0.009	0.289	0.349	0.020	0.0	0.0	0.0	0.0	0.0	0.667
WNW	0.010	0.339	0.269	0.010	0.0	0.0	0.0	0.0	0.0	0.629
NW	0.015	0.489	0.469	0.020	0.0	0.0	0.0	0.0	0.0	0.993
NNW	0.015	0.479	0.299	0.020	0.0	0.0	0.0	0.0	0.0	0.813
TOTALS	0.129	4.250	3.951	0.180	0.0	0.010	0.0	0.0	0.0	8.519

WIND FREQUENCIES INTO THE SECTORS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00
N	0.015	0.639	2.285	1.437	0.579	0.688	0.180	0.020	0.0
NNE	0.014	0.639	3.003	3.562	2.554	3.891	1.477	0.180	0.0
NE	0.015	0.559	2.305	2.434	1.985	1.646	0.399	0.060	0.010
ENE	0.022	0.868	1.756	1.008	0.589	0.459	0.229	0.010	0.0
E	0.031	1.247	2.095	0.778	0.599	0.678	0.160	0.030	0.0
ESE	0.029	1.127	1.726	0.569	0.519	0.748	0.150	0.030	0.0
SE	0.045	1.746	2.454	0.728	0.798	1.048	0.180	0.0	0.0
SSE	0.048	1.936	2.045	0.758	0.888	1.217	0.100	0.0	0.0
S	0.028	1.137	1.686	0.998	1.078	0.998	0.120	0.0	0.0
SSW	0.026	0.998	2.095	1.656	1.277	2.065	0.140	0.0	0.0
SW	0.026	0.938	2.804	1.696	1.257	1.337	0.050	0.0	0.0
WSW	0.022	0.908	2.963	1.187	0.539	0.259	0.030	0.0	0.0
W	0.020	0.908	2.135	1.038	0.399	0.219	0.0	0.0	0.0
WNW	0.010	0.379	0.878	0.339	0.090	0.060	0.0	0.0	0.0
NW	0.009	0.349	0.858	0.389	0.080	0.060	0.0	0.0	0.0
NNW	0.014	0.619	1.686	0.658	0.190	0.200	0.060	0.020	0.0

TABLE C.6 JOINT FREQUENCY DISTRIBUTION FOR GROUND-LEVEL RELEASES FROM THE CONTAINMENT BUILDING

WATTS BAR JFD EFF VEL = 21.2 MPH WS = 33 FEET 7/1/73 - 6/30/75 (RB) 03/18/76

STABILITY CLASS A

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	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	0.0	0.020	0.0	0.0	0.0	0.020
NE	0.0	0.0	0.0	0.0	0.0	0.020	0.0	0.0	0.0	0.020
ENE	0.0	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	0.0
ESE	0.0	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	0.0
SSE	0.0	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	0.010	0.0	0.0	0.0	0.010
SSW	0.0	0.0	0.0	0.0	0.020	0.060	0.040	0.0	0.0	0.120
SW	0.0	0.0	0.0	0.0	0.020	0.030	0.010	0.0	0.0	0.060
WSW	0.0	0.0	0.0	0.0	0.0	0.010	0.010	0.0	0.0	0.020
W	0.0	0.0	0.0	0.0	0.0	0.010	0.010	0.0	0.0	0.020
WNW	0.0	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	0.010	0.010	0.0	0.0	0.020
NNW	0.0	0.0	0.0	0.0	0.0	0.020	0.010	0.0	0.0	0.030
TOTALS	0.0	0.0	0.0	0.0	0.040	0.190	0.090	0.0	0.0	0.320

STABILITY CLASS B

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.0	0.0	0.0	0.0	0.010	0.0	0.0	0.0	0.010
NNE	0.0	0.0	0.0	0.0	0.020	0.030	0.0	0.0	0.0	0.050
NE	0.0	0.0	0.0	0.0	0.010	0.020	0.0	0.0	0.0	0.030
ENE	0.0	0.0	0.0	0.0	0.0	0.010	0.0	0.0	0.0	0.010
E	0.0	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	0.0
SE	0.0	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	0.0
S	0.0	0.0	0.0	0.0	0.010	0.020	0.0	0.0	0.0	0.030
SSW	0.0	0.0	0.0	0.010	0.040	0.080	0.050	0.0	0.0	0.180
SW	0.0	0.0	0.0	0.010	0.020	0.010	0.0	0.0	0.0	0.040
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.010	0.0	0.0	0.010
W	0.0	0.0	0.0	0.0	0.0	0.010	0.0	0.0	0.0	0.010
WNW	0.0	0.0	0.0	0.0	0.0	0.020	0.0	0.0	0.0	0.020
NW	0.0	0.0	0.0	0.0	0.0	0.010	0.010	0.0	0.0	0.020
NNW	0.0	0.0	0.0	0.0	0.010	0.010	0.0	0.0	0.0	0.020
TOTALS	0.0	0.0	0.0	0.020	0.110	0.230	0.070	0.0	0.0	0.430

TABLE C.6 (CONTINUED)

WATTS BAR JFD EFF VEL = 21.2 MPH WS = 33 FEET 7/1/73 - 6/30/75 (RB) 03/18/76

STABILITY CLASS C

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.0	0.0	0.0	0.0	0.010	0.0	0.0	0.0	0.010
NNE	0.0	0.0	0.0	0.0	0.0	0.010	0.0	0.0	0.0	0.010
NE	0.0	0.0	0.0	0.0	0.010	0.020	0.0	0.0	0.0	0.030
ENE	0.0	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	0.0
ESE	0.0	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	0.0
SSE	0.0	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	0.010	0.010	0.0	0.0	0.0	0.020
SSW	0.0	0.0	0.0	0.010	0.020	0.030	0.030	0.010	0.0	0.100
SW	0.0	0.0	0.0	0.0	0.010	0.010	0.010	0.0	0.0	0.030
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.010	0.0	0.0	0.010
W	0.0	0.0	0.0	0.0	0.0	0.010	0.0	0.0	0.0	0.010
WNW	0.0	0.0	0.0	0.0	0.0	0.010	0.0	0.0	0.0	0.010
NW	0.0	0.0	0.0	0.0	0.010	0.020	0.0	0.0	0.0	0.030
NNW	0.0	0.0	0.0	0.0	0.010	0.010	0.0	0.0	0.0	0.020
TOTALS	0.0	0.0	0.0	0.010	0.070	0.140	0.050	0.010	0.0	0.280

STABILITY CLASS D

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.0	0.0	0.020	0.070	0.100	0.030	0.0	0.0	0.220
NNE	0.0	0.0	0.0	0.030	0.080	0.210	0.040	0.0	0.0	0.360
NE	0.0	0.0	0.0	0.040	0.090	0.110	0.0	0.0	0.0	0.240
ENE	0.0	0.0	0.0	0.020	0.040	0.020	0.010	0.0	0.0	0.090
E	0.0	0.0	0.0	0.020	0.030	0.010	0.0	0.0	0.0	0.060
ESE	0.0	0.0	0.0	0.010	0.010	0.0	0.0	0.0	0.0	0.020
SE	0.0	0.0	0.0	0.010	0.010	0.010	0.0	0.0	0.0	0.030
SSE	0.0	0.0	0.0	0.010	0.010	0.010	0.010	0.010	0.0	0.050
S	0.0	0.0	0.0	0.020	0.030	0.040	0.0	0.010	0.0	0.100
SSW	0.0	0.0	0.0	0.080	0.120	0.250	0.210	0.020	0.0	0.680
SW	0.0	0.0	0.0	0.050	0.090	0.100	0.040	0.020	0.010	0.310
WSW	0.0	0.0	0.0	0.020	0.030	0.040	0.080	0.0	0.0	0.170
W	0.0	0.0	0.0	0.010	0.030	0.050	0.030	0.0	0.0	0.120
WNW	0.0	0.0	0.0	0.020	0.040	0.090	0.040	0.0	0.0	0.190
NW	0.0	0.0	0.0	0.020	0.050	0.110	0.040	0.0	0.0	0.220
NNW	0.0	0.0	0.0	0.010	0.050	0.100	0.020	0.0	0.0	0.180
TOTALS	0.0	0.0	0.0	0.390	0.780	1.250	0.550	0.060	0.010	3.040

TABLE C.6 (CONTINUED)

WATTS BAR JFD EFF VEL = 21.2 MPH WS = 33 FEET 7/1/73 - 6/30/75 (RB) 03/18/76

STABILITY CLASS E

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.0	0.010	0.050	0.060	0.050	0.010	0.0	0.0	0.180
NNE	0.0	0.0	0.010	0.060	0.070	0.090	0.010	0.0	0.0	0.240
NE	0.0	0.0	0.010	0.050	0.050	0.040	0.0	0.0	0.0	0.150
ENE	0.0	0.0	0.010	0.040	0.020	0.010	0.0	0.0	0.0	0.080
E	0.0	0.0	0.0	0.020	0.010	0.020	0.0	0.0	0.0	0.050
ESE	0.0	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	0.010	0.0	0.0	0.0	0.0	0.0	0.010
SSE	0.0	0.0	0.0	0.010	0.010	0.020	0.020	0.010	0.0	0.070
S	0.0	0.0	0.010	0.040	0.030	0.050	0.070	0.010	0.0	0.210
SSW	0.0	0.0	0.030	0.140	0.140	0.290	0.260	0.020	0.0	0.880
SW	0.0	0.0	0.020	0.070	0.110	0.140	0.100	0.010	0.0	0.450
WSW	0.0	0.0	0.010	0.050	0.050	0.050	0.050	0.010	0.0	0.220
W	0.0	0.0	0.010	0.040	0.040	0.050	0.030	0.0	0.0	0.170
WNW	0.0	0.0	0.010	0.020	0.020	0.030	0.010	0.0	0.0	0.090
NW	0.0	0.0	0.0	0.030	0.030	0.020	0.010	0.0	0.0	0.090
NNW	0.0	0.0	0.0	0.030	0.040	0.040	0.0	0.0	0.0	0.110
TOTALS	0.0	0.0	0.130	0.660	0.680	0.900	0.570	0.060	0.0	3.000

STABILITY CLASS F

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.0	0.010	0.010	0.0	0.0	0.0	0.0	0.0	0.020
NNE	0.0	0.0	0.010	0.010	0.0	0.0	0.0	0.0	0.0	0.020
NE	0.0	0.0	0.010	0.0	0.0	0.0	0.0	0.0	0.0	0.010
ENE	0.0	0.0	0.020	0.010	0.0	0.0	0.0	0.0	0.0	0.030
E	0.0	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	0.0
SE	0.0	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	0.0
S	0.0	0.0	0.010	0.0	0.0	0.0	0.0	0.0	0.0	0.010
SSW	0.0	0.0	0.030	0.030	0.020	0.010	0.0	0.0	0.0	0.090
SW	0.0	0.0	0.020	0.020	0.010	0.0	0.0	0.0	0.0	0.050
WSW	0.0	0.0	0.010	0.010	0.010	0.0	0.0	0.0	0.0	0.030
W	0.0	0.0	0.010	0.010	0.0	0.0	0.0	0.0	0.0	0.020
WNW	0.0	0.0	0.010	0.010	0.0	0.0	0.0	0.0	0.0	0.020
NW	0.0	0.0	0.010	0.010	0.0	0.0	0.0	0.0	0.0	0.020
NNW	0.0	0.0	0.0	0.010	0.0	0.0	0.0	0.0	0.0	0.010
TOTALS	0.0	0.0	0.150	0.130	0.040	0.010	0.0	0.0	0.0	0.330

TABLE C.6 (CONTINUED)

WATTS BAR JFD EFF VEL = 21.2 MPH WS = 33 FEET 7/1/73 - 6/30/75 (RB) 03/18/76

STABILITY CLASS G

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.010	0.0	0.0	0.0	0.0	0.0	0.0	0.010
NE	0.0	0.0	0.010	0.0	0.0	0.0	0.0	0.0	0.0	0.010
ENE	0.0	0.0	0.010	0.0	0.0	0.0	0.0	0.0	0.0	0.010
E	0.0	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	0.0
SE	0.0	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	0.0
S	0.0	0.0	0.010	0.0	0.0	0.0	0.0	0.0	0.0	0.010
SSW	0.0	0.0	0.010	0.0	0.0	0.0	0.0	0.0	0.0	0.010
SW	0.0	0.0	0.010	0.0	0.0	0.0	0.0	0.0	0.0	0.010
WSW	0.0	0.0	0.010	0.0	0.0	0.0	0.0	0.0	0.0	0.010
W	0.0	0.0	0.010	0.0	0.0	0.0	0.0	0.0	0.0	0.010
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.010	0.0	0.0	0.0	0.0	0.0	0.0	0.010
NNW	0.0	0.0	0.010	0.0	0.0	0.0	0.0	0.0	0.0	0.010
TOTALS	0.0	0.0	0.100	0.0	0.0	0.0	0.0	0.0	0.0	0.100

TABLE C.7 JOINT FREQUENCY DISTRIBUTION FOR ELEVATED RELEASES FROM THE CONTAINMENT BUILDING

WATTS BAR JFD EFF VEL = 21.2 MPH WS = 150 FEET (SCALED) 7/1/73 - 6/30/75 03/18/76

STABILITY CLASS A

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.0	0.0	0.010	0.010	0.040	0.0	0.0	0.0	0.060
NNE	0.0	0.0	0.010	0.010	0.040	0.100	0.030	0.0	0.0	0.190
NE	0.0	0.0	0.040	0.050	0.020	0.110	0.010	0.0	0.0	0.230
ENE	0.0	0.010	0.030	0.030	0.030	0.020	0.0	0.0	0.0	0.120
E	0.0	0.0	0.040	0.010	0.010	0.010	0.0	0.0	0.0	0.070
ESE	0.0	0.0	0.020	0.0	0.0	0.010	0.0	0.0	0.0	0.030
SE	0.0	0.0	0.020	0.010	0.0	0.010	0.0	0.0	0.0	0.040
SSE	0.0	0.0	0.020	0.020	0.0	0.030	0.0	0.0	0.0	0.070
S	0.0	0.0	0.010	0.010	0.0	0.0	0.010	0.0	0.0	0.030
SSW	0.0	0.0	0.050	0.090	0.050	0.110	0.040	0.0	0.0	0.340
SW	0.0	0.010	0.020	0.120	0.100	0.290	0.050	0.0	0.0	0.590
WSW	0.0	0.0	0.010	0.050	0.050	0.120	0.010	0.0	0.0	0.240
W	0.0	0.0	0.010	0.010	0.0	0.020	0.030	0.0	0.0	0.070
WNW	0.0	0.0	0.0	0.0	0.010	0.010	0.0	0.0	0.0	0.020
NW	0.0	0.0	0.010	0.0	0.0	0.030	0.030	0.0	0.0	0.070
NNW	0.0	0.0	0.0	0.010	0.0	0.030	0.030	0.0	0.0	0.070
TOTALS	0.0	0.020	0.290	0.430	0.320	0.940	0.240	0.0	0.0	2.240

STABILITY CLASS B

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.010	0.0	0.040	0.050	0.040	0.020	0.0	0.0	0.160
NNE	0.0	0.0	0.020	0.070	0.040	0.110	0.040	0.0	0.0	0.280
NE	0.0	0.0	0.050	0.090	0.070	0.190	0.030	0.0	0.0	0.430
ENE	0.0	0.0	0.050	0.110	0.060	0.050	0.010	0.0	0.0	0.280
E	0.0	0.0	0.030	0.060	0.020	0.020	0.0	0.0	0.0	0.130
ESE	0.0	0.0	0.030	0.050	0.010	0.010	0.0	0.0	0.0	0.100
SE	0.0	0.0	0.0	0.030	0.010	0.0	0.0	0.0	0.0	0.040
SSE	0.0	0.0	0.030	0.020	0.020	0.010	0.0	0.0	0.0	0.080
S	0.0	0.0	0.030	0.040	0.020	0.010	0.010	0.0	0.0	0.110
SSW	0.0	0.0	0.030	0.120	0.090	0.130	0.050	0.0	0.0	0.420
SW	0.0	0.0	0.030	0.230	0.240	0.360	0.040	0.0	0.0	0.900
WSW	0.0	0.0	0.020	0.060	0.030	0.100	0.020	0.0	0.0	0.230
W	0.0	0.0	0.0	0.010	0.020	0.020	0.010	0.0	0.0	0.060
WNW	0.0	0.0	0.0	0.0	0.010	0.040	0.020	0.0	0.0	0.070
NW	0.0	0.0	0.010	0.010	0.020	0.040	0.030	0.0	0.0	0.110
NNW	0.0	0.0	0.010	0.010	0.020	0.050	0.010	0.0	0.0	0.100
TOTALS	0.0	0.010	0.340	0.950	0.730	1.180	0.290	0.0	0.0	3.500

TABLE C.7 (CONTINUED)

WATTS BAR JFD EFF VEL = 21.2 MPH WS = 150 FEET (SCALED) 7/1/73 - 6/30/75 03/18/76

STABILITY CLASS C

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.0	0.0	0.010	0.060	0.050	0.010	0.0	0.0	0.130
NNE	0.0	0.0	0.040	0.030	0.050	0.060	0.020	0.0	0.0	0.200
NE	0.0	0.0	0.020	0.160	0.060	0.090	0.010	0.0	0.0	0.340
ENE	0.0	0.0	0.050	0.050	0.020	0.030	0.0	0.0	0.0	0.150
E	0.0	0.0	0.060	0.050	0.050	0.020	0.0	0.0	0.0	0.180
ESE	0.0	0.0	0.010	0.050	0.0	0.010	0.0	0.0	0.0	0.070
SE	0.0	0.0	0.010	0.010	0.010	0.010	0.0	0.0	0.0	0.040
SSE	0.0	0.0	0.010	0.030	0.010	0.010	0.0	0.0	0.0	0.060
S	0.0	0.0	0.020	0.090	0.010	0.010	0.010	0.0	0.0	0.140
SSW	0.0	0.0	0.050	0.110	0.090	0.060	0.020	0.0	0.0	0.330
SW	0.0	0.0	0.040	0.180	0.120	0.100	0.060	0.0	0.0	0.500
WSW	0.0	0.0	0.010	0.070	0.050	0.050	0.0	0.0	0.0	0.180
W	0.0	0.0	0.020	0.010	0.030	0.030	0.0	0.0	0.0	0.090
WNW	0.0	0.0	0.010	0.010	0.010	0.030	0.020	0.0	0.0	0.080
NW	0.0	0.0	0.0	0.020	0.010	0.090	0.020	0.0	0.0	0.140
NNW	0.0	0.0	0.010	0.0	0.020	0.030	0.010	0.0	0.0	0.070
TOTALS	0.0	0.0	0.360	0.880	0.600	0.680	0.180	0.0	0.0	2.700

STABILITY CLASS D

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.010	0.140	0.250	0.230	0.560	0.070	0.0	0.0	1.260
NNE	0.001	0.030	0.400	0.520	0.570	0.940	0.170	0.0	0.0	2.631
NE	0.001	0.030	0.660	0.910	0.610	0.990	0.110	0.0	0.0	3.311
ENE	0.001	0.040	0.510	0.550	0.450	0.300	0.010	0.0	0.0	1.861
E	0.0	0.010	0.400	0.360	0.220	0.200	0.010	0.0	0.0	1.200
ESE	0.0	0.010	0.230	0.260	0.110	0.050	0.0	0.0	0.0	0.660
SE	0.001	0.030	0.190	0.140	0.040	0.040	0.010	0.0	0.0	0.451
SSE	0.0	0.010	0.250	0.180	0.050	0.020	0.0	0.0	0.0	0.510
S	0.0	0.010	0.370	0.270	0.080	0.130	0.030	0.0	0.0	0.890
SSW	0.0	0.020	0.690	0.900	0.450	0.440	0.250	0.0	0.0	2.750
SW	0.001	0.030	0.810	1.700	0.910	1.090	0.280	0.0	0.0	4.821
WSW	0.0	0.010	0.360	0.620	0.420	0.410	0.130	0.0	0.0	1.950
W	0.0	0.010	0.350	0.250	0.170	0.270	0.090	0.0	0.0	1.140
WNW	0.0	0.010	0.160	0.160	0.200	0.380	0.130	0.0	0.0	1.040
NW	0.0	0.010	0.100	0.150	0.330	0.500	0.140	0.0	0.0	1.230
NNW	0.001	0.030	0.140	0.170	0.230	0.530	0.120	0.0	0.0	1.221
TOTALS	0.006	0.300	5.760	7.390	5.070	6.850	1.550	0.0	0.0	26.926

TABLE C.7 (CONTINUED)

WATTS BAR JFD EFF VEL = 21.2 MPH WS = 150 FEET (SCALED) 7/1/73 - 6/30/75 03/18/76

STABILITY CLASS E

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.002	0.080	0.460	0.330	0.360	0.460	0.040	0.0	0.0	1.732
NNE	0.003	0.150	1.100	0.620	0.490	0.640	0.080	0.0	0.0	3.083
NE	0.005	0.210	1.570	1.220	0.530	0.610	0.080	0.0	0.0	4.225
ENE	0.002	0.080	0.890	0.560	0.200	0.140	0.020	0.0	0.0	1.892
E	0.001	0.030	0.710	0.260	0.230	0.110	0.010	0.0	0.0	1.351
ESE	0.001	0.050	0.350	0.110	0.100	0.030	0.010	0.0	0.0	0.651
SE	0.003	0.120	0.230	0.100	0.020	0.010	0.0	0.0	0.0	0.483
SSE	0.002	0.080	0.400	0.070	0.040	0.090	0.020	0.0	0.0	0.702
S	0.001	0.060	0.430	0.200	0.130	0.190	0.120	0.0	0.0	1.131
SSW	0.003	0.120	1.190	0.850	0.510	0.840	0.310	0.010	0.0	3.833
SW	0.002	0.100	1.470	1.530	1.120	1.380	0.440	0.010	0.0	6.052
WSW	0.003	0.110	0.940	0.650	0.460	0.810	0.140	0.0	0.0	3.113
W	0.002	0.070	0.370	0.250	0.190	0.320	0.040	0.0	0.0	1.242
WNW	0.002	0.080	0.330	0.130	0.200	0.280	0.060	0.0	0.0	1.082
NW	0.001	0.060	0.310	0.210	0.130	0.290	0.050	0.0	0.0	1.051
NNW	0.002	0.080	0.350	0.220	0.160	0.250	0.060	0.0	0.0	1.122
TOTALS	0.035	1.480	11.100	7.310	4.870	6.450	1.480	0.020	0.0	32.745

STABILITY CLASS F

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.005	0.140	0.460	0.200	0.060	0.020	0.0	0.0	0.0	0.885
NNE	0.006	0.160	1.240	0.740	0.120	0.0	0.0	0.0	0.0	2.266
NE	0.007	0.190	1.700	0.830	0.160	0.010	0.0	0.0	0.0	2.897
ENE	0.003	0.080	0.560	0.160	0.050	0.010	0.0	0.0	0.0	0.863
E	0.0	0.010	0.390	0.170	0.020	0.010	0.0	0.0	0.0	0.600
ESE	0.001	0.030	0.160	0.020	0.0	0.0	0.0	0.0	0.0	0.211
SE	0.002	0.050	0.180	0.010	0.0	0.0	0.0	0.0	0.0	0.242
SSE	0.002	0.050	0.230	0.040	0.010	0.0	0.0	0.0	0.0	0.332
S	0.002	0.050	0.310	0.130	0.030	0.020	0.010	0.0	0.0	0.552
SSW	0.003	0.070	0.710	0.370	0.160	0.100	0.0	0.0	0.0	1.413
SW	0.003	0.080	1.080	0.790	0.320	0.190	0.010	0.0	0.0	2.473
WSW	0.003	0.090	0.640	0.450	0.120	0.100	0.0	0.0	0.0	1.403
W	0.003	0.090	0.240	0.080	0.040	0.030	0.0	0.0	0.0	0.483
WNW	0.002	0.050	0.200	0.070	0.030	0.010	0.0	0.0	0.0	0.362
NW	0.002	0.050	0.160	0.080	0.050	0.030	0.0	0.0	0.0	0.372
NNW	0.004	0.100	0.230	0.070	0.050	0.010	0.0	0.0	0.0	0.464
TOTALS	0.048	1.290	8.490	4.210	1.220	0.540	0.020	0.0	0.0	15.818

TABLE C.7 (CONTINUED)

WATTS BAR JFD EFF VEL = 21.2 MPH WS = 150 FEET (SCALED) 7/1/73 - 6/30/75 03/18/76

STABILITY CLASS G

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.010	0.320	0.180	0.030	0.0	0.0	0.0	0.0	0.540
NNE	0.003	0.060	0.690	0.300	0.040	0.050	0.0	0.0	0.0	1.143
NE	0.002	0.050	0.770	0.380	0.070	0.030	0.0	0.0	0.0	1.302
ENE	0.0	0.010	0.240	0.080	0.010	0.0	0.0	0.0	0.0	0.340
E	0.001	0.030	0.230	0.030	0.010	0.010	0.0	0.0	0.0	0.311
ESE	0.0	0.010	0.100	0.030	0.0	0.0	0.0	0.0	0.0	0.140
SE	0.0	0.010	0.100	0.010	0.0	0.0	0.0	0.0	0.0	0.120
SSE	0.001	0.020	0.120	0.060	0.0	0.0	0.0	0.0	0.0	0.201
S	0.002	0.050	0.160	0.120	0.010	0.0	0.0	0.0	0.0	0.342
SSW	0.001	0.030	0.400	0.440	0.120	0.010	0.0	0.0	0.0	1.001
SW	0.002	0.040	0.610	0.610	0.190	0.060	0.0	0.0	0.0	1.512
WSW	0.001	0.030	0.320	0.280	0.040	0.010	0.0	0.0	0.0	0.681
W	0.001	0.030	0.190	0.030	0.020	0.0	0.0	0.0	0.0	0.271
WNW	0.0	0.0	0.090	0.010	0.010	0.0	0.0	0.0	0.0	0.110
NW	0.002	0.040	0.110	0.040	0.020	0.010	0.0	0.0	0.0	0.222
NNW	0.001	0.020	0.230	0.080	0.010	0.0	0.0	0.0	0.0	0.341
TOTALS	0.017	0.440	4.680	2.680	0.580	0.180	0.0	0.0	0.0	8.577

WIND FREQUENCIES INTO THE SECTORS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00
N	0.005	0.170	1.360	0.920	0.360	0.490	0.260	0.020	0.0
NNE	0.007	0.240	3.190	3.150	1.830	2.410	1.260	0.060	0.0
NE	0.008	0.260	4.110	5.310	3.260	3.760	1.040	0.040	0.010
ENE	0.007	0.240	2.330	2.260	1.260	1.700	0.460	0.010	0.0
E	0.006	0.200	1.210	0.700	0.540	0.820	0.240	0.0	0.0
ESE	0.004	0.140	0.810	0.430	0.530	0.900	0.280	0.0	0.0
SE	0.005	0.160	0.720	0.570	0.650	1.160	0.340	0.0	0.0
SSE	0.008	0.230	0.980	0.610	0.600	1.080	0.260	0.0	0.0
S	0.007	0.250	1.400	1.100	0.930	1.340	0.180	0.0	0.0
SSW	0.013	0.400	3.530	2.390	1.520	2.260	0.390	0.0	0.0
SW	0.015	0.480	4.840	3.730	1.680	2.240	0.240	0.0	0.0
WSW	0.006	0.220	2.370	1.610	0.880	0.590	0.050	0.0	0.0
W	0.002	0.080	1.860	0.960	0.600	0.410	0.020	0.0	0.0
WNW	0.002	0.100	0.900	0.530	0.230	0.110	0.010	0.0	0.0
NW	0.006	0.210	0.730	0.330	0.090	0.080	0.010	0.0	0.0
NNW	0.005	0.160	1.060	0.440	0.150	0.190	0.050	0.020	0.0

TABLE C.8 JOINT FREQUENCY DISTRIBUTION FOR GROUND-LEVEL RELEASES FROM THE AUXILIARY BUILDING

WATTS BAR NUCLEAR PLANT AUXILIARY BUILDING ** JFD FOR GROUND-LEVEL RELEASES 03/18/76

STABILITY CLASS A

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.0	0.0	0.0	0.020	0.010	0.0	0.0	0.0	0.030
NNE	0.0	0.0	0.0	0.010	0.030	0.100	0.010	0.0	0.0	0.150
NE	0.0	0.0	0.0	0.010	0.020	0.120	0.0	0.0	0.0	0.150
ENE	0.0	0.0	0.0	0.0	0.010	0.030	0.0	0.0	0.0	0.040
E	0.0	0.0	0.010	0.010	0.0	0.010	0.0	0.0	0.0	0.030
ESE	0.0	0.0	0.0	0.0	0.0	0.010	0.0	0.0	0.0	0.010
SE	0.0	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	0.010	0.010	0.020	0.0	0.0	0.0	0.040
S	0.0	0.0	0.0	0.010	0.010	0.070	0.0	0.0	0.0	0.090
SSW	0.0	0.0	0.0	0.020	0.100	0.320	0.070	0.0	0.0	0.509
SW	0.0	0.0	0.0	0.010	0.120	0.150	0.010	0.0	0.0	0.290
WSW	0.0	0.0	0.0	0.010	0.010	0.030	0.020	0.0	0.0	0.070
W	0.0	0.0	0.0	0.010	0.0	0.030	0.020	0.0	0.0	0.060
WNW	0.0	0.0	0.0	0.0	0.010	0.010	0.010	0.0	0.0	0.030
NW	0.0	0.0	0.0	0.0	0.010	0.050	0.020	0.0	0.0	0.080
NNW	0.0	0.0	0.0	0.0	0.010	0.100	0.020	0.0	0.0	0.130
TOTALS	0.0	0.0	0.010	0.100	0.359	1.058	0.180	0.0	0.0	1.707

STABILITY CLASS B

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.0	0.0	0.010	0.010	0.060	0.010	0.0	0.0	0.090
NNE	0.0	0.0	0.0	0.010	0.090	0.180	0.010	0.0	0.0	0.290
NE	0.0	0.0	0.0	0.020	0.050	0.120	0.010	0.0	0.0	0.200
ENE	0.0	0.0	0.0	0.010	0.020	0.060	0.010	0.0	0.0	0.100
E	0.0	0.0	0.0	0.020	0.020	0.010	0.0	0.0	0.0	0.050
ESE	0.0	0.0	0.0	0.010	0.0	0.010	0.0	0.0	0.0	0.020
SE	0.0	0.0	0.0	0.0	0.010	0.010	0.0	0.0	0.0	0.020
SSE	0.0	0.0	0.0	0.020	0.010	0.0	0.0	0.0	0.0	0.030
S	0.0	0.0	0.0	0.020	0.050	0.080	0.010	0.0	0.0	0.160
SSW	0.0	0.0	0.010	0.050	0.210	0.379	0.080	0.0	0.0	0.729
SW	0.0	0.0	0.0	0.050	0.130	0.060	0.0	0.0	0.0	0.240
WSW	0.0	0.0	0.0	0.010	0.020	0.030	0.010	0.0	0.0	0.070
W	0.0	0.0	0.0	0.010	0.010	0.030	0.0	0.0	0.0	0.050
WNW	0.0	0.0	0.0	0.0	0.010	0.080	0.010	0.0	0.0	0.100
NW	0.0	0.0	0.0	0.0	0.030	0.060	0.020	0.0	0.0	0.110
NNW	0.0	0.0	0.0	0.010	0.030	0.090	0.010	0.0	0.0	0.140
TOTALS	0.0	0.0	0.010	0.250	0.699	1.258	0.180	0.0	0.0	2.396

TABLE C.8 (CONTINUED)

WATTS BAR NUCLEAR PLANT AUXILIARY BUILDING ** JFD FOR GROUND-LEVEL RELEASES 03/18/76

STABILITY CLASS C

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.0	0.0	0.0	0.020	0.050	0.0	0.0	0.0	0.070
NNE	0.0	0.0	0.010	0.030	0.020	0.060	0.010	0.0	0.0	0.130
NE	0.0	0.0	0.010	0.020	0.040	0.120	0.010	0.0	0.0	0.200
ENE	0.0	0.0	0.0	0.010	0.020	0.030	0.0	0.0	0.0	0.060
E	0.0	0.0	0.0	0.010	0.020	0.010	0.0	0.0	0.0	0.040
ESE	0.0	0.0	0.0	0.010	0.010	0.010	0.0	0.0	0.0	0.030
SE	0.0	0.0	0.0	0.010	0.0	0.0	0.0	0.0	0.0	0.010
SSE	0.0	0.0	0.010	0.020	0.010	0.0	0.010	0.0	0.0	0.050
S	0.0	0.0	0.0	0.030	0.040	0.030	0.010	0.0	0.0	0.110
SSW	0.0	0.0	0.010	0.050	0.130	0.140	0.060	0.010	0.0	0.399
SW	0.0	0.0	0.0	0.020	0.070	0.030	0.020	0.0	0.0	0.140
WSW	0.0	0.0	0.0	0.010	0.010	0.010	0.010	0.0	0.0	0.040
W	0.0	0.0	0.0	0.0	0.020	0.040	0.0	0.0	0.0	0.060
WNW	0.0	0.0	0.0	0.0	0.010	0.030	0.0	0.0	0.0	0.040
NW	0.0	0.0	0.0	0.0	0.040	0.120	0.0	0.0	0.0	0.160
NNW	0.0	0.0	0.0	0.0	0.040	0.050	0.0	0.0	0.0	0.090
TOTALS	0.0	0.0	0.040	0.220	0.499	0.729	0.130	0.010	0.0	1.628

STABILITY CLASS D

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.0	0.020	0.090	0.419	0.549	0.080	0.0	0.0	1.158
NNE	0.0	0.0	0.050	0.170	0.459	1.208	0.080	0.0	0.0	1.967
NE	0.0	0.0	0.060	0.190	0.479	0.649	0.010	0.0	0.0	1.388
ENE	0.0	0.0	0.070	0.120	0.220	0.120	0.010	0.0	0.0	0.539
E	0.0	0.0	0.070	0.120	0.160	0.080	0.0	0.0	0.0	0.429
ESE	0.0	0.0	0.030	0.040	0.040	0.020	0.0	0.0	0.0	0.130
SE	0.0	0.0	0.040	0.050	0.040	0.040	0.0	0.0	0.0	0.170
SSE	0.0	0.0	0.060	0.060	0.050	0.060	0.010	0.010	0.0	0.250
S	0.0	0.0	0.080	0.140	0.170	0.230	0.010	0.010	0.0	0.639
SSW	0.0	0.0	0.120	0.409	0.699	1.218	0.369	0.020	0.0	2.836
SW	0.0	0.0	0.080	0.280	0.519	0.459	0.060	0.020	0.010	1.428
WSW	0.0	0.0	0.040	0.100	0.200	0.170	0.120	0.0	0.0	0.629
W	0.0	0.0	0.040	0.070	0.200	0.270	0.050	0.0	0.0	0.629
WNW	0.0	0.0	0.030	0.090	0.260	0.449	0.060	0.0	0.0	0.889
NW	0.0	0.0	0.020	0.080	0.320	0.569	0.080	0.0	0.0	1.068
NNW	0.0	0.0	0.020	0.050	0.320	0.569	0.060	0.0	0.0	1.018
TOTALS	0.0	0.0	0.829	2.057	4.553	6.660	0.999	0.060	0.010	15.167

TABLE C.8 (CONTINUED)

WATTS BAR NUCLEAR PLANT AUXILIARY BUILDING ** JFD FOR GROUND-LEVEL RELEASES 03/18/76

STABILITY CLASS E

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.010	0.080	0.250	0.359	0.280	0.010	0.0	0.0	0.989
NNE	0.0	0.020	0.120	0.280	0.399	0.489	0.030	0.0	0.0	1.338
NE	0.0	0.010	0.150	0.210	0.290	0.200	0.010	0.0	0.0	0.869
ENE	0.0	0.010	0.170	0.180	0.110	0.030	0.010	0.0	0.0	0.509
E	0.0	0.020	0.100	0.080	0.060	0.100	0.0	0.0	0.0	0.359
ESE	0.0	0.010	0.040	0.020	0.030	0.010	0.0	0.0	0.0	0.110
SE	0.0	0.010	0.030	0.040	0.020	0.010	0.0	0.0	0.0	0.110
SSE	0.0	0.020	0.090	0.050	0.060	0.100	0.030	0.010	0.0	0.359
S	0.0	0.010	0.160	0.200	0.190	0.240	0.100	0.010	0.0	0.909
SSW	0.0	0.020	0.240	0.709	0.849	1.318	0.419	0.020	0.0	3.575
SW	0.0	0.010	0.160	0.359	0.669	0.629	0.150	0.010	0.0	1.987
WSW	0.0	0.010	0.130	0.260	0.280	0.220	0.070	0.010	0.0	0.979
W	0.0	0.020	0.120	0.200	0.250	0.260	0.040	0.0	0.0	0.889
WNW	0.0	0.010	0.080	0.100	0.150	0.140	0.020	0.0	0.0	0.499
NW	0.0	0.020	0.110	0.130	0.200	0.120	0.020	0.0	0.0	0.599
NNW	0.0	0.020	0.080	0.160	0.230	0.260	0.010	0.0	0.0	0.759
TOTALS	0.0	0.230	1.857	3.225	4.144	4.403	0.919	0.060	0.0	14.838

STABILITY CLASS F

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.030	0.090	0.030	0.010	0.0	0.0	0.0	0.0	0.160
NNE	0.0	0.030	0.090	0.030	0.0	0.0	0.0	0.0	0.0	0.150
NE	0.0	0.030	0.120	0.020	0.010	0.010	0.0	0.0	0.0	0.190
ENE	0.0	0.030	0.140	0.030	0.0	0.0	0.0	0.0	0.0	0.200
E	0.0	0.020	0.060	0.010	0.0	0.0	0.0	0.0	0.0	0.090
ESE	0.0	0.010	0.020	0.0	0.0	0.0	0.0	0.0	0.0	0.030
SE	0.0	0.010	0.020	0.0	0.0	0.0	0.0	0.0	0.0	0.030
SSE	0.0	0.020	0.040	0.020	0.0	0.010	0.0	0.0	0.0	0.090
S	0.0	0.010	0.070	0.010	0.0	0.010	0.0	0.0	0.0	0.100
SSW	0.0	0.010	0.150	0.150	0.100	0.030	0.0	0.0	0.0	0.439
SW	0.0	0.020	0.110	0.100	0.070	0.010	0.0	0.0	0.0	0.310
WSW	0.0	0.020	0.080	0.050	0.030	0.0	0.0	0.0	0.0	0.180
W	0.0	0.030	0.090	0.030	0.010	0.010	0.0	0.0	0.0	0.170
WNW	0.0	0.030	0.070	0.030	0.0	0.010	0.0	0.0	0.0	0.140
NW	0.0	0.040	0.100	0.020	0.020	0.010	0.0	0.0	0.0	0.190
NNW	0.001	0.060	0.100	0.030	0.010	0.0	0.0	0.0	0.0	0.201
TOTALS	0.001	0.399	1.348	0.559	0.260	0.100	0.0	0.0	0.0	2.667

TABLE C.8 (CONTINUED)

WATTS BAR NUCLEAR PLANT AUXILIARY BUILDING ** JFD FOR GROUND-LEVEL RELEASES 03/18/76

STABILITY CLASS G

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.001	0.040	0.050	0.0	0.0	0.0	0.0	0.0	0.0	0.091
NNE	0.0	0.030	0.050	0.0	0.0	0.0	0.0	0.0	0.0	0.080
NE	0.0	0.030	0.100	0.0	0.0	0.0	0.0	0.0	0.0	0.130
ENE	0.001	0.040	0.080	0.010	0.0	0.0	0.0	0.0	0.0	0.131
E	0.0	0.020	0.030	0.0	0.0	0.010	0.0	0.0	0.0	0.060
ESE	0.0	0.010	0.010	0.0	0.0	0.0	0.0	0.0	0.0	0.020
SE	0.0	0.010	0.020	0.0	0.0	0.0	0.0	0.0	0.0	0.030
SSE	0.0	0.010	0.020	0.0	0.0	0.0	0.0	0.0	0.0	0.030
S	0.0	0.010	0.040	0.010	0.0	0.0	0.0	0.0	0.0	0.060
SSW	0.0	0.020	0.040	0.020	0.0	0.0	0.0	0.0	0.0	0.080
SW	0.0	0.020	0.030	0.020	0.0	0.0	0.0	0.0	0.0	0.070
WSW	0.0	0.030	0.050	0.0	0.0	0.0	0.0	0.0	0.0	0.080
W	0.0	0.030	0.060	0.010	0.0	0.0	0.0	0.0	0.0	0.100
WNW	0.001	0.040	0.040	0.0	0.0	0.0	0.0	0.0	0.0	0.081
NW	0.001	0.060	0.070	0.010	0.0	0.0	0.0	0.0	0.0	0.141
NNW	0.001	0.060	0.050	0.010	0.0	0.0	0.0	0.0	0.0	0.121
TOTALS	0.005	0.459	0.739	0.090	0.0	0.010	0.0	0.0	0.0	1.303

TABLE C.9 JOINT FREQUENCY DISTRIBUTION FOR ELEVATED RELEASES FROM THE AUXILIARY BUILDING

WATTS BAR NUCLEAR PLANT AUXILIARY BUILDING ** JFD FOR ELEVATED RELEASES 03/18/76

STABILITY CLASS A

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.0	0.0	0.010	0.010	0.0	0.0	0.0	0.0	0.020
NNE	0.0	0.0	0.010	0.010	0.020	0.0	0.0	0.0	0.0	0.040
NE	0.0	0.0	0.040	0.050	0.010	0.0	0.0	0.0	0.0	0.100
ENE	0.0	0.010	0.020	0.020	0.020	0.0	0.0	0.0	0.0	0.070
E	0.0	0.0	0.040	0.010	0.010	0.0	0.0	0.0	0.0	0.060
ESE	0.0	0.0	0.020	0.0	0.0	0.0	0.0	0.0	0.0	0.020
SE	0.0	0.0	0.020	0.010	0.0	0.0	0.0	0.0	0.0	0.030
SSE	0.0	0.0	0.020	0.020	0.0	0.0	0.0	0.0	0.0	0.040
S	0.0	0.0	0.010	0.010	0.0	0.0	0.0	0.0	0.0	0.020
SSW	0.0	0.0	0.040	0.080	0.030	0.0	0.0	0.0	0.0	0.150
SW	0.0	0.010	0.010	0.100	0.060	0.010	0.0	0.0	0.0	0.190
WSW	0.0	0.0	0.010	0.050	0.030	0.010	0.0	0.0	0.0	0.100
W	0.0	0.0	0.010	0.010	0.0	0.0	0.0	0.0	0.0	0.020
WNW	0.0	0.0	0.0	0.0	0.010	0.0	0.0	0.0	0.0	0.010
NW	0.0	0.0	0.010	0.0	0.0	0.0	0.0	0.0	0.0	0.010
NNW	0.0	0.0	0.0	0.010	0.0	0.0	0.0	0.0	0.0	0.010
TOTALS	0.0	0.020	0.260	0.389	0.200	0.020	0.0	0.0	0.0	0.889

STABILITY CLASS B

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.010	0.0	0.030	0.030	0.0	0.0	0.0	0.0	0.070
NNE	0.0	0.0	0.020	0.060	0.030	0.010	0.0	0.0	0.0	0.120
NE	0.0	0.0	0.040	0.080	0.040	0.010	0.0	0.0	0.0	0.170
ENE	0.0	0.0	0.040	0.090	0.040	0.0	0.0	0.0	0.0	0.170
E	0.0	0.0	0.030	0.050	0.020	0.0	0.0	0.0	0.0	0.100
ESE	0.0	0.0	0.030	0.040	0.0	0.0	0.0	0.0	0.0	0.070
SE	0.0	0.0	0.0	0.030	0.010	0.0	0.0	0.0	0.0	0.040
SSE	0.0	0.0	0.020	0.020	0.010	0.0	0.0	0.0	0.0	0.050
S	0.0	0.0	0.020	0.030	0.020	0.0	0.0	0.0	0.0	0.070
SSW	0.0	0.0	0.030	0.100	0.050	0.010	0.0	0.0	0.0	0.190
SW	0.0	0.0	0.020	0.200	0.140	0.020	0.0	0.0	0.0	0.379
WSW	0.0	0.0	0.020	0.050	0.020	0.0	0.0	0.0	0.0	0.090
W	0.0	0.0	0.0	0.010	0.020	0.0	0.0	0.0	0.0	0.030
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.010	0.010	0.010	0.0	0.0	0.0	0.0	0.030
NNW	0.0	0.0	0.010	0.010	0.010	0.0	0.0	0.0	0.0	0.030
TOTALS	0.0	0.010	0.290	0.809	0.449	0.050	0.0	0.0	0.0	1.608

TABLE C.9 (CONTINUED)

WATTS BAR NUCLEAR PLANT AUXILIARY BUILDING ** JFD FOR ELEVATED RELEASES 03/18/76

STABILITY CLASS C

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.0	0.0	0.010	0.030	0.0	0.0	0.0	0.0	0.040
NNE	0.0	0.0	0.040	0.030	0.030	0.0	0.0	0.0	0.0	0.100
NE	0.0	0.0	0.010	0.130	0.040	0.0	0.0	0.0	0.0	0.180
ENE	0.0	0.0	0.050	0.040	0.020	0.0	0.0	0.0	0.0	0.110
E	0.0	0.0	0.050	0.040	0.020	0.0	0.0	0.0	0.0	0.110
ESE	0.0	0.0	0.010	0.050	0.0	0.0	0.0	0.0	0.0	0.060
SE	0.0	0.0	0.010	0.010	0.0	0.0	0.0	0.0	0.0	0.020
SSE	0.0	0.0	0.010	0.030	0.0	0.0	0.0	0.0	0.0	0.040
S	0.0	0.0	0.020	0.070	0.010	0.0	0.0	0.0	0.0	0.100
SSW	0.0	0.0	0.040	0.100	0.050	0.010	0.0	0.0	0.0	0.200
SW	0.0	0.0	0.030	0.150	0.070	0.0	0.0	0.0	0.0	0.250
WSW	0.0	0.0	0.010	0.060	0.020	0.0	0.0	0.0	0.0	0.090
W	0.0	0.0	0.020	0.010	0.020	0.0	0.0	0.0	0.0	0.050
WNW	0.0	0.0	0.0	0.010	0.010	0.0	0.0	0.0	0.0	0.020
NW	0.0	0.0	0.0	0.020	0.0	0.0	0.0	0.0	0.0	0.020
NNW	0.0	0.0	0.010	0.0	0.010	0.0	0.0	0.0	0.0	0.020
TOTALS	0.0	0.0	0.310	0.759	0.330	0.010	0.0	0.0	0.0	1.408

STABILITY CLASS D

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.010	0.130	0.210	0.150	0.020	0.0	0.0	0.0	0.519
NNE	0.001	0.030	0.369	0.439	0.320	0.040	0.0	0.0	0.0	1.199
NE	0.001	0.030	0.579	0.759	0.369	0.040	0.0	0.0	0.0	1.778
ENE	0.001	0.040	0.469	0.459	0.270	0.020	0.0	0.0	0.0	1.259
E	0.0	0.010	0.359	0.300	0.140	0.020	0.0	0.0	0.0	0.829
ESE	0.0	0.010	0.200	0.220	0.070	0.0	0.0	0.0	0.0	0.499
SE	0.001	0.030	0.170	0.120	0.030	0.0	0.0	0.0	0.0	0.350
SSE	0.0	0.010	0.230	0.150	0.030	0.0	0.0	0.0	0.0	0.419
S	0.0	0.010	0.330	0.220	0.050	0.010	0.0	0.0	0.0	0.619
SSW	0.0	0.020	0.619	0.759	0.270	0.020	0.0	0.0	0.0	1.687
SW	0.001	0.030	0.699	1.418	0.539	0.050	0.0	0.0	0.0	2.737
WSW	0.0	0.010	0.310	0.529	0.270	0.020	0.0	0.0	0.0	1.138
W	0.0	0.010	0.310	0.200	0.110	0.020	0.0	0.0	0.0	0.649
WNW	0.0	0.010	0.150	0.130	0.100	0.010	0.0	0.0	0.0	0.399
NW	0.0	0.010	0.090	0.130	0.180	0.020	0.0	0.0	0.0	0.429
NNW	0.001	0.030	0.130	0.140	0.140	0.020	0.0	0.0	0.0	0.460
TOTALS	0.006	0.300	5.142	6.181	3.035	0.310	0.0	0.0	0.0	14.974

TABLE C.9 (CONTINUED)

WATTS BAR NUCLEAR PLANT AUXILIARY BUILDING ** JFD FOR ELEVATED RELEASES 03/19/76

STABILITY CLASS E

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.002	0.080	0.429	0.270	0.200	0.020	0.0	0.0	0.0	1.001
NNE	0.004	0.150	0.989	0.519	0.300	0.030	0.0	0.0	0.0	1.991
NE	0.005	0.210	1.378	1.018	0.320	0.040	0.0	0.0	0.0	2.971
ENE	0.002	0.080	0.779	0.479	0.130	0.010	0.0	0.0	0.0	1.480
E	0.001	0.030	0.609	0.220	0.140	0.0	0.0	0.0	0.0	1.000
ESE	0.001	0.050	0.310	0.090	0.070	0.0	0.0	0.0	0.0	0.520
SE	0.003	0.120	0.210	0.090	0.010	0.0	0.0	0.0	0.0	0.432
SSE	0.002	0.080	0.359	0.060	0.020	0.0	0.0	0.0	0.0	0.521
S	0.001	0.060	0.399	0.160	0.080	0.010	0.0	0.0	0.0	0.710
SSW	0.003	0.120	1.048	0.719	0.320	0.030	0.0	0.0	0.0	2.240
SW	0.002	0.100	1.293	1.268	0.679	0.070	0.0	0.0	0.0	3.437
WSW	0.003	0.110	0.849	0.549	0.270	0.030	0.0	0.0	0.0	1.810
W	0.002	0.070	0.339	0.210	0.120	0.020	0.0	0.0	0.0	0.761
WNW	0.002	0.080	0.300	0.110	0.110	0.020	0.0	0.0	0.0	0.621
NW	0.001	0.060	0.280	0.180	0.070	0.010	0.0	0.0	0.0	0.600
NNW	0.002	0.080	0.320	0.190	0.090	0.010	0.0	0.0	0.0	0.691
TOTALS	0.036	1.478	9.895	6.151	2.926	0.300	0.0	0.0	0.0	20.785

STABILITY CLASS F

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.005	0.150	0.419	0.170	0.040	0.0	0.0	0.0	0.0	0.784
NNE	0.006	0.170	1.128	0.619	0.080	0.0	0.0	0.0	0.0	2.003
NE	0.007	0.190	1.528	0.689	0.110	0.0	0.0	0.0	0.0	2.523
ENE	0.003	0.080	0.509	0.140	0.030	0.0	0.0	0.0	0.0	0.762
E	0.0	0.010	0.359	0.140	0.020	0.0	0.0	0.0	0.0	0.529
ESE	0.001	0.030	0.150	0.020	0.0	0.0	0.0	0.0	0.0	0.201
SE	0.002	0.060	0.170	0.010	0.0	0.0	0.0	0.0	0.0	0.242
SSE	0.002	0.060	0.210	0.030	0.0	0.0	0.0	0.0	0.0	0.302
S	0.002	0.050	0.280	0.110	0.020	0.0	0.0	0.0	0.0	0.461
SSW	0.003	0.070	0.649	0.310	0.100	0.010	0.0	0.0	0.0	1.141
SW	0.003	0.080	0.959	0.649	0.200	0.010	0.0	0.0	0.0	1.900
WSW	0.003	0.090	0.569	0.379	0.080	0.010	0.0	0.0	0.0	1.131
W	0.003	0.090	0.230	0.070	0.030	0.0	0.0	0.0	0.0	0.422
WNW	0.002	0.050	0.180	0.060	0.020	0.0	0.0	0.0	0.0	0.312
NW	0.002	0.050	0.150	0.070	0.040	0.0	0.0	0.0	0.0	0.312
NNW	0.004	0.100	0.220	0.060	0.030	0.0	0.0	0.0	0.0	0.413
TOTALS	0.048	1.328	7.709	3.525	0.799	0.030	0.0	0.0	0.0	13.438

TABLE C.9 (CONTINUED)

WATTS BAR NUCLEAR PLANT AUXILIARY BUILDING ** JFD FOR ELEVATED RELEASES 03/18/76

STABILITY CLASS G

WIND SPEEDS IN METERS PER SECOND FROM THE DIRECTIONS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.010	0.280	0.140	0.020	0.0	0.0	0.0	0.0	0.449
NNE	0.003	0.060	0.579	0.240	0.030	0.0	0.0	0.0	0.0	0.912
NE	0.003	0.060	0.669	0.320	0.050	0.0	0.0	0.0	0.0	1.101
ENE	0.0	0.010	0.210	0.070	0.010	0.0	0.0	0.0	0.0	0.300
E	0.001	0.030	0.180	0.030	0.0	0.0	0.0	0.0	0.0	0.241
ESE	0.0	0.010	0.080	0.020	0.0	0.0	0.0	0.0	0.0	0.110
SE	0.0	0.010	0.090	0.010	0.0	0.0	0.0	0.0	0.0	0.110
SSE	0.001	0.020	0.120	0.050	0.0	0.0	0.0	0.0	0.0	0.191
S	0.002	0.050	0.150	0.100	0.010	0.0	0.0	0.0	0.0	0.312
SSW	0.001	0.030	0.369	0.369	0.080	0.0	0.0	0.0	0.0	0.850
SW	0.002	0.040	0.559	0.509	0.130	0.0	0.0	0.0	0.0	1.240
WSW	0.001	0.030	0.280	0.240	0.030	0.0	0.0	0.0	0.0	0.580
W	0.001	0.030	0.170	0.020	0.010	0.0	0.0	0.0	0.0	0.231
WNW	0.0	0.0	0.070	0.010	0.010	0.0	0.0	0.0	0.0	0.090
NW	0.002	0.040	0.110	0.030	0.010	0.0	0.0	0.0	0.0	0.192
NNW	0.001	0.020	0.190	0.070	0.010	0.0	0.0	0.0	0.0	0.291
TOTALS	0.018	0.449	4.104	2.227	0.399	0.0	0.0	0.0	0.0	7.197

WIND FREQUENCIES INTO THE SECTORS INDICATED

SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00
N	0.005	0.200	1.558	1.118	0.649	0.679	0.130	0.020	0.0
NNE	0.007	0.290	3.365	3.844	2.986	3.485	0.999	0.050	0.0
NE	0.008	0.310	3.954	5.152	3.395	1.498	0.240	0.030	0.010
ENE	0.007	0.300	2.347	2.297	1.268	0.529	0.230	0.010	0.0
E	0.006	0.280	1.388	0.859	0.799	0.679	0.110	0.0	0.0
ESE	0.005	0.220	0.919	0.539	0.699	0.749	0.100	0.0	0.0
SE	0.006	0.280	0.949	0.679	0.929	0.959	0.140	0.0	0.0
SSE	0.010	0.369	1.128	0.739	0.929	1.098	0.100	0.0	0.0
S	0.008	0.339	1.498	1.218	1.318	0.989	0.100	0.0	0.0
SSW	0.014	0.489	3.455	2.446	1.807	2.117	0.140	0.0	0.0
SW	0.016	0.559	4.683	3.515	1.827	1.308	0.040	0.0	0.0
WSW	0.007	0.300	2.536	1.658	0.899	0.300	0.030	0.0	0.0
W	0.002	0.140	1.897	1.038	0.609	0.240	0.0	0.0	0.0
WNW	0.002	0.130	0.899	0.519	0.220	0.060	0.0	0.0	0.0
NW	0.006	0.250	0.779	0.379	0.120	0.060	0.0	0.0	0.0
NNW	0.005	0.220	1.188	0.539	0.200	0.190	0.050	0.020	0.0

TABLE C.10 RADIONUCLIDE DATA USED IN LICENSING CALCULATIONS

	NUCLIDE		HALF-LIFE (DAYS)	LAMDA (1/S)	T	C	BETA (MEV/DIS)	GAMMA (MEV/DIS)
1	TRITIUM	101	4.49E 03	1.79E-09	2	1	5.68E-03	0.0
2	C-14	604	2.09E 06	3.84E-12	2	1	5.17E-02	0.0
3	N-13	702	6.94E-03	1.16E-03	2	1	4.91E-01	1.02E 00
4	O-19	804	3.36E-04	2.39E-02	2	1	1.02E 00	1.05E 00
5	F-18	902	7.62E-02	1.05E-04	2	1	2.41E-01	9.68E-01
6	NA-24	1104	6.33E-01	1.27E-05	5	1	5.55E-01	4.12E 00
7	P-32	1504	1.43E 01	5.61E-07	5	1	6.95E-01	0.0
8	AR-41	1805	7.63E-02	1.05E-04	2	1	3.63E-01	1.28E 00
9	CR-51	2405	2.78E 01	2.89E-07	5	1	3.75E-03	3.28E-02
10	MN-54	2508	3.03E 02	2.65E-08	5	1	4.17E-03	8.36E-01
11	MN-56	2509	1.07E-01	7.50E-05	5	1	7.93E-01	1.76E 00
12	FE-59	2604	4.50E 01	1.78E-07	5	1	1.18E-01	1.19E 00
13	CO-58	2706	7.13E 01	1.12E-07	5	1	2.05E-01	9.76E-01
14	CO-60	2708	1.92E 03	4.18E-09	5	1	9.68E-02	2.50E 00
15	ZN-69M	3007	5.75E-01	1.39E-05	5	1	0.0	4.15E 00
16	ZN-69	3006	3.96E-02	2.03E-04	5	1	3.19E-01	0.0
17	BR-84	3516	2.21E-02	3.63E-04	2	1	1.28E 00	1.68E 00
18	BR-85	3518	2.08E-03	3.86E-03	2	2	1.04E 00	8.40E-01
19	KR-85M	3611	1.83E-01	4.38E-05	1	2	2.53E-01	1.59E-01
20	KR-85	3610	3.93E 03	2.04E-09	1	1	2.51E-01	2.21E-03
21	KR-87	3612	5.28E-02	1.52E-04	1	1	1.32E 00	7.93E-01
22	KR-88	3613	1.17E-01	6.86E-05	1	1	3.75E-01	1.96E 00
23	KR-89	3614	2.21E-03	3.63E-03	1	1	1.23E 00	2.08E 00
24	RB-88	3713	1.24E-02	6.47E-04	5	1	2.06E 00	6.86E-01
25	RB-89	3714	1.07E-02	7.50E-04	5	1	0.0	2.40E 00
26	SR-89	3808	5.20E 01	1.54E-07	5	1	5.73E-01	1.36E-04
27	SR-90	3810	1.03E 04	7.79E-10	5	1	1.96E-01	0.0
28	SR-91	3811	4.03E-01	1.99E-05	5	2	6.50E-01	6.95E-01
29	SR-92	3812	1.13E-01	7.10E-05	5	1	1.95E-01	1.34E 00
30	SR-93	3813	5.56E-03	1.44E-03	5	1	1.61E 00	6.28E-01
31	Y-90	3916	2.67E 00	3.00E-06	5	1	9.36E-01	0.0
32	Y-91M	3919	3.47E-02	2.31E-04	5	1	0.0	5.56E-01
33	Y-91	3918	5.88E 01	1.36E-07	5	1	6.06E-01	3.61E-03
34	Y-92	3920	1.47E-01	5.46E-05	5	1	1.44E 00	2.50E-01
35	Y-93	3921	4.29E-01	1.87E-05	5	1	1.17E 00	8.94E-02
36	ZR-95	4014	6.50E 01	1.23E-07	5	2	1.20E-01	7.35E-01
37	NB-95M	4115	3.75E 00	2.14E-06	5	1	2.85E-01	5.87E-02
38	NB-95	4114	3.50E 01	2.29E-07	5	1	4.50E-02	7.64E-01
39	MO-99	4209	2.79E 00	2.87E-06	5	2	3.96E-01	1.62E-01
40	TC-99M	4314	2.50E-01	3.21E-05	5	1	4.85E-03	1.43E-01
41	TC-99	4313	7.74E 07	1.04E-13	5	1	5.38E-02	0.0
42	TC-104	4320	1.25E-02	6.42E-04	5	1	0.0	0.0
43	RU-106	4407	3.67E 02	2.19E-08	5	1	1.01E-02	0.0
44	TE-132	5223	3.24E 00	2.48E-06	5	1	1.00E-01	2.05E-01
45	I-129	5315	6.21E 09	1.29E-15	3	1	4.02E-02	3.77E-03
46	I-131	5317	8.05E 00	9.96E-07	3	2	1.94E-01	3.61E-01
47	MI-131	15317	8.05E 00	9.96E-07	4	2	1.94E-01	3.81E-01
48	I-132	5318	9.58E-02	8.37E-05	3	1	5.14E-01	2.33E 00
49	I-133	5319	8.75E-01	9.17E-06	3	2	4.08E-01	6.10E-01
50	I-134	5320	3.61E-02	2.22E-04	3	1	6.10E-01	2.59E 00
51	I-135	5321	2.79E-01	2.87E-05	3	2	3.68E-01	1.58E 00
52	XE-131M	5412	1.18E 01	6.80E-07	1	1	1.43E-01	2.01E-02
53	XE-133M	5414	2.26E 00	3.55E-06	1	1	1.90E-01	4.16E-02
54	XE-133	5413	5.27E 00	1.52E-06	1	1	1.35E-01	4.54E-02
55	XE-135M	5416	1.08E-02	7.43E-04	1	1	9.50E-02	4.32E-01
56	XE-135	5415	3.83E-01	2.09E-05	1	1	3.17E-01	2.47E-01
57	XE-137	5417	2.71E-03	2.96E-03	1	1	1.64E 00	1.94E-01
58	XE-138	5418	1.18E-02	6.80E-04	1	1	6.06E-01	1.18E 00
59	CS-134	5510	7.48E 02	1.07E-08	5	1	1.57E-01	1.04E 00
60	CS-135	5512	1.10E 09	7.29E-15	5	1	5.74E-02	0.0
61	CS-136	5514	1.30E 01	6.17E-07	5	1	1.01E-01	2.20E 00
62	CS-137	5515	1.10E 04	7.29E-10	5	1	2.52E-01	5.97E-01
63	CS-138	5516	2.24E-02	3.58E-04	5	1	1.23E 00	2.30E 00
64	BA-139	5615	5.76E-02	1.39E-04	5	1	6.54E-01	5.05E-02
65	BA-140	5616	1.28E 01	6.27E-07	5	1	3.15E-01	1.95E-01
66	LA-140	5715	1.68E 00	4.77E-06	5	1	5.40E-01	2.31E 00
67	CE-144	5815	2.84E 02	2.82E-08	5	1	9.13E-02	3.29E-02
68	PR-143	5912	1.36E 01	5.90E-07	5	1	3.14E-01	0.0
69	PR-144	5913	1.20E-02	6.68E-04	5	1	1.23E 00	3.10E-02
70	NP-239	9310	2.35E 00	3.41E-06	5	1	1.24E-01	2.08E 00

D. Effluent Treatment Systems

With regard to items D.1, D.2, and D.3:

The Watts Bar Nuclear Plant is equipped with the following effluent treatment system augments: containment purge filters, provisions for 60-day holdup of gaseous waste, filtration of the mechanical vacuum pump exhaust, and venting of the steam generator blowdown flash tank to the condenser. Hence, the only augments remaining for consideration are filtration of the auxiliary building and turbine building exhausts.

Provision for filtration of auxiliary building and turbine exhausts would require complete redesign of the HVAC system for the turbine building and extensive modifications of both the auxiliary building and the turbine building. The cost estimates of Regulatory Guide 1.110 (September 1975) are intended for initial installation; hence, an actual cost estimate tailored to Watts Bar Nuclear Plant would result in significantly higher estimated costs than Regulatory Guide 1.110 values.

The findings of the cost-benefit analysis presented below (based on Appendix I to 10CFR50) are that neither the HEPA nor the HEPA/charcoal filtration augments offer a cost-benefit return sufficient to justify their addition to either the auxiliary building or the turbine building at Watts Bar Nuclear Plant.

Item D.1

Provide detailed cost estimate sheets, similar to attachments A and B, listing all parameters (and their bases) used in determining capital, operating, and maintenance costs associated with all augments considered in the cost-benefit analysis. All costs should be stated in terms of 1975 dollars.

Response to Item D.1

The detailed cost estimates listed in the following table are all based solely on methods of analysis, cost parameters, and cost data as presented in Regulatory Guide 1.110 (September 1975). These cost estimates are presented in terms of 1975 dollars.

1975 COSTS FOR GASEOUS RADWASTES AUGMENTS

Gaseous Filtration Augment		15,000 cfm HEPA	1,000 cfm HEPA/ Charcoal	15,000 cfm HEPA/ Charcoal	30,000 cfm HEPA/ Charcoal
Equipment and Material Cost	Aux.	$52K*	$28K	$97K	$157K
	Turbine	$48K	--	$93K	$152K
Labor Cost	Aux.	$16K	$10K	$31K	$51K
	Turbine	$12K	--	$26K	$41K
Labor Cost Factor = 1.0 for Region III					
Total Direct Cost	Aux.	$68K	$38K	$128K	$208K
	Turbine	$60K	--	$119K	$193K
Indirect Cost Factor = 1.75; based on 2-unit site, shared system					
Total Capital Cost	Aux.	$119K	$66.5K	$224K	$364K
	Turbine	$105K	--	$208K	$338K
Capital Recovery Factor = 0.1150; based on 11% annual rate of interest					
Annual Fixed Cost	Aux.	$14K	$7.6K	$26K	$42K
	Turbine	$12K	--	$24K	$39K
Annual Operating Cost	Aux.	$6K	$2K	$7K	$14K
	Turbine	$6K	--	$7K	$14K
Annual Maintenance Cost	Aux.	$2K	$0.6K	$9K	$18K
	Turbine	$2K	--	$9K	$18K
Total Annual Cost	Aux.	$22K	$10K	$42K	$74K
	Turbine	$20K	--	$40K	$71K

*In this table, "K" means "times one thousand"

The above direct costs and annual maintenance costs are for each augment addition only. Annual operating costs are given for a single reactor.

These cost estimates are used in the benefit-cost evaluation to determine the necessary augments for the Watts Bar Nuclear Plant.

Item D.2

Provide the cost of borrowed money used in the cost analysis and the method of arriving at this cost.

Response to Item D.2

The interest rate used for this economic evaluation is 11% per year. As may be seen from the summary cost-benefit analysis presented below, the outcome of this analysis is not sensitive to the use of an annual economic evaluation rate of 11%, and a value of 5% or 15% would not have changed the evaluation results.

Item D.3

Describe the methods and parameters used in the benefit-cost analysis and provide bases for all parameters. Include the following information:

a. Decontamination factors assigned to each augment and fraction of "on-line" time assumed, i.e., hours per year used.

b. Parameters and method used to determine the Indirect Cost Factor and the Capital Recovery Factor.

Response to Item D.3

As stated in response to item D.1; methods of analysis, cost parameters, and cost data used in determining capital, operating, and maintenance costs associated with all augments considered in the cost-benefit analysis are based solely on Regulatory Guide 1.110 (September 1975).

a. Arguments for decontamination factors assigned to each augment and fraction of "on-line" time assumed were not developed extensively in

the summary cost-benefit analysis presented below since it was assumed that filtration of either the auxiliary building or turbine building ventilation exhausts by either the HEPA or HEPA/charcoal augments would result in reduction of calculated doses from gaseous effluents to both total body and thyroid of population within 50 miles of the Watts Bar Nuclear Plant to zero.

b. The indirect cost factor chosen for this analysis is 1.75, based on 2-unit site, shared system. This came from Regulatory Guide 1.110 (September 1975). The capital recovery factor was based on an 11% annual economic evaluation rate and taken from Regulatory Guide 1.110 (September 1975). See "Response to Item D.2."

Summary Cost-Benefit Analysis

The cost-benefit analysis is as follows:

Auxiliary Building exhaust flow rate--228,000 cfm

Turbine Building exhaust flow rate--982,000 cfm

These buildings are shared by the two reactor units at Watts Bar Nuclear Plant; hence, on the average, half of these exhaust flow rates would be applicable to any one of the reactor units.

From Table C.4 (Watts Bar Population Doses from Gaseous Effluents) the grand totals for doses from a reactor unit to the population expected to reside within 50 miles of the plant in the year 2020 A.D. are as follows:

15.8 man-thyroid-rem

.721 man-total body-rem

In order to provide capabilities for filtration of all auxiliary building exhausts (attributable to operation of one of the units), it would be necessary to have 8 of the 15,000 cfm HEPA augments at an annual cost

of $176,000 and of the HEPA/charcoal augments the most economical choice would be 4 of the 30,000 cfm augments at an annual cost of $296,000. Taking both doses above and applying the $1,000 per man-rem reduction in dose commitment to them results in about $16,500 if it is assumed that either of these augments would reduce the above population doses to zero.

In order to provide capabilities for filtration of all turbine building exhausts (attributable to operation of one of the units), it would be necessary to have 33 of the 15,000 cfm HEPA augments at an annual cost of $660,000 and of the HEPA/charcoal augments the most economical choice would be 16 of the 30,000 cfm augments and 1 of the 15,000 cfm augments at an annual cost of $1,176,000. Taking both doses above and applying the $1,000 per man-rem reduction in dose commitment to them results in about $16,500 if it is assumed that either of these augments would reduce the above population doses to zero.

We therefore conclude that in accordance with Appendix I to 10CFR50 neither the HEPA nor the HEPA/charcoal filtration augmentation systems provide a population dose reduction sufficient to justify their addition to either the auxiliary building or the turbine building exhausts at the Watts Bar Nuclear Plant.

D.4.a. For each building housing systems that contain radioactive materials, the BWR turbine gland seal exhaust and mechanical vacuum pump, the steam generator blowdown system vent exhaust (PWR), and the main condenser air removal system (PWR), provide the following: ventilation system flow rates and provisions incorporated to reduce radioactivity releases through the ventilation or exhaust systems.

Response:

The turbine building ventilation system flow rate is 982,000 cfm. No abatement features have been incorporated in the design to reduce radioactivity releases through this system.

The main condenser air ejection system exhausts through a HEPA filter followed by a one-inch thick carbon adsorber.

The auxiliary building ventilation system flow rate is 228,000 cfm. The exhaust is filtered through a HEPA filter.

The containment building purge flow is broken down into

(1) upper containment purge flow rate of 18,250 cfm,

(2) lower containment purge flow rate of 9,150 cfm,

(3) instrument room purge flow rate of 600 cfm,

when the instrument room is purged concurrently with upper and lower containment purge, and 900 cfm when the instrument room only is purged. The containment building effluent is exhausted through HEPA filters followed by two-inch thick carbon adsorbers.

D.4.b. For each building housing system that contain radioactive materials, the BWR turbine gland seal exhaust and mechanical vacuum pump, the steam generator blowdown system vent exhaust (PWR), and the main condenser air removal system (PWR), provide the following: decontamination factors assumed and the bases (include charcoal adsorbers, HEPA filters, mechanical devices).

Response:

Decontamination factors of 100 for HEPA filters, 3.33 for two-inch thick charcoal absorbers, and 1.82 for one-inch thick charcoal absorbers were assumed. A DF of 100 for HEPA filters is suggested in Regulatory Guide 1.BB (Draft), dated September 9, 1975. Based on a survey of the literature, the efficiency of the basic two-inch thick bed was reduced from 95 percent used for accident concentrations. An efficiency of 70 percent was used resulting in the DF's shown above.

D.4.c. For each building housing systems that contain radioactive materials, the BWR turbine gland seal exhaust and mechanical vacuum pump, the steam generator blowdown system vent exhaust (PWR), and the main condenser air removal system (PWR), provide the following: release rates for radioiodine, noble gases, and radioactive particulates (Ci/yr), and the bases.

Response:

Release rates from the containment building vent, auxiliary building vent, and turbine building vents are shown in Table D.4-1. These release rates were calculated under the following assumptions:

1. Leak rates of primary and secondary fluids to the different buildings followed the suggested values in Regulatory Guide 1.BB (Draft), dated September 9, 1975.

2. Leakage into the containment building takes place only in lower containment. Exchange flow between upper and lower containment is 284 cfm, and between lower compartment and the instrument room is 13.65 ft^3/hr.

3. The concentrations of radioactive materials in the fluid streams is given in Table 11.1-7 of the Watts Bar FSAR.

4. The release from the containment building includes upper containment purge, lower containment purge, instrument room purge, a continuous purge of 10 cfm to account for frequent, small releases for temperature and pressure control, and the releases from the waste gas decay tanks.

5. The release from the turbine building includes the turbine building ventilation system, main condenser air ejection system, turbine gland seal system, and a miscellaneous leakage of 5 gpm of liquid downstream of the condensate demineralizers.

6. The release from the auxiliary building is that from the auxiliary building ventilation system.

D.4.d. For each building housing systems that contain radioactive materials, the BWR turbine gland seal exhaust and mechanical vacuum pump, the steam generator blowdown system vent exhaust (PWR), and the main condenser air removal system (PWR), provide the following: release points to the environment including location, height of release, inside dimension of release point exit, effluent temperature, and exit velocity.

Response:

The containment building vent is located 129.6 feet above grade. It is rectangular in shape, with inside dimensions 2 feet by 7 feet 6 inches. Exit velocity is 1866 ft/min with both purge fans in operation which is the normal purge mode. Ambient temperature is assumed for the effluent.

The auxiliary building vent is located 106.8 feet above grade. It is rectangular in shape, with inside dimensions 10 feet by 30 feet. Exit velocity is 760 ft/min. Ambient temperature is assumed for the effluent.

The turbine building ventilation system discharges through 20 hooded vents approximately 96 feet above grade, and an additional 18 vents approximately 30 feet above grade. The discharge from the latter vents is directed parallel to the ground. The vents 96 feet above grade are square, 55 inches by 55 inches. Effluent exit velocity is 1357 ft/min. The vents 30 feet above grade have an equivalent opening of 17.45 ft^2; effluent exit velocity is 1311 ft/min.

D.4.e. For each building housing systems that contain radioactive materials, the BWR turbine gland seal exhaust and mechanical vacuum pump, the steam generator blowdown system vent exhaust (PWR), and the main condenser air removal system (PWR), provide the following: for the containment building, provide the building free volume (ft^3) and a thorough description of the internal recirculation system (if provided) including the recirculation rate, charcoal bed depth, operating time assumed, and mixing efficiency. Indicate the expected purge and venting frequencies and duration, and continuous purge rate (if used).

Response:

Upper containment free volume: 651,000 ft^3

Lower containment free volume: 402,800 ft^3

Instrument room free volume : 19,000 ft^3

It is assumed that the recirculation system operates only on the lower containment, since it is also assumed that leakage of radioactive fluids occurs only in lower containment (see response D.4.c). The system contains two cleanup units, of 8,000 cfm capacity each, containing a pre-filter, HEPA filter, and two-inch thick carbon adsorber. The mixing efficiency is taken as 70 percent. It is assumed that the recirculation system operates for 16 hours prior to a containment purge and remains in operation during it. Releases are calculated on the assumption of six containment purges per year, each of 24-hour duration, and 52 instrument room purges per year, of which six are concurrent with containment purges, lasting four hours each. A continuous purge of 10 cfm is assumed to account for frequent, small releases for temperature and pressure control.

D.4.f. For each building housing systems that contain radioactive materials, the BWR turbine gland seal exhaust and mechanical vacuum pump, the steam generator blowdown system vent exhaust (PWR), and the main condenser air removal system (PWR), provide the following: if HEPA filters are used downstream of pressurized storage tanks provide the decontamination factor used in your evaluation.

Response:

A HEPA filter is provided on the outlet of the Waste Gas Decay Tanks. After holdup of the waste for 60 days the only radioisotopes remaining are Kr-85, Xe-131m, Xe-133, and a very small amount of I-131. Since a HEPA filter is ineffective for these isotopes a DF of one was assumed.

TABLE D.4-1

NUCLIDE	AUXILIARY BUILDING VENT	CONTAINMENT VENT	TURBINE BUILDING VENT
Kr-83m	4.4(-1)	3.340E-01	2.990E-01
Kr-85m	2.2(0)	2.345E 00	1.487E 00
Kr 85	2.0(0)	5.053F 02	1.244E 00
Kr 87	1.2(0)	8.068E-01	8,157E-01
Kr 88	4.0(0)	3.571E 00	2.695E 00
Kr 89	2.8(-2)	8.294E-03	6.389E-02
Xe-131m	1.7(0)	2.633E 01	1.084E 00
Xe-133m	3.7(0)	1.626E 01	2.390E 00
Xe-133	2.9(2)	2.415E 03	1.830E 02
Xe-135m	1.8(-1)	7.818E-02	1.964E-01
Xe-135	6.8(0)	9.901E 00	4.369E 00
Xe-137	5.6(-2)	1.765E-02	1.175E-01
Xe-138	5.9(-1)	2.448E-01	6.215E-01
Br-83	8.0(-4)	1.545E-05	9.483E-05
Br-84	3.5(-4)	4.946E-06	1.728E-05
Br-85	1.2(-5)	1.298E-07	2.449E-07
I-130	3.6(-4)	1.348E-05	6.904E-05
I-131	4.5(-2)	1.249E-02	9.196E-03
I-132	1.7(-2)	3.703E-04	2.581E-03
I-133	6.5(-2)	3.380E-03	1.364E-02
I-134	7.1(-3)	1.079E-04	5.025E-04
I-135	3.3(-2)	8.983E-04	5.391E-03
Rb-86	1.9(-9)	2.083E-08	2.415E-07
Rb-88	1.6(-2)	2.060E-02	1.030E-04
Cs-134	5.5(-7)	1.062E-05	6.352E-05
Cs-136	2.9(-7)	2.636E-06	3.556E-05
Cs-137	4.0(-7)	7.778E-06	5.255E-05
Cr-51	2.0(-8)	2.557E-07	3.611E-07
Mn-54	1.6(-8)	3.078E-07	4.514E-07
Fe-59	2.1(-8)	3.195E-07	5.417E-07
Co-58	5.3(-9)	8.781E-08	9.030E-06
Co-60	1.6(-8)	3.059E-07	2.707E-07
Sr-89	7.6(-9)	1.185E-07	1.618E-07
Sr-90	2.2(-10)	4.273E-09	8.447E-09
Sr-91	1.5(-8)	1.183E-08	8.899E-08
Y-90	3.8(-10)	4.734E-09	8.185E-09
Ym-91	9.1(-9)	7.376E-09	4.104E-08
Y-91	4.4(-8)	6.994E-07	1.898E-06
Y-93	3.0(-9)	2.441E-09	3.585E-08
Zr-95	1.3(-9)	2.127E-08	8.441E-08
Nb-95	1.1(-9)	2.156E-08	8.431E-08
Mo-99	10.0(-6)	2.959E-05	1.433E-04
Tc-99m	8.9(-6)	2.811E-05	1.016E-04
Ru-103	9.8(-10)	1.435E-08	4.216E-08
Ru-106	2.2(-10)	4.136E-09	8.444E-09
Rh-103m	1.1(-9)	1.440E-08	2.803E-08
Rh-106	2.2(-10)	4.136E-09	2.744E-07
Te-125m	6.3(-10)	1.010E-08	1.265E-08
Te-127m	6.1(-9)	1.071E-07	2.110E-07
Te-127	2.0(-8)	1.156E-07	5.339E-07

TABLE D.4-1 (Continued

NUCLIDE	AUXILIARY BUILDING VENT	CONTAINMENT VENT	TURBINE BUILDING VENT
Te-129m	3.1(-8)	4.259E-07	1.264E-06
Te-129	3.6(-8)	2.777E-07	8.276E-07
Te-131m	5.6(-8)	9.120E-08	1.977E-06
Te-131	2.2(-8)	2.042E-08	2.700E-07
Te-132	6.0(-7)	2.016E-06	2.057E-05
Ba-137m	3.8(-7)	7.320E-06	1.481E-05
Ba-140	4.8(-9)	4.374E-08	2.097E-07
La-140	3.4(-9)	4.592E-08	1.409E-07
Ce-141	1.5(-9)	2.107E-08	8.429E-08
Ce-143	9.0(-10)	1.561E-09	1.987E-08
Ce-144	7.2(-10)	1.350E-08	4.224E-08
Pr-143	1.1(-9)	1.105E-08	4.198E-08
Pr-144	7.7(-10)	1.352E-08	2.819E-08
Np-239	2.7(-8)	6.977E-08	1.222E-06

D.5.a. For a pressurized water reactor having recirculating U-tube steam generators and employing all volatile treatment (AVT) to main secondary coolant chemistry, provide the following information: expected blowdown rate (lb/hr) and method of processing blowdown.

Response:

Steam generator blowdown rates will be in the range of 5 to 30 gpm at 544.6°F and 1,000 psi. This corresponds to 1,850 to 11,120 pounds per hour per steam generator. There are four steam generators for each unit, so total blowdown flow ranges from 7,400 to 44,480 lbs/hr per unit.

Steam generator blowdown may be discharged from the plant; however, if the radioactive content exceeds 10^{-4} uCi/gm it will be processed through the condensate demineralizers. The normal operating mode is to treat the blowdown through the condensate demineralizers.

D.5.b. For a pressurized water reactor having recirculating U-tube steam generators and employing all volatile treatment (AVT) to main secondary coolant chemistry, provide the following information: number and type of condensate demineralizers (if applicable) and flow rate of condensate through polishing demineralizers (lb/hr).

Response:

Number of vessels - six/plant generating unit

Type - deep mixed bed

Total flow (five vessels operating, one standby)

maximum - 17,000 gpm - 8,455,188 lb/hr

minimum - 4,000 gpm - 1,989,465 lb/hr

Flow/vessel

maximum - 1,691,038 lb/hr

minimum - 397,893 lb/hr

D.5.c. For a pressurized water reactor having recirculating U-tube steam generators and employing all volatile treatment (AVT) to main secondary coolant chemistry, provide the following information: expected frequency of resin regeneration or replacement, volumes and radioactivity of regenerant and rinse solutions, sluice water, or backwash water per batch of resin regenerated or replaced.

Response:

$$\text{regen/yr} = \frac{365 \text{ days/yr}}{\text{days run/regen}} \text{ (number of resin beds active)}$$

$$= \frac{365 \text{ days/yr}}{10 \text{ days run/regen}} \quad (10)$$

*regen/yr = 365 or less

<u>Destination of regenerant wastes/regen</u>:

**	High Crud/Low Conductivity Tk	-	33,210 gal
***	Neutralization Tk NR Waste Tk	-	10,715 gal
****	Reclaimed Acid Tk	-	2,200 gal
	Reclaimed Caustic	-	1,375 gal

*Regen/yr based on continuous operation at normal flow without significant condenser tube leakage. Actual operation expected to be 20 percent of normal flow processed by the demineralizers and 80 percent bypassing the demineralizers.

**High Crud Low Conductivity (HC/LC) tank inputs from low conductivity sources - backwash, sluice and final rinses. These sources may contain radioactive suspended solids which are filtered out before the inventory of the HC/LC tanks is reused in subsequent regenerations.

***Neutralization tank inputs contain high conductivity regenerant wastes - wasted chemicals and initial rinse waters after resin regeneration.

****Reclaim Acid and Reclaim Caustic tank inputs do not enter radwaste system but are saved to be used in the regeneration of the next resin batch.

The isotopic composition of activity in one demineralizer vessel at the end of a 10-day operating cycle, assuming 0.12 percent failed fuel and 100 lbs/day primary-to-secondary leakage, is shown in Table D.5-1. Corrision products (isotopes of Cr, Mn, Fe, and Co) will appear in the backwash and sluice water. Remaining isotopes will appear in regenerant and rinse solutions.

D.5.d. For a pressurized water reactor having recirculating U-tube steam generators and employing all volatile treatment (AVT) to main secondary coolant chemistry, provide the following information: method of collection, processing, and disposal of liquid wastes, including decontamination factors assumed for process operations.

Response:

The inventory of the Non-Reclaimable Waste Tank is transferred to the Floor Drain Collector Tank in the auxiliary building. The waste liquid is evaporated and the distillate is discharged from the plant. The evaporator bottoms are solidified and shipped off-site for burial.

Decontamination factor of evaporator -

All nuclides except Iodine 10^4

- Iodine 10^3

D.5.e. For a pressurized water reactor having recirculating U-tube steam generators and employing all volatile treatment (AVT) to main secondary coolant chemistry, provide the following information: P&ID's and process flow diagrams for the steam generator blowdown system and condensate polishing system.

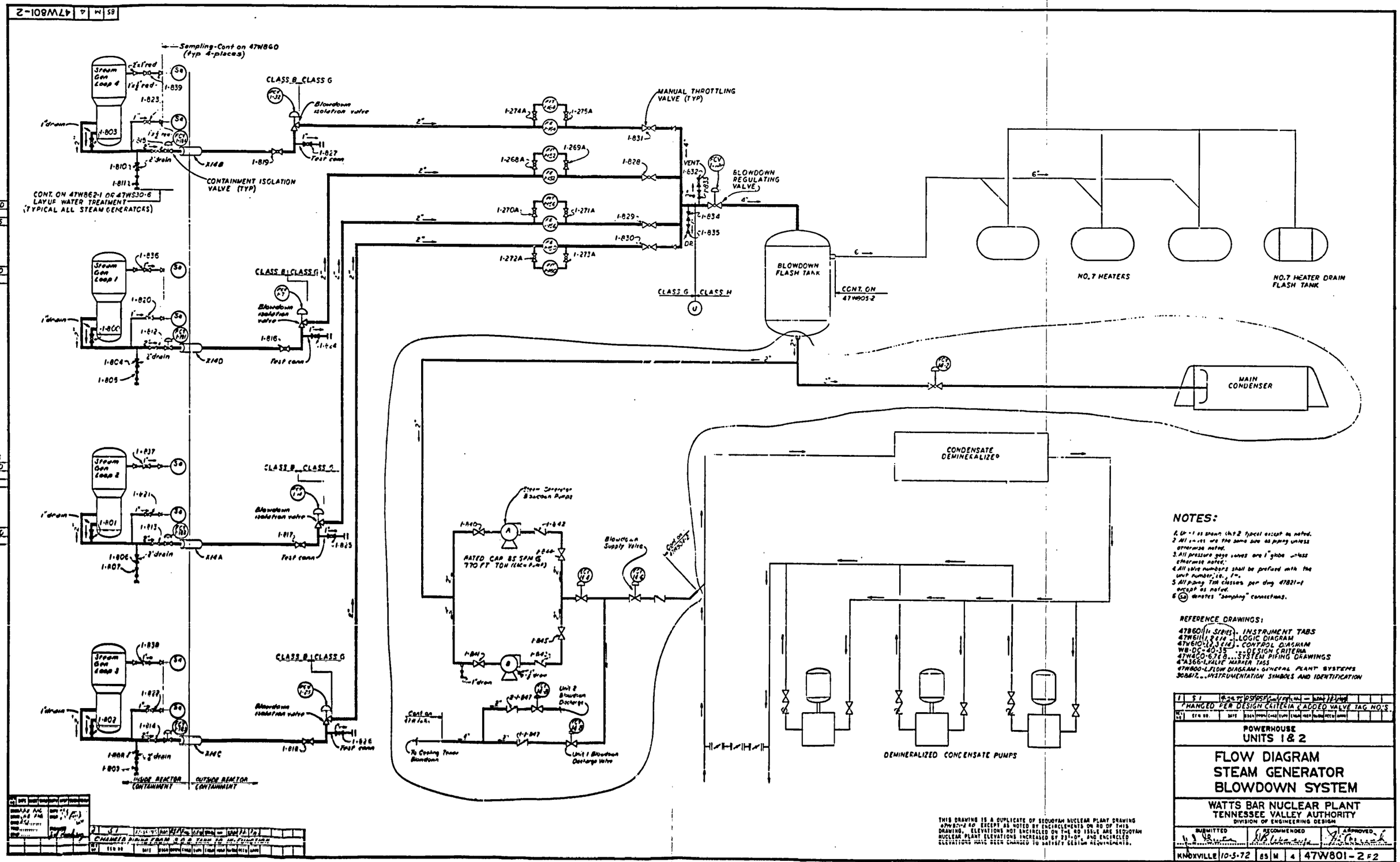
Response:

Only Proprietary L&A flow diagrams are available at this time for the Condensate Demineralizer System. TVA flow diagrams are being developed and will be available around May 1, 1976. TVA blowdown flow diagrams are available and are included with this request.

TABLE D.5-1

NUCLIDE	ACTIVITY (uCi)
Br-83	3.4(0)
Br-84	1.5(-1)
Br-85	1.8(-4)
Rb-86	6.5(0)
Rb-88	7.9(-1)
Sr-89	3.0(1)
Sr-90	9.3(-1)
Sr-91	2.0(0)
Y-90	1.1(0)
Y-91m	1.3(0)
Y-91	1.8(2)
Y-93	4.4(-1)
Zr-95	5.3(0)
Nb-95	4.7(0)
Mo-99	1.4(4)
Tc-99m	1.4(4)
Ru-103	3.8(0)
Ru-106	9.2(-1)
Rh-103m	3.8(0)
Rh-106	9.2(-1)
Te-125m	2.5(0)
Te-127m	2.5(1)
Te-127	2.7(1)
Te-129m	1.2(2)
Te-129	7.5(1)
Te-131m	3.4(1)
Te-131	6.3(0)
Te-132	9.6(2)
I-130	1.3(1)
I-131	1.7(4)
I-132	1.1(3)
I-133	4.1(3)
I-134	6.5(0)
I-135	5.4(2)
Cs-134	2.3(3)
Cs-136	9.1(2)
Cs-137	1.7(3)
Ba-137m	1.6(3)
Ba-140	1.6(1)
La-140	1.6(1)
Ce-141	5.8(0)
Ce-143	6.1(-1)
Ce-144	3.0(0)
Pr-143	3.8(0)
Pr-144	3.0(0)
Np-239	3.2(1)
Cr-51	7.4(1)
Mn-54	6.9(1)
Fe-59	8.3(1)
Co-58	2.2(3)
Co-60	6.7(1)

*(0) denotes power of ten



NOTES:

1. Unit 1 as shown. Unit 2 typical except as noted.
2. All valves are the same size as piping unless otherwise noted.
3. All pressure gage valves are 1" globe unless otherwise noted.
4. All valve numbers shall be prefixed with the unit number, i.e., 1-.
5. All piping TVA classes per dwg 47B21-1 except as noted.
6. (Sa) denotes "sampling" connections.

REFERENCE DRAWINGS:

47B601 (1 SERIES) - INSTRUMENT TABS
47W611 (1, 2 & 4) - LOGIC DIAGRAM
47W610-123 (1-4) - CONTROL DIAGRAM
WB-DC-40-35 - DESIGN CRITERIA
47W400-6,7,8 - SYSTEM PIPING DRAWINGS
4*A366-1 VALVE MARKER TABS
47W800-1 FLOW DIAGRAM - GENERAL PLANT SYSTEMS
30B817 - INSTRUMENTATION SYMBOLS AND IDENTIFICATION

REV NO.	ECN NO.	DATE	DSGN	DWN	CHKD	SUPV	ENGR	MGR	NUCLEAR	REC'D	APPR
1	S1	9-26-75	PS	PS	FC	FC	FC	LAN	—	SDM	[illegible]
CHANGED PER DESIGN CRITERIA & ADDED VALVE TAG NO'S											

POWERHOUSE
UNITS 1 & 2

FLOW DIAGRAM STEAM GENERATOR BLOWDOWN SYSTEM

WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY
DIVISION OF ENGINEERING DESIGN

SUBMITTED	RECOMMENDED	APPROVED
[illegible]	[illegible]	[illegible]

KNOXVILLE 10-5-72 65 M 4 47W801-2 F2

RECORD DRAWING AS CONSTRUCTED

THIS DRAWING IS A DUPLICATE OF SEQUOYAH NUCLEAR PLANT DRAWING 47W801-2 R0 EXCEPT AS NOTED BY ENCIRCLEMENTS ON R0 OF THIS DRAWING. ELEVATIONS NOT ENCIRCLED ON THE R0 ISSUE ARE SEQUOYAH NUCLEAR PLANT ELEVATIONS INCREASED BY 237'-0", AND ENCIRCLED ELEVATIONS HAVE BEEN CHANGED TO WATTS'S DESIGN REQUIREMENTS.