

RADIOLOGICAL IMPACT ASSESSMENT

BROWNS FERRY NUCLEAR PLANT

JULY-DECEMBER 1976

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#### Introduction

Potential doses to individuals and populations have been calculated for the time period July 1 through December 31, 1976. The calculations have been made using the measured releases listed in Tables 1 and 2 for radioactivity in both gaseous and liquid effluents. Dispersion of radioactive effluents in the environment has been calculated using meteorological data and river flow data measured during this period.

#### Meteorological Data

Meteorological data were measured, and average quarterly joint frequency distributions (JFD's) for ground-level and stack releases were calculated. The ground-level JFD was derived from wind speeds and directions measured with a sensor located 33 feet above ground level and from the vertical temperature gradient between 33 and 150 feet. The JFD's for elevated releases were based on wind directions and wind speeds measured at 300 feet. Stability class D was assumed to persist at the effluent release level of 600 feet for the entire period. Examination of rawinsonde data from TVA's Colbert Steam Plant (40 miles west of BFNP) indicates that, for  $\Delta T$ -based stabilities at levels above 600 feet, the frequencies of stability classes D and E total more than 95% of all occurrences. For an elevated release, assumption of class D instead of E yields conservative results.

The wind speeds were divided into nine wind-speed ranges. For calculational purposes, calms were distributed into the lowest wind speed range (0-0.5 mph) according to the directional probabilities in the 0.6-1.4 mph range. The quarterly JFD's are listed in Tables 3 and 4 for ground-level releases and in Tables 5 and 6 for elevated releases.

#### Gaseous Effluents

Ground-level and elevated (stack) dispersion models were used to estimate radioactivity concentrations in the environment. Radionuclides in gaseous effluents were assumed to be released continuously. Dose estimates for external air exposures were made at the site boundary. External doses to the skin and total body were estimated for the nearest residence in each sector. Internal doses to the thyroid were estimated from the ingestion, inhalation, and external exposure pathways. The internal doses were calculated for farms where milk is consumed without commercial preparation. Doses are given in Tables 7 and 8 for these individual exposure pathways at the maximum exposure locations.

Population doses were calculated for an estimated 627,000 persons living within a 50-mile radius of the plant site. Population doses were calculated assuming that each individual consumes vegetables and meat produced within the sector annuli in which he resides. Doses from milk ingestion were calculated from data on milk production within 50 miles of the plant site. Doses from external pathways, inhalation, and beef and vegetable ingestion are based on the 50-mile human population distribution. Population dose estimates for the gaseous effluents are presented in Table 9.

### Liquid Effluents

Doses from liquid effluents were calculated using measured hydraulic data. The average river flows at the plant site were 38,200 cfs for the third quarter and 41,000 cfs for the fourth quarter. Radioactivity concentrations in the Tennessee River were calculated assuming that releases in liquid effluents were continuous.

Doses were calculated for recreation, consumption of fish, and drinking water from public water supplies between the plant site and the mouth of the Tennessee River. The maximum individual dose from drinking water was assumed to be that calculated for the nearest downstream public water supply (Champion Paper Company). The maximum potential recreation dose was calculated for a location immediately downstream from the plant outfall. Dose estimates for the liquid effluents are presented in Tables 10 and 11.

### Direct Radiation

Statistical analysis of thermoluminescent dosimetry (TLD) data accumulated at both onsite and offsite locations during the first and second quarters has indicated no identifiable increase in dose rate levels attributable to direct radiation from plant equipment and/or gaseous effluents. Fluctuations in natural background dose rates and in TLD readings tend to mask any small increments which may be due to plant operations.

An experimental program is being conducted using high-pressure ionization chamber measurements to relate reactor power level to direct

radiation dose rates. However, results of this work are not available for estimating dose rates during this reporting period.

#### Dose Summary

Doses calculated for this semiannual period result from the low-level effluent releases of Units 1, 2, and 3. For gaseous effluents released in the third quarter, the maximum gamma and beta air doses were calculated to be .985 and 6.02 mrad, respectively. During the fourth quarter, the gamma and beta air doses were .722 and 7.94 mrad, respectively. These quarterly doses are well below the annual air dose limits (as specified in Appendix I to 10 CFR 50) of 30 and 60 mrad for gamma and beta radiation, respectively, for three reactor units. (All doses and dose limits referred to will be totals for the three reactor units.) The maximum doses from external sources to the skin and total body during the third quarter were calculated to be 2.06 and .479 mrem. During the fourth quarter, the skin and total body doses were 2.61 and .421 mrem, respectively. These compare with annual dose limits of 45 mrem to the skin and 15 mrem to the total body. Internal doses to the maximum exposed organ, i.e., the thyroid, were estimated to be .108 and .202 mrem for the third and fourth quarter. These doses result from the ingestion of milk, meat, and vegetables, inhalation, and from exposures to external sources of radiation.

For liquid effluents released in the third quarter, the maximum doses to the total body and the maximum exposed organ, i.e., G.I. tract,

were calculated to be .05 and .08 mrem, respectively. In the fourth quarter, the maximum doses to the total body and G.I. tract were .01 and .03 mrem, respectively. These compare with annual dose limits as specified in Appendix I to 10 CFR 50 of 9 and 30 mrem to the total body and maximum exposed organ (G.I. tract), respectively, for three units.

Population doses from gaseous effluents during the third quarter were estimated to be .544 man-rem to the total body and .768 man-rem to the thyroid. For the fourth quarter, population doses were .277 man-rem to the total body and .813 man-rem to the thyroid.

From liquid releases during the third quarter, the total population along the Tennessee River was estimated to receive 1.6 man-rem to the total body and 3.0 man-rem to the G.I. tract. For the fourth quarter, the Tennessee River population was estimated to receive 0.5 man-rem to the total body and 1.0 man-rem to the G.I. tract.

In summary, all doses calculated were below the limits of Appendix I to 10 CFR 50 and below the limits specified in the Browns Ferry Nuclear Plant technical specifications for plant operation.

TABLE 1

BFNP GASEOUS EFFLUENT RELEASES

<u>Radionuclide</u>	<u>Ground-Level Releases</u>		<u>Elevated Releases</u>	
	<u>Third Quarter, 1976</u> (Ci)	<u>Fourth Quarter, 1976</u> (Ci)	<u>Third Quarter, 1976</u> (Ci)	<u>Fourth Quarter, 1976</u> (Ci)
H-3	<3.81E-2	3.59E-1	<4.91E-4	5.84E-2
Ar-41	<2.94E+2	<1.44E+2	<1.21E+1	<6.23E+0
Sr-89	<2.57E-6	1.77E-6	<7.36E-8	3.87E-6
Sr-90	<1.40E-5	1.94E-6	<1.59E-8	2.16E-6
Kr-85	<4.33E+4	<2.48E+4	<1.16E+2	6.41E+2
Kr-85m	<2.61E+2	<2.49E+2	<1.52E+0	6.89E+1
Kr-87	<4.34E+2	<2.45E+2	<2.29E+1	8.20E+0
Kr-88	<5.12E+2	<2.74E+2	<7.27E+0	1.52E+1
I-131	<1.32E-3	<5.46E-4	<7.13E-4	3.85E-3
I-133	<8.70E-3	1.22E-3	<5.07E-4	<5.46E-4
I-135	<8.21E-2	<9.28E-3	<6.55E-3	<5.53E-4
Xe-133	<3.29E+2	<3.40E+2	<7.27E+0	2.47E+2
Xe-135	<1.69E+2	<1.22E+2	<1.01E-1	3.50E+0
Xe-135m	<1.62E+3	<7.65E+2	<5.15E-2	1.21E+1
Xe-138	<2.98E+3	<1.83E+2	<7.77E-2	2.73E+1
Cs-134	<1.33E-3	<1.09E-4	<8.58E-4	<3.92E-5
Cs-137	<1.28E-3	<1.12E-4	<3.88E-5	<1.51E-5
Ba-140	<1.60E-3	<4.42E-4	<8.20E-5	<5.05E-5
Zr-95	<1.45E-3	<2.35E-4	<1.88E-4	<2.90E-5
Nb-95	<1.29E-3	<1.12E-4	<4.34E-5	<1.33E-5
Co-58	<1.23E-3	<1.34E-4	<4.10E-5	<1.25E-5
Mn-54	<1.33E-3	<1.03E-4	<1.49E-5	<1.25E-5
Fe-59	<1.31E-4	<2.62E-4	<1.31E-4	<3.22E-5
Co-60	<2.09E-3	<1.53E-4	<5.94E-5	<1.53E-5

TABLE 2

BFNP LIQUID EFFLUENTS RELEASES

<u>Nuclide</u>	<u>Activity (Ci)</u>	
	<u>Third Quarter</u>	<u>Fourth Quarter</u>
H-3	<2.5E-1	<3.3E-0
Na-24	<4.3E-3	<5.0E-1
Cr-51	<4.4E-2	<1.1E-2
Mn-54	<9.4E-3	<7.9E-3
Mn-56	<8.7E-5	<8.7E-4
Fe-59	<6.9E-4	<6.8E-3
Co-58	<8.9E-3	<1.5E-2
Co-60	<2.4E-2	<1.7E-2
Zn-65	<3.1E-2	<2.4E-2
Sr-89	<6.3E-5	<3.3E-3
Sr-90	<1.8E-3	<1.1E-4
Zr-95	<5.7E-3	<4.5E-3
Nb-95	<5.7E-3	<4.5E-3
Mo-99	<3.7E-4	<4.3E-3
Tc-99m	<3.7E-4	<4.3E-3
I-131	<6.1E-3	<3.3E-2
I-133	<3.0E-4	<5.3E-3
I-135		<6.7E-4
Xe-133	<9.2E-3	<6.5E-2
Cs-134	<1.0E-2	<8.8E-3
Cs-136	<2.5E-4	<4.2E-3
Cs-137	<1.0E-2	<1.1E-2
Ba-140	<7.6E-3	<4.7E-3
La-140	<7.6E-3	<4.7E-3
Ce-141	<9.2E-4	<4.2E-4
Totals	<4.4E-1	<4.0E-0

TABLE 3

## BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA

## JOINT FREQUENCY DISTRIBUTION IN PERCENT

## GROUND-LEVEL RELEASES - THIRD QUARTER, 1976

## STABILITY CLASS A

WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS 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	0.090	0.621	1.282	0.381	0.0	0.0	2.374
NNE	0.0	0.0	0.0	0.090	0.661	1.042	0.0	0.0	0.0	1.793
NE	0.0	0.0	0.0	0.280	0.471	0.140	0.0	0.0	0.0	0.891
ENE	0.0	0.0	0.0	0.050	0.090	0.0	0.0	0.0	0.0	0.140
E	0.0	0.0	0.0	0.090	0.0	0.0	0.0	0.0	0.0	0.090
ESE	0.0	0.0	0.0	0.381	0.431	0.140	0.0	0.0	0.0	0.951
SE	0.0	0.0	0.090	2.614	0.521	0.0	0.050	0.0	0.0	3.275
SSE	0.0	0.0	0.140	1.192	0.0	0.0	0.0	0.0	0.0	1.332
S	0.0	0.0	0.240	1.002	0.0	0.0	0.0	0.0	0.0	1.242
SSW	0.0	0.0	0.050	0.0	0.0	0.0	0.0	0.0	0.0	0.050
SW	0.0	0.0	0.050	0.240	0.050	0.0	0.0	0.0	0.0	0.341
WSW	0.0	0.0	0.0	0.240	0.090	0.050	0.0	0.0	0.0	0.381
W	0.0	0.0	0.0	0.331	0.240	0.280	0.050	0.0	0.0	0.901
WNW	0.0	0.0	0.0	0.240	0.761	0.431	0.0	0.0	0.0	1.432
NW	0.0	0.0	0.0	0.0	0.381	0.431	0.050	0.0	0.0	0.861
NNW	0.0	0.0	0.050	0.0	0.090	0.711	0.050	0.0	0.0	0.901
TOTALS	0.0	0.0	0.621	6.840	4.407	4.507	0.581	0.0	0.0	16.956

## STABILITY CLASS B

WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS 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	0.050	0.090	0.050	0.471	0.0	0.0	0.0	0.661
NNE	0.0	0.0	0.0	0.090	0.280	0.140	0.0	0.0	0.0	0.511
NE	0.0	0.0	0.050	0.240	0.050	0.090	0.0	0.0	0.0	0.431
ENE	0.0	0.0	0.0	0.140	0.0	0.0	0.0	0.0	0.0	0.140
E	0.0	0.0	0.0	0.050	0.0	0.0	0.0	0.0	0.0	0.050
ESE	0.0	0.0	0.0	0.240	0.190	0.0	0.0	0.0	0.0	0.431
SE	0.0	0.0	0.471	0.471	0.0	0.0	0.0	0.0	0.0	0.941
SSE	0.0	0.0	0.190	0.190	0.0	0.0	0.0	0.0	0.0	0.381
S	0.0	0.0	0.381	0.190	0.050	0.0	0.0	0.0	0.0	0.621
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.050	0.140	0.0	0.0	0.0	0.0	0.0	0.190
WSW	0.0	0.0	0.140	0.431	0.0	0.090	0.0	0.0	0.0	0.661
W	0.0	0.0	0.050	0.381	0.711	0.0	0.0	0.0	0.0	1.142
WNW	0.0	0.0	0.0	0.521	0.381	0.140	0.0	0.0	0.0	1.042
NW	0.0	0.0	0.050	0.240	0.280	0.431	0.050	0.0	0.0	1.052
NNW	0.0	0.0	0.0	0.140	0.090	0.190	0.0	0.0	0.0	0.421
TOTALS	0.0	0.0	1.432	3.555	2.083	1.552	0.050	0.0	0.0	8.673

TABLE 3 (Continued)

## STABILITY CLASS C

WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS 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	0.050	0.090	0.090	0.280	0.0	0.0	0.0	0.511
NNE	0.0	0.0	0.140	0.190	0.090	0.0	0.0	0.0	0.0	0.421
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.090	0.050	0.0	0.0	0.0	0.0	0.0	0.140
E	0.0	0.0	0.0	0.050	0.0	0.0	0.0	0.0	0.0	0.050
ESE	0.0	0.0	0.050	0.090	0.0	0.0	0.0	0.0	0.0	0.140
SE	0.0	0.0	0.471	0.190	0.0	0.050	0.0	0.0	0.0	0.711
SSE	0.0	0.0	0.240	0.140	0.050	0.0	0.0	0.0	0.0	0.431
S	0.0	0.0	0.471	0.050	0.0	0.0	0.0	0.0	0.0	0.521
SSW	0.0	0.0	0.050	0.050	0.0	0.0	0.0	0.0	0.0	0.100
SW	0.0	0.0	0.190	0.050	0.0	0.0	0.0	0.0	0.0	0.240
WSW	0.0	0.0	0.050	0.331	0.140	0.050	0.0	0.0	0.0	0.571
W	0.0	0.0	0.090	0.190	0.190	0.090	0.0	0.0	0.0	0.561
WNW	0.0	0.0	0.050	0.140	0.280	0.0	0.0	0.0	0.0	0.471
NW	0.0	0.0	0.050	0.140	0.090	0.190	0.0	0.0	0.0	0.471
NNW	0.0	0.0	0.0	0.050	0.050	0.0	0.0	0.0	0.0	0.100
TOTALS	0.0	0.0	1.993	1.803	0.981	0.661	0.0	0.0	0.0	5.438

## STABILITY CLASS D

WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS 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	0.381	0.571	0.571	0.661	0.050	0.0	0.0	2.233
NNE	0.0	0.0	0.280	0.471	0.621	0.190	0.0	0.0	0.0	1.562
NE	0.0	0.0	0.521	0.090	0.050	0.0	0.0	0.0	0.0	0.661
ENE	0.0	0.0	0.431	0.090	0.0	0.0	0.0	0.0	0.0	0.521
E	0.0	0.0	0.190	0.621	0.0	0.0	0.0	0.0	0.0	0.811
ESE	0.0	0.0	0.521	0.711	0.140	0.0	0.0	0.0	0.0	1.372
SE	0.0	0.0	1.763	1.472	0.571	0.0	0.0	0.0	0.0	3.806
SSE	0.0	0.050	1.092	0.381	0.0	0.0	0.0	0.0	0.0	1.522
S	0.0	0.050	1.382	0.571	0.0	0.0	0.0	0.0	0.0	2.003
SSW	0.0	0.0	0.811	0.190	0.0	0.0	0.0	0.0	0.0	1.002
SW	0.0	0.0	0.431	0.090	0.0	0.0	0.0	0.0	0.0	0.521
WSW	0.0	0.050	1.042	0.851	0.140	0.0	0.0	0.0	0.0	2.083
W	0.0	0.0	0.571	1.282	0.811	0.140	0.0	0.0	0.0	2.804
WNW	0.0	0.0	0.190	0.280	0.621	0.280	0.0	0.0	0.0	1.372
NW	0.0	0.0	0.090	0.381	0.140	0.431	0.0	0.0	0.0	1.042
NNW	0.0	0.0	0.240	0.761	0.851	0.381	0.0	0.0	0.0	2.233
TOTALS	0.0	0.150	9.935	8.813	4.517	2.083	0.050	0.0	0.0	25.549

TABLE 3 (Continued)

## STABILITY CLASS E

WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED										
SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.090	0.521	0.711	0.381	0.0	0.0	0.0	0.0	1.703
NNE	0.0	0.140	0.571	0.661	1.042	0.331	0.0	0.0	0.0	2.744
NE	0.0	0.140	0.661	0.240	0.381	0.050	0.0	0.0	0.0	1.472
ENE	0.0	0.090	0.901	0.240	0.0	0.0	0.0	0.0	0.0	1.232
E	0.0	0.090	0.661	0.381	0.050	0.0	0.0	0.0	0.0	1.182
ESE	0.0	0.0	0.571	0.471	0.050	0.0	0.0	0.0	0.0	1.092
SE	0.0	0.050	1.092	0.711	0.090	0.050	0.0	0.0	0.0	1.993
SSE	0.0	0.090	0.381	0.050	0.0	0.0	0.0	0.0	0.0	0.521
S	0.0	0.050	0.711	0.0	0.0	0.0	0.0	0.0	0.0	0.761
SSW	0.0	0.090	0.521	0.090	0.0	0.0	0.0	0.0	0.0	0.701
SW	0.0	0.050	0.431	0.050	0.0	0.0	0.0	0.0	0.0	0.531
WSW	0.0	0.090	0.521	0.381	0.0	0.0	0.0	0.0	0.0	0.992
W	0.0	0.050	0.431	0.811	0.280	0.0	0.0	0.0	0.0	1.572
WNW	0.0	0.0	0.190	0.090	0.050	0.050	0.0	0.0	0.0	0.381
NW	0.0	0.0	0.381	0.280	0.0	0.0	0.0	0.0	0.0	0.661
NNW	0.0	0.090	0.280	1.092	0.240	0.0	0.0	0.0	0.0	1.703
TOTALS	0.0	1.112	8.823	6.260	2.564	0.481	0.0	0.0	0.0	19.239

## STABILITY CLASS F

WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED										
SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.240	0.811	0.571	0.190	0.0	0.0	0.0	0.0	1.813
NNE	0.0	0.190	1.282	1.422	0.431	0.0	0.0	0.0	0.0	3.325
NE	0.0	0.240	0.661	0.431	0.140	0.050	0.0	0.0	0.0	1.522
ENE	0.0	0.090	1.002	0.140	0.0	0.0	0.0	0.0	0.0	1.232
E	0.0	0.0	0.381	0.521	0.0	0.0	0.0	0.0	0.0	0.901
ESE	0.0	0.050	0.190	0.140	0.0	0.0	0.0	0.0	0.0	0.381
SE	0.0	0.090	0.240	0.0	0.0	0.0	0.0	0.0	0.0	0.331
SSE	0.0	0.050	0.280	0.0	0.0	0.0	0.0	0.0	0.0	0.331
S	0.0	0.240	0.090	0.050	0.0	0.0	0.0	0.0	0.0	0.381
SSW	0.0	0.090	0.140	0.0	0.0	0.0	0.0	0.0	0.0	0.230
SW	0.0	0.050	0.190	0.0	0.0	0.0	0.0	0.0	0.0	0.240
WSW	0.0	0.090	0.050	0.050	0.0	0.0	0.0	0.0	0.0	0.190
W	0.0	0.050	0.090	0.0	0.0	0.0	0.0	0.0	0.0	0.140
WNW	0.0	0.0	0.331	0.0	0.0	0.0	0.0	0.0	0.0	0.331
NW	0.0	0.090	0.090	0.050	0.0	0.0	0.0	0.0	0.0	0.230
NNW	0.0	0.140	0.571	0.090	0.0	0.0	0.0	0.0	0.0	0.801
TOTALS	0.0	1.703	6.400	3.465	0.761	0.050	0.0	0.0	0.0	12.379

TABLE 3 (Continued)

## STABILITY CLASS G

WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED										
SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.471	1.422	0.621	0.0	0.0	0.0	0.0	0.0	2.514
NNE	0.0	0.331	1.943	0.811	0.0	0.0	0.0	0.0	0.0	3.085
NE	0.0	0.190	1.142	0.050	0.0	0.0	0.0	0.0	0.0	1.382
ENE	0.0	0.050	0.901	0.190	0.0	0.0	0.0	0.0	0.0	1.142
E	0.0	0.140	0.521	0.471	0.0	0.0	0.0	0.0	0.0	1.132
ESE	0.0	0.0	0.090	0.0	0.0	0.0	0.0	0.0	0.0	0.090
SE	0.0	0.050	0.090	0.0	0.0	0.0	0.0	0.0	0.0	0.140
SSE	0.0	0.050	0.190	0.0	0.0	0.0	0.0	0.0	0.0	0.240
S	0.0	0.050	0.090	0.0	0.0	0.0	0.0	0.0	0.0	0.140
SSW	0.0	0.0	0.090	0.0	0.0	0.0	0.0	0.0	0.0	0.090
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.050	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.050
NW	0.0	0.050	0.190	0.050	0.0	0.0	0.0	0.0	0.0	0.290
NNW	0.0	0.381	0.761	0.331	0.0	0.0	0.0	0.0	0.0	1.472
TOTALS	0.0	1.813	7.431	2.524	0.0	0.0	0.0	0.0	0.0	11.760

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	0.0	0.391	3.365	1.863	0.050	0.0	0.0	0.0	0.0
NNE	0.0	0.180	1.663	0.331	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.100	1.342	0.571	0.050	0.0	0.0	0.0	0.0
ENE	0.0	0.230	1.803	2.283	0.371	0.190	0.0	0.0	0.0
E	0.0	0.100	1.232	2.995	2.233	0.511	0.050	0.0	0.0
ESE	0.0	0.050	0.761	1.272	2.093	0.901	0.0	0.0	0.0
SE	0.0	0.140	0.851	1.142	0.891	1.482	0.100	0.0	0.0
SSE	0.0	0.611	1.903	2.464	1.322	1.282	0.050	0.0	0.0
S	0.0	0.801	3.235	2.744	1.903	2.694	0.431	0.0	0.0
SSW	0.0	0.661	4.216	3.736	3.125	1.703	0.0	0.0	0.0
SW	0.0	0.571	3.035	1.332	1.092	0.331	0.0	0.0	0.0
WSW	0.0	0.230	3.325	0.901	0.090	0.0	0.0	0.0	0.0
W	0.0	0.230	1.753	2.183	0.050	0.0	0.0	0.0	0.0
WNW	0.0	0.050	1.422	2.033	0.811	0.140	0.0	0.0	0.0
NW	0.0	0.190	4.216	5.458	1.182	0.100	0.050	0.0	0.0
NNW	0.0	0.240	2.514	1.953	0.050	0.0	0.0	0.0	0.0

TABLE 4

## BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA

## JOINT FREQUENCY DISTRIBUTION IN PERCENT

## GROUND-LEVEL RELEASES - FOURTH QUARTER, 1976

## STABILITY CLASS A

WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS 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	0.050	0.149	0.438	0.239	0.0	0.0	0.876
NNE	0.0	0.0	0.0	0.050	0.149	0.338	0.050	0.0	0.0	0.587
NE	0.0	0.0	0.0	0.100	0.0	0.050	0.0	0.0	0.0	0.149
ENE	0.0	0.0	0.0	0.050	0.0	0.0	0.0	0.0	0.0	0.050
E	0.0	0.0	0.0	0.050	0.0	0.0	0.0	0.0	0.0	0.050
ESE	0.0	0.0	0.050	0.149	0.100	0.0	0.0	0.0	0.0	0.299
SE	0.0	0.0	0.149	1.165	0.926	0.100	0.0	0.0	0.0	2.339
SSE	0.0	0.0	0.438	0.587	0.149	0.0	0.0	0.0	0.0	1.175
S	0.0	0.0	0.149	0.826	0.239	0.0	0.0	0.0	0.0	1.214
SSW	0.0	0.0	0.0	0.050	0.0	0.0	0.0	0.0	0.0	0.050
SW	0.0	0.0	0.100	0.100	0.0	0.0	0.0	0.0	0.0	0.199
WSW	0.0	0.0	0.0	0.199	0.149	0.239	0.0	0.0	0.0	0.587
W	0.0	0.0	0.0	0.149	0.050	0.100	0.0	0.0	0.0	0.299
WNW	0.0	0.0	0.100	0.149	0.100	0.488	0.050	0.0	0.0	0.886
NW	0.0	0.0	0.0	0.100	0.149	0.976	0.438	0.0	0.0	1.662
NNW	0.0	0.0	0.0	0.050	0.050	0.0	0.199	0.0	0.0	0.299
TOTALS	0.0	0.0	0.985	3.823	2.210	2.728	0.976	0.0	0.0	10.721

## STABILITY CLASS B

WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS 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	0.100	0.149	0.488	0.0	0.0	0.0	0.737
NNE	0.0	0.0	0.0	0.0	0.100	0.488	0.0	0.0	0.0	0.587
NE	0.0	0.0	0.050	0.050	0.149	0.050	0.0	0.0	0.0	0.299
ENE	0.0	0.0	0.0	0.0	0.100	0.0	0.0	0.0	0.0	0.100
E	0.0	0.0	0.0	0.050	0.0	0.0	0.0	0.0	0.0	0.050
ESE	0.0	0.0	0.0	0.100	0.050	0.0	0.0	0.0	0.0	0.149
SE	0.0	0.0	0.100	0.199	0.0	0.050	0.0	0.0	0.0	0.348
SSE	0.0	0.0	0.488	0.149	0.0	0.0	0.0	0.0	0.0	0.637
S	0.0	0.0	0.199	0.199	0.100	0.0	0.0	0.0	0.0	0.498
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.050	0.100	0.0	0.0	0.0	0.0	0.0	0.149
WSW	0.0	0.0	0.050	0.100	0.100	0.0	0.0	0.0	0.0	0.249
W	0.0	0.0	0.050	0.289	0.289	0.100	0.100	0.0	0.0	0.826
WNW	0.0	0.0	0.100	0.289	0.388	0.488	0.338	0.0	0.0	1.603
NW	0.0	0.0	0.050	0.149	0.149	0.776	0.149	0.0	0.0	1.274
NNW	0.0	0.0	0.050	0.0	0.239	0.199	0.050	0.0	0.0	0.538
TOTALS	0.0	0.0	1.185	1.772	1.812	2.638	0.637	0.0	0.0	8.043

TABLE 4 (Continued)

## STABILITY CLASS C

WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS 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	0.050	0.149	0.199	0.0	0.0	0.0	0.398
NNE	0.0	0.0	0.0	0.0	0.050	0.199	0.100	0.0	0.0	0.348
NE	0.0	0.0	0.100	0.050	0.050	0.050	0.0	0.0	0.0	0.249
ENE	0.0	0.0	0.050	0.050	0.0	0.0	0.0	0.0	0.0	0.100
E	0.0	0.050	0.0	0.050	0.0	0.0	0.0	0.0	0.0	0.100
ESE	0.0	0.0	0.0	0.050	0.0	0.0	0.0	0.0	0.0	0.050
SE	0.0	0.0	0.100	0.100	0.050	0.050	0.0	0.0	0.0	0.299
SSE	0.0	0.0	0.239	0.239	0.0	0.0	0.0	0.0	0.0	0.478
S	0.0	0.0	0.100	0.050	0.0	0.0	0.0	0.0	0.0	0.149
SSW	0.0	0.0	0.0	0.0	0.050	0.0	0.0	0.0	0.0	0.050
SW	0.0	0.0	0.050	0.050	0.0	0.0	0.0	0.0	0.0	0.100
WSW	0.0	0.0	0.050	0.149	0.0	0.0	0.0	0.0	0.0	0.199
W	0.0	0.0	0.050	0.050	0.050	0.050	0.050	0.0	0.0	0.249
WNW	0.0	0.0	0.050	0.100	0.050	0.100	0.100	0.0	0.0	0.398
NW	0.0	0.0	0.0	0.100	0.100	0.149	0.149	0.0	0.0	0.498
NNW	0.0	0.0	0.0	0.050	0.100	0.338	0.050	0.0	0.0	0.538
TOTALS	0.0	0.050	0.786	1.135	0.647	1.135	0.448	0.0	0.0	4.201

## STABILITY CLASS D

WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS 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	0.050	0.438	0.826	1.842	0.388	0.0	0.0	3.544
NNE	0.0	0.0	0.199	0.388	0.727	1.652	0.050	0.0	0.0	3.016
NF	0.0	0.050	0.050	0.587	0.239	0.149	0.0	0.0	0.0	1.075
ENE	0.0	0.100	0.199	0.199	0.149	0.0	0.0	0.0	0.0	0.647
E	0.0	0.0	0.199	0.0	0.0	0.0	0.0	0.0	0.0	0.199
ESE	0.0	0.0	0.149	0.627	0.100	0.0	0.0	0.0	0.0	0.876
SE	0.0	0.100	0.438	0.826	1.015	0.488	0.0	0.0	0.0	2.867
SSE	0.0	0.0	0.587	0.338	0.149	0.0	0.0	0.0	0.0	1.075
S	0.0	0.0	0.488	1.165	0.100	0.0	0.0	0.0	0.0	1.752
SSW	0.0	0.0	0.149	0.100	0.100	0.050	0.0	0.0	0.0	0.398
SW	0.0	0.0	0.050	0.050	0.050	0.0	0.0	0.0	0.0	0.149
WSW	0.0	0.050	0.100	0.338	0.100	0.149	0.0	0.0	0.0	0.737
W	0.0	0.0	0.149	0.677	0.488	0.776	0.100	0.0	0.0	2.190
WNW	0.0	0.0	0.149	0.239	0.388	0.976	0.438	0.0	0.0	2.190
NW	0.0	0.0	0.0	0.289	0.239	1.214	1.453	0.149	0.0	3.345
NNW	0.0	0.0	0.149	0.199	0.826	2.280	0.776	0.050	0.0	4.280
TOTALS	0.0	0.299	3.106	6.460	5.495	9.576	3.205	0.199	0.0	28.340

TABLE 4 (Continued)

## STABILITY CLASS E

WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED										
SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.100	0.567	0.677	0.149	0.199	0.0	0.0	0.0	1.712
NNE	0.0	0.100	0.438	0.587	0.876	0.438	0.0	0.0	0.0	2.439
NE	0.0	0.050	0.289	0.438	0.199	0.050	0.0	0.0	0.0	1.025
ENE	0.0	0.100	0.488	0.149	0.0	0.0	0.0	0.0	0.0	0.737
E	0.0	0.100	0.438	0.239	0.0	0.0	0.0	0.0	0.0	0.776
ESE	0.0	0.100	0.926	0.876	0.388	0.149	0.0	0.0	0.0	2.439
SE	0.0	0.199	1.314	1.364	0.627	0.199	0.0	0.0	0.0	3.703
SSE	0.0	0.100	1.115	1.165	0.538	0.0	0.0	0.0	0.0	2.917
S	0.0	0.100	1.314	0.587	0.199	0.050	0.0	0.0	0.0	2.250
SSW	0.0	0.050	0.289	0.050	0.050	0.0	0.0	0.0	0.0	0.438
SW	0.0	0.050	0.239	0.050	0.100	0.0	0.0	0.0	0.0	0.438
WSW	0.0	0.050	0.488	0.289	0.199	0.100	0.0	0.0	0.0	1.125
W	0.0	0.100	0.388	1.214	0.388	0.149	0.0	0.0	0.0	2.240
WNW	0.0	0.0	0.149	0.289	0.100	0.100	0.0	0.0	0.0	0.637
NW	0.0	0.100	0.199	0.338	0.050	0.338	0.050	0.0	0.0	1.075
NNW	0.0	0.100	0.388	0.338	0.587	0.727	0.149	0.0	0.0	2.290
TOTALS	0.0	1.394	9.049	8.650	4.450	2.499	0.199	0.0	0.0	26.240

## STABILITY CLASS F

WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED										
SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.100	0.149	0.488	0.149	0.0	0.0	0.0	0.0	0.886
NNE	0.0	0.050	0.388	0.289	0.289	0.0	0.0	0.0	0.0	1.015
NE	0.0	0.100	0.149	0.199	0.050	0.0	0.0	0.0	0.0	0.498
ENE	0.0	0.0	0.488	0.100	0.0	0.0	0.0	0.0	0.0	0.587
E	0.0	0.050	0.438	0.587	0.0	0.0	0.0	0.0	0.0	1.075
ESE	0.0	0.0	0.289	0.438	0.0	0.0	0.0	0.0	0.0	0.727
SE	0.0	0.149	0.926	0.388	0.0	0.0	0.0	0.0	0.0	1.463
SSE	0.0	0.100	1.503	0.239	0.0	0.0	0.0	0.0	0.0	1.842
S	0.0	0.0	0.727	0.289	0.149	0.0	0.0	0.0	0.0	1.165
SSW	0.0	0.050	0.289	0.0	0.0	0.0	0.0	0.0	0.0	0.338
SW	0.0	0.0	0.199	0.050	0.0	0.0	0.0	0.0	0.0	0.249
WSW	0.0	0.0	0.100	0.100	0.0	0.0	0.0	0.0	0.0	0.199
W	0.0	0.0	0.100	0.338	0.0	0.0	0.0	0.0	0.0	0.438
WNW	0.0	0.050	0.050	0.050	0.0	0.0	0.0	0.0	0.0	0.149
NW	0.0	0.100	0.100	0.100	0.0	0.0	0.0	0.0	0.0	0.299
NNW	0.0	0.100	0.438	0.627	0.289	0.0	0.0	0.0	0.0	1.453
TOTALS	0.0	0.846	6.331	4.280	0.926	0.0	0.0	0.0	0.0	12.383

TABLE 4 (Continued)

## STABILITY CLASS G

WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED										
SECTOR	0.13	0.45	1.10	1.99	2.80	4.45	6.91	9.59	13.00	TOTALS
N	0.0	0.100	1.015	0.149	0.0	0.0	0.0	0.0	0.0	1.264
NNE	0.0	0.050	1.065	0.289	0.338	0.0	0.0	0.0	0.0	1.742
NE	0.0	0.149	0.289	0.0	0.0	0.0	0.0	0.0	0.0	0.438
ENE	0.0	0.050	1.364	0.149	0.0	0.0	0.0	0.0	0.0	1.563
E	0.0	0.0	0.826	0.438	0.0	0.0	0.0	0.0	0.0	1.264
ESE	0.0	0.050	0.289	0.0	0.0	0.0	0.0	0.0	0.0	0.338
SE	0.0	0.050	0.727	0.0	0.0	0.0	0.0	0.0	0.0	0.776
SSE	0.0	0.050	0.776	0.239	0.0	0.0	0.0	0.0	0.0	1.065
S	0.0	0.100	0.388	0.050	0.0	0.0	0.0	0.0	0.0	0.538
SSW	0.0	0.149	0.199	0.0	0.0	0.0	0.0	0.0	0.0	0.348
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.050	0.0	0.0	0.0	0.0	0.0	0.0	0.050
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	0.100	0.050	0.0	0.0	0.0	0.0	0.0	0.149
NNW	0.0	0.199	0.239	0.100	0.0	0.0	0.0	0.0	0.0	0.538
TOTALS	0.0	0.946	7.326	1.463	0.338	0.0	0.0	0.0	0.0	10.074

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	0.0	0.199	3.365	3.166	0.786	0.050	0.0	0.0	0.0	
NNE	0.0	0.249	0.926	0.199	0.199	0.050	0.0	0.0	0.0	
NE	0.0	0.050	0.687	0.398	0.149	0.0	0.0	0.0	0.0	
ENE	0.0	0.100	0.786	1.175	0.547	0.488	0.0	0.0	0.0	
E	0.0	0.100	0.786	2.718	1.264	1.175	0.249	0.0	0.0	
ESE	0.0	0.050	0.547	1.115	1.025	2.150	0.926	0.0	0.0	
SE	0.0	0.199	0.448	1.125	0.687	3.454	2.240	0.149	0.0	
SSE	0.0	0.398	1.264	1.364	2.090	3.544	1.224	0.050	0.0	
S	0.0	0.299	1.802	1.951	1.573	3.166	0.627	0.0	0.0	
SSW	0.0	0.199	2.090	1.603	2.528	3.116	0.199	0.0	0.0	
SW	0.0	0.348	0.926	1.423	0.687	0.348	0.0	0.0	0.0	
WSW	0.0	0.249	2.518	0.697	0.249	0.0	0.0	0.0	0.0	
W	0.0	0.199	1.901	1.414	0.0	0.0	0.0	0.0	0.0	
WNW	0.0	0.149	1.702	2.240	0.637	0.149	0.0	0.0	0.0	
NW	0.0	0.498	3.753	4.042	2.618	0.886	0.0	0.0	0.0	
NNW	0.0	0.249	5.146	2.956	0.836	0.0	0.0	0.0	0.0	

ELEVATED RELEASES - THIRD QUARTER, 1976

[illegible]

TABLE 5 (Continued)

## STABILITY CLASS C

WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS 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	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

## STABILITY CLASS D

WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS 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	0.470	0.520	0.991	2.272	3.363	0.140	0.050	7.806
NNE	0.0	0.0	0.090	0.570	0.661	3.082	3.413	2.512	0.0	10.328
NE	0.0	0.0	0.190	0.240	0.330	1.892	1.751	1.281	0.0	5.685
ENE	0.0	0.0	0.240	0.280	0.380	1.661	1.041	0.090	0.0	3.693
E	0.0	0.050	0.330	0.470	0.570	1.611	0.761	0.090	0.0	3.883
ESE	0.0	0.0	0.520	0.801	1.181	3.653	2.892	0.090	0.0	9.137
SE	0.0	0.090	0.761	1.701	2.082	2.842	1.281	0.050	0.090	8.897
SSE	0.0	0.0	0.801	1.471	1.281	3.273	0.991	0.090	0.0	7.906
S	0.0	0.0	0.280	0.901	0.991	2.272	0.330	0.0	0.0	4.774
SSW	0.0	0.0	0.470	1.231	0.711	1.281	0.801	0.0	0.0	4.494
SW	0.0	0.050	0.330	1.141	0.901	1.801	0.240	0.0	0.0	4.464
WSW	0.0	0.0	0.280	1.611	1.521	1.181	0.470	0.050	0.0	5.114
W	0.0	0.050	0.430	1.371	1.942	1.751	0.470	0.050	0.0	6.065
WNW	0.0	0.050	0.661	0.851	2.272	2.602	0.380	0.0	0.0	6.815
NW	0.0	0.0	0.330	0.801	1.141	1.751	0.851	0.050	0.0	4.924
NNW	0.0	0.0	0.280	0.711	0.711	2.702	1.521	0.090	0.0	6.015
TOTALS	0.0	0.290	6.465	14.672	17.664	35.629	20.557	4.584	0.140	100.000

TABLE 5 (Continued)

## STABILITY CLASS E

[illegible]

STABILITY CLASS E.

[illegible]

TABLE 5 (Continued)

## STABILITY CLASS G

WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS 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	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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	0.0	0.0	0.280	0.901	0.991	2.272	0.330	0.0	0.0
NNE	0.0	0.0	0.470	1.231	0.711	1.281	0.801	0.0	0.0
NE	0.0	0.050	0.330	1.141	0.901	1.801	0.240	0.0	0.0
ENE	0.0	0.0	0.280	1.611	1.521	1.181	0.470	0.050	0.0
E	0.0	0.050	0.430	1.371	1.942	1.751	0.470	0.050	0.0
ESE	0.0	0.050	0.661	0.851	2.272	2.602	0.380	0.0	0.0
SE	0.0	0.0	0.330	0.801	1.141	1.751	0.851	0.050	0.0
SSE	0.0	0.0	0.280	0.711	0.711	2.702	1.521	0.090	0.0
S	0.0	0.0	0.470	0.520	0.991	2.272	3.363	0.140	0.050
SSW	0.0	0.0	0.090	0.570	0.661	3.082	3.413	2.512	0.0
SW	0.0	0.0	0.190	0.240	0.330	1.892	1.751	1.281	0.0
WSW	0.0	0.0	0.240	0.280	0.380	1.661	1.041	0.090	0.0
W	0.0	0.050	0.330	0.470	0.570	1.611	0.761	0.090	0.0
WNW	0.0	0.0	0.520	0.801	1.181	3.653	2.892	0.090	0.0
NW	0.0	0.090	0.761	1.701	2.082	2.842	1.281	0.050	0.090
NNW	0.0	0.0	0.801	1.471	1.281	3.273	0.991	0.090	0.0

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA

ELEVATED RELEASES - FOURTH QUARTER, 1976

[illegible][illegible]

TABLE 6 (Continued)

## STABILITY CLASS C

WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS 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	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

## STABILITY CLASS D

WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS 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	0.050	0.330	2.660	4.280	0.620	0.0	7.941
NNE	0.0	0.0	0.140	0.100	0.330	1.900	4.180	0.950	0.140	7.741
NE	0.0	0.0	0.240	0.190	0.380	1.620	1.240	0.520	0.0	4.190
ENE	0.0	0.0	0.100	0.290	0.140	0.430	0.380	0.100	0.0	1.440
E	0.0	0.0	0.360	0.330	0.430	1.330	0.190	0.0	0.0	2.660
ESE	0.0	0.140	0.330	0.520	0.570	1.570	1.520	0.240	0.140	5.031
SE	0.0	0.0	0.330	0.330	0.570	2.090	3.420	1.710	0.190	8.641
SSE	0.0	0.0	0.240	0.620	0.430	1.710	1.660	1.330	0.330	6.321
S	0.0	0.100	0.140	0.620	0.520	2.990	2.710	0.520	0.140	7.741
SSW	0.0	0.0	0.0	0.190	0.810	2.990	2.000	0.570	0.050	6.611
SW	0.0	0.050	0.190	0.430	0.520	1.470	1.850	0.670	0.190	5.371
WSW	0.0	0.0	0.140	0.710	0.950	2.470	1.470	0.330	0.0	6.071
W	0.0	0.0	0.240	0.620	0.810	1.620	2.190	0.430	0.140	6.051
WNW	0.0	0.0	0.140	0.520	1.000	2.420	2.610	0.710	0.100	7.501
NW	0.0	0.0	0.240	0.710	0.710	2.470	3.370	1.950	0.290	9.741
NNW	0.0	0.0	0.0	0.100	0.100	1.900	3.470	1.280	0.100	6.951
TOTALS	0.0	0.290	2.850	6.331	8.601	31.643	36.544	11.931	1.810	100.001

TABLE 6 (Continued)

**STABILITY CLASS E**

[illegible]

STABILITY CLASS F

[illegible]

TABLE 6 (Continued)

## STABILITY CLASS C

WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS 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	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

## 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	0.0	0.100	0.140	0.620	0.520	2.990	2.710	0.520	0.140
NNE	0.0	0.0	0.0	0.190	0.810	2.990	2.000	0.570	0.050
NE	0.0	0.050	0.190	0.430	0.520	1.470	1.850	0.670	0.190
ENE	0.0	0.0	0.140	0.710	0.950	2.470	1.470	0.330	0.0
E	0.0	0.0	0.240	0.620	0.810	1.620	2.190	0.430	0.140
ESE	0.0	0.0	0.140	0.520	1.000	2.420	2.610	0.710	0.100
SE	0.0	0.0	0.240	0.710	0.710	2.470	3.370	1.950	0.290
SSE	0.0	0.0	0.0	0.100	0.100	1.900	3.470	1.280	0.100
S	0.0	0.0	0.0	0.050	0.330	2.660	4.280	0.620	0.0
SSW	0.0	0.0	0.140	0.100	0.330	1.900	4.180	0.950	0.140
SW	0.0	0.0	0.240	0.190	0.380	1.620	1.240	0.520	0.0
WSW	0.0	0.0	0.100	0.290	0.140	0.430	0.380	0.100	0.0
W	0.0	0.0	0.380	0.330	0.430	1.330	0.190	0.0	0.0
WNW	0.0	0.140	0.330	0.520	0.570	1.570	1.520	0.240	0.140
NW	0.0	0.0	0.330	0.330	0.570	2.090	3.420	1.710	0.190
NNW	0.0	0.0	0.240	0.620	0.430	1.710	1.660	1.330	0.330

TABLE 7

BNFP DOSES TO INDIVIDUALS FROM THIRD QUARTER, 1976 RELEASESExternal Exposure\*

<u>Pathway</u>	<u>Limit**</u>	<u>Point</u>	<u>Doses (mrem)</u>
γ air dose	10	Max. Exp. <sup>1</sup>	9.85E-1
β air dose	20	Max. Exp. <sup>1</sup>	6.02E+0
Total body	5	Residence <sup>2</sup>	4.79E-1
Skin	15	Residence <sup>2</sup>	2.06E+0

Internal Exposure (Thyroid-maximum exposed organ)

Radioiodines & Particulates	15	Real Pathway <sup>3,4,5</sup>	1.08E-1
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Ingestion

	<u>Infant</u>	<u>Child</u>	<u>Adult</u>
Milk <sup>3</sup>	6.64E-2	2.75E-2	9.14E-3
Meat <sup>4</sup>	0.00E 0	9.95E-4	9.59E-4
Veg. <sup>5</sup>	0.00E 0	4.63E-3	3.15E-3

Inhalation<sup>5</sup>

	2.12E-4	3.41E-4	3.82E-4
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External<sup>5</sup>

	4.14E-2	4.14E-2	4.14E-2
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## Total

	1.08E-1	7.49E-2	5.50E-2
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\* Calculated with a semi-infinite cloud model.

\*\* Limits as defined by Appendix I to 10 CFR 50.

1. Maximum exposure point is at 1,620 meters in the NNW sector.

2. Residence is at 1,860 meters in the NNW sector.

3. Limiting milk cow is at 5,940 meters in the N sector.

4. Doses calculated at the site boundary.

5. Doses calculated at the residence on the farm which has the limiting milk cow.

TABLE 8

BFNP DOSES TO INDIVIDUALS FROM FOURTH QUARTER, 1976 RELEASESExternal Exposure\*

<u>Pathway</u>	<u>Limit**</u>	<u>Point</u>	<u>Doses (mrem)</u>
γ air dose	10	Max. Exp. <sup>1</sup>	7.22E-1
β air dose	20	Max. Exp. <sup>1</sup>	7.94E+0
Total body	5	Residence <sup>2</sup>	4.21E-1
Skin	15	Residence <sup>2</sup>	2.61E+0

Internal Exposure (Thyroid-maximum exposed organ)

Radioiodines & Particulates	15	Real Pathway <sup>3,4,5</sup>	2.02E-1
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Ingestion

	<u>Infant</u>	<u>Child</u>	<u>Adult</u>
Milk <sup>3</sup>	1.63E-1	6.74E-2	2.27E-2
Meat <sup>4</sup>	0.00E 0	1.44E-3	1.38E-3
Veg. <sup>5</sup>	0.00E 0	1.20E-2	8.15E-3
<u>Inhalation</u> <sup>5</sup>	9.59E-5	1.56E-4	1.20E-4
<u>External</u> <sup>5</sup>	3.88E-2	3.88E-2	3.88E-2
Total	2.02E-1	1.20E-1	7.12E-2

\* Calculated with a semi-infinite cloud model.

\*\* Limits as defined by Appendix I to 10 CFR 50.

1. Maximum exposure point is at 1,620 meters in the NNW sector.

2. Residence is at 1,860 meters in the NNW sector.

3. Limiting milk cow is at 5,940 meters in the N sector.

4. Doses calculated at the site boundary.

5. Doses calculated at the residence on the farm which has the limiting milk cow.

TABLE 9  
BFNP POPULATION DOSES  
THIRD QUARTER, 1976

	THYROID				TOTAL BODY			
	INFANT	CHILD	TEEN	ADULT	INFANT	CHILD	TEEN	ADULT
SUBMERSION	1.62E-02	1.01E-01	6.41E-02	2.97E-01	1.62E-02	1.01E-01	6.41E-02	2.97E-01
GROUND	1.43E-03	8.92E-03	5.68E-03	2.63E-02	1.43E-03	8.92E-03	5.68E-03	2.63E-02
INHALATION	2.50E-04	2.51E-03	8.80E-04	6.68E-03	1.46E-06	3.14E-05	2.71E-05	4.40E-03
COW MILK	3.01E-02	7.77E-02	2.06E-02	8.20E-02	3.67E-04	2.32E-03	1.55E-03	9.56E-03
BEEF INGESTION	0.0	1.72E-03	7.32E-04	4.69E-03	0.0	2.08E-04	1.80E-04	1.69E-03
VEG INGESTION	0.0	4.95E-03	2.13E-03	1.29E-02	0.0	3.46E-04	3.22E-04	2.81E-03
TOTALS	4.79E-02	1.97E-01	9.42E-02	4.30E-01	1.80E-02	1.13E-01	7.19E-02	3.42E-01
GRAND TOTALS				7.68E-01 MAN-REM				5.44E-01 MAN-REM

FOURTH QUARTER, 1976

	THYROID				TOTAL BODY			
	INFANT	CHILD	TEEN	ADULT	INFANT	CHILD	TEEN	ADULT
SUBMERSION	9.01E-03	5.62E-02	3.58E-02	1.66E-01	9.01E-03	5.62E-02	3.58E-02	1.66E-01
GROUND	1.98E-04	1.23E-03	7.84E-04	3.63E-03	1.98E-04	1.23E-03	7.84E-04	3.63E-03
INHALATION	1.10E-04	1.11E-03	4.21E-04	2.03E-03	1.78E-06	2.89E-05	1.45E-05	1.45E-03
COW MILK	6.76E-02	1.75E-01	4.64E-02	1.85E-01	1.51E-04	5.90E-04	2.22E-04	1.11E-03
BEEF INGESTION	0.0	4.03E-03	1.71E-03	1.10E-02	0.0	2.85E-05	1.96E-05	1.98E-04
VEG INGESTION	0.0	1.16E-02	4.98E-03	3.02E-02	0.0	7.25E-05	4.75E-05	3.47E-04
TOTALS	7.69E-02	2.49E-01	9.00E-02	3.97E-01	9.36E-03	5.81E-02	3.69E-02	1.72E-01
GRAND TOTALS				8.13E-01 MAN-REM				2.77E-01 MAN-REM

TABLE 10  
LIQUID EFFLUENT DOSES - THIRD QUARTER 1976

	<u>Bone</u>	<u>G. I. Tract</u>	<u>Thyroid</u>	<u>Total Body</u>	<u>Skin</u>	
I. Water Ingestion						
A. Maximum Individual Dose Champion Paper Com- pany	<2.3E-3	<7.0E-4	<1.6E-3	<5.7E-4	<5.7E-4mrem	
B. Total Population Dose Tennessee River	<5.7E-2	<1.4E-2	<1.9E-2	<1.4E-2	<1.4E-2man-rem	
II. Fish Consumption						
A. Maximum Individual Dose Wheeler Lake below Browns Ferry	<2.3E-2	<5.9E-2	<3.1E-2	<2.8E-2	<2.8E-2mrem	
B. Total Population Dose Tennessee River	<1.1E-0	<2.8E-0	<1.5E-0	<1.4E-0	<1.4E-0man-rem	
	<u>In-Water</u>		<u>Above-Water</u>		<u>Shoreline</u>	
	<u>Total Body</u>	<u>Skin</u>	<u>Total Body</u>	<u>Skin</u>	<u>Total Body</u> <u>Skin</u>	
III. Recreation						
A. Maximum Individual Dose Wheeler Lake below Browns Ferry	<1.2E-4	<2.4E-4	<1.1E-4	<2.4E-4	<2.1E-2	<2.5E-2mrem
B. Total Population Dose Tennessee River	<2.5E-4	<5.3E-4	<6.5E-4	<1.4E-3	<1.4E-1	<1.7E-1man-rem
	<u>Bone</u>	<u>G. I. Tract</u>	<u>Thyroid</u>	<u>Total Body</u>	<u>Skin</u>	
IV. Total Tennessee River Population Dose	<1.3E-0	<3.0E-0	<1.7E-0	<1.6E-0	<1.6E-0man-rem	

TABLE 11

LIQUID EFFLUENT DOSES - FOURTH QUARTER 1976

	<u>Bone</u>	<u>G. I. Tract</u>	<u>Thyroid</u>	<u>Total Body</u>	<u>Skin</u>	
I. Water Ingestion						
A. Maximum Individual Dose Champion Paper Com- pany	<3.6E-4	<1.0E-3	<5.4E-3	<2.8E-4	<2.8E-4 mrem	
B. Total Population Dose Tennessee River	<8.9E-3	<1.5E-2	<3.6E-2	<6.9E-3	<6.9E-3 man-rem	
II. Fish Consumption						
A. Maximum Individual Dose Wheeler Lake below Browns Ferry	<7.0E-3	<2.1E-2	<1.6E-2	<9.8E-3	<9.8E-3 mrem	
B. Total Population Dose Tennessee River	<3.4E-1	<9.7E-1	<6.6E-1	<4.7E-1	<4.7E-1 man-rem	
	<u>In-Water</u>		<u>Above-Water</u>		<u>Shoreline</u>	
	<u>Total Body</u>	<u>Skin</u>	<u>Total Body</u>	<u>Skin</u>	<u>Total Body</u>	<u>Skin</u>
III. Recreation						
A. Maximum Individual Dose Wheeler Lake below Browns Ferry	<2.4E-4	<5.1E-4	<2.3E-4	<5.0E-4	<2.7E-3	<3.2E-3 mrem
B. Total Population Dose Tennessee River	<1.0E-4	<2.2E-4	<2.7E-4	<5.7E-4	<1.8E-2	<2.1E-2 man-rem
IV. Total Tennessee River Population Dose	<u>Bone</u>	<u>G. I. Tract</u>	<u>Thyroid</u>	<u>Total Body</u>	<u>Skin</u>	
	<3.7E-1	<1.0E-0	<7.1E-1	<5.0E-1	<5.0E-1 man-rem	