Tennessee Valley Authority, Post Office Box 2000, Decatur, Alabama 35609-2000

April 28, 2004

10 CFR 50.36a(a)(2)
10 CFR 50, Appendix I,
Section IV.B.1

U.S. Nuclear Regulatory Commission
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Mail Stop: OWFN, P1-35
Washington, D.C. 20555-0001

Gentlemen:

In the Matter of	)	Docket Nos. 50-259
Tennessee Valley Authority	)	50-260
		50-296

BROWNS FERRY NUCLEAR PLANT (BFN) - UNITS 1, 2, AND 3 - ANNUAL RADIOACTIVE EFFLUENT RELEASE (ARER) REPORT - JANUARY THROUGH DECEMBER 2003

In accordance with 10 CFR 50.36a(a)(2); 10 CFR 50, Appendix I, Section IV.B; and the BFN Technical Specification (TS) 5.6.3, TVA is submitting the BFN ARER report for January through December 2003. Also, in accordance with the BFN Offsite Dose Calculation Manual (ODCM) Section 1.1.1, Action (b), and Section 1.1.2, Action (c), TVA is providing the BFN Inoperable Radioactive Effluent Instrumentation Report. TVA is also submitting Revision 15 of the ODCM which was revised during this reporting period.

This report includes the following:

- Radiological Impact Assessment Report (Enclosure 1)
- Meteorological Data Tables (Enclosure 2)

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- Effluent and Waste Disposal Annual Report (Enclosure 3)
- Inoperable Radiological Effluent Instrumentation Report (Enclosure 4)
- ODCM, Revision 15 (Enclosure 5)

If you have any questions concerning this submittal, please contact me at (256) 729-2636.

Sincerely,

T. E. Abney
Manager of Site Licensing
and Industry Affairs

Enclosure
cc: See page 3

April 28, 2004

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ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNITS 1, 2, AND 3

RADIOLOGICAL IMPACT ASSESSMENT REPORT
2003

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Radiological Impact Assessment
Browns Ferry Nuclear Plant
January - December 2003

I. INTRODUCTION

Potential doses to the "maximum exposed individual" and the population around Browns Ferry are calculated for each quarter as required in Section 5.2 of the Offsite Dose Calculation Manual (ODCM). The methodology for determining plant releases for the reporting period used to estimate dose is specified in Sections 6 and 7 of the ODCM. Dispersion of radioactive effluents in the environment is estimated using meteorological data and river flow measured during the period. In this report, the doses resulting from releases are described and compared to limits established for Browns Ferry.

II. DOSE LIMITS

The ODCM specifies limits for the release of radioactive effluents, as well as limits for doses to the general public from the release of radioactive effluents. These limits are set well below the Technical Specification limits which govern the concentrations of radioactivity and doses permissible in unrestricted areas. This ensures that radioactive effluent releases are As Low As Reasonably Achievable.

The air dose limits in areas at and beyond the Site Boundary due to noble gases released in gaseous effluents per unit are:

$\leq$ 5 mrad per quarter and
$\leq$ 10 mrad per year for gamma radiation.
- and -
$\leq$ 10 mrad per quarter and
$\leq$ 20 mrad per year for beta radiation.

The dose limits to a Member of the Public in an unrestricted area from radioiodines, radioactive materials in particulate form, and radionuclides other than noble gases with half-lives > 8 days released in gaseous effluents for each unit are:

$\leq$ 7.5 mrem per quarter and
$\leq$ 15 mrem per year to any organ.

The dose or dose commitment to a Member of the Public from radioactive material in liquid effluents released to unrestricted areas are:

$\leq$ 1.5 mrem per quarter and
$\leq$ 3 mrem per year to the total body,
- and -
$\leq$ 5 mrem per quarter and
$\leq$ 10 mrem per year to any organ.

The limit for the total effective dose equivalent to an individual Member of the Public inside the site boundary is:

100 mrem per year.

The EPA limits for total dose to any Member of the Public in the vicinity of a nuclear power plant, established in the Environmental Dose Standard of 40 CFR 190, are:

$\leq$ 25 mrem per year to the whole body,
$\leq$ 75 mrem per year to the thyroid,
- and -
$\leq$ 25 mrem per year to any other organ.

III. DOSE CALCULATIONS

Estimated doses to Members of the Public are determined using computer models (the Gaseous Effluent Licensing Code, GELC, and the Quarterly Water Dose Assessment Code, QWATA). These models are based on guidance provided by the NRC (in Regulatory Guides 1.109, 1.111 and 1.113) for determining the potential dose to individuals and populations living in the vicinity of the plant. The area around the plant is analyzed to determine the pathways through which the public may receive a dose. The doses calculated are a representation of the dose to a "maximum exposed individual." Some of the factors used in these calculations (such as ingestion rates) are maximum values to ensure conservative reporting data. Many of these factors are obtained from NUREG/CR-1004. The values chosen will tend to overestimate the dose. The expected dose to actual individuals is lower. The calculated doses are presented in Tables 1, 2, 3, 4, 5, 6, 7, 8, and 9.

IV. DOSES FROM AIRBORNE EFFLUENTS

For airborne effluents, Members of the Public can be exposed to radiation from several sources: direct radiation from the radioactivity in the air, direct radiation from radioactivity deposited on the ground, inhalation of airborne radioactivity, ingestion of vegetation which contains radioactivity deposited from the atmosphere, and ingestion of milk and beef which contains radioactivity deposited from the atmosphere onto vegetation and subsequently consumed by milk and beef animals.

Airborne Release Points

There are four monitored release points from Browns Ferry Nuclear Plant: the turbine building, the radwaste building, the reactor building, and the stack.

Releases from the turbine building are considered ground-level releases. The ground-level Joint Frequency Distribution (JFD) is derived from windspeeds and directions measured 10 meters above ground and from the vertical temperature difference between 10 and 45 meters, and are presented for each quarter in Tables 10, 11, 12, and 13.

Releases from the radwaste and reactor buildings are considered split-level releases. Portions of the release are treated as ground-level while other portions are considered elevated depending on the ratio of the vertical exit velocity to the horizontal wind speed. The split-level dispersion approach is implemented using a model that requires two complete quarterly JFDs for each effluent vent, one for the ground-level releases and one for the elevated releases. The ground-level portion of the split-level JFD is based on wind speeds and directions measured 10 meters above ground-level and from the vertical temperature difference between 10 and 45 meters. The elevated portion of the split-level JFD is based on wind speeds and direction measurements at the 45 meter level and the vertical temperature difference between 45 and 91 meters. Both of these JFDs are given for each quarter in Tables 14, 15, 16, 17, 18, 19, 20, and 21.

Releases from the stack are considered to be elevated releases. The JFDs for elevated releases are based on wind directions and wind speeds measured at 91 meters and the vertical temperature difference between 45 and 91 meters, and are given for each quarter in Tables 22, 23, 24, and 25.

Meteorological Data

Meteorological variables at BFN are measured continuously. Measurements collected include wind speed, wind direction, and temperature at heights of 10, 45, and 91 meters above the ground. Quarterly JFDs are calculated for each release point using the appropriate levels of meteorological data. A quarterly JFD gives the percentage of the time that the wind is blowing out of a particular upwind compass sector in a particular range of wind speeds for a given stability class A through G. The wind speeds are divided into nine wind speed ranges. Calms are distributed by direction in proportion to the distribution of noncalm wind directions less than 1.6 m/s (3.5 mph). Stability classes are determined from the vertical temperature difference between two measurement levels.

The generally open terrain around BFN does not cause any significant effects on the transport and dispersion of gaseous effluents from the plant. Within 30 kilometers of BFN, the terrain is mostly gently rolling hills (30-60 meters). Between 30 and 80 kilometers the hills become larger to the north and south, and mountainous to the east and northeast. The Tennessee River/Wheeler Lake may have a minor effect on transport and dispersion in the immediate vicinity of BFN during periods of winds with a southerly component, overcast skies, and relatively high wind speeds. Also, the lower layer (10-45 meters) stability class tends to be more stable. However, during this infrequent condition, dose estimates will be conservative.

External Exposure Dose

Dose calculated for maximum external air dose (gamma-air and beta-air) are made for points at and beyond the unrestricted area boundary as described in the BFN ODCM. The highest of these doses is then selected.

Submersion Dose

External doses to the skin and total body, due to submersion in a cloud of noble gases, are calculated for the nearest residence in each sector. The residence with the highest dose is then selected from all sectors.

Organ Dose

Dose to an organ due to releases of airborne effluents are estimated for the inhalation, ground contamination, and ingestion pathways. The ingestion pathway is further divided into three possible contributing pathways: ingestion of cow/goat milk, ingestion of beef, and ingestion of vegetables. Doses from applicable pathways are calculated for each receptor location identified in the most recent land use survey. To determine the maximum organ dose, the doses from the pathways are summed for each receptor. For the ingestion dose, however, only those pathways that exist for each receptor are considered in the sum, e.g., milk ingestion doses are included only for locations where milk was consumed without commercial preparation and vegetable ingestion is included only for those locations where a garden was identified. To conservatively account for beef ingestion, a beef ingestion dose equal to that for the highest unrestricted area boundary location is added to each identified receptor. For ground contamination, the dose added to the organ dose being calculated is the total body dose calculated for that location, i.e., it is assumed that the dose to an individual organ is equal to the total body dose.

The maximum organ dose, thyroid dose, and total body dose from airborne effluents are presented in Tables 1, 2, 3, and 4.

V. DOSES FROM LIQUID EFFLUENTS

For liquid effluents, the public can be exposed to radiation from three sources: the ingestion of water from the Tennessee River, the ingestion of fish caught in the Tennessee River, and direct exposure from radioactive material deposited on the river shoreline sediment (recreation).

The concentration of radionuclides in the Tennessee River are calculated by a computer model which uses measured hydraulic data downstream of BFN. Parameters used to determine the doses are based on guidance given by the NRC (in Regulatory Guides 1.109) for maximum ingestion rates, exposure times, etc. Wherever possible, parameters used in the dose calculation are site specific. The models that are used to estimate doses, as well as the parameters input to the models, are described in detail in the BFN ODCM.

Liquid Release Points and River Data

Radionuclide concentrations in the Tennessee River are calculated assuming that releases in liquid effluents are continuous. When necessary, liquid releases from BFN, located at Tennessee River Mile 294, are made through diffusers which extend into the Tennessee River. It is assumed that releases to the river through these diffusers will initially be entrained in one-fifth of the water which flows past the plant. The QWATA code makes the assumption that this mixing condition holds true until the water is completely mixed at the first downstream dam (Wheeler Dam), at Tennessee River Mile 283.0.

Doses are calculated for locations within a 50 mile radius downstream of the plant site. The maximum potential recreation dose is calculated for a location immediately downstream from the plant's release point. The maximum exposed individual dose from ingestion of fish is assumed to be that calculated for the consumption of fish caught anywhere between the plant and the first downstream dam. The maximum exposed individual dose from drinking water is assumed to be that calculated at the nearest downstream public water supply [West Morgan - East Lawrence (WMEL)]. This could be interpreted as indicating that the maximum exposed individual, as assumed for liquid releases from Browns Ferry, is an individual who obtains all of his drinking water at WMEL, consumes fish caught from the Tennessee River between BFN and Wheeler Dam, and spends 500 hours per year on the shoreline just downstream of the plant's release point. Doses calculated for the maximum exposed individual due to liquid effluents for each quarter in the period are presented in Tables 5, 6, 7, and 8, along with the average river flows past the plant site for the periods.

VI. POPULATION DOSES

Population doses due to airborne effluents are calculated for an estimated 778,266 persons living within a 50-mile radius of the plant site. Doses from external pathways and inhalation are based on the 50-mile human population distribution. Ingestion population doses are calculated assuming that each individual consumed milk, vegetables, and meat produced within the sector in which the individual resides.

Population doses due to liquid effluents are calculated for the entire downstream Tennessee River population. Water ingestion population doses are calculated using actual population figures for downstream public water supplies. Fish ingestion population doses are calculated assuming that all sport fish caught in the Tennessee River are consumed by the Tennessee River population. Recreation population doses are calculated using historical recreational data on the number of shoreline visits at downstream locations.

Population doses calculated for airborne and liquid effluents are presented in Tables 1, 2, 3, 4, 5, 6, 7, and 8.

VII. OFFSITE DIRECT RADIATION DOSE

External gamma radiation levels were measured by thermoluminescent dosimeters (TLDs) deployed around BFN as part of the offsite Radiological Environmental Monitoring Program (REMP). The quarterly gamma radiation levels determined from these TLDs during this reporting period averaged approximately 16.5 mrem/quarter at onsite (at or near the site boundary) stations and approximately 14.25 mrem/quarter at offsite stations or approximately 2.3 mrem/quarter higher onsite than at offsite stations. This difference is consistent with levels measured for pre-operation and construction phases of TVA nuclear plants where the average radiation levels onsite were generally 2-6 mrem/quarter higher than the levels offsite. This may be attributable to natural variations in environmental radiation levels, earth moving activities onsite, the mass of concrete employed in the construction of the plants, or other undetermined influences. Fluctuations in natural background dose rates and in TLD readings tend to mask any small increments which may be due to plant operations. Thus, there was no identifiable increase in dose rate levels attributable to direct radiation from plant equipment and/or gaseous effluents.

VIII. DOSE TO A MEMBER OF THE PUBLIC INSIDE THE SITE BOUNDARY

Pursuant to ODCM section 7.7.5, a review was performed to determine the highest dose to a member of the public in the site boundary. This review assumed that onsite TVA employees engaged in work activities not associated with nuclear power electric generation were considered as members of the public. The dose to a member of the public consists of the sum of dose commitments from effluent releases as well as any direct radiation dose. The effluent dose commitment is negligible compared to the direct radiation dose.

The direct radiation dose was determined from area TLDs located onsite. It consisted of gamma dose from the plume, ground contamination and from equipment sources (i.e., tanks, turbine shine, radioactive material storage areas, etc.). The highest direct radiation dose accounting for background and occupancy was 17.8 mrem during 2003.

The total annual dose commitment to the member of the public for 2003 is 17.8 mrem; the direct radiation dose while in the site boundary. It can be concluded that the dose limit for a member of the public inside the site boundary as specified in 10 CFR 20.1301 was not exceeded.

IX. TOTAL DOSE

To determine compliance with 40 CFR 190, annual total dose contributions to the maximum exposed individual from BFN radioactive effluents and all other nearby uranium fuel cycle sources are considered.

The annual dose to any organ other than thyroid for the maximum exposed individual is conservatively calculated by summing the following doses: the total body air submersion dose for each quarter, the critical organ dose (for any organ other than the thyroid) from airborne effluents for each quarter from ground contamination, inhalation and ingestion, the total body dose from liquid effluents for each quarter, the maximum organ dose (for any organ other than the thyroid) from liquid effluents for each quarter, and any identifiable increase in direct radiation dose levels as measured by the REMP. This dose is compared to the 40 CFR 190 limit for total body or any organ dose (other than thyroid) to determine compliance.

The annual thyroid dose to the maximum exposed individual is conservatively estimated by summing the following doses: the total body air submersion dose for each quarter, the thyroid dose from airborne effluents for each quarter, the total body dose from liquid effluents for each quarter, the thyroid dose from liquid effluents for each quarter, and any identifiable increase in direct radiation dose levels as measured by the REMP. This dose is compared to the 40 CFR 190 limit for thyroid dose to determine compliance.

Total dose from the fuel cycle is presented in Table 9.

Table 1
Doses from Airborne Effluents
First Quarter

Individual Doses

Pathway	Dose	Quarterly Limit	Percent of Limit	Location
External				
Gamma Air	2.7E-02 mrad	5 mrad	1 %	N/1525 meters
Beta Air	8.2E-02 mrad	10 mrad	1 %	N/1525 meters
Submersion				
Total Body	2.8E-02 mrem	NA	NA	NNW/1639 meters
Skin	6.5E-02 mrem	NA	NA	NNW/1639 meters
Organ Doses				
Child/Liver	5.0E-02 mrem	7.5 mrem	1 %	NNW/1791 meters
Child/Thyroid	2.3E-01 mrem	7.5 mrem	3 %	NNW/1791 meters
Adult/Total Body	3.5E-02 mrem	7.5 mrem	< 1 %	NNW/1791 meters

Population Doses

Total Body Dose 1.5E-01 man-rem

Maximum Organ Dose (organ) 1.3E+00 man-rem (thyroid)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 70,044 man-rem/year (based on 90 mrem/yr for natural background).

Table 2
Doses from Airborne Effluents
Second Quarter

Individual Doses

Pathway	Dose	Quarterly Limit	Percent of Limit	Location
External				
Gamma Air	2.8E-06 mrad	5 mrad	< 1 %	N/7400 meters
Beta Air	6.5E-06 mrad	10 mrad	< 1 %	N/7400 meters
Submersion				
Total Body	3.8E-03 mrem	NA	NA	N/2000 meters
Skin	4.4E-03 mrem	NA	NA	N/2000 meters
Organ Doses				
Child/Liver	4.0E-02 mrem	7.5 mrem	1 %	NNW/1791 meters
Child/Thyroid	1.8E-02 mrem	7.5 mrem	< 1 %	NNW/1791 meters
Adult /Total Body	1.7E-02 mrem	7.5 mrem	< 1 %	NNW/1791 meters

Population Doses

Total Body Dose 5.3E-02 man-rem

Maximum Organ Dose (organ) 7.2E-02 man-rem (liver)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 70,044 man-rem/year (based on 90 mrem/yr for natural background).

Table 3
Doses from Airborne Effluents
Third Quarter

Individual Doses

Pathway	Dose	Quarterly Limit	Percent of Limit	Location
External				
Gamma Air	1.4E-10 mrad	5 mrad	< 1 %	S/2250 meters
Beta Air	4.4E-10 mrad	10 mrad	< 1 %	S/2250 meters
Submersion				
Total Body	3.5E-03 mrem	NA	NA	N/2000 meters
Skin	4.1E-03 mrem	NA	NA	N/2000 meters
Organ Doses				
Child/Liver	4.1E-02 mrem	7.5 mrem	1 %	NNW/1791 meters
Child/Thyroid	8.5E-03 mrem	7.5 mrem	< 1 %	NNW/1791 meters
Adult/Total Body	1.5E-02 mrem	7.5 mrem	< 1 %	NNW/1791 meters

Population Doses

Total Body Dose 5.4E-02 man-rem

Maximum Organ Dose (organ) 8.5E-02 man-rem (liver)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 70,044 man-rem/year (based on 90 mrem/yr for natural background).

Table 4
Doses from Airborne Effluents
Fourth Quarter

Individual Doses

Pathway	Dose	Quarterly Limit	Percent of Limit	Location
External				
Gamma Air	1.2E-05 mrad	5 mrad	<1 %	NW/7000 meters
Beta Air	2.7E-05 mrad	10 mrad	<1 %	NW/7000 meters
Submersion				
Total Body	3.2E-03 mrem	NA	NA	NNW/1639 meters
Skin	3.7E-03 mrem	NA	NA	NNW/1639 meters
Organ Doses				
Child/ Liver	4.9E-02 mrem	7.5 mrem	1 %	NNW/1791 meters
Child/Thyroid	1.6E-02 mrem	7.5 mrem	<1 %	NNW/1791 meters
Adult /Total Body	1.9E-02 mrem	7.5 mrem	<1 %	NNW/1791 meters

Population Doses

Total Body Dose 3.7E-02 man-rem

Maximum Organ Dose (organ) 5.3E-02 man-rem (liver)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 70,044 man-rem/year (based on 90 mrem/yr for natural background).

Table 5
Doses from Liquid Effluents
First Quarter*

Individual Doses (mrem)

Age Group	Organ	Dose Pathway	Dose	Quarterly Limit	Percent of Limit
Child	Total Body	Fish Ingestion	2.0E-08		
		Recreation	0		
		Water Ingestion	1.6E-06		
		Total	**1.6E-06**	1.5 mrem	< 1 %
Child	Bone	Fish Ingestion	2.0E-08		
		Recreation	0		
		Water Ingestion	1.6E-06		
		Total	**1.6E-06**	5 mrem	< 1 %
Child	Thyroid	Fish Ingestion	2.0E-08		
		Recreation	0		
		Water Ingestion	1.6E-06		
		Total	**1.6E-06**	5 mrem	< 1 %

***All dose is from an abnormal liquid release this quarter.**

Average Riverflow past BFN (cubic feet per second): 76746

Population Doses

Total Body Dose 2.6E-05 man-rem

Maximum Organ Dose (organ) 2.6E-05 man-rem (bone)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 70,044 man-rem/year (based on 90 mrem/yr for natural background).

Table 6
Doses from Liquid Effluents
Second Quarter*

Individual Doses (mrem)

Age Group	Organ	Dose Pathway	Dose	Quarterly Limit	Percent of Limit
Adult	**Total Body**	Fish Ingestion	5.1E-02		
		Recreation	2.3E-03		
		Water Ingestion	9.5E-04		
		Total	**5.4E-02**	1.5 mrem	4 %
Teen	**Liver**	Fish Ingestion	7.0E-02		
		Recreation	2.3E-03		
		Water Ingestion	1.2E-03		
		Total	**7.4E-02**	5 mrem	1 %
Child	**Thyroid**	Fish Ingestion	3.2E-07		
		Recreation	2.3E-03		
		Water Ingestion	2.6E-05		
		Total	**2.3E-03**	5 mrem	< 1 %

*** Dose includes both abnormal and batch liquid releases this quarter.**

Average Riverflow past BFN (cubic feet per second): 73986

Population Doses

Total Body Dose 3.9E-01 man-rem

Maximum Organ Dose (organ) 5.9E-01 man-rem (liver)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 70,044 man-rem/year (based on 90 mrem/yr for natural background).

Table 7
Doses from Liquid Effluents
Third Quarter*

Individual Doses (mrem)

Age Group	Organ	Dose Pathway	Dose	Quarterly Limit	Percent of Limit
Child	**Total Body**	Fish Ingestion	1.6E-08		
		Recreation	0		
		Water Ingestion	1.3E-06		
		Total	**1.3E-06**	1.5 mrem	<1 %
Child	**Bone**	Fish Ingestion	1.6E-08		
		Recreation	0		
		Water Ingestion	1.3E-06		
		Total	**1.3E-06**	5 mrem	<1 %
Child	**Thyroid**	Fish Ingestion	1.6E-08		
		Recreation	0		
		Water Ingestion	1.3E-06		
		Total	**1.3E-06**	5 mrem	<1 %

*** Dose includes both abnormal and batch liquid releases this quarter.**

Average Riverflow past BFN (cubic feet per second): 50174

Population Doses

Total Body Dose 2.2E-05 man-rem

Maximum Organ Dose (organ) 2.2E-05 man-rem (bone)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 70,044 man-rem/year (based on 90 mrem/yr for natural background).

Table 8
Doses from Liquid Effluents
Fourth Quarter*

Individual Doses (mrem)

Age Group	Organ	Dose Pathway	Dose	Quarterly Limit	Percent of Limit
	Total Body	Fish Ingestion	0		
		Recreation	0		
		Water Ingestion	0		
		Total	**0**	1.5 mrem	0 %
		Fish Ingestion	0		
		Recreation	0		
		Water Ingestion	0		
		Total	**0**	5 mrem	0 %
	Thyroid	Fish Ingestion	0		
		Recreation	0		
		Water Ingestion	0		
		Total	**0**	5 mrem	0 %

***No liquid releases were made this quarter.**

Average Riverflow past BFN (cubic feet per second): No Release

Population Doses

Total Body Dose 0 man-rem

Maximum Organ Dose (organ) 0 man-rem (organ)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 70,044 man-rem/year (based on 90 mrem/yr for natural background).

Table 9
Total Dose from Fuel Cycle

Dose	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
Total Body or any Organ (except thyroid)					
Total body air submersion	2.8E-02	3.8E-03	3.5E-03	3.2E-03	
Critical organ dose (air)	5.0E-02	4.0E-02	4.1E-02	4.9E-02	
Total body dose (liquid)	1.6E-06	5.4E-02	1.3E-06	0	
Maximum organ dose (liquid)	1.6E-06	7.4E-02	1.3E-06	0	
Direct Radiation Dose	0	0	0	0	
Total	**7.8E-02**	**1.7E-01**	**4.5E-02**	**5.2E-02**	
Cumulative Total Dose (mrem) (Total body or any other organ)					**3.5E-01**
Annual Dose Limit (mrem)					**2.5E+01**
Percent of Limit					**1.4 %**
Thyroid Dose (mrem)					
Total body air submersion	2.8E-02	3.8E-03	3.5E-03	3.2E-03	
Thyroid dose (airborne)	2.3E-01	1.8E-02	8.5E-03	1.6E-02	
Total body dose (liquid)	1.6E-06	5.4E-02	1.3E-06	0	
Thyroid dose (liquid)	1.6E-06	2.3E-03	1.3E-06	0	
Direct Radiation Dose	0	0	0	0	
Total	**2.6E-01**	**7.8E-02**	**1.2E-02**	**1.9E-02**	
Cumulative Total Dose (Thyroid) mrem					**3.7E-01**
Annual Dose Limit (mrem)					**7.5E+01**
Percent of Limit					**< 1 %**

ENCLOSURE 2

TENNESSEE VALEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT
UNITS 1, 2, AND 3

METEOROLOGICAL DATA TABLES
2003

METEORLOGICAL DATA TABLES

BROWNS FERRY NUCLEAR PLANT

JANUARY - DECEMBER 2003

TABLE 10

JOINT FREQUENCY DISTRIBUTION IN PERCENT

FOR GROUND LEVEL RELEASES

FIRST QUARTER

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

Browns Ferry Nuclear Plant

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	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
	WIND SPEED(MPH)									
N	0.000	0.000	0.000	0.000	0.095	0.378	0.000	0.000	0.000	0.473
NNE	0.000	0.000	0.000	0.000	0.189	0.426	0.000	0.000	0.000	0.615
NE	0.000	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.047
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.095	0.000	0.000	0.000	0.000	0.095
SE	0.000	0.000	0.000	0.520	0.426	0.000	0.000	0.000	0.000	0.946
SSE	0.000	0.000	0.047	0.236	0.000	0.000	0.000	0.000	0.000	0.284
S	0.000	0.000	0.095	0.426	0.047	0.000	0.000	0.000	0.000	0.567
SSW	0.000	0.000	0.047	0.331	0.047	0.000	0.000	0.000	0.000	0.426
SW	0.000	0.000	0.000	0.189	0.047	0.000	0.000	0.000	0.000	0.236
WSW	0.000	0.000	0.000	0.000	0.236	0.095	0.000	0.000	0.000	0.331
W	0.000	0.000	0.000	0.047	0.047	0.000	0.000	0.000	0.000	0.095
WNW	0.000	0.000	0.000	0.000	0.000	0.142	0.047	0.000	0.000	0.189
NW	0.000	0.000	0.000	0.000	0.000	0.142	0.236	0.000	0.000	0.378
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.331	0.000	0.000	0.331
SUBTOTAL	0.000	0.000	0.189	1.749	1.229	1.229	0.615	0.000	0.000	5.012

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2119
TOTAL HOURS OF STABILITY CLASS A	106
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS A	106
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2115
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2003/05/20

MEAN WIND SPEED = 7.39

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA T<=-1.7 C/100 M)

Browns Ferry Nuclear Plant

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.000	0.047	0.047	0.142	0.000	0.000	0.000	0.236
NNE	0.000	0.000	0.000	0.047	0.095	0.047	0.000	0.000	0.000	0.189
NE	0.000	0.000	0.000	0.000	0.047	0.047	0.000	0.000	0.000	0.095
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.047
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.047	0.426	0.095	0.000	0.000	0.000	0.000	0.567
SSE	0.000	0.000	0.142	0.331	0.000	0.000	0.000	0.000	0.000	0.473
S	0.000	0.000	0.095	0.000	0.000	0.000	0.000	0.000	0.000	0.095
SSW	0.000	0.000	0.000	0.189	0.047	0.000	0.000	0.000	0.000	0.236
SW	0.000	0.000	0.047	0.000	0.047	0.000	0.000	0.000	0.000	0.095
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.095	0.047	0.000	0.000	0.000	0.142
WNW	0.000	0.000	0.000	0.047	0.047	0.473	0.189	0.000	0.000	0.757
NW	0.000	0.000	0.000	0.000	0.047	0.567	0.142	0.000	0.000	0.757
NNW	0.000	0.000	0.000	0.000	0.047	0.047	0.142	0.000	0.000	0.236
SUBTOTAL	0.000	0.000	0.331	1.087	0.662	1.371	0.473	0.000	0.000	3.924

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2119
TOTAL HOURS OF STABILITY CLASS B	83
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS B	83
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2115
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2003/05/20

MEAN WIND SPEED = 7.84

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA T<=-1.5 C/100 M)

Browns Ferry Nuclear Plant

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	WIND SPEED(MPH) CALM	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	0.000	0.000	0.047	0.095	0.142	0.095	0.000	0.000	0.000	0.378
NNE	0.000	0.000	0.047	0.095	0.331	0.236	0.000	0.000	0.000	0.709
NE	0.000	0.000	0.000	0.095	0.095	0.047	0.000	0.000	0.000	0.236
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.047
ESE	0.000	0.000	0.047	0.047	0.000	0.000	0.000	0.000	0.000	0.095
SE	0.000	0.000	0.000	0.236	0.000	0.000	0.000	0.000	0.000	0.236
SSE	0.000	0.000	0.284	0.095	0.000	0.000	0.000	0.000	0.000	0.378
S	0.000	0.000	0.047	0.047	0.000	0.000	0.000	0.000	0.000	0.095
SSW	0.000	0.000	0.047	0.095	0.000	0.000	0.000	0.000	0.000	0.142
SW	0.000	0.000	0.000	0.047	0.047	0.000	0.000	0.000	0.000	0.095
WSW	0.000	0.000	0.000	0.142	0.047	0.000	0.000	0.000	0.000	0.189
W	0.000	0.000	0.000	0.095	0.236	0.047	0.000	0.000	0.000	0.378
WNW	0.000	0.000	0.000	0.095	0.189	0.567	0.095	0.047	0.000	0.993
NW	0.000	0.000	0.000	0.095	0.000	0.095	0.095	0.000	0.000	0.284
NNW	0.000	0.000	0.000	0.000	0.000	0.331	0.000	0.000	0.000	0.331
SUBTOTAL	0.000	0.000	0.567	1.277	1.087	1.418	0.189	0.047	0.000	4.586

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2119
TOTAL HOURS OF STABILITY CLASS C 97
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS C 97
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2115
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2003/05/20

MEAN WIND SPEED = 6.79

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA T<=-0.5 C/100 M)

Browns Ferry Nuclear Plant

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	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	0.000	0.047	0.236	0.284	0.520	1.655	0.000	0.000	0.000	2.742
NNE	0.000	0.000	0.331	0.757	1.182	1.087	0.000	0.000	0.000	3.357
NE	0.000	0.047	0.142	0.851	0.898	0.331	0.000	0.000	0.000	2.270
ENE	0.000	0.000	0.331	0.662	0.331	0.000	0.000	0.000	0.000	1.324
E	0.000	0.000	0.331	0.662	0.236	0.000	0.000	0.000	0.000	1.229
ESE	0.000	0.000	0.709	0.851	0.709	0.047	0.000	0.000	0.000	2.317
SE	0.000	0.000	0.520	0.662	0.236	0.142	0.000	0.000	0.000	1.560
SSE	0.000	0.095	0.804	0.378	0.095	0.000	0.000	0.000	0.000	1.371
S	0.000	0.000	0.709	0.709	0.236	0.000	0.000	0.000	0.000	1.655
SSW	0.000	0.047	0.473	0.284	0.236	0.047	0.000	0.000	0.000	1.087
SW	0.000	0.047	0.804	0.142	0.047	0.047	0.000	0.000	0.000	1.087
WSW	0.000	0.000	0.851	1.040	0.331	0.095	0.000	0.000	0.000	2.317
W	0.000	0.000	0.189	1.371	1.135	1.182	0.047	0.000	0.000	3.924
WNW	0.000	0.000	0.095	0.331	0.520	1.087	1.513	0.142	0.000	3.688
NW	0.000	0.000	0.331	0.378	0.284	3.735	1.371	0.095	0.000	6.194
NNW	0.000	0.000	0.284	0.426	0.804	2.175	0.946	0.000	0.000	4.634
SUBTOTAL	0.000	0.284	7.139	9.787	7.801	11.631	3.877	0.236	0.000	40.757

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2119
TOTAL HOURS OF STABILITY CLASS D	863
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS D	862
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2115
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2003/05/20

MEAN WIND SPEED = 7.01

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA T<= 1.5 C/100 M)

Browns Ferry Nuclear Plant

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	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	0.004	0.095	0.851	0.851	0.473	0.284	0.000	0.000	0.000	2.557
NNE	0.003	0.047	0.709	0.331	0.520	0.378	0.000	0.000	0.000	1.989
NE	0.002	0.047	0.426	0.426	0.236	0.000	0.000	0.000	0.000	1.137
ENE	0.003	0.047	0.615	0.378	0.095	0.000	0.000	0.000	0.000	1.138
E	0.002	0.095	0.426	0.189	0.095	0.000	0.000	0.000	0.000	0.806
ESE	0.004	0.095	0.757	0.757	0.567	0.142	0.000	0.000	0.000	2.320
SE	0.004	0.142	0.851	0.757	0.473	0.047	0.000	0.000	0.000	2.274
SSE	0.002	0.047	0.473	0.662	0.047	0.000	0.000	0.000	0.000	1.232
S	0.005	0.047	1.087	1.371	0.615	0.473	0.000	0.000	0.000	3.598
SSW	0.002	0.047	0.473	0.520	0.284	0.189	0.000	0.000	0.000	1.515
SW	0.003	0.095	0.615	0.236	0.000	0.047	0.000	0.000	0.000	0.996
WSW	0.003	0.047	0.662	0.284	0.000	0.047	0.000	0.000	0.000	1.043
W	0.002	0.047	0.520	0.095	0.142	0.047	0.000	0.000	0.000	0.853
WNW	0.002	0.047	0.331	0.189	0.142	0.047	0.000	0.000	0.000	0.758
NW	0.004	0.047	0.851	0.662	0.757	0.757	0.000	0.000	0.000	3.077
NNW	0.002	0.047	0.520	0.851	0.567	0.662	0.000	0.000	0.000	2.650
SUBTOTAL	0.047	1.040	10.165	8.558	5.012	3.121	0.000	0.000	0.000	27.943

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2119
TOTAL HOURS OF STABILITY CLASS E	592
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS E	591
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2115
TOTAL HOURS CALM	1

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2003/05/20

MEAN WIND SPEED = 4.46

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA T<= 4.0 C/100 M)

Browns Ferry Nuclear Plant

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	WIND SPEED(MPH) CALM	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	0.000	0.095	0.615	0.378	0.000	0.000	0.000	0.000	0.000	1.087
NNE	0.000	0.000	0.284	0.236	0.047	0.000	0.000	0.000	0.000	0.567
NE	0.000	0.047	0.095	0.000	0.000	0.000	0.000	0.000	0.000	0.142
ENE	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.047
E	0.000	0.047	0.378	0.047	0.000	0.000	0.000	0.000	0.000	0.473
ESE	0.000	0.095	0.520	0.047	0.000	0.000	0.000	0.000	0.000	0.662
SE	0.000	0.095	0.993	0.284	0.000	0.000	0.000	0.000	0.000	1.371
SSE	0.000	0.000	1.087	0.284	0.000	0.000	0.000	0.000	0.000	1.371
S	0.000	0.331	0.567	0.946	0.851	0.378	0.000	0.000	0.000	3.073
SSW	0.000	0.047	0.473	0.426	0.047	0.047	0.000	0.000	0.000	1.040
SW	0.000	0.142	0.189	0.000	0.000	0.000	0.000	0.000	0.000	0.331
WSW	0.000	0.095	0.142	0.047	0.000	0.000	0.000	0.000	0.000	0.284
W	0.000	0.047	0.142	0.000	0.000	0.000	0.000	0.000	0.000	0.189
WNW	0.000	0.047	0.189	0.142	0.000	0.000	0.000	0.000	0.000	0.378
NW	0.000	0.095	0.236	0.236	0.000	0.000	0.000	0.000	0.000	0.567
NNW	0.000	0.095	0.142	0.615	0.095	0.000	0.000	0.000	0.000	0.946
SUBTOTAL	0.000	1.277	6.099	3.688	1.040	0.426	0.000	0.000	0.000	12.530

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2119
TOTAL HOURS OF STABILITY CLASS F	267
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS F	265
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2115
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2003/05/20

MEAN WIND SPEED = 3.41

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

Browns Ferry Nuclear Plant

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.142	0.142	0.000	0.000	0.000	0.000	0.000	0.284
NNE	0.000	0.142	0.095	0.000	0.000	0.000	0.000	0.000	0.000	0.236
NE	0.000	0.189	0.142	0.000	0.000	0.000	0.000	0.000	0.000	0.331
ENE	0.000	0.047	0.189	0.000	0.000	0.000	0.000	0.000	0.000	0.236
E	0.000	0.000	0.095	0.047	0.000	0.000	0.000	0.000	0.000	0.142
ESE	0.000	0.095	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.142
SE	0.000	0.047	0.142	0.000	0.000	0.000	0.000	0.000	0.000	0.189
SSE	0.000	0.331	1.324	0.047	0.000	0.000	0.000	0.000	0.000	1.702
S	0.000	0.000	0.898	0.378	0.189	0.000	0.000	0.000	0.000	1.466
SSW	0.000	0.047	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.095
SW	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.047
WSW	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.047
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.095	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.142
NNW	0.000	0.142	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.189
SUBTOTAL	0.000	1.182	3.215	0.615	0.236	0.000	0.000	0.000	0.000	5.248

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2119
TOTAL HOURS OF STABILITY CLASS G	111
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS G	111
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2115
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2003/05/20

MEAN WIND SPEED = 2.47

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

METEORLOGICAL DATA TABLES

BROWNS FERRY NUCLEAR PLANT

JANUARY - DECEMBER 2003

TABLE 11

JOINT FREQUENCY DISTRIBUTION IN PERCENT

FOR GROUND LEVEL RELEASES

SECOND QUARTER

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

Browns Ferry Nuclear Plant

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.000	0.050	0.149	0.000	0.000	0.000	0.199
NNE	0.000	0.000	0.000	0.000	0.000	0.249	0.000	0.000	0.000	0.249
NE	0.000	0.000	0.000	0.050	0.000	0.000	0.000	0.000	0.000	0.050
ENE	0.000	0.000	0.000	0.100	0.050	0.000	0.000	0.000	0.000	0.149
E	0.000	0.000	0.000	0.050	0.000	0.000	0.000	0.000	0.000	0.050
ESE	0.000	0.000	0.100	0.050	0.149	0.050	0.000	0.000	0.000	0.349
SE	0.000	0.000	0.349	0.398	0.149	0.000	0.000	0.000	0.000	0.896
SSE	0.000	0.000	1.544	0.199	0.000	0.000	0.000	0.000	0.000	1.743
S	0.000	0.000	0.996	0.448	0.000	0.050	0.000	0.000	0.000	1.494
SSW	0.000	0.000	0.349	0.797	0.000	0.000	0.000	0.000	0.000	1.145
SW	0.000	0.000	0.249	0.398	0.100	0.000	0.000	0.000	0.000	0.747
WSW	0.000	0.000	0.100	0.050	0.199	0.000	0.000	0.000	0.000	0.349
W	0.000	0.000	0.050	0.000	0.000	0.000	0.000	0.000	0.000	0.050
WNW	0.000	0.000	0.000	0.000	0.050	0.598	0.149	0.000	0.000	0.797
NW	0.000	0.000	0.000	0.000	0.000	0.548	0.398	0.100	0.000	1.046
NNW	0.000	0.000	0.000	0.000	0.050	0.448	0.050	0.000	0.000	0.548
SUBTOTAL	0.000	0.000	3.735	2.540	0.797	2.092	0.598	0.100	0.000	9.861

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2020
TOTAL HOURS OF STABILITY CLASS A	198
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS A	198
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2008
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2003/08/11

MEAN WIND SPEED = 5.93

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA T<=-1.7 C/100 M)

Browns Ferry Nuclear Plant

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.000	0.149	0.050	0.000	0.000	0.000	0.199
NNE	0.000	0.000	0.000	0.100	0.050	0.050	0.000	0.000	0.000	0.199
NE	0.000	0.000	0.000	0.000	0.050	0.149	0.000	0.000	0.000	0.199
ENE	0.000	0.000	0.000	0.149	0.050	0.000	0.000	0.000	0.000	0.199
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.149	0.149	0.000	0.000	0.000	0.000	0.000	0.299
SE	0.000	0.000	0.199	0.199	0.000	0.000	0.000	0.000	0.000	0.398
SSE	0.000	0.000	0.249	0.050	0.000	0.000	0.000	0.000	0.000	0.299
S	0.000	0.000	0.050	0.299	0.000	0.000	0.000	0.000	0.000	0.349
SSW	0.000	0.000	0.498	0.199	0.000	0.000	0.000	0.000	0.000	0.697
SW	0.000	0.000	0.050	0.050	0.000	0.000	0.000	0.000	0.000	0.100
WSW	0.000	0.000	0.149	0.100	0.000	0.000	0.000	0.000	0.000	0.249
W	0.000	0.000	0.000	0.100	0.050	0.199	0.000	0.000	0.000	0.349
WNW	0.000	0.000	0.000	0.149	0.050	0.349	0.000	0.000	0.000	0.548
NW	0.000	0.000	0.000	0.050	0.149	0.199	0.149	0.000	0.000	0.548
NNW	0.000	0.000	0.000	0.000	0.149	0.299	0.149	0.000	0.000	0.598
SUBTOTAL	0.000	0.000	1.345	1.594	0.697	1.295	0.299	0.000	0.000	5.229

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2020
TOTAL HOURS OF STABILITY CLASS B 105
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS B 105
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2008
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2003/08/11

MEAN WIND SPEED = 5.99

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA T<=-1.5 C/100 M)

Browns Ferry Nuclear Plant

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.050	0.050	0.149	0.000	0.000	0.000	0.000	0.249
NNE	0.000	0.000	0.000	0.050	0.050	0.050	0.000	0.000	0.000	0.149
NE	0.000	0.000	0.000	0.000	0.149	0.100	0.000	0.000	0.000	0.249
ENE	0.000	0.000	0.050	0.100	0.000	0.000	0.000	0.000	0.000	0.149
E	0.000	0.000	0.050	0.050	0.000	0.000	0.000	0.000	0.000	0.100
ESE	0.000	0.000	0.050	0.050	0.149	0.000	0.000	0.000	0.000	0.249
SE	0.000	0.000	0.050	0.000	0.000	0.000	0.000	0.000	0.000	0.050
SSE	0.000	0.000	0.249	0.050	0.000	0.000	0.000	0.000	0.000	0.299
S	0.000	0.000	0.249	0.249	0.000	0.000	0.000	0.000	0.000	0.498
SSW	0.000	0.000	0.398	0.299	0.000	0.000	0.000	0.000	0.000	0.697
SW	0.000	0.000	0.249	0.249	0.000	0.000	0.000	0.000	0.000	0.498
WSW	0.000	0.000	0.199	0.100	0.000	0.000	0.000	0.000	0.000	0.299
W	0.000	0.000	0.050	0.100	0.149	0.349	0.000	0.000	0.000	0.647
WNW	0.000	0.000	0.000	0.100	0.100	0.199	0.000	0.000	0.000	0.398
NW	0.000	0.000	0.000	0.100	0.199	0.448	0.050	0.000	0.000	0.797
NNW	0.000	0.000	0.000	0.050	0.149	0.448	0.199	0.000	0.000	0.847
SUBTOTAL	0.000	0.000	1.643	1.594	1.096	1.594	0.249	0.000	0.000	6.175

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2020
TOTAL HOURS OF STABILITY CLASS C	125
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS C	124
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2008
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2003/08/11

MEAN WIND SPEED = 5.84

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA T<=-0.5 C/100 M)

Browns Ferry Nuclear Plant

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.199	0.647	0.896	0.349	0.000	0.000	0.000	2.092
NNE	0.000	0.050	0.199	0.647	0.747	0.448	0.000	0.000	0.000	2.092
NE	0.000	0.050	0.349	0.498	0.050	0.249	0.000	0.000	0.000	1.195
ENE	0.000	0.000	0.249	0.299	0.000	0.000	0.000	0.000	0.000	0.548
E	0.000	0.000	0.249	0.448	0.050	0.000	0.000	0.000	0.000	0.747
ESE	0.000	0.000	0.847	0.996	1.594	0.249	0.000	0.000	0.000	3.685
SE	0.000	0.000	1.394	0.498	0.000	0.000	0.000	0.000	0.000	1.892
SSE	0.000	0.000	1.892	0.299	0.000	0.000	0.000	0.000	0.000	2.191
S	0.000	0.050	2.341	0.946	0.398	0.000	0.000	0.000	0.000	3.735
SSW	0.000	0.000	1.843	0.946	0.249	0.100	0.000	0.000	0.000	3.137
SW	0.000	0.050	0.647	0.149	0.050	0.000	0.000	0.000	0.000	0.896
WSW	0.000	0.050	0.697	0.498	0.149	0.000	0.000	0.000	0.000	1.394
W	0.000	0.000	0.299	0.398	0.349	0.448	0.050	0.000	0.000	1.544
WNW	0.000	0.000	0.100	0.249	0.498	0.548	0.050	0.000	0.000	1.444
NW	0.000	0.050	0.050	0.199	0.498	1.544	0.199	0.000	0.000	2.540
NNW	0.000	0.050	0.100	0.498	0.697	1.743	0.100	0.000	0.000	3.187
SUBTOTAL	0.000	0.349	11.454	8.217	6.225	5.677	0.398	0.000	0.000	32.321

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2020
TOTAL HOURS OF STABILITY CLASS D	654
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS D	649
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2008
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2003/08/11

MEAN WIND SPEED = 5.08

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA T<= 1.5 C/100 M)

Browns Ferry Nuclear Plant

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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	0.000	0.050	1.096	0.647	0.149	0.050	0.000	0.000	0.000	1.992
NNE	0.000	0.050	0.996	0.349	0.199	0.050	0.000	0.000	0.000	1.643
NE	0.000	0.000	0.249	0.249	0.299	0.249	0.000	0.000	0.000	1.046
ENE	0.000	0.100	0.647	0.299	0.000	0.000	0.000	0.000	0.000	1.046
E	0.000	0.149	1.145	0.548	0.000	0.000	0.000	0.000	0.000	1.843
ESE	0.000	0.199	2.042	1.145	0.697	0.100	0.000	0.000	0.000	4.183
SE	0.000	0.199	1.693	0.598	0.000	0.000	0.000	0.000	0.000	2.490
SSE	0.000	0.149	1.096	0.100	0.000	0.000	0.000	0.000	0.000	1.345
S	0.000	0.100	1.992	1.594	0.896	0.100	0.000	0.000	0.000	4.681
SSW	0.000	0.100	0.847	0.847	0.448	0.050	0.000	0.000	0.000	2.291
SW	0.000	0.000	0.299	0.050	0.000	0.000	0.000	0.000	0.000	0.349
WSW	0.000	0.000	0.349	0.299	0.000	0.000	0.000	0.000	0.000	0.647
W	0.000	0.050	0.349	0.100	0.299	0.050	0.000	0.000	0.000	0.847
WNW	0.000	0.000	0.100	0.249	0.050	0.149	0.000	0.000	0.000	0.548
NW	0.000	0.050	0.100	0.349	0.199	0.050	0.000	0.000	0.000	0.747
NNW	0.000	0.100	0.498	0.349	0.299	0.249	0.000	0.000	0.000	1.494
SUBTOTAL	0.000	1.295	13.496	7.769	3.536	1.096	0.000	0.000	0.000	27.191

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2020
TOTAL HOURS OF STABILITY CLASS E	551
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS E	546
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2008
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2003/08/11

MEAN WIND SPEED = 3.67

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA T<= 4.0 C/100 M)

Browns Ferry Nuclear Plant

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.050	0.847	0.797	0.000	0.000	0.000	0.000	0.000	1.693
NNE	0.000	0.149	0.498	0.498	0.149	0.000	0.000	0.000	0.000	1.295
NE	0.000	0.199	0.249	0.050	0.050	0.000	0.000	0.000	0.000	0.548
ENE	0.000	0.050	0.349	0.050	0.050	0.000	0.000	0.000	0.000	0.498
E	0.000	0.249	0.697	0.299	0.000	0.000	0.000	0.000	0.000	1.245
ESE	0.000	0.100	0.847	0.050	0.000	0.000	0.000	0.000	0.000	0.996
SE	0.000	0.249	0.349	0.000	0.000	0.000	0.000	0.000	0.000	0.598
SSE	0.000	0.149	0.598	0.000	0.000	0.000	0.000	0.000	0.000	0.747
S	0.000	0.100	0.448	0.747	0.000	0.000	0.000	0.000	0.000	1.295
SSW	0.000	0.050	0.050	0.100	0.000	0.000	0.000	0.000	0.000	0.199
SW	0.000	0.000	0.050	0.000	0.000	0.000	0.000	0.000	0.000	0.050
WSW	0.000	0.000	0.050	0.000	0.000	0.000	0.000	0.000	0.000	0.050
W	0.000	0.050	0.050	0.000	0.000	0.000	0.000	0.000	0.000	0.100
WNW	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100
NW	0.000	0.050	0.249	0.050	0.000	0.000	0.000	0.000	0.000	0.349
NNW	0.000	0.149	0.398	0.299	0.000	0.000	0.000	0.000	0.000	0.847
SUBTOTAL	0.000	1.693	5.727	2.938	0.249	0.000	0.000	0.000	0.000	10.608

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2020
TOTAL HOURS OF STABILITY CLASS F	213
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS F	213
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2008
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2003/08/11

MEAN WIND SPEED = 2.80

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

Browns Ferry Nuclear Plant

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.498	0.896	0.199	0.000	0.000	0.000	0.000	0.000	1.594
NNE	0.000	0.199	0.647	0.149	0.000	0.000	0.000	0.000	0.000	0.996
NE	0.000	0.050	0.398	0.000	0.050	0.000	0.000	0.000	0.000	0.498
ENE	0.000	0.199	0.448	0.050	0.050	0.000	0.000	0.000	0.000	0.747
E	0.000	0.349	0.548	0.000	0.000	0.000	0.000	0.000	0.000	0.896
ESE	0.000	0.349	0.100	0.000	0.000	0.000	0.000	0.000	0.000	0.448
SE	0.000	0.149	0.149	0.000	0.000	0.000	0.000	0.000	0.000	0.299
SSE	0.000	0.249	0.498	0.050	0.000	0.000	0.000	0.000	0.000	0.797
S	0.000	0.000	0.249	0.050	0.000	0.000	0.000	0.000	0.000	0.299
SSW	0.000	0.050	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.050
SW	0.000	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.000	0.100
WSW	0.000	0.050	0.050	0.000	0.000	0.000	0.000	0.000	0.000	0.100
W	0.000	0.100	0.050	0.000	0.000	0.000	0.000	0.000	0.000	0.149
WNW	0.000	0.050	0.100	0.000	0.000	0.000	0.000	0.000	0.000	0.149
NW	0.000	0.100	0.349	0.000	0.000	0.000	0.000	0.000	0.000	0.448
NNW	0.000	0.448	0.548	0.050	0.000	0.000	0.000	0.000	0.000	1.046
SUBTOTAL	0.000	2.839	5.129	0.548	0.100	0.000	0.000	0.000	0.000	8.616

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2020
TOTAL HOURS OF STABILITY CLASS G	174
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS G	173
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2008
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2003/08/11

MEAN WIND SPEED = 2.03

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

METEORLOGICAL DATA TABLES

BROWNS FERRY NUCLEAR PLANT

JANUARY - DECEMBER 2003

TABLE 12

JOINT FREQUENCY DISTRIBUTION IN PERCENT

FOR GROUND LEVEL RELEASES

THIRD QUARTER

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

Browns Ferry Nuclear Plant

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.138	0.231	0.415	0.000	0.000	0.000	0.784
NNE	0.000	0.000	0.000	0.138	0.000	0.415	0.000	0.000	0.000	0.554
NE	0.000	0.000	0.000	0.046	0.000	0.277	0.046	0.000	0.000	0.369
ENE	0.000	0.000	0.000	0.138	0.092	0.092	0.000	0.000	0.000	0.323
E	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.046
ESE	0.000	0.000	0.046	0.508	0.415	0.000	0.000	0.000	0.000	0.969
SE	0.000	0.000	0.969	2.169	0.046	0.000	0.000	0.000	0.000	3.184
SSE	0.000	0.000	1.984	1.431	0.000	0.000	0.000	0.000	0.000	3.415
S	0.000	0.000	1.846	1.015	0.000	0.000	0.000	0.000	0.000	2.861
SSW	0.000	0.000	0.877	0.554	0.000	0.000	0.000	0.000	0.000	1.431
SW	0.000	0.000	0.508	0.369	0.000	0.000	0.000	0.000	0.000	0.877
WSW	0.000	0.000	0.046	0.692	0.185	0.000	0.000	0.000	0.000	0.923
W	0.000	0.000	0.000	0.231	0.046	0.000	0.000	0.000	0.000	0.277
WNW	0.000	0.000	0.000	0.046	0.092	0.046	0.046	0.000	0.000	0.231
NW	0.000	0.000	0.000	0.000	0.046	0.185	0.138	0.000	0.000	0.369
NNW	0.000	0.000	0.000	0.000	0.092	0.092	0.000	0.000	0.000	0.185
SUBTOTAL	0.000	0.000	6.322	7.476	1.246	1.523	0.231	0.000	0.000	16.797

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2173
TOTAL HOURS OF STABILITY CLASS A	364
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS A	364
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2167
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2003/11/12

MEAN WIND SPEED = 4.47

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA T<=-1.7 C/100 M)

Browns Ferry Nuclear Plant

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.046	0.369	0.046	0.000	0.000	0.000	0.461
NNE	0.000	0.000	0.000	0.000	0.046	0.046	0.000	0.000	0.000	0.092
NE	0.000	0.000	0.046	0.092	0.000	0.000	0.000	0.000	0.000	0.138
ENE	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.046
E	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
ESE	0.000	0.000	0.092	0.092	0.092	0.000	0.000	0.000	0.000	0.277
SE	0.000	0.000	0.185	0.000	0.000	0.000	0.000	0.000	0.000	0.185
SSE	0.000	0.000	0.415	0.000	0.000	0.000	0.000	0.000	0.000	0.415
S	0.000	0.000	0.277	0.000	0.000	0.000	0.000	0.000	0.000	0.277
SSW	0.000	0.000	0.277	0.046	0.000	0.000	0.000	0.000	0.000	0.323
SW	0.000	0.000	0.461	0.092	0.000	0.000	0.000	0.000	0.000	0.554
WSW	0.000	0.000	0.092	0.508	0.046	0.000	0.000	0.000	0.000	0.646
W	0.000	0.000	0.000	0.415	0.369	0.046	0.000	0.000	0.000	0.831
WNW	0.000	0.000	0.000	0.092	0.046	0.092	0.046	0.000	0.000	0.277
NW	0.000	0.000	0.000	0.046	0.277	0.185	0.092	0.000	0.000	0.600
NNW	0.000	0.000	0.046	0.000	0.185	0.092	0.000	0.000	0.000	0.323
SUBTOTAL	0.000	0.000	1.938	1.477	1.431	0.508	0.138	0.000	0.000	5.491

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2173
TOTAL HOURS OF STABILITY CLASS B	119
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS B	119
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2167
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2003/11/12

MEAN WIND SPEED = 5.09

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA T<=-1.5 C/100 M)

Browns Ferry Nuclear Plant

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.092	0.185	0.046	0.000	0.000	0.000	0.323
NNE	0.000	0.000	0.046	0.092	0.000	0.000	0.000	0.000	0.000	0.138
NE	0.000	0.000	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.092
ENE	0.000	0.000	0.000	0.046	0.000	0.046	0.000	0.000	0.000	0.092
E	0.000	0.000	0.000	0.046	0.000	0.046	0.000	0.000	0.000	0.092
ESE	0.000	0.000	0.092	0.138	0.046	0.000	0.000	0.000	0.000	0.277
SE	0.000	0.000	0.138	0.000	0.000	0.000	0.000	0.000	0.000	0.138
SSE	0.000	0.000	0.185	0.046	0.000	0.000	0.000	0.000	0.000	0.231
S	0.000	0.000	0.231	0.046	0.000	0.000	0.000	0.000	0.000	0.277
SSW	0.000	0.000	0.461	0.046	0.000	0.000	0.000	0.000	0.000	0.508
SW	0.000	0.000	0.185	0.000	0.000	0.000	0.000	0.000	0.000	0.185
WSW	0.000	0.000	0.092	0.323	0.046	0.046	0.000	0.000	0.000	0.508
W	0.000	0.000	0.138	0.738	0.185	0.046	0.000	0.000	0.000	1.108
WNW	0.000	0.000	0.000	0.231	0.277	0.277	0.046	0.000	0.000	0.831
NW	0.000	0.000	0.000	0.138	0.138	0.369	0.000	0.000	0.000	0.646
NNW	0.000	0.000	0.000	0.138	0.231	0.277	0.000	0.000	0.000	0.646
SUBTOTAL	0.000	0.000	1.661	2.123	1.108	1.154	0.046	0.000	0.000	6.091

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2173
TOTAL HOURS OF STABILITY CLASS C 132
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS C 132
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2167
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2003/11/12

MEAN WIND SPEED = 5.23

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA T<=-0.5 C/100 M)

Browns Ferry Nuclear Plant

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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	0.000	0.046	0.369	0.508	0.277	0.092	0.000	0.000	0.000	1.292
NNE	0.000	0.000	0.138	0.415	0.185	0.138	0.000	0.000	0.000	0.877
NE	0.000	0.000	0.092	0.323	0.092	0.000	0.000	0.000	0.000	0.508
ENE	0.000	0.000	0.138	0.092	0.092	0.138	0.046	0.000	0.000	0.508
E	0.000	0.092	0.185	0.415	0.092	0.092	0.000	0.000	0.000	0.877
ESE	0.000	0.000	0.415	0.415	0.000	0.000	0.000	0.000	0.000	0.831
SE	0.000	0.000	0.646	0.092	0.046	0.000	0.000	0.000	0.000	0.784
SSE	0.000	0.000	0.646	0.000	0.000	0.000	0.000	0.000	0.000	0.646
S	0.000	0.092	2.123	0.185	0.000	0.000	0.000	0.000	0.000	2.400
SSW	0.000	0.046	2.815	0.138	0.000	0.000	0.000	0.000	0.000	3.000
SW	0.000	0.046	1.154	0.138	0.000	0.000	0.000	0.000	0.000	1.338
WSW	0.000	0.046	2.261	1.754	0.000	0.000	0.000	0.000	0.000	4.061
W	0.000	0.000	0.692	2.030	0.508	0.000	0.000	0.000	0.000	3.230
WNW	0.000	0.000	0.185	0.738	1.061	0.831	0.000	0.000	0.000	2.815
NW	0.000	0.000	0.138	0.831	1.384	1.338	0.046	0.000	0.000	3.738
NNW	0.000	0.046	0.323	0.784	1.015	0.461	0.000	0.000	0.000	2.630
SUBTOTAL	0.000	0.415	12.321	8.860	4.753	3.092	0.092	0.000	0.000	29.534

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2173
TOTAL HOURS OF STABILITY CLASS D	641
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS D	640
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2167
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2003/11/12

MEAN WIND SPEED = 4.36

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA T<= 1.5 C/100 M)

Browns Ferry Nuclear Plant

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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	0.000	0.138	0.738	0.277	0.231	0.046	0.000	0.000	0.000	1.431
NNE	0.000	0.231	0.600	0.692	0.738	0.138	0.000	0.000	0.000	2.400
NE	0.000	0.046	0.461	0.185	0.231	0.046	0.046	0.000	0.000	1.015
ENE	0.000	0.138	0.692	0.554	0.000	0.000	0.000	0.000	0.000	1.384
E	0.000	0.138	1.431	0.692	0.138	0.000	0.000	0.000	0.000	2.400
ESE	0.000	0.323	0.784	0.600	0.046	0.000	0.000	0.000	0.000	1.754
SE	0.000	0.185	1.108	0.000	0.000	0.000	0.000	0.000	0.000	1.292
SSE	0.000	0.138	0.692	0.000	0.000	0.000	0.000	0.000	0.000	0.831
S	0.000	0.277	1.292	0.046	0.000	0.000	0.000	0.000	0.000	1.615
SSW	0.000	0.508	0.831	0.046	0.000	0.000	0.000	0.000	0.000	1.384
SW	0.000	0.092	0.415	0.000	0.000	0.000	0.000	0.000	0.000	0.508
WSW	0.000	0.092	1.015	0.138	0.000	0.000	0.000	0.000	0.000	1.246
W	0.000	0.185	0.600	0.138	0.046	0.000	0.000	0.000	0.000	0.969
WNW	0.000	0.138	0.277	0.092	0.046	0.046	0.000	0.000	0.000	0.600
NW	0.000	0.092	0.415	0.231	0.092	0.046	0.000	0.000	0.000	0.877
NNW	0.000	0.138	0.877	1.015	0.185	0.092	0.000	0.000	0.000	2.307
SUBTOTAL	0.000	2.861	12.229	4.707	1.754	0.415	0.046	0.000	0.000	22.012

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2173
TOTAL HOURS OF STABILITY CLASS E	481
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS E	477
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2167
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2003/11/12

MEAN WIND SPEED = 3.04

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA T<= 4.0 C/100 M)

Browns Ferry Nuclear Plant

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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	0.000	0.231	2.123	0.646	0.000	0.000	0.000	0.000	0.000	3.000
NNE	0.000	0.323	0.369	0.185	0.092	0.046	0.000	0.000	0.000	1.015
NE	0.000	0.369	0.323	0.231	0.000	0.000	0.000	0.000	0.000	0.923
ENE	0.000	0.138	0.692	0.415	0.000	0.000	0.000	0.000	0.000	1.246
E	0.000	0.092	1.154	0.600	0.000	0.000	0.000	0.000	0.000	1.846
ESE	0.000	0.185	0.461	0.046	0.000	0.000	0.000	0.000	0.000	0.692
SE	0.000	0.231	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.231
SSE	0.000	0.277	0.138	0.000	0.000	0.000	0.000	0.000	0.000	0.415
S	0.000	0.138	0.185	0.000	0.000	0.000	0.000	0.000	0.000	0.323
SSW	0.000	0.231	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.323
SW	0.000	0.185	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.231
WSW	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046
W	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.092
WNW	0.000	0.092	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.185
NW	0.000	0.046	0.369	0.000	0.000	0.000	0.000	0.000	0.000	0.415
NNW	0.000	0.415	0.969	0.508	0.046	0.000	0.000	0.000	0.000	1.938
SUBTOTAL	0.000	3.046	7.060	2.630	0.138	0.046	0.000	0.000	0.000	12.921

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2173
TOTAL HOURS OF STABILITY CLASS F	280
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS F	280
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2167
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2003/11/12

MEAN WIND SPEED = 2.54

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

Browns Ferry Nuclear Plant

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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
	WIND SPEED(MPH)									
N	0.000	0.600	1.338	0.923	0.000	0.000	0.000	0.000	0.000	2.861
NNE	0.000	0.138	0.600	0.277	0.000	0.000	0.000	0.000	0.000	1.015
NE	0.000	0.046	0.508	0.000	0.000	0.000	0.000	0.000	0.000	0.554
ENE	0.000	0.000	0.369	0.277	0.000	0.000	0.000	0.000	0.000	0.646
E	0.000	0.046	0.185	0.092	0.000	0.000	0.000	0.000	0.000	0.323
ESE	0.000	0.092	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.185
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.092
SSW	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.092
W	0.000	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.092
WNW	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.046
NW	0.000	0.185	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.185
NNW	0.000	0.508	0.508	0.000	0.000	0.000	0.000	0.000	0.000	1.015
SUBTOTAL	0.000	1.846	3.738	1.569	0.000	0.000	0.000	0.000	0.000	7.153

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2173
TOTAL HOURS OF STABILITY CLASS G	156
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS G	155
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2167
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2003/11/12

MEAN WIND SPEED = 2.39

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

METEORLOGICAL DATA TABLES

BROWNS FERRY NUCLEAR PLANT

JANUARY - DECEMBER 2003

TABLE 13

JOINT FREQUENCY DISTRIBUTION IN PERCENT

FOR GROUND LEVEL RELEASES

FOURTH QUARTER

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

Browns Ferry Nuclear Plant

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.000	0.000	0.280	0.280	0.047	0.000	0.000	0.606
NNE	0.000	0.000	0.000	0.047	0.140	0.466	0.000	0.000	0.000	0.653
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.047
E	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.047
ESE	0.000	0.000	0.047	0.420	0.187	0.000	0.000	0.000	0.000	0.653
SE	0.000	0.000	0.513	1.632	0.280	0.000	0.000	0.000	0.000	2.425
SSE	0.000	0.000	0.700	1.026	0.000	0.000	0.000	0.000	0.000	1.726
S	0.000	0.000	0.093	1.166	0.140	0.000	0.000	0.000	0.000	1.399
SSW	0.000	0.000	0.187	0.233	0.000	0.000	0.000	0.000	0.000	0.420
SW	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.047
WSW	0.000	0.000	0.047	0.093	0.000	0.000	0.000	0.000	0.000	0.140
W	0.000	0.000	0.000	0.000	0.093	0.000	0.000	0.000	0.000	0.093
WNW	0.000	0.000	0.000	0.047	0.047	0.047	0.140	0.000	0.000	0.280
NW	0.000	0.000	0.000	0.000	0.000	0.140	0.047	0.000	0.000	0.187
NNW	0.000	0.000	0.000	0.047	0.047	0.233	0.187	0.000	0.000	0.513
SUBTOTAL	0.000	0.000	1.632	4.757	1.259	1.166	0.420	0.000	0.000	9.235

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2146
TOTAL HOURS OF STABILITY CLASS A	198
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS A	198
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2144
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2004/02/19

MEAN WIND SPEED = 5.52

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA T<=-1.7 C/100 M)

Browns Ferry Nuclear Plant

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.000	0.047	0.093	0.140	0.000	0.000	0.000	0.280
NNE	0.000	0.000	0.000	0.047	0.140	0.093	0.000	0.000	0.000	0.280
NE	0.000	0.000	0.000	0.047	0.047	0.047	0.000	0.000	0.000	0.140
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.047
ESE	0.000	0.000	0.047	0.093	0.000	0.000	0.000	0.000	0.000	0.140
SE	0.000	0.000	0.280	0.373	0.000	0.000	0.000	0.000	0.000	0.653
SSE	0.000	0.000	0.140	0.280	0.000	0.000	0.000	0.000	0.000	0.420
S	0.000	0.000	0.187	0.140	0.047	0.000	0.000	0.000	0.000	0.373
SSW	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.047
SW	0.000	0.000	0.000	0.093	0.000	0.000	0.000	0.000	0.000	0.093
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.140	0.140	0.047	0.000	0.000	0.000	0.326
WNW	0.000	0.000	0.047	0.047	0.047	0.047	0.000	0.093	0.000	0.280
NW	0.000	0.000	0.000	0.000	0.047	0.093	0.140	0.000	0.000	0.280
NNW	0.000	0.000	0.000	0.047	0.047	0.093	0.000	0.000	0.000	0.187
SUBTOTAL	0.000	0.000	0.700	1.446	0.606	0.560	0.140	0.093	0.000	3.545

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2146
TOTAL HOURS OF STABILITY CLASS B 76
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS B 76
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2144
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2004/02/19

MEAN WIND SPEED = 5.92

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA T<=-1.5 C/100 M)

Browns Ferry Nuclear Plant

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	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
	WIND SPEED(MPH)									
N	0.000	0.000	0.000	0.093	0.233	0.093	0.000	0.000	0.000	0.420
NNE	0.000	0.000	0.093	0.047	0.280	0.000	0.000	0.000	0.000	0.420
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.093	0.047	0.000	0.000	0.000	0.000	0.140
ESE	0.000	0.000	0.047	0.000	0.000	0.000	0.047	0.000	0.000	0.093
SE	0.000	0.000	0.187	0.187	0.000	0.000	0.000	0.000	0.000	0.373
SSE	0.000	0.000	0.280	0.140	0.000	0.000	0.000	0.000	0.000	0.420
S	0.000	0.000	0.047	0.233	0.000	0.000	0.000	0.000	0.000	0.280
SSW	0.000	0.000	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.093
SW	0.000	0.000	0.047	0.093	0.000	0.000	0.000	0.000	0.000	0.140
WSW	0.000	0.000	0.047	0.047	0.000	0.000	0.000	0.000	0.000	0.093
W	0.000	0.000	0.093	0.047	0.140	0.000	0.000	0.000	0.000	0.280
WNW	0.000	0.000	0.047	0.093	0.047	0.140	0.047	0.187	0.000	0.560
NW	0.000	0.000	0.000	0.093	0.047	0.047	0.093	0.047	0.000	0.326
NNW	0.000	0.000	0.047	0.047	0.093	0.047	0.000	0.000	0.000	0.233
SUBTOTAL	0.000	0.000	1.026	1.213	0.886	0.326	0.187	0.233	0.000	3.871

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2146
TOTAL HOURS OF STABILITY CLASS C 83
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS C 83
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2144
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2004/02/19

MEAN WIND SPEED = 6.47

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA T<=-0.5 C/100 M)

Browns Ferry Nuclear Plant

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	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
	WIND SPEED(MPH)									
N	0.002	0.000	0.326	0.326	0.653	0.606	0.000	0.000	0.000	1.915
NNE	0.000	0.000	0.047	0.746	1.026	0.233	0.000	0.000	0.000	2.053
NE	0.000	0.000	0.047	0.560	0.373	0.093	0.000	0.000	0.000	1.073
ENE	0.002	0.000	0.233	0.187	0.093	0.000	0.000	0.000	0.000	0.515
E	0.003	0.000	0.373	0.373	0.093	0.000	0.000	0.000	0.000	0.842
ESE	0.004	0.047	0.513	0.746	0.420	0.233	0.000	0.000	0.000	1.963
SE	0.004	0.047	0.606	0.793	0.420	0.093	0.000	0.000	0.000	1.963
SSE	0.009	0.047	1.306	0.653	0.047	0.000	0.000	0.000	0.000	2.062
S	0.008	0.140	1.073	0.933	0.233	0.000	0.000	0.000	0.000	2.387
SSW	0.004	0.233	0.373	0.233	0.047	0.000	0.000	0.000	0.000	0.890
SW	0.004	0.047	0.466	0.140	0.047	0.000	0.000	0.000	0.000	0.703
WSW	0.003	0.000	0.420	0.187	0.280	0.280	0.000	0.000	0.000	1.169
W	0.002	0.047	0.233	0.326	0.466	1.026	0.187	0.000	0.000	2.287
WNW	0.000	0.000	0.047	0.140	0.140	1.259	1.259	0.093	0.000	2.939
NW	0.001	0.000	0.093	0.187	0.047	1.306	1.632	0.420	0.000	3.685
NNW	0.000	0.000	0.047	0.466	0.886	1.026	0.047	0.000	0.000	2.472
SUBTOTAL	0.047	0.606	6.203	6.996	5.271	6.157	3.125	0.513	0.000	28.918

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2146
TOTAL HOURS OF STABILITY CLASS D 620
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS D 620
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2144
TOTAL HOURS CALM 1

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2004/02/19

MEAN WIND SPEED = 6.89

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA T<= 1.5 C/100 M)

Browns Ferry Nuclear Plant

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	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	0.000	0.140	0.560	0.840	0.093	0.000	0.000	0.000	0.000	1.632
NNE	0.000	0.093	0.513	0.466	0.560	0.000	0.000	0.000	0.000	1.632
NE	0.000	0.000	0.466	0.560	0.187	0.000	0.000	0.000	0.000	1.213
ENE	0.000	0.140	0.466	0.326	0.000	0.000	0.000	0.000	0.000	0.933
E	0.000	0.047	1.353	0.933	0.093	0.000	0.000	0.000	0.000	2.425
ESE	0.000	0.047	1.166	0.979	0.093	0.047	0.000	0.000	0.000	2.332
SE	0.000	0.326	1.539	0.933	0.187	0.047	0.000	0.000	0.000	3.032
SSE	0.000	0.140	1.772	1.166	0.373	0.000	0.000	0.000	0.000	3.451
S	0.000	0.466	2.565	1.586	0.373	0.653	0.000	0.000	0.000	5.644
SSW	0.000	0.233	0.653	0.047	0.093	0.000	0.000	0.000	0.000	1.026
SW	0.000	0.047	0.420	0.000	0.000	0.000	0.000	0.000	0.000	0.466
WSW	0.000	0.280	0.233	0.280	0.000	0.000	0.000	0.000	0.000	0.793
W	0.000	0.093	0.233	0.280	0.140	0.187	0.000	0.000	0.000	0.933
WNW	0.000	0.000	0.047	0.000	0.047	0.233	0.420	0.000	0.000	0.746
NW	0.000	0.000	0.187	0.280	0.653	0.326	0.187	0.000	0.000	1.632
NNW	0.000	0.093	0.187	0.466	0.140	0.140	0.000	0.000	0.000	1.026
SUBTOTAL	0.000	2.146	12.360	9.142	3.032	1.632	0.606	0.000	0.000	28.918

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2146
TOTAL HOURS OF STABILITY CLASS E	620
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS E	620
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2144
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2004/02/19

MEAN WIND SPEED = 4.02

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA T<= 4.0 C/100 M)

Browns Ferry Nuclear Plant

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	WIND SPEED(MPH) CALM	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	0.000	0.233	0.793	0.560	0.047	0.000	0.000	0.000	0.000	1.632
NNE	0.000	0.140	0.233	0.513	0.047	0.000	0.000	0.000	0.000	0.933
NE	0.000	0.000	0.233	0.140	0.000	0.000	0.000	0.000	0.000	0.373
ENE	0.000	0.140	0.560	0.140	0.000	0.000	0.000	0.000	0.000	0.840
E	0.000	0.280	1.026	0.047	0.000	0.000	0.000	0.000	0.000	1.353
ESE	0.000	0.140	0.933	0.513	0.000	0.000	0.000	0.000	0.000	1.586
SE	0.000	0.187	0.933	0.233	0.140	0.000	0.000	0.000	0.000	1.493
SSE	0.000	0.326	1.306	0.653	0.000	0.000	0.000	0.000	0.000	2.285
S	0.000	0.093	0.420	0.140	0.140	0.047	0.000	0.000	0.000	0.840
SSW	0.000	0.047	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.093
SW	0.000	0.000	0.140	0.000	0.000	0.000	0.000	0.000	0.000	0.140
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.093	0.140	0.000	0.000	0.047	0.000	0.000	0.000	0.280
WNW	0.000	0.047	0.233	0.000	0.000	0.000	0.000	0.000	0.000	0.280
NW	0.000	0.187	0.187	0.093	0.047	0.000	0.000	0.000	0.000	0.513
NNW	0.000	0.093	0.746	0.513	0.140	0.000	0.000	0.000	0.000	1.493
SUBTOTAL	0.000	2.006	7.929	3.545	0.560	0.093	0.000	0.000	0.000	14.132

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2146
TOTAL HOURS OF STABILITY CLASS F	304
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS F	303
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2144
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2004/02/19

MEAN WIND SPEED = 2.90

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

Browns Ferry Nuclear Plant

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	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	0.031	0.886	1.399	0.373	0.047	0.000	0.000	0.000	0.000	2.736
NNE	0.011	0.280	0.560	0.047	0.000	0.000	0.000	0.000	0.000	0.898
NE	0.016	0.513	0.653	0.047	0.000	0.000	0.000	0.000	0.000	1.229
ENE	0.013	0.187	0.746	0.000	0.000	0.000	0.000	0.000	0.000	0.946
E	0.007	0.047	0.466	0.093	0.000	0.000	0.000	0.000	0.000	0.613
ESE	0.008	0.140	0.466	0.000	0.000	0.000	0.000	0.000	0.000	0.615
SE	0.006	0.140	0.326	0.093	0.000	0.000	0.000	0.000	0.000	0.566
SSE	0.015	0.280	0.793	0.093	0.000	0.000	0.000	0.000	0.000	1.181
S	0.006	0.140	0.326	0.000	0.000	0.000	0.000	0.000	0.000	0.473
SSW	0.001	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.047
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.003	0.140	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.189
W	0.001	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.095
WNW	0.002	0.140	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.142
NW	0.004	0.187	0.140	0.000	0.000	0.000	0.000	0.000	0.000	0.331
NNW	0.015	0.653	0.466	0.187	0.000	0.000	0.000	0.000	0.000	1.321
SUBTOTAL	0.140	3.871	6.390	0.933	0.047	0.000	0.000	0.000	0.000	11.381

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2146
TOTAL HOURS OF STABILITY CLASS G 245
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS G 244
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2144
TOTAL HOURS CALM 3

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND SPEED AND DIRECTION MEASURED AT 10.50 METER LEVEL

DATE PRINTED: 2004/02/19

MEAN WIND SPEED = 1.96

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

METEORLOGICAL DATA TABLES

BROWNS FERRY NUCLEAR PLANT

JANUARY - DECEMBER 2003

TABLE 14

JOINT FREQUENCY DISTRIBUTION IN PERCENT

FOR SPLIT LEVEL RELEASES

(GROUND LEVEL PORTION)

FIRST QUARTER

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.000	0.009	0.065	0.000	0.000	0.000	0.075
NNE	0.000	0.000	0.000	0.000	0.017	0.067	0.000	0.000	0.000	0.084
NE	0.000	0.000	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.008
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.008
SE	0.000	0.000	0.000	0.060	0.064	0.000	0.000	0.000	0.000	0.124
SSE	0.000	0.000	0.003	0.029	0.000	0.000	0.000	0.000	0.000	0.033
S	0.000	0.000	0.000	0.008	0.009	0.000	0.000	0.000	0.000	0.017
SSW	0.000	0.000	0.000	0.021	0.010	0.000	0.000	0.000	0.000	0.031
SW	0.000	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0.017
WSW	0.000	0.000	0.000	0.000	0.023	0.000	0.000	0.000	0.000	0.023
W	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.003
WNW	0.000	0.000	0.000	0.000	0.000	0.024	0.009	0.000	0.000	0.032
NW	0.000	0.000	0.000	0.000	0.000	0.019	0.052	0.000	0.000	0.071
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.071	0.000	0.000	0.071
SUBTOTAL	0.000	0.000	0.003	0.135	0.143	0.182	0.131	0.000	0.000	0.595

TOTAL HOURS OF VALID OBSERVATIONS 2111.000
TOTAL HOURS OF GROUND LEVEL RELEASE 249.850
TOTAL HOURS OF STABILITY CLASS A 12.560
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS A 12.560

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/05/20

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA T<=-1.7 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.000	0.006	0.023	0.000	0.000	0.000	0.029
NNE	0.000	0.000	0.000	0.000	0.008	0.007	0.000	0.000	0.000	0.014
NE	0.000	0.000	0.000	0.000	0.004	0.008	0.000	0.000	0.000	0.012
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.003
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.029	0.015	0.000	0.000	0.000	0.000	0.044
SSE	0.000	0.000	0.000	0.025	0.000	0.000	0.000	0.000	0.000	0.025
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.021	0.009	0.000	0.000	0.000	0.000	0.031
SW	0.000	0.000	0.000	0.000	0.007	0.000	0.000	0.000	0.000	0.007
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.008	0.009	0.000	0.000	0.000	0.016
WNW	0.000	0.000	0.000	0.000	0.003	0.070	0.039	0.000	0.000	0.112
NW	0.000	0.000	0.000	0.000	0.005	0.091	0.030	0.000	0.000	0.126
NNW	0.000	0.000	0.000	0.000	0.005	0.008	0.033	0.000	0.000	0.046
SUBTOTAL	0.000	0.000	0.000	0.076	0.072	0.216	0.102	0.000	0.000	0.466

TOTAL HOURS OF VALID OBSERVATIONS 2111.000
TOTAL HOURS OF GROUND LEVEL RELEASE 249.850
TOTAL HOURS OF STABILITY CLASS B 11.500
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS B 9.840

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/05/20

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA T<=-1.5 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.002	0.016	0.017	0.000	0.000	0.000	0.035
NNE	0.000	0.000	0.000	0.000	0.033	0.035	0.000	0.000	0.000	0.068
NE	0.000	0.000	0.000	0.000	0.006	0.007	0.000	0.000	0.000	0.013
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.004
SE	0.000	0.000	0.000	0.016	0.000	0.000	0.000	0.000	0.000	0.016
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.004
SSW	0.000	0.000	0.000	0.009	0.000	0.000	0.000	0.000	0.000	0.009
SW	0.000	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.008
WSW	0.000	0.000	0.000	0.004	0.005	0.000	0.000	0.000	0.000	0.009
W	0.000	0.000	0.000	0.000	0.013	0.005	0.000	0.000	0.000	0.018
WNW	0.000	0.000	0.000	0.000	0.006	0.074	0.018	0.032	0.000	0.131
NW	0.000	0.000	0.000	0.000	0.000	0.014	0.018	0.000	0.000	0.032
NNW	0.000	0.000	0.000	0.000	0.000	0.057	0.000	0.000	0.000	0.057
SUBTOTAL	0.000	0.000	0.000	0.040	0.086	0.209	0.037	0.032	0.000	0.404

TOTAL HOURS OF VALID OBSERVATIONS 2111.000
TOTAL HOURS OF GROUND LEVEL RELEASE 249.850
TOTAL HOURS OF STABILITY CLASS C 23.220
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS C 8.520

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL

WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/05/20

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA T<=-0.5 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.005	0.071	0.308	0.000	0.000	0.000	0.384
NNE	0.000	0.000	0.000	0.024	0.137	0.182	0.000	0.000	0.000	0.344
NE	0.000	0.000	0.000	0.024	0.091	0.045	0.000	0.000	0.000	0.160
ENE	0.000	0.000	0.003	0.021	0.026	0.000	0.000	0.000	0.000	0.050
E	0.000	0.000	0.000	0.037	0.029	0.000	0.000	0.000	0.000	0.066
ESE	0.000	0.000	0.016	0.068	0.110	0.009	0.000	0.000	0.000	0.203
SE	0.000	0.000	0.018	0.091	0.045	0.075	0.000	0.000	0.000	0.229
SSE	0.000	0.000	0.024	0.068	0.037	0.000	0.000	0.000	0.000	0.128
S	0.000	0.000	0.010	0.090	0.047	0.000	0.000	0.000	0.000	0.147
SSW	0.000	0.000	0.002	0.032	0.055	0.012	0.000	0.000	0.000	0.101
SW	0.000	0.000	0.002	0.006	0.008	0.014	0.000	0.000	0.000	0.029
WSW	0.000	0.000	0.007	0.075	0.044	0.018	0.000	0.000	0.000	0.143
W	0.000	0.000	0.000	0.076	0.115	0.181	0.018	0.000	0.000	0.390
WNW	0.000	0.000	0.000	0.002	0.034	0.176	0.457	0.062	0.000	0.731
NW	0.000	0.000	0.000	0.003	0.027	0.631	0.373	0.083	0.000	1.117
NNW	0.000	0.000	0.000	0.016	0.096	0.374	0.317	0.000	0.000	0.803
SUBTOTAL	0.000	0.000	0.082	0.636	0.973	2.026	1.165	0.145	0.000	5.027

TOTAL HOURS OF VALID OBSERVATIONS 2111.000
TOTAL HOURS OF GROUND LEVEL RELEASE 249.850
TOTAL HOURS OF STABILITY CLASS D 1261.220
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS D 106.130

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/05/20

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA T<= 1.5 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.020	0.084	0.076	0.068	0.000	0.000	0.000	0.248
NNE	0.000	0.000	0.020	0.035	0.082	0.067	0.000	0.000	0.000	0.204
NE	0.000	0.000	0.006	0.039	0.035	0.000	0.000	0.000	0.000	0.080
ENE	0.000	0.000	0.018	0.035	0.013	0.000	0.000	0.000	0.000	0.066
E	0.000	0.000	0.023	0.019	0.015	0.000	0.000	0.000	0.000	0.057
ESE	0.000	0.000	0.067	0.098	0.104	0.039	0.000	0.000	0.000	0.308
SE	0.000	0.000	0.051	0.124	0.156	0.025	0.000	0.000	0.000	0.356
SSE	0.000	0.000	0.054	0.151	0.047	0.000	0.000	0.000	0.000	0.252
S	0.000	0.000	0.060	0.212	0.117	0.241	0.000	0.000	0.000	0.631
SSW	0.000	0.000	0.014	0.078	0.054	0.047	0.000	0.000	0.000	0.193
SW	0.000	0.000	0.025	0.024	0.000	0.022	0.000	0.000	0.000	0.071
WSW	0.000	0.000	0.018	0.029	0.000	0.010	0.000	0.000	0.000	0.056
W	0.000	0.000	0.019	0.007	0.022	0.009	0.000	0.000	0.000	0.057
WNW	0.000	0.000	0.002	0.009	0.017	0.007	0.000	0.000	0.000	0.035
NW	0.000	0.000	0.011	0.058	0.116	0.134	0.000	0.000	0.000	0.318
NNW	0.000	0.000	0.012	0.076	0.085	0.120	0.000	0.000	0.000	0.293
SUBTOTAL	0.000	0.000	0.420	1.077	0.938	0.789	0.000	0.000	0.000	3.224

TOTAL HOURS OF VALID OBSERVATIONS 2111.000
TOTAL HOURS OF GROUND LEVEL RELEASE 249.850
TOTAL HOURS OF STABILITY CLASS E 666.330
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS E 68.050

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/05/20

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA T<= 4.0 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	WIND SPEED(MPH) CALM	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	0.000	0.000	0.020	0.052	0.000	0.000	0.000	0.000	0.000	0.072
NNE	0.000	0.000	0.012	0.036	0.008	0.000	0.000	0.000	0.000	0.055
NE	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.003
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.002	0.031	0.006	0.000	0.000	0.000	0.000	0.000	0.039
ESE	0.000	0.000	0.031	0.008	0.000	0.000	0.000	0.000	0.000	0.039
SE	0.000	0.000	0.089	0.085	0.000	0.000	0.000	0.000	0.000	0.174
SSE	0.000	0.000	0.117	0.094	0.000	0.000	0.000	0.000	0.000	0.211
S	0.000	0.021	0.061	0.165	0.181	0.198	0.000	0.000	0.000	0.627
SSW	0.000	0.000	0.057	0.070	0.009	0.009	0.000	0.000	0.000	0.146
SW	0.000	0.000	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.011
WSW	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.008
W	0.000	0.000	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.009
WNW	0.000	0.000	0.005	0.014	0.000	0.000	0.000	0.000	0.000	0.019
NW	0.000	0.000	0.010	0.023	0.000	0.000	0.000	0.000	0.000	0.034
NNW	0.000	0.000	0.000	0.080	0.015	0.000	0.000	0.000	0.000	0.094
SUBTOTAL	0.000	0.024	0.457	0.640	0.213	0.207	0.000	0.000	0.000	1.542

TOTAL HOURS OF VALID OBSERVATIONS 2111.000
TOTAL HOURS OF GROUND LEVEL RELEASE 249.850
TOTAL HOURS OF STABILITY CLASS F 102.460
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS F 32.550

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/05/20

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.005	0.015	0.000	0.000	0.000	0.000	0.000	0.020
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.010
ENE	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.001
E	0.000	0.000	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.009
ESE	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
SE	0.000	0.005	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.025
SSE	0.000	0.022	0.213	0.009	0.000	0.000	0.000	0.000	0.000	0.245
S	0.000	0.000	0.138	0.068	0.052	0.000	0.000	0.000	0.000	0.258
SSW	0.000	0.000	0.000	0.000	0.009	0.000	0.000	0.000	0.000	0.009
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.034	0.387	0.097	0.061	0.000	0.000	0.000	0.000	0.578

TOTAL HOURS OF VALID OBSERVATIONS 2111.000
TOTAL HOURS OF GROUND LEVEL RELEASE 249.850
TOTAL HOURS OF STABILITY CLASS G 33.710
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS G 12.200

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/05/20

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

METEORLOGICAL DATA TABLES

BROWNS FERRY NUCLEAR PLANT

JANUARY - DECEMBER 2003

TABLE 15

JOINT FREQUENCY DISTRIBUTION IN PERCENT

FOR SPLIT LEVEL RELEASES

(GROUND LEVEL PORTION)

SECOND QUARTER

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.000	0.005	0.025	0.000	0.000	0.000	0.030
NNE	0.000	0.000	0.000	0.000	0.000	0.042	0.000	0.000	0.000	0.042
NE	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.001
ENE	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.002
E	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.001
ESE	0.000	0.000	0.000	0.007	0.025	0.009	0.000	0.000	0.000	0.042
SE	0.000	0.000	0.018	0.037	0.023	0.000	0.000	0.000	0.000	0.078
SSE	0.000	0.000	0.055	0.010	0.000	0.000	0.000	0.000	0.000	0.066
S	0.000	0.000	0.045	0.035	0.000	0.032	0.000	0.000	0.000	0.112
SSW	0.000	0.000	0.014	0.101	0.000	0.000	0.000	0.000	0.000	0.115
SW	0.000	0.000	0.000	0.040	0.015	0.000	0.000	0.000	0.000	0.056
WSW	0.000	0.000	0.001	0.003	0.025	0.000	0.000	0.000	0.000	0.030
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.004	0.096	0.035	0.000	0.000	0.134
NW	0.000	0.000	0.000	0.000	0.000	0.082	0.141	0.075	0.000	0.298
NNW	0.000	0.000	0.000	0.000	0.004	0.069	0.010	0.000	0.000	0.084
SUBTOTAL	0.000	0.000	0.133	0.237	0.105	0.355	0.186	0.075	0.000	1.092

TOTAL HOURS OF VALID OBSERVATIONS 2008.000
TOTAL HOURS OF GROUND LEVEL RELEASE 212.170
TOTAL HOURS OF STABILITY CLASS A 21.920
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS A 21.920

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/08/11

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA T<=-1.7 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.000	0.013	0.008	0.000	0.000	0.000	0.021
NNE	0.000	0.000	0.000	0.001	0.003	0.007	0.000	0.000	0.000	0.012
NE	0.000	0.000	0.000	0.000	0.004	0.018	0.000	0.000	0.000	0.022
ENE	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.003
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.003	0.015	0.000	0.000	0.000	0.000	0.000	0.019
SE	0.000	0.000	0.002	0.011	0.000	0.000	0.000	0.000	0.000	0.013
SSE	0.000	0.000	0.009	0.006	0.000	0.000	0.000	0.000	0.000	0.015
S	0.000	0.000	0.000	0.035	0.000	0.000	0.000	0.000	0.000	0.035
SSW	0.000	0.000	0.007	0.023	0.000	0.000	0.000	0.000	0.000	0.031
SW	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.008
WSW	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.008
W	0.000	0.000	0.000	0.004	0.006	0.034	0.000	0.000	0.000	0.044
WNW	0.000	0.000	0.000	0.000	0.001	0.055	0.000	0.000	0.000	0.057
NW	0.000	0.000	0.000	0.000	0.009	0.033	0.029	0.000	0.000	0.072
NNW	0.000	0.000	0.000	0.000	0.011	0.041	0.030	0.000	0.000	0.082
SUBTOTAL	0.000	0.000	0.022	0.114	0.052	0.197	0.059	0.000	0.000	0.444

TOTAL HOURS OF VALID OBSERVATIONS 2008.000
TOTAL HOURS OF GROUND LEVEL RELEASE 212.170
TOTAL HOURS OF STABILITY CLASS B 8.920
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS B 8.920

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/08/11

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA T<=-1.5 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	WIND SPEED(MPH) CALM	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	0.000	0.000	0.000	0.000	0.011	0.000	0.000	0.000	0.000	0.011
NNE	0.000	0.000	0.000	0.000	0.006	0.007	0.000	0.000	0.000	0.014
NE	0.000	0.000	0.000	0.000	0.008	0.013	0.000	0.000	0.000	0.022
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.005	0.022	0.000	0.000	0.000	0.000	0.028
SE	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.002
SSE	0.000	0.000	0.007	0.002	0.000	0.000	0.000	0.000	0.000	0.009
S	0.000	0.000	0.014	0.042	0.000	0.000	0.000	0.000	0.000	0.056
SSW	0.000	0.000	0.013	0.024	0.000	0.000	0.000	0.000	0.000	0.038
SW	0.000	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0.017
WSW	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.002
W	0.000	0.000	0.000	0.003	0.006	0.048	0.000	0.000	0.000	0.058
WNW	0.000	0.000	0.000	0.000	0.006	0.027	0.000	0.000	0.000	0.033
NW	0.000	0.000	0.000	0.001	0.013	0.066	0.010	0.000	0.000	0.091
NNW	0.000	0.000	0.000	0.001	0.015	0.071	0.040	0.000	0.000	0.127
SUBTOTAL	0.000	0.000	0.039	0.098	0.090	0.233	0.050	0.000	0.000	0.509

TOTAL HOURS OF VALID OBSERVATIONS 2008.000
TOTAL HOURS OF GROUND LEVEL RELEASE 212.170
TOTAL HOURS OF STABILITY CLASS C 18.100
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS C 10.220

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL

WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/08/11

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA T<=-0.5 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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
	WIND SPEED(MPH)									
N	0.000	0.000	0.007	0.049	0.117	0.064	0.000	0.000	0.000	0.237
NNE	0.000	0.000	0.002	0.033	0.081	0.070	0.000	0.000	0.000	0.187
NE	0.000	0.000	0.000	0.007	0.005	0.036	0.000	0.000	0.000	0.048
ENE	0.000	0.000	0.000	0.011	0.000	0.000	0.000	0.000	0.000	0.011
E	0.000	0.000	0.000	0.030	0.004	0.000	0.000	0.000	0.000	0.035
ESE	0.000	0.000	0.052	0.130	0.350	0.111	0.000	0.000	0.000	0.644
SE	0.000	0.000	0.109	0.061	0.000	0.000	0.000	0.000	0.000	0.169
SSE	0.000	0.000	0.157	0.056	0.000	0.000	0.000	0.000	0.000	0.213
S	0.000	0.000	0.212	0.179	0.240	0.000	0.000	0.000	0.000	0.630
SSW	0.000	0.000	0.091	0.162	0.050	0.045	0.000	0.000	0.000	0.349
SW	0.000	0.000	0.014	0.014	0.008	0.000	0.000	0.000	0.000	0.037
WSW	0.000	0.000	0.006	0.022	0.022	0.000	0.000	0.000	0.000	0.051
W	0.000	0.000	0.000	0.009	0.044	0.071	0.010	0.000	0.000	0.134
WNW	0.000	0.000	0.000	0.002	0.038	0.094	0.010	0.000	0.000	0.145
NW	0.000	0.000	0.000	0.000	0.050	0.254	0.040	0.000	0.000	0.344
NNW	0.000	0.000	0.000	0.026	0.073	0.295	0.041	0.000	0.000	0.436
SUBTOTAL	0.000	0.000	0.650	0.795	1.084	1.041	0.102	0.000	0.000	3.671

TOTAL HOURS OF VALID OBSERVATIONS 2008.000
TOTAL HOURS OF GROUND LEVEL RELEASE 212.170
TOTAL HOURS OF STABILITY CLASS D 1134.320
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS D 73.710

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/08/11

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA T<= 1.5 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.033	0.060	0.022	0.009	0.000	0.000	0.000	0.125
NNE	0.000	0.000	0.028	0.034	0.024	0.009	0.000	0.000	0.000	0.096
NE	0.000	0.000	0.004	0.025	0.042	0.041	0.000	0.000	0.000	0.113
ENE	0.000	0.000	0.010	0.021	0.000	0.000	0.000	0.000	0.000	0.032
E	0.000	0.000	0.035	0.050	0.000	0.000	0.000	0.000	0.000	0.085
ESE	0.000	0.002	0.132	0.181	0.171	0.026	0.000	0.000	0.000	0.512
SE	0.000	0.014	0.184	0.100	0.000	0.000	0.000	0.000	0.000	0.298
SSE	0.000	0.007	0.140	0.046	0.000	0.000	0.000	0.000	0.000	0.194
S	0.000	0.000	0.275	0.334	0.429	0.090	0.000	0.000	0.000	1.128
SSW	0.000	0.000	0.089	0.138	0.144	0.036	0.000	0.000	0.000	0.407
SW	0.000	0.000	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.006
WSW	0.000	0.000	0.007	0.023	0.000	0.000	0.000	0.000	0.000	0.030
W	0.000	0.000	0.007	0.009	0.037	0.008	0.000	0.000	0.000	0.062
WNW	0.000	0.000	0.000	0.014	0.007	0.024	0.000	0.000	0.000	0.046
NW	0.000	0.000	0.003	0.033	0.033	0.008	0.000	0.000	0.000	0.077
NNW	0.000	0.000	0.014	0.029	0.046	0.045	0.000	0.000	0.000	0.135
SUBTOTAL	0.000	0.023	0.964	1.106	0.955	0.298	0.000	0.000	0.000	3.346

TOTAL HOURS OF VALID OBSERVATIONS 2008.000
TOTAL HOURS OF GROUND LEVEL RELEASE 212.170
TOTAL HOURS OF STABILITY CLASS E 611.550
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS E 67.180

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/08/11

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA T<= 4.0 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	WIND SPEED(MPH) CALM	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	0.000	0.000	0.065	0.105	0.000	0.000	0.000	0.000	0.000	0.169
NNE	0.000	0.000	0.049	0.075	0.024	0.000	0.000	0.000	0.000	0.148
NE	0.000	0.007	0.007	0.004	0.007	0.000	0.000	0.000	0.000	0.026
ENE	0.000	0.000	0.013	0.004	0.009	0.000	0.000	0.000	0.000	0.026
E	0.000	0.011	0.032	0.041	0.000	0.000	0.000	0.000	0.000	0.084
ESE	0.000	0.001	0.078	0.006	0.000	0.000	0.000	0.000	0.000	0.086
SE	0.000	0.030	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.050
SSE	0.000	0.011	0.043	0.000	0.000	0.000	0.000	0.000	0.000	0.054
S	0.000	0.000	0.075	0.166	0.000	0.000	0.000	0.000	0.000	0.241
SSW	0.000	0.000	0.007	0.019	0.000	0.000	0.000	0.000	0.000	0.026
SW	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.002
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.006	0.006	0.000	0.000	0.000	0.000	0.000	0.012
NNW	0.000	0.000	0.029	0.043	0.000	0.000	0.000	0.000	0.000	0.072
SUBTOTAL	0.000	0.061	0.425	0.470	0.041	0.000	0.000	0.000	0.000	0.998

TOTAL HOURS OF VALID OBSERVATIONS 2008.000
TOTAL HOURS OF GROUND LEVEL RELEASE 212.170
TOTAL HOURS OF STABILITY CLASS F 168.590
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS F 20.040

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/08/11

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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	0.000	0.003	0.067	0.029	0.000	0.000	0.000	0.000	0.000	0.099
NNE	0.000	0.000	0.035	0.022	0.000	0.000	0.000	0.000	0.000	0.058
NE	0.000	0.000	0.011	0.000	0.009	0.000	0.000	0.000	0.000	0.020
ENE	0.000	0.000	0.019	0.004	0.008	0.000	0.000	0.000	0.000	0.033
E	0.000	0.042	0.027	0.000	0.000	0.000	0.000	0.000	0.000	0.070
ESE	0.000	0.026	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.033
SE	0.000	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013
SSE	0.000	0.025	0.057	0.000	0.000	0.000	0.000	0.000	0.000	0.082
S	0.000	0.000	0.039	0.008	0.000	0.000	0.000	0.000	0.000	0.047
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.003
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.002
WNW	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.004
NW	0.000	0.001	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.007
NNW	0.000	0.000	0.026	0.007	0.000	0.000	0.000	0.000	0.000	0.034
SUBTOTAL	0.000	0.112	0.307	0.071	0.017	0.000	0.000	0.000	0.000	0.507

TOTAL HOURS OF VALID OBSERVATIONS 2008.000
TOTAL HOURS OF GROUND LEVEL RELEASE 212.170
TOTAL HOURS OF STABILITY CLASS G 44.600
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS G 10.180

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/08/11

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

METEORLOGICAL DATA TABLES

BROWNS FERRY NUCLEAR PLANT

JANUARY - DECEMBER 2003

TABLE 16

JOINT FREQUENCY DISTRIBUTION IN PERCENT

FOR SPLIT LEVEL RELEASES

(GROUND LEVEL PORTION)

THIRD QUARTER

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	WIND SPEED(MPH) CALM	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	0.000	0.000	0.000	0.000	0.024	0.065	0.000	0.000	0.000	0.090
NNE	0.000	0.000	0.000	0.001	0.000	0.062	0.000	0.000	0.000	0.063
NE	0.000	0.000	0.000	0.000	0.000	0.041	0.009	0.000	0.000	0.050
ENE	0.000	0.000	0.000	0.000	0.006	0.012	0.000	0.000	0.000	0.018
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.029	0.070	0.000	0.000	0.000	0.000	0.099
SE	0.000	0.000	0.026	0.159	0.009	0.000	0.000	0.000	0.000	0.194
SSE	0.000	0.000	0.055	0.059	0.000	0.000	0.000	0.000	0.000	0.114
S	0.000	0.000	0.104	0.047	0.000	0.000	0.000	0.000	0.000	0.151
SSW	0.000	0.000	0.022	0.043	0.000	0.000	0.000	0.000	0.000	0.065
SW	0.000	0.000	0.007	0.005	0.000	0.000	0.000	0.000	0.000	0.012
WSW	0.000	0.000	0.000	0.018	0.026	0.000	0.000	0.000	0.000	0.043
W	0.000	0.000	0.000	0.001	0.006	0.000	0.000	0.000	0.000	0.006
WNW	0.000	0.000	0.000	0.000	0.008	0.005	0.010	0.000	0.000	0.023
NW	0.000	0.000	0.000	0.000	0.003	0.030	0.028	0.000	0.000	0.060
NNW	0.000	0.000	0.000	0.000	0.008	0.012	0.000	0.000	0.000	0.020
SUBTOTAL	0.000	0.000	0.214	0.361	0.161	0.226	0.047	0.000	0.000	1.008

TOTAL HOURS OF VALID OBSERVATIONS 2166.000
TOTAL HOURS OF GROUND LEVEL RELEASE 124.300
TOTAL HOURS OF STABILITY CLASS A 21.840
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS A 21.840

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/11/12

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA T<=-1.7 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	0.6-1.4	1.5-3.4	WIND SPEED(MPH) 3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.000	0.000	0.000	0.001	0.026	0.008	0.000	0.000	0.000	0.036
NNE	0.000	0.000	0.000	0.000	0.002	0.007	0.000	0.000	0.000	0.010
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.002	0.007	0.018	0.000	0.000	0.000	0.000	0.027
SE	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.004
SSE	0.000	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.006
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.010	0.004	0.000	0.000	0.000	0.000	0.000	0.014
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.011	0.007	0.000	0.000	0.000	0.000	0.018
W	0.000	0.000	0.000	0.002	0.033	0.006	0.000	0.000	0.000	0.041
WNW	0.000	0.000	0.000	0.000	0.004	0.011	0.012	0.000	0.000	0.027
NW	0.000	0.000	0.000	0.000	0.020	0.029	0.018	0.000	0.000	0.067
NNW	0.000	0.000	0.000	0.000	0.013	0.012	0.000	0.000	0.000	0.026
SUBTOTAL	0.000	0.000	0.021	0.026	0.124	0.074	0.030	0.000	0.000	0.276

TOTAL HOURS OF VALID OBSERVATIONS 2166.000
TOTAL HOURS OF GROUND LEVEL RELEASE 124.300
TOTAL HOURS OF STABILITY CLASS B 6.960
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS B 5.970

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/11/12

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA T<=-1.5 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.000	0.001	0.018	0.005	0.000	0.000	0.000	0.024
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.008
E	0.000	0.000	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.008
ESE	0.000	0.000	0.000	0.010	0.009	0.000	0.000	0.000	0.000	0.019
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.008
S	0.000	0.000	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.014
SSW	0.000	0.000	0.008	0.006	0.000	0.000	0.000	0.000	0.000	0.015
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.009	0.006	0.008	0.000	0.000	0.000	0.023
W	0.000	0.000	0.000	0.014	0.011	0.007	0.000	0.000	0.000	0.032
WNW	0.000	0.000	0.000	0.000	0.016	0.034	0.008	0.000	0.000	0.058
NW	0.000	0.000	0.000	0.000	0.012	0.058	0.000	0.000	0.000	0.069
NNW	0.000	0.000	0.000	0.001	0.021	0.042	0.000	0.000	0.000	0.065
SUBTOTAL	0.000	0.000	0.023	0.050	0.092	0.170	0.008	0.000	0.000	0.344

TOTAL HOURS OF VALID OBSERVATIONS 2166.000
TOTAL HOURS OF GROUND LEVEL RELEASE 124.300
TOTAL HOURS OF STABILITY CLASS C 19.830
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS C 7.450

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL

WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/11/12

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA T<=-0.5 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.015	0.036	0.016	0.000	0.000	0.000	0.067
NNE	0.000	0.000	0.000	0.009	0.013	0.021	0.000	0.000	0.000	0.044
NE	0.000	0.000	0.000	0.005	0.012	0.000	0.000	0.000	0.000	0.016
ENE	0.000	0.000	0.000	0.009	0.008	0.026	0.009	0.000	0.000	0.052
E	0.000	0.000	0.002	0.028	0.014	0.016	0.000	0.000	0.000	0.060
ESE	0.000	0.000	0.008	0.047	0.000	0.000	0.000	0.000	0.000	0.054
SE	0.000	0.000	0.054	0.012	0.008	0.000	0.000	0.000	0.000	0.075
SSE	0.000	0.000	0.059	0.000	0.000	0.000	0.000	0.000	0.000	0.059
S	0.000	0.000	0.148	0.032	0.000	0.000	0.000	0.000	0.000	0.180
SSW	0.000	0.000	0.142	0.020	0.000	0.000	0.000	0.000	0.000	0.162
SW	0.000	0.000	0.003	0.020	0.000	0.000	0.000	0.000	0.000	0.023
WSW	0.000	0.000	0.002	0.083	0.000	0.000	0.000	0.000	0.000	0.084
W	0.000	0.000	0.002	0.086	0.041	0.000	0.000	0.000	0.000	0.130
WNW	0.000	0.000	0.000	0.015	0.076	0.113	0.000	0.000	0.000	0.204
NW	0.000	0.000	0.000	0.017	0.113	0.190	0.019	0.000	0.000	0.339
NNW	0.000	0.000	0.000	0.013	0.104	0.073	0.000	0.000	0.000	0.190
SUBTOTAL	0.000	0.000	0.419	0.410	0.424	0.456	0.029	0.000	0.000	1.738

TOTAL HOURS OF VALID OBSERVATIONS 2166.000
TOTAL HOURS OF GROUND LEVEL RELEASE 124.300
TOTAL HOURS OF STABILITY CLASS D 1177.250
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS D 37.640

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/11/12

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA T<= 1.5 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.004	0.019	0.035	0.035	0.008	0.000	0.000	0.000	0.102
NNE	0.000	0.000	0.021	0.082	0.115	0.027	0.000	0.000	0.000	0.246
NE	0.000	0.000	0.002	0.015	0.033	0.008	0.010	0.000	0.000	0.067
ENE	0.000	0.000	0.006	0.052	0.000	0.000	0.000	0.000	0.000	0.058
E	0.000	0.000	0.035	0.070	0.020	0.000	0.000	0.000	0.000	0.125
ESE	0.000	0.005	0.037	0.082	0.008	0.000	0.000	0.000	0.000	0.133
SE	0.000	0.000	0.071	0.000	0.000	0.000	0.000	0.000	0.000	0.071
SSE	0.000	0.005	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.031
S	0.000	0.000	0.120	0.008	0.000	0.000	0.000	0.000	0.000	0.128
SSW	0.000	0.005	0.034	0.002	0.000	0.000	0.000	0.000	0.000	0.041
SW	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.002
WSW	0.000	0.000	0.003	0.002	0.000	0.000	0.000	0.000	0.000	0.005
W	0.000	0.000	0.004	0.006	0.005	0.000	0.000	0.000	0.000	0.015
WNW	0.000	0.003	0.001	0.005	0.003	0.007	0.000	0.000	0.000	0.020
NW	0.000	0.004	0.007	0.013	0.012	0.008	0.000	0.000	0.000	0.044
NNW	0.000	0.000	0.023	0.084	0.028	0.016	0.000	0.000	0.000	0.151
SUBTOTAL	0.000	0.027	0.411	0.457	0.260	0.075	0.010	0.000	0.000	1.239

TOTAL HOURS OF VALID OBSERVATIONS 2166.000
TOTAL HOURS OF GROUND LEVEL RELEASE 124.300
TOTAL HOURS OF STABILITY CLASS E 698.470
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS E 26.840

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/11/12

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA T<= 4.0 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	WIND SPEED(MPH) CALM	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	0.000	0.000	0.127	0.077	0.000	0.000	0.000	0.000	0.000	0.204
NNE	0.000	0.001	0.009	0.026	0.015	0.008	0.000	0.000	0.000	0.060
NE	0.000	0.007	0.017	0.028	0.000	0.000	0.000	0.000	0.000	0.052
ENE	0.000	0.000	0.025	0.049	0.000	0.000	0.000	0.000	0.000	0.074
E	0.000	0.000	0.082	0.064	0.000	0.000	0.000	0.000	0.000	0.146
ESE	0.000	0.000	0.010	0.006	0.000	0.000	0.000	0.000	0.000	0.017
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012
S	0.000	0.000	0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.013
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.002
NW	0.000	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.006
NNW	0.000	0.000	0.069	0.068	0.008	0.000	0.000	0.000	0.000	0.145
SUBTOTAL	0.000	0.020	0.361	0.318	0.023	0.008	0.000	0.000	0.000	0.730

TOTAL HOURS OF VALID OBSERVATIONS 2166.000
TOTAL HOURS OF GROUND LEVEL RELEASE 124.300
TOTAL HOURS OF STABILITY CLASS F 204.700
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS F 15.820

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/11/12

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.084	0.139	0.000	0.000	0.000	0.000	0.000	0.224
NNE	0.000	0.000	0.035	0.035	0.000	0.000	0.000	0.000	0.000	0.070
NE	0.000	0.000	0.025	0.000	0.000	0.000	0.000	0.000	0.000	0.025
ENE	0.000	0.000	0.015	0.026	0.000	0.000	0.000	0.000	0.000	0.041
E	0.000	0.000	0.011	0.008	0.000	0.000	0.000	0.000	0.000	0.018
ESE	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.005
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.020
SUBTOTAL	0.000	0.000	0.195	0.208	0.000	0.000	0.000	0.000	0.000	0.404

TOTAL HOURS OF VALID OBSERVATIONS 2166.000
TOTAL HOURS OF GROUND LEVEL RELEASE 124.300
TOTAL HOURS OF STABILITY CLASS G 36.950
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS G 8.740

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/11/12

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

METEORLOGICAL DATA TABLES

BROWNS FERRY NUCLEAR PLANT

JANUARY - DECEMBER 2003

TABLE 17

JOINT FREQUENCY DISTRIBUTION IN PERCENT

FOR SPLIT LEVEL RELEASES

(GROUND LEVEL PORTION)

FOURTH QUARTER

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.000	0.018	0.046	0.027	0.000	0.000	0.091
NNE	0.000	0.000	0.000	0.000	0.009	0.080	0.000	0.000	0.000	0.090
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.002
E	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.001
ESE	0.000	0.000	0.000	0.037	0.031	0.000	0.000	0.000	0.000	0.068
SE	0.000	0.000	0.017	0.152	0.041	0.000	0.000	0.000	0.000	0.210
SSE	0.000	0.000	0.022	0.114	0.000	0.000	0.000	0.000	0.000	0.135
S	0.000	0.000	0.010	0.131	0.025	0.000	0.000	0.000	0.000	0.167
SSW	0.000	0.000	0.005	0.010	0.000	0.000	0.000	0.000	0.000	0.015
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.008
W	0.000	0.000	0.000	0.000	0.011	0.000	0.000	0.000	0.000	0.011
WNW	0.000	0.000	0.000	0.000	0.003	0.008	0.049	0.000	0.000	0.061
NW	0.000	0.000	0.000	0.000	0.000	0.025	0.009	0.000	0.000	0.034
NNW	0.000	0.000	0.000	0.000	0.003	0.036	0.051	0.000	0.000	0.090
SUBTOTAL	0.000	0.000	0.053	0.453	0.144	0.196	0.136	0.000	0.000	0.982

TOTAL HOURS OF VALID OBSERVATIONS 2137.000
TOTAL HOURS OF GROUND LEVEL RELEASE 267.180
TOTAL HOURS OF STABILITY CLASS A 20.980
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS A 20.980

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2004/02/19

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA T<=-1.7 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	WIND SPEED(MPH) CALM	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	0.000	0.000	0.000	0.000	0.007	0.023	0.000	0.000	0.000	0.030
NNE	0.000	0.000	0.000	0.000	0.012	0.017	0.000	0.000	0.000	0.029
NE	0.000	0.000	0.000	0.000	0.004	0.006	0.000	0.000	0.000	0.009
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.011	0.000	0.000	0.000	0.000	0.000	0.011
SE	0.000	0.000	0.004	0.019	0.000	0.000	0.000	0.000	0.000	0.022
SSE	0.000	0.000	0.000	0.011	0.000	0.000	0.000	0.000	0.000	0.011
S	0.000	0.000	0.007	0.016	0.009	0.000	0.000	0.000	0.000	0.033
SSW	0.000	0.000	0.000	0.007	0.000	0.000	0.000	0.000	0.000	0.007
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.002	0.014	0.007	0.000	0.000	0.000	0.023
WNW	0.000	0.000	0.000	0.000	0.001	0.006	0.000	0.075	0.000	0.082
NW	0.000	0.000	0.000	0.000	0.004	0.013	0.038	0.000	0.000	0.055
NNW	0.000	0.000	0.000	0.000	0.004	0.016	0.000	0.000	0.000	0.020
SUBTOTAL	0.000	0.000	0.011	0.065	0.054	0.089	0.038	0.075	0.000	0.333

TOTAL HOURS OF VALID OBSERVATIONS 2137.000
TOTAL HOURS OF GROUND LEVEL RELEASE 267.180
TOTAL HOURS OF STABILITY CLASS B 8.020
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS B 7.110

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2004/02/19

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA T<=-1.5 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	WIND SPEED(MPH) CALM	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	0.000	0.000	0.000	0.000	0.027	0.016	0.000	0.000	0.000	0.043
NNE	0.000	0.000	0.000	0.002	0.018	0.000	0.000	0.000	0.000	0.020
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.007	0.005	0.000	0.000	0.000	0.000	0.012
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.047
SE	0.000	0.000	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.018
SSE	0.000	0.000	0.009	0.008	0.000	0.000	0.000	0.000	0.000	0.017
S	0.000	0.000	0.004	0.035	0.000	0.000	0.000	0.000	0.000	0.038
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.008
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.010	0.000	0.000	0.000	0.000	0.010
WNW	0.000	0.000	0.000	0.000	0.004	0.023	0.026	0.160	0.000	0.213
NW	0.000	0.000	0.000	0.001	0.003	0.005	0.044	0.047	0.000	0.100
NNW	0.000	0.000	0.000	0.000	0.007	0.008	0.000	0.000	0.000	0.016
SUBTOTAL	0.000	0.000	0.013	0.078	0.075	0.053	0.117	0.207	0.000	0.543

TOTAL HOURS OF VALID OBSERVATIONS 2137.000
TOTAL HOURS OF GROUND LEVEL RELEASE 267.180
TOTAL HOURS OF STABILITY CLASS C 20.480
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS C 11.610

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL

WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2004/02/19

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA T<=-0.5 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.016	0.081	0.109	0.000	0.000	0.000	0.206
NNE	0.000	0.000	0.002	0.043	0.115	0.040	0.000	0.000	0.000	0.200
NE	0.000	0.000	0.000	0.012	0.036	0.013	0.000	0.000	0.000	0.060
ENE	0.000	0.000	0.000	0.001	0.011	0.000	0.000	0.000	0.000	0.012
E	0.000	0.000	0.000	0.027	0.014	0.000	0.000	0.000	0.000	0.041
ESE	0.000	0.000	0.008	0.086	0.088	0.092	0.000	0.000	0.000	0.275
SE	0.000	0.000	0.016	0.119	0.143	0.059	0.000	0.000	0.000	0.338
SSE	0.000	0.000	0.102	0.165	0.009	0.000	0.000	0.000	0.000	0.276
S	0.000	0.001	0.057	0.137	0.071	0.000	0.000	0.000	0.000	0.266
SSW	0.000	0.002	0.012	0.039	0.009	0.000	0.000	0.000	0.000	0.062
SW	0.000	0.000	0.007	0.021	0.009	0.000	0.000	0.000	0.000	0.037
WSW	0.000	0.000	0.003	0.013	0.042	0.023	0.000	0.000	0.000	0.081
W	0.000	0.000	0.003	0.015	0.057	0.174	0.046	0.000	0.000	0.294
WNW	0.000	0.000	0.000	0.005	0.008	0.210	0.375	0.067	0.000	0.665
NW	0.000	0.000	0.000	0.004	0.002	0.232	0.522	0.348	0.000	1.108
NNW	0.000	0.000	0.000	0.031	0.086	0.179	0.020	0.000	0.000	0.316
SUBTOTAL	0.000	0.003	0.211	0.734	0.781	1.131	0.963	0.415	0.000	4.238

TOTAL HOURS OF VALID OBSERVATIONS 2137.000
TOTAL HOURS OF GROUND LEVEL RELEASE 267.180
TOTAL HOURS OF STABILITY CLASS D 981.150
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS D 90.570

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2004/02/19

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA T<= 1.5 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.033	0.098	0.016	0.000	0.000	0.000	0.000	0.147
NNE	0.000	0.000	0.003	0.051	0.083	0.000	0.000	0.000	0.000	0.137
NE	0.000	0.000	0.010	0.056	0.025	0.000	0.000	0.000	0.000	0.091
ENE	0.000	0.000	0.017	0.034	0.000	0.000	0.000	0.000	0.000	0.051
E	0.000	0.000	0.053	0.108	0.015	0.000	0.000	0.000	0.000	0.175
ESE	0.000	0.002	0.078	0.150	0.018	0.010	0.000	0.000	0.000	0.258
SE	0.000	0.005	0.143	0.214	0.049	0.010	0.000	0.000	0.000	0.421
SSE	0.000	0.000	0.238	0.412	0.269	0.000	0.000	0.000	0.000	0.919
S	0.000	0.018	0.258	0.266	0.104	0.518	0.000	0.000	0.000	1.165
SSW	0.000	0.003	0.026	0.007	0.019	0.000	0.000	0.000	0.000	0.054
SW	0.000	0.000	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.009
WSW	0.000	0.000	0.008	0.026	0.000	0.000	0.000	0.000	0.000	0.034
W	0.000	0.000	0.010	0.028	0.019	0.033	0.000	0.000	0.000	0.089
WNW	0.000	0.000	0.000	0.000	0.005	0.040	0.115	0.000	0.000	0.159
NW	0.000	0.000	0.004	0.027	0.093	0.060	0.051	0.000	0.000	0.235
NNW	0.000	0.000	0.007	0.050	0.022	0.023	0.000	0.000	0.000	0.103
SUBTOTAL	0.000	0.028	0.898	1.527	0.737	0.693	0.166	0.000	0.000	4.048

TOTAL HOURS OF VALID OBSERVATIONS 2137.000
TOTAL HOURS OF GROUND LEVEL RELEASE 267.180
TOTAL HOURS OF STABILITY CLASS E 793.120
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS E 86.510

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2004/02/19

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA T<= 4.0 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.005	0.047	0.073	0.008	0.000	0.000	0.000	0.000	0.134
NNE	0.000	0.005	0.022	0.071	0.008	0.000	0.000	0.000	0.000	0.105
NE	0.000	0.000	0.010	0.018	0.000	0.000	0.000	0.000	0.000	0.028
ENE	0.000	0.014	0.019	0.015	0.000	0.000	0.000	0.000	0.000	0.047
E	0.000	0.018	0.059	0.007	0.000	0.000	0.000	0.000	0.000	0.084
ESE	0.000	0.002	0.094	0.085	0.000	0.000	0.000	0.000	0.000	0.181
SE	0.000	0.015	0.089	0.044	0.094	0.000	0.000	0.000	0.000	0.243
SSE	0.000	0.026	0.232	0.195	0.000	0.000	0.000	0.000	0.000	0.453
S	0.000	0.009	0.067	0.025	0.082	0.035	0.000	0.000	0.000	0.219
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.003	0.000	0.000	0.009	0.000	0.000	0.000	0.012
WNW	0.000	0.000	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.007
NW	0.000	0.000	0.013	0.012	0.007	0.000	0.000	0.000	0.000	0.032
NNW	0.000	0.000	0.041	0.063	0.024	0.000	0.000	0.000	0.000	0.128
SUBTOTAL	0.000	0.094	0.701	0.608	0.224	0.044	0.000	0.000	0.000	1.671

TOTAL HOURS OF VALID OBSERVATIONS 2137.000
TOTAL HOURS OF GROUND LEVEL RELEASE 267.180
TOTAL HOURS OF STABILITY CLASS F 239.430
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS F 35.710

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2004/02/19

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

Browns Ferry Nuclear Plant

PART 1 OF 2 GROUND LEVEL RELEASE MODE

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	0.6-1.4	1.5-3.4	WIND SPEED(MPH) 3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.000	0.000	0.078	0.047	0.008	0.000	0.000	0.000	0.000	0.133
NNE	0.000	0.005	0.009	0.007	0.000	0.000	0.000	0.000	0.000	0.021
NE	0.000	0.007	0.012	0.003	0.000	0.000	0.000	0.000	0.000	0.022
ENE	0.000	0.007	0.036	0.000	0.000	0.000	0.000	0.000	0.000	0.043
E	0.000	0.006	0.034	0.012	0.000	0.000	0.000	0.000	0.000	0.051
ESE	0.000	0.000	0.028	0.000	0.000	0.000	0.000	0.000	0.000	0.028
SE	0.000	0.021	0.042	0.019	0.000	0.000	0.000	0.000	0.000	0.082
SSE	0.000	0.029	0.131	0.019	0.000	0.000	0.000	0.000	0.000	0.180
S	0.000	0.009	0.054	0.000	0.000	0.000	0.000	0.000	0.000	0.063
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.001	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.004
NNW	0.000	0.000	0.031	0.028	0.000	0.000	0.000	0.000	0.000	0.059
SUBTOTAL	0.000	0.086	0.458	0.135	0.008	0.000	0.000	0.000	0.000	0.687

TOTAL HOURS OF VALID OBSERVATIONS 2137.000
TOTAL HOURS OF GROUND LEVEL RELEASE 267.180
TOTAL HOURS OF STABILITY CLASS G 73.820
TOTAL HOURS OF GROUND LEVEL STABILITY CLASS G 14.690

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 10.03 AND 45.30 METERS
WIND DIRECTION MEASURED AT 10.50 METER LEVEL
WIND SPEED MEASURED AT 10.50 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2004/02/19

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

METEORLOGICAL DATA TABLES

BROWNS FERRY NUCLEAR PLANT

JANUARY - DECEMBER 2003

TABLE 18

JOINT FREQUENCY DISTRIBUTION IN PERCENT

FOR SPLIT LEVEL RELEASES

(ELEVATED PORTION)

FIRST QUARTER

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

TOTAL HOURS OF VALID OBSERVATIONS 2111.000
TOTAL HOURS OF ELEVATED RELEASES 1861.150
TOTAL HOURS OF STABILITY CLASS A 12.560
TOTAL HOURS OF ELEVATED STABILITY CLASS A 0.000

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/05/20

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA T<=-1.7 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	0.6-1.4	1.5-3.4	WIND SPEED(MPH) 3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.040	0.039	0.000	0.000	0.079
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.000	0.000	0.040	0.039	0.000	0.000	0.079

TOTAL HOURS OF VALID OBSERVATIONS 2111.000
TOTAL HOURS OF ELEVATED RELEASES 1861.150
TOTAL HOURS OF STABILITY CLASS B 11.500

TOTAL HOURS OF ELEVATED STABILITY CLASS B 1.660

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/05/20

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA T<=-1.5 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	0.6-1.4	1.5-3.4	WIND SPEED(MPH) 3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.000	0.000	0.000	0.000	0.000	0.040	0.000	0.000	0.000	0.040
NNE	0.000	0.000	0.000	0.047	0.000	0.081	0.079	0.000	0.000	0.207
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.042	0.000	0.000	0.000	0.042
W	0.000	0.000	0.000	0.000	0.045	0.000	0.000	0.000	0.000	0.045
WNW	0.000	0.000	0.000	0.047	0.000	0.082	0.154	0.000	0.000	0.284
NW	0.000	0.000	0.000	0.000	0.000	0.041	0.000	0.000	0.000	0.041
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.037	0.000	0.000	0.037
SUBTOTAL	0.000	0.000	0.000	0.095	0.045	0.287	0.270	0.000	0.000	0.696

TOTAL HOURS OF VALID OBSERVATIONS 2111.000
TOTAL HOURS OF ELEVATED RELEASES 1861.150
TOTAL HOURS OF STABILITY CLASS C 23.220
TOTAL HOURS OF ELEVATED STABILITY CLASS C 14.700

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/05/20

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA T<=-0.5 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	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	0.000	0.047	0.189	0.095	0.549	1.847	1.820	0.327	0.000	4.873
NNE	0.000	0.000	0.237	0.521	0.736	2.431	0.970	0.035	0.000	4.929
NE	0.000	0.000	0.237	0.284	0.781	1.095	0.039	0.000	0.000	2.436
ENE	0.000	0.000	0.095	0.284	0.634	0.170	0.000	0.000	0.000	1.183
E	0.000	0.047	0.095	0.284	0.412	0.385	0.000	0.000	0.000	1.223
ESE	0.000	0.000	0.095	0.568	0.690	1.462	0.346	0.032	0.000	3.193
SE	0.000	0.000	0.189	0.474	0.322	1.448	0.581	0.145	0.000	3.159
SSE	0.000	0.000	0.474	0.379	0.274	0.492	0.688	0.195	0.000	2.502
S	0.000	0.000	0.332	0.284	0.321	0.869	1.117	0.183	0.004	3.110
SSW	0.000	0.047	0.426	0.095	0.415	0.915	1.459	0.111	0.000	3.468
SW	0.000	0.000	0.379	0.521	0.324	0.497	0.234	0.084	0.000	2.039
WSW	0.000	0.000	0.237	0.521	0.727	1.052	0.116	0.037	0.000	2.689
W	0.000	0.000	0.284	0.379	0.953	1.878	0.504	0.029	0.000	4.027
WNW	0.000	0.000	0.047	0.379	0.728	1.331	1.229	0.573	0.000	4.288
NW	0.000	0.047	0.189	0.474	0.094	1.640	3.008	0.514	0.011	5.978
NNW	0.000	0.000	0.284	0.332	0.407	2.063	2.076	0.460	0.000	5.622
SUBTOTAL	0.000	0.189	3.790	5.874	8.365	19.571	14.186	2.727	0.016	54.718

TOTAL HOURS OF VALID OBSERVATIONS 2111.000
TOTAL HOURS OF ELEVATED RELEASES 1861.150
TOTAL HOURS OF STABILITY CLASS D 1261.220
TOTAL HOURS OF ELEVATED STABILITY CLASS D 1155.090

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/05/20

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA T<= 1.5 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.189	0.379	0.317	0.750	0.038	0.000	0.000	1.675
NNE	0.000	0.047	0.142	0.332	0.497	0.787	0.117	0.000	0.000	1.923
NE	0.000	0.000	0.047	0.284	0.462	0.680	0.000	0.000	0.000	1.473
ENE	0.000	0.000	0.095	0.284	0.365	0.210	0.000	0.000	0.000	0.954
E	0.000	0.000	0.047	0.189	0.319	0.293	0.000	0.000	0.000	0.849
ESE	0.000	0.047	0.047	0.474	0.091	1.208	0.309	0.071	0.000	2.247
SE	0.000	0.047	0.095	0.189	0.317	1.082	0.500	0.219	0.013	2.463
SSE	0.000	0.000	0.332	0.237	0.273	0.547	0.458	0.035	0.000	1.881
S	0.000	0.047	0.095	0.284	0.274	1.030	1.126	0.132	0.000	2.987
SSW	0.000	0.000	0.000	0.332	0.365	0.711	0.347	0.132	0.008	1.894
SW	0.000	0.000	0.095	0.426	0.411	1.044	0.274	0.034	0.000	2.283
WSW	0.000	0.000	0.189	0.521	0.461	0.342	0.000	0.000	0.000	1.513
W	0.000	0.000	0.047	0.426	0.638	0.384	0.000	0.000	0.000	1.495
WNW	0.000	0.000	0.095	0.047	0.368	0.169	0.039	0.000	0.000	0.719
NW	0.000	0.000	0.142	0.237	0.228	0.543	0.467	0.028	0.000	1.646
NNW	0.000	0.000	0.047	0.237	0.415	1.443	0.196	0.000	0.000	2.339
SUBTOTAL	0.000	0.189	1.705	4.879	5.802	11.224	3.872	0.650	0.020	28.341

TOTAL HOURS OF VALID OBSERVATIONS 2111.000
TOTAL HOURS OF ELEVATED RELEASES 1861.150
TOTAL HOURS OF STABILITY CLASS E 666.330
TOTAL HOURS OF ELEVATED STABILITY CLASS E 598.280

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/05/20

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA T<= 4.0 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.047	0.000	0.000	0.167	0.000	0.000	0.000	0.214
NNE	0.000	0.000	0.000	0.000	0.091	0.122	0.000	0.000	0.000	0.213
NE	0.000	0.000	0.000	0.000	0.000	0.121	0.000	0.000	0.000	0.121
ENE	0.000	0.000	0.000	0.000	0.090	0.040	0.000	0.000	0.000	0.129
E	0.000	0.000	0.000	0.047	0.044	0.165	0.000	0.000	0.000	0.257
ESE	0.000	0.000	0.000	0.000	0.228	0.042	0.000	0.000	0.000	0.270
SE	0.000	0.000	0.047	0.142	0.089	0.125	0.038	0.000	0.000	0.441
SSE	0.000	0.000	0.095	0.095	0.093	0.085	0.038	0.000	0.000	0.406
S	0.000	0.000	0.047	0.047	0.089	0.369	0.039	0.000	0.000	0.592
SSW	0.000	0.000	0.047	0.000	0.000	0.170	0.000	0.036	0.000	0.253
SW	0.000	0.000	0.000	0.000	0.000	0.044	0.000	0.000	0.000	0.044
WSW	0.000	0.000	0.000	0.047	0.047	0.000	0.000	0.000	0.000	0.095
W	0.000	0.000	0.000	0.000	0.090	0.000	0.000	0.000	0.000	0.090
WNW	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.047
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.095	0.045	0.000	0.000	0.000	0.000	0.139
SUBTOTAL	0.000	0.000	0.332	0.474	0.905	1.450	0.116	0.036	0.000	3.312

TOTAL HOURS OF VALID OBSERVATIONS 2111.000
TOTAL HOURS OF ELEVATED RELEASES 1861.150
TOTAL HOURS OF STABILITY CLASS F 102.460
TOTAL HOURS OF ELEVATED STABILITY CLASS F 69.910

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/05/20

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	WIND SPEED(MPH) CALM	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.041	0.000	0.000	0.000	0.041
E	0.000	0.000	0.000	0.000	0.000	0.084	0.000	0.000	0.000	0.084
ESE	0.000	0.000	0.000	0.000	0.045	0.127	0.000	0.000	0.000	0.172
SE	0.000	0.000	0.095	0.000	0.139	0.251	0.000	0.000	0.000	0.485
SSE	0.000	0.000	0.095	0.047	0.000	0.000	0.000	0.000	0.000	0.142
S	0.000	0.000	0.047	0.047	0.000	0.000	0.000	0.000	0.000	0.095
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.237	0.095	0.185	0.503	0.000	0.000	0.000	1.019

TOTAL HOURS OF VALID OBSERVATIONS 2111.000
TOTAL HOURS OF ELEVATED RELEASES 1861.150
TOTAL HOURS OF STABILITY CLASS G 33.710
TOTAL HOURS OF ELEVATED STABILITY CLASS G 21.510

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/05/20

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

METEORLOGICAL DATA TABLES

BROWNS FERRY NUCLEAR PLANT

JANUARY - DECEMBER 2003

TABLE 19

JOINT FREQUENCY DISTRIBUTION IN PERCENT

FOR SPLIT LEVEL RELEASES

(ELEVATED LEVEL PORTION)

SECOND QUARTER

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

TOTAL HOURS OF VALID OBSERVATIONS 2008.000
TOTAL HOURS OF ELEVATED RELEASES 1795.830
TOTAL HOURS OF STABILITY CLASS A 21.920
TOTAL HOURS OF ELEVATED STABILITY CLASS A 0.000

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/08/11

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA T<=-1.7 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

TOTAL HOURS OF VALID OBSERVATIONS 2008.000
TOTAL HOURS OF ELEVATED RELEASES 1795.830
TOTAL HOURS OF STABILITY CLASS B 8.920

TOTAL HOURS OF ELEVATED STABILITY CLASS B 0.000

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/08/11

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA T<=-1.5 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.041	0.000	0.000	0.041
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.050	0.048	0.000	0.000	0.000	0.000	0.098
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.090	0.000	0.000	0.000	0.090
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.040	0.034	0.000	0.074
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.090	0.000	0.090
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.050	0.048	0.090	0.081	0.124	0.000	0.392

TOTAL HOURS OF VALID OBSERVATIONS 2008.000
TOTAL HOURS OF ELEVATED RELEASES 1795.830
TOTAL HOURS OF STABILITY CLASS C 18.100
TOTAL HOURS OF ELEVATED STABILITY CLASS C 7.880

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/08/11

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA T<=-0.5 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.050	0.249	0.720	1.837	0.530	0.000	0.000	3.385
NNE	0.000	0.000	0.100	0.299	0.670	1.534	0.288	0.000	0.000	2.891
NE	0.000	0.000	0.199	0.398	0.291	0.484	0.000	0.000	0.000	1.373
ENE	0.000	0.000	0.100	0.398	0.241	0.133	0.000	0.000	0.000	0.872
E	0.000	0.000	0.050	0.199	0.289	0.045	0.000	0.000	0.000	0.584
ESE	0.000	0.000	0.199	0.448	0.191	1.123	0.368	0.030	0.000	2.359
SE	0.000	0.050	0.498	0.797	0.954	1.167	1.287	0.397	0.008	5.158
SSE	0.000	0.000	0.647	1.046	0.491	1.485	1.137	0.051	0.000	4.857
S	0.000	0.050	0.548	0.847	0.765	1.873	1.778	0.247	0.021	6.128
SSW	0.000	0.050	0.199	0.847	0.761	2.506	1.785	0.247	0.000	6.395
SW	0.000	0.050	0.896	0.747	0.673	0.774	0.204	0.000	0.000	3.344
WSW	0.000	0.050	0.448	0.548	0.335	0.305	0.082	0.000	0.000	1.767
W	0.000	0.000	0.398	0.349	0.386	0.692	0.410	0.039	0.000	2.274
WNW	0.000	0.000	0.100	0.398	0.377	0.995	0.903	0.000	0.000	2.773
NW	0.000	0.000	0.050	0.448	0.479	1.878	1.174	0.102	0.009	4.141
NNW	0.000	0.000	0.100	0.199	0.380	2.040	1.741	0.058	0.000	4.518
SUBTOTAL	0.000	0.249	4.582	8.217	8.003	18.872	11.687	1.172	0.038	52.819

TOTAL HOURS OF VALID OBSERVATIONS 2008.000
TOTAL HOURS OF ELEVATED RELEASES 1795.830
TOTAL HOURS OF STABILITY CLASS D 1134.320
TOTAL HOURS OF ELEVATED STABILITY CLASS D 1060.610

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/08/11

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA T<= 1.5 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	WIND SPEED(MPH) CALM	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	0.000	0.000	0.199	0.299	0.712	0.530	0.000	0.000	0.000	1.740
NNE	0.000	0.000	0.448	0.050	0.670	0.836	0.000	0.000	0.000	2.004
NE	0.000	0.000	0.100	0.199	0.241	0.784	0.165	0.000	0.000	1.489
ENE	0.000	0.000	0.050	0.249	0.294	0.317	0.000	0.000	0.000	0.909
E	0.000	0.000	0.100	0.349	0.335	0.132	0.000	0.000	0.000	0.916
ESE	0.000	0.000	0.050	0.548	0.527	0.789	0.041	0.000	0.000	1.956
SE	0.000	0.000	0.349	0.896	1.291	1.306	0.200	0.098	0.000	4.141
SSE	0.000	0.000	0.299	0.448	0.528	0.773	0.568	0.057	0.000	2.674
S	0.000	0.050	0.199	0.548	0.436	1.383	1.505	0.098	0.025	4.244
SSW	0.000	0.000	0.050	0.100	0.194	0.951	0.690	0.000	0.000	1.985
SW	0.000	0.000	0.199	0.199	0.478	0.441	0.000	0.000	0.000	1.318
WSW	0.000	0.000	0.100	0.299	0.143	0.045	0.000	0.000	0.000	0.587
W	0.000	0.000	0.000	0.100	0.143	0.088	0.000	0.000	0.000	0.330
WNW	0.000	0.050	0.050	0.050	0.242	0.175	0.041	0.000	0.000	0.608
NW	0.000	0.000	0.100	0.100	0.336	0.218	0.165	0.000	0.000	0.918
NNW	0.000	0.000	0.100	0.149	0.237	0.603	0.205	0.000	0.000	1.293
SUBTOTAL	0.000	0.100	2.390	4.582	6.808	9.372	3.581	0.253	0.025	27.110

TOTAL HOURS OF VALID OBSERVATIONS 2008.000
TOTAL HOURS OF ELEVATED RELEASES 1795.830
TOTAL HOURS OF STABILITY CLASS E 611.550
TOTAL HOURS OF ELEVATED STABILITY CLASS E 544.370

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/08/11

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA T<= 4.0 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	0.6-1.4	1.5-3.4	WIND SPEED(MPH) 3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.000	0.000	0.100	0.000	0.144	0.478	0.000	0.000	0.000	0.722
NNE	0.000	0.000	0.000	0.000	0.189	0.735	0.083	0.000	0.000	1.006
NE	0.000	0.000	0.000	0.000	0.236	0.656	0.000	0.000	0.000	0.892
ENE	0.000	0.000	0.000	0.149	0.338	0.000	0.082	0.000	0.000	0.569
E	0.000	0.000	0.000	0.149	0.145	0.179	0.040	0.000	0.000	0.514
ESE	0.000	0.050	0.000	0.199	0.197	0.438	0.000	0.000	0.000	0.884
SE	0.000	0.000	0.000	0.199	0.049	0.219	0.000	0.000	0.000	0.467
SSE	0.000	0.000	0.000	0.050	0.095	0.091	0.000	0.000	0.000	0.236
S	0.000	0.000	0.050	0.000	0.144	0.000	0.041	0.000	0.000	0.235
SSW	0.000	0.000	0.000	0.100	0.099	0.091	0.000	0.000	0.000	0.289
SW	0.000	0.000	0.000	0.100	0.000	0.000	0.000	0.000	0.000	0.100
WSW	0.000	0.000	0.050	0.050	0.000	0.000	0.000	0.000	0.000	0.100
W	0.000	0.100	0.050	0.249	0.048	0.000	0.000	0.000	0.000	0.447
WNW	0.000	0.050	0.000	0.050	0.098	0.000	0.000	0.000	0.000	0.198
NW	0.000	0.000	0.050	0.050	0.237	0.092	0.041	0.000	0.000	0.470
NNW	0.000	0.000	0.000	0.050	0.000	0.222	0.000	0.000	0.000	0.271
SUBTOTAL	0.000	0.199	0.299	1.394	2.018	3.200	0.287	0.000	0.000	7.398

TOTAL HOURS OF VALID OBSERVATIONS 2008.000
TOTAL HOURS OF ELEVATED RELEASES 1795.830
TOTAL HOURS OF STABILITY CLASS F 168.590
TOTAL HOURS OF ELEVATED STABILITY CLASS F 148.550

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/08/11

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.000	0.049	0.132	0.000	0.000	0.000	0.181
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.175	0.041	0.000	0.000	0.216
ENE	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.047
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.100	0.194	0.043	0.000	0.000	0.000	0.337
SE	0.000	0.000	0.000	0.199	0.146	0.000	0.000	0.000	0.000	0.345
SSE	0.000	0.000	0.000	0.000	0.097	0.000	0.000	0.000	0.000	0.097
S	0.000	0.000	0.050	0.050	0.047	0.000	0.000	0.000	0.000	0.147
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.050	0.000	0.000	0.000	0.000	0.050
WNW	0.000	0.000	0.000	0.149	0.000	0.000	0.000	0.000	0.000	0.149
NW	0.000	0.000	0.100	0.000	0.000	0.045	0.000	0.000	0.000	0.145
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.149	0.498	0.630	0.395	0.041	0.000	0.000	1.714

TOTAL HOURS OF VALID OBSERVATIONS 2008.000
TOTAL HOURS OF ELEVATED RELEASES 1795.830
TOTAL HOURS OF STABILITY CLASS G 44.600
TOTAL HOURS OF ELEVATED STABILITY CLASS G 34.420

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/08/11

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

METEORLOGICAL DATA TABLES

BROWNS FERRY NUCLEAR PLANT

JANUARY - DECEMBER 2003

TABLE 20

JOINT FREQUENCY DISTRIBUTION IN PERCENT

FOR SPLIT LEVEL RELEASES

(ELEVATED LEVEL PORTION)

THIRD QUARTER

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

TOTAL HOURS OF VALID OBSERVATIONS 2166.000
TOTAL HOURS OF ELEVATED RELEASES 2041.700
TOTAL HOURS OF STABILITY CLASS A 21.840
TOTAL HOURS OF ELEVATED STABILITY CLASS A 0.000

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/11/12

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA T<=-1.7 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.046
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.046

TOTAL HOURS OF VALID OBSERVATIONS 2166.000
TOTAL HOURS OF ELEVATED RELEASES 2041.700
TOTAL HOURS OF STABILITY CLASS B 6.960

TOTAL HOURS OF ELEVATED STABILITY CLASS B 0.990

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/11/12

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA T<=-1.5 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.046
SW	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
WSW	0.000	0.000	0.000	0.092	0.044	0.041	0.000	0.000	0.000	0.177
W	0.000	0.000	0.000	0.046	0.090	0.040	0.000	0.000	0.000	0.176
WNW	0.000	0.000	0.000	0.000	0.043	0.040	0.000	0.000	0.000	0.083
NW	0.000	0.000	0.000	0.000	0.043	0.000	0.000	0.000	0.000	0.043
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.046	0.185	0.220	0.120	0.000	0.000	0.000	0.572

TOTAL HOURS OF VALID OBSERVATIONS 2166.000
TOTAL HOURS OF ELEVATED RELEASES 2041.700
TOTAL HOURS OF STABILITY CLASS C 19.830
TOTAL HOURS OF ELEVATED STABILITY CLASS C 12.380

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/11/12

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA T<=-0.5 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.185	0.323	0.489	1.380	0.266	0.000	0.000	2.643
NNE	0.000	0.000	0.092	0.462	0.490	0.478	0.075	0.000	0.000	1.598
NE	0.000	0.046	0.139	0.323	0.000	0.158	0.075	0.036	0.000	0.777
ENE	0.000	0.000	0.046	0.139	0.182	0.164	0.112	0.000	0.000	0.643
E	0.000	0.000	0.046	0.092	0.087	0.079	0.152	0.000	0.000	0.457
ESE	0.000	0.046	0.277	0.323	0.536	0.489	0.190	0.000	0.000	1.861
SE	0.000	0.000	0.646	1.570	1.060	1.270	0.413	0.000	0.000	4.959
SSE	0.000	0.046	0.785	1.016	0.625	1.751	0.228	0.000	0.000	4.451
S	0.000	0.000	0.508	1.847	1.150	2.639	0.190	0.000	0.000	6.333
SSW	0.000	0.000	0.693	1.939	1.209	1.571	0.077	0.000	0.000	5.488
SW	0.000	0.046	0.600	1.616	0.811	0.324	0.000	0.000	0.000	3.397
WSW	0.000	0.000	0.785	2.031	1.509	0.499	0.038	0.000	0.000	4.862
W	0.000	0.000	0.323	1.016	1.651	0.876	0.000	0.000	0.000	3.866
WNW	0.000	0.000	0.000	0.508	1.297	1.720	0.151	0.034	0.000	3.710
NW	0.000	0.046	0.139	0.462	1.112	2.186	0.562	0.027	0.000	4.533
NNW	0.000	0.000	0.323	0.554	0.707	1.262	0.188	0.000	0.000	3.035
SUBTOTAL	0.000	0.231	5.586	14.220	12.916	16.847	2.717	0.097	0.000	52.614

TOTAL HOURS OF VALID OBSERVATIONS 2166.000
TOTAL HOURS OF ELEVATED RELEASES 2041.700
TOTAL HOURS OF STABILITY CLASS D 1177.250
TOTAL HOURS OF ELEVATED STABILITY CLASS D 1139.610

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/11/12

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA T<= 1.5 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	WIND SPEED(MPH) CALM	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	0.000	0.000	0.231	0.462	0.536	0.696	0.191	0.000	0.000	2.115
NNE	0.000	0.000	0.139	0.277	0.449	0.931	0.415	0.000	0.000	2.211
NE	0.000	0.000	0.231	0.277	0.220	0.601	0.038	0.000	0.000	1.367
ENE	0.000	0.000	0.231	0.185	0.223	0.283	0.000	0.000	0.000	0.922
E	0.000	0.000	0.231	0.323	0.352	0.411	0.038	0.000	0.000	1.355
ESE	0.000	0.000	0.277	0.508	0.490	0.702	0.000	0.000	0.000	1.977
SE	0.000	0.000	0.277	0.323	0.621	0.952	0.000	0.000	0.000	2.173
SSE	0.000	0.000	0.554	0.831	0.583	0.416	0.076	0.000	0.000	2.460
S	0.000	0.000	0.554	0.508	0.265	0.687	0.341	0.000	0.000	2.356
SSW	0.000	0.092	0.508	0.785	0.723	0.367	0.000	0.000	0.000	2.475
SW	0.000	0.046	0.877	1.016	0.401	0.041	0.000	0.000	0.000	2.380
WSW	0.000	0.000	0.554	1.154	0.182	0.041	0.000	0.000	0.000	1.931
W	0.000	0.000	0.416	0.554	0.630	0.205	0.000	0.000	0.000	1.805
WNW	0.000	0.000	0.277	0.508	0.444	0.082	0.000	0.000	0.000	1.311
NW	0.000	0.046	0.092	0.369	0.445	0.572	0.038	0.000	0.000	1.564
NNW	0.000	0.000	0.416	0.369	0.355	1.353	0.114	0.000	0.000	2.607
SUBTOTAL	0.000	0.185	5.863	8.449	6.919	8.340	1.252	0.000	0.000	31.008

TOTAL HOURS OF VALID OBSERVATIONS 2166.000
TOTAL HOURS OF ELEVATED RELEASES 2041.700
TOTAL HOURS OF STABILITY CLASS E 698.470
TOTAL HOURS OF ELEVATED STABILITY CLASS E 671.630

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/11/12

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA T<= 4.0 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.046	0.277	0.358	0.971	0.000	0.000	0.000	1.652
NNE	0.000	0.000	0.046	0.000	0.176	0.562	0.000	0.000	0.000	0.784
NE	0.000	0.000	0.000	0.369	0.219	0.492	0.038	0.000	0.000	1.119
ENE	0.000	0.000	0.046	0.092	0.351	0.332	0.000	0.000	0.000	0.822
E	0.000	0.000	0.046	0.139	0.264	0.783	0.000	0.000	0.000	1.231
ESE	0.000	0.000	0.139	0.000	0.043	0.454	0.000	0.000	0.000	0.635
SE	0.000	0.000	0.046	0.092	0.224	0.127	0.000	0.000	0.000	0.490
SSE	0.000	0.000	0.046	0.092	0.000	0.000	0.000	0.000	0.000	0.139
S	0.000	0.000	0.092	0.046	0.000	0.000	0.000	0.000	0.000	0.139
SSW	0.000	0.000	0.092	0.046	0.000	0.000	0.000	0.000	0.000	0.139
SW	0.000	0.046	0.185	0.046	0.045	0.000	0.000	0.000	0.000	0.322
WSW	0.000	0.000	0.046	0.185	0.046	0.000	0.000	0.000	0.000	0.277
W	0.000	0.000	0.092	0.092	0.045	0.000	0.000	0.000	0.000	0.229
WNW	0.000	0.000	0.092	0.046	0.000	0.000	0.000	0.000	0.000	0.139
NW	0.000	0.000	0.046	0.000	0.045	0.000	0.000	0.000	0.000	0.091
NNW	0.000	0.000	0.000	0.000	0.306	0.208	0.000	0.000	0.000	0.513
SUBTOTAL	0.000	0.046	1.062	1.524	2.121	3.929	0.038	0.000	0.000	8.720

TOTAL HOURS OF VALID OBSERVATIONS 2166.000
TOTAL HOURS OF ELEVATED RELEASES 2041.700
TOTAL HOURS OF STABILITY CLASS F 204.700
TOTAL HOURS OF ELEVATED STABILITY CLASS F 188.880

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/11/12

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.000	0.044	0.205	0.000	0.000	0.000	0.249
NNE	0.000	0.000	0.000	0.000	0.000	0.275	0.191	0.000	0.000	0.466
NE	0.000	0.000	0.000	0.000	0.046	0.324	0.000	0.000	0.000	0.370
ENE	0.000	0.000	0.000	0.000	0.088	0.082	0.000	0.000	0.000	0.170
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.046	0.178	0.887	0.191	0.000	0.000	1.302

TOTAL HOURS OF VALID OBSERVATIONS 2166.000
TOTAL HOURS OF ELEVATED RELEASES 2041.700
TOTAL HOURS OF STABILITY CLASS G 36.950
TOTAL HOURS OF ELEVATED STABILITY CLASS G 28.210

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2003/11/12

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

METEORLOGICAL DATA TABLES

BROWNS FERRY NUCLEAR PLANT

JANUARY - DECEMBER 2003

TABLE 21

JOINT FREQUENCY DISTRIBUTION IN PERCENT

FOR SPLIT LEVEL RELEASES

(ELEVATED LEVEL PORTION)

FOURTH QUARTER

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	0.6-1.4	1.5-3.4	WIND SPEED(MPH) 3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

TOTAL HOURS OF VALID OBSERVATIONS 2137.000
TOTAL HOURS OF ELEVATED RELEASES 1869.820
TOTAL HOURS OF STABILITY CLASS A 20.980
TOTAL HOURS OF ELEVATED STABILITY CLASS A 0.000

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2004/02/19

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA T<=-1.7 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	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
	WIND SPEED(MPH)									
N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.043	0.000	0.000	0.000	0.043
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.000	0.000	0.043	0.000	0.000	0.000	0.043

TOTAL HOURS OF VALID OBSERVATIONS 2137.000
TOTAL HOURS OF ELEVATED RELEASES 1869.820
TOTAL HOURS OF STABILITY CLASS B 8.020

TOTAL HOURS OF ELEVATED STABILITY CLASS B 0.910

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2004/02/19

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA T<=-1.5 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.000	0.000	0.000	0.039	0.000	0.000	0.039
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.039	0.000	0.000	0.000	0.039
SSW	0.000	0.000	0.000	0.094	0.000	0.044	0.000	0.000	0.000	0.137
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.124	0.039	0.000	0.000	0.162
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.037	0.000	0.000	0.037
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.094	0.000	0.206	0.115	0.000	0.000	0.415

TOTAL HOURS OF VALID OBSERVATIONS 2137.000
TOTAL HOURS OF ELEVATED RELEASES 1869.820
TOTAL HOURS OF STABILITY CLASS C 20.480
TOTAL HOURS OF ELEVATED STABILITY CLASS C 8.870

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2004/02/19

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA T<=-0.5 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	0.6-1.4	1.5-3.4	WIND SPEED(MPH) 3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.000	0.000	0.047	0.281	0.272	1.620	0.807	0.020	0.000	3.048
NNE	0.000	0.000	0.094	0.328	0.622	1.816	0.496	0.000	0.000	3.356
NE	0.000	0.000	0.234	0.328	0.226	0.542	0.000	0.000	0.000	1.329
ENE	0.000	0.000	0.047	0.281	0.046	0.084	0.000	0.000	0.000	0.458
E	0.000	0.000	0.047	0.374	0.184	0.165	0.000	0.000	0.000	0.770
ESE	0.000	0.000	0.047	0.281	0.268	0.666	0.190	0.031	0.000	1.483
SE	0.000	0.000	0.655	1.170	0.913	1.520	1.479	0.181	0.040	5.958
SSE	0.000	0.047	0.468	0.374	0.356	1.386	1.337	0.227	0.042	4.237
S	0.000	0.000	0.328	0.374	0.407	1.665	1.602	0.275	0.018	4.669
SSW	0.000	0.000	0.281	0.374	0.267	0.780	0.416	0.013	0.000	2.132
SW	0.000	0.047	0.281	0.374	0.044	0.246	0.231	0.033	0.000	1.255
WSW	0.000	0.000	0.328	0.421	0.044	0.335	0.113	0.000	0.000	1.241
W	0.000	0.000	0.281	0.281	0.223	0.982	0.569	0.066	0.000	2.402
WNW	0.000	0.000	0.047	0.281	0.182	0.611	1.482	0.715	0.041	3.359
NW	0.000	0.000	0.094	0.187	0.180	0.364	1.818	0.651	0.048	3.341
NNW	0.000	0.000	0.000	0.047	0.490	1.230	0.761	0.109	0.000	2.636
SUBTOTAL	0.000	0.094	3.276	5.756	4.726	14.012	11.303	2.321	0.188	41.674

TOTAL HOURS OF VALID OBSERVATIONS 2137.000
TOTAL HOURS OF ELEVATED RELEASES 1869.820
TOTAL HOURS OF STABILITY CLASS D 981.150
TOTAL HOURS OF ELEVATED STABILITY CLASS D 890.580

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2004/02/19

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA T<= 1.5 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.140	0.281	0.406	1.278	0.154	0.000	0.000	2.259
NNE	0.000	0.000	0.094	0.421	0.493	0.950	0.078	0.000	0.000	2.036
NE	0.000	0.000	0.047	0.468	0.182	0.538	0.000	0.000	0.000	1.234
ENE	0.000	0.000	0.234	0.234	0.269	0.165	0.000	0.000	0.000	0.902
E	0.000	0.047	0.374	0.328	0.498	0.495	0.000	0.000	0.000	1.742
ESE	0.000	0.000	0.187	0.328	0.583	1.407	0.038	0.031	0.000	2.574
SE	0.000	0.047	0.140	0.842	0.857	1.354	1.370	0.171	0.016	4.798
SSE	0.000	0.000	0.608	0.796	0.493	1.512	1.945	0.479	0.006	5.838
S	0.000	0.000	0.281	0.281	0.352	1.385	0.917	0.030	0.010	3.256
SSW	0.000	0.094	0.187	0.421	0.404	0.533	0.188	0.000	0.000	1.827
SW	0.000	0.000	0.374	0.328	0.404	0.203	0.039	0.000	0.000	1.348
WSW	0.000	0.000	0.140	0.328	0.184	0.086	0.000	0.000	0.000	0.738
W	0.000	0.000	0.094	0.328	0.137	0.210	0.000	0.000	0.000	0.768
WNW	0.000	0.000	0.094	0.140	0.091	0.326	0.037	0.000	0.000	0.687
NW	0.000	0.047	0.000	0.281	0.047	0.933	0.152	0.000	0.000	1.459
NNW	0.000	0.000	0.094	0.047	0.448	0.821	0.189	0.000	0.000	1.599
SUBTOTAL	0.000	0.234	3.088	5.849	5.849	12.196	5.106	0.711	0.032	33.066

TOTAL HOURS OF VALID OBSERVATIONS 2137.000
TOTAL HOURS OF ELEVATED RELEASES 1869.820
TOTAL HOURS OF STABILITY CLASS E 793.120
TOTAL HOURS OF ELEVATED STABILITY CLASS E 706.610

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2004/02/19

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA T<= 4.0 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.000	0.088	0.493	0.000	0.000	0.000	0.581
NNE	0.000	0.000	0.000	0.094	0.088	0.365	0.039	0.000	0.000	0.586
NE	0.000	0.047	0.000	0.047	0.136	0.249	0.039	0.000	0.000	0.518
ENE	0.000	0.000	0.000	0.094	0.225	0.335	0.000	0.000	0.000	0.653
E	0.000	0.000	0.000	0.140	0.221	0.208	0.000	0.000	0.000	0.569
ESE	0.000	0.000	0.047	0.562	0.407	0.370	0.039	0.000	0.000	1.424
SE	0.000	0.000	0.140	0.468	0.418	0.535	0.154	0.000	0.000	1.716
SSE	0.000	0.000	0.187	0.187	0.139	0.287	0.038	0.000	0.000	0.838
S	0.000	0.000	0.047	0.047	0.136	0.123	0.000	0.000	0.000	0.352
SSW	0.000	0.000	0.047	0.140	0.091	0.043	0.000	0.000	0.000	0.321
SW	0.000	0.094	0.047	0.094	0.230	0.000	0.000	0.000	0.000	0.464
WSW	0.000	0.000	0.047	0.140	0.000	0.000	0.000	0.000	0.000	0.187
W	0.000	0.000	0.000	0.140	0.180	0.125	0.000	0.000	0.000	0.446
WNW	0.000	0.000	0.000	0.000	0.088	0.000	0.000	0.000	0.000	0.088
NW	0.000	0.000	0.000	0.047	0.135	0.243	0.000	0.000	0.000	0.425
NNW	0.000	0.000	0.047	0.140	0.134	0.042	0.000	0.000	0.000	0.364
SUBTOTAL	0.000	0.140	0.608	2.340	2.717	3.418	0.309	0.000	0.000	9.533

TOTAL HOURS OF VALID OBSERVATIONS 2137.000
TOTAL HOURS OF ELEVATED RELEASES 1869.820
TOTAL HOURS OF STABILITY CLASS F 239.430
TOTAL HOURS OF ELEVATED STABILITY CLASS F 203.720

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2004/02/19

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

Browns Ferry Nuclear Plant

PART 2 OF 2 ELEVATED RELEASE MODE

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.000	0.000	0.200	0.039	0.000	0.000	0.239
NNE	0.000	0.000	0.000	0.000	0.044	0.000	0.000	0.000	0.000	0.044
NE	0.000	0.000	0.000	0.000	0.045	0.083	0.000	0.000	0.000	0.128
ENE	0.000	0.000	0.047	0.000	0.000	0.168	0.000	0.000	0.000	0.215
E	0.000	0.000	0.000	0.047	0.090	0.000	0.000	0.000	0.000	0.137
ESE	0.000	0.000	0.094	0.094	0.046	0.043	0.000	0.000	0.000	0.277
SE	0.000	0.000	0.000	0.328	0.227	0.212	0.038	0.000	0.000	0.804
SSE	0.000	0.000	0.000	0.047	0.046	0.000	0.000	0.000	0.000	0.093
S	0.000	0.000	0.047	0.000	0.000	0.042	0.000	0.000	0.000	0.089
SSW	0.000	0.000	0.047	0.094	0.134	0.000	0.000	0.000	0.000	0.274
SW	0.000	0.047	0.047	0.094	0.000	0.000	0.000	0.000	0.000	0.187
WSW	0.000	0.047	0.047	0.047	0.000	0.000	0.000	0.000	0.000	0.140
W	0.000	0.000	0.047	0.047	0.047	0.000	0.000	0.000	0.000	0.140
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.094	0.374	0.796	0.679	0.748	0.077	0.000	0.000	2.767

TOTAL HOURS OF VALID OBSERVATIONS 2137.000
TOTAL HOURS OF ELEVATED RELEASES 1869.820
TOTAL HOURS OF STABILITY CLASS G 73.820
TOTAL HOURS OF ELEVATED STABILITY CLASS G 59.130

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND DIRECTION MEASURED AT 45.74 METER LEVEL
WIND SPEED MEASURED AT 45.74 METER LEVEL
EFFLUENT VELOCITY = 12.60 M/S

DATE PRINTED: 2004/02/19

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

METEORLOGICAL DATA TABLES

BROWNS FERRY NUCLEAR PLANT

JANUARY - DECEMBER 2003

TABLE 22

JOINT FREQUENCY DISTRIBUTION IN PERCENT

FOR ELEVATED RELEASES

FIRST QUARTER

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

Browns Ferry Nuclear Plant

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2118
TOTAL HOURS OF STABILITY CLASS A	0
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS A	0
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2114
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2003/05/20

MEAN WIND SPEED = 0.00

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA T<=-1.7 C/100 M)

Browns Ferry Nuclear Plant

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.095	0.000	0.000	0.095
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.000	0.000	0.000	0.095	0.000	0.000	0.095

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2118
TOTAL HOURS OF STABILITY CLASS B	2
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS B	2
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2114
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2003/05/20

MEAN WIND SPEED = 14.30

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA T<=-1.5 C/100 M)

Browns Ferry Nuclear Plant

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	0.6-1.4	1.5-3.4	WIND SPEED(MPH) 3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.000	0.000	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.047
NNE	0.000	0.000	0.000	0.000	0.000	0.047	0.142	0.000	0.000	0.189
NE	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.047
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.047
W	0.000	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.047
WNW	0.000	0.000	0.000	0.047	0.000	0.142	0.189	0.000	0.000	0.378
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.047	0.000	0.047
SUBTOTAL	0.000	0.000	0.000	0.095	0.000	0.284	0.378	0.047	0.000	0.804

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2118
TOTAL HOURS OF STABILITY CLASS C	17
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS C	17
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2114
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2003/05/20

MEAN WIND SPEED = 12.27

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA T<=-0.5 C/100 M)

Browns Ferry Nuclear Plant

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.047	0.284	0.142	0.284	1.466	2.838	0.662	0.000	5.724
NNE	0.000	0.000	0.047	0.189	0.757	2.081	1.987	0.095	0.000	5.156
NE	0.000	0.047	0.142	0.284	0.520	1.703	0.237	0.000	0.000	2.933
ENE	0.000	0.047	0.047	0.284	0.284	0.710	0.000	0.000	0.000	1.372
E	0.000	0.000	0.047	0.095	0.284	0.662	0.047	0.000	0.000	1.135
ESE	0.000	0.000	0.047	0.237	0.568	1.419	1.135	0.189	0.047	3.642
SE	0.000	0.000	0.189	0.378	0.331	1.325	0.662	0.568	0.000	3.453
SSE	0.000	0.047	0.095	0.615	0.189	0.568	0.757	0.520	0.000	2.791
S	0.000	0.000	0.473	0.189	0.142	0.851	1.230	0.378	0.189	3.453
SSW	0.000	0.000	0.189	0.142	0.331	0.710	1.608	0.804	0.095	3.879
SW	0.000	0.000	0.426	0.189	0.473	0.757	0.615	0.142	0.095	2.696
WSW	0.000	0.000	0.189	0.284	0.426	1.798	0.378	0.142	0.000	3.217
W	0.000	0.047	0.237	0.331	0.473	1.798	1.230	0.284	0.095	4.494
WNW	0.000	0.000	0.047	0.331	0.615	1.561	1.325	1.419	0.284	5.582
NW	0.000	0.000	0.378	0.473	0.095	0.993	3.453	1.419	0.047	6.859
NNW	0.000	0.000	0.095	0.237	0.284	1.939	2.365	1.466	0.000	6.386
SUBTOTAL	0.000	0.237	2.933	4.399	6.055	20.341	19.868	8.089	0.851	62.772

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2118
TOTAL HOURS OF STABILITY CLASS D	1329
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS D	1327
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2114
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2003/05/20

MEAN WIND SPEED = 12.23

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA T<= 1.5 C/100 M)

Browns Ferry Nuclear Plant

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	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
	WIND SPEED(MPH)									
N	0.000	0.000	0.000	0.142	0.095	0.804	0.568	0.000	0.000	1.608
NNE	0.000	0.000	0.189	0.142	0.378	0.993	0.710	0.000	0.000	2.412
NE	0.000	0.000	0.047	0.047	0.331	0.662	0.331	0.000	0.000	1.419
ENE	0.000	0.000	0.095	0.095	0.095	0.520	0.189	0.000	0.000	0.993
E	0.000	0.000	0.095	0.047	0.142	0.520	0.142	0.000	0.000	0.946
ESE	0.000	0.000	0.000	0.095	0.237	0.568	0.804	0.284	0.000	1.987
SE	0.000	0.000	0.189	0.142	0.284	0.899	0.710	0.378	0.520	3.122
SSE	0.000	0.000	0.189	0.237	0.000	0.757	0.473	0.378	0.047	2.081
S	0.000	0.047	0.000	0.189	0.142	0.662	1.656	0.520	0.095	3.311
SSW	0.000	0.000	0.095	0.047	0.142	1.088	1.041	0.520	0.047	2.980
SW	0.000	0.142	0.047	0.095	0.189	0.757	1.041	0.095	0.000	2.365
WSW	0.000	0.000	0.047	0.189	0.284	1.514	0.284	0.000	0.000	2.318
W	0.000	0.000	0.000	0.047	0.189	0.946	0.189	0.000	0.000	1.372
WNW	0.000	0.000	0.047	0.000	0.142	0.378	0.142	0.000	0.047	0.757
NW	0.000	0.095	0.047	0.000	0.142	0.473	0.710	0.095	0.000	1.561
NNW	0.000	0.000	0.095	0.142	0.189	0.615	1.372	0.000	0.000	2.412
SUBTOTAL	0.000	0.284	1.183	1.656	2.980	12.157	10.360	2.271	0.757	31.646

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2118
TOTAL HOURS OF STABILITY CLASS E	671
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS E	669
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2114
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2003/05/20

MEAN WIND SPEED = 11.91

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA T<= 4.0 C/100 M)

Browns Ferry Nuclear Plant

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	WIND SPEED(MPH) CALM	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	0.000	0.000	0.000	0.000	0.000	0.047	0.095	0.000	0.000	0.142
NNE	0.000	0.000	0.000	0.000	0.047	0.047	0.142	0.000	0.000	0.237
NE	0.000	0.000	0.000	0.000	0.047	0.000	0.095	0.000	0.000	0.142
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.142	0.000	0.000	0.142
E	0.000	0.000	0.047	0.000	0.000	0.047	0.047	0.000	0.000	0.142
ESE	0.000	0.000	0.000	0.000	0.095	0.047	0.189	0.000	0.000	0.331
SE	0.000	0.000	0.000	0.000	0.047	0.331	0.047	0.000	0.000	0.426
SSE	0.000	0.000	0.000	0.000	0.047	0.095	0.047	0.095	0.000	0.284
S	0.000	0.000	0.000	0.000	0.000	0.237	0.331	0.142	0.000	0.710
SSW	0.000	0.000	0.095	0.000	0.047	0.142	0.142	0.095	0.000	0.520
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.047	0.000	0.047
WSW	0.000	0.000	0.047	0.000	0.047	0.047	0.047	0.000	0.000	0.189
W	0.000	0.000	0.000	0.000	0.000	0.047	0.047	0.000	0.000	0.095
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.047	0.000	0.142	0.000	0.000	0.000	0.189
SUBTOTAL	0.000	0.000	0.189	0.047	0.378	1.230	1.372	0.378	0.000	3.595

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2118
TOTAL HOURS OF STABILITY CLASS F	76
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS F	76
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2114
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2003/05/20

MEAN WIND SPEED = 11.95

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

Browns Ferry Nuclear Plant

JAN 1, 2003 - MAR 31, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.047
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.047
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.047
SE	0.000	0.000	0.000	0.000	0.000	0.189	0.047	0.000	0.000	0.237
SSE	0.000	0.000	0.000	0.000	0.000	0.142	0.189	0.000	0.000	0.331
S	0.000	0.000	0.000	0.000	0.000	0.095	0.000	0.000	0.000	0.095
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.047	0.095	0.000	0.000	0.000	0.000	0.000	0.142
WSW	0.000	0.000	0.095	0.047	0.000	0.000	0.000	0.000	0.000	0.142
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.189	0.142	0.000	0.426	0.331	0.000	0.000	1.088

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2118
TOTAL HOURS OF STABILITY CLASS G	23
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS G	23
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2114
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2003/05/20

MEAN WIND SPEED = 9.34

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

IMPACT ASSESSMENT

BROWNS FERRY NUCLEAR PLANT

JANUARY - DECEMBER 2003

TABLE 23

JOINT FREQUENCY DISTRIBUTION IN PERCENT

FOR ELEVATED RELEASES

SECOND QUARTER

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

Browns Ferry Nuclear Plant

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2041
TOTAL HOURS OF STABILITY CLASS A 0
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS A 0
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2032
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2003/08/11

MEAN WIND SPEED = 0.00

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA T<=-1.7 C/100 M)

Browns Ferry Nuclear Plant

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2041
TOTAL HOURS OF STABILITY CLASS B	0
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS B	0
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2032
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2003/08/11

MEAN WIND SPEED = 0.00

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA T<=-1.5 C/100 M)

Browns Ferry Nuclear Plant

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.049	0.000	0.000	0.049
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.049	0.000	0.000	0.000	0.049
WSW	0.000	0.000	0.000	0.000	0.049	0.000	0.000	0.000	0.000	0.049
W	0.000	0.000	0.000	0.000	0.000	0.098	0.000	0.000	0.000	0.098
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.098	0.000	0.098
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.098	0.049	0.148
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.000	0.049	0.148	0.049	0.197	0.049	0.492

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2041
TOTAL HOURS OF STABILITY CLASS C	10
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS C	10
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2032
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2003/08/11

MEAN WIND SPEED = 16.22

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA T<=-0.5 C/100 M)

Browns Ferry Nuclear Plant

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.049	0.148	0.394	1.821	1.132	0.098	0.000	3.642
NNE	0.000	0.000	0.049	0.246	0.344	1.919	0.787	0.000	0.000	3.346
NE	0.000	0.000	0.098	0.443	0.197	0.443	0.098	0.000	0.000	1.280
ENE	0.000	0.000	0.000	0.394	0.492	0.443	0.000	0.000	0.000	1.329
E	0.000	0.000	0.049	0.098	0.098	0.295	0.000	0.000	0.000	0.541
ESE	0.000	0.000	0.098	0.394	0.148	0.640	1.132	0.197	0.049	2.657
SE	0.000	0.000	0.394	0.689	0.541	1.230	1.329	1.427	0.344	5.955
SSE	0.000	0.000	0.443	0.787	0.541	1.476	1.329	0.492	0.197	5.266
S	0.000	0.098	0.394	0.394	0.492	1.722	2.165	1.132	0.541	6.939
SSW	0.000	0.000	0.541	0.344	0.443	1.722	2.953	1.132	0.394	7.530
SW	0.000	0.000	0.344	0.591	0.640	0.984	1.083	0.197	0.000	3.839
WSW	0.000	0.098	0.837	0.344	0.246	0.492	0.148	0.098	0.049	2.313
W	0.000	0.000	0.394	0.394	0.295	0.443	1.181	0.197	0.000	2.904
WNW	0.000	0.000	0.098	0.443	0.295	0.837	1.378	0.098	0.000	3.150
NW	0.000	0.000	0.000	0.394	0.246	1.870	1.132	0.492	0.148	4.281
NNW	0.000	0.000	0.049	0.197	0.295	1.870	2.264	0.492	0.049	5.217
SUBTOTAL	0.000	0.197	3.839	6.299	5.709	18.209	18.110	6.053	1.772	60.187

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2041
TOTAL HOURS OF STABILITY CLASS D 1225
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS D 1223
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2032
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2003/08/11

MEAN WIND SPEED = 11.73

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA T<= 1.5 C/100 M)

Browns Ferry Nuclear Plant

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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
	WIND SPEED(MPH)									
N	0.000	0.000	0.000	0.098	0.148	0.738	0.344	0.000	0.000	1.329
NNE	0.000	0.000	0.000	0.049	0.246	1.181	0.541	0.000	0.000	2.018
NE	0.000	0.000	0.000	0.098	0.246	0.591	0.886	0.049	0.000	1.870
ENE	0.000	0.000	0.098	0.246	0.049	0.541	0.246	0.098	0.000	1.280
E	0.000	0.049	0.000	0.148	0.197	0.197	0.098	0.000	0.000	0.689
ESE	0.000	0.000	0.098	0.295	0.492	0.295	0.344	0.000	0.049	1.575
SE	0.000	0.000	0.197	0.295	0.640	1.476	0.787	0.246	0.000	3.642
SSE	0.000	0.000	0.049	0.344	0.640	1.230	0.984	0.344	0.049	3.642
S	0.000	0.000	0.197	0.246	0.394	1.132	2.165	0.886	0.344	5.364
SSW	0.000	0.000	0.098	0.148	0.098	0.394	1.329	0.640	0.098	2.805
SW	0.000	0.000	0.148	0.049	0.098	0.640	0.541	0.000	0.000	1.476
WSW	0.000	0.000	0.098	0.148	0.148	0.344	0.049	0.000	0.000	0.787
W	0.000	0.049	0.049	0.049	0.000	0.098	0.098	0.000	0.000	0.344
WNW	0.000	0.000	0.049	0.049	0.098	0.295	0.148	0.000	0.000	0.640
NW	0.000	0.000	0.000	0.049	0.098	0.394	0.197	0.000	0.000	0.738
NNW	0.000	0.000	0.098	0.098	0.098	0.246	0.886	0.049	0.000	1.476
SUBTOTAL	0.000	0.098	1.181	2.411	3.691	9.793	9.646	2.313	0.541	29.675

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2041
TOTAL HOURS OF STABILITY CLASS E	608
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS E	603
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2032
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2003/08/11

MEAN WIND SPEED = 11.55

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA T<= 4.0 C/100 M)

Browns Ferry Nuclear Plant

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.000	0.049	0.000	0.197	0.394	0.000	0.000	0.640
NNE	0.000	0.000	0.000	0.000	0.000	0.098	0.492	0.295	0.000	0.886
NE	0.000	0.000	0.049	0.000	0.000	0.148	0.689	0.148	0.000	1.033
ENE	0.000	0.000	0.000	0.000	0.000	0.344	0.344	0.000	0.000	0.689
E	0.000	0.000	0.000	0.049	0.049	0.246	0.197	0.049	0.000	0.591
ESE	0.000	0.000	0.049	0.098	0.049	0.246	0.098	0.000	0.000	0.541
SE	0.000	0.049	0.000	0.000	0.098	0.246	0.246	0.049	0.000	0.689
SSE	0.000	0.000	0.098	0.049	0.148	0.197	0.049	0.000	0.000	0.541
S	0.000	0.049	0.000	0.049	0.049	0.148	0.098	0.049	0.000	0.443
SSW	0.000	0.000	0.049	0.049	0.000	0.000	0.098	0.000	0.000	0.197
SW	0.000	0.049	0.000	0.000	0.000	0.246	0.000	0.000	0.000	0.295
WSW	0.000	0.000	0.000	0.000	0.000	0.049	0.000	0.000	0.000	0.049
W	0.000	0.000	0.049	0.000	0.098	0.148	0.000	0.000	0.000	0.295
WNW	0.000	0.000	0.000	0.098	0.000	0.049	0.000	0.000	0.000	0.148
NW	0.000	0.000	0.049	0.000	0.098	0.000	0.000	0.000	0.000	0.148
NNW	0.000	0.000	0.000	0.000	0.000	0.394	0.246	0.049	0.000	0.689
SUBTOTAL	0.000	0.148	0.344	0.443	0.591	2.756	2.953	0.640	0.000	7.874

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2041
TOTAL HOURS OF STABILITY CLASS F	161
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS F	160
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2032
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2003/08/11

MEAN WIND SPEED = 11.76

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

Browns Ferry Nuclear Plant

APR 1, 2003 - JUN 30, 2003

WIND DIRECTION	CALM	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
	WIND SPEED(MPH)									
N	0.000	0.000	0.000	0.000	0.000	0.049	0.148	0.000	0.000	0.197
NNE	0.000	0.000	0.000	0.000	0.098	0.000	0.000	0.000	0.000	0.098
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.098	0.098	0.000	0.197
E	0.000	0.000	0.000	0.000	0.049	0.049	0.000	0.000	0.000	0.098
ESE	0.000	0.000	0.000	0.049	0.098	0.000	0.000	0.000	0.000	0.148
SE	0.000	0.000	0.000	0.049	0.098	0.000	0.049	0.000	0.000	0.197
SSE	0.000	0.000	0.000	0.000	0.000	0.246	0.000	0.000	0.000	0.246
S	0.000	0.000	0.000	0.049	0.000	0.148	0.000	0.000	0.000	0.197
SSW	0.000	0.000	0.000	0.049	0.000	0.098	0.000	0.000	0.000	0.148
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.049	0.000	0.000	0.000	0.049
NNW	0.000	0.000	0.000	0.000	0.049	0.098	0.049	0.000	0.000	0.197
SUBTOTAL	0.000	0.000	0.000	0.197	0.394	0.738	0.344	0.098	0.000	1.772

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2041
TOTAL HOURS OF STABILITY CLASS G	37
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS G	36
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2032
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2003/08/11

MEAN WIND SPEED = 9.78

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

METEORLOGICAL DATA TABLES

BROWNS FERRY NUCLEAR PLANT

JANUARY - DECEMBER 2003

TABLE 24

JOINT FREQUENCY DISTRIBUTION IN PERCENT

FOR ELEVATED RELEASES

THIRD QUARTER

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

Browns Ferry Nuclear Plant

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2190
TOTAL HOURS OF STABILITY CLASS A 0
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS A 0
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2185
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2003/11/12

MEAN WIND SPEED = 0.00

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA T<=-1.7 C/100 M)

Browns Ferry Nuclear Plant

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	WIND SPEED(MPH) CALM	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.046
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.046

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2190
TOTAL HOURS OF STABILITY CLASS B	1
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS B	1
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2185
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2003/11/12

MEAN WIND SPEED = 9.80

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA T<=-1.5 C/100 M)

Browns Ferry Nuclear Plant

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.137	0.046	0.046	0.000	0.000	0.229
W	0.000	0.000	0.000	0.000	0.137	0.000	0.046	0.000	0.000	0.183
WNW	0.000	0.000	0.000	0.000	0.046	0.046	0.000	0.000	0.000	0.092
NW	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.046
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.046	0.366	0.092	0.092	0.000	0.000	0.595

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2190
TOTAL HOURS OF STABILITY CLASS C	13
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS C	13
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2185
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2003/11/12

MEAN WIND SPEED = 7.69

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA T<=-0.5 C/100 M)

Browns Ferry Nuclear Plant

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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	0.000	0.046	0.183	0.275	0.503	1.465	0.641	0.000	0.000	3.112
NNE	0.000	0.000	0.183	0.275	0.458	0.549	0.183	0.137	0.000	1.785
NE	0.000	0.000	0.000	0.183	0.092	0.092	0.092	0.092	0.000	0.549
ENE	0.000	0.046	0.046	0.137	0.229	0.229	0.046	0.183	0.000	0.915
E	0.000	0.000	0.137	0.092	0.000	0.092	0.183	0.092	0.000	0.595
ESE	0.000	0.046	0.275	0.275	0.641	0.778	0.595	0.046	0.000	2.654
SE	0.000	0.000	0.366	1.648	0.595	1.419	0.595	0.092	0.000	4.714
SSE	0.000	0.046	0.732	0.595	0.320	1.876	0.595	0.092	0.046	4.302
S	0.000	0.000	0.686	0.870	0.824	2.563	1.236	0.092	0.000	6.270
SSW	0.000	0.000	0.412	1.053	1.190	2.517	0.549	0.000	0.000	5.721
SW	0.000	0.000	0.595	1.007	0.641	1.327	0.366	0.000	0.000	3.936
WSW	0.000	0.000	0.549	1.190	1.510	1.968	0.092	0.046	0.000	5.355
W	0.000	0.000	0.320	0.778	1.098	1.693	0.137	0.000	0.000	4.027
WNW	0.000	0.000	0.092	0.503	1.327	2.151	0.412	0.092	0.000	4.577
NW	0.000	0.000	0.137	0.458	1.053	1.831	1.053	0.183	0.046	4.760
NNW	0.000	0.000	0.092	0.366	0.412	1.602	0.320	0.046	0.000	2.838
SUBTOTAL	0.000	0.183	4.805	9.703	10.892	22.151	7.094	1.190	0.092	56.110

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2190
TOTAL HOURS OF STABILITY CLASS D	1226
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS D	1226
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2185
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2003/11/12

MEAN WIND SPEED = 8.40

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA T<= 1.5 C/100 M)

Browns Ferry Nuclear Plant

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.137	0.275	0.275	0.961	0.458	0.092	0.000	2.197
NNE	0.000	0.000	0.000	0.137	0.275	0.732	0.778	0.503	0.000	2.426
NE	0.000	0.000	0.137	0.092	0.137	0.320	0.824	0.046	0.000	1.556
ENE	0.000	0.000	0.000	0.046	0.183	0.549	0.137	0.046	0.000	0.961
E	0.000	0.000	0.092	0.046	0.000	0.458	0.275	0.000	0.000	0.870
ESE	0.000	0.000	0.092	0.137	0.137	0.595	0.412	0.000	0.000	1.373
SE	0.000	0.000	0.320	0.549	0.412	1.739	0.092	0.000	0.000	3.112
SSE	0.000	0.000	0.412	0.320	0.778	1.236	0.137	0.000	0.000	2.883
S	0.000	0.000	0.458	0.275	0.458	0.686	0.686	0.137	0.000	2.700
SSW	0.000	0.000	0.275	0.458	0.458	0.732	0.458	0.000	0.000	2.380
SW	0.000	0.000	0.137	0.595	0.503	1.327	0.229	0.000	0.000	2.792
WSW	0.000	0.000	0.366	0.275	0.366	0.275	0.092	0.000	0.000	1.373
W	0.000	0.000	0.320	0.412	0.549	0.824	0.092	0.000	0.000	2.197
WNW	0.000	0.000	0.229	0.366	0.732	0.641	0.000	0.000	0.000	1.968
NW	0.000	0.000	0.183	0.137	0.366	0.412	0.503	0.000	0.000	1.602
NNW	0.000	0.000	0.137	0.183	0.000	1.144	0.641	0.046	0.000	2.151
SUBTOTAL	0.000	0.000	3.295	4.302	5.629	12.632	5.812	0.870	0.000	32.540

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2190
TOTAL HOURS OF STABILITY CLASS E 715
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS E 711
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2185
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2003/11/12

MEAN WIND SPEED = 8.91

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA T<= 4.0 C/100 M)

Browns Ferry Nuclear Plant

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.000	0.046	0.000	0.229	0.961	0.046	0.000	1.281
NNE	0.000	0.000	0.000	0.092	0.092	0.503	0.595	0.000	0.000	1.281
NE	0.000	0.000	0.046	0.000	0.000	0.366	0.549	0.092	0.000	1.053
ENE	0.000	0.000	0.000	0.183	0.092	0.275	0.229	0.000	0.000	0.778
E	0.000	0.000	0.000	0.046	0.046	0.412	0.092	0.000	0.000	0.595
ESE	0.000	0.000	0.046	0.046	0.183	1.053	0.275	0.000	0.000	1.602
SE	0.000	0.000	0.000	0.092	0.046	0.549	0.137	0.000	0.000	0.824
SSE	0.000	0.000	0.000	0.000	0.137	0.183	0.000	0.000	0.000	0.320
S	0.000	0.000	0.092	0.046	0.046	0.000	0.000	0.000	0.000	0.183
SSW	0.000	0.000	0.000	0.046	0.000	0.092	0.000	0.000	0.000	0.137
SW	0.000	0.000	0.046	0.137	0.000	0.137	0.000	0.000	0.000	0.320
WSW	0.000	0.000	0.000	0.137	0.046	0.000	0.000	0.000	0.000	0.183
W	0.000	0.000	0.046	0.046	0.046	0.092	0.000	0.000	0.000	0.229
WNW	0.000	0.000	0.000	0.000	0.092	0.046	0.000	0.000	0.000	0.137
NW	0.000	0.000	0.046	0.000	0.000	0.092	0.000	0.000	0.000	0.137
NNW	0.000	0.000	0.046	0.046	0.000	0.092	0.000	0.000	0.000	0.183
SUBTOTAL	0.000	0.000	0.366	0.961	0.824	4.119	2.838	0.137	0.000	9.245

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2190
TOTAL HOURS OF STABILITY CLASS F	203
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS F	202
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2185
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2003/11/12

MEAN WIND SPEED = 10.48

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

Browns Ferry Nuclear Plant

JUL 1, 2003 - SEP 30, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.000	0.000	0.000	0.000	0.137	0.046	0.000	0.183
NNE	0.000	0.000	0.000	0.000	0.000	0.046	0.046	0.092	0.000	0.183
NE	0.000	0.000	0.000	0.000	0.000	0.092	0.137	0.366	0.000	0.595
ENE	0.000	0.000	0.000	0.046	0.000	0.046	0.320	0.000	0.000	0.412
E	0.000	0.000	0.000	0.000	0.000	0.092	0.000	0.000	0.000	0.092
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.046	0.000	0.275	0.641	0.503	0.000	1.465

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2190
TOTAL HOURS OF STABILITY CLASS G	32
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS G	32
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2185
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2003/11/12

MEAN WIND SPEED = 15.83

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

METEORLOGICAL DATA TABLES

BROWNS FERRY NUCLEAR PLANT

JANUARY - DECEMBER 2003

TABLE 25

JOINT FREQUENCY DISTRIBUTION IN PERCENT

FOR ELEVATED RELEASES

FOURTH QUARTER

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

Browns Ferry Nuclear Plant

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2163
TOTAL HOURS OF STABILITY CLASS A	0
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS A	0
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2161
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2004/02/19

MEAN WIND SPEED = 0.00

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA T<=-1.7 C/100 M)

Browns Ferry Nuclear Plant

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.046
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.046

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2163
TOTAL HOURS OF STABILITY CLASS B	1
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS B	1
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2161
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2004/02/19

MEAN WIND SPEED = 11.40

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA T<=-1.5 C/100 M)

Browns Ferry Nuclear Plant

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.046
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSW	0.000	0.000	0.000	0.000	0.093	0.046	0.046	0.000	0.000	0.185
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.046	0.046	0.000	0.000	0.093
W	0.000	0.000	0.000	0.000	0.000	0.000	0.093	0.000	0.000	0.093
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.046
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.000	0.000	0.000	0.093	0.093	0.231	0.046	0.000	0.463

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2163
TOTAL HOURS OF STABILITY CLASS C	10
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS C	10
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2161
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2004/02/19

MEAN WIND SPEED = 12.42

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA T<=-0.5 C/100 M)

Browns Ferry Nuclear Plant

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	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	0.000	0.000	0.046	0.185	0.185	1.712	1.111	0.139	0.046	3.424
NNE	0.000	0.000	0.139	0.139	0.416	2.036	1.249	0.046	0.000	4.026
NE	0.000	0.000	0.093	0.324	0.139	0.555	0.185	0.000	0.000	1.296
ENE	0.000	0.000	0.046	0.185	0.185	0.046	0.046	0.000	0.000	0.509
E	0.000	0.046	0.046	0.231	0.185	0.185	0.139	0.000	0.000	0.833
ESE	0.000	0.000	0.046	0.416	0.509	1.018	0.324	0.185	0.093	2.591
SE	0.000	0.000	0.370	0.740	0.648	1.388	1.805	1.018	0.463	6.432
SSE	0.000	0.000	0.324	0.416	0.231	1.249	1.758	0.463	0.555	4.998
S	0.000	0.000	0.231	0.278	0.185	1.388	2.406	0.602	0.324	5.414
SSW	0.000	0.046	0.231	0.324	0.139	0.787	0.694	0.231	0.046	2.499
SW	0.000	0.046	0.139	0.231	0.093	0.185	0.324	0.231	0.000	1.249
WSW	0.000	0.000	0.231	0.463	0.093	0.278	0.139	0.139	0.000	1.342
W	0.000	0.000	0.278	0.278	0.231	0.787	0.925	0.602	0.093	3.193
WNW	0.000	0.046	0.139	0.093	0.278	0.555	1.249	1.666	0.555	4.581
NW	0.000	0.000	0.139	0.139	0.185	0.278	1.527	1.620	0.602	4.489
NNW	0.000	0.000	0.046	0.000	0.278	1.249	0.925	0.370	0.046	2.915
SUBTOTAL	0.000	0.185	2.545	4.442	3.980	13.697	14.808	7.311	2.823	49.792

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2163
TOTAL HOURS OF STABILITY CLASS D	1076
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS D	1076
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2161
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2004/02/19

MEAN WIND SPEED = 13.05

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA T<= 1.5 C/100 M)

Browns Ferry Nuclear Plant

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	0.6-1.4	1.5-3.4	WIND SPEED(MPH) 3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	>=24.5	TOTAL
N	0.000	0.000	0.000	0.139	0.093	0.416	1.296	0.046	0.000	1.990
NNE	0.000	0.000	0.046	0.093	0.139	1.203	0.694	0.139	0.000	2.314
NE	0.000	0.000	0.046	0.139	0.185	0.602	0.602	0.046	0.000	1.620
ENE	0.000	0.046	0.000	0.000	0.093	0.740	0.139	0.000	0.000	1.018
E	0.000	0.093	0.278	0.139	0.324	0.139	0.231	0.000	0.000	1.203
ESE	0.000	0.000	0.139	0.370	0.370	0.648	0.787	0.046	0.046	2.406
SE	0.000	0.000	0.231	0.416	0.602	1.712	1.573	0.972	0.185	5.692
SSE	0.000	0.000	0.139	0.278	0.694	1.249	2.036	1.897	0.324	6.617
S	0.000	0.046	0.324	0.185	0.231	0.833	1.944	0.555	0.139	4.257
SSW	0.000	0.000	0.093	0.278	0.231	1.157	0.787	0.231	0.000	2.776
SW	0.000	0.000	0.139	0.139	0.139	0.740	0.278	0.000	0.000	1.435
WSW	0.000	0.000	0.046	0.139	0.185	0.463	0.046	0.000	0.000	0.879
W	0.000	0.000	0.046	0.046	0.046	0.139	0.139	0.000	0.000	0.416
WNW	0.000	0.000	0.139	0.185	0.185	0.231	0.324	0.093	0.000	1.157
NW	0.000	0.000	0.093	0.093	0.139	0.324	0.925	0.046	0.000	1.620
NNW	0.000	0.046	0.000	0.046	0.185	0.509	0.416	0.185	0.000	1.388
SUBTOTAL	0.000	0.231	1.758	2.684	3.841	11.106	12.217	4.257	0.694	36.789

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2163
TOTAL HOURS OF STABILITY CLASS E	796
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS E	795
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2161
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2004/02/19

MEAN WIND SPEED = 11.95

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA T<= 4.0 C/100 M)

Browns Ferry Nuclear Plant

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	WIND SPEED(MPH) CALM	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	0.000	0.000	0.000	0.046	0.000	0.139	0.278	0.046	0.000	0.509
NNE	0.000	0.000	0.046	0.046	0.000	0.046	0.463	0.000	0.000	0.602
NE	0.000	0.046	0.046	0.000	0.046	0.185	0.324	0.093	0.000	0.740
ENE	0.000	0.000	0.000	0.000	0.046	0.093	0.278	0.000	0.000	0.416
E	0.000	0.000	0.046	0.000	0.093	0.509	0.093	0.000	0.000	0.740
ESE	0.000	0.093	0.093	0.139	0.416	0.185	0.278	0.000	0.000	1.203
SE	0.000	0.000	0.046	0.093	0.185	0.463	0.555	0.046	0.000	1.388
SSE	0.000	0.000	0.000	0.046	0.278	0.509	0.324	0.046	0.000	1.203
S	0.000	0.000	0.046	0.139	0.231	0.046	0.185	0.000	0.000	0.648
SSW	0.000	0.000	0.046	0.046	0.000	0.231	0.185	0.000	0.000	0.509
SW	0.000	0.000	0.000	0.000	0.093	0.185	0.185	0.000	0.000	0.463
WSW	0.000	0.000	0.000	0.046	0.093	0.046	0.000	0.000	0.000	0.185
W	0.000	0.000	0.000	0.000	0.046	0.139	0.000	0.000	0.000	0.185
WNW	0.000	0.000	0.093	0.046	0.139	0.278	0.046	0.000	0.000	0.602
NW	0.000	0.000	0.046	0.000	0.046	0.093	0.093	0.139	0.000	0.416
NNW	0.000	0.000	0.046	0.046	0.000	0.046	0.093	0.000	0.000	0.231
SUBTOTAL	0.000	0.139	0.555	0.694	1.712	3.193	3.378	0.370	0.000	10.042

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2163
TOTAL HOURS OF STABILITY CLASS F	218
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS F	217
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2161
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2004/02/19

MEAN WIND SPEED = 10.66

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

Browns Ferry Nuclear Plant

OCT 1, 2003 - DEC 31, 2003

WIND DIRECTION	CALM	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
				WIND SPEED(MPH)						
N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.231	0.000	0.231
NNE	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.046	0.000	0.093
NE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ENE	0.000	0.000	0.000	0.000	0.046	0.093	0.046	0.000	0.000	0.185
E	0.000	0.000	0.093	0.046	0.046	0.185	0.000	0.000	0.000	0.370
ESE	0.000	0.000	0.000	0.046	0.046	0.093	0.000	0.000	0.000	0.185
SE	0.000	0.046	0.046	0.000	0.139	0.278	0.093	0.046	0.000	0.648
SSE	0.000	0.000	0.000	0.000	0.046	0.185	0.046	0.000	0.000	0.278
S	0.000	0.000	0.000	0.000	0.000	0.093	0.046	0.000	0.000	0.139
SSW	0.000	0.000	0.000	0.046	0.000	0.000	0.046	0.000	0.000	0.093
SW	0.000	0.000	0.000	0.000	0.000	0.046	0.185	0.000	0.000	0.231
WSW	0.000	0.000	0.000	0.093	0.000	0.046	0.000	0.000	0.000	0.139
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.046	0.139	0.000	0.000	0.000	0.000	0.185
NW	0.000	0.000	0.000	0.046	0.000	0.046	0.000	0.000	0.000	0.093
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.046	0.139	0.324	0.463	1.064	0.509	0.324	0.000	2.869

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2163
TOTAL HOURS OF STABILITY CLASS G	62
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS G	62
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2161
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: Browns Ferry Nuclear Plant
STABILITY BASED ON DELTA-T BETWEEN 45.30 AND 89.59 METERS
WIND SPEED AND DIRECTION MEASURED AT 90.29 METER LEVEL

DATE PRINTED: 2004/02/19

MEAN WIND SPEED = 10.26

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

ENCLOSURE 3

TENNESSEE VALEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT
UNITS 1, 2, AND 3
EFFLUENT AND WASTE DISPOSAL REPORT
2003

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
YEAR 2003

I. Regulatory and BFN ODCM Limits

A. Fission and Activation Gases in Gaseous Effluent:

The release of fission and activation gases is regulated by the dose limits of 10 CFR 50 Appendix I and BFN Offsite Dose Calculation Manual (ODCM). The air dose to areas at and beyond the site boundary due to noble gases released in gaseous effluents per unit, shall be limited during any calendar quarter to $\leq$ 5 millirad (mrad) for gamma radiation and $\leq$ 10 mrad for beta radiation; and during any calendar year to $\leq$ 10 mrad for gamma radiation and $\leq$ 20 mrad for beta radiation.

B. Iodines and Particulates with Half-Lives Greater than Eight Days in Gaseous Effluents.

The release of iodines and particulates in gaseous effluent is regulated by the dose limits of 10 CFR 50 Appendix I and the BFN ODCM. The dose to a member of the public from radioiodines, radioactive materials in particulate form, and radionuclides other than noble gases with half-lives greater than eight days in gaseous effluent released per unit to areas at and beyond the site boundary shall be limited to any organ during any calendar quarter to $\leq$ 7.5 millirem (mrem), and during any calendar year to $\leq$ 15 mrem.

C. Liquid Effluents

The release of radioactive liquid effluents is regulated by the dose limits of 10 CFR 50 Appendix I and the BFN ODCM. The doses or dose commitment to a member of the public from radioactive materials in liquid effluents released from each unit to unrestricted areas shall be limited during any calendar quarter to $\leq$ 1.5 mrem to the total body and $\leq$5 mrem to any organ and during any calendar year to $\leq$ 3 mrem to the total body and $\leq$ 10 mrem to any organ.

II. Limitation on Dose Rate

A. Fission and Activation Gases in Gaseous Effluent:

1. The instantaneous release rate of fission and activation gases is based on the dose rate limits of 10 CFR 20.1301 and the BFN ODCM. The dose rate at any time to areas at and beyond the site boundary due to noble gases released in gaseous effluents from the site shall be limited to
$\leq$ 500 mrem per year to the total body and $\leq$ 3000 mrem per year to the skin.

2. The BFN ODCM Section 7.2 determines the maximum noble gas release rate.

II. Limitations on Dose Rate (Continued)

B. Iodines and Particulates with Half-Lives Greater than Eight Days in gaseous effluents.

1. The instantaneous release rate of particulates and iodines is regulated by the dose rate limits of the BFN ODCM. The dose rate at any time to areas at and beyond the site boundary, due to I-131, I-133, H-3 and particulates with greater than eight days half-lives released in gaseous effluents from the site, shall be limited to $\leq$ 1500 mrem per year to any organ.

2. The BFN ODCM Section 7.3 determines the maximum particulate and iodine dose rates.

C. Liquid Effluents

1. The concentration of radionuclides in liquid effluents released at any time from the site to unrestricted areas shall be limited to the concentrations specified in 10 CFR 20.1001 - 20.2402, Appendix B, Table 2, Column 2 for radionuclides other than dissolved or entrained noble gases.

2. For dissolved or entrained noble gases, the concentration shall be limited to 2E-4 μCi per milliliter (ml) total activity.

III. Measurements and Approximations of Total Radioactivity

A. Fission and Activation Gases:

1. Noble gases in the building vent and stack (elevated) gaseous effluents are continuously monitored. The flow rate of the stack is continuously monitored and the building vent effluent flow rates are calculated once a shift based on the configuration of operating exhaust fans. The vent flow is calculated for each release. Gas grab samples of the stack are taken and analyzed weekly. Gas grab samples of in-service vents are taken and analyzed monthly. The specific noble gas activity concentrations and total volume of the gases are used to calculate the total curies of noble gases released.

2. The tritium concentration is determined by the analysis of a monthly grab sample for each release point.

III. Measurements and Approximations of Total Radioactivity (continued)

B. Iodines and Particulates

1. Iodines and particulates are continuously sampled on impregnated charcoal filters and particulate filters, respectively. The charcoal and particulate samples are replaced at least weekly and analyzed to determine specific activity concentrations. The specific activity concentrations and vent flow rate data are used weekly to verify that release rate limits were not exceeded. The specific activity concentrations and total volume of gaseous effluent are used on a monthly basis to determine the total curies of each particulate and iodine released during the month.

2. The gross alpha concentration is determined by analysis of a monthly particulate filter composite sample and strontium -89 and -90 are determined by analysis of a quarterly particulate filter composite sample for each release point.

C. Liquid Effluents

1. The gamma ray emitting radionuclide concentrations are determined for each batch by gamma ray spectroscopy analysis of a grab sample. The allowable release rate is calculated for each batch based upon the known dilution flow. The flow rate of the liquid effluent is continuously monitored and the total volume released in each batch is determined. The total gamma activity released in each batch is determined by multiplying the radionuclide concentrations by the total volume discharged. The total gamma activity released during the month is then determined by summing the gamma activity content of each batch discharged during the month.

2. The gross alpha and tritium concentrations are measured on a monthly composite sample. The strontium -89 and -90 and iron -55 are measured on a quarterly composite sample.

D. The Radioactive Gaseous and Liquid Waste Monitoring Sampling and Analysis Program is specified in ODCM Sections 1/2.2.1 and 1/2.2.2.

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
SUPPLEMENTAL INFORMATION
2003

IV. Batch

A. Liquid	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4
1. Number of batches released	Each	0	33	9	0
2. Total time for batches released	Minutes	0	9306	190	0
3. Maximum time period for a batch release	Minutes	0	300	30	0
4. Average time period for a batch release	Minutes	0	282	21	0
5. Minimum time period for a batch release	Minutes	0	210	17	0
6. Average stream flow during period of release into a flowing stream	Cubic feet per second	0	73986	50174	0

B. Gaseous

None

C. Abnormal/Unplanned Releases*

Type	Number of Releases	Total Activity Releases (Curies)
Liquid	One	8.37E-01
Gaseous	None	None

* An explanation of any liquid or gaseous abnormal/unexplained release shall be documented in the summary.

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES
YEAR 2003

		Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Error %
A.	Fission and Activation Products (Does not include tritium, gases, Alpha)						
	1. Total Release	Curies	9.86E-03**	2.75E-01**	1.70E-02**	NR*	9
	2. Average Diluted Concentration Released During Period	µCi/ml	ND****	1.30E-08**	8.06E-10**	NR	
	3. Percent of Applicable Limit	%	***	***	***	***	
B.	Tritium						
	1. Total Releases	Curies	3.19E-01**	5.01E+00**	1.65E-01**	NR	6
	2. Average Diluted Concentration Released During Period	µCi/ml	ND	2.37E-07**	7.82E-09**	NR	
	3. Percent of Applicable Limit	%	***	***	***	***	
C.	Dissolved and Entrained Noble Gases						
	1. Total Releases	Curies	ND	ND	ND	NR	8
	2. Average Diluted Concentration Released During Period	µCi/ml	ND	ND	ND	NR	
	3. Percent of Applicable Limit	%	***	***	***	***	
D.	Gross Alpha Radioactivity						
	1. Total Releases	Curies	ND	ND	ND	NR	48
	2. Average Diluted Concentration Released During Period	µCi/ml	ND	ND	ND	NR	
E.	Volume of Liquid Waste to Discharge Canal (Prior to dilution)	Liters	ND	3.87E+06	3.69E+05	NR	3
F.	Volume of Dilution Water for Period	Liters	ND	2.11E+10	2.11E+10	NR	10
G.	Total CCW	Gigagal.	1.48E+02	1.91E+02	1.95E+02	NR	

*NR -- No liquid releases were made in the 4th quarter.
** Includes abnormal release. See documentation in the summary.
*** The applicable limit is expressed in terms of dose. See Enclosure 1, Tables 5 through 8.
**** ND – Not Detected. Dilution flow was not determined for the abnormal release.

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
LIQUID RELEASES FOR YEAR 2003 - BATCH MODE

	CURIES Isotope (Required by Regulatory (REG) Guide 1.21)	Quarter 1	Quarter 2	Quarter 3	Quarter 4
1.	Ba-140	ND**	ND	ND	NR*
2.	Ce-141	ND	ND	ND	NR
3.	Co-58	ND	3.32E-05	ND	NR
4.	Co-60	ND	5.49E-03	ND	NR
5.	Cr-51	ND	ND	ND	NR
6.	Cs-134	ND	1.38E-01	ND	NR
7.	Cs-137	ND	1.19E-01	ND	NR
8.	Fe-59	ND	ND	ND	NR
9.	I-131	ND	ND	ND	NR
10.	La-140	ND	ND	ND	NR
11.	Mn-54	ND	1.14E-03	ND	NR
12.	Mo-99	ND	ND	ND	NR
13.	Nb-95	ND	ND	ND	NR
14.	Sr-89	ND	9.13E-05	ND	NR
15.	Sr-90	ND	ND	ND	NR
16.	Tc-99m	ND	ND	ND	NR
17.	Xe-133	ND	ND	ND	NR
18.	Xe-135	ND	ND	ND	NR
19.	Zn-65	ND	4.10E-04	ND	NR
20.	Zr-95	ND	ND	ND	NR

*NR -- No liquid releases were made during the 4th quarter.
** - Not Detected.

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
LIQUID RELEASES FOR YEAR 2003 - BATCH MODE

	CURIES Isotope	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Others (Not Required by REG Guide 1.21)					
1.	F-18	9.86E-03**	1.07E-02**	1.70E-02**	NR*
2.	Fe-55	ND***	3.14E-04	ND	NR
3.	Y-91M	ND	1.05E-05	ND	NR
4.	Ag-110M	ND	2.31E-05	ND	NR

*NR -- No liquid releases were made during the 4th quarter.
** Includes abnormal release.
***ND – Not Detected.

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES
YEAR 2003

	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Error %
A. Fission and Activation Gases						
1. Total Releases	Curies	4.72E+03	1.43E+01	ND	5.20E+01	45
2. Average Release Rate for Period	µCi/sec	6.07E+02	1.82E+00	ND	6.54E+00	
3. Percent of Applicable Limit	%	*	*	*	*	
B. Iodines						
1. Total Iodine-131	Curies	9.37E-02	3.34E-03	1.56E-03	1.16E-03	36
2. Average Release Rate for Period	µCi/sec	1.21E-02	4.25E-04	1.97E-04	1.46E-04	
3. Percent of Applicable Limit	%	*	*	*	*	
C. Particulates						
1. Particulates with half-lives > eight days	Curies	4.05E-03	3.10E-03	4.03E-03	2.41E-03	35
2. Average Release Rate for Period	µCi/sec	5.21E-04	3.95E-04	5.08E-04	3.03E-04	
3. Percent of Applicable Limit	%	*	*	*	*	
4. Gross Alpha Radioactivity	Curies	ND**	ND	ND	ND	
D. Tritium						
1. Total Release	Curies	2.58E+01	3.83E+01	2.29E+01	2.29E+01	21
2. Average Release Rate for Period	µCi/sec	3.32E+00	4.87E+00	2.88E+00	2.88E+00	
3. Percent of Applicable Limit	%	*	*	*	*	

*Applicable Limits are expressed in terms of dose. See Enclosure 1, Tables 1 through 4.
**ND – Not Detected.

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
YEAR 2003
GASEOUS EFFLUENTS - ELEVATED RELEASE

CURIES	Quarter 1	Quarter 2	Quarter 3	Quarter 4
1. Fission Gases				
Kr-85m	2.67E+01	3.34E+00	ND	1.06E+01
Kr-85	ND*	ND	ND	ND
Kr-87	ND	ND	ND	ND
Kr-88	2.67E+01	ND	ND	ND
Xe-133	1.32E+02	1.10E+01	ND	4.14E+01
Xe-135m	ND	ND	ND	ND
Xe-135	ND	ND	ND	ND
Xe-138	ND	ND	ND	ND
Others (specify)				
N-13	ND	ND	ND	ND
Total for Period	1.86E+02	1.43E+01	ND	5.20E+01
2. Iodines				
I-131	1.39E-02	4.61E-04	3.31E-04	2.38E-04
I-133	1.02E-03	6.96E-04	5.87E-04	3.00E-04
Total for Period	1.49E-02	1.16E-03	9.17E-04	5.38E-04

*ND – Not Detected.

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
YEAR 2003
GASEOUS EFFLUENTS - ELEVATED RELEASE

	CURIES	Quarter 1	Quarter 2	Quarter 3	Quarter 4
3.	Particulates*				
	Sr-89	1.45E-04	4.88E-05	3.98E-05	4.59E-05
	Sr-90	ND**	ND	ND	ND
	Cs-134	9.57E-07	ND	ND	ND
	Cs-137	1.22E-06	ND	ND	ND
	Ba-140	9.13E-05	8.08E-05	5.94E-05	7.95E-05
	La-140	4.80E-05	3.41E-05	2.63E-05	2.33E-05
	Others (specify)				
	Rb-89	2.46E-01	8.64E-02	3.95E-02	ND
	Sr-91	1.07E-03	5.09E-04	5.21E-04	2.64E-04
	Y-91m	8.27E-04	5.96E-04	4.84E-04	4.99E-04
	Cs-138	9.00E-01	9.58E-02	6.38E-02	9.39E-02
	Ba-139	1.39E-01	7.80E-02	7.14E-02	7.69E-02
	Au-199	ND	5.94E-06	ND	ND
	Total for Period*	1.29E+00	2.61E-01	1.76E-01	1.72E-01
4.	Tritium	1.07E+00	1.37E+00	4.47E+00	2.24E+00

*Includes all nuclides, even those with less than an eight day half-life.
**ND – Not Detected.

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
YEAR 2003
GASEOUS EFFLUENTS - GROUND RELEASE

CURIES	Quarter 1	Quarter 2	Quarter 3	Quarter 4
1. Fission Gases				
Kr-85m	ND*	ND	ND	ND
Kr-85	ND	ND	ND	ND
Kr-87	ND	ND	ND	ND
Kr-88	ND	ND	ND	ND
Xe-133	ND	ND	ND	ND
Xe-135m	ND	ND	ND	ND
Xe-135	ND	ND	ND	ND
Xe-138	ND	ND	ND	ND
Others(specify)				
NONE				
Total for Period	ND	ND	ND	ND
2. Iodines				
I-131	1.45E-02	4.21E-04	4.62E-04	5.29E-04
I-132	ND	ND	ND	ND
I-133	4.63E-03	6.82E-04	1.22E-03	1.34E-03
I-135	ND	ND	ND	ND
Total for Period	1.91E-02	1.10E-03	1.68E-03	1.87E-03

*ND – Not Detected.

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
YEAR 2003
GASEOUS EFFLUENTS - GROUND RELEASE

CURIES 3. Particulates*	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Sr-89	7.72E-05	ND	ND	ND
Sr-90	ND**	ND	ND	ND
Cs-134	ND	ND	ND	ND
Cs-137	ND	ND	1.74E-06	2.19E-06
Ba-140	6.34E-06	ND	ND	1.71E-06
La-140	ND	ND	ND	ND
Others (specify)				
Y-91m	8.74E-04	1.30E-04	4.76E-06	2.09E-04
Cs-138	1.66E-01	4.69E-03	4.90E-04	1.46E-02
Ba-139	3.35E-02	1.35E-02	1.64E-02	3.15E-02
Total for Period*	2.00E-01	1.83E-02	1.69E-02	4.63E-02
4. Tritium	5.93E+00	9.74E+00	3.87E+00	4.68E+00

*Include all nuclides even those with less than an eight day half-life.
**ND – Not Detected.

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
YEAR 2003
GASEOUS EFFLUENTS - MIXED MODE RELEASE*

CURIES	Quarter 1	Quarter 2	Quarter 3	Quarter 4
1. Fission Gases				
Kr-85m	ND**	ND	ND	ND
Kr-85	ND	ND	ND	ND
Kr-87	ND	ND	ND	ND
Kr-88	ND	ND	ND	ND
Xe-133	4.54E+03	ND	ND	ND
Xe-135m	ND	ND	ND	ND
Xe-135	2.74E-02	ND	ND	ND
Xe-138	ND	ND	ND	ND
Others(specify)				
NONE				
Total for Period	4.54E+03	ND	ND	ND
2. Iodines				
I-131	6.53E-02	2.46E-03	7.71E-04	3.95E-04
I-133	1.07E-02	2.91E-03	1.19E-03	9.35E-04
I-135	ND	ND	ND	ND
Total for Period	7.61E-02	5.37E-03	1.96E-03	1.33E-03

*The Reactor Building and Radwaste Building are treated as split-level releases.
**ND – Not Detected.

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
YEAR 2003
GASEOUS EFFLUENTS - MIXED MODE RELEASE*

CURIES	Quarter 1	Quarter 2	Quarter 3	Quarter 4
3. Particulates**				
Sr-89	8.27E-05	3.03E-05	ND	2.99E-05
Sr-90	ND***	ND	ND	ND
Cs-134	1.09E-03	1.26E-03	1.95E-03	1.09E-03
Cs-137	1.07E-03	1.07E-03	1.78E-03	1.11E-03
Ba-140	7.96E-04	2.01E-04	2.93E-05	2.70E-05
La-140	3.71E-04	2.88E-05	4.41E-06	1.40E-06
Others (specify)				
Na-24	2.15E-03	ND	ND	ND
Cr-51	8.67E-05	4.04E-05	5.12E-05	1.55E-05
Mn-54	1.09E-04	5.24E-05	2.25E-05	6.73E-06
Co-58	1.91E-05	1.59E-05	2.79E-08	ND
Fe-59	6.93E-06	ND	ND	ND
Co-60	2.41E-04	2.05E-04	5.05E-05	ND
Zn-65	3.56E-05	9.11E-05	4.54E-05	ND
Y-91m	7.72E-03	1.28E-03	5.70E-04	9.48E-04
Sr-91	8.66E-03	3.52E-04	ND	3.33E-04
Sr -92	7.95E-03	3.98E-05	ND	ND

*The Reactor Building and Radwaste Building are treated as split-level releases.
**Includes all nuclides, even those with less than an eight day half-life.
***ND – Not Detected.

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
YEAR 2003
GASEOUS EFFLUENTS - MIXED MODE RELEASE*

CURIES Particulates** (Continued) Others (specify)	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Mo-99	4.38E-05	ND***	ND	6.25E-06
Tc-99m	4.28E-05	ND	ND	6.10E-06
Ag-110m	1.62E-04	9.49E-06	7.89E-06	ND
Cs-138	ND	ND	ND	5.55E-03
Ba-139	1.40E-01	3.31E-02	1.78E-02	2.84E-02
Ce-141	2.59E-05	ND	ND	ND
Total for Period**	1.70E-01	3.78E-02	2.23E-02	3.75E-02
4. Tritium	1.88E+01	2.72E+01	1.45E+01	1.60E+01

*The Reactor Building and Radwaste Building are treated as split-level releases.
**Includes all nuclides, even those with less than an eight day half-life.
***ND – Not Detected.

BROWNS FERRY NUCLEAR PLANT
ANNUAL EFFLUENT AND WASTE DISPOSAL REPORT
2003
SOLID WASTE AND IRRADIATED FUEL

A. Solid Waste Shipped Off-site for Burial or Disposal (Not Irradiated Fuel)

1. Type of Waste	Units	Amount	Error %
a. Spent resins, filters, filter sludge evaporator bottoms, etc.	m^3	4.31E+02	
	Ci	1.44E+03	+/-25.0
b. Dry compressible waste, contaminated equipment, etc.			
1. Shipped from site to processor	m^3	5.73E+03	
	Ci	6.59E+00	+/-25.0
2. Estimated volume sent to burial by waste processor	m^3	5.92E+02	
	Ci	6.59E+00	+/-25.0
c. Irradiated components, control rod blades & LPRMs with fission chambers	m^3	3.25E+02	
	Ci	4.26E+04	+/-25.0
d. Other – Mixed Hazard Waste (Contaminated Lead)	m^3	2.12E-01	
	Ci	2.32E-06	+/-25.0

2. Estimate of Major Nuclide Composition by Waste Type

a. Spent resins, filters, filter sludge, evaporator bottoms, etc.

	Nuclide	Percentage	Curies
1)	Co-60	38.039	5.47E+02
2)	Fe-55	31.015	4.46E+02
3)	Cs-137	19.193	2.76E+02
4)	Cs-134	6.287	9.04E+01
5)	Mn-54	1.919	2.76E+01
6)	Zn-65	1.899	2.73E+01
7)	Ni-63	1.015	1.46E+01
8)	Ag-110m	0.293	4.21E+00
9)	Sr-90	0.137	1.97E+00
10)	Pu-241	0.097	1.39E+00
11)	C-14	0.077	1.11E+00
12)	Tc-99	0.009	1.24E-01
13)	Am-241	0.005	7.32E-02
14)	Pu-238	0.003	4.33E-02
15)	Pu-239	0.002	2.64E-02
16)	Cm-243	0.001	1.33E-02

b. Dry compressible waste, contaminated equipment, etc.

	Nuclide	Percentage	Curies
1)	Fe-55	5.39E+01	3.55E+00
2)	Co-60	2.70E+01	1.78E+00
3)	Cs-137	7.41E+00	4.88E-01
4)	Mn-54	2.63E+00	1.73E-01
5)	Ni-63	2.50E+00	1.65E-01
6)	Cs-134	2.09E+00	1.38E-01
7)	Zn-65	1.45E+00	9.56E-02
8)	Cr-51	1.25E+00	8.27E-02
9)	Ag-110m	5.48E-01	3.61E-02
10)	Fe-59	3.60E-01	2.37E-02
11)	Pu-244	2.66E-01	1.75E-02
12)	Co-58	2.49E-01	1.64E-02
13)	I-131	1.13E-02	7.42E-04
14)	Sb-125	6.37E-02	4.20E-03
15)	Zr-95	4.36E-02	2.87E-03
16)	Nb-95	3.88E-02	2.56E-03
17)	Sr-90	3.79E-02	2.50E-03
18)	Sb-124	3.28E-02	2.16E-03
19)	Ba-140	2.81E-02	1.85E-03
20)	La-140	2.76E-02	1.82E-03
21)	Eu-154	1.91E-02	1.26E-03
22)	Ce-141	1.70E-02	1.12E-03
23)	Ce-144	1.37E-02	9.04E-04
24)	Am-241	1.14E-02	7.54E-04
25)	Pu-238	1.14E-02	7.50E-04
26)	Cm-243	3.85E-03	2.54E-04
27)	Cm-244	3.79E-03	2.50E-04
28)	Pu-239	3.79E-03	2.50E-04
29)	Pu-240	3.79E-03	2.50E-04
30)	Co-57	1.43E-03	9.43E-05
31)	Pu-241	5.36E-04	3.53E-05

c. Irradiated components, Control Rod Blades & LPRMs with fission chambers

	Nuclide	Percentage	Curies
1)	Co-60	5.06E+01	2.16E+04
2)	Fe-55	4.19E+01	1.79E+04
3)	Ni-63	3.43E+00	1.46E+03
4)	Cr-51	2.15E+00	9.16E+02
5)	Mn-54	1.17E+00	4.97E+02
6)	Co-58	5.87E-01	2.50E+02
7)	Fe-59	1.20E-01	5.11E+01
8)	Ni-59	1.97E-02	8.38E+00
9)	H-3	9.51E-03	4.05E+00
10)	C-14	4.66E-03	1.99E+00
11)	Ta-182	1.26E-03	5.35E-01
12)	Cs-137	1.98E-04	8.45E-02
13)	Cs-134	1.05E-04	4.48E-02
14)	Nb-94	9.98E-05	4.25E-02
15)	Pu-238	6.95E-05	2.96E-02
16)	Ag-110m	7.79E-05	3.32E-02
17)	Zn-65	5.45E-05	2.32E-02
18)	Tc-99	2.11E-05	8.99E-03
19)	Pu-241	9.23E-06	3.93E-03
20)	La-140	9.18E-06	3.91E-03
21)	Ba-140	3.12E-06	1.33E-03
22)	Sb-124	2.66E-06	1.14E-03
23)	Zr-95	2.39E-06	1.02E-03
24)	Cm-242	1.06E-06	4.51E-04
25)	Sr-89	1.11E-06	4.73E-04
26)	Ce-144	1.04E-06	4.41E-04
27)	Sr-90	8.15E-07	3.47E-04
28)	Sb-125	5.19E-07	2.21E-04
29)	Cm-244	3.50E-07	1.49E-04
30)	Sn-113	2.35E-07	9.99E-05
31)	Ce-141	2.13E-07	9.06E-05
32)	Co-57	1.79E-07	7.63E-05
33)	Pu-240	7.02E-08	2.99E-05
34)	Pu-239	5.17E-08	2.20E-05
35)	Am-241	4.55E-08	1.94E-05
36)	Np-237	5.58E-09	2.38E-06
37)	Cm-243	1.80E-09	7.68E-07
38)	Am-243	2.84E-08	1.21E-05

d. Other, Mixed Hazard Waste (Contaminated Lead)

	Nuclide	Percentage	Curies
1)	Co-60	38.28	8.88E-07
2)	Fe-55	20.09	4.66E-07
3)	Cs-137	18.28	4.24E-07
4)	Mn-54	8.92	2.07E-07
5)	Cs-134	4.96	1.15E-07
6)	Ni-63	4.35	1.01E-07
7)	Zn-65	2.44	5.67E-08
8)	Pu-241	1.20	2.79E-08
9)	Ag-110m	1.13	2.62E-08
10)	Sr-90	0.17	4.01E-09
11)	Am-241	0.06	1.42E-09
12)	Pu-238	0.05	1.30E-09
13)	Pu-239	0.02	3.51E-10
14)	Pu-240	0.02	3.51E-10
15)	Cm-243	0.01	2.92E-10
16)	Cm-244	0.01	2.92E-10
17)	H-3	<0.01	4.10E-12
18)	Tc-99	<0.01	1.89E-12
19)	I-129	<0.01	1.06E-12
20)	C-14	<0.01	9.00E-13

3. Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
13	HIC/Cask, Sole Use Truck	Barnwell Waste Management Barnwell, SC
81	HIC/Cask, Sole Use Truck	Duratek Consolidation & Services Facility Barnwell, SC
106	63 - Sole Use Truck 43 - Non Sole Use Truck	Duratek Oak Ridge, TN
26	2 - Sole Use Truck 24 - Non Sole Use Truck	Duratek Kingston, TN
1	1 - Non Sole Use Truck	Tennessee Valley Authority Mixed Waste Storage Facility Muscle Shoals, AL

NOTE: The 94 cask shipments consisted of the following:

Type of HIC	Number of Packages	Volume per Package (m^3)
14-170	84	4.82E+00
8-120	7	3.40E+00
3-55	2	1.63E+00
EP-150	1	6.94E-01

NOTE: The 133 shipments of waste packaged in strong tight packages consisted of the following:

Type of STC	Number of Packages	Volume of Packages (m^3)
40' "Sealand"	46	2.16E+03
20' "Sealand"	109	3.56E+03
"B" Box	7	1.54E+01
55 Gal drum	1	2.12E-01

B. Irradiated Fuel Disposition

Number of Shipments	Mode of Transportation	Destination
None	N/A	N/A

BROWNS FERRY NUCLEAR PLANT
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT
SUMMARY OF ABNORMAL/UNPLANNED RELEASES
2003

The release of radioactive material to the environment from Browns Ferry has been a small fraction of the 10 CFR 20 Appendix B and 10 CFR 50 Appendix I limits. There were no limits exceeded as specified in 10 CFR 20 Appendix B and 10 CFR 50 Appendix I.

No abnormal gaseous releases occurred in 2003. One abnormal liquid release was detected on August 14, 2003. The release consisted of low concentrations of Fluorine-18 and tritium from the Unit 3 station sump. The chemistry database was searched for previous sump entries. All entries showed zero activity. The spectrum for the last clean sample was reviewed in the process of estimating the total activity released. Traces of F-18 were discovered in the spectrum. A further investigation of 2002 and 2003 sump samples found traces of F-18 since September 02, 2002. Traces of H-3 were found in the composite of batch releases made in August 2003 when the F-18 was first discovered. This level of H-3 activity was assumed to be present in all releases showing F-18. Doses from H-3 are very small and doses from F-18 are small due to its short half-life. Due to the travel time to the first public water supply, the trace levels of F-18 were reduced by a factor more than 1000 for each quarter. Details of the abnormal release are given in Problem Evaluation Report 03-015578. Problem Evaluation Report 03-022239 was written to address the F-18 not being identified in the spectra.

During the reporting period, January 1 through December 31, 2003, there were no missed compensatory measures.

In calendar year 2003, Browns Ferry had no changes to the radwaste system or the Process Control Program (PCP).

ENCLOSURE 4

TENNESSEE VALEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT
UNITS 1, 2, AND 3

INOPERABLE RADIOLOGICAL EFFLUENT INSTRUMENTATION REPORT
2003

INOPERABLE RADIOLOGICAL EFFLUENT INSTRUMENTATION REPORT 2003

This report is to comply with Browns Ferry Nuclear Plant Offsite Dose Calculation Manual (Offsite Dose Calculation Manual (ODCM)) Sections 1/2.1.1 and 1/2.1.2. The ODCM requires the exertion of best efforts to return inoperable instruments to operable status within 30 days. Failure to return such instruments to an operable status within the prescribed interval requires a description in the Annual Radioactive Effluent Release Report.

During the reporting period, January 1 through December 31, 2003, there were no radioactive gaseous effluent monitoring instruments out of service for greater than 30 days.

The liquid radwaste effluent flow rate instrument [(77-60 loop) ODCM Table 1.1-1] was out of service from May 1, 2003, to June 14, 2003.Browns Ferry Nuclear currently has a policy of zero liquid releases; however, an exception was made due to the need to drain the unit 1 torus (to support unit 1 recovery efforts). Additional releases were made during the period (May-June 2003). Due to inconsistencies in recording the flow totalizer readings, the flow instrument remained inoperable during these releases. A Browns Ferry Problem Evaluation Report, 03-008018, addressed the issue with the flow totalizer recording. During all releases, the flow was estimated once per 4 hours as required by the ODCM.

Some effluent monitors and flow instrumentation were placed in "out-of-service" status because these monitors' effluent streams were isolated. Therefore, these monitors are not included in this report.

ENCLOSURE 5

TENNESSEE VALEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT
UNITS 1, 2, AND 3

CHANGES TO OFFSITE DOSE CLCULATION MANUAL
2003

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT

OFFSITE DOSE CALCULATION MANUAL

ODCM

REVISION 15

PREPARED BY: Dale W. Nix PHONE: 2682

RESPONSIBLE ORGANIZATION: RADCHEM, CHEMISTRY

APPROVED BY: R. G. JONES DATE: 03/01/2003

EFFECTIVE DATE: 03/01/2003

LEVEL OF USE: REFERENCE USE

QUALITY-RELATED

REVISION LOG

Procedure Number: ODCM Revision Number: 15

Page Affected: 15, 17, 22, 27, 31, 32, 33, 36-39, 50, 202, 204, 205, and 206.

Pagination Pages: None

Description of Changes: IC-16.

Revised the Radiological Environmental Monitoring Program due to a dairy farm going out of business. Refined locations of sampling and dosimetry locations due to global positioning system measurements (CORP PER 02-000189-000).

Deleted controls 1.0.3 and 1.0.4 and their references. This is a clarification, since these controls are not applicable to any action in the ODCM. This is consistent with other TVA plants.

Deleted reference to the Environmental Protection Agency Interlaboratory Comparison Program, since TVA no longer participates in this program.

The changes due to this revision will maintain the levels of radioactive effluent control required by 10 CFR 20.1302, 40 CFR 190, 10 CFR 50.36a, and 40 CFR 190, AND 10 CFR 50, Appendix I, and will not adversely impact the accuracy or reliability of effluent, dose, or setpoint calculations.

OFFSITE DOSE CALCULATION MANUAL (ODCM)

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INTRODUCTION

The Browns Ferry Nuclear Plant (BFN) Offsite Dose Calculation Manual (ODCM) is a supporting document of the BFN Technical Specifications. The ODCM is divided into two major parts. The first part of the ODCM contains: 1) Radioactive Effluent Controls specified by the BFN Technical Specification 5.5.4; 2) Radiological Environmental Monitoring Controls; 3) descriptions of the information that should be included in the Annual Radiological Environmental Operating and Annual Radioactive Effluent Release Reports required by BFN Technical Specifications 5.6.2 and 5.6.3; and, 4) Administrative Controls for the ODCM requirements. The second part of the ODCM contains the methodologies used to: 1) calculate offsite doses resulting from radioactive gaseous and liquid effluents; 2) calculate gaseous and liquid effluent monitor Alarm/Trip setpoints; and, 3) conduct the Radiological Environmental Monitoring Program (REMP).

The BFN ODCM is maintained for use as a reference guide on accepted methodologies and calculations. Changes in the calculation methods or parameters will be incorporated into the ODCM in order to assure that the ODCM represents the present methodology in all applicable areas. Any licensee initiated ODCM changes will be implemented in accordance with BFN Technical Specifications.

Radioactive waste release levels to UNRESTRICTED AREAS shall be kept "as low as reasonably achievable" and are not to exceed the annual average concentration limits specified in 10 CFR Part 20, Appendix B, Table 2. At the same time, the requirements specified in this manual permit the flexibility of operation, compatible with considerations of health and safety, to assure that the public is provided a dependable source of power under unusual operating conditions which may temporarily result in releases higher than design objectives but still within the annual average concentration limits specified in 10 CFR Part 20. It is expected that by using this operational flexibility and exerting every effort to keep levels of radioactive releases "as low as reasonably achievable" in accordance with criteria established in 10 CFR Part 50, Appendix I, the annual releases will result in a small fraction of the annual average concentration limits specified in 10 CFR Part 20, Appendix B, Table 2.

The surveillance/testing requirements given in this manual provide assurance that liquid and gaseous wastes are properly controlled and monitored during any release of radioactive materials in the liquid and gaseous effluents. These requirements provide the data for the licensee and the Commission to evaluate the station's performance relative to radioactive materials released to the environment. Reports on the quantities of radioactive materials released in effluents shall be furnished to the Commission on the basis of Section 5.0 of this manual. On the basis of such reports and any additional information the Commission may obtain from the licensee or others, the Commission may require the licensee to take such actions as the Commission deems appropriate.

SECTION 1.0 AND 2.0

CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.0 APPLICABILITY

CONTROLS

1.0.1 Compliance with the Controls contained in the succeeding sections is required during the MODES specified therein; except that upon failure to meet the Control, the associated ACTION requirements shall be met.

1.0.2 Noncompliance with a Control shall exist when the requirements of the Control and associated ACTION requirements are not met within the specified time intervals. If the Control is restored prior to the expiration of the specified intervals, completion of the ACTION requirements is not required.

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.0 APPLICABILITY

SURVEILLANCE REQUIREMENTS

2.0.1 Surveillance Requirements shall be met during the MODES specified for individual Controls unless otherwise stated in the individual Surveillance Requirement.

2.0.2 Each Surveillance Requirement shall be performed within the specified time interval with a maximum allowable extension not to exceed 25% of the surveillance interval.

2.0.3 Performance of a Surveillance Requirement within the specified time interval shall constitute compliance and OPERABILITY requirements for a Control and associated action statements unless otherwise required by these Controls. Surveillance Requirements do not have to be performed on inoperable equipment.

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.1 INSTRUMENTATION

1/2.1.1 RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

CONTROLS

1.1.1 In accordance with BFN Technical Specification 5.5.4.a, the radioactive liquid effluent monitoring instrumentation listed in Table 1.1-1 shall be OPERABLE with the applicability as shown in Tables 1.1-1 and 2.1-1. Alarm/trip setpoints will be set in accordance with guidance given in ODCM Section 6.2 to ensure that the limits of Control 1.2.1.1 are not exceeded.

APPLICABILITY: This requirement is applicable as shown in Table 1.1-1.

ACTION:

a. With a radioactive liquid effluent monitoring channel alarm/trip setpoint less conservative than required by these requirements, suspend the release without delay, declare the channel inoperable, or adjust the alarm/trip setpoint to establish the conservatism required by these requirements.

b. The action required when the number of OPERABLE channels is less than the minimum channels OPERABLE requirement is specified in the notes for Table 1.1-1. Exert best efforts to return the instrument(s) to OPERABLE status within 30 days and, if unsuccessful, explain in the next Annual Radioactive Effluent Release Report why the in-operability was not corrected in a timely manner.

c. Report all deviations in the Annual Radioactive Release Report.

SURVEILLANCE REQUIREMENTS

2.1.1 Each of the radioactive liquid effluent monitoring instruments shall be demonstrated OPERABLE by performance of tests in accordance with Table 2.1-1.

Table 1.1-1 (Page 1 of 2)
RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

Instrument*	Minimum Channels OPERABLE	Applicability	ACTION
1. Liquid Radwaste Effluent Monitor (RM-90-130)	1	**	A/B
2. RHR Service Water Monitor (RM-90-133D, -134D)	1	***	C
3. Raw Cooling Water Monitor (RM-90-132D)	1	**	D
4. Liquid Radwaste Effluent Flow Rate (77-60 loop)	1	**	E

* Alarm/trip setpoints will be calculated in accordance with the guidance given in Section 6.2.
** During Releases via this pathway.
*** During operation of an RHR loop and associated RHR service water system.

Table 1.1-1 (Page 2 of 2)
RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION
TABLE NOTATION

ACTION A
During release of radioactive wastes from the radwaste processing system, the following shall be met:

(1) liquid waste activity and flowrate shall be continuously monitored and recorded during release and shall be set to alarm and automatically close the waste discharge valve before exceeding the limits specified in Control 1.2.1.1,
(2) if this cannot be met, two independent samples of the tank being discharged shall be analyzed in accordance with the sampling and analysis program specified in Table 2.2-1 and two qualified station personnel shall independently verify the release rate calculations and check valving before the discharge. Otherwise, suspend releases via this pathway.

ACTION B
With a radioactive liquid effluent monitoring channel alarm/trip setpoint less conservative than required by these requirements, suspend release via this pathway without delay, declare the channel inoperable, or adjust the alarm/trip setpoint to establish the conservatism required by these requirements.

ACTION C
During operation of an RHR loop and associated RHR service water system, the effluent from that unit's service water shall be continuously monitored. If an installed monitoring system is not available, a temporary monitor or grab samples taken every 4 hours and an analysis with at least an LLD[1] of 1E-7 µCi/ml (gross) or < applicable ECL ratio (γ isotopic) shall be used to monitor the effluent.

ACTION D
With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided that a temporary monitor is installed or, at least once per 8 hours, grab samples are collected and analyzed for radioactivity with an LLD[1] of 1E-7 µCi/ml (gross) or < applicable ECL ratio (γ isotopic).

ACTION E
With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may be continued provided the flow rate is estimated at least once per 4 hours during actual releases. Pump curves may be used to estimate flow.

[1] See Table 2.2-1, Table Notation for the definition of LLD.

Table 2.1-1 (Page 1 of 2)
RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

Instrument	INSTRUMENT CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST
a. Liquid Radwaste Effluent Monitor (RM-90-130)	D[4]	M	18M[5]	Q[1]
b. RHR Service Water Monitor (RM-90-133D,-134D)	D[4]	M	18M[5]	Q[2]
c. Raw Cooling Water Monitor (RM-90-132D)	D[4]	M	18M[5]	Q[2]
d. Liquid Radwaste Effluent Flow Rate (77-60 loop)	D[4]	N/A	18M	Q[3]

Table 2.1-1 (Page 2 of 2)
RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION
SURVEILLANCE REQUIREMENTS
TABLE NOTATION

NOTE: Each requirement shall be performed within the specified time interval with a maximum allowable extension not to exceed 25% of the interval given.

1 The CHANNEL FUNCTIONAL TEST shall demonstrate that automatic isolation of this pathway and control room alarm annunciation occurs if any of the following conditions exists:

a. Instrument indicates measured levels above the alarm/trip setpoint.
b. Instrument indicates an inoperative/downscale failure.
c. Instrument controls not set in operate mode.

2 The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:

a. Instrument indicates measured levels above the alarm/trip setpoint.
b. Instrument indicates an inoperative/downscale failure.
c. Instrument controls not set in operate mode.

3 This functional test shall consist of measuring rate of tank decrease over a period of time and comparing this value with flow rate instrument reading.

4 INSTRUMENT CHECK shall consist of verifying indication during periods of release. INSTRUMENT CHECK shall be made at least once per 24 hours on days which continuous, periodic, or batch releases are made.

5 The CHANNEL CALIBRATION shall include the use of a known (traceable to the National Institute of Standards and Technology (NIST)) radioactive source(s) positioned in a reproducible geometry with respect to the sensor or using standards that have been obtained from suppliers that participate in measurement assurance activities with the NIST.

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.1 INSTRUMENTATION

1/2.1.2 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

CONTROLS

1.1.2 In accordance with BFN Technical Specification 5.5.4.a, the radioactive gaseous effluent monitoring instruments listed in Table 1.1-2 shall be OPERABLE with the applicability as shown in Table 1.1-2. Alarm/trip setpoints will be set in accordance with guidance given in ODCM Section 7.2 to ensure that the limits of ODCM Control 1.2.2.1 are not exceeded.

APPLICABILITY: As shown in Table 1.1-2.

ACTION:

a. With a radioactive gaseous effluent monitoring channel alarm/trip setpoint less conservative than required by these requirements, suspend the release without delay, declare the channel inoperable or adjust the alarm/trip setpoint to establish the conservatism required by these requirements.

b. Both off-gas treatment monitors may be taken out of service for less than one hour for purging of monitors during SI performance.

c. The action required when the number of operable channels is less than the minimum channels operable requirement is specified in the notes for Table 1.1-2. Exert best efforts to return the instrument(s) to operable status within 30 days and, if unsuccessful, explain in the next Annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner.

d. Report all deviations in the Annual Radioactive Release Report.

SURVEILLANCE REQUIREMENTS

2.1.2 Each of the radioactive gaseous effluent monitoring instruments shall be demonstrated OPERABLE by performance of tests in accordance with Table 2.1-2.

Table 1.1-2 (Page 1 of 2)
RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Instrument	Minimum Channels/ Devices OPERABLE	Applicability	ACTION
1. STACK (RM-90-147B & -148B)			
a. Noble Gas Monitor	1	*	A/C
b. Iodine Cartridge	1	*	B/C
c. Particulate Filter	1	*	B/C
d. Sampler Flow Abnormal	1	*	D
e. Stack Flow (FT, FM, FI-90-271)	1	*	G
2. REACTOR/TURBINE/REFUEL BUILDING VENTILATION ZONE (RM-90-250)			
a. Noble Gas Monitor	1	*	A/C
b. Iodine Sampler	1	*	B/C
c. Particulate Sampler	1	*	B/C
d. Sampler Flowmeter	1	*	D
3. TURBINE BUILDING EXHAUST (RM-90-249, -251)			
a. Noble Gas Monitor	1	**	A/C
b. Iodine Sampler	1	**	B/C
c. Particulate Sampler	1	**	B/C
e. Sampler Flowmeter	1	**	D
4. RADWASTE BUILDING VENT (RM-90-252)			
a. Noble Gas Monitor	1	*	A/C
b. Iodine Sampler	1	*	B/C
c. Particulate Sampler	1	*	B/C
e. Sampler Flowmeter	1	*	D
5. OFFGAS POST TREATMENT			
a. Noble Gas Activity Monitor (RM-90-265, -266)	1	**	F
b. Sample Flow Abnormal (PA-90-262)	1	**	D

* At all times.
** During releases via this pathway.

Table 1.1-2 (Page 2 of 2)
RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION
TABLE NOTATION

ACTION A

With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via the affected pathway may continue provided a temporary monitoring system is installed or grab samples are taken and analyzed at least once every 8 hours.

ACTION B

With a number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided samples are continuously collected with auxiliary sampling equipment for periods on the order of seven (7) days and analyzed in accordance with the sampling and analysis program specified in Table 2.2-2 within 48 hours after the end of the sampling period.

ACTION C

A monitoring system may be out of service for 4 hours for functional testing, calibration, or repair without providing or initiating grab sampling.

ACTION D

With the number of channels OPERABLE less than required by the Minimum Channels Operable requirement, effluent releases via this pathway may continue provided the flow rate is estimated at least once per 4 hours.

ACTION F

With the number of channels OPERABLE less than required by the Minimum Channels Operable requirement, effluent releases via this pathway may continue provided grab samples are taken at least once per 8 hours and these samples are analyzed for gross activity within 24 hours. Purging during SI performance is not considered a loss of monitoring capability.

ACTION G

With the number of channels OPERABLE less than required by the Minimum Channels Operable requirement, effluent releases via this pathway may continue provided the flow rate is recorded from 0-FI-90-348 (WRGERMS, Stack Flow Indicator)[BFPER960961]. If both 0-FI-90-271 and 0-FI-90-348 are inoperable, ACTION D applies.

Table 2.1-2 (Page 1 of 2)
RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

Instrument	INSTRUMENT CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST
1. STACK				
a. Noble Gas Monitor[4]	D	M	18M[1]	Q[2]
b. Iodine Cartridge	W	N/A	N/A	N/A
c. Particulate Filter	W	N/A	N/A	N/A
d. Sampler Flow Abnormal	D	N/A	18M	Q
e. Stack Flowmeter	D	N/A	18M	Q
2. REACTOR/TURBINE/REFUEL BUILDING VENTILATION ZONE				
a. Noble Gas Monitor[5]	D	M	18M[1]	Q[2]
b. Iodine Sampler	W	N/A	N/A	N/A
c. Particulate Sampler	W	N/A	N/A	N/A
b. Sampler Flowmeter	D	N/A	18M	Q
3. TURBINE BUILDING EXHAUST				
a. Noble Gas Monitor[5]	D	M	18M[1]	Q[2]
b. Iodine Sampler	W	N/A	N/A	N/A
c. Particulate Sampler	W	N/A	N/A	N/A
b. Sampler Flowmeter	D	N/A	18M	Q
4. RADWASTE BUILDING VENT				
a. Noble Gas Monitor[5]	D	M	18M[1]	Q[2]
b. Iodine Sampler	W	N/A	N/A	N/A
c. Particulate Sampler	W	N/A	N/A	N/A
b. Sampler Flowmeter	D	N/A	18M	Q
5. OFF GAS POST TREATMENT				
a. Noble Gas Activity Monitor[4]	D	M	18M[1]	Q[3]
b. Sample Flow Abnormal	D	N/A	18M	Q[2]

Table 2.1-2 (Page 2 of 2)
RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

NOTE: Each requirement shall be performed within the specified time interval with a maximum allowable extension not to exceed 25% of the interval given.

[1] The CHANNEL CALIBRATION shall include the use of a known (traceable to the National Institute of Standards and Technology (NIST)) radioactive source(s) positioned in a reproducible geometry with respect to the sensor or using standards that have been obtained from suppliers that participate in measurement assurance activities with the NIST.

[2] The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm/trip setpoint.

2. Instrument indicates an inoperative/downscale failure.

3. Instrument controls not set in operate mode (stack only).

[3] The CHANNEL FUNCTIONAL TEST shall demonstrate that automatic isolation of this pathway and control room alarm annunciation occurs if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm/trip setpoint.

2. Instrument indicates an inoperative/downscale failure.

3. Instrument controls not set in operate mode (stack only).

The two channels are arranged in a coincidence logic such that 2 upscale, or 1 downscale and 1 upscale or 2 downscale will isolate the offgas line.

[4] The noble gas monitor shall have a LLD of 1E-5 µCi/cc (Xe-133 Equivalent).

[5] The noble gas monitor shall have a LLD of 1E-6 µCi/cc (Xe-133 Equivalent).

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.1 LIQUID EFFLUENTS

1/2.2.1.1 CONCENTRATION

CONTROLS

1.2.1.1 In accordance with BFN Technical Specifications 5.5.4.b and c, the concentration of radioactive material released at any time from the site to UNRESTRICTED AREAS (see Figure 3.1) shall be limited to ten times the concentrations specified in 10 CFR Part 20, Appendix B, Table 2, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2E-4 µCi/ml total activity.

APPLICABILITY: At all times.

ACTION:

a. If the above limits are exceeded, appropriate action shall be initiated without delay to bring the release within limits. Report all deviations in the Annual Radioactive Effluent Release Report.

SURVEILLANCE REQUIREMENTS

2.2.1.1.1 Facility records shall be maintained of radioactive concentrations and volume before dilution of each batch of liquid effluent released, and of the average dilution flow and the length of time over which each discharge occurred.

2.2.1.1.2 Radioactive liquid waste sampling and activity analysis of each liquid waste batch to be discharged shall be performed prior to release in accordance with the sampling and analysis program specified in Table 2.2-1.

2.2.1.1.3 The operation of the automatic isolation valves and discharge tank selection valves shall be checked once per 24 months.

2.2.1.1.4 The results of the analysis of samples collected from release points shall be used with the calculational methodology in ODCM Section 6.1 to assure that the concentrations at the point of discharge are maintained within the above limits.

Table 2.2-1 (Page 1 of 3)
RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

Liquid Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	System Design Capability Lower Limit of Detection (LLD)[3] (µCi/ml)
Batch Waste Releases[1]	Each Batch	Each Batch Prior to Release	Principal Gamma Emitters[4]	$5x10^{-7}$
	One Batch per Month	Monthly	Dissolved and Entrained Gases[5]	$1x10^{-5}$
	Monthly Proportional Composite[2]	Monthly	Tritium	$1x10^{-5}$
			Gross Alpha	$1x10^{-7}$
	Quarterly Proportional Composite[2]	Quarterly	Sr-89, Sr-90	$5x10^{-8}$
			Fe-55	$1x10^{-6}$

Table 2.2-1 (Page 2 of 3)
RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM
TABLE NOTATION

1 A batch release is the discharge of liquid waste of a discrete volume. The discharge shall be thoroughly mixed prior to sampling.

2 A proportional composite sample is one in which the quantity of liquid sampled is proportional to the quantity of liquid waste discharged from the plant and is representative of the liquid discharged.

3 The LLD is defined for the purpose of these requirements as the smallest concentration of radioactive material in a sample that will yield a net count above system background that will be detected with 95% probability with only a 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system (which may include radiochemical separation):

$$LLD = \frac{4.66 s_b}{E \quad V \quad 2.22E{+}06 \quad Y \quad \exp(-\lambda \Delta t)}$$

Where:

LLD = the "a priori" lower limit of detection as defined above (µCi/g or µCi/ml),
s_b = the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (cpm),
E = the counting efficiency (c/decay),
V = the sample size (g or ml),
2.22E+06 = the number of dpm/µCi
Y = the fractional radiochemical yield, when applicable,
λ = the radioactive decay constant for the particular radionuclide (s^{-1}), and
Δt = the elapsed time between midpoint of sample collection and time of counting (s).

Typical values of E, V, Y, and Δt should be used in the calculation.

It should be recognized that the LLD is defined as an <u>a priori</u> (before the fact) limit representing the capability of a measurement system and not an <u>a posteriori</u> (after the fact) limit for a particular measurement.

Table 2.2-1 (Page 3 of 3)
RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM
TABLE NOTATION

[4] The principal gamma emitters for which the LLD specification will apply are exclusively the following radionuclides: Zn-65, Co-60, Cs-137, Mn-54, Co-58, Cs-134, Ce-141, Ce-144, Mo-99 and Fe-59 for liquid releases. This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measurable and identifiable, together with the above nuclides, shall also be identified and reported as being present. Nuclides which are below the LLD for the analysis should not be reported as being present at the LLD level for that nuclide. I-131 shall have a LLD of ≤ 1E-6 μCi/ml.

[5] Gamma Emitters Only.

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.1 LIQUID EFFLUENTS

1/2.2.1.2 DOSE

CONTROLS

1.2.1.2 In accordance with BFN Technical Specifications 5.5.4.d and e, the doses or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released from each unit to UNRESTRICTED AREAS shall be limited:

a. During any calendar quarter to ≤ 1.5 mrem to the total body and to ≤ 5 mrem to any organ, and

b. During any calendar year to ≤ 3 mrem to the total body and to ≤ 10 mrem to any organ.

APPLICABILITY: At all times.

ACTION:

a. With the calculated dose from the release of radioactive materials in liquid effluents exceeding any of the above limits, prepare and submit to the Commission within 30 days, pursuant to ODCM Administrative Control 5.4, a Special Report that identifies the cause(s) for exceeding the limit(s) and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits. This Special Report shall also include: (1) the results of radiological analyses of the drinking water source, and (2) the radiological impact on finished drinking water supplies with regard to the requirements of 40 CFR Part 141, National Primary Drinking Water Regulations.*

SURVEILLANCE REQUIREMENTS

2.2.1.2 Cumulative quarterly and yearly dose contributions from liquid effluents shall be determined as specified in ODCM Section 6.3 at least once every 31 days.

* The requirements of (1) and (2) above are applicable only if drinking water supply is taken from the receiving water body within 3 miles of the plant discharge. In the case of river-sited plants this is 3 miles downstream only.

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.1 LIQUID EFFLUENTS

1/2.2.1.3 LIQUID RADWASTE TREATMENT SYSTEM

CONTROLS

1.2.1.3 In accordance with BFN Technical Specification 5.5.4.f, the Liquid Radwaste Treatment System shall be used to reduce the radioactive materials in liquid discharge from the site when the projected monthly dose would exceed 0.06 mrem to the total body or 0.20 mrem to any other organ per unit.

APPLICABILITY: At all times.

ACTION:

a. With radioactive liquid waste being discharged for more than 31 days without treatment and when the projected dose is in excess of the above limits and any portion of the Liquid Radwaste Treatment System not in operation, prepare and submit to the Commission within 30 days, pursuant to ODCM Adminstrative Control 5.4, a Special Report that includes the following information:

   1. Explanation of why liquid radwaste was being discharged without treatment, identification of any inoperable equipment or subsystems, and the reason for the inoperability,

   2. Action(s) taken to restore the inoperable equipment to OPERABLE status, and

   3. Summary description of action(s) taken to prevent a recurrence.

SURVEILLANCE REQUIREMENTS

2.2.1.3 Doses due to liquid releases to UNRESTRICTED AREAS shall be projected at least once per 31 days, in accordance with ODCM Section 6.5.

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.2 GASEOUS EFFLUENTS

1/2.2.2.1 DOSE RATE

CONTROLS

1.2.2.1 In accordance with BFN Technical Specification 5.5.4.g, the dose rate at any time to areas at and beyond the SITE BOUNDARY (see Figure 3.1) due to radioactivity released in gaseous effluents from the site shall be limited to the following values:

a. The dose rate limit for noble gases shall be ≤ 500 mrem/yr to the total body and ≤ 3000 mrem/yr to the skin, and

b. The dose rate limit for I-131, I-133, H-3 and particulates with greater than eight day half-lives shall be ≤ 1500 mrem/yr to any organ.

APPLICABILITY: At all times.

ACTION: a. If the limits above are exceeded, appropriate corrective action shall be immediately initiated to bring the release within limits. Report all deviations in the Annual Radioactive Effluent Release Report.

SURVEILLANCE REQUIREMENTS

2.2.2.1.1 The gross ß/γ and particulate activity of gaseous wastes released to the environment shall be monitored and recorded.

a. For effluent streams having continuous monitoring capability, the activity shall be monitored and flow rate evaluated and recorded to enable release rates of gross radioactivity to be determined at least once per shift using instruments specified in Table 1.1-2.

b. For effluent streams without continuous monitoring capability, the activity shall be monitored and recorded and the release through these streams controlled to within the limits specified above.

2.2.2.1.2 Radioactive gaseous waste sampling and activity analysis shall be performed in accordance with the sampling and analysis program specified in Table 2.2-2. Dose rates shall be determined to be within the above limits using methods contained in ODCM Section 7.3.

2.2.2.1.3 Samples of offgas system effluents shall be analyzed at least weekly to determine the identity and quantity of the principal radionuclides being released.

Table 2.2-2 (Page 1 of 2)

RADIOACTIVE GASEOUS WASTE MONITORING SAMPLING AND ANALYSIS PROGRAM

Gaseous Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	System Design Capability Lower Limit of Detection (LLD)[1] (µCi/ml)
A. Containment Purge	Prior to Each PURGE Grab Sample[5]	Prior to Each PURGE	Principal Gamma Emitters[3]	$1x10^{-4}$
		Monthly[6]	H-3	$1x10^{-6}$
B.1. Stack	Monthly Grab Sample	Monthly[4]	Principal Gamma Emitters[3]	$1x10^{-4}$
2. Building Ventilation a. Reactor/ Turbine b. Turbine Exhaust c. Radwaste	Monthly Grab Sample	Monthly[4]	H-3	$1x10^{-6}$
C. All Release Points Listed in B. Above	Continuous Sampler	Charcoal Sample Weekly[4]	I-131	$1x10^{-12}$ [2]
	Continuous Sampler	Particulate Sample Weekly[4]	Principal Gamma Emitters[3]	$1x10^{-11}$ [2]
			I-131	$1x10^{-12}$ [2]
	Continuous Sampler	Composite Particulate Sample Monthly	Gross Alpha	$1x10^{-11}$
	Continuous Sampler	Composite Particulate Sample Quarterly	Sr-89, Sr-90	$1x10^{-11}$

Table 2.2-2 (Page 2 of 2)

RADIOACTIVE GASEOUS WASTE MONITORING SAMPLING AND ANALYSIS PROGRAM

TABLE NOTATION

1 The LLD is defined, for the purpose of this requirement, as the smallest concentration of radioactive material in a sample that will yield a net count above system background that will be detected with 95% probability with only a 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system (which may include radiochemical separation):

$$LLD = \frac{4.66\ s_b}{E\ \ V\ \ 2.22E{+}06\ \ Y\ \ \exp(-\lambda\ \Delta t)}$$

Where:

LLD = the "a priori" lower limit of detection (µCi/g or µCi/ml),
s_b = the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (cpm),
E = the counting efficiency (c/decay),
V = the sample size (g or ml)
2.22E+06 = the number of dpm/µCi,
Y = the fractional radiochemical yield, when applicable,
λ = the radioactive decay constant for the particular radionuclide (s^{-1}), and
Δt = the elapsed time between midpoint of sample collection and time of counting (s).

Typical values of E, V, Y, and Δt should be used in the calculation

It should be recognized that the LLD is defined as an <u>a priori</u> (before the fact) limit representing the capability of a measurement system and not an <u>a posteriori</u> (after the fact) limit for a particular measurement.

2 When samples are collected more often than that shown, the minimum detectable concentrations can be correspondingly higher.

3 The principal gamma emitters for which the LLD specification will apply are exclusively the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, and Xe-138 for gaseous emissions and Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, Ce-141 and Ce-144 for particulate emissions. This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measurable and identifiable, together with the above nuclides, shall also be identified and reported. Nuclides which are below the LLD for the analyses should not be reported as being present at the LLD level for that nuclide.

4 Analysis shall also be performed if the radiation monitor alarm exceeds the setpoint value.

5 A grab sample is not required after deinerting, provided that:
- the reactor has not achieved criticality in the interim, and,
- the reactor coolant temperature has not reached or exceeded 212°F.

6 The primary coolant H-3 concentration in µCi/ml can be converted to µCi/cc and used to estimate the containment H-3 concentration (R38 960812 943).

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.2 GASEOUS EFFLUENTS

1/2.2.2.2 DOSE - NOBLE GASES

CONTROLS

1.2.2.2 In accordance with BFN Technical Specification 5.5.4.h, the air dose to areas at and beyond the SITE BOUNDARY (see Figure 3.1) due to noble gases released in gaseous effluents per unit shall be limited to the following:

a. During any calendar quarter, to ≤ 5 mrad for gamma radiation and ≤10 mrad for beta radiation;

b. During any calendar year, to ≤ 10 mrad for gamma radiation and ≤ 20 mrad for beta radiation.

APPLICABILITY: At all times.

ACTION:

a. With the calculated air dose from radioactive noble gases in gaseous effluents exceeding any of the above limits, prepare and submit to the Commission within 30 days, pursuant to ODCM Administrative Control 5.4, a Special Report that identifies the cause(s) for exceeding the limit(s) and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits.

SURVEILLANCE REQUIREMENTS

2.2.2.2 Cumulative quarterly and yearly dose contributions from gaseous releases shall be determined using methods contained in ODCM Section 7.3 at least once every 31 days.

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.2 GASEOUS EFFLUENTS

1/2.2.2.3 DOSE - I-131, I-133, TRITIUM AND RADIONUCLIDES IN PARTICULATE FORM WITH HALF-LIVES GREATER THAN EIGHT DAYS

CONTROLS

1.2.2.3 In accordance with BFN Technical Specification 5.5.4.e and i, the dose to a MEMBER OF THE PUBLIC from radioiodines, radioactive materials in particulate form, and radionuclides other than noble gases with half-lives greater than 8 days in gaseous effluent released per unit to areas at and beyond the SITE BOUNDARY (see Figure 3.1) shall be limited to the following:

a. To any organ during any calendar quarter to ≤ 7.5 mrem;

b. To any organ during any calendar year to ≤ 15 mrem.

APPLICABILITY: At all times.

ACTION:

a. With the calculated dose from the release of Iodine-131, Iodine-133, tritium, and radionuclides in particulate form with half-lives greater than 8 days, in gaseous effluents exceeding any of the above limits, prepare and submit to the Commission within 30 days, pursuant to ODCM Administrative Control 5.4, a Special Report that identifies the cause(s) for exceeding the limit(s) and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits.

SURVEILLANCE REQUIREMENTS

2.2.2.3 Cumulative quarterly and yearly dose contributions from gaseous releases shall be determined using methods contained in ODCM Section 7.4 at least once every 31 days.

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.2 GASEOUS EFFLUENTS

1/2.2.2.4 GASEOUS RADWASTE TREATMENT

CONTROLS

1.2.2.4 During operation above 25% power, the discharge of the SJAE must be routed through the charcoal adsorbers.

In accordance with BFN Technical Specification 5.5.4.f, the GASEOUS RADWASTE TREATMENT SYSTEM shall be operable and appropriate portions of the system shall be used to reduce releases of radioactivity when the projected doses in 31 days due to gaseous effluents from each unit, to areas at and beyond the SITE BOUNDARY, would exceed:

a. 0.2 mrad to air from gamma radiation, or
b. 0.4 mrad to air from beta radiation, or
c. 0.3 mrem to any organ of a MEMBER OF THE PUBLIC.

APPLICABILITY: At all times.

ACTION:

a. With gaseous radwaste being discharged without treatment for more than 7 days, prepare and submit to the Commission within 30 days, pursuant to ODCM Administrative Control 5.4, a Special Report that includes the following information:

1. Identification of the inoperable equipment or subsystems and the reason for inoperability,

2. Action(s) taken to restore the inoperable equipment to OPERABLE status, and

3. Summary description of action(s) taken to prevent a recurrence.

SURVEILLANCE REQUIREMENTS

2.2.2.4.1 During operation above 25% power, the position of the charcoal bed bypass valve will be verified daily.

2.2.2.4.2 Doses due to gaseous releases to areas at and beyond the SITE BOUNDARY shall be projected in accordance with Section 7.6 at least once per 31 days.

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.3 TOTAL DOSE

CONTROLS

1.2.3 In accordance with BFN Technical Specification 5.5.4.j, the dose or dose commitment to a real individual in an UNRESTRICTED AREA from all uranium fuel cycle sources is limited to ≤ 25 mrem to the total body or any organ (except the thyroid, which is limited to ≤ 75 mrem) over a period of one calendar year.

APPLICABILITY: At all times.

ACTION:

a. With the calculated doses from the release of radioactive materials in liquid or gaseous effluents exceeding twice the limits of Control 1.2.1.2, 1.2.2.2, or 1.2.2.3, calculations shall be made including direct radiation contributions from the units (including outside storage tanks, etc.) to determine whether the above limits of Control 1.2.3 have been exceeded. If such is the case, prepare and submit to the Commission within 30 days, pursuant to ODCM Administrative Control 5.4, a Special Report that defines the corrective action to be taken to reduce subsequent releases to prevent recurrence of exceeding the above limits and includes the schedule for achieving conformance with the above limits. This Special Report, as defined in 10 CFR 20.2203, shall include an analysis that estimates the radiation exposure (dose) to a MEMBER OF THE PUBLIC in an UNRESTRICTED AREA from uranium fuel cycle sources, including all effluent pathways and direct radiation, for the calendar year that includes the release(s) covered by this report. It shall also describe levels of radiation and concentrations of radioactive material involved, and the cause of the exposure levels or concentrations. If the estimated dose(s) exceeds the above limits, and if the release condition resulting in violation of 40 CFR Part 190 has not already been corrected, the Special Report shall include a request for a variance in accordance with the provisions of 40 CFR Part 190. Submittal of the report is considered a timely request, and a variance is granted until staff action on the request is complete.

SURVEILLANCE REQUIREMENTS

2.2.3 Cumulative dose contributions from liquid and gaseous effluents shall be determined in accordance with ODCM Sections 6.3, 7.4, and 7.5 and the methods in ODCM Section 8.0.

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.3 RADIOLOGICAL ENVIRONMENTAL MONITORING

1/2.3.1 MONITORING PROGRAM

CONTROLS

1.3.1 The Radiological Environmental Monitoring Program (REMP) shall be conducted as specified in Table 2.3-1.

APPLICABILITY: At all times.

ACTION:

a. With the REMP not being conducted as specified in Table 2.3-1, prepare and submit to the Commission, in the Annual Radiological Environmental Operating Report, a description of the reasons for not conducting the program as required and the plans for preventing a recurrence.

   Deviations are permitted from the required sampling schedule if specimens are unobtainable due to hazardous conditions, seasonal unavailability or malfunction of automatic sampling equipment. If the latter, every effort shall be made to complete corrective action prior to the end of the next sampling period. All deviations from the sampling schedule shall be reported in the Annual Radiological Environmental Operating Report.

b. With the level of radioactivity in an environmental sampling medium exceeding the reporting levels of Table 2.3-3 when averaged over any calendar quarter, prepare and submit to the Commission within 30 days from the end of the affected quarter a report which identifies the cause(s) for exceeding the limit(s) and defines the corrective actions to be taken to reduce radioactive effluents so that the potential annual dose to a member of the public is less than the calendar year limits of ODCM Controls 1.2.1.2, 1.2.2.2, and 1.2.2.3. When one or more of the radionuclides in Table 2.3-2 is detected in the sampling medium, this report shall be submitted if:

$$\frac{\text{concentration(1)}}{\text{limit level(1)}} + \frac{\text{concentration(2)}}{\text{limit level(2)}} + \ldots \geq 1.0$$

   When radionuclides other than those in Table 2.3-3 are detected and are the result of plant effluents, this report shall be submitted if the potential annual dose to a MEMBER OF THE PUBLIC is equal to or greater than the calendar year limits of ODCM Controls 1.2.1.2, 1.2.2.2, and 1.2.2.3. This report is not required if the measured level of radioactivity was not the result of plant effluents; however, in such an event, the condition shall be reported and described in the Annual Radiological Environmental Operating Report.

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.3 RADIOLOGICAL ENVIRONMENTAL MONITORING

1/2.3.1 MONITORING PROGRAM

CONTROLS

ACTION (CONTINUED):

c. With milk or fresh leafy vegetable samples unavailable from one or more of the sample locations required by Table 2.3-1, identify locations for obtaining replacement samples, if available, and add them to the REMP within 30 days. The specific locations from which samples were unavailable may then be deleted from the monitoring program.

   Pursuant to Control 1.3.1.b, identify the cause of the unavailability of samples and identify the new location(s), if available, for obtaining replacement samples in the next Annual Radiological Environmental Operating Report and also include a revised figure(s) and table(s) for the ODCM reflecting the new location(s).

   The detection capabilities required by Table 2.3-2 are state-of-the art for routine environmental measurements in industrial laboratories. It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as a posteriori (after the fact) limit for a particular measurement. Analyses shall be performed in such a manner that the stated LLDs will be achieved under routine conditions. Occasionally background fluctuations, unavoidably small sample sizes, the presence of interfering nuclides, or other uncontrollable circumstances may render these LLDs unachievable. In such cases, the contributing circumstances will be identified and described in the Annual Radiological Environmental Operating Report.

SURVEILLANCE REQUIREMENTS

2.3.1.1 The radiological environmental monitoring samples shall be collected pursuant to Table 2.3-1 from the locations given in the tables and figures listed below and shall be analyzed pursuant to the requirements of Table 2.3-1 and the detection capabilities required by Table 2.3-2.

2.3.1.2 If measured levels of radioactivity in a environmental sampling medium are determined to exceed the reporting level values of Table 2.3-3 when averaged over any calendar quarter sampling period, a report shall be submitted to the Commission pursuant to Control 1.3.1.b.

Table 2.3-1 (1 of 3)

MINIMUM REQUIRED RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Samples and Sample Locations[a]	Sampling and Collection Frequency	Type and Frequency of Analysis
1. AIRBORNE			
Radioiodine/ Particulates	Minimum of 5 locations	Continuous operation of sampler with sample collection as required by dust loading but at least once per 7 days.	Radioiodine canister: Analyze at least once per 7 days for I-131. Particulate sampler: Analyze for gross beta radioactivity ≥ 24 hours following filter change. Perform gamma isotopic analysis on each sample when gross beta activity is > 10 times the average of control samples. Perform gamma isotopic analysis on composite (by location) sample at least once per 92 days.
2. DIRECT RADIATION	At least 40 locations with ≥ 2 dosimeters at each location.	At least once per 92 days.	Gamma Dose. At least once per 92 days.

[a] Sample locations are given in ODCM Section 9.0.

Table 2.3-1 (2 of 3)

MINIMUM REQUIRED RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Samples and Sample Locations[a]	Sampling and Collection Frequency	Type and Frequency of Analysis
3. WATERBORNE			
a. Surface	2 locations	Composite sample collected over a period of ≤ 31 days.[b]	Gamma isotopic analysis of each composite sample. Tritium analysis of composite sample at least once per 92 days.
b. Drinking	Minimum of 1 downstream location, or all water supplies within 10 miles downstream which are taken from the Tennessee River	Composite sample collected over a period of ≤ 31 days.[b,c]	Gross beta and gamma isotopic analysis of each composite sample. Tritium analysis of composite sample at least once per 92 days.
c. Sediment	Minimum of 1 location.	At least once per 184 days	Gamma isotopic analysis of each sample.
d. Ground[d]			

a Sample locations are given in ODCM Section 9.0.

b Composite samples shall be collected by collecting an aliquot at intervals not exceeding 2 hours.

c Composite samples shall be collected over a period of ≤ 14 days for I-131 if drinking water is obtained within 3 miles downstream of the plant.

d Ground water movement in the area has been determined to be from the plant site toward the Tennessee River. Since no drinking water wells exist between the plant and the river, monitoring of ground water is not required.

Table 2.3-1 (3 of 3)

MINIMUM REQUIRED RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Samples and Sample Locations[a]	Sampling and Collection Frequency	Type and Frequency of Analysis
4. INGESTION			
a. Milk	3 locations	At least once per 15 days when animals are on pasture; at least once per 31 days at other times.	I-131 analysis of each sample. Gamma isotopic analysis at least once per 31 days
b. Fish	2 samples	One sample in season, or at least once per 184 days if not seasonal. One sample of commercial and game species.	Gamma isotopic analysis on edible portions.
c. Food Products[e]	2 locations	At least once per year at time of harvest	Gamma isotopic analysis on edible portion.

a Sample locations are given in ODCM Section 9.0.

e Since water from the Tennessee River in the immediate area downstream is not used for irrigation purposes, the sampling of food products (primarily broad leaf vegetation) is not required unless milk sampling is not performed.

Table 2.3-2 (1 of 2)

MAXIMUM VALUES FOR THE LOWER LIMIT OF DETECTION (LLD)[a,b]

FOR ENVIRONMENTAL SAMPLES

Analysis	Water (pCi/L)	Airborne Particulate or Gases (pCi/m^3)	Fish (pCi/kg, wet)	Milk (pCi/L)	Food Products (pCi/kg, wet)	Sediment (pCi/kg, dry)
gross beta	4	0.01	N/A	N/A	N/A	N/A
H-3	2000[c]	N/A	N/A	N/A	N/A	N/A
Mn-54	15	N/A	130	N/A	N/A	N/A
Fe-59	30	N/A	260	N/A	N/A	N/A
Co-58, 60	15	N/A	130	N/A	N/A	N/A
Zn-65	30	N/A	260	N/A	N/A	N/A
Zr-95	30	N/A	N/A	N/A	N/A	N/A
Nb-95	15	N/A	N/A	N/A	N/A	N/A
I-131	1[d]	0.07	N/A	1	60	N/A
Cs-134	15	0.05	130	15	60	150
Cs-137	18	0.06	150	18	80	180
Ba-140	60	N/A	N/A	60	N/A	N/A
La-140	15	N/A	N/A	15	N/A	N/A

Table 2.3-2 (2 of 2)

MAXIMUM VALUES FOR THE LOWER LIMIT OF DETECTION (LLD)[a,b]

FOR ENVIRONMENTAL SAMPLES

TABLE NOTATION

[a] The LLD is the smallest concentration of radioactive material in a sample that will be detected with 95 percent probability with 5 percent probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system, which may include radiochemical separation:

$$LLD = \frac{4.66\ s_b}{E\ V\ 2.22\ Y\ \exp(-\lambda\ \Delta t)}$$

Where:

- LLD = the "a priori" lower limit of detection as defined above, (as pCi/g or pCi/L).
- s_b = the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate, (cpm).
- E = the counting efficiency, (c/decay).
- V = the sample size (g or L).
- 2.22 = the number of dpm/pCi,
- Y = the fractional radiochemical yield, (when applicable).
- λ = the radioactive decay constant for the particular radionuclide, (s^{-1}) and
- Δt = for environmental samples is the elapsed time between sample collection, (or end of the sample collection period), and time of counting (for environmental samples, not plant effluent samples), seconds.

Typical values of E, V, Y, and Δt should be used in the calculation.

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement.

[b] Other peaks which are measurable and identifiable shall be identified and reported.

[c] If no drinking water pathway exists, a value of 3000 pCi/L may be used.

[d] LLD for analysis of drinking water and surface water samples shall be performed by gamma spectroscopy at approximately 15 pCi/L. If levels greater than 15 pCi/L are identified in surface water samples downstream from the plant, or in the event of an unanticipated release of I-131, drinking water samples will be analyzed at an LLD of 1.0 pCi/L for I-131.

Table 2.3-3

REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

Analysis	Water (pCi/L)	Airborne Particulate or gases (pCi/m^3)	Fish (pCi/Kg, wet)	Milk (pCi/L)	Food Products (pCi/Kg, wet)
H-3	2×10^4 [a]	N.A	N.A	N.A.	N.A.
Mn-54	1×10^3	N.A.	3×10^4	N.A.	N.A.
Fe-59	4×10^2	N.A.	1×10^4	N.A.	N.A.
Co-58	1×10^3	N.A.	3×10^4	N.A.	N.A.
Co-60	3×10^2	N.A.	1×10^4	N.A.	N.A.
Zn-65	3×10^2	N.A.	2×10^4	N.A.	N.A.
Zr-Nb-95	4×10^2	N.A.	N.A.	N.A.	N.A.
I-131	2 [b]	0.9	N.A.	3	1×10^2
Cs-134	30	10	1×10^3	60	1×10^3
Cs-137	50	20	2×10^3	70	2×10^3
Ba-La-140	2×10^2	N.A.	N.A.	3×10^2	N.A.

(a) For drinking water samples. This is 40 CFR Part 141 value. If no drinking water pathway exists, a value of 30,000 pCi/L may be used.

(b) If no drinking water pathway exists, a value of 20 pCi/L may be used.

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.3 RADIOLOGICAL ENVIRONMENTAL MONITORING

1/2.3.2 LAND USE CENSUS

CONTROLS

1.3.2 A land use census shall be conducted and shall identify the location of the nearest milk animal, the nearest residence and the nearest garden[1] of greater than 500 square feet producing vegetables in each of the 16 meteorological sectors within a distance of 5 miles. (For elevated releases as defined in Regulatory Guide 1.111, Revision 1, July 1977, the land use census shall also identify the locations of all milk animals and gardens of greater than 500 square feet producing fresh leafy vegetables in each of the 16 meteorological sectors within a distance of three miles.)

[1] Broad leaf vegetation sampling may be performed at the SITE BOUNDARY in the direction sector with the highest D/Q in lieu of the garden census.

APPLICABILITY: At all times.

ACTION:

With a land use census identifying a location(s) which yields a calculated dose or dose commitment greater than the maximum value currently being calculated in Section 7.5, identify the new location(s) in the next Annual Radiological Environmental Operating Report.

With a land use census identifying a location(s) that yields a calculated dose or dose commitment (via the same exposure pathway) 20 percent greater than at a location from which samples are currently being obtained in accordance with ODCM Control 1.3.1, add the new location(s) to the REMP within 30 days if the owner consents. The sampling location(s), excluding the control station location, having the lowest calculated dose or dose commitment(s) (via the same exposure pathway) may be deleted from this monitoring program after October 31 of the year in which this land use census was conducted. Identify the new location(s) in the next Annual Radiological Environmental Operating Report and provide a revised figure(s) and table(s) reflecting the new location(s).

SURVEILLANCE REQUIREMENTS

(see next page)

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.3 RADIOLOGICAL ENVIRONMENTAL MONITORING

1/2.3.2 LAND USE CENSUS

SURVEILLANCE REQUIREMENTS

2.3.2 The land use census shall be conducted at least once per calendar year between the dates of April 1 and October 1 using the following techniques:

1. Within a 2-mile radius from the plant or within the 15 mrem per year isodose line, whichever is larger, enumeration by a door-to-door or equivalent counting technique.

2. Within a 5-mile radius from the plant, enumeration by using appropriate techniques such as door-to-door survey, mail survey, telephone survey, aerial survey, or information from local agricultural authorities or other reliable sources.

1/2 CONTROLS AND SURVEILLANCE REQUIREMENTS

1/2.3 RADIOLOGICAL ENVIRONMENTAL MONITORING

1/2.3.3 INTERLABORATORY COMPARISON PROGRAM

CONTROLS

1.3.3 Analyses shall be performed on radioactive materials supplied as part of an Interlaboratory Comparison Program which has been approved by the Commission.

APPLICABILITY: At all times.

ACTION:

With analyses not being performed as required above, report the corrective actions taken to prevent a recurrence to the Commission in the Annual Radiological Environmental Operating Report.

SURVEILLANCE REQUIREMENTS

2.3.3 A summary of the results obtained as part of the above required Interlaboratory Comparison Program shall be included in the Annual Radiological Environmental Operating Report.

BASES FOR

SECTIONS 1.0 AND 2.0

CONTROLS

AND

SURVEILLANCE REQUIREMENTS

NOTE

The BASES contained in succeeding pages summarize the reasons for the Controls in Sections 1.0 and 2.0, but are not part of these Controls.

BASES

1/2.1 EFFLUENT MONITORING INSTRUMENTATION

1/2.1.1 RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

The radioactive liquid effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in liquid effluents during actual or potential releases of liquid effluents. The alarm/trip setpoints for these instruments shall be calculated in accordance with guidance provided in the ODCM to ensure that the alarm/trip will occur prior to exceeding ten times the limits of 10 CFR Part 20 Appendix B, Table 2, Column 2. The OPERABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50.

The criteria for ensuring the reliability and accuracy of the radioactive liquid effluent instrumentation is listed in Table 2.1-1.

1/2.1.2 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

The radioactive gaseous effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in gaseous effluents during actual or potential releases of gaseous effluents. The alarm/trip setpoints for these instruments will be calculated in accordance with Section 7.2.1 to ensure that the alarm/trip will occur prior to exceeding ten times the limits of 10 CFR Part 20. The operability and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50.

The action required when the number of OPERABLE channels is less than the Minimum Channels Operable requirement is specified in the notes for Table 1.1-2. Exert best efforts to return the instruments to OPERABLE status within 30 days and, if unsuccessful, explain in the next Annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner.

The criteria for ensuring the reliability and accuracy of the radioactive gaseous effluent instrumentation is listed in Table 2.1-2.

Two post treatment off-gas radiation monitors are provided and, when their trip point is reached, cause an isolation of the off-gas line. Isolation is initiated when both instruments reach their high trip point or one has an upscale trip and the other a downscale trip or both have a downscale trip.

Both instruments are required for trip but the instruments are set so that the instantaneous stack release rate limit given in Control 1.2.2.1 is not exceeded.

The off-gas post treatment monitors are connected in a 2-out-of-2 logic arrangement. Based on experience with instruments of similar design, a testing interval of once every three months has been found adequate.

BASES

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.1 LIQUID EFFLUENTS

1/2.2.1.1 CONCENTRATION

This requirement is provided to ensure that the concentration of radioactive materials released at any time in liquid waste effluents from the site to UNRESTRICTED AREAS will be less than or equal to ten times the concentration levels specified in 10 CFR Part 20, Appendix B, Table 2, Column 2.

This limitation provides additional assurance that the levels of radioactive materials in bodies of water outside the site will result in exposures within (1) the Section II.A limits of Appendix I to 10 CFR Part 50, and (2) the limits of 10 CFR Part 20.1301 (a)(1) to a member of the public. The concentration limit for noble gases is based upon the assumption that Xe-135 is the controlling radioisotope and its Maximum Permissible Concentration in air (submersion) was converted to an equivalent concentration in water using the methods described in International Commission of Radiological Protection (ICRP) Publication 2.

1/2.2.1.2 DOSE

This requirement is provided to implement the dose requirements of Section II.A, III.A, and IV.A of Appendix I, 10 CFR Part 50. The requirement implements the guides set forth in Section II.A of Appendix I. Compliance with this control will be considered to demonstrate compliance with the 0.1 rem limit of 10 CFR Part 20.1301 (a)(1) per 56FR23374.

This action provides the required operating flexibility and at the same time implements the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive material in liquid effluents will be kept "as low as is reasonable achievable". Also, for fresh water sites with drinking water supplies which can potentially be affected by plant operations, there is reasonable assurance that the operation of the facility will not result in radionuclide concentrations in the finished drinking water that are in excess of the requirements of 40 CFR 141. The dose calculations in Section 6.0 implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data such that the actual exposure of an individual through appropriate pathways is unlikely to be substantially underestimated. The equations specified in Section 6.0 for calculating the doses due to the actual release rates of radioactive materials in liquid effluents will be consistent with the methodology provided in Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Implementing Appendix I," October 1977 and Regulatory Guide 1.113, "Estimating Aquatic Dispersion of Effluents from Accidental and Routine Reactor Releases for the Purpose of Implementing Appendix I" April 1977. NUREG-0133 provides methods for dose calculations consistent with Regulatory Guides 1.109 and 1.113.

BASES

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.1 LIQUID EFFLUENTS

1/2.2.1.3 LIQUID WASTE TREATMENT

This section requires that the appropriate portions of the liquid radwaste treatment system be used when specified. This provides assurance that the releases of radioactive materials in liquid effluents will be kept "as low as is reasonably achievable." This requirement implements the requirements of 10 CFR Part 50.36a, General Design Criterion 60 of Appendix A to 10 CFR Part 50 and design objective Section II.D of Appendix I to 10 CFR 50. The specified limits governing the use of appropriate portions of the liquid radwaste treatment system were specified as a suitable fraction of the guide set forth in Section II.A of Appendix I, 10 CFR 50, for liquid effluents.

This section also requires submittal of a special report if the limiting values are exceeded and unexpected failures of non-redundant radwaste processing equipment halt waste treatment.

1/2.2.2 GASEOUS EFFLUENTS

1/2.2.2.1 DOSE RATE

This requirement is provided to ensure that the external dose rate at anytime at the SITE BOUNDARY from gaseous effluents from all units on the site will be within the limits of 10 CFR Part 20.1301 (a)(2) for UNRESTRICTED AREAS. The 500 mrem/yr dose rate will ensure that the instanteous dose rate is well below 2 mrem/hr. These limits provide reasonable assurance that radioactive material discharged in gaseous effluents will not result in the exposure of a MEMBER OF THE PUBLIC in an UNRESTRICTED AREA, to annual average concentrations exceeding the limits specified in Appendix B, Table 2 of 10 CFR Part 20. For MEMBERS OF THE PUBLIC who may at times be within the SITE BOUNDARY, the occupancy of the MEMBER OF THE PUBLIC will be sufficiently low to compensate for any increase in the atmospheric diffusion factor above that for the SITE BOUNDARY.

The specified release rate limits restrict, at all times, the corresponding gamma and beta dose rates to an individual at or beyond the SITE BOUNDARY to $\leq$ 500 mrem/year to the total body or $\leq$ 3000 mrem/year to the skin. These release rates also restrict, at all times, the corresponding thyroid dose rate above background to an infant via the cow-milk-infant pathway to $\leq$ 1500 mrem/year for the nearest cow to the plant.

The action for this requirement requires that appropriate corrective action(s) be taken to reduce gaseous effluent releases if the limits are exceeded.

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.2 GASEOUS EFFLUENTS

1/2.2.2.2 DOSE - NOBLE GASES

This requirement is provided to implement the requirements of Section II.B, III.A, and IV.A of Appendix I, 10 CFR Part 50. The limits are the guides set forth in Section II.C of Appendix I. Compliance with this control will be considered to demonstrate compliance with the 0.1 rem limit of 10 CFR 20.1301 (a)(1) per 56FR23374.

The action to be taken for exceeding these limits provides the required operating flexibility and at the same time implements the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive material in gaseous effluents will be kept "as low as reasonably achievable." Section 7.0 calculational methods implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data such that the actual exposure of an individual through appropriate pathways is unlikely to be substantially underestimated. Section 7.0 calculational methods for calculating the doses due to the actual release rates of the subject materials are consistent with the methodologies provided in NUREG/CR-1004, "A Statistical Analysis of Selected Parameters for Predicting Food Chain Transport and Internal Dose of Radionuclides." October 1979 and Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purposes of Evaluating Compliance with 10 CFR Part 50, "Appendix I," Revision 1, October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water Cooled Reactors," Revision 1, July 1977. These ODCM equations also provide for determining the air doses at the exclusion area boundary are based upon the historical average atmospheric conditions. NUREG-0133 provides methods for dose calculations consistent with Regulatory Guides 1.109 and 1.111.

If these limits are exceeded, this section requires that a special report be prepared and submitted to explain violations of the limiting doses contained in the section above.

BASES

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.2 GASEOUS EFFLUENTS

1/2.2.2.3 DOSE - I-131, I-133, TRITIUM AND RADIONUCLIDES IN PARTICULATE FORM WITH HALF-LIVES GREATER THAN EIGHT DAYS

This requirement is provided to implement the requirements of Section II.C, III.A, and IV of Appendix I, 10 CFR Part 50. The limits are the guides set forth in Section II.C of Appendix I. Compliance with this control will be considered to demonstrate compliance with the 0.1 rem limit of 10 CFR 20.1301 (a)(1) per 56FR23374.

The action to be taken for exceeding these limits provides the required operating flexibility and at the same time implements the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive material in gaseous effluents will be kept "as low as reasonably achievable." Section 7.0 calculational methods implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data such that the actual exposure of an individual through appropriate pathways is unlikely to be substantially underestimated. Section 7.0 calculational methods for calculating the doses due to the actual release rates of the subject materials are consistent with the methodologies provided in NUREG/CR-1004, "A Statistical Analysis of Selected Parameters for Predicting Food Chain Transport and Internal Dose of Radionuclides," October 1979 and Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purposes of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water Cooled Reactors," Revision 1, July 1977. These equations also provide for determining the actual doses based upon the historical average atmospheric conditions. The release rate specifications for iodines, radioactive material in particulate form and radionuclides other than noble gases are dependent on the existing radionuclide pathways to man in the UNRESTRICTED AREA. The pathways which were examined in the development of these calculations were: 1) individual inhalation of airborne radionuclides, 2) deposition of radionuclides onto green leafy vegetation with subsequent consumption by man, 3) deposition onto grassy areas where milk animals and meat producing animals graze with consumption of the milk and meat by man, and 4) deposition on the ground with subsequent exposure of man.

If these limits are exceeded, this section requires that a special report be prepared and submitted to explain violations of the limiting doses contained in the section above.

1/2.2 RADIOACTIVE EFFLUENTS

1/2.2.2 GASEOUS EFFLUENTS

1/2.2.2.4 GASEOUS RADWASTE TREATMENT

This requires that the offgas charcoal adsorber beds be used when specified to treat gaseous effluents prior their release to the environment. This provides reasonable assurance that the release of radioactive materials in gaseous effluents will be kept "as low as is reasonable achievable". This requirement implements the requirements of 10 CFR Part 50.36a, General Design Criterion 60 of Appendix A to 10 CFR Part 50, and design objective Section II.D of Appendix I to 10 CFR Part 50. The specified limits governing the use of appropriate portions of the systems were specified as a suitable fraction of the guide set forth in Sections II.B and II.C of Appendix I, 10 CFR Part 50, for gaseous effluents.

This action requires that a special report be prepared and submitted to explain reasons for any failure to comply with the above requirements.

1/2.2.3 TOTAL DOSE

This requirement is provided to meet the dose limitations of 40 CFR 190. Compliance with this control will be considered to demonstrate compliance with the 0.1 rem limit of 10 CFR 20.1301 (a)(1) per 56FR23374. This requirement requires the preparation and submittal of a Special Report whenever the calculated doses from plant radioactive effluents exceed twice the design objective doses of Appendix I. For sites containing up to four reactors, it is highly unlikely that the resultant dose to a MEMBER OF THE PUBLIC will exceed the dose limits of 40 CFR 190 if the individual reactors remain within the reporting requirement level. The Special Report will describe a course of action which should result in the limitation of dose to a MEMBER OF THE PUBLIC for the calendar year to be within 40 CFR 190 limits. For the purposes of the Special Report, it may be assumed that the dose commitment to the MEMBER OF THE PUBLIC from other fuel cycle sources is negligible, with the exception that dose contributions from other nuclear fuel cycle facilities within a radius of five miles must be considered.

1/2.3 RADIOLOGICAL ENVIRONMENTAL MONITORING

1/2.3.1 MONITORING PROGRAM

The REMP required by this section provides measurements of radiation and radioactive materials in those exposure pathways and for those radionuclides, which lead to the highest potential radiation exposures of individuals resulting from the station operation. This monitoring program thereby supplements the

1/2.3 RADIOLOGICAL ENVIRONMENTAL MONITORING

1/2.3.1 MONITORING PROGRAM (continued)

radiological effluent monitoring program by verifying that the measurable concentration of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and modeling of the environmental exposure pathways. The REMP satisfies the requirements of 10 CFR 50, Appendix A, Criteria 64 and 10 CFR 50, Appendix I, Section IV.B.2.

1/2.3.2 LAND USE CENSUS

This requirement is provided to ensure that changes in the use of UNRESTRICTED AREAS are identified and that modifications to the monitoring program are made if required by the results of this census. The best survey information from the door-to-door, mail, telephone, aerial or consulting with local authorities shall be used. This census satisfies the requirements of Section IV.B.3 of Appendix I to 10 CFR Part 50. Restricting the census to gardens of greater than 500 square feet provides assurance that significant exposure pathways via the leafy vegetables will be identified and monitored since a garden of this size is the minimum required to produce the quantity (26 kg/year) of leafy vegetation assumed in Regulatory Guide 1.109 for consumption by a child. To determine this minimum garden size, the following assumptions were used: 1) that 20% of the garden was used for growing broad leaf vegetation (i.e., similar to lettuce and cabbage), and 2) a vegetation yield of 2 kg/square meter.

1/2.3.3 INTERLABORATORY COMPARISON PROGRAM

The requirement for participation in an Interlaboratory Comparison Program is provided to ensure that independent checks on the precision and accuracy of the measurements of radioactive materials in environmental sample matrices are performed as part of the quality assurance program for environmental monitoring in order to demonstrate that the results are reasonably valid.

SECTION 3.0

DEFINITIONS

3.0 DEFINITIONS

The defined terms in this section appear in capitalized type in the text and are applicable throughout these controls.

3.0.A. CHANNEL CALIBRATION

A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds with the necessary range and accuracy to known values of the parameter which the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel including alarm and/or trip functions, and shall include the CHANNEL FUNCTIONAL TEST. The CHANNEL CALIBRATION may be performed by any series of sequential, overlapping, or total channel steps such that the entire channel is calibrated. Non-calibratable components shall be excluded from this requirement, but will be included in CHANNEL FUNCTIONAL TEST and SOURCE CHECK.

3.0.B. CHANNEL FUNCTIONAL TEST

A CHANNEL FUNCTIONAL TEST shall be:

a. Analog channels - the injection of a simulated signal into the channel as close to the sensor as practicable to verify OPERABILITY including alarm and/or trip functions.
b. Bistable channel - the injection of a simulated signal into the sensor to verify OPERABILITY including alarm and/or trip function.

3.0.C. GASEOUS WASTE TREATMENT SYSTEM

The GASEOUS WASTE TREATMENT SYSTEM consists of the charcoal adsorber vessels installed in the discharge of the steam jet air ejector (SJAE) to provide delay to a unit's offgas activity prior to release.

3.0.D. DOSE EQUIVALENT I-131

DOSE EQUIVALENT I-131 shall be that concentration of I-131 (µCi/g) which alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table III of TID-14844, "Calculation of Distance Factors for Power and Test Reactor Sites."

3.0.E. MEMBER(S) OF THE PUBLIC

MEMBER(S) OF THE PUBLIC as defined in 10 CFR 20, is any individual except when that individual is receiving an occupational dose.

3.0.F. OPERABLE - OPERABILITY

A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s). Implicit in this definition shall be the assumption that all necessary attendant instrumentation, controls, normal and emergency electrical power sources, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its function(s) are also capable of performing their related support function(s).

3.0.G. PURGE - PURGING

PURGE or PURGING is the controlled process of discharging air or gas from the primary containment to maintain temperature, pressure, humidity, concentration or other operating condition, in such a manner that replacement air or gas is required to purify the containment.

3.0.H. RATED POWER

RATED POWER refers to operation at a reactor power of 3,293 MWt (for a licensed thermal power of 3,293 MWt) or 3,458 MWt (for a licensed thermal power of 3,458 MWt); this is also termed 100 percent power and is the maximum power level authorized by the operating license. Rated steam flow, rated coolant flow, rated neutron flux, and rated nuclear system pressure refer to the values of these parameters when the reactor is at rated power. Design power, the power to which the safety analysis (for a licensed thermal power of 3,293 MWt) applies, corresponds to 3,440 MWt.

3.0.I. SITE BOUNDARY

The SITE BOUNDARY as defined in 10 CFR 20, shall be that line beyond which the land or property is not owned, leased, or otherwise controlled by TVA (see Figure 3.1).

3.0.J. SOURCE CHECK

A SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to a radioactive source or multiple of sources.

3.0.K. UNRESTRICTED AREA

An UNRESTRICTED AREA shall be any area, at or beyond the SITE BOUNDARY to which access is not controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials or any area within the SITE BOUNDARY used for residential quarters or industrial, commercial, institutional, and/or recreational purposes (see Figure 3.1).

3.0.L. VENTING

VENTING is the controlled process of discharging air or gas from primary containment to maintain temperature, pressure, humidity, concentration, or other operating condition, in such a manner that replacement air or gas is not provided or required. Vent, used in system names, does not imply a VENTING process.

3.0.M. CONTROLLED AREA

A CONTROLLED AREA, as defined in 10 CFR 20, is the area outside the RESTRICTED AREA, but inside the SITE BOUNDARY, access to which can be limited by TVA for any reason, (See Figure 3.1).

3.0.N. RESTRICTED AREA

The RESTRICTED AREA, as defined in 10 CFR Part 20, is that area, access to which is limited by the licensee for purpose of protecting individuals against undue risks from exposure to radiation and radioactive materials. The permanent RESTRICTED AREA is shown on Figure 3.1, but temporary restricted areas outside the permanent RESTRICTED AREA may be defined by BFN Site.

3.0.P. MODE

A MODE shall correspond to any one inclusive combination of mode switch position, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 3.2 with fuel in the reactor vessel.

Table 3.1

FREQUENCY NOTATION

Notation	Frequency
S	At least once per 12 hours.
D	At least once per 24 hours.
W	At least once per 7 days.
M	At least once per 31 days.
Q	At least once per 92 days.
SA	At least once per 184 days.
18M	At least once per 18 months.
N.A.	Not Applicable
P	Completed prior to each release

Table 3.2

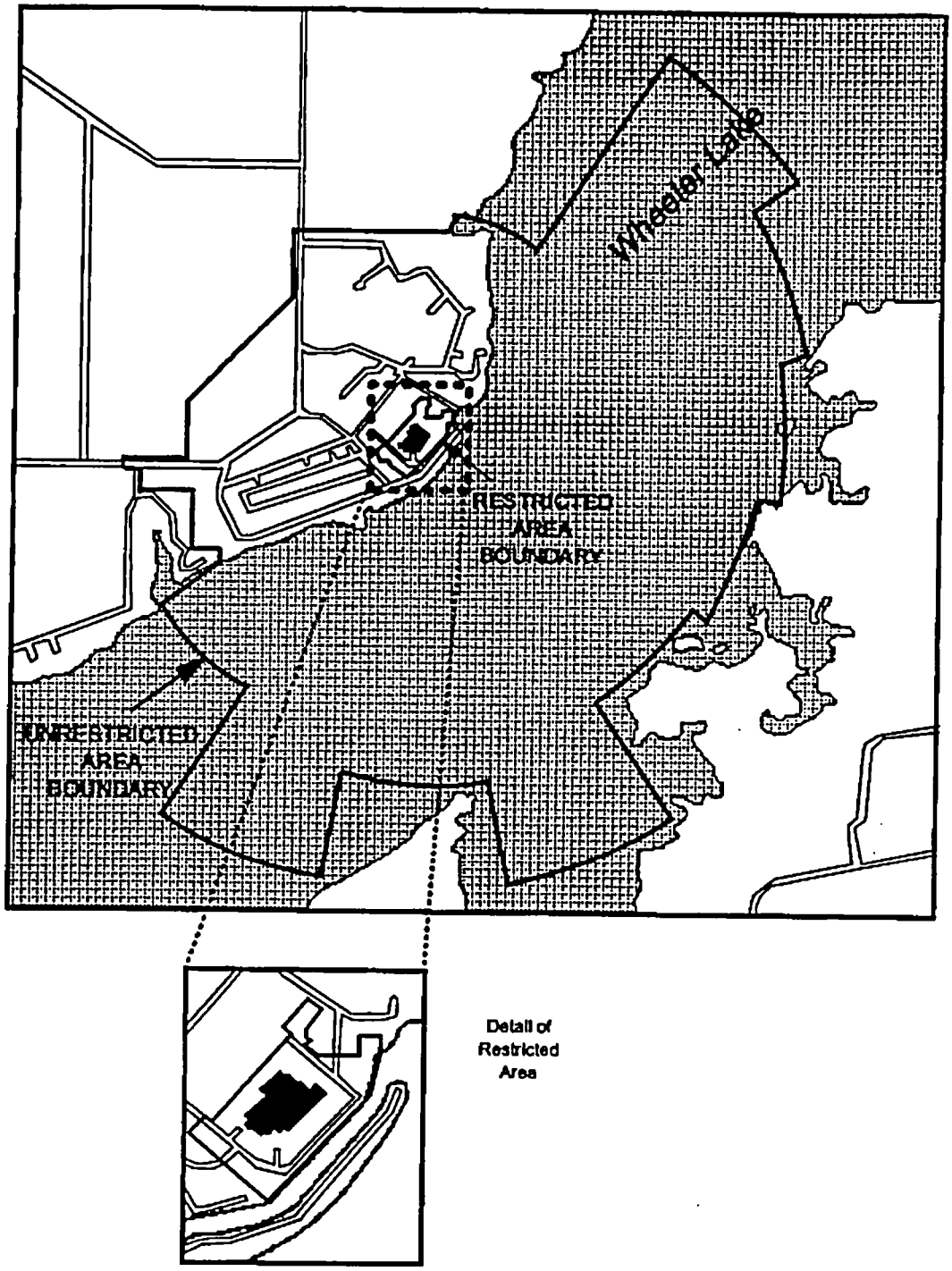
MODES

MODE	TITLE	REACTOR MODE SWITCH POSITION	AVERAGE REACTOR COOLANT TEMPERATURE (°F)
1	Power Operation	Run	NA
2	Startup	Refuel[a] or Startup/Hot Standby	NA
3	Hot Shutdown[a]	Shutdown	>212
4	Cold Shutdown[a]	Shutdown	≤212
5	Refueling[b]	Shutdown or Refuel	NA

(a) All reactor vessel head closure bolts fully tensioned.
(b) One or more reactor vessel head closure bolts less than fully tensioned.

Figure 3.1

LAND SITE BOUNDARY



SECTION 4.0

(NOT USED)

SECTION 5.0

ADMINISTRATIVE CONTROLS

5.1 ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

The Annual Radiological Environmental Operating Report shall include summaries, interpretations, and an analysis of trends of the results of the radiological environmental surveillance activities for the report period, including a comparison with pre-operational studies, operational controls (as appropriate), and previous environmental surveillance reports and an assessment of the observed impacts of the plant operation on the environment. The report shall also include the results of land use censuses required by Control 1.3.2. If harmful effects or evidence of irreversible damage are detected by the monitoring, the report shall provide an analysis of the problems and a planned course of action to alleviate the problem.

The Annual Radiological Environmental Operating Report shall include summarized and tabulated results in the format of Regulatory Guide 4.8, December 1975 of all radiological environmental samples taken during the report period. In the event that some results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. The missing data shall be submitted as soon as possible in a supplementary report.

The report shall also include the following: a summary description of the REMP; a map of all sampling locations keyed to a table giving distances and directions from one reactor; and the results of licensee participation in the Interlaboratory Comparison Program required by Control 1.3.3.

5.2 ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

Annual Radioactive Effluent Release Reports shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste shipped from the plant as delineated in Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants," Revision 1, June 1974, with data summarized on a quarterly basis following the format of Appendix B thereof.

The report shall include a summary of the meteorological conditions concurrent with the release of gaseous effluents during each quarter as outlined in Regulatory Guide 1.21, Revision 1, with data summarized on a quarterly bases following the format of Appendix B thereof. Calculated offsite dose to members of the public resulting from the release of liquid and gaseous effluents and their subsequent dispersion in the river and atmosphere shall be reported as recommended in Regulatory Guide 1.21, Revision 1.

5.2 ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT (continued)

The Annual Radioactive Effluent Release Report shall include the information regarding solid waste as specified in the Process Control Program.

5.3 OFFSITE DOSE CALCULATION MANUAL CHANGES

As required by BFN TS 5.5.1, changes to the ODCM:

1. Shall be documented and records of reviews performed shall be retained as required by process described in TVA-NQA-PLN89-A. This documentation shall contain:

   a. Sufficient information to support the change(s) together with the appropriate analyses or evaluations justifying the change(s), and

   b. A determination that the change will maintain the levels of radioactive effluent control required by 10 CFR 20.1302, 40 CFR 190, 10 CFR 50.36a, and 10 CFR 50, Appendix I, and not adversely impact the accuracy or reliability of effluent, dose, or setpoint calculations.

2. Shall become effective after review and acceptance by the process described in TVA-NQA-PLN89-A.

3. Shall be submitted to the NRC in the form of a complete, legible copy of the entire ODCM as a part of or concurrent with the Annual Radioactive Effluent Report for the period of the report in which any change to the ODCM was made. Each change shall be identified by markings in the margin of the affected pages, clearly indicating the area of the page that was changed, and shall indicate the date (i.e., month and year) the change was implemented.

5.4 SPECIAL REPORTS

Special Reports shall be submitted to the NRC in accordance with 10 CFR 50.4.

5.5 QUALITY ASSURANCE PROCEDURES

Quality Assurance procedures shall be established, implemented, and maintained for effluent and environmental monitoring, using the guidance in Regulatory Guide 1.21, Rev. 1, June 1974 and Regulatory Guide 4.1, April 1975 or Regulatory Guide 4.15, Dec. 1977.

SECTION 6.0

LIQUID EFFLUENTS

6.0 - LIQUID EFFLUENTS

RELEASE POINTS

The minimum flow available for dilution of radwaste are shown below:

```
            ---> open - 2 pumps @ 200,000 gpm/pump------
            ↑                                          ↓
Radwaste ----->                                      ---->    Discharge
            ↓                                          ↑      Conduit
            ---> closed - 50,000 gpm -------------------
                  or
                helper
```

6.1 LIQUID RELEASES

6.1.1 Pre-release Analysis/ECL - Sum of the Ratios

Prior to a batch release, a grab sample will be analyzed to determine the concentration (C_i) of each gamma emitting radionuclide i in the radwaste tank. The following equation is used to calculate effluent concentration limit (ECL) fractions (M_i).

$$M_i = \frac{C_i}{ECL_i} \qquad (6.1)$$

where:

M_i = ECL fraction of radionuclide i.
C_i = concentration of radionuclide i in the radwaste tank, µCi/ml.
ECL_i = ECL of radionuclide i as specified in Control 1.2.1.1, µCi/ml.

The sum of the ratios (R) will be calculated by the following relationship:

$$R = \sum_i M_i \qquad (6.2)$$

where:

R = the sum of the ratios.
M_i = ECL fraction from equation 6.1.

6.1.2 Release Flow Rate Calculations

The sum of the ratios at the diffuser pipes must be ≤ 10 due to a liquid release. The following relationship will assure this criterion is met:

$$R[f/(f+F)] \leq 10 \qquad (6.3)$$

where:

f = the effluent flow rate (gallons/minute) before dilution.
R = the sum of the ratios as determined by Equation 6.2.
F = minimum dilution flow rate for prerelease analysis.

The allowable release rate is calculated before each release and the release rate is continuously monitored during the release so that the ECL limit is not exceeded.

6.1.3 Post-release Analysis

A post-release analysis will be done using actual release data to ensure that the limits specified in Control 1.2.1.1 were not exceeded.

A composite list of concentrations (C_i) by isotope, will be used with actual liquid radwaste (f) and dilution (F) flow rates (or volumes) during the release. The data will be substituted into Equations 6.1, 6.2 and 6.3 to demonstrate compliance with the limits in Control 1.2.1.1. This data and setpoints will be recorded in auditable records by plant personnel.

6.2 INSTRUMENT SETPOINTS

Alarm/trip setpoints for each liquid monitor will be established and set such that Equation 6.3 is satisfied. The locations and identification numbers for each liquid effluent radiation detector are shown in Figures 6.1 and 6.2. This section of the ODCM describes the methodology that will be used to determine allowable values. The allowable values are then used to determine the physical settings on the monitors. The physical settings are calculated in the applicable Scaling and Setpoint Document.

6.2.1 Release Point Monitor Allowable Values

There is only one point through which routine releases are made from BFN, the Liquid Radwaste System. All releases from the Liquid Radwaste System are in a batch mode, and the monitor is looking at an undiluted waste stream as it comes out of a tank. The purpose of the monitor setpoint for these batch releases is to identify any release that would have the potential to exceed ten times the 10 CFR 20 limits after dilution. Allowable values used to determine the setpoints are calculated as described here.

For each release, a setpoint is calculated based on the monitor response to the activity in the release stream if the release were large enough to exceed ten times the 10 CFR 20 limits after dilution. This maximum calculated setpoint, S_{max}, is calculated using Equation 6.4 below. A comparison is made between this calculated setpoint and the default setpoint (see Section 6.2.2) to determine which is used. The actual monitor setpoint for the release is set equal to the default setpoint, or to the maximum calculated setpoint, whichever is less.

Calculated Maximum Monitor Setpoint

$$S_{max} = \frac{10^* \, SF \, (F_W + (FD * F_{dil}))}{F_W \, R} (ER - B) + B \qquad (6.4)$$

where:

SF = safety factor for the monitor.
F_W = flow of waste stream, gpm.
F_{dil} = flow of the dilution stream, gpm.
FD = fraction of dilution flow allocated to this release point. For BFN this fraction is equal to one.
B = background, cpm.
R = sum of the ratios for the release point as calculated in Section 6.1.1.
ER = expected monitor response, cpm,

$$= B + \sum_i E_i * C_i \qquad (6.5)$$

where:

B = monitor background, cpm.
E_i = monitor efficiency for nuclide i, cpm per µCi/cc.
C_i = tank concentration of nuclide i, µCi/cc.

6.2.2 Default Allowable Values

6.2.2.1 Radwaste Discharge Monitor

The default allowable value for the radwaste discharge monitor (RM-90-130), shown in Figures 6.1 and 6.2, will be established using the methodology below. The alarm/trip allowable value will be set such that Equation 6.3 is satisfied. The default trip allowable value for the monitor, which will automatically isolate the release, is set at less than or equal to the limit in Control 1.2.1.1. The alarm allowable value is set at 90% or less of the trip allowable value.

The default maximum activity concentration[1] of liquid radwaste that can be discharged can be calculated as:

$$A = \frac{F + f}{f * \sum_i \frac{WF_i}{ECL_i}}$$

where:

A = default maximum batch activity concentration, µCi/ml.
ECL_i = ECL of radionuclide i as specified in Control 1.2.1.1, µCi/ml.
WF_i = weighting factor for nuclide i, defined as the fraction of the total concentration which is attributed to nuclide i.
F = dilution water flow rate, gpm.
f = maximum discharge flow rate, gpm.

[1] The default maximum activity concentration is based on a selected isotopic mixture so that an allowable value can be calculated. The selected isotopic mixture will be documented in 0-TI-45. If ten times the actual batch ECL fraction is less restrictive than ten times the ECL fraction for the selected isotopic mixture, then the actual activity concentration may be higher than the calculated maximum activity concentration; this is the case for which the maximum allowable value defined in Section 6.2.1 would be indicated.

The default monitor isolation allowable value, in cps, for releases is calculated using the following equation:

$$\text{Monitor Isolation Allowable Value} = (A * \sum_i WF_i * E_i) + B$$

where:

A = maximum batch activity concentration as calculated above, µCi/ml
WF_i = weighting factor for nuclide i, defined as the fraction of the total concentration which is attributed to nuclide i
E_i = efficiency of the monitor for nuclide i, cps/µCi/ml
B = monitor background, cps

The calculation of these allowable values are documented further in 0-TI-45, including the numerical values for each of the parameters described above.

6.2.2.2 Raw Cooling Water and Residual Heat Removal Service Water Monitors

The allowable value for the Raw Cooling Water (RCW) monitors and the Residual Heat Removal Service Water (RHRSW) monitors (RM-90-132 and RM-90-133,134 respectively), shown in Figure 6.1, will be established using the methodology below. The alarm/trip allowable values will be set such that Equation 6.3 is satisfied. The allowable values for these monitors, which will alarm in the control room, are based on ten times the 10 CFR 20 Appendix B concentration limits. These allowable values are also based on a selected isotopic mixture.

The monitor alarm allowable values, in cpm, for the RCW and RHRSW effluent monitors are calculated using the following equation:

$$\text{Monitor Allowable Values} \leq (A * \sum_i WF_i * E_i) + B$$

where:

A = total activity concentration, µCi/ml.
WF_i = weighting factor for nuclide i, defined as the fraction of the total concentration which is attributed to nuclide i.
E_i = efficiency of the monitor for nuclide i, cpm/µCi/ml.
B = monitor background, cpm.

The calculation of these allowable values are documented further in 0-TI-45, including the numerical values for each of the parameters described above.

6.3 CUMULATIVE LIQUID EFFLUENT DOSE CALCULATION

Doses due to liquid effluents are calculated for each release for all age groups (adult, teen, child and infant) and organs (bone, liver, total body, thyroid, skin, kidney, lung and GI tract). Pathways considered are drinking water ingestion, fish consumption and shoreline recreation. The maximum individual dose from drinking water is assumed to be that calculated at the location immediately downstream from the diffuser. The maximum individual dose from fish ingestion is assumed to be that calculated for the consumption of fish caught anywhere between the plant and the first downstream dam (Wheeler Dam). The maximum potential recreation dose is calculated for a location immediately downstream of the plant outfall. Dose factors for these age groups and pathways are calculated as described in Section 6.7. For pathways with no age or organ specific dose factors (i.e., shoreline recreation), the total body dose will be added to the internal organ dose for all age groups.

6.3.1 Dose Calculation

The general equation for the dose calculation for each organ j is:

$$D_j = \sum_i A_{ij} \, T \, C_i \, D \qquad (6.6)$$

where:

A_{ij} = the total dose factor to the total body or any organ j for nuclide i, mrem/h per µCi/ml. The total dose factor is the sum of the dose factors for water ingestion, fish ingestion, and shoreline recreation, as defined in Section 6.7.

T = the length of time period over which the concentrations and the flows are averaged for the liquid release, h.

C_i = the average concentration of radionuclide i, in undiluted liquid effluent during the time period T from any liquid release, µCi/ml.

D = the near field average dilution factor for C_i during any effluent release.

$$= \frac{FLOW_W}{0.30 \; RF}$$

where:

$FLOW_W$ = maximum undiluted liquid waste flow during the release, cfs.

0.30 = mixing factor of effluent in river, defined as the percentage of the riverflow which is available for dilution of the release.

RF = default riverflow, cfs. For each release, this value is set to 44,000 cfs (the average monthly riverflow for the period of 1986-1992).

From the four age groups considered, the maximum is determined by comparing all organ doses for all age groups. The age group with the highest single organ dose is selected as the critical age group.

6.3.2 Cumulative Doses

Quarterly and annual sums of all doses are determined for each release to compare to the limits given in ODCM Control 1.2.1.2. These quarterly and annual sums will be the sum of all the doses for each release in the quarter or year respectively.

6.3.3 Comparison to Limits

The cumulative calendar quarter and calendar year doses are compared to the limits in ODCM Control 1.2.1.2 prior to and after each liquid release.

6.4 LIQUID RADWASTE TREATMENT SYSTEM

The Liquid Radwaste Treatment System (LRTS) shall be maintained and operated to keep releases ALARA. A flow diagram for the LRTS is given in Figure 6.2.

6.5 DOSE PROJECTIONS

Dose projections will be done by averaging the calculated dose for the most recent month and the calculated dose for the previous month and assigning that average dose as the projection for the current month.

6.6 DOSE CALCULATIONS FOR REPORTING PURPOSES

A complete dose analysis utilizing the total estimated liquid releases for each calendar quarter will be performed and reported as required in ODCM Administrative Control 5.2. Methodology for this analysis is that which is described in this section using the quarterly release values reported by the plant personnel. The releases are assumed, for this calculation, to be continuous over the 90 day period.

The average dilution factor, D, used for these calculations is:

$$D = \frac{1}{RF * 0.30} \quad \text{(for receptors upstream of Wheeler Dam)} \qquad (6.13a)$$

and

$$D = \frac{1}{RF} \quad \text{(for receptors downstream of Wheeler Dam)} \qquad (6.13b)$$

where:

RF = the average actual riverflow for the location at which the dose is being determined, cfs.
0.30 = the fraction of the riverflow available for dilution in the near field, dimensionless.

6.6.1 Water Ingestion

Water ingestion doses are calculated for each Public Water Supply (PWS) identified within a 50 mile radius downstream of BFN (Table 6.1). Water ingestion doses are calculated for the total body and each internal organ as described below:

$$D_j = 10^6 \ (9.8E\text{-}09) \ A_{Wij} \ Q_i \ D \ \exp(-8.64E{+}04 \ \lambda_i \ t_d) \qquad (6.14)$$

where:

10^6 = conversion factor, µCi/Ci.
9.8E-09 = conversion factor, cfs per ml/h.
A_{Wij} = Dose factor for water ingestion for nuclide i, age group j, mrem/h per µCi/ml, as calculated in Section 6.7.1.
Q_i = Quantity of nuclide i released during the quarter, Ci.
D = dilution factor, as described above, cfs^{-1}.
λ_i = radiological decay constant of nuclide i, s^{-1} (Table 6.3).
t_d = decay time for water ingestion, equal to the travel time from the plant to the water supply plus one-half day (12 hours) to account for the time of processing at the water supply (per Regulatory Guide 1.109), d.
8.64E+04 = conversion factor, s/d.

6.6.2 Fish Ingestion

Fish ingestion doses are calculated for each identified reach within a 50 mile radius downstream of BFN (Table 6.1). Individual fish ingestion doses are calculated for the total body and each internal organ as described below:

$$D_j = 10^6 \ (9.8E\text{-}09) \ 0.25 \ A_{Fij} \ Q_i \ D \ \exp(-8.64E{+}04 \ \lambda_i \ t_d) \qquad (6.15)$$

where:

10^6 = conversion factor, µCi/Ci.
9.8E-09 = conversion factor, cfs per ml/h.
0.25 = fraction of the yearly fish consumption eaten in one quarter, dimensionless.
A_{Fij} = Dose factor for fish ingestion for nuclide i, age group j, mrem/h per µCi/ml, as calculated in ODCM Section 6.7.2.
Q_i = Quantity of nuclide i released during the quarter, Ci.
D = dilution factor, as described above, cfs^{-1}.
λ_i = radiological decay constant of nuclide i, s^{-1} (Table 6.3).
t_d = decay time for fish ingestion, equal to the travel time from the plant to the center of the reach plus one day to account for transit through the food chain and food preparation time (per Regulatory Guide 1.109), d.
8.64E+04 = conversion factor, s/d.

6.6.3 Shoreline Recreation

Recreation doses are calculated for each identified reach within a 50 mile radius downstream of BFN (Table 6.1). It is assumed that the maximum exposed individual spends 500 hours per year on the shoreline at a location immediately downstream from the diffusers. Individual recreation shoreline doses are calculated for the total body and skin as described below:

$$D_{org} = 10^6 \ (9.8E\text{-}09) \ rf \ A_{Rij} \ Q_i \ D \ \exp(-8.64E{+}04 \ \lambda_i \ t_d) \qquad (6.16)$$

where:

10^6 = conversion factor, µCi/Ci.
9.8E-09 = conversion factor, cfs per ml/h.
rf = recreation factor, used to account for the fact that the same amount of time will not be spent at a recreation site during each quarter. Recreation factors used are:

1st quarter - 0.1
2nd quarter - 0.3
3rd quarter - 0.4
4th quarter - 0.2.

A_{Rij} = Dose factor for shoreline recreation for nuclide i, age group j, mrem/h per µCi/ml, as calculated in ODCM Section 6.7.3.

Q_i = Quantity of nuclide i released during the quarter, Ci.

D = dilution factor, as described above, cfs^{-1}.

λ_i = radiological decay constant of nuclide i, s^{-1} (Table 6.3).

t_d = decay time for recreation, equal to the travel time from the plant to the center of the reach, d.

8.64E+04 = conversion factor, s/d.

6.6.4 Total Maximum Individual Dose

The total maximum individual total body dose is obtained by summing the following for each age group: the highest total body water ingestion dose from among all the public water supplies; the highest total body fish ingestion dose from among all the reaches; and the total body maximum shoreline recreation dose. The total maximum individual organ dose is obtained by summing the following for each organ and each age group: that organ's highest water ingestion dose from among all the public water supplies; that organ's highest fish ingestion dose from among all the reaches; and the total body maximum shoreline recreation dose. The total maximum individual skin dose is that skin dose calculated for the maximum shoreline dose.

6.6.5 Population Doses

For determining population doses to the 50-mile population around the plant, an average dose is calculated for each age group and each pathway and then multiplied by the population.

For water ingestion, the general equation used for calculating the population doses, POPWTR, in person-rem for a given PWS is:

$$POPWTR_j = 10^{-3} \sum_{m=1}^{5} POP_m \sum_{a=1}^{4} POP_a \; ATMW_a \; TWDOS_{amj} \qquad (6.17)$$

where:

$POPWTR_j$ = water ingestion population dose to organ j, person-rem.
POP_a = fraction of population in each age group a (from NUREG CR-1004, Table 3.39).
= 0.665 for adult
= 0.168 for child
= 0.015 for infant
= 0.153 for teen
POP_m = population at PWS m. The 5 PWSs and their populations are listed in Table 6.1.
$ATMW_a$ = ratio of average to maximum water ingestion rates for each age group a. Maximum water ingestion rates are given in Table 6.3. Average water ingestion rates are obtained from R.G. 1.109 Table E-4). The ratios are:
= 0.5069 for adult
= 0.5098 for child
= 0.7879 for infant
= 0.5098 for teen
$TWDOS_{amj}$ = total individual water ingestion dose to organ j at PWS m, to the age group a, as described in Section 6.6.1, mrem.
10^{-3} = conversion factor for rem/mrem.

For population doses resulting from fish ingestion the calculation assumes that all fish caught within a 50-mile radius downstream of BFN are consumed by local population. An additional 7-days decay is added due to distribution time of sport fish. The general equation for calculating population doses, POPF, in person-rem from fish ingestion of all fish caught within a 50-mile radius downstream is:

$$POPF_j = 10^{-3} \; 10^{-3} \sum_{r=1}^{3} \sum_{a=1}^{3} \frac{453.6 \; HVST \; APR_r}{FISH_a \; POP_a} \; POP_a \; TFDOS_{arj} \qquad (6.18)$$

where:

$POPF_j$ = total fish ingestion population dose to organ j, person-rem.

HVST = fish harvest for the Tennessee River, 8.32 lbs/acre/y.

APR_r = size of reach r, acres (Table 6.1).

$TFDOS_{arj}$ = total fish ingestion dose to organ j for reach r, for the age group a, as described in Section 6.6.2, mrem. Calculated with t_d in that equation equal to travel time plus 8 days.

POP_a = fraction of population in each age group a, as given above.

$FISH_a$ = amount of fish ingested by each age group a, kg/y per person. The average fish ingestion rates (R.G. 1.109 Table E-4) are:

Adult = 6.9
Child = 2.2
Teen = 5.2

453.6 = conversion factor, g/lb.

10^{-3} = conversion factor, rem/mrem.

10^{-3} = conversion factor, kg/g.

For shoreline recreation, the general equation used for calculating the population doses, POPR, in person-rem is:

$$POPR_j = \frac{REQFRA}{10^3} \sum_{r=1}^{3} SHVIS_r \; HRSVIS_r \; TSHDOS_{rj} \qquad (6.19)$$

where:

$POPR_j$ = total recreation population dose for all reaches to organ j, person-rem.

REQFRA = fraction of yearly recreation which occurs in that quarter, as given in Section 6.6.3, year per quarter.

$SHVIS_r$ = shoreline visits per year at each reach r, (Table 6.1).

$HRSVIS_r$ = length of shoreline recreation visit at reach r, 5 h.

10^3 = conversion factor, mrem/rem.

$TSHDOS_{rj}$ = total shoreline dose rate for organ j, in reach r, mrem-quarter/h per quarter.

$$= \frac{Q_i \exp(-\lambda_i t_r) \; K_c \; M \; DF_{Git} \; 10^{12} \; 24 \; 10^3 \; D_r}{2.22E11 \; \lambda_i}$$

where:

Q_i = total activity released during the quarter, Ci.

λ_i = decay constant for nuclide i, d^{-1}.

t_r = travel time from the plant to reach r, d.

K_c = transfer coefficient from water to sediment, L/kg-h, (Table 6.3).

M = mass density of sediment, kg/m^2, (Table 6.3).

DF_{Git} = dose conversion factor for standing on contaminated ground for nuclide i and organ t (total body and skin), mrem/h per pCi/m^2.

10^{12} = conversion factor, pCi/Ci.

24 = conversion factor, h/d.

10^3 = conversion factor, ml/L.

D_r = dilution factor for reach r, cfs^{-1}. Calculated as described in Equation 6.13.

2.22E11 = conversion factor, ml/quarter per cfs.

6.7 LIQUID DOSE FACTOR EQUATIONS

6.7.1 Water Ingestion Dose Factors

$$A_{Wij} = \frac{DF_{Liaj}\ U_{wa}\ 10^6\ 10^3}{8760}$$

where:

DF_{Liaj} = ingestion dose conversion factor for nuclide i, age group a, organ j, mrem/pCi, (Table 6.4).

U_{wa} = water consumption rate for age group a, L/y, (Table 6.3).

10^6 = conversion factor, pCi/µCi.

10^3 = conversion factor, ml/L.

8760 = conversion factor, h/y.

6.7.2 Fish Ingestion Dose Factors

$$A_{Fij} = \frac{DF_{Liaj}\ U_{fa}\ B_i\ 10^6\ 10^3}{8760}$$

where:

DF_{Liaj} = ingestion dose conversion factor for nuclide i, age group a, organ j, mrem/pCi, (Table 6.4).

U_{fa} = fish consumption rate for age group a, kg/y, (Table 6.3).

B_i = bioaccumulation factor for nuclide i, pCi/kg per pCi/L, (Table 6.5).

10^6 = conversion factor, pCi/µCi.

10^3 = conversion factor, ml/L.

8760 = conversion factor, h/y.

6.7.3 Shoreline Recreation Dose Factors

$$A_{Rij} = \frac{DF_{Gij}\ K_c\ M\ W\ 10^3\ 10^6\ U}{8760 * 3600\ \lambda_i}\ [1-\exp(-\lambda_i\ t_{b1})]$$

where:

DF_{Gij} = dose conversion factor for standing on contaminated ground for nuclide i and organ j (total body and skin), mrem/h per pCi/m^2, (Table 6.6).

K_c = transfer coefficient from water to shoreline sediment, L/kg-h, (Table 6.3).

M = mass density of sediment, kg/m^2, (Table 6.3).

W = shoreline width factor, dimensionless, (Table 6.3).

10^3 = conversion factor, ml/L.

10^6 = conversion factor, pCi/µCi.

3600 = conversion factor, s/h.

λ_i = decay constant for nuclide i, s^{-1}, (Table 6.2).

t_{b1} = time shoreline is exposed to the concentration in the water, s, (Table 6.3).

U = usage factor, 500 h/y.

8760 = conversion factor, h/y.

Table 6.1
RECEPTORS FOR LIQUID DOSE CALCULATIONS

Tennessee River Reaches Within
50 Mile Radius Downstream of BFN

Name	Beginning TRM*	Ending TRM	Size (acres)	Recreation visits/y
Wheeler Lake below BFN	294.0	274.9	26076	1,408,600
Wilson Lake	274.9	259.4	15930	3,816,800
Pickwick Lake	259.4	206.7	15048	705,500

Public Water Supplies Within
50 Mile Radius Downstream of BFN

Name	TRM	Population
West Morgan - East Lawrence, AL	286.5	25,000
Florence, AL	259.8	36,000
Muscle Shoals, AL	259.6	10,740
Sheffield, AL	254.3	13,065
Cherokee, AL	239.3	3,400

* TRM = Tennessee River Mile. Distances in this and other tables are consistent with memo L78 961104 800.

Table 6.2 (1 of 3)

RADIONUCLIDE DECAY AND STABLE ELEMENT TRANSFER DATA

Nuclide	Half-Life (minutes)	λ (1/s)	B_{iv}	F_{mi} (cow)	F_{mi} (goat)	F_{fi} (beef)
H-3	6.46E+06	1.79E-09	4.80E+00	1.00E-02	1.70E-01	1.20E-02
C-14	3.01E+09	3.84E-12	5.50E+00	1.20E-02	1.00E-01	3.10E-02
Na-24	9.00E+02	1.28E-05	5.20E-02	4.00E-02	4.00E-02	3.00E-02
P-32	2.06E+04	5.61E-07	1.10E+00	2.50E-02	2.50E-01	4.60E-02
Cr-51	3.99E+04	2.90E-07	2.50E-04	2.20E-03	2.20E-03	2.40E-03
Mn-54	4.50E+05	2.57E-08	2.90E-02	2.50E-04	2.50E-04	8.00E-04
Mn-56	1.55E+02	7.45E-05	2.90E-02	2.50E-04	2.50E-04	8.00E-04
Fe-55	1.42E+06	8.13E-09	6.60E-04	1.20E-03	1.30E-04	1.20E-02
Fe-59	6.43E+04	1.80E-07	6.60E-04	1.20E-03	1.30E-04	1.20E-02
Co-57	3.90E+05	2.96E-08	9.40E-03	1.00E-03	1.00E-03	1.30E-02
Co-58	1.02E+05	1.13E-07	9.40E-03	1.00E-03	1.00E-03	1.30E-02
Co-60	2.77E+06	4.17E-09	9.40E-03	1.00E-03	1.00E-03	1.30E-02
Ni-63	5.27E+07	2.19E-10	1.90E-02	6.70E-03	6.70E-03	5.30E-02
Ni-65	1.51E+02	7.65E-05	1.90E-02	6.70E-03	6.70E-03	5.30E-02
Cu-64	7.62E+02	1.52E-05	1.20E-01	1.40E-02	1.30E-02	9.70E-04
Zn-65	3.52E+05	3.28E-08	4.00E-01	3.90E-02	3.90E-02	3.00E-02
Zn-69m	8.26E+02	1.40E-05	4.00E-01	3.90E-02	3.90E-02	3.00E-02
Zn-69	5.56E+01	2.08E-04	4.00E-01	3.90E-02	3.90E-02	3.00E-02
Br-82	2.12E+03	5.45E-06	7.60E-01	5.00E-02	5.00E-02	2.60E-02
Br-83	1.43E+02	8.08E-05	7.60E-01	5.00E-02	5.00E-02	2.60E-02
Br-84	3.18E+01	3.63E-04	7.60E-01	5.00E-02	5.00E-02	2.60E-02
Br-85	2.87E+00	4.02E-03	7.60E-01	5.00E-02	5.00E-02	2.60E-02
Rb-86	2.69E+04	4.29E-07	1.30E-01	3.00E-02	3.00E-02	3.10E-02
Rb-88	1.78E+01	6.49E-04	1.30E-01	3.00E-02	3.00E-02	3.10E-02
Rb-89	1.54E+01	7.50E-04	1.30E-01	3.00E-02	3.00E-02	3.10E-02
Sr-89	7.28E+04	1.59E-07	1.70E-02	1.40E-03	1.40E-02	6.00E-04
Sr-90	1.50E+07	7.70E-10	1.70E-02	1.40E-03	1.40E-02	6.00E-04
Sr-91	5.70E+02	2.03E-05	1.70E-02	1.40E-03	1.40E-02	6.00E-04
Sr-92	1.63E+02	7.09E-05	1.70E-02	1.40E-03	1.40E-02	6.00E-04
Y-90	3.85E+03	3.00E-06	2.60E-03	1.00E-05	1.00E-05	4.60E-03
Y-91m	4.97E+01	2.32E-04	2.60E-03	1.00E-05	1.00E-05	4.60E-03
Y-91	8.43E+04	1.37E-07	2.60E-03	1.00E-05	1.00E-05	4.60E-03
Y-92	2.12E+02	5.45E-05	2.60E-03	1.00E-05	1.00E-05	4.60E-03
Y-93	6.06E+02	1.91E-05	2.60E-03	1.00E-05	1.00E-05	4.60E-03
Zr-95	9.22E+04	1.25E-07	1.70E-04	5.00E-06	5.00E-06	3.40E-02
Zr-97	1.01E+03	1.14E-05	1.70E-04	5.00E-06	5.00E-06	3.40E-02
Nb-95	5.05E+04	2.29E-07	9.40E-03	2.50E-03	2.50E-03	2.80E-01
Nb-97	7.21E+01	1.60E-04	9.40E-03	2.50E-03	2.50E-03	2.80E-01
Mo-99	3.96E+03	2.92E-06	1.20E-01	7.50E-03	7.50E-03	1.10E-03
Tc-99m	3.61E+02	3.20E-05	2.50E-01	2.50E-02	2.50E-02	4.00E-01
Tc-101	1.42E+01	8.13E-04	2.50E-01	2.50E-02	2.50E-02	4.00E-01
Ru-103	5.67E+04	2.04E-07	5.00E-02	1.00E-06	1.00E-06	4.00E-01
Ru-105	2.66E+02	4.34E-05	5.00E-02	1.00E-06	1.00E-06	4.00E-01
Ru-106	5.30E+05	2.18E-08	5.00E-02	1.00E-06	1.00E-06	4.00E-01
Ag-110m	3.60E+05	3.21E-08	1.50E-01	5.00E-02	5.00E-02	1.70E-02

Table 6.2 (2 of 3)

RADIONUCLIDE DECAY AND STABLE ELEMENT TRANSFER DATA

Nuclide	Half-Life (minutes)	λ (1/s)	B_{iv}	F_{mi} (cow)	F_{mi} (goat)	F_{fi} (beef)
Sb-124	8.67E+04	1.33E-07	N/A	1.50E-03	1.50E-03	N/A
Sb-125	1.46E+06	7.91E-09	N/A	1.50E-03	1.50E-03	N/A
Te-125m	8.35E+04	1.38E-07	1.30E+00	1.00E-03	1.00E-03	7.70E-02
Te-127m	1.57E+05	7.36E-08	1.30E+00	1.00E-03	1.00E-03	7.70E-02
Te-127	5.61E+02	2.06E-05	1.30E+00	1.00E-03	1.00E-03	7.70E-02
Te-129m	4.84E+04	2.39E-07	1.30E+00	1.00E-03	1.00E-03	7.70E-02
Te-129	6.96E+01	1.66E-04	1.30E+00	1.00E-03	1.00E-03	7.70E-02
Te-131m	1.80E+03	6.42E-06	1.30E+00	1.00E-03	1.00E-03	7.70E-02
Te-131	2.50E+01	4.62E-04	1.30E+00	1.00E-03	1.00E-03	7.70E-02
Te-132	4.69E+03	2.46E-06	1.30E+00	1.00E-03	1.00E-03	7.70E-02
I-130	7.42E+02	1.56E-05	2.00E-02	1.20E-02	4.30E-01	2.90E-03
I-131	1.16E+04	9.96E-07	2.00E-02	1.20E-02	4.30E-01	2.90E-03
I-132	1.38E+02	8.37E-05	2.00E-02	1.20E-02	4.30E-01	2.90E-03
I-133	1.25E+03	9.24E-06	2.00E-02	1.20E-02	4.30E-01	2.90E-03
I-134	5.26E+01	2.20E-04	2.00E-02	1.20E-02	4.30E-01	2.90E-03
I-135	3.97E+02	2.91E-05	2.00E-02	1.20E-02	4.30E-01	2.90E-03
Cs-134	1.08E+06	1.06E-08	1.00E-02	8.00E-03	3.00E-01	1.50E-02
Cs-136	1.90E+04	6.08E-07	1.00E-02	8.00E-03	3.00E-01	1.50E-02
Cs-137	1.59E+07	7.26E-10	1.00E-02	8.00E-03	3.00E-01	1.50E-02
Cs-138	3.22E+01	3.59E-04	1.00E-02	8.00E-03	3.00E-01	1.50E-02
Ba-139	8.31E+01	1.39E-04	5.00E-03	4.00E-04	4.00E-04	3.20E-03
Ba-140	1.84E+04	6.28E-07	5.00E-03	4.00E-04	4.00E-04	3.20E-03
Ba-141	1.83E+01	6.31E-04	5.00E-03	4.00E-04	4.00E-04	3.20E-03
Ba-142	1.07E+01	1.08E-03	5.00E-03	4.00E-04	4.00E-04	3.20E-03
La-140	2.41E+03	4.79E-06	2.50E-03	5.00E-06	5.00E-06	2.00E-04
La-142	9.54E+01	1.21E-04	2.50E-03	5.00E-06	5.00E-06	2.00E-04
Ce-141	4.68E+04	2.47E-07	2.50E-03	1.00E-04	1.00E-04	1.20E-03
Ce-143	1.98E+03	5.83E-06	2.50E-03	1.00E-04	1.00E-04	1.20E-03
Ce-144	4.09E+05	2.82E-08	2.50E-03	1.00E-04	1.00E-04	1.20E-03
Pr-143	1.95E+04	5.92E-07	2.50E-03	5.00E-06	5.00E-06	4.70E-03
Pr-144	1.73E+01	6.68E-04	2.50E-03	5.00E-06	5.00E-06	4.70E-03
Nd-147	1.58E+04	7.31E-07	2.40E-03	5.00E-06	5.00E-06	3.30E-03
W-187	1.43E+03	8.08E-06	1.80E-02	5.00E-04	5.00E-04	1.30E-03
Np-239	3.39E+03	3.41E-06	2.50E-03	5.00E-06	5.00E-06	2.00E-04
Ar-41	1.10E+02	1.05E-04	N/A	N/A	N/A	N/A
Kr-83m	1.10E+02	1.05E-04	N/A	N/A	N/A	N/A
Kr-85m	2.69E+02	4.29E-05	N/A	N/A	N/A	N/A
Kr-85	5.64E+06	2.05E-09	N/A	N/A	N/A	N/A
Kr-87	7.63E+01	1.51E-04	N/A	N/A	N/A	N/A
Kr-88	1.70E+02	6.79E-05	N/A	N/A	N/A	N/A
Kr-89	3.16E+00	3.66E-03	N/A	N/A	N/A	N/A
Kr-90	5.39E-01	2.14E-02	N/A	N/A	N/A	N/A
Xe-131m	1.70E+04	6.79E-07	N/A	N/A	N/A	N/A
Xe-133m	3.15E+03	3.67E-06	N/A	N/A	N/A	N/A

Table 6.2 (3 of 3)

RADIONUCLIDE DECAY AND STABLE ELEMENT TRANSFER DATA

Nuclide	Half-Life (minutes)	λ (1/s)	B_{iv}	F_{mi} (cow)	F_{mi} (goat)	F_{fi} (beef)
Xe-133	7.55E+03	1.53E-06	N/A	N/A	N/A	N/A
Xe-135m	1.54E+01	7.50E-04	N/A	N/A	N/A	N/A
Xe-135	5.47E+02	2.11E-05	N/A	N/A	N/A	N/A
Xe-137	3.83E+00	3.02E-03	N/A	N/A	N/A	N/A
Xe-138	1.41E+01	8.19E-04	N/A	N/A	N/A	N/A

References:

Half lives for all nuclides: DOE-TIC-11026, "Radioactive Decay Data Tables - A Handbook of Decay Data for Application to Radiation Dosimetry and Radiological Assessment," D. C. Kocher, 1981.

Transfer factors for Sb- isotopes are from ORNL 4992, "Methodology for Calculating Radiation Doses from Radioactivity Released to the Environment," March 1976, Table 2-7.

Cow-milk transfer factors for Iodine, Strontium, and Cesium nuclides are from NUREG/CR-1004, Table 3.17.

Goat-milk transfer factors for Iodine nuclides are from NUREG/CR-1004, Table 3.17.

Beef transfer factors for Iron, Copper, Molybdenum, and Cesium nuclides are from NUREG/CR-1004, Table 3.18.

All other nuclides' transfer factors are from Regulatory Guide 1.109, Tables E-1 and E-2.

Table 6.3 (1 of 2)
DOSE CALCULATION FACTORS

Factor	Value	Units	Reference
BR_a (infant)	1400	m^3/y	ICRP 23
BR_a (child)	5500	m^3/y	ICRP 23
BR_a (teen)	8000	m^3/y	ICRP 23
BR_a (adult)	8100	m^3/y	ICRP 23
f_g	1		TVA Assumption
f_L	1		R. G. 1.109 (Table E-15)
f_p	1		TVA Assumption
f_s	0		TVA Assumption
H	9	g/m^3	TVA Value
K_c	0.072	L/kg-h	R. G. 1.109 (Section 2.C.)
M	40	kg/m^2	R. G. 1.109 (Section 2.C.)
P	240	kg/m^2	R. G. 1.109 (Table E-15)
Q_f (cow)	64	kg/d	NUREG/CR-1004 (Sect. 3.4)
Q_f (goat)	08	kg/d	NUREG/CR-1004 (Sect. 3.4)
r	0.47		NUREG/CR-1004 (Sect. 3.2)
t_b	4.73E+08 (15 y)	s	R. G. 1.109 (Table E-15)
t_{b1}	4.73E+08 (15 y)	s	R. G. 1.109 (Table E-15)
t_{cb}	7.78E+06 (90 d)	s	SQN FSAR Section 11.3.9.1
t_{csf}	1.56E+07 (180 d)	s	SQN FSAR Section 11.3.9.1
t_e	5.18E+06 (60 d)	s	R. G. 1.109 (Table E-15)
t_{ep}	2.59E+06 (30 d)	s	R. G. 1.109 (Table E-15)
t_{esf}	7.78E+06 (90 d)	s	R. G. 1.109 (Table E-15)
t_{fm}	8.64E+04 (1 d)	s	SQN FSAR Section 11.3.9.1
t_{hc}	8.64E+04 (1 d)	s	NUREG/CR-1004, Table 3.40
t_s	1.12E+06 (13 d)	s	NUREG/CR-1004, Table 3.40
t_{sv}	2.38E+07 (275 d)	s	SQN FSAR Section 11.3.9.1
U_m (infant)	0	kg/y	R. G. 1.109 (Table E-5)
U_m (child)	41	kg/y	R. G. 1.109 (Table E-5)
U_m (teen)	65	kg/y	R. G. 1.109 (Table E-5)
U_m (adult)	110	kg/y	R. G. 1.109 (Table E-5)
U_p (infant)	330	L/y	R. G. 1.109 (Table E-5)
U_p (child)	330	L/y	R. G. 1.109 (Table E-5)
U_p (teen)	400	L/y	R. G. 1.109 (Table E-5)
U_p (adult)	310	L/y	R. G. 1.109 (Table E-5)

Table 6.3 (2 of 2)
DOSE CALCULATION FACTORS

Factor	Value	Units	Reference
U_f(infant)	0	kg/y	R. G. 1.109 (Table E-5)
U_f(child)	6.9	kg/y	R. G. 1.109 (Table E-5)
U_f(teen)	16	kg/y	R. G. 1.109 (Table E-5)
U_f(adult)	21	kg/y	R. G. 1.109 (Table E-5)
U_{FL} (infant)	0	kg/y	R. G. 1.109 (Table E-5)
U_{FL} (child)	26	kg/y	R. G. 1.109 (Table E-5)
U_{FL} (teen)	42	kg/y	R. G. 1.109 (Table E-5)
U_{FL} (adult)	64	kg/y	R. G. 1.109 (Table E-5)
U_S (infant)	0	kg/y	R. G. 1.109 (Table E-5)
U_S (child)	520	kg/y	R. G. 1.109 (Table E-5)
U_S (teen)	630	kg/y	R. G. 1.109 (Table E-5)
U_S (adult)	520	kg/y	R. G. 1.109 (Table E-5)
U_W(infant)	330	L/y	R. G. 1.109 (Table E-5)
U_W(child)	510	L/y	R. G. 1.109 (Table E-5)
U_W(teen)	510	L/y	R. G. 1.109 (Table E-5)
U_W(adult)	730	L/y	R. G. 1.109 (Table E-5)
W	0.3	none	R. G. 1.109 (Table A-2)
Y_V	1.85	kg/m^2	NUREG/CR-1004 (Table 3.4)
Y_P	1.18	kg/m^2	NUREG/CR-1004 (Table 3.3)
Y_S	0.64	kg/m^2	NUREG/CR-1004 (Table 3.3)
Y_{SV}	0.57	kg/m^2	NUREG/CR-1004 (Table 3.4) (value selected is for non-leafy vegetables)
$\lambda_W r$(iodines)	7.71E-07 (15.4 d half-life)	s^{-1}	NUREG/CR-1004 (Table 3.10)
λ_W (particulates)	5.21E-07 (10.4 d half-life)	s^{-1}	NUREG/CR-1004 (Table 3.10)

Table 6.4 (1 of 8)
INGESTION DOSE FACTORS
(mrem/pCi ingested)

ADULT

Nuclide	bone	liver	t body	thyroid	kidney	lung	gi-lli
H-3	1.05E-07	1.05E-07	1.05E-07	1.05E-07	1.05E-07	1.05E-07	1.05E-07
C-14	2.84E-06	5.68E-07	5.68E-07	5.68E-07	5.68E-07	5.68E-07	5.68E-07
Na-24	1.70E-06	1.70E-06	1.70E-06	1.70E-06	1.70E-06	1.70E-06	1.70E-06
P-32	1.93E-04	1.20E-05	7.46E-06	0.00E+00	0.00E+00	0.00E+00	2.17E-05
Cr-51	0.00E+00	0.00E+00	2.66E-09	1.59E-09	5.86E-10	3.53E-09	6.69E-07
Mn-54	0.00E+00	4.57E-06	8.72E-07	0.00E+00	1.36E-06	0.00E+00	1.40E-05
Mn-56	0.00E+00	1.15E-07	2.04E-08	0.00E+00	1.46E-07	0.00E+00	3.67E-06
Fe-55	2.75E-06	1.90E-06	4.43E-07	0.00E+00	0.00E+00	1.06E-06	1.09E-06
Fe-59	4.34E-06	1.02E-05	3.91E-06	0.00E+00	0.00E+00	2.85E-06	3.40E-05
Co-57	0.00E+00	1.75E-07	2.91E-07	0.00E+00	0.00E+00	0.00E+00	4.44E-06
Co-58	0.00E+00	7.45E-07	1.67E-06	0.00E+00	0.00E+00	0.00E+00	1.51E-05
Co-60	0.00E+00	2.14E-06	4.72E-06	0.00E+00	0.00E+00	0.00E+00	4.02E-05
Ni-63	1.30E-04	9.01E-06	4.36E-06	0.00E+00	0.00E+00	0.00E+00	1.88E-06
Ni-65	5.28E-07	6.86E-08	3.13E-08	0.00E+00	0.00E+00	0.00E+00	1.74E-06
Cu-64	0.00E+00	8.33E-08	3.91E-08	0.00E+00	2.10E-07	0.00E+00	7.10E-06
Zn-65	4.84E-06	1.54E-05	6.96E-06	0.00E+00	1.03E-05	0.00E+00	9.70E-06
Zn-69	1.03E-08	1.97E-08	1.37E-09	0.00E+00	1.28E-08	0.00E+00	2.96E-09
Zn-69m	1.70E-07	4.08E-07	3.73E-08	0.00E+00	2.47E-07	0.00E+00	2.49E-05
Br-82	0.00E+00	0.00E+00	2.26E-06	0.00E+00	0.00E+00	0.00E+00	2.59E-06
Br-83	0.00E+00	0.00E+00	4.02E-08	0.00E+00	0.00E+00	0.00E+00	5.79E-08
Br-84	0.00E+00	0.00E+00	5.21E-08	0.00E+00	0.00E+00	0.00E+00	4.09E-13
Br-85	0.00E+00	0.00E+00	2.14E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Rb-86	0.00E+00	2.11E-05	9.83E-06	0.00E+00	0.00E+00	0.00E+00	4.16E-06
Rb-88	0.00E+00	6.05E-08	3.21E-08	0.00E+00	0.00E+00	0.00E+00	8.36E-19
Rb-89	0.00E+00	4.01E-08	2.82E-08	0.00E+00	0.00E+00	0.00E+00	2.33E-21
Sr-89	3.08E-04	0.00E+00	8.84E-06	0.00E+00	0.00E+00	0.00E+00	4.94E-05
Sr-90	7.58E-03	0.00E+00	1.86E-03	0.00E+00	0.00E+00	0.00E+00	2.19E-04
Sr-91	5.67E-06	0.00E+00	2.29E-07	0.00E+00	0.00E+00	0.00E+00	2.70E-05
Sr-92	2.15E-06	0.00E+00	9.30E-08	0.00E+00	0.00E+00	0.00E+00	4.26E-05
Y-90	9.62E-09	0.00E+00	2.58E-10	0.00E+00	0.00E+00	0.00E+00	1.02E-04
Y-91m	9.09E-11	0.00E+00	3.52E-12	0.00E+00	0.00E+00	0.00E+00	2.67E-10
Y-91	1.41E-07	0.00E+00	3.77E-09	0.00E+00	0.00E+00	0.00E+00	7.76E-05
Y-92	8.45E-10	0.00E+00	2.47E-11	0.00E+00	0.00E+00	0.00E+00	1.48E-05
Y-93	2.68E-09	0.00E+00	7.40E-11	0.00E+00	0.00E+00	0.00E+00	8.50E-05
Zr-95	3.04E-08	9.75E-09	6.60E-09	0.00E+00	1.53E-08	0.00E+00	3.09E-05
Zr-97	1.68E-09	3.39E-10	1.55E-10	0.00E+00	5.12E-10	0.00E+00	1.05E-04
Nb-95	6.22E-09	3.46E-09	1.86E-09	0.00E+00	3.42E-09	0.00E+00	2.10E-05
Nb-97	5.22E-11	1.32E-11	4.82E-12	0.00E+00	1.54E-11	0.00E+00	4.87E-08
Mo-99	0.00E+00	4.31E-06	8.20E-07	0.00E+00	9.76E-06	0.00E+00	9.99E-06
Tc-99m	2.47E-10	6.98E-10	8.89E-09	0.00E+00	1.06E-08	3.42E-10	4.13E-07
Tc-101	2.54E-10	3.66E-10	3.59E-09	0.00E+00	6.59E-09	1.87E-10	1.10E-21
Ru-103	1.85E-07	0.00E+00	7.97E-08	0.00E+00	7.06E-07	0.00E+00	2.16E-05
Ru-105	1.54E-08	0.00E+00	6.08E-09	0.00E+00	1.99E-07	0.00E+00	9.42E-06
Ru-106	2.75E-06	0.00E+00	3.48E-07	0.00E+00	5.31E-06	0.00E+00	1.78E-04
Ag-110m	1.60E-07	1.48E-07	8.79E-08	0.00E+00	2.91E-07	0.00E+00	6.04E-05

Table 6.4 (2 of 8)
INGESTION DOSE FACTORS
(mrem/pCi ingested)

ADULT

Nuclide	bone	liver	t body	thyroid	kidney	lung	gi-lli
Sb-124	2.80E-06	5.29E-08	1.11E-06	6.79E-09	0.00E-00	2.18E-06	7.95E-05
Sb-125	1.79E-06	2.00E-08	4.26E-07	1.82E-09	0.00E-00	1.38E-06	1.97E-05
Te-125m	2.68E-06	9.71E-07	3.59E-07	8.06E-07	1.09E-05	0.00E+00	1.07E-05
Te-127m	6.77E-06	2.42E-06	8.25E-07	1.73E-06	2.75E-05	0.00E+00	2.27E-05
Te-127	1.10E-07	3.95E-08	2.38E-08	8.15E-08	4.48E-07	0.00E+00	8.68E-06
Te-129m	1.15E-05	4.29E-06	1.82E-06	3.95E-06	4.80E-05	0.00E+00	5.79E-05
Te-129	3.14E-08	1.18E-08	7.65E-09	2.41E-08	1.32E-07	0.00E+00	2.37E-08
Te-131m	1.73E-06	8.46E-07	7.05E-07	1.34E-06	8.57E-06	0.00E+00	8.40E-05
Te-131	1.97E-08	8.23E-09	6.22E-09	1.62E-08	8.63E-08	0.00E+00	2.79E-09
Te-132	2.52E-06	1.63E-06	1.53E-06	1.80E-06	1.57E-05	0.00E+00	7.71E-05
I-130	7.56E-07	2.23E-06	8.80E-07	1.89E-04	3.48E-06	0.00E+00	1.92E-06
I-131	4.16E-06	5.95E-06	3.41E-06	1.95E-03	1.02E-05	0.00E+00	1.57E-06
I-132	2.03E-07	5.43E-07	1.90E-07	1.90E-05	8.65E-07	0.00E+00	1.02E-07
I-133	1.42E-06	2.47E-06	7.53E-07	3.63E-04	4.31E-06	0.00E+00	2.22E-06
I-134	1.06E-07	2.88E-07	1.03E-07	4.99E-06	4.58E-07	0.00E+00	2.51E-10
I-135	4.43E-07	1.16E-06	4.28E-07	7.65E-05	1.86E-06	0.00E+00	1.31E-06
Cs-134	6.22E-05	1.48E-04	1.21E-04	0.00E+00	4.79E-05	1.59E-05	2.59E-06
Cs-136	6.51E-06	2.57E-05	1.85E-05	0.00E+00	1.43E-05	1.96E-06	2.92E-06
Cs-137	7.97E-05	1.09E-04	7.14E-05	0.00E+00	3.70E-05	1.23E-05	2.11E-06
Cs-138	5.52E-08	1.09E-07	5.40E-08	0.00E+00	8.01E-08	7.91E-09	4.65E-13
Ba-139	9.70E-08	6.91E-11	2.84E-09	0.00E+00	6.46E-11	3.92E-11	1.72E-07
Ba-140	2.03E-05	2.55E-08	1.33E-06	0.00E+00	8.67E-09	1.46E-08	4.18E-05
Ba-141	4.71E-08	3.56E-11	1.59E-09	0.00E+00	3.31E-11	2.02E-11	2.22E-17
Ba-142	2.13E-08	2.19E-11	1.34E-09	0.00E+00	1.85E-11	1.24E-11	3.00E-26
La-140	2.50E-09	1.26E-09	3.33E-10	0.00E+00	0.00E+00	0.00E+00	9.25E-05
La-142	1.28E-10	5.82E-11	1.45E-11	0.00E+00	0.00E+00	0.00E+00	4.25E-07
Ce-141	9.36E-09	6.33E-09	7.18E-10	0.00E+00	2.94E-09	0.00E+00	2.42E-05
Ce-143	1.65E-09	1.22E-06	1.35E-10	0.00E+00	5.37E-10	0.00E+00	4.56E-05
Ce-144	4.88E-07	2.04E-07	2.62E-08	0.00E+00	1.21E-07	0.00E+00	1.65E-04
Pr-143	9.20E-09	3.69E-09	4.56E-10	0.00E+00	2.13E-09	0.00E+00	4.03E-05
Pr-144	3.01E-11	1.25E-11	1.53E-12	0.00E+00	7.05E-12	0.00E+00	4.33E-18
Nd-147	6.29E-09	7.27E-09	4.35E-10	0.00E+00	4.25E-09	0.00E+00	3.49E-05
W-187	1.03E-07	8.61E-08	3.01E-08	0.00E+00	0.00E+00	0.00E+00	2.82E-05
Np-239	1.19E-09	1.17E-10	6.45E-11	0.00E+00	3.65E-10	0.00E+00	2.40E-05

References:

Dose Factors for Co-57, Zn-69m, Br-82, Nb-97, Sb-124 and Sb-125 are from NUREG-0172 Age Specific Radiation Dose Commitment Factors for a One Year Chronic Intake,, November, 1977, Table 4.

All others:

Regulatory Guide 1.109, Table E-11.

NOTE: The tritium dose factor for bone is assumed to be equal to the total body dose factor.

Table 6.4 (3 of 8)
INGESTION DOSE FACTORS
(mrem/pCi ingested)

TEEN

Nuclide	bone	liver	t body	thyroid	kidney	lung	gi-lli
H-3	1.06E-07	1.06E-07	1.06E-07	1.06E-07	1.06E-07	1.06E-07	1.06E-07
C-14	4.06E-06	8.12E-07	8.12E-07	8.12E-07	8.12E-07	8.12E-07	8.12E-07
Na-24	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06
P-32	2.76E-04	1.71E-05	1.07E-05	0.00E+00	0.00E+00	0.00E+00	2.32E-05
Cr-51	0.00E+00	0.00E+00	3.60E-09	2.00E-09	7.89E-10	5.14E-09	6.05E-07
Mn-54	0.00E+00	5.90E-06	1.17E-06	0.00E+00	1.76E-06	0.00E+00	1.21E-05
Mn-56	0.00E+00	1.58E-07	2.81E-08	0.00E+00	2.00E-07	0.00E+00	1.04E-05
Fe-55	3.78E-06	2.68E-06	6.25E-07	0.00E+00	0.00E+00	1.70E-06	1.16E-06
Fe-59	5.87E-06	1.37E-05	5.29E-06	0.00E+00	0.00E+00	4.32E-06	3.24E-05
Co-57	0.00E+00	2.38E-07	3.99E-07	0.00E+00	0.00E+00	0.00E+00	4.44E-06
Co-58	0.00E+00	9.72E-07	2.24E-06	0.00E+00	0.00E+00	0.00E+00	1.34E-05
Co-60	0.00E+00	2.81E-06	6.33E-06	0.00E+00	0.00E+00	0.00E+00	3.66E-05
Ni-63	1.77E-04	1.25E-05	6.00E-06	0.00E+00	0.00E+00	0.00E+00	1.99E-06
Ni-65	7.49E-07	9.57E-08	4.36E-08	0.00E+00	0.00E+00	0.00E+00	5.19E-06
Cu-64	0.00E+00	1.15E-07	5.41E-08	0.00E+00	2.91E-07	0.00E+00	8.92E-06
Zn-65	5.76E-06	2.00E-05	9.33E-06	0.00E+00	1.28E-05	0.00E+00	8.47E-06
Zn-69	1.47E-08	2.80E-08	1.96E-09	0.00E+00	1.83E-08	0.00E+00	5.16E-08
Zn-69m	2.40E-07	5.66E-07	5.19E-08	0.00E+00	3.44E-07	0.00E+00	3.11E-05
Br-82	0.00E+00	0.00E+00	3.04E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Br-83	0.00E+00	0.00E+00	5.74E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Br-84	0.00E+00	0.00E+00	7.22E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Br-85	0.00E+00	0.00E+00	3.05E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Rb-86	0.00E+00	2.98E-05	1.40E-05	0.00E+00	0.00E+00	0.00E+00	4.41E-06
Rb-88	0.00E+00	8.52E-08	4.54E-08	0.00E+00	0.00E+00	0.00E+00	7.30E-15
Rb-89	0.00E+00	5.50E-08	3.89E-08	0.00E+00	0.00E+00	0.00E+00	8.43E-17
Sr-89	4.40E-04	0.00E+00	1.26E-05	0.00E+00	0.00E+00	0.00E+00	5.24E-05
Sr-90	8.30E-03	0.00E+00	2.05E-03	0.00E+00	0.00E+00	0.00E+00	2.33E-04
Sr-91	8.07E-06	0.00E+00	3.21E-07	0.00E+00	0.00E+00	0.00E+00	3.66E-05
Sr-92	3.05E-06	0.00E+00	1.30E-07	0.00E+00	0.00E+00	0.00E+00	7.77E-05
Y-90	1.37E-08	0.00E+00	3.69E-10	0.00E+00	0.00E+00	0.00E+00	1.13E-04
Y-91m	1.29E-10	0.00E+00	4.93E-12	0.00E+00	0.00E+00	0.00E+00	6.09E-09
Y-91	2.01E-07	0.00E+00	5.39E-09	0.00E+00	0.00E+00	0.00E+00	8.24E-05
Y-92	1.21E-09	0.00E+00	3.50E-11	0.00E+00	0.00E+00	0.00E+00	3.32E-05
Y-93	3.83E-09	0.00E+00	1.05E-10	0.00E+00	0.00E+00	0.00E+00	1.17E-04
Zr-95	4.12E-08	1.30E-08	8.94E-09	0.00E+00	1.91E-08	0.00E+00	3.00E-05
Zr-97	2.37E-09	4.69E-10	2.16E-10	0.00E+00	7.11E-10	0.00E+00	1.27E-04
Nb-95	8.22E-09	4.56E-09	2.51E-09	0.00E+00	4.42E-09	0.00E+00	1.95E-05
Nb-97	7.37E-11	1.83E-11	6.68E-12	0.00E+00	2.14E-11	0.00E+00	4.37E-07
Mo-99	0.00E+00	6.03E-06	1.15E-06	0.00E+00	1.38E-05	0.00E+00	1.08E-05
Tc-99m	3.32E-10	9.26E-10	1.20E-08	0.00E+00	1.38E-08	5.14E-10	6.08E-07
Tc-101	3.60E-10	5.12E-10	5.03E-09	0.00E+00	9.26E-09	3.12E-10	8.75E-17
Ru-103	2.55E-07	0.00E+00	1.09E-07	0.00E+00	8.99E-07	0.00E+00	2.13E-05
Ru-105	2.18E-08	0.00E+00	8.46E-09	0.00E+00	2.75E-07	0.00E+00	1.76E-05
Ru-106	3.92E-06	0.00E+00	4.94E-07	0.00E+00	7.56E-06	0.00E+00	1.88E-04
Ag-110m	2.05E-07	1.94E-07	1.18E-07	0.00E+00	3.70E-07	0.00E+00	5.45E-05

Table 6.4 (4 of 8)
INGESTION DOSE FACTORS
(mrem/pCi ingested)

Nuclide	bone	liver	t body	TEEN thyroid	kidney	lung	gi-lli
Sb-124	3.87E-06	7.13E-08	1.51E-06	8.78E-09	0.00E-00	3.38E-06	7.80E-05
Sb-125	2.48E-06	2.71E-08	5.80E-07	2.37E-09	0.00E+00	2.18E-06	1.93E-05
Te-125m	3.83E-06	1.38E-06	5.12E-07	1.07E-06	0.00E+00	0.00E+00	1.13E-05
Te-127m	9.67E-06	3.43E-06	1.15E-06	2.30E-06	3.92E-05	0.00E+00	2.41E-05
Te-127	1.58E-07	5.60E-08	3.40E-08	1.09E-07	6.40E-07	0.00E+00	1.22E-05
Te-129m	1.63E-05	6.05E-06	2.58E-06	5.26E-06	6.82E-05	0.00E+00	6.12E-05
Te-129	4.48E-08	1.67E-08	1.09E-08	3.20E-08	1.88E-07	0.00E+00	2.45E-07
Te-131m	2.44E-06	1.17E-06	9.76E-07	1.76E-06	1.22E-05	0.00E+00	9.39E-05
Te-131	2.79E-08	1.15E-08	8.72E-09	2.15E-08	1.22E-07	0.00E+00	2.29E-09
Te-132	3.49E-06	2.21E-06	2.08E-06	2.33E-06	2.12E-05	0.00E+00	7.00E-05
I-130	1.03E-06	2.98E-06	1.19E-06	2.43E-04	4.59E-06	0.00E+00	2.29E-06
I-131	5.85E-06	8.19E-06	4.40E-06	2.39E-03	1.41E-05	0.00E+00	1.62E-06
I-132	2.79E-07	7.30E-07	2.62E-07	2.46E-05	1.15E-06	0.00E+00	3.18E-07
I-133	2.01E-06	3.41E-06	1.04E-06	4.76E-04	5.98E-06	0.00E+00	2.58E-06
I-134	1.46E-07	3.87E-07	1.39E-07	6.45E-06	6.10E-07	0.00E+00	5.10E-09
I-135	6.10E-07	1.57E-06	5.82E-07	1.01E-04	2.48E-06	0.00E+00	1.74E-06
Cs-134	8.37E-05	1.97E-04	9.14E-05	0.00E+00	6.26E-05	2.39E-05	2.45E-06
Cs-136	8.59E-06	3.38E-05	2.27E-05	0.00E+00	1.84E-05	2.90E-06	2.72E-06
Cs-137	1.12E-04	1.49E-04	5.19E-05	0.00E+00	5.07E-05	1.97E-05	2.12E-06
Cs-138	7.76E-08	1.49E-07	7.45E-08	0.00E+00	1.10E-07	1.28E-08	6.76E-11
Ba-139	1.39E-07	9.78E-11	4.05E-09	0.00E+00	9.22E-11	6.74E-11	1.24E-06
Ba-140	2.84E-05	3.48E-08	1.83E-06	0.00E+00	1.18E-08	2.34E-08	4.38E-05
Ba-141	6.71E-08	5.01E-11	2.24E-09	0.00E+00	4.65E-11	3.43E-11	1.43E-13
Ba-142	2.99E-08	2.99E-11	1.84E-09	0.00E+00	2.53E-11	1.99E-11	9.18E-20
La-140	3.48E-09	1.71E-09	4.55E-10	0.00E+00	0.00E+00	0.00E+00	9.82E-05
La-142	1.79E-10	7.95E-11	1.98E-11	0.00E+00	0.00E+00	0.00E+00	2.42E-06
Ce-141	1.33E-08	8.88E-09	1.02E-09	0.00E+00	4.18E-09	0.00E+00	2.54E-05
Ce-143	2.35E-09	1.71E-06	1.91E-10	0.00E+00	7.67E-10	0.00E+00	5.14E-05
Ce-144	6.96E-07	2.88E-07	3.74E-08	0.00E+00	1.72E-07	0.00E+00	1.75E-04
Pr-143	1.31E-08	5.23E-09	6.52E-10	0.00E+00	3.04E-09	0.00E+00	4.31E-05
Pr-144	4.30E-11	1.76E-11	2.18E-12	0.00E+00	1.01E-11	0.00E+00	4.74E-14
Nd-147	9.38E-09	1.02E-08	6.11E-10	0.00E+00	5.99E-09	0.00E+00	3.68E-05
W-187	1.46E-07	1.19E-07	4.17E-08	0.00E+00	0.00E+00	0.00E+00	3.22E-05
Np-239	1.76E-09	1.66E-10	9.22E-11	0.00E+00	5.21E-10	0.00E+00	2.67E-05

References:

Dose Factors for Co-57, Zn-69m, Br-82, Nb-97, Sb-124 and Sb-125 are from NUREG-0172 Age Specific Radiation Dose Commitment Factors for a One Year Chronic Intake,, November, 1977, Table 3.

All others:

Regulatory Guide 1.109, Table E-12.

NOTE: The tritium dose factor for bone is assumed to be equal to the total body dose factor.

Table 6.4 (5 of 8)
INGESTION DOSE FACTORS
(mrem/pCi ingested)

CHILD

Nuclide	bone	liver	t body	thyroid	kidney	lung	gi-lli
H-3	2.03E-07	2.03E-07	2.03E-07	2.03E-07	2.03E-07	2.03E-07	2.03E-07
C-14	1.21E-05	2.42E-06	2.42E-06	2.42E-06	2.42E-06	2.42E-06	2.42E-06
Na-24	5.80E-06	5.80E-06	5.80E-06	5.80E-06	5.80E-06	5.80E-06	5.80E-06
P-32	8.25E-04	3.86E-05	3.18E-05	0.00E+00	0.00E+00	0.00E+00	2.28E-05
Cr-51	0.00E+00	0.00E+00	8.90E-09	4.94E-09	1.35E-09	9.02E-09	4.72E-07
Mn-54	0.00E+00	1.07E-05	2.85E-06	0.00E+00	3.00E-06	0.00E+00	8.98E-06
Mn-56	0.00E+00	3.34E-07	7.54E-08	0.00E+00	4.04E-07	0.00E+00	4.84E-05
Fe-55	1.15E-05	6.10E-06	1.89E-06	0.00E+00	0.00E+00	3.45E-06	1.13E-06
Fe-59	1.65E-05	2.67E-05	1.33E-05	0.00E+00	0.00E+00	7.74E-06	2.78E-05
Co-57	0.00E+00	4.93E-07	9.98E-07	0.00E+00	0.00E+00	0.00E+00	4.04E-06
Co-58	0.00E+00	1.80E-06	5.51E-06	0.00E+00	0.00E+00	0.00E+00	1.05E-05
Co-60	0.00E+00	5.29E-06	1.56E-05	0.00E+00	0.00E+00	0.00E+00	2.93E-05
Ni-63	5.38E-04	2.88E-05	1.83E-05	0.00E+00	0.00E+00	0.00E+00	1.94E-06
Ni-65	2.22E-06	2.09E-07	1.22E-07	0.00E+00	0.00E+00	0.00E+00	2.56E-05
Cu-64	0.00E+00	2.45E-07	1.48E-07	0.00E+00	5.92E-07	0.00E+00	1.15E-05
Zn-65	1.37E-05	3.65E-05	2.27E-05	0.00E+00	2.30E-05	0.00E+00	6.41E-06
Zn-69	4.38E-08	6.33E-08	5.85E-09	0.00E+00	3.84E-08	0.00E+00	3.99E-06
Zn-69m	7.10E-07	1.21E-06	1.43E-07	0.00E+00	7.03E-07	0.00E+00	3.94E-05
Br-82	0.00E+00	0.00E+00	7.55E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Br-83	0.00E+00	0.00E+00	1.71E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Br-84	0.00E+00	0.00E+00	1.98E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Br-85	0.00E+00	0.00E+00	9.12E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Rb-86	0.00E+00	6.70E-05	4.12E-05	0.00E+00	0.00E+00	0.00E+00	4.31E-06
Rb-88	0.00E+00	1.90E-07	1.32E-07	0.00E+00	0.00E+00	0.00E+00	9.32E-09
Rb-89	0.00E+00	1.17E-07	1.04E-07	0.00E+00	0.00E+00	0.00E+00	1.02E-09
Sr-89	1.32E-03	0.00E+00	3.77E-05	0.00E+00	0.00E+00	0.00E+00	5.11E-05
Sr-90	1.70E-02	0.00E+00	4.31E-03	0.00E+00	0.00E+00	0.00E+00	2.29E-04
Sr-91	2.40E-05	0.00E+00	9.06E-07	0.00E+00	0.00E+00	0.00E+00	5.30E-05
Sr-92	9.03E-06	0.00E+00	3.62E-07	0.00E+00	0.00E+00	0.00E+00	1.71E-04
Y-90	4.11E-08	0.00E+00	1.10E-09	0.00E+00	0.00E+00	0.00E+00	1.17E-04
Y-91m	3.82E-10	0.00E+00	1.39E-11	0.00E+00	0.00E+00	0.00E+00	7.48E-07
Y-91	6.02E-07	0.00E+00	1.61E-08	0.00E+00	0.00E+00	0.00E+00	8.02E-05
Y-92	3.60E-09	0.00E+00	1.03E-10	0.00E+00	0.00E+00	0.00E+00	1.04E-04
Y-93	1.14E-08	0.00E+00	3.13E-10	0.00E+00	0.00E+00	0.00E+00	1.70E-04
Zr-95	1.16E-07	2.55E-08	2.27E-08	0.00E+00	3.65E-08	0.00E+00	2.66E-05
Zr-97	6.99E-09	1.01E-09	5.96E-10	0.00E+00	1.45E-09	0.00E+00	1.53E-04
Nb-95	2.25E-08	8.76E-09	6.26E-09	0.00E+00	8.23E-09	0.00E+00	1.62E-05
Nb-97	2.17E-10	3.92E-11	1.83E-11	0.00E+00	4.35E-11	0.00E+00	1.21E-05
Mo-99	0.00E+00	1.33E-05	3.29E-06	0.00E+00	2.84E-05	0.00E+00	1.10E-05
Tc-99m	9.23E-10	1.81E-09	3.00E-08	0.00E+00	2.63E-08	9.19E-10	1.03E-06
Tc-101	1.07E-09	1.12E-09	1.42E-08	0.00E+00	1.91E-08	5.92E-10	3.56E-09
Ru-103	7.31E-07	0.00E+00	2.81E-07	0.00E+00	1.84E-06	0.00E+00	1.89E-05
Ru-105	6.45E-08	0.00E+00	2.34E-08	0.00E+00	5.67E-07	0.00E+00	4.21E-05
Ru-106	1.17E-05	0.00E+00	1.46E-06	0.00E+00	1.58E-05	0.00E+00	1.82E-04
Ag-110m	5.39E-07	3.64E-07	2.91E-07	0.00E+00	6.78E-07	0.00E+00	4.33E-05

Table 6.4 (6 of 8)
INGESTION DOSE FACTORS
(mrem/pCi ingested)

				CHILD			
Nuclide	bone	liver	t body	thyroid	kidney	lung	gi-lli
Sb-124	1.11E-05	1.44E-07	3.89E-06	2.45E-08	0.00E+00	6.16E-06	6.94E-05
Sb-125	7.16E-06	5.52E-08	1.50E-06	6.63E-09	0.00E+00	3.99E-06	1.71E-05
Te-125m	1.14E-05	3.09E-06	1.52E-06	3.20E-06	0.00E+00	0.00E+00	1.10E-05
Te-127m	2.89E-05	7.78E-06	3.43E-06	6.91E-06	8.24E-05	0.00E+00	2.34E-05
Te-127	4.71E-07	1.27E-07	1.01E-07	3.26E-07	1.34E-06	0.00E+00	1.84E-05
Te-129m	4.87E-05	1.36E-05	7.56E-06	1.57E-05	1.43E-04	0.00E+00	5.94E-05
Te-129	1.34E-07	3.74E-08	3.18E-08	9.56E-08	3.92E-07	0.00E+00	8.34E-06
Te-131m	7.20E-06	2.49E-06	2.65E-06	5.12E-06	2.41E-05	0.00E+00	1.01E-04
Te-131	8.30E-08	2.53E-08	2.47E-08	6.35E-08	2.51E-07	0.00E+00	4.36E-07
Te-132	1.01E-05	4.47E-06	5.40E-06	6.51E-06	4.15E-05	0.00E+00	4.50E-05
I-130	2.92E-06	5.90E-06	3.04E-06	6.50E-04	8.82E-06	0.00E+00	2.76E-06
I-131	1.72E-05	1.73E-05	9.83E-06	5.72E-03	2.84E-05	0.00E+00	1.54E-06
I-132	8.00E-07	1.47E-06	6.76E-07	6.82E-05	2.25E-06	0.00E+00	1.73E-06
I-133	5.92E-06	7.32E-06	2.77E-06	1.36E-03	1.22E-05	0.00E+00	2.95E-06
I-134	4.19E-07	7.78E-07	3.58E-07	1.79E-05	1.19E-06	0.00E+00	5.16E-07
I-135	1.75E-06	3.15E-06	1.49E-06	2.79E-04	4.83E-06	0.00E+00	2.40E-06
Cs-134	2.34E-04	3.84E-04	8.10E-05	0.00E+00	1.19E-04	4.27E-05	2.07E-06
Cs-136	2.35E-05	6.46E-05	4.18E-05	0.00E+00	3.44E-05	5.13E-06	2.27E-06
Cs-137	3.27E-04	3.13E-04	4.62E-05	0.00E+00	1.02E-04	3.67E-05	1.96E-06
Cs-138	2.28E-07	3.17E-07	2.01E-07	0.00E+00	2.23E-07	2.40E-08	1.46E-07
Ba-139	4.14E-07	2.21E-10	1.20E-08	0.00E+00	1.93E-10	1.30E-10	2.39E-05
Ba-140	8.31E-05	7.28E-08	4.85E-06	0.00E+00	2.37E-08	4.34E-08	4.21E-05
Ba-141	2.00E-07	1.12E-10	6.51E-09	0.00E+00	9.69E-11	6.58E-10	1.14E-07
Ba-142	8.74E-08	6.29E-11	4.88E-09	0.00E+00	5.09E-11	3.70E-11	1.14E-09
La-140	1.01E-08	3.53E-09	1.19E-09	0.00E+00	0.00E+00	0.00E+00	9.84E-05
La-142	5.24E-10	1.67E-10	5.23E-11	0.00E+00	0.00E+00	0.00E+00	3.31E-05
Ce-141	3.97E-08	1.98E-08	2.94E-09	0.00E+00	8.68E-09	0.00E+00	2.47E-05
Ce-143	6.99E-09	3.79E-06	5.49E-10	0.00E+00	1.59E-09	0.00E+00	5.55E-05
Ce-144	2.08E-06	6.52E-07	1.11E-07	0.00E+00	3.61E-07	0.00E+00	1.70E-04
Pr-143	3.93E-08	1.18E-08	1.95E-09	0.00E+00	6.39E-09	0.00E+00	4.24E-05
Pr-144	1.29E-10	3.99E-11	6.49E-12	0.00E+00	2.11E-11	0.00E+00	8.59E-08
Nd-147	2.79E-08	2.26E-08	1.75E-09	0.00E+00	1.24E-08	0.00E+00	3.58E-05
W-187	4.29E-07	2.54E-07	1.14E-07	0.00E+00	0.00E+00	0.00E+00	3.57E-05
Np-239	5.25E-09	3.77E-10	2.65E-10	0.00E+00	1.09E-09	0.00E+00	2.79E-05

References:

Dose Factors for Co-57, Zn-69m, Br-82, Nb-97, Sb-124 and Sb-125 are from NUREG-0172 Age Specific Radiation Dose Commitment Factors for a One Year Chronic Intake,, November, 1977, Table 2.

All others:

Regulatory Guide 1.109, Table E-13.

NOTE: The tritium dose factor for bone is assumed to be equal to the total body dose factor.

Table 6.4 (7 of 8)
INGESTION DOSE FACTORS
(mrem/pCi ingested)

INFANT

Nuclide	bone	liver	t body	thyroid	kidney	lung	gi-lli
H-3	3.08E-07	3.08E-07	3.08E-07	3.08E-07	3.08E-07	3.08E-07	3.08E-07
C-14	2.37E-05	5.06E-06	5.06E-06	5.06E-06	5.06E-06	5.06E-06	5.06E-06
Na-24	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05	1.01E-05
P-32	1.70E-03	1.00E-04	6.59E-05	0.00E+00	0.00E+00	0.00E+00	2.30E-05
Cr-51	0.00E+00	0.00E+00	1.41E-08	9.20E-09	2.01E-09	1.79E-08	4.11E-07
Mn-54	0.00E+00	1.99E-05	4.51E-06	0.00E+00	4.41E-06	0.00E+00	7.31E-06
Mn-56	0.00E+00	8.18E-07	1.41E-07	0.00E+00	7.03E-07	0.00E+00	7.43E-05
Fe-55	1.39E-05	8.98E-06	2.40E-06	0.00E+00	0.00E+00	4.39E-06	1.14E-06
Fe-59	3.08E-05	5.38E-05	2.12E-05	0.00E+00	0.00E+00	1.59E-05	2.57E-05
Co-57	0.00E+00	1.15E-06	1.87E-06	0.00E+00	0.00E+00	0.00E+00	3.92E-06
Co-58	0.00E+00	3.60E-06	8.98E-06	0.00E+00	0.00E+00	0.00E+00	8.97E-06
Co-60	0.00E+00	1.08E-05	2.55E-05	0.00E+00	0.00E+00	0.00E+00	2.57E-05
Ni-63	6.34E-04	3.92E-05	2.20E-05	0.00E+00	0.00E+00	0.00E+00	1.95E-06
Ni-65	4.70E-06	5.32E-07	2.42E-07	0.00E+00	0.00E+00	0.00E+00	4.05E-05
Cu-64	0.00E+00	6.09E-07	2.82E-07	0.00E+00	1.03E-06	0.00E+00	1.25E-05
Zn-65	1.84E-05	6.31E-05	2.91E-05	0.00E+00	3.06E-05	0.00E+00	5.33E-05
Zn-69	9.33E-08	1.68E-07	1.25E-08	0.00E+00	6.98E-08	0.00E+00	1.37E-05
Zn-69m	1.50E-06	3.06E-06	2.79E-07	0.00E+00	1.24E-06	0.00E+00	4.24E-05
Br-82	0.00E+00	0.00E+00	1.27E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Br-83	0.00E+00	0.00E+00	3.63E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Br-84	0.00E+00	0.00E+00	3.82E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Br-85	0.00E+00	0.00E+00	1.94E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Rb-86	0.00E+00	1.70E-04	8.40E-05	0.00E+00	0.00E+00	0.00E+00	4.35E-06
Rb-88	0.00E+00	4.98E-07	2.73E-07	0.00E+00	0.00E+00	0.00E+00	4.85E-07
Rb-89	0.00E+00	2.86E-07	1.97E-07	0.00E+00	0.00E+00	0.00E+00	9.74E-08
Sr-89	2.51E-03	0.00E+00	7.20E-05	0.00E+00	0.00E+00	0.00E+00	5.16E-05
Sr-90	1.85E-02	0.00E+00	4.71E-03	0.00E+00	0.00E+00	0.00E+00	2.31E-04
Sr-91	5.00E-05	0.00E+00	1.81E-06	0.00E+00	0.00E+00	0.00E+00	5.92E-05
Sr-92	1.92E-05	0.00E+00	7.13E-07	0.00E+00	0.00E+00	0.00E+00	2.07E-04
Y-90	8.69E-08	0.00E+00	2.33E-09	0.00E+00	0.00E+00	0.00E+00	1.20E-04
Y-91m	8.10E-10	0.00E+00	2.76E-11	0.00E+00	0.00E+00	0.00E+00	2.70E-06
Y-91	1.13E-06	0.00E+00	3.01E-08	0.00E+00	0.00E+00	0.00E+00	8.10E-05
Y-92	7.65E-09	0.00E+00	2.15E-10	0.00E+00	0.00E+00	0.00E+00	1.46E-04
Y-93	2.43E-08	0.00E+00	6.62E-10	0.00E+00	0.00E+00	0.00E+00	1.92E-04
Zr-95	2.06E-07	5.02E-08	3.56E-08	0.00E+00	5.41E-08	0.00E+00	2.50E-05
Zr-97	1.48E-08	2.54E-09	1.16E-09	0.00E+00	2.56E-09	0.00E+00	1.62E-04
Nb-95	4.20E-08	1.73E-08	1.00E-08	0.00E+00	1.24E-08	0.00E+00	1.46E-05
Nb-97	4.59E-10	9.79E-11	3.53E-11	0.00E+00	7.65E-11	0.00E+00	3.09E-05
Mo-99	0.00E+00	3.40E-05	6.63E-06	0.00E+00	5.08E-05	0.00E+00	1.12E-05
Tc-99m	1.92E-09	3.96E-09	5.10E-08	0.00E+00	4.26E-08	2.07E-09	1.15E-06
Tc-101	2.27E-09	2.86E-09	2.83E-08	0.00E+00	3.40E-08	1.56E-09	4.86E-07
Ru-103	1.48E-06	0.00E+00	4.95E-07	0.00E+00	3.08E-06	0.00E+00	1.80E-05
Ru-105	1.36E-07	0.00E+00	4.58E-08	0.00E+00	1.00E-06	0.00E+00	5.41E-05
Ru-106	2.41E-05	0.00E+00	3.01E-06	0.00E+00	2.85E-05	0.00E+00	1.83E-04
Ag-110m	9.96E-07	7.27E-07	4.81E-07	0.00E+00	1.04E-06	0.00E+00	3.77E-05

Table 6.4 (8 of 8)
INGESTION DOSE FACTORS
(mrem/pCi ingested)

INFANT

Nuclide	bone	liver	t body	thyroid	kidney	lung	gi-lli
Sb-124	2.14E-05	3.15E-07	6.63E-06	5.68E-08	0.00E+00	1.34E-05	6.60E-05
Sb-125	1.23E-05	1.19E-07	2.53E-06	1.54E-08	0.00E+00	7.72E-06	1.64E-05
Te-125m	2.33E-05	7.79E-06	3.15E-06	7.84E-06	0.00E+00	0.00E+00	1.11E-05
Te-127m	5.85E-05	1.94E-05	7.08E-06	1.69E-05	1.44E-04	0.00E+00	2.36E-05
Te-127	1.00E-06	3.35E-07	2.15E-07	8.14E-07	2.44E-06	0.00E+00	2.10E-05
Te-129m	1.00E-04	3.43E-05	1.54E-05	3.84E-05	2.50E-04	0.00E+00	5.97E-05
Te-129	2.84E-07	9.79E-08	6.63E-08	2.38E-07	7.07E-07	0.00E+00	2.27E-05
Te-131m	1.52E-05	6.12E-06	5.05E-06	1.24E-05	4.21E-05	0.00E+00	1.03E-04
Te-131	1.76E-07	6.50E-08	4.94E-08	1.57E-07	4.50E-07	0.00E+00	7.11E-06
Te-132	2.08E-05	1.03E-05	9.61E-06	1.52E-05	6.44E-05	0.00E+00	3.81E-05
I-130	6.00E-06	1.32E-05	5.30E-06	1.48E-03	1.45E-05	0.00E+00	2.83E-06
I-131	3.59E-05	4.23E-05	1.86E-05	1.39E-02	4.94E-05	0.00E+00	1.51E-06
I-132	1.66E-06	3.37E-06	1.20E-06	1.58E-04	3.76E-06	0.00E+00	2.73E-06
I-133	1.25E-05	1.82E-05	5.33E-06	3.31E-03	2.14E-05	0.00E+00	3.08E-06
I-134	8.69E-07	1.78E-06	6.33E-07	4.15E-05	1.99E-06	0.00E+00	1.84E-06
I-135	3.64E-06	7.24E-06	2.64E-06	6.49E-04	8.07E-06	0.00E+00	2.62E-06
Cs-134	3.77E-04	7.03E-04	7.10E-05	0.00E+00	1.81E-04	7.42E-05	1.91E-06
Cs-136	4.59E-05	1.35E-04	5.04E-05	0.00E+00	5.38E-05	1.10E-05	2.05E-06
Cs-137	5.22E-04	6.11E-04	4.33E-05	0.00E+00	1.64E-04	6.64E-05	1.91E-06
Cs-138	4.81E-07	7.82E-07	3.79E-07	0.00E+00	3.90E-07	6.09E-08	1.25E-06
Ba-139	8.81E-07	5.84E-10	2.55E-08	0.00E+00	3.51E-10	3.54E-10	5.58E-05
Ba-140	1.71E-04	1.71E-07	8.81E-06	0.00E+00	4.06E-08	1.05E-07	4.20E-05
Ba-141	4.25E-07	2.91E-10	1.34E-08	0.00E+00	1.75E-10	1.77E-10	5.19E-06
Ba-142	1.84E-07	1.53E-10	9.06E-09	0.00E+00	8.81E-11	9.26E-11	7.59E-07
La-140	2.11E-08	8.32E-09	2.14E-09	0.00E+00	0.00E+00	0.00E+00	9.77E-05
La-142	1.10E-09	4.04E-10	9.67E-11	0.00E+00	0.00E+00	0.00E+00	6.86E-05
Ce-141	7.87E-08	4.80E-08	5.65E-09	0.00E+00	1.48E-08	0.00E+00	2.48E-05
Ce-143	1.48E-08	9.82E-06	1.12E-09	0.00E+00	2.86E-09	0.00E+00	5.73E-05
Ce-144	2.98E-06	1.22E-06	1.67E-07	0.00E+00	4.93E-07	0.00E+00	1.71E-04
Pr-143	8.13E-08	3.04E-08	4.03E-09	0.00E+00	1.13E-08	0.00E+00	4.29E-05
Pr-144	2.74E-10	1.06E-10	1.38E-11	0.00E+00	3.84E-11	0.00E+00	4.93E-06
Nd-147	5.53E-08	5.68E-08	3.48E-09	0.00E+00	2.19E-08	0.00E+00	3.60E-05
W-187	9.03E-07	6.28E-07	2.17E-07	0.00E+00	0.00E+00	0.00E+00	3.69E-05
Np-239	1.11E-08	9.93E-10	5.61E-10	0.00E+00	1.98E-09	0.00E+00	2.87E-05

References:

Dose Factors for Co-57, Zn-69m, Br-82, Nb-97, Sb-124 and Sb-125 are from NUREG-0172 Age Specific Radiation Dose Commitment Factors for a One Year Chronic Intake,, November, 1977, Table 1.

All others:

Regulatory Guide 1.109, Table E-14.

NOTE: The tritium dose factor for bone is assumed to be equal to the total body dose factor.

Table 6.5
BIOACCUMULATION FACTORS FOR FRESHWATER FISH
(pCi/kg per pCi/L)

H-3	9.0E-01	Tc-99m	1.5E+01
C-14	4.6E+03	Tc-101	1.5E+01
Na-24	1.0E+02	Ru-103	1.0E+01
P-32	1.0E+05	Ru-105	1.0E+01
Cr-51	2.0E+02	Ru-106	1.0E+01
Mn-54	4.0E+02	Ag-110m	0.0E+00
Mn-56	4.0E+02	Sb-124	1.0E+00
Fe-55	1.0E+02	Sb-125	1.0E+00
Fe-59	1.0E+02	Te-125m	4.0E+02
Co-57	5.0E+01	Te-127m	4.0E+02
Co-58	5.0E+01	Te-127	4.0E+02
Co-60	5.0E+01	Te-129m	4.0E+02
Ni-63	1.0E+02	Te-129	4.0E+02
Ni-65	1.0E+02	Te-131m	4.0E+02
Cu-64	5.0E+01	Te-131	4.0E+02
Zn-65	2.0E+03	Te-132	4.0E+02
Zn-69	2.0E+03	I-130	4.0E+01
Zn-69m	2.0E+03	I-131	4.0E+01
Br-82	4.2E+02	I-132	4.0E+01
Br-83	4.2E+02	I-133	4.0E+01
Br-84	4.2E+02	I-134	4.0E+01
Br-85	4.2E+02	I-135	4.0E+01
Rb-86	2.0E+03	Cs-134	1.9E+03
Rb-88	2.0E+03	Cs-136	1.9E+03
Rb-89	2.0E+03	Cs-137	1.9E+03
Sr-89	5.6E+01	Cs-138	1.9E+03
Sr-90	5.6E+01	Ba-139	4.0E+00
Sr-91	5.6E+01	Ba-140	4.0E+00
Sr-92	5.6E+01	Ba-141	4.0E+00
Y-90	2.5E+01	Ba-142	4.0E+00
Y-91m	2.5E+01	La-140	2.5E+01
Y-91	2.5E+01	La-142	2.5E+01
Y-92	2.5E+01	Ce-141	1.0E+00
Y-93	2.5E+01	Ce-143	1.0E+00
Zr-95	3.3E+00	Ce-144	1.0E+00
Zr-97	3.3E+00	Pr-143	2.5E+01
Nb-95	3.0E+04	Pr-144	2.5E+01
Nb-97	3.0E+04	Nd-147	2.5E+01
Mo-99	1.0E+01	W-187	1.2E+03
		Np-239	1.0E+01

References:
Bioaccumulation factors for Antimony nuclides are from ORNL-4992, "A Methodology for Calculating Radiation Doses from Radioactivity Released to the Environment, March 1976, Table 4.12A.

Bioaccumulation factors for Iodine, Cesium, and Strontium nuclides are from NUREG/CR-1004, Table 3.2.4.

All other nuclides' bioaccumulation factors are from Regulatory Guide 1.109, Table A-1.

Table 6.6 (1 of 2)
EXTERNAL DOSE FACTORS FOR STANDING ON CONTAMINATED GROUND
(mrem/h per pCi/m^2)

Nuclide	Total Body	Skin
H-3	0.0	0.0
C-14	0.0	0.0
Na-24	2.50E-08	2.90E-08
P-32	0.0	0.0
Cr-51	2.20E-10	2.60E-10
Mn-54	5.80E-09	6.80E-09
Mn-56	1.10E-08	1.30E-08
Fe-55	0.0	0.0
Fe-59	8.00E-09	9.40E-09
Co-57	1.77E-09	2.21E-09
Co-58	7.00E-09	8.20E-09
Co-60	1.70E-08	2.00E-08
Ni-63	0.0	0.0
Ni-65	3.70E-09	4.30E-09
Cu-64	1.50E-09	1.70E-09
Zn-65	4.00E-09	4.60E-09
Zn-69	0.0	0.0
Zn-69m	5.50E-09	6.59E-09
Br-82	3.18E-08	3.90E-08
Br-83	6.40E-11	9.30E-11
Br-84	1.20E-08	1.40E-08
Br-85	0.0	0.0
Rb-86	6.30E-10	7.20E-10
Rb-88	3.50E-09	4.00E-09
Rb-89	1.50E-08	1.80E-08
Sr-89	5.60E-13	6.50E-13
Sr-91	7.10E-09	8.30E-09
Sr-92	9.00E-09	1.00E-08
Y-90	2.20E-12	2.60E-12
Y-91m	3.80E-09	4.40E-09
Y-91	2.40E-11	2.70E-11
Y-92	1.60E-09	1.90E-09
Y-93	5.70E-10	7.80E-10
Zr-95	5.00E-09	5.80E-09
Zr-97	5.50E-09	6.40E-09
Nb-95	5.10E-09	6.00E-09
Nb-97	8.11E-09	1.00E-08
Mo-99	1.90E-09	2.20E-09
Tc-99m	9.60E-10	1.10E-09
Tc-101	2.70E-09	3.00E-09
Ru-103	3.60E-09	4.20E-09
Ru-105	4.50E-09	5.10E-09
Ru-106	1.50E-09	1.80E-09
Ag-110m	1.80E-08	2.10E-08
Sb-124	2.17E-08	2.57E-08

Table 6.6 (2 of 2)
EXTERNAL DOSE FACTORS FOR STANDING ON CONTAMINATED GROUND
(mrem/h per pCi/m^2)

Nuclide	Total Body	Skin
Sb-125	5.48E-09	6.80E-09
Te-125m	3.50E-11	4.80E-11
Te-127m	1.10E-12	1.30E-12
Te-127	1.00E-11	1.10E-11
Te-129m	7.70E-10	9.00E-10
Te-129	7.10E-10	8.40E-10
Te-131m	8.40E-09	9.90E-09
Te-131	2.20E-09	2.60E-06
Te-132	1.70E-09	2.00E-09
I-130	1.40E-08	1.70E-08
I-131	2.80E-09	3.40E-09
I-132	1.70E-08	2.00E-08
I-133	3.70E-09	4.50E-09
I-134	1.60E-08	1.90E-08
I-135	1.20E-08	1.40E-08
Cs-134	1.20E-08	1.40E-08
Cs-136	1.50E-08	1.70E-08
Cs-137	4.20E-09	4.90E-09
Cs-138	2.10E-08	2.40E-08
Ba-139	2.40E-09	2.70E-09
Ba-140	2.10E-09	2.40E-09
Ba-141	4.30E-09	4.90E-09
Ba-142	7.90E-09	9.00E-09
La-140	1.50E-08	1.70E-08
La-142	1.50E-08	1.80E-08
Ce-141	5.50E-10	6.20E-10
Ce-143	2.20E-09	2.50E-09
Ce-144	3.20E-10	3.70E-10
Pr-143	0.0	0.0
Pr-144	2.00E-10	2.30E-10
Nd-147	1.00E-09	1.20E-09
W-187	3.10E-09	3.60E-09
Np-239	9.50E-10	1.10E-09

References:

Dose Factors for Co-57, Zn-69m, Br-82, Nb-97, Sb-124 and Sb-125 are from Dose-Rate Conversion Factors for External Exposure to Photon and Electron Radiation from Radionuclides Occurring in Routine Releases from Nuclear Fuel Cycle Facilities, D. C. Kocher, Health Physics Volume 38, April 1980.

All Others:

Regulatory Guide 1.109, Table E-6.

Figure 6.1
LIQUID RELEASE POINTS

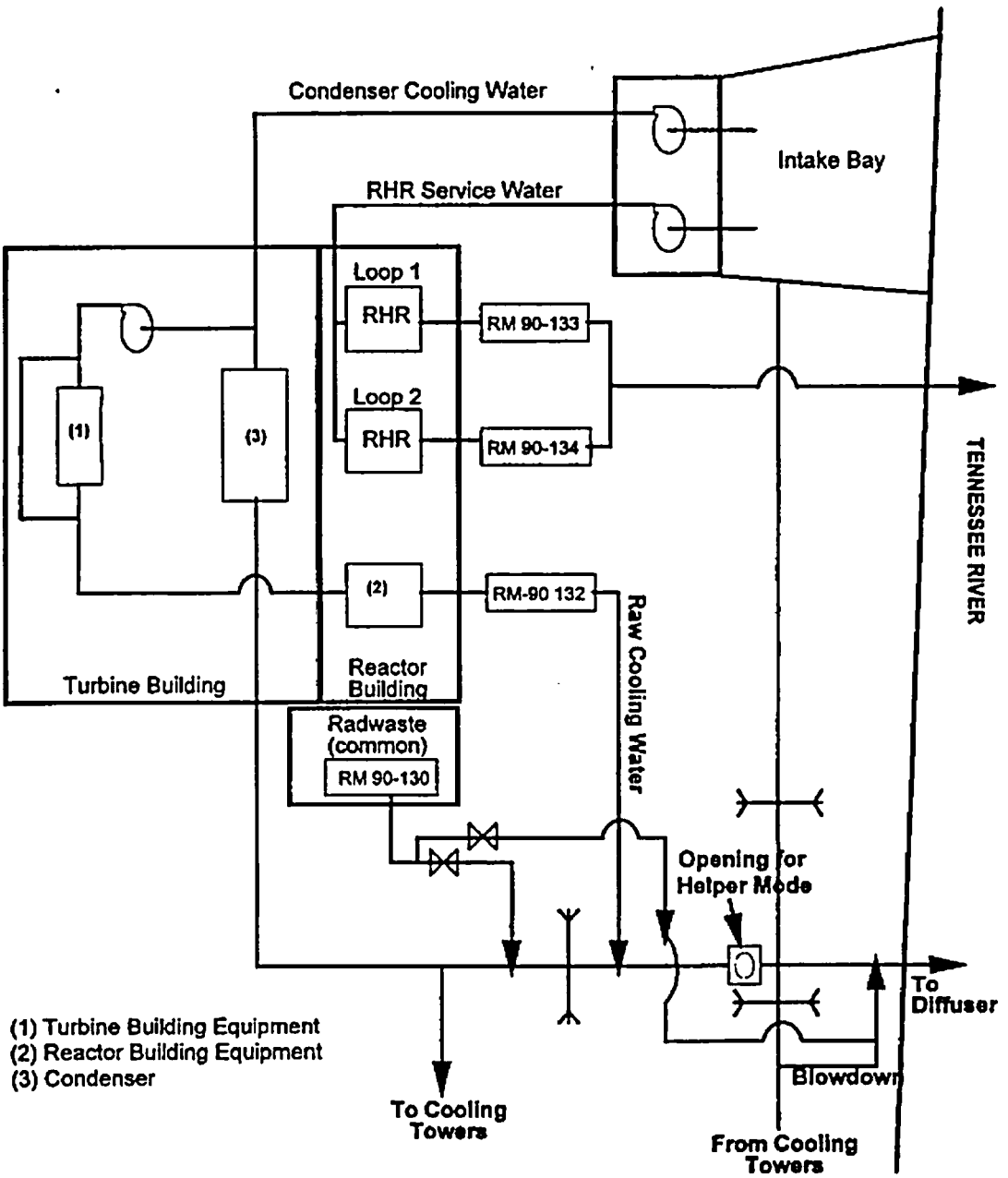
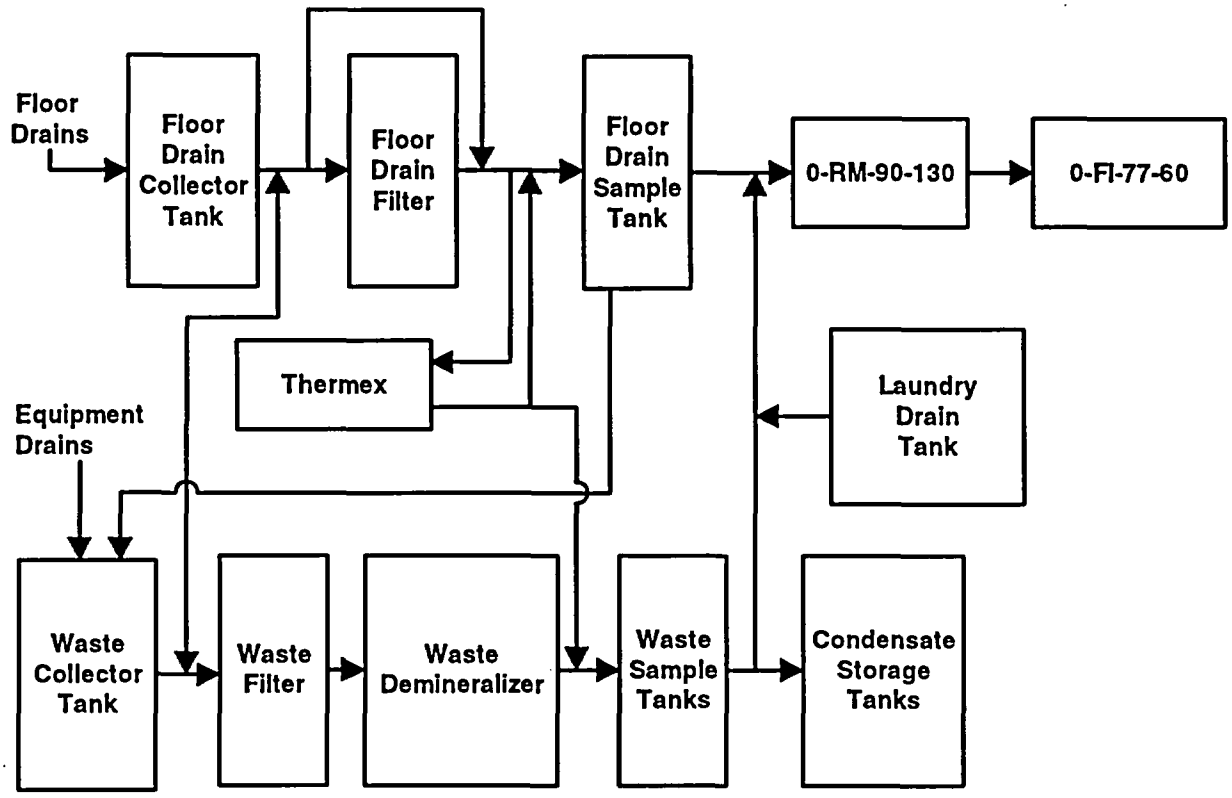


Figure 6.2
LIQUID RADWASTE SYSTEM



SECTION 7.0

GASEOUS EFFLUENTS

7.0 GASEOUS EFFLUENTS

RELEASE POINTS DESCRIPTION

There are eleven monitored discharge points at BFN: a Reactor Building Exhaust for each unit, the Radwaste Building Exhaust, two sets of Turbine Deck Roof Fans for each unit, and the Stack. The Reactor and Radwaste Exhausts are located on the roof of the reactor building.

The Reactor Building Exhausts include exhaust from the refuel floor of the reactor buildings, exhaust from the Primary Containment Purge System, and exhaust from the turbine buildings. These discharge points are monitored by radiation monitors 1-,2-,3-RM-90-250.

The Radwaste Building Exhaust includes exhaust from the common radwaste building. This discharge point is monitored by radiation monitor RM-90-252.

There are nine roof fans on the roof of each unit's turbine building to provide building ventilation. These are generally used in the warmer months to control building temperature. For each unit, there are two radiation monitors. One of these monitors the exhaust through four of the fans (1-,2-RM-90-249 and 3-RM-90-251). The other monitors the exhaust through the remaining five fans (1-,2-RM-90-251 and 3-RM-90-249).

The common 600 foot plant stack receives the Condenser Offgas exhaust, the Filter Cubicle exhaust, the Steam Packing and Mechanical Vacuum exhaust, and the Standby Gas Treatment System (SBGTS) exhaust. The stack effluents are monitored by radiation monitors RM-90-147 and 148.

Figures 7.1 and 7.2 show the Offgas System, the Standby Gas Treatment System and normal building ventilation with effluent monitor locations.

7.1 GASEOUS EFFLUENT MONITOR INSTRUMENT SETPOINTS

ODCM Control 1.1.2 requires that gaseous effluent monitors have alarm/trip setpoints to ensure that ODCM dose rate limits are not exceeded. This section of the ODCM describes the methodology that is used to determine the allowable values which are used to calculate the physical settings on the monitors. The monitor setpoints are calculated in the applicable Scaling and Setpoint Document. Figures 7.1 and 7.2 show the Offgas System, the Standby Gas Treatment System and normal building ventilation with the effluent monitor locations.

All gaseous releases from BFN are continuous, so allowable values are calculated for each of the monitors as a part of a release permit package per sampling requirements of Table 2.2-2. Using the actual radionuclide mix as measured in a sample, a maximum allowable value is calculated (as described below) and compared to a default allowable value assigned to that monitor. The default allowable values are described in Section 7.1.2. The lower of the two values is the recommended setpoint for that release point. If the release point is one of several leading into a common discharge point, all current releases into that discharge point are used in the calculation of the discharge point monitor allowable value (e.g., the stack).

7.1.1 Maximum Allowable Value

An expected monitor response is calculated from the sample results:

$$R = B + \sum_i E_i C_i \qquad (7.1)$$

where:

B = monitor background, cpm or cps.
E_i = efficiency factor for the monitor for nuclide i, cpm per µCi/cc or cps per µCi/cc.
C_i = measured concentration of nuclide i, µCi/cc.

The expected response is then used to determine the calculated maximum allowable value, S_{max} in cpm or cps. This value corresponds to the dose rate limit for the measured radionuclide mix and is determined using the following equation:

$$S_{max} = \left(A\ SF \left(\frac{DR_{lim}}{DR} (R - B) \right) \right) + B \qquad (7.2)$$

where:

A = dose rate allocation factor for the release/discharge point, dimensionless. The dose rate allocation factor for the stack is 0.1, the building vent allocation factors are equal to 0.9 times the fraction of the total building flow assigned to that particular vent.

SF = safety factor for the monitor, dimensionless.
DR_{lim} = the dose rate limit, mrem/y.
= 500 mrem/y to the total body for noble gases,
= 3000 mrem/y to the skin for noble gases, and
DR = the calculated dose rate for the release, mrem/y.
= DR_{TB} for total body (as described in Section 7.3.2.1),
= DR_S for skin (as described in Section 7.3.2.2), and
R = expected monitor response (as calculated above) cpm or cps.
B = the monitor background, cpm or cps.

7.1.2 Default Allowable Values

The methodology for determining the default alarm/trip allowable values is divided into two major parts. The first consists of backcalculating from a dose rate to a release rate limit, in µCi/s, for each release point. The methodology for determining these release rate limits is given in Section 7.2. The second part consists of using the release rate limits to determine default allowable values for the monitors.

The default allowable values are calculated using the following equation.

$$\text{Allowable Value} \leq \frac{r\ f\ A}{F\ E} + B \qquad (7.3)$$

where:

r = release rate limit for stack or ground level, µCi/s. The release rate limits used for the allowable value calculation are 1.44E+07 µCi/s for the stack and 1.50E+05 µCi/s for the building vents.
f = fraction of the limits r which is allowed for the release mode (elevated or ground level).
NOTE: The sum of the f values for elevated and ground levels must be less than or equal to 1. This lowers the limits to ensure that the site dose rate limit will not be exceeded if both the stack and the ground level release rate limits were reached simultaneously.
A = allocation factor. This is the portion of the release rate limit r which is assigned to the release point under consideration. This ensures that the ground level release rate limit will not be exceeded if all building vents were to reach their limit simultaneously. This is equal to 1 for the stack. The building vent release rate limit is divided among the ten vents based on the flow rates.
F = flow rate for the vent, cc/s. Maximum flow rates are used to ensure conservative setpoints.
E = efficiency of the monitor, (µCi/cc)/cpm or (µCi/cc)/cps.
B = background of the monitor, cpm or cps.

The calculation of these setpoints are documented further in 0-TI-15 and the applicable Scaling and Setpoint Document, including the numerical values for each of the parameters described above.

7.2 RELEASE RATE LIMIT METHODOLOGY

A dose rate (D_{TB}, D_S or D_{TH}) is calculated based on the design objective source term mix used in the licensing of the plant. Dose rates are determined for (1) noble gases as described in Section 7.3.2 and (2) iodines and particulates as described in Section 7.3.3.

The dose rate limits of interest are:

Total Body = 500 mrem/y
Skin = 3000 mrem/y
Maximum Organ = 1500 mrem/y

A release rate limit based on organ dose rates is not considered since iodine and particulate releases are not determined on a real time basis. The total body and skin dose rate limits are divided by the corresponding calculated dose rates described above:

$$R_{TB}(\text{vent or stack}) = \frac{\text{Total Body Dose Rate Limit}}{D_{TB}\ (\text{vent or stack})}$$

$$R_S(\text{vent or stack}) = \frac{\text{Skin Dose Rate Limit}}{D_S\ (\text{vent or stack})}$$

These ratios represent how far above or below the guidelines the dose rate calculations were.

A total release rate, Q, for each release level (building vent or stack) is calculated, using the source term data in Table 7.2. Thus, two total release rates are calculated:

Q_{ngv} = Total noble gas release rate from building exhaust vents, Ci/s.
Q_{ngs} = Total noble gas release rate from main stack, Ci/s.

To obtain a release rate limit, r, for each release level, the total release rate, Q, for that release level is multiplied by the corresponding ratio, R:

For noble gases released from building vents:

$$r_{ngv} = R_{TBv}\, Q_{ngv}, \quad \text{or}$$
$$= R_{Sv}\, Q_{ngv}$$

whichever is more restrictive, i.e., smaller.

where:

r_{ngv} = Calculated release rate limit for noble gases released from building vents.

R_{TBv} = Ratio of total body dose rate limit to total body dose rate for building vent releases, as calculated above.

Q_{ngv} = Total Table 7.2 noble gas release rate from building vents.

R_{Sv} = Ratio of skin dose rate limit to skin dose rate for building vent releases, as calculated above.

For noble gases released from the stack:

$$r_{ngs} = R_{TBs}\, Q_{ngs}, \quad \text{or}$$
$$= R_{Ss}\, Q_{ngs}$$

whichever is more restrictive, i.e., smaller.

where:

r_{ngs} = Calculated release rate limit for noble gases released from the stack.

R_{TBs} = Ratio of total body dose rate limit to total body dose rate for stack releases, as calculated above.

Q_{ngs} = Total Table 7.2 noble gas release rate from stack.

R_{Ss} = Ratio of skin dose rate limit to skin dose rate for stack releases, as calculated above.

The release rate limits, r, calculated for BFN using this methodology are:

	Noble Gas
Stack	r_{ngs} = 1.44E+01 Ci/s
Building Vents	r_{ngv} = 1.50E-01 Ci/s

7.3 GASEOUS EFFLUENTS - DOSE RATES

7.3.1 RELEASE SAMPLING

As required by Table 2.2-2, a grab sample is taken and analyzed to determine the concentration, µCi/cc, of each noble gas nuclide. On at least a weekly basis, filters are analyzed to determine the amount of iodines and particulates released. Composite samples are maintained (as required by Table 2.2-2) to determine the concentration of certain nuclides (e.g., Sr-89, Sr-90, and alpha emitters).

7.3.2 NOBLE GAS DOSE RATES

Dose rates are calculated in order to determine compliance with the requirements of ODCM Control 1.2.2.1. Dose rates are calculated for total body and skin due to noble gases using semi-infinite and finite cloud models as described in NUREG 0133. The release mode will determine the model used: turbine building releases are treated as ground level and use the semi-infinite model; reactor and radwaste building vents are treated as split-level (or mixed mode) and use the semi-infinite model; and stack releases are elevated and use the finite cloud model.

7.3.2.1 Total Body Dose Rate

The dose rate to the total body, DR_{TB} in mrem/y, is calculated using the following equation:

$$DR_{TB} = \sum_i [V_i\, Q_{is} + DFB_i\, ((\chi/Q)_g\, Q_{ig}) + DFB_i\, ((\chi/Q)_m\, Q_{im})] \qquad (7.4)$$

where:

V_i = the constant for each identified noble gas radionuclide accounting for the gamma radiation from the elevated finite plume, in mrem/y per µCi/s, as given in Table 7.4

Q_{is} = the release rate of radionuclide i, in gaseous effluents from the stack, µCi/s.

DFB_i = total body submersion dose factor due to gamma radiation for noble gas nuclide i, mrem/y per µCi/m^3 (Table 7.4).

χ/Q_g = for ground level releases, the highest calculated annual average relative concentration for any area at or beyond the unrestricted area boundary, s/m^3 (Table 7.1).

Q_{ig} = the release rate of radionuclide i, in the gaseous effluents from all ground level releases, µCi/s.

χ/Q_m = for split-level releases, the highest calculated annual average relative concentration for any area at or beyond the unrestricted area boundary, s/m^3 (Table 7.1).

Q_{im} = the release rate of radionuclide i, in gaseous effluents from all split level releases, µCi/s.

7.3.2.2 Skin Dose Rate

The dose rate to the skin, DR_s in mrem/y, is calculated using the following equation:

$$DR_s = \sum_i [(DFS_i \chi/Q_s + 1.1 B_i) Q_{is} + ((DFS_i + 1.1 DF_{\gamma i}) \chi/Q_g Q_{ig}) + ((DFS_i + 1.1 DF_{\gamma i}) \chi/Q_m Q_{im})] \quad (7.5)$$

where:

DFS_i = the skin dose factor due to beta emissions for each identified noble gas radionuclide, mrem/y per $\mu Ci/m^3$.

χ/Q_s = for stack releases, the highest calculated annual average relative concentration for any area at or beyond the unrestricted area boundary, s/m^3 (Table 7.1).

B_i = the constant for long term releases (greater than 500 h/y) for each identified noble gas radionuclide accounting for the gamma radiation from the elevated finite plume, mrad/y per µCi/s (Table 7.4).

Q_{is} = the release rate of radionuclide i, in gaseous effluents from the stack, µCi/s.

$DF_{\gamma i}$ = the air dose factor due to gamma emissions for each identified noble gas radionuclide, mrad/y per $\mu Ci/m^3$ (unit conversion factor of 1.1 mrem/mrad converts air dose to skin dose) (Table 7.4).

χ/Q_g = for ground level releases, the highest calculated annual average relative concentration for any area at or beyond the unrestricted area boundary, s/m^3 (Table 7.1).

Q_{ig} = the release rate of radionuclide i, in gaseous effluents from all ground level releases, µCi/s.

χ/Q_m = for split level releases, the highest calculated annual average relative concentration for any area at or beyond the unrestricted area boundary, s/m^3 (Table 7.1).

Q_{im} = the release rate of radionuclide i, in gaseous effluents from all split level releases, µCi/s.

7.3.3 I-131, I-133, TRITIUM AND ALL RADIONUCLIDES IN PARTICULATE FORM WITH HALF-LIVES OF GREATER THAN 8 DAYS - ORGAN DOSE RATE

Organ dose rates due to I-131, I-133, Tritium and all radionuclides in particulate form with half-lives of greater than 8 days, DR_j in mrem/y, are calculated for all age groups (adult, teen, child, and infant) and all organs (bone, liver, total body, thyroid, kidney, lung, and GI Tract) using the following equation:

$$DR_j = \sum_D F_D \left[C_{TD}(\chi/Q)_D[R_{IT}+R_{CTP}] + \sum_i C_{iD}[(\chi/Q)_D R_{Ii}+(D/Q)_D[R_{CPi}+R_{Gi}]]\right] \quad (7.6)$$

where:

F_D = flowrate of effluent stream from discharge point D, cc/s.

C_{TD} = concentration of tritium in effluent stream at discharge point D, µCi/cc.

χ/Q_D = the highest calculated annual average relative concentration for any area at or beyond the unrestricted area boundary for the release mode associated with the discharge point D, s/m^3, (Table 7.1).

R_{IT} = inhalation dose factor for tritium, mrem/y per µCi/m^3. Dose factor is calculated as described in Section 7.8.13 (where: $R_{Ii} = R_{IT}$, i.e., i=T for tritium).

R_{CTP} = grass-cow-milk dose factor for tritium, mrem/y per µCi/m^3. Dose factor is calculated as described in Section 7.8.7.

C_{iD} = concentration of nuclide i in effluent stream at discharge point D, µCi/cc.

R_{Ii} = inhalation dose factor for each identified nuclide i, mrem/y per µCi/m^3. Dose factors are calculated ad described in Section 7.8.13.

D/Q_D = the highest calculated annual average relative deposition for any area at or beyond the unrestricted area boundary for the release mode associated with discharge point D, m^{-2}, (Table 7.1).

R_{CPi} = grass-cow-milk dose factor for each identified nuclide i, m^2-mrem/y per µCi/s. Dose factors are calculated as described in Section 7.8.1.

R_{Gi} = ground plane dose factor for each identified nuclide i, m^2-mrem/y per µCi/s. Dose factors are calculated as described in Section 7.8.14.

The organ dose rates for all pathways are summed to find the total site dose rate. The maximum organ dose rate is selected from among the dose rates calculated for all locations, organs, and age groups.

7.4 CUMULATIVE DOSE - NOBLE GASES

Doses to be calculated are gamma and beta air doses due to exposure to noble gases. For elevated releases (stack), a finite cloud model will be used for the gamma dose. All other releases will be calculated using a semi-infinite cloud model. The doses will be calculated at three locations: the land-site boundary locations with the highest annual-average split-level χ/Q; the land-site boundary location with the highest ground-level annual-average χ/Q; and the offsite location with the highest annual-average elevated-level χ/Q. The joint frequency distributions for the three levels of met data are given in Table 7.3. The locations, and their respective dispersion factors are listed in Table 7.1. Dispersion factors are calculated using the methodology described in Section 7.9.2

No credit is taken for radioactive decay.

7.4.1 Gamma Dose to Air

The gamma air dose, $D\gamma$ in mrad, is calculated for each release permit using one of the following equations:

For ground or split-level release/discharge points:

$$D\gamma = 3.17E\text{-}08\ T \sum_i [\ DF_{\gamma i}\ Q_i\ \chi/Q\ ] \qquad (7.7)$$

For elevated release/discharge points:

$$D\gamma = 3.17E\text{-}08\ T \sum_i [\ B_i\ Q_i\ ] \qquad (7.8)$$

where:

3.17E-08	= conversion factor, y/s.
T	= duration of release, s.
$DF_{\gamma i}$	= dose conversion factor for external gamma for nuclide i (Table 7.4), mrad/y per $\mu Ci/m^3$.
Q_i	= the release rate of radionuclide i, $\mu Ci/s$.
χ/Q	= the highest calculated annual-average relative concentration for any area at or beyond the unrestricted area boundary for the release type under consideration (Table 7.1), s/m^3.
B_i	= the constant for long term releases (greater than 500 h/y) for each identified noble gas radionuclide accounting for the gamma radiation from the elevated finite plume (Table 7.4), mrad/y per $\mu Ci/s$.

The location with the highest dose is selected as the critical receptor for each release. This receptor is used in the determination of the cumulative doses in Section 7.4.3.

7.4.2 Beta Dose to Air

The beta air dose, D_β in mrad, is calculated for each release permit using the following equation:

$$D_\beta = 3.17E\text{-}08\ T \sum_i [\ DF_{\beta i}\ (Q_i\ \chi/Q\ )\ ] \qquad (7.9)$$

where:

3.17E-08	=	conversion factor, y/s.
T	=	duration of release, s.
$DF_{\beta i}$	=	dose conversion factor for external beta for nuclide i (Table 7.4), mrad/y per $\mu Ci/m^3$.
Q_i	=	the release rate of radionclide i from the release/discharge point under consideration, µCi/s.
χ/Q	=	the highest calculated annual average relative concentration for any area at or beyond the unrestricted area boundary for the release/discharge point under consideration (Table 7.1), s/m^3.

The beta-air dose calculated by this method will be used in the cumulative dose calculations discussed in Section 7.4.3.

7.4.3 Cumulative Dose - Noble Gas

Quarterly and annual sums of all doses are calculated for each release as described below to compare to the limits listed in ODCM Control 1.2.2.2.

For noble gases, cumulative doses are calculated for gamma and beta air doses. Doses due to each release are summed with the doses for all previous release in the quarter or year to obtain cumulative quarterly and annual doses.

7.4.4 Comparison to Limits

The cumulative calendar quarter and calendar year doses are compared to their respective limits for each release to determine compliance.

7.5 CUMULATIVE DOSE - I-131, I-133, TRITIUM AND RADIONUCLIDES IN PARTICULATE FORM WITH HALF-LIVES GREATER THAN 8 DAYS

7.5.1 Organ Dose Calculation

Organ dose due to I-131, I-133, tritium and all radionuclides in particulate form with half-lives of greater than 8 days are calculated for each release permit for the critical receptor. The critical receptor is defined as the receptor with the highest calculated dose of all the receptors defined in Table 7.1. Annual average χ/Q and D/Q are calculated using the methodology in Sections 7.9.2 and 7.9.3 using the historical 1977-88 meteorological data (Table 7.2). Pathways considered to exist at these locations are inhalation, ground plane exposure, grass-cow-milk ingestion, grass-cow-beef ingestion and fresh leafy and stored vegetable ingestion. All age groups are considered (adult, teen, child and infant). Dose factors for these age groups and pathways are calculated as described in Section 7.8. For the ground exposure pathway, which has no age or organ specific dose factors, the total body dose will be added to the internal organ doses for all age groups. No credit is taken for radioactive decay.

The general equation for the calculation of organ dose is:

$$D_{org} = 3.17E\text{-}08 \sum_i \sum_P T\, R_{pi}\, [\, W_p\, Q_i \,] \qquad (7.10)$$

where:

3.17E-08	=	conversion factor, y/s.
T	=	duration of release from release/discharge point under consideration, s.
R_{pi}	=	dose factor for pathway P for each identified nuclide i, m^2-mrem/y per µCi/s for ground plane, grass-cow-milk, grass-cow-meat, and vegetation pathways, and mrem/y per µCi/m^3 for inhalation and tritium ingestion pathways. Equations for calculating these dose factors are given in Section 7.8.
W_p	=	dispersion factor for the release/discharge point under consideration and pathway P (Table 7.1).
	=	χ/Q for the inhalation and tritium ingestion pathways,
	=	D/Q for the food and ground plane pathways,
Q_i	=	release rate for radionuclide i from release/discharge point under consideration, µCi/s.

The receptor with the highest dose of all locations, age groups and organs is selected as the critical receptor. The age group with the highest dose for that receptor is selected as the critical age group. The organ dose for the critical age group will be used in the cumulative doses discussed in Section 7.5.2.

7.5.2 Cumulative Doses

Quarterly and annual sums of all doses are calculated for each release as described below to compare to the limits listed in ODCM Control 1.2.2.3.

For maximum organ dose, cumulative quarterly and annual doses are maintained for each of the eight organs considered. The cumulative dose is obtained by summing the doses for each organ of the critical age group (as calculated in Section 7.5.1) as determined for each release with the organ doses for all previous releases in the quarter or year to obtain the cumulative quarterly and annual doses. Thus, the cumulative organ doses will be conservative values, consisting of doses belonging to various age groups depending on the mix of radionuclides. The highest of these cumulative organ doses is used for the comparison to the limits described in ODCM Control 1.2.2.3.

7.5.3 Comparison to Limits

The cumulative calendar quarter and calendar year doses are compared to their respective limits for each release to determine compliance.

7.6 GASEOUS RADWASTE TREATMENT

7.6.1 DOSE PROJECTIONS

Dose projections will be performed by averaging the calculated dose for the most recent month and the calculated dose for the previous month and assigning that average dose as the projection for the current month.

If the results of the dose projection indicate potential doses in excess of the monthly fraction of the annual dose limit, efforts will be made to minimize future releases.

7.6.2 SYSTEM DESCRIPTION

Figure 7.1 shows major elements of the Gaseous Radwaste Treatment System. The system includes the subsystems that process and dispose of the gases from the main condenser air ejectors, the startup vacuum pumps, and the gland seal condensers. One gaseous radwaste treatment system is provided for each unit. The processed gases from each unit are routed to the plant stack for dilution and elevated release to the atmosphere. The air-ejector off-gas line of each unit and the stack are continuously monitored by radiation monitors.

7.7 DOSE CALCULATIONS FOR REPORTING PURPOSES

A complete dose analysis utilizing the total estimated gaseous releases for each calendar quarter will be performed and reported as required in ODCM Administrative Control 5.2. Methodology for this analysis is that which is described below, using the quarterly release values. For iodine releases, it will be assumed that half the iodines released are organic iodines, which contribute only to the inhalation dose. All real pathways and receptor locations (as identified in the most recent land use survey) are considered. In addition, actual meteorological data representative of each corresponding calendar quarter will be used to calculate dispersion factors as described in Section 7.9. Stack releases will be considered elevated releases. Radwaste and reactor building releases will be considered split-level releases. Turbine building releases will be treated as ground level.

7.7.1 Noble Gas Dose

All measured radionuclides are used to calculate gamma and beta air doses. The dose is evaluated at the nearest SITE BOUNDARY point in each sector and at other locations expected to be maximum exposure points using a semi-infinite cloud model. The use of a finite cloud model would result in calculated doses of 0 to 10 percent higher than those calculations using the semi-infinite cloud model for BFN.

Radioactive decay is considered in this calculation. The quarterly release is averaged over one year to obtain an average release rate.

7.7.1.1 Gamma Dose to Air

$$D_{\gamma n} = \sum_i \chi_{ni} \, DF_{\gamma i} \qquad (7.12)$$

where:

$D_{\gamma n}$ = gamma dose to air for sector n, mrad.
χ_{ni} = air concentration of radionuclide i in sector n, μCi-y/m^3. Air concentrations are calculated as described by Equation 7.16.
$DF_{\gamma i}$ = gamma-to-air dose factor for radionuclide i, mrad/y per μCi/m^3 (Table 7.4).

7.7.1.2 Beta Dose to Air

$$D_{\beta n} = \sum_i \chi_{ni} \, DF_{\beta i} \qquad (7.13)$$

where:

$D_{\beta n}$ = beta dose to air for sector n, mrad.
χ_{ni} = air concentration of radionuclide i in sector n, μCi-y/m^3. Air concentrations are calculated as described by Equation 7.16.
$DF_{\beta i}$ = beta-to-air dose factor for radionuclide i, mrad/y per μCi/m^3 (Table 7.4).

7.7.2 Radioiodine, Particulate and Tritium - Maximum Organ Dose

Organ doses due to radioiodine, particulate and tritium releases are calculated using the following equation:

$$D_{org} = 3.17E\text{-}08 \left[\sum_i \left(D/Q \sum_P R_{Pi} + D/Q\, R_{Gi} + \chi/Q\, R_{Ii}\right) Q_i + \sum_P (\chi/Q\, R_{PT}) Q_T\right] \quad (7.14)$$

where:

D_{org} = Organ dose, mrem.

3.17E-08 = conversion factor, y/s.

χ/Q = Relative concentration for location under consideration, s/m^3. Relative concentrations are calculated as described by Equation 7.17.

R_{Pi} = ingestion dose factor for pathway P for each identified nuclide i (except tritium), m^2-mrem/y per µCi/s. Ingestion pathways available for consideration include:

- pasture grass-cow-milk ingestion
- stored feed-cow-milk ingestion
- pasture grass-goat-milk ingestion
- stored feed-goat-milk ingestion
- pasture grass-beef ingestion
- stored feed-beef ingestion
- fresh leafy vegetable ingestion
- stored vegetable ingestion

Equations for calculating these ingestion dose factors are given in Sections 7.8.1 through 7.8.6.

D/Q = Relative deposition for location under consideration, m^{-2}. Relative deposition is calculated as described in Equation 7.18.

R_{Gi} = Dose factor for standing on contaminated ground, m^2-mrem/y per µCi/s. The equation for calculating the ground plane dose factor is given in Section 7.8.14.

R_{Ii} = Inhalation dose factor, mrem/y per µCi/m^3. The equation for calculating the inhalation dose factor is given in Section 7.8.13.

Q_i = adjusted release for nuclide i for location under consideration, µCi. The initial release is adjusted to account for decay between the release point and the location, depending on the frequency of wind speeds applicable to that sector. Hence, the adjusted release is equal to the actual release decayed for an average travel time during the period.

$$= Q_{i0} \sum_{j=1}^{9} f_j \exp(-\lambda_i x/u_j)$$

where:

Q_{i0} = initial average release for nuclide i over the period, µCi.

f_j = joint relative frequency of occurrence of winds in windspeed class j blowing toward this exposure point, expressed as a fraction.

λ_i = radiological decay constant for nuclide i, s^{-1}.

x = downwind distance, meters.

u_j = midpoint value of wind speed class interval j, m/s.

R_{PT} = ingestion dose factor for pathway P for tritium, mrem/y per µCi/m^3. Ingestion pathways available for consideration are the same as those listed above for R_{Pi}. Equations for calculating ingestion dose factors for tritium are given in Sections 7.8.7 through 7.8.12.

Q_T = adjusted release for tritium for location under consideration, µCi. Calculated in the same manner as Q_i above.

7.7.3 Population Doses

For determining population doses to the 50-mile population around the plant, each compass sector is broken down into elements. These elements are defined in Table 7.5. For each of these sector elements, an average dose is calculated, and then multiplied by the population in that sector element. Dispersion factors are calculated for the midpoint of each sector element (see Table 7.5) using the methodology described in Section 7.9. For population doses resulting from ingestion, it is conservatively assumed that all food eaten by the average individual is grown locally.

The general equation used for calculating the population dose in a given sector element is:

$$Dose_{pop} = \sum_{P} RATIO_P * POPN * AGE * 0.001 * DOSE_P \qquad (7.15)$$

where:

$RATIO_P$ = ratio of average to maximum dose for pathway P. (Average ingestion rates are obtained from Regulatory Guide 1.109, Table E-4.)
= 0.5 for submersion and ground exposure pathways, a shielding/occupancy factor.
= 1.0 for the inhalation pathway.
= 0.515, 0.515, 0.5, and 0.355 for milk, for infant, child, teen and adult, respectively. (It is assumed that the ratio of average to maximum infant milk ingestion rates is the same as that for child.)
= 1.0, 0.90, 0.91, 0.86 for beef ingestion, for infant, child, teen and adult, respectively.
= 1.0, 0.38, 0.38, 0.37 for vegetable ingestion, for infant, child, teen and adult, respectively. (It is assumed that the average individual eats no fresh vegetables, only stored vegetables.)

POPN = the population of the sector element, persons (Table 7.6).

AGE = fraction of the population belonging to each age group.
= 0.015, 0.168, 0.153, 0.665 for infant, child, teen and adult, respectively (fractions taken from NUREG/CR-1004, Table 3.39).

0.001 = conversion from mrem to rem.

$DOSE_P$ = the dose for pathway P to the maximum individual at the location under consideration, mrem. For ingestion pathways, this dose is multiplied by an average decay correction to account for decay as the food is moved through the food distribution cycle. This average decay correction, ADC, is defined as:

$$ADC = \exp(-\lambda_i t), \quad \text{for milk and vegetables,}$$

where:

λ_i = decay constant for nuclide i, s.

t = distribution time for food product under consideration (from Regulatory Guide 1.109, Table D-1).
= 1.21E+06 s (14 d) for vegetables.
= 3.46E+05 s (4 d) for milk.

$$ADC = \frac{\exp(-\lambda_i t)\ \lambda_i t_{cb}}{1 - \exp(-\lambda_i\ t_{cb})}, \text{ for meat,}$$

where:

λ_i = decay constant for nuclide i, s.
t = additional distribution time for meat, over and above the time for slaughter to consumption described in Section 7.8.3, 7d (from Regulatory Guide 1.109, Table D-2).
t_{cb} = time to consume a whole beef, as described in Section 7.8.3.

For beef ingestion, the additional factors in the calculation of ADC negate the integration of the dose term over the period during which a whole beef is consumed, for the calculation of population dose. This assumes that the maximum individual freezes and eats a whole beef, but the average individual buys smaller portions at a time.

Population doses are summed over all sector elements to obtain a total population dose for the 50-mile population.

7.7.4 Reporting of Doses

The calculated quarterly doses and calculated population doses described in this section are reported in the Annual Radioactive Effluent Release Report as described in ODCM Administrative Control 5.2

7.7.5 Dose to a MEMBER OF THE PUBLIC Inside the SITE BOUNDARY

The Basis for ODCM Control 1.2.2.1 states that for MEMBERS OF THE PUBLIC who may at times be within the SITE BOUNDARY, the occupancy factor of that MEMBER OF THE PUBLIC will usually be sufficiently low to compensate for any increase in the atmospheric dispersion factor above that for the SITE BOUNDARY.

The highest dose to a MEMBER OF THE PUBLIC will consider the effects of effluent pathways (onsite and offsite) and direct radiation from plant operating activities.

The dose to this hypothetical MEMBER OF THE PUBLIC will be determined on an annual basis (using the methodology above) to ensure that the actual exposure to any individual is less than 100 mrem/year. The results of this review will be included in the Annual Radiological Effluent Report pursuant to ODCM Administrative Control 5.2.

7.8 GASEOUS DOSE FACTOR EQUATIONS

7.8.1 Pasture Grass-Cow/Goat-Milk Ingestion Dose Factors (m^2-mrem/y per µCi/s)

$$R_{CPi} = 10^6 DFL_{iaj} U_{ap} F_{mi} Q_f \exp(-\lambda_i t_{fm}) f_{pc} \left\{ \frac{r(1-\exp(-\lambda_E t_{em}))}{Y_p \lambda_E} + \frac{B_{iv}(1-\exp(-\lambda_i t_b))}{P \lambda_i} \right\}$$

where:

10^6 = conversion factor, pCi/µCi.
DFL_{iaj} = ingestion dose conversion factor for nuclide i, age group a, organ j, mrem/pCi (Table 6.4).
U_{ap} = milk ingestion rate for age group a, L/y.
F_{mi} = transfer factor for nuclide i from animal's feed to milk, d/L (Table 6.2).
Q_f = animal's consumption rate, kg/d.
λ_i = decay constant for nuclide i, s^{-1} (Table 6.2).
t_{fm} = transport time from milking to receptor, s.
f_{pc} = fraction of time animal spends on pasture, dimensionless.
r = fraction of activity retained on pasture grass, dimensionless.
λ_E = the effective decay constant, due to radioactive decay and weathering, s^{-1}, equal to $\lambda_i + \lambda_w$.
λ_w = weathering decay constant for leaf and plant surfaces, s^{-1}.
t_{em} = time pasture is exposed to deposition, s.
Y_p = agricultural productivity by unit area of pasture grass, kg/m^2.
B_{iv} = transfer factor for nuclide i from soil to vegetation, pCi/kg (wet weight of vegetation) per pCi/kg (dry soil).
t_b = time period over which accumulation on the ground is evaluated, s.
P = effective surface density of soil, kg/m^2.

NOTE: Factors defined above which do not reference a table for their numerical values, are listed in Table 6.3.

7.8.2 Stored Feed-Cow/Goat-Milk Ingestion Dose Factors
(m^2-mrem/y per µCi/s)

$$R_{CSi} = 10^6\ DFL_{iaj}\ U_{ap}\ F_{mi}\ Q_f\ f_{sc}\ \exp(-\lambda_i t_{mc})\ \frac{(1-\exp(-\lambda_i t_{csf}))}{t_{csf}\ \lambda_i}$$

$$\left\{\frac{r(1-\exp(-\lambda_E t_{esf}))}{Y_s\ \lambda_E} + \frac{B_{iv}(1-\exp(-\lambda_i t_b))}{P\ \lambda_i}\right\}$$

where:

10^6 = conversion factor, pCi/µCi.
DFL_{iaj} = ingestion dose conversion factor for nuclide i, age group a, organ j, mrem/pCi (Table 6.4).
U_{ap} = milk ingestion rate for age group a, L/y.
F_{mi} = transfer factor for nuclide i from animal's feed to milk, d/L (Table 6.2).
Q_f = animal's consumption rate, kg/d.
f_{sc} = fraction of time animal spends on stored feed, dimensionless.
λ_i = decay constant for nuclide i, s^{-1} (Table 6.2).
t_{mc} = transport time from milking to receptor, s.
t_{csf} = time between harvest of stored feed and consumption by animal, s.
r = fraction of activity retained on pasture grass, dimensionless.
λ_E = the effective decay constant, due to radioactive decay and weathering, s^{-1}, equal to $\lambda_i + \lambda_w$.
λ_w = weathering decay constant for leaf and plant surfaces, s^{-1}.
t_{esf} = time stored feed is exposed to deposition, s.
Y_s = agricultural productivity by unit area of stored feed, kg/m^2.
B_{iv} = transfer factor for nuclide i from soil to vegetation, pCi/kg (wet weight of vegetation) per pCi/kg (dry soil).
t_b = time period over which accumulation on the ground is evaluated, s.
P = effective surface density of soil, kg/m^2.

NOTE: Factors defined above which do not reference a table for their numerical values, are listed in Table 6.3.

7.8.3 Pasture Grass-Beef Ingestion Dose Factors
(m^2-mrem/y per µCi/s)

$$R_{MPi} = 10^6\ DFL_{iaj}\ U_{am}\ F_{fi}\ Q_f \frac{(1-\exp(-\lambda_i t_{cb}))}{\lambda_i\ t_{cb}} \exp(-\lambda_i t_s)\ \ f_p$$

$$\left\{\frac{r(1-\exp(-\lambda_E t_{em}))}{Y_p\ \lambda_E} + \frac{B_{iv}(1-\exp(-\lambda_i t_b))}{P\ \lambda_i}\right\}$$

where:

10^6 = conversion factor, pCi/µCi.
DFL_{iaj} = ingestion dose conversion factor for nuclide i, age group a, organ j, mrem/pCi (Table 6.4).
U_{am} = meat ingestion rate for age group a, kg/y.
F_{fi} = transfer factor for nuclide i from cow's feed to meat, d/kg (Table 6.2).
Q_f = cow's consumption rate, kg/d.
λ_i = decay constant for nuclide i, s^{-1} (Table 6.2).
t_{cb} = time for receptor to consume a whole beef, s.
t_s = transport time from slaughter to consumer, s.
f_p = fraction of time cow spends on pasture, dimensionless.
r = fraction of activity retained on pasture grass, dimensionless.
λ_E = the effective decay constant, due to radioactive decay and weathering, s^{-1}, equal to $\lambda_i + \lambda_w$.
λ_w = weathering decay constant for leaf and plant surfaces, s^{-1}.
t_{em} = time pasture is exposed to deposition, s.
Y_p = agricultural productivity by unit area of pasture grass, kg/m^2.
B_{iv} = transfer factor for nuclide i from soil to vegetation, pCi/kg (wet weight of vegetation) per pCi/kg (dry soil).
t_b = time over which accumulation on the ground is evaluated, s.
P = effective surface density of soil, kg/m^2.

NOTE: Factors defined above which do not reference a table for their numerical values, are listed in Table 6.3.

7.8.4 Stored Feed-Beef Ingestion Dose Factors
(m^2-mrem/y per µCi/s)

$$R_{MSi} = 10^6\ DFL_{iaj}\ U_{am}\ F_{fi}\ Q_f \frac{(1-\exp(-\lambda_i t_{cb}))}{\lambda_i\ t_{cb}} \exp(-\lambda_i t_s)$$

$$f_s \frac{(1-\exp(-\lambda_i t_{csf}))}{\lambda_i\ t_{csf}} \left\{ \frac{r(1-\exp(-\lambda_E t_{esf}))}{Y_{sf}\ \lambda_E} + \frac{B_{iv}(1-\exp(-\lambda_i t_b))}{P\ \lambda_i} \right\}$$

where:

10^6 = conversion factor, pCi/µCi.
DFL_{iaj} = ingestion dose conversion factor for nuclide i, age group a, organ j, mrem/pCi (Table 6.4).
U_{am} = meat ingestion rate for age group a, kg/y.
F_{fi} = transfer factor for nuclide i from cow's feed to meat, d/kg (Table 6.2).
Q_f = cow's consumption rate, kg/d.
λ_i = decay constant for nuclide i, s^{-1} (Table 6.2).
t_{cb} = time for receptor to consume a whole beef, s.
t_s = transport time from slaughter to consumer, s.
f_s = fraction of time cow spends on stored feed, dimensionless.
t_{csf} = time between harvest of stored feed and consumption by cow, s.
r = fraction of activity retained on pasture grass, dimensionless.
t_{esf} = time stored feed is exposed to deposition, s.
Y_{sf} = agricultural productivity by unit area of stored feed, kg/m^2.
λ_E = the effective decay constant, due to radioactive decay and weathering, s^{-1}, equal to $\lambda_i + \lambda_w$.
λ_w = weathering decay constant for leaf and plant surfaces, s^{-1}.
B_{iv} = transfer factor for nuclide i from soil to vegetation, pCi/kg (wet weight of vegetation) per pCi/kg (dry soil).
t_b = time over which accumulation on the ground is evaluated, s.
P = effective surface density of soil, kg/m^2.

NOTE: Factors defined above which do not reference a table for their numerical values, are listed in Table 6.3.

7.8.5 Fresh Leafy Vegetable Ingestion Dose Factors
(m^2-mrem/y per µCi/s)

$$R_{VFi} = 10^6\ DFL_{iaj}\ \exp(-\lambda_i t_{hc})\ U_{FLa} f_L \left\{ \frac{r(1-\exp(-\lambda_E t_e))}{Y_f\ \lambda_E} + \frac{B_{iv}(1-\exp(-\lambda_i t_b))}{P\ \lambda_i} \right\}$$

where:

10^6 = conversion factor, pCi/µCi.
DFL_{iaj} = ingestion dose conversion factor for nuclide i, age group a, organ j, mrem/pCi (Table 6.4).
λ_i = decay constant for nuclide i, s^{-1} (Table 6.2).
t_{hc} = average time between harvest of vegetables and their consumption and/or storage, s.
U_{FLa} = consumption rate of fresh leafy vegetables by the receptor in age group a, kg/y.
f_L = fraction of fresh leafy vegetables grown locally, dimensionless.
r = fraction of deposited activity retained on vegetables, dimensionless.
λ_E = the effective decay constant, due to radioactive decay and weathering, s^{-1}.
= $\lambda_i + \lambda_w$
λ_w = decay constant for removal of activity on leaf and plant surfaces by weathering, s^{-1}.
t_e = exposure time in garden for fresh leafy and/or stored vegetables, s.
Y_f = vegetation areal density for fresh leafy vegetables, kg/m^2.
B_{iv} = transfer factor for nuclide i from soil to vegetables, pCi/kg (wet weight of vegetation) per pCi/kg (dry soil).
t_b = time period over which accumulation on the ground is evaluated, s.
P = effective surface density of soil, kg/m^2.

NOTE: Factors defined above which do not reference a table for their numerical values, are listed in Table 6.3.

7.8.6 Stored Vegetable Ingestion Dose Factors
(m^2-mrem/y per µCi/s)

$$R_{VSi} = 10^6\ DFL_{iaj}\ \exp(-\lambda_i t_{hc})\ U_{Sa} f_g \frac{(1-\exp(-\lambda_i t_{sv}))}{\lambda_i\ t_{sv}}$$

$$\left\{ \frac{r(1-\exp(-\lambda_E t_e))}{Y_{sv}\ \lambda_E} + \frac{B_{iv}(1-\exp(-\lambda_i t_b))}{P\ \lambda_i} \right\}$$

where:

10^6 = conversion factor, pCi/µCi.
DFL_{iaj} = ingestion dose conversion factor for nuclide i, age group a, organ j, mrem/pCi (Table 6.4).
λ_i = decay constant for nuclide i, s^{-1} (Table 6.2).
t_{hc} = average time between harvest of vegetables and their consumption and/or storage, s.
U_{Sa} = consumption rate of stored vegetables by the receptor in age group a, kg/y.
f_g = fraction of stored vegetables grown locally, dimensionless.
t_{sv} = time between storage of vegetables and their consumption, s.
r = fraction of deposited activity retained on vegetables, dimensionless.
λ_E = the effective decay constant, due to radioactive decay and weathering, s^{-1}.
= $\lambda_i + \lambda_w$
λ_w = decay constant for removal of activity on leaf and plant surfaces by weathering, s^{-1}.
t_e = exposure time in garden for fresh leafy and/or stored vegetables, s.
Y_{sv} = vegetation areal density for stored vegetables, kg/m^2.
B_{iv} = transfer factor for nuclide i from soil to vegetables, pCi/kg (wet weight of vegetation) per pCi/kg (dry soil).
t_b = time period over which accumulation on the ground is evaluated, s.
P = effective surface density of soil, kg/m^2.

NOTE: Factors defined above which do not reference a table for their numerical values, are listed in Table 6.3.

7.8.7 Tritium-Pasture Grass-Cow/Goat-Milk Dose Factor
(mrem/y per $\mu Ci/m^3$)

$$R_{CTP} = 10^3\ 10^6\ DFL_{Taj}\ F_{mT}\ Q_f\ U_{ap}\ [0.75(0.5/H)]\ f_p\ \exp(-\lambda_T t_{fm})$$

where:

10^3 = conversion factor, g/kg.
10^6 = conversion factor, pCi/µCi.
DFL_{Taj} = ingestion dose conversion factor for tritium for age group a, organ j, mrem/pCi (Table 6.4).
F_{mT} = transfer factor for tritium from animal's feed to milk, d/L (Table 6.2).
Q_f = animal's consumption rate, kg/d.
U_{ap} = milk ingestion rate for age group a, L/y.
0.75 = the fraction of total feed that is water.
0.5 = the ratio of the specific activity of the feed grass water to the atmospheric water.
H = absolute humidity of the atmosphere, g/m^3.
f_p = fraction of time animal spends on pasture, dimensionless.
λ_T = decay constant for tritium, s^{-1} (Table 6.2).
t_{fm} = transport time from milking to receptor, s.

NOTE: Factors defined above which do not reference a table for their numerical values, are listed in Table 6.3.

7.8.8 Tritium-Stored Feed-Cow/Goat-Milk Dose Factor
(mrem/y per $\mu Ci/m^3$)

$$R_{CTS} = 10^3\ 10^6\ DFL_{Taj}\ F_{mT}\ Q_f\ U_{ap}\ [0.75(0.5/H)]\ f_s \frac{(1-\exp(-\lambda_T t_{csf}))}{\lambda_T\ t_{csf}} \exp(-\lambda_T t_{fm})$$

where:

10^3 = conversion factor, g/kg.
10^6 = conversion factor, pCi/µCi.
DFL_{Taj} = ingestion dose conversion factor for tritium for age group a, organ j, mrem/pCi (Table 6.4).
F_{mT} = transfer factor for tritium from animal's feed to milk, d/L (Table 6.2).
Q_f = animal's consumption rate, kg/d.
U_{ap} = milk ingestion rate for age group a, L/y.
0.75 = the fraction of total feed that is water.
0.5 = the ratio of the specific activity of the feed grass water to the atmospheric water.
H = absolute humidity of the atmosphere, g/m^3.
f_s = fraction of time animal spends on stored feed, dimensionless.
λ_T = decay constant for tritium, s^{-1} (Table 6.2).
t_{csf} = time between harvest of stored feed and consumption by animal, s.
t_{fm} = transport time from milking to receptor, s.

NOTE: Factors defined above which do not reference a table for their numerical values, are listed in Table 6.3.

7.8.9 Tritium-Pasture Grass-Beef Dose Factor
(mrem/y per $\mu Ci/m^3$)

$$R_{MT} = 10^3\ 10^6\ DFL_{Taj}\ F_{fT}\ Q_f\ U_{am}\ [0.75(0.5/H)]\ f_p\ \exp(-\lambda_T t_s)\ \frac{(1-\exp(-\lambda_T t_{ep}))}{\lambda_T\ t_{ep}}\ \frac{(1-\exp(-\lambda_T t_{cb}))}{\lambda_T\ t_{cb}}$$

where:

10^3 = conversion factor, g/kg.
10^6 = conversion factor, pCi/µCi.
DFL_{Taj} = ingestion dose conversion factor for tritium for age group a, organ j, mrem/pCi (Table 6.4).
F_{fT} = transfer factor for tritium from cow's feed to meat, d/kg (Table 6.2).
Q_f = cow's consumption rate, kg/d.
U_{am} = meat ingestion rate for age group a, kg/y.
0.75 = the fraction of total feed that is water.
0.5 = the ratio of the specific activity of the feed grass water to the atmospheric water.
H = absolute humidity of the atmosphere, g/m^3.
f_p = fraction of time cow spends on pasture, dimensionless.
λ_T = decay constant for tritium, s^{-1} (Table 6.2).
t_s = transport time from slaughter to consumer, s.
t_{ep} = time pasture is exposed to deposition, s.
t_{cb} = time for receptor to consume a whole beef, s.

NOTE: Factors defined above which do not reference a table for their numerical values, are listed in Table 6.3.

7.8.10 Tritium-Stored Feed-Beef Dose Factor
(mrem/y per μCi/m^3)

$$R_{MTS} = 10^3\ 10^6\ DFL_{Taj}\ F_{fT}\ Q_f\ U_{am}\ [0.75(0.5/H)]\ f_s\ \exp(-\lambda_T t_s)\ \frac{(1-\exp(-\lambda_T t_{csf}))}{\lambda_T\ t_{csf}}\ \frac{(1-\exp(-\lambda_T t_{cb}))}{\lambda_T\ t_{cb}}$$

where:

10^3 = conversion factor, g/kg.
10^6 = conversion factor, pCi/μCi.
DFL_{Taj} = ingestion dose conversion factor for tritium for age group a, organ j, mrem/pCi (Table 6.4).
F_{fT} = transfer factor for tritium from cow's feed to meat, d/kg (Table 6.2).
Q_f = cow's consumption rate, kg/d.
U_{am} = meat ingestion rate for age group a, kg/y.
0.75 = the fraction of total feed that is water.
0.5 = the ratio of the specific activity of the feed grass water to the atmospheric water.
H = absolute humidity of the atmosphere, g/m^3.
f_s = fraction of time cow spends on stored feed, dimensionless.
λ_T = decay constant for tritium, s^{-1} (Table 6.2).
t_s = transport time from slaughter to consumer, s.
t_{csf} = time between harvest of stored feed and consumption by animal, s.
t_{cb} = time for receptor to consume a whole beef, s.

NOTE: Factors defined above which do not reference a table for their numerical values, are listed in Table 6.3.

7.8.11 Tritium-Fresh Leafy Vegetable Dose Factor
(mrem/y per $\mu Ci/m^3$)

$$R_{VTF} = 10^3\ 10^6\ DFL_{Taj}\ [0.75(0.5/H)]\ U_{FLa}\ f_L\ \exp(-\lambda_T t_{hc})$$

where:

10^3 = conversion factor, g/kg.
10^6 = conversion factor, pCi/µCi.
DFL_{Taj} = ingestion dose conversion factor for tritium for age group a, organ j, mrem/pCi (Table 6.4).
0.75 = the fraction of total vegetation that is water.
0.5 = the ratio of the specific activity of the vegetables water to the atmospheric water.
H = absolute humidity of the atmosphere, g/m^3.
U_{FLa} = consumption rate of fresh leafy vegetables by the receptor in age group a, kg/y.
f_L = fraction of fresh leafy vegetables grown locally, dimensionless.
λ_T = decay constant for tritium, s^{-1} (Table 6.2).
t_{hc} = time between harvest of vegetables and their consumption and/or storage, s.

NOTE: Factors defined above which do not reference a table for their numerical values, are listed in Table 6.3.

7.8.12 Tritium-Stored Vegetables Dose Factor
(mrem/y per μCi/m^3)

$$R_{VTS} = 10^3\ 10^6\ DFL_{Taj}\ [0.75(0.5/H)]\ \ U_{Sa} f_g \frac{(1-\exp(-\lambda_T t_{sv}))}{\lambda_T\ t_{sv}} \exp(-\lambda_T t_{hc})$$

where:

10^3 = conversion factor, g/kg.
10^6 = conversion factor, pCi/μCi.
DFL_{Taj} = ingestion dose conversion factor for tritium for age group a, organ j, mrem/pCi (Table 6.4).
0.75 = the fraction of total vegetation that is water.
0.5 = the ratio of the specific activity of the vegetation water to the atmospheric water.
H = absolute humidity of the atmosphere, g/m^3.
U_{Sa} = consumption rate of stored vegetables by the receptor in age group a, kg/y.
f_g = fraction of stored vegetables grown locally, dimensionless.
λ_T = decay constant for tritium, s^{-1} (Table 6.2).
t_{sv} = time between harvest of stored vegetables and their consumption and/or storage, s.
t_{hc} = time between harvest of vegetables and their storage, s.

NOTE: Factors defined above which do not reference a table for their numerical values, are listed in Table 6.3.

7.8.13 Inhalation Dose Factors
(mrem/y per μCi/m^3)

$$R_{Ii} = DFA_{iaj}\ BR_a\ 10^6$$

where:

DFA_{iaj} = inhalation dose conversion factor for nuclide i, age group a and organ j, mrem/pCi (Table 7.7).
BR_a = breathing rate for age group a, m^3/y (Table 6.3).

10^6 = conversion factor, pCi/μCi.

7.8.14 Ground Plane Dose Factors
(m^2-mrem/y per μCi/s)

$$R_{Gi} = DF_{Gij}\ (1/\lambda_i)\ 10^6\ 8760\ [1 - \exp(-\lambda_i t_b)]$$

where:

DF_{Gij} = dose conversion factor for standing on contaminated ground for nuclide i and organ j (total body and skin), mrem/h per pCi/m^2 (Table 6.6).
λ_i = decay constant of nuclide i, s^{-1} (Table 6.2).
10^6 = conversion factor, pCi/μCi.
8760 = conversion factor, h/y.
t_b = time period over which the ground accumulation is evaluated, s (Table 6.3).

7.9 DISPERSION METHODOLOGY

Dispersion factors are calculated for radioactive effluent releases using hourly average meteorological data collected onsite.

Meteorological data for ground level releases consist of windspeed and direction measurements at 10m and temperature measurements of 10m and 45 m.

Hourly average meteorological data for the ground level portion of a split level release consist of wind speeds and directions measured at the 10m level and temperature measurements at 10m and 45m. The elevated portion of the split level release uses wind speeds and directions measured at the 46m level and temperature measurements at 45m and 90m.

Hourly average meteorological data for the elevated releases consist of windspeed and directions measured at 93m. Stability class D is assumed to persist during the entire period for elevated releases, except for the dose calculations described in Section 7.7 when all stability classes will be used to evaluate the elevated results.

Meteorological data are expressed as a joint-frequency distribution of wind speed, wind direction, and atmospheric stability for each release level (ground, split and elevated). The joint-frequency distributions which represent the historical meteorological data for the period January 1977 to December 1988 are given in Table 7.3.

The wind speed classes that are used are as follows:

Number	Range (m/s)	Midpoint (m/s)
1	<0.3	0.13
2	0.3-0.6	0.45
3	0.7-1.5	1.10
4	1.6-2.4	1.99
5	2.5-3.3	2.88
6	3.4-5.5	4.45
7	5.6-8.2	6.91
8	8.3-10.9	9.59
9	>10.9	10.95

The stability classes that will be used are the standard Pasquill A through G classifications. The stability classes 1-7 will correspond to A=1, B=2, ..., G=7.

A sector-average dispersion equation consistent with Regulatory Guide 1.111 is used. The dispersion model considers plume depletion (using information from Figure 7.3), and building wake effects. Terrain effects on dispersion are not considered except for reducing the effective height of an elevated release by the terrain height.

7.9.1 Annual Average Air Concentration
χ (μCi-y/m^3)

Air concentrations of nuclides at downwind locations are calculated using the following equation:

$$\chi_i = \sum_{j=1}^{9} \sum_{k=1}^{7} (2/\pi)^{1/2} \frac{f_{jk}\, Q_i\, p}{\Sigma_{zk} u_j (2\pi x/n)} \exp(-\lambda_i x/u_j)\, \exp(-h_e^2/2\sigma_{zk}^2)\, 10^6\, 3.17E\text{-}08 \qquad (7.16)$$

where:

f_{jk} = joint relative frequency of occurrence of winds in windspeed class j, stability class k, blowing toward this exposure point, expressed as a fraction.
Q_i = amount released of radionuclide i, Ci.
p = fraction of radionuclide remaining in plume (Figure 7.3).
Σ_{zk} = vertical dispersion coefficient for stability class k which includes a building wake adjustment,
= $(\sigma_{zk}^2 + cA/\pi)^{1/2}$,

or = $\sqrt{3}\,\sigma_{zk}$, whichever is smaller (for ground level releases).

where:
σ_{zk} is the vertical dispersion coefficient for stability class k, m (Figure 7.4),
c is a building shape factor (c=0.5),
A is the minimum building cross-sectional area, 2400 m^2.

u_j = midpoint value of wind speed class interval j, m/s.
x = downwind distance, m.
n = number of sectors, 16.
λ_i = radioactive decay coefficient of radionuclide i, s^{-1}
$2\pi x/n$ = sector width at point of interest, m.
h_e = effective release height, m. The effective release height is calculated as described in Section 7.9.4.
10^6 = conversion factor, μCi per Ci.
3.17E-08 = conversion factor, y/s.

7.9.2 Relative Concentration
χ/Q (s/m^3)

Relative concentrations of nuclides at downwind locations are calculated using the following equation:

$$\chi/Q = \sum_{j=1}^{9} \sum_{k=1}^{7} (2/\pi)^{1/2} \frac{f_{jk}}{\Sigma_{zk}\, u_j\, (2\pi x/n)} \exp(-h_e^2/2\sigma_{zk}^2) \qquad (7.17)$$

where:

f_{jk} = joint relative frequency of occurrence of winds in windspeed class j, stability class k, blowing toward this exposure point, expressed as a fraction.

Σ_{zk} = vertical dispersion coefficient for stability class k which includes a building wake adjustment,

= $(\sigma_{zk}^2 + cA/\pi)^{1/2}$,

or = $\sqrt{3}\, \Sigma_{zk}$, whichever is smaller (for ground level releases).

where:

σ_{zk} is the vertical dispersion coefficient for stability class k, m (Figure 7.4),

c is a building shape factor (c=0.5),

A is the minimum building cross-sectional area, 2400 m^2.

u_j = midpoint value of wind speed class interval j, m/s.

x = downwind distance, m.

n = number of sectors, 16.

$2\pi x/n$ = sector width at point of interest, m.

h_e = effective release height, m. The effective release height is calculated as described in Section 7.9.4.

7.9.3 Relative Deposition
D/Q (m^{-2})

Relative deposition of nuclides at downwind locations is calculated using the following equation:

$$D/Q = \sum_{j=1}^{9} \sum_{k=1}^{7} \frac{f_{jk}\, DR}{(2\pi x/n)} \qquad (7.18)$$

where:

f_k = joint relative frequency of occurrence of winds in windspeed class j and stability class k, blowing toward this exposure point, expressed as a fraction.

DR = relative deposition rate, m^{-1} (from Figure 7.5). The choice of figures is governed by the effective release height calculation described in Section 7.9.4. A linear interpolation is used for effluent release heights that fall in between the given curves.

x = downwind distance, m.

n = number of sectors, 16.

$2\pi x/n$ = sector width at point of interest, m.

7.9.4 Effective Release Height

For effluents exhausted from release points that are higher than twice the height of adjacent structures (elevated releases) the effective release height is determined by the following equation, consistent with Regulatory Guide 1.111

$$h_e = h_s + h_{pr} - h_t - c$$

where:

c = downwash correction factor for low relative exit velocity,
= $3(1.5-W_o/u)d$,
where:
W_o = the vertical plume exit velocity, m/s.
u = mean wind speed at 93m, m/s.
d = inside diameter of the release point, m.
NOTE: If c is less than zero, it is set equal to zero.

h_{pr} = plume rise above the release point, m.

h_s = physical height of release point, m.

h_t = maximum terrain height between release point and receptor location, m.

For effluents released from points less than the height of adjacent structures, a ground level release is assumed ($h_e = 0$).

For effluents released from points at the level of or above adjacent structures, but lower than elevated release points, releases are treated as split-level as follows:

Case 1 - elevated if $W_o/u \geq 5$.
Case 2 - ground level ($h_e = 0$) if $W_o/u \leq 1$.
Case 3 - mixed mode if $1 < w_o/u < 5$.
where:
u = mean wind speed at 46m, m/s.

Under the split-level dispersion approach, a model that requires two JFDs (one for elevated releases and one for ground level releases) is used. The summation of the elevated and ground level JFDs account for the total period of record. For Case 3 (mixed-mode), releases are considered to be elevated $100(1-E_t)$ percent of the time and ground level 100 E_t percent of the time where the entrainment coefficient, E_t, is defined by

$$E_t = 2.58 - 1.58(W_o/u) \text{ for } 1 < W_o/u \leq 1.5$$
$$E_t = 0.3 - 0.06(W_o/u) \text{ for } 1.5 < W_o/u \leq 5$$

Table 7.1

BFN - OFFSITE RECEPTOR LOCATION DATA

Dir./ Dist. (m)	Elev. above plant grade (m)	Ground Vent χ/Q (s/m³)	Ground Vent D/Q (1/m²)	Mixed Vent χ/Q (s/m³)	Mixed Vent D/Q (1/m²)	Elevated Vent χ/Q (s/m³)	Elevated Vent D/Q (1/m²)
N 1525	7	1.91E-06	5.77E-09	3.88E-07	2.19E-09	4.46E-10	4.99E-10
NNE 1300	4	1.06E-06	2.69E-09	1.65E-07	1.12E-09	3.99E-10	3.17E-10
NE 1250	7	7.13E-07	1.89E-09	1.35E-07	8.90E-10	1.64E-09	3.65E-10
ENE 1450	0	9.08E-07	3.15E-09	1.20E-07	9.36E-10	1.22E-09	3.37E-10
E 1375	0	9.21E-07	3.81E-09	1.50E-07	1.37E-09	8.36E-10	4.25E-10
ESE 1575	0	5.19E-07	3.09E-09	1.25E-07	1.43E-09	4.84E-10	4.78E-10
SE 5600	-6	9.61E-08	3.50E-10	4.30E-08	2.69E-10	5.15E-09	2.14E-10
SSE 2875	-6	5.20E-07	1.57E-09	9.78E-08	7.40E-10	1.13E-09	3.96E-10
S 2250	-6	1.21E-06	2.93E-09	1.54E-07	1.14E-09	4.39E-10	5.11E-10
SSW 2425	-6	1.28E-06	2.88E-09	1.74E-07	1.10E-09	6.10E-10	4.29E-10
SW 2300	-6	8.33E-07	1.71E-09	1.02E-07	5.22E-10	2.55E-10	2.21E-10
WSW 2500	-6	8.17E-07	1.21E-09	7.00E-08	2.15E-10	2.61E-10	1.14E-10
W 2550	-6	8.51E-07	1.43E-09	6.95E-08	2.40E-10	2.63E-10	1.18E-10
WNW 3325	-6	4.14E-07	7.87E-10	1.04E-07	3.33E-10	1.75E-09	2.50E-10
NW 2275	-6	1.90E-06	4.65E-09	3.22E-07	1.53E-09	1.83E-09	6.17E-10
NNW 1650	-6	2.26E-06	5.42E-09	3.63E-07	2.12E-09	8.93E-10	5.54E-10
NW 8500	-6	3.04E-07	4.60E-10	9.90E-08	2.05E-10	8.93E-09	1.37E-10

NOTE: For quarterly dose calculations, doses will also be calculated for all locations identified in the most recent land use census, and for any additional points deemed necessary.

Table 7.2
EXPECTED ANNUAL ROUTINE ATMOSPHERIC RELEASES FROM ONE UNIT AT BFN

	Building Vents (Ci/y/Unit)			Stack (Ci/y/Unit)	
Isotope	Reactor Complex Vent	Radwaste Building Vent	Turbine Building Vent	Gland Seal and Offgas	MVP
Kr-85m	6E+0	< 1	2E+0	1.66E+4	0.0E+0
Kr-85	-	-	-	6.3E+2	-
Kr-87	6E+0	< 1	9.5E+1	7.47E+2	0.0E+0
Kr-88	9E+0	< 1	1.02E+2	1.35E+4	0.0E+0
Kr-89	1E+0	3.4E+1	5.03E+2	4.10E+3	0.0E+0
Xe-131m	-	-	-	3.09E+2	0.0E+0
Xe-133m	0E+0	6.0E+1	0E+0	8.51E+2	0.0E+0
Xe-133	1.03E+2	2.94E+2	5.81E+2	9.47E+4	3.0E+2
Xe-135m	1.11E+2	6.67E+2	4.64E+2	9.17E+2	0.0E+0
Xe-135	1.73E+2	3.28E+2	6.72E+2	5.99E+2	2.0E+2
Xe-137	7.8E+1	1.13E+2	3.86E+2	5.04E+3	0.0E+0
Xe-138	1.2E+1	2E+0	1.18E+3	3.15E+3	0.0E+0
I-131 I	5.94E-2	5.0E-3	1.56E-2	4.1E-3	8.5E-3
I-132 I	5.94E-1	5.0E-2	1.79E-1	4.69E-2	9.73E-2
I-133 I	2.97E-1	2.5E-2	1.23E-1	3.23E-2	6.71E-2
I-134 I	1.49E+0	1.25E-1	2.67E-2	7.0E-3	1.45E-2
I-135 I	5.94E-1	5.0E-2	1.23E-1	3.23E-2	6.71E-2
I-131 O	3.16E-2	2.9E-2	6.5E-3	3.32E-2	2.74E-1
I-132 O	3.16E-1	2.9E-1	7.44E-2	3.80E-1	3.14E+0
I-133 O	1.58E-1	1.45E-1	5.13E-2	2.62E-1	2.16E+0
I-134 O	7.90E-1	7.25E-1	1.11E-2	5.68E-2	4.69E-1
I-135 O	3.16E-1	2.90E-1	5.13E-2	2.61E-1	2.16E+0
Cr-51	3E-3	9E-4	1E-3	1E-4	0.0E+0
Mn-54	3E-3	5E-3	2E-3	4E-5	0.0E+0
Co-58	2E-3	4E-4	9E-5	2E-5	0.0E+0
Fe-59	1E-4	8E-4	4E-4	2E-4	0.0E+0
Co-60	3E-2	6E-3	3E-3	1E-5	0.0E+0
Zn-65	3E-3	2E-4	4E-4	9E-5	0.0E+0
Sr-89	1E-2	3E-1	*	*	0.0E+0
Sr-90	2E-3	4E-3	*	*	0.0E+0
Nb-95	3E-4	2E-4	9E-6	8E-5	0.0E+0
Zr-95	1E-4	1E-4	8E-6	8E-5	0.0E+0
Ru-103	3E-5	1E-4	2E-4	1E-4	0.0E+0
Ag-110m	7E-6	*	*	*	0.0E+0
Sb-124	3E-5	3E-4	6E-5	8E-5	0.0E+0
Cs-134	5E-3	3E-4	5E-4	2E-5	0.0E+0
Cs-136	2E-3	5E-5	1E-4	9E-8	0.0E+0
Cs-137	7E-3	4E-4	2E-3	7E-4	0.0E+0
Ba-140	4E-3	5E-4	2E-2	8E-3	0.0E+0
Ce-141	4E-4	2E-4	2E-3	2E-5	0.0E+0
Ce-144	5E-6	*	*	4E-6	0.0E+0
Ar-41	2.5E+1	0E+0	0E+0	0E+0	0.0E+0
C-14	0E+0	0E+0	0E+0	9.5E+0	0.0E+0
H-3	0E+0	9.5E+0	0E+0	0E+0	0.0E+0

* Not available.
I denotes nonorganic iodine (elemental, particulate, HIO)
O denotes organic iodine.

Table 7.3 (1 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Ground Level Releases

Stability Class A (Delta-T ≦ -1.9 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	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	0.010	0.026	0.281	0.122	0.005	0.0	0.444
NNE	0.0	0.0	0.001	0.009	0.038	0.284	0.109	0.001	0.0	0.443
NE	0.0	0.0	0.001	0.007	0.024	0.075	0.015	0.0	0.0	0.122
ENE	0.0	0.0	0.001	0.003	0.006	0.004	0.0	0.0	0.0	0.014
E	0.0	0.0	0.001	0.004	0.007	0.006	0.0	0.0	0.0	0.018
ESE	0.0	0.0	0.006	0.061	0.093	0.014	0.0	0.0	0.0	0.173
SE	0.0	0.001	0.106	1.205	0.366	0.044	0.0	0.0	0.0	1.721
SSE	0.0	0.0	0.132	0.672	0.115	0.015	0.0	0.0	0.0	0.934
S	0.0	0.0	0.069	0.557	0.112	0.033	0.0	0.0	0.0	0.772
SSW	0.0	0.0	0.018	0.142	0.057	0.011	0.0	0.0	0.0	0.227
SW	0.0	0.0	0.008	0.097	0.042	0.005	0.0	0.0	0.0	0.152
WSW	0.0	0.0	0.0	0.055	0.084	0.050	0.004	0.0	0.0	0.193
W	0.0	0.0	0.001	0.014	0.046	0.065	0.007	0.001	0.0	0.133
WNW	0.0	0.0	0.0	0.020	0.037	0.115	0.067	0.007	0.0	0.246
NW	0.0	0.0	0.0	0.005	0.032	0.191	0.144	0.004	0.0	0.375
NNW	0.0	0.0	0.0	0.007	0.012	0.107	0.102	0.019	0.0	0.245
Sub total	0.0	0.001	0.343	2.865	1.098	1.298	0.570	0.036	0.0	6.211

Total hours of valid stability observations - 103468
Total hours of stability class A - 6379
Total hours of valid wind direction-wind speed-stability class A - 6354
Total hours of valid wind direction-wind speed-stability observations - 102303

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T measured between 10.03 and 45.30 meters
Wind speed and direction measured at the 10.42 meter level

Mean wind speed = 6.81 mph

Table 7.3 (2 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Ground Level Releases

Stability Class B (-1.9 < Delta-T ≦ -1.7 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	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	0.002	0.021	0.072	0.212	0.044	0.002	0.0	0.353
NNE	0.0	0.0	0.001	0.030	0.093	0.237	0.047	0.0	0.0	0.408
NE	0.0	0.0	0.002	0.024	0.034	0.080	0.007	0.0	0.0	0.148
ENE	0.0	0.0	0.002	0.010	0.008	0.008	0.0	0.0	0.0	0.027
E	0.0	0.0	0.002	0.011	0.007	0.001	0.001	0.0	0.0	0.022
ESE	0.0	0.0	0.013	0.052	0.021	0.011	0.0	0.0	0.0	0.096
SE	0.0	0.0	0.153	0.445	0.053	0.015	0.0	0.0	0.0	0.666
SSE	0.0	0.0	0.130	0.216	0.023	0.012	0.0	0.0	0.0	0.381
S	0.0	0.0	0.072	0.264	0.039	0.012	0.0	0.0	0.0	0.387
SSW	0.0	0.0	0.027	0.104	0.016	0.002	0.002	0.0	0.0	0.151
SW	0.0	0.0	0.013	0.125	0.025	0.007	0.0	0.0	0.0	0.170
WSW	0.0	0.0	0.005	0.088	0.087	0.044	0.008	0.0	0.0	0.232
W	0.0	0.0	0.005	0.024	0.090	0.082	0.016	0.001	0.0	0.218
WNW	0.0	0.0	0.002	0.044	0.075	0.164	0.071	0.018	0.0	0.374
NW	0.0	0.0	0.001	0.014	0.055	0.236	0.087	0.006	0.0	0.398
NNW	0.0	0.0	0.0	0.007	0.036	0.171	0.058	0.003	0.0	0.275
Sub total	0.0	0.0	0.430	1.478	0.734	1.292	0.340	0.029	0.0	4.304

Total hours of valid stability observations - 103468
Total hours of stability class B - 4424
Total hours of valid wind direction-wind speed-stability class B - 4403
Total hours of valid wind direction-wind speed-stability observations - 102303

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T measured between 10.03 and 45.30 meters
Wind speed and direction measured at the 10.42 meter level

Mean wind speed = 7.04 mph

Table 7.3 (3 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Ground Level Releases

Stability Class C (-1.7 < Delta-T ≦ -1.5 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	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	0.011	0.055	0.122	0.231	0.030	0.002	0.0	0.451
NNE	0.0	0.0	0.008	0.062	0.115	0.202	0.027	0.0	0.0	0.414
NE	0.0	0.0	0.002	0.042	0.080	0.086	0.007	0.0	0.0	0.217
ENE	0.0	0.0	0.004	0.021	0.011	0.011	0.0	0.0	0.0	0.046
E	0.0	0.0	0.004	0.020	0.016	0.003	0.001	0.0	0.0	0.043
ESE	0.0	0.0	0.008	0.048	0.018	0.004	0.0	0.0	0.0	0.077
SE	0.0	0.001	0.213	0.313	0.057	0.013	0.002	0.0	0.0	0.598
SSE	0.0	0.0	0.188	0.166	0.022	0.009	0.0	0.0	0.0	0.385
S	0.0	0.0	0.146	0.232	0.044	0.013	0.0	0.0	0.0	0.434
SSW	0.0	0.0	0.042	0.109	0.014	0.002	0.0	0.0	0.0	0.167
SW	0.0	0.001	0.053	0.143	0.025	0.005	0.001	0.0	0.0	0.228
WSW	0.0	0.0	0.013	0.140	0.079	0.072	0.006	0.001	0.0	0.311
W	0.0	0.0	0.003	0.048	0.103	0.088	0.022	0.004	0.0	0.267
WNW	0.0	0.0	0.009	0.096	0.109	0.197	0.079	0.027	0.0	0.518
NW	0.0	0.0	0.002	0.054	0.108	0.211	0.067	0.004	0.001	0.447
NNW	0.0	0.0	0.003	0.016	0.058	0.182	0.055	0.002	0.0	0.315
Sub total	0.0	0.002	0.707	1.562	0.980	1.328	0.297	0.040	0.001	4.918

Total hours of valid stability observations - 103468
Total hours of stability class C - 5065
Total hours of valid wind direction-wind speed-stability class C - 5031
Total hours of valid wind direction-wind speed-stability observations - 102303

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T measured between 10.03 and 45.30 meters
Wind speed and direction measured at the 10.42 meter level

Mean wind speed = 6.67 mph

Table 7.3 (4 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Ground Level Releases

Stability Class D (-1.5 < Delta-T ≦ -0.5 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	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	0.016	0.212	0.471	0.584	1.151	0.368	0.029	0.001	2.832
NNE	0.0	0.013	0.227	0.519	0.647	1.156	0.190	0.009	0.0	2.761
NE	0.0	0.014	0.195	0.429	0.446	0.461	0.022	0.0	0.0	1.566
ENE	0.001	0.015	0.247	0.346	0.185	0.106	0.004	0.0	0.0	0.903
E	0.001	0.010	0.264	0.435	0.250	0.125	0.008	0.0	0.0	1.092
ESE	0.001	0.013	0.258	0.437	0.241	0.078	0.001	0.0	0.0	1.029
SE	0.003	0.051	1.498	1.203	0.648	0.294	0.005	0.0	0.0	3.702
SSE	0.003	0.031	1.300	0.823	0.228	0.105	0.004	0.0	0.0	2.493
S	0.002	0.029	1.132	1.031	0.290	0.152	0.016	0.001	0.0	2.653
SSW	0.001	0.030	0.624	0.421	0.097	0.053	0.002	0.0	0.0	1.228
SW	0.001	0.018	0.370	0.339	0.065	0.027	0.003	0.001	0.0	0.825
WSW	0.001	0.015	0.456	0.767	0.380	0.331	0.056	0.001	0.0	2.007
W	0.0	0.006	0.220	0.644	0.697	0.651	0.138	0.016	0.0	2.372
WNW	0.0	0.007	0.140	0.444	0.518	1.008	0.637	0.152	0.009	2.914
NW	0.0	0.008	0.090	0.316	0.436	0.815	0.617	0.093	0.011	2.385
NNW	0.0	0.005	0.134	0.363	0.480	1.196	0.568	0.033	0.001	2.780
Sub total	0.015	0.279	7.365	8.989	6.192	7.710	2.636	0.334	0.022	33.543

Total hours of valid stability observations - 103468
Total hours of stability class D - 34636
Total hours of valid wind direction-wind speed-stability class D - 34315
Total hours of valid wind direction-wind speed-stability observations - 102303

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T measured between 10.03 and 45.30 meters
Wind speed and direction measured at the 10.42 meter level

Mean wind speed = 6.51 mph

Table 7.3 (5 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Ground Level Releases

Stability Class E (-0.5 < Delta-T ≤ -1.5 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

	Wind Speed (mph)									
WIND Dir	Calm	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	0.005	0.075	0.430	0.529	0.404	0.371	0.062	0.003	0.0	1.879
NNE	0.006	0.084	0.506	0.580	0.497	0.413	0.031	0.002	0.0	2.119
NE	0.006	0.113	0.494	0.491	0.369	0.193	0.009	0.0	0.0	1.674
ENE	0.007	0.109	0.642	0.417	0.160	0.037	0.005	0.001	0.0	1.380
E	0.008	0.071	0.744	0.677	0.174	0.065	0.004	0.0	0.0	1.744
ESE	0.009	0.099	0.821	0.772	0.350	0.121	0.002	0.0	0.0	2.174
SE	0.022	0.268	1.942	1.323	0.679	0.328	0.017	0.0	0.0	4.579
SSE	0.013	0.197	1.120	0.695	0.367	0.251	0.030	0.001	0.0	2.675
S	0.012	0.161	1.016	0.688	0.494	0.559	0.084	0.003	0.0	3.016
SSW	0.007	0.114	0.547	0.221	0.098	0.101	0.005	0.0	0.0	1.093
SW	0.004	0.084	0.292	0.082	0.023	0.013	0.0	0.0	0.0	0.498
WSW	0.007	0.060	0.641	0.514	0.109	0.098	0.019	0.0	0.0	1.448
W	0.005	0.044	0.463	0.676	0.299	0.152	0.016	0.0	0.0	1.656
WNW	0.002	0.025	0.168	0.153	0.133	0.158	0.053	0.004	0.0	0.697
NW	0.002	0.037	0.183	0.259	0.176	0.271	0.080	0.006	0.0	1.014
NNW	0.004	0.060	0.392	0.508	0.459	0.530	0.085	0.004	0.001	2.044
Sub total	0.119	1.603	10.402	8.586	4.791	3.663	0.500	0.023	0.001	29.689

Total hours of valid stability observations - 103468
Total hours of stability class E - 30806
Total hours of valid wind direction-wind speed-stability class E - 30373
Total hours of valid wind direction-wind speed-stability observations - 102303

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T measured between 10.03 and 45.30 meters
Wind speed and direction measured at the 10.42 meter level

Mean wind speed = 4.61 mph

Table 7.3 (6 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Ground Level Releases

Stability Class F (1.5 < Delta-T ≦ 4.0 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	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	0.012	0.113	0.450	0.449	0.240	0.056	0.0	0.0	0.0	1.319
NNE	0.013	0.144	0.499	0.572	0.324	0.094	0.0	0.0	0.0	1.646
NE	0.009	0.114	0.334	0.238	0.122	0.016	0.0	0.0	0.0	0.833
ENE	0.014	0.121	0.564	0.301	0.038	0.004	0.0	0.0	0.0	1.042
E	0.018	0.052	0.831	0.499	0.014	0.0	0.0	0.0	0.0	1.413
ESE	0.012	0.071	0.536	0.119	0.006	0.004	0.0	0.0	0.0	0.749
SE	0.025	0.209	1.021	0.359	0.146	0.066	0.003	0.001	0.0	1.831
SSE	0.014	0.123	0.573	0.309	0.173	0.184	0.018	0.002	0.0	1.395
S	0.008	0.077	0.315	0.218	0.224	0.223	0.013	0.001	0.0	1.078
SSW	0.003	0.052	0.108	0.027	0.008	0.007	0.0	0.0	0.0	0.205
SW	0.003	0.030	0.110	0.014	0.003	0.001	0.0	0.0	0.0	0.161
WSW	0.003	0.027	0.109	0.038	0.001	0.002	0.0	0.0	0.0	0.181
W	0.003	0.026	0.098	0.062	0.006	0.003	0.0	0.0	0.0	0.197
WNW	0.002	0.028	0.080	0.023	0.007	0.005	0.0	0.0	0.0	0.146
NW	0.003	0.033	0.109	0.042	0.022	0.009	0.0	0.0	0.0	0.218
NNW	0.008	0.072	0.302	0.276	0.164	0.044	0.0	0.0	0.0	0.866
Sub total	0.151	1.295	6.040	3.544	1.497	0.716	0.033	0.004	0.0	13.280

Total hours of valid stability observations - 103468
Total hours of stability class F - 13774
Total hours of valid wind direction-wind speed-stability class F - 13586
Total hours of valid wind direction-wind speed-stability observations - 102303

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T measured between 10.03 and 45.30 meters
Wind speed and direction measured at the 10.42 meter level

Mean wind speed = 3.60 mph

Table 7.3 (7 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Ground Level Releases

Stability Class G (Delta-T > 4.0 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	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	0.023	0.178	0.699	0.277	0.043	0.002	0.0	0.0	0.0	1.221
NNE	0.025	0.190	0.752	0.550	0.166	0.012	0.0	0.0	0.0	1.694
NE	0.013	0.118	0.369	0.073	0.021	0.001	0.0	0.0	0.0	0.594
ENE	0.015	0.084	0.492	0.168	0.013	0.001	0.0	0.0	0.0	0.773
E	0.013	0.029	0.471	0.280	0.001	0.0	0.0	0.0	0.0	0.794
ESE	0.004	0.020	0.121	0.005	0.0	0.0	0.0	0.0	0.0	0.149
SE	0.013	0.106	0.373	0.069	0.047	0.010	0.0	0.0	0.0	0.618
SSE	0.015	0.095	0.467	0.326	0.120	0.052	0.0	0.0	0.0	1.075
S	0.005	0.068	0.111	0.128	0.065	0.029	0.0	0.0	0.0	0.407
SSW	0.002	0.036	0.034	0.002	0.0	0.0	0.0	0.0	0.0	0.074
SW	0.001	0.025	0.015	0.003	0.0	0.0	0.0	0.0	0.0	0.044
WSW	0.001	0.012	0.016	0.002	0.0	0.0	0.0	0.0	0.0	0.030
W	0.001	0.012	0.019	0.003	0.0	0.0	0.0	0.0	0.0	0.034
WNW	0.001	0.020	0.028	0.001	0.0	0.0	0.0	0.0	0.0	0.050
NW	0.003	0.039	0.061	0.003	0.0	0.0	0.0	0.0	0.0	0.105
NNW	0.007	0.086	0.200	0.075	0.022	0.001	0.0	0.0	0.0	0.392
Sub total	0.140	1.117	4.228	1.966	0.498	0.108	0.0	0.0	0.0	8.055

Total hours of valid stability observations - 103468
Total hours of stability class G - 8384
Total hours of valid wind direction-wind speed-stability class G - 8241
Total hours of valid wind direction-wind speed-stability observations - 102303

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T measured between 10.03 and 45.30 meters
Wind speed and direction measured at the 10.42 meter level

Mean wind speed = 2.95 mph

Table 7.3 (8 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Stack Releases

Stability Class A (Delta-T ≦ -1.9 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	≧ 24.5	Total
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.001	0.0	0.0	0.0	0.0	0.0	0.0	0.001
SSE	0.0	0.0	0.002	0.002	0.0	0.0	0.001	0.0	0.0	0.005
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	0.001	0.0	0.0	0.0	0.0	0.0	0.001
SW	0.0	0.0	0.0	0.002	0.003	0.002	0.002	0.0	0.0	0.009
WSW	0.0	0.0	0.002	0.001	0.0	0.0	0.002	0.0	0.001	0.006
W	0.0	0.0	0.0	0.0	0.001	0.001	0.0	0.0	0.0	0.002
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.001	0.0	0.0	0.001
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	0.001	0.0	0.0	0.0	0.001
Sub total	0.0	0.0	0.005	0.006	0.004	0.004	0.006	0.0	0.001	0.026

Total hours of valid stability observations - 103166
Total hours of stability class A - 27
Total hours of valid wind direction-wind speed-stability class A - 26
Total hours of valid wind direction-wind speed-stability observations - 101803

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T measured between 45.30 and 89.59 meters
Wind speed and direction measured at the 95.63 meter level

Mean wind speed = 8.66 mph

Table 7.3 (9 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Stack Releases

Stability Class B (-1.9 < Delta-T ≦ -1.7 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	≧ 24.5	Total
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.001	0.0	0.001	0.0	0.0	0.0	0.002
NE	0.0	0.0	0.0	0.001	0.0	0.0	0.0	0.0	0.0	0.001
ENE	0.0	0.0	0.001	0.0	0.0	0.002	0.0	0.0	0.0	0.003
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	0.001	0.003	0.001	0.005	0.004	0.001	0.0	0.015
SE	0.0	0.0	0.008	0.007	0.002	0.002	0.001	0.0	0.0	0.020
SSE	0.0	0.0	0.008	0.005	0.002	0.0	0.0	0.0	0.0	0.015
S	0.0	0.0	0.001	0.002	0.002	0.0	0.0	0.0	0.0	0.005
SSW	0.0	0.0	0.001	0.005	0.001	0.004	0.0	0.0	0.0	0.011
SW	0.0	0.0	0.003	0.016	0.010	0.013	0.007	0.002	0.0	0.050
WSW	0.0	0.0	0.002	0.009	0.004	0.008	0.003	0.0	0.002	0.028
W	0.0	0.0	0.0	0.0	0.004	0.008	0.013	0.004	0.001	0.029
WNW	0.0	0.0	0.0	0.0	0.002	0.002	0.001	0.001	0.0	0.006
NW	0.0	0.0	0.0	0.0	0.000	0.001	0.0	0.0	0.0	0.001
NNW	0.0	0.0	0.0	0.0	0.000	0.0	0.0	0.0	0.0	0.0
Sub total	0.0	0.0	0.025	0.048	0.028	0.045	0.028	0.008	0.003	0.185

Total hours of valid stability observations - 103166
Total hours of stability class B - 190
Total hours of valid wind direction-wind speed-stability class B - 188
Total hours of valid wind direction-wind speed-stability observations - 101803

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T measured between 45.30 and 89.59 meters
Wind speed and direction measured at the 92.63 meter level

Mean wind speed = 8.57 mph

Table 7.3 (10 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Stack Releases

Stability Class C (-1.7 < Delta-T ≦ -1.5 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	≧ 24.5	Total
N	0.0	0.0	0.0	0.0	0.0	0.0	0.001	0.001	0.0	0.002
NNE	0.0	0.0	0.0	0.0	0.002	0.0	0.002	0.001	0.0	0.005
NE	0.0	0.0	0.0	0.0	0.001	0.002	0.0	0.0	0.0	0.003
ENE	0.0	0.0	0.001	0.001	0.0	0.003	0.004	0.0	0.0	0.009
E	0.0	0.0	0.0	0.002	0.002	0.003	0.0	0.0	0.001	0.008
ESE	0.0	0.0	0.003	0.009	0.008	0.020	0.013	0.003	0.001	0.056
SE	0.0	0.0	0.018	0.056	0.022	0.015	0.004	0.0	0.0	0.114
SSE	0.0	0.001	0.018	0.027	0.010	0.005	0.0	0.0	0.0	0.060
S	0.0	0.0	0.011	0.013	0.007	0.002	0.0	0.0	0.0	0.032
SSW	0.0	0.0	0.010	0.008	0.004	0.011	0.002	0.0	0.0	0.034
SW	0.0	0.0	0.019	0.045	0.028	0.038	0.019	0.003	0.0	0.152
WSW	0.0	0.0	0.010	0.037	0.033	0.038	0.021	0.005	0.001	0.145
W	0.0	0.0	0.002	0.014	0.022	0.058	0.034	0.011	0.014	0.154
WNW	0.0	0.0	0.002	0.0	0.011	0.035	0.031	0.010	0.005	0.094
NW	0.0	0.0	0.0	0.001	0.001	0.001	0.017	0.001	0.001	0.022
NNW	0.0	0.0	0.0	0.0	0.0	0.001	0.001	0.0	0.0	0.002
Sub total	0.0	0.001	0.092	0.212	0.150	0.232	0.148	0.034	0.023	0.893

Total hours of valid stability observations - 103166
Total hours of stability class C - 916
Total hours of valid wind direction-wind speed-stability class C - 909
Total hours of valid wind direction-wind speed-stability observations - 101803

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T measured between 45.30 and 89.59 meters
Wind speed and direction measured at the 92.63 meter level

Mean wind speed = 8.90 mph

Table 7.3 (11 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Stack Releases

Stability Class D (-1.5 < Delta-T ≦ 0.5 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	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	0.001	0.010	0.100	0.270	0.468	1.721	1.698	0.468	0.062	4.797
NNE	0.001	0.020	0.098	0.258	0.455	1.685	1.334	0.211	0.020	4.081
NE	0.0	0.010	0.070	0.203	0.364	0.952	0.438	0.035	0.006	2.079
ENE	0.001	0.009	0.088	0.194	0.221	0.396	0.134	0.023	0.009	1.074
E	0.001	0.009	0.122	0.202	0.206	0.339	0.190	0.042	0.013	1.123
ESE	0.001	0.009	0.173	0.336	0.374	0.844	0.691	0.239	0.058	2.724
SE	0.001	0.015	0.265	0.729	0.712	1.364	1.288	0.804	0.337	5.516
SSE	0.002	0.018	0.319	0.581	0.568	1.442	1.293	0.551	0.249	5.021
S	0.001	0.009	0.277	0.491	0.463	1.321	1.336	0.738	0.300	4.936
SSW	0.001	0.015	0.222	0.348	0.344	0.935	0.914	0.423	0.166	3.368
SW	0.001	0.013	0.254	0.453	0.340	0.760	0.712	0.219	0.091	2.844
WSW	0.001	0.009	0.194	0.556	0.397	0.641	0.541	0.246	0.093	2.679
W	0.001	0.008	0.129	0.525	0.630	1.103	0.759	0.316	0.173	3.643
WNW	0.001	0.004	0.108	0.262	0.497	1.481	1.124	0.608	0.260	4.345
NW	0.001	0.012	0.121	0.298	0.458	1.244	1.380	0.842	0.219	4.573
NNW	0.001	0.010	0.098	0.201	0.312	1.184	1.467	0.534	0.117	3.924
Sub total	0.015	0.177	2.639	5.907	6.808	17.412	15.297	6.299	2.172	56.727

Total hours of valid stability observations - 103166
Total hours of stability class D - 58662
Total hours of valid wind direction-wind speed-stability class D - 57750
Total hours of valid wind direction-wind speed-stability observations - 101803

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T measured between 45.30 and 89.59 meters
Wind speed and direction measured at the 92.63 meter level

Mean wind speed = 11.90 mph

Table 7.3 (12 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Stack Releases

Stability Class E (0.5 < Delta-T ≦ 1.5 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	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	0.001	0.013	0.066	0.099	0.149	0.537	0.735	0.139	0.005	1.744
NNE	0.001	0.007	0.061	0.080	0.134	0.614	0.836	0.202	0.002	1.936
NE	0.002	0.011	0.075	0.107	0.161	0.640	0.686	0.176	0.001	1.858
ENE	0.001	0.006	0.063	0.103	0.122	0.443	0.328	0.071	0.005	1.142
E	0.002	0.010	0.097	0.162	0.199	0.461	0.173	0.026	0.003	1.133
ESE	0.003	0.014	0.129	0.179	0.252	0.671	0.696	0.173	0.027	2.143
SE	0.003	0.009	0.152	0.381	0.429	1.259	1.286	0.609	0.282	4.411
SSE	0.003	0.019	0.150	0.369	0.465	1.114	1.080	0.550	0.256	4.006
S	0.003	0.015	0.143	0.293	0.365	0.927	0.975	0.369	0.108	3.199
SSW	0.002	0.014	0.116	0.155	0.188	0.595	0.712	0.215	0.024	2.021
SW	0.002	0.008	0.083	0.139	0.193	0.606	0.631	0.117	0.022	1.799
WSW	0.002	0.006	0.086	0.135	0.169	0.493	0.359	0.047	0.014	1.310
W	0.001	0.007	0.071	0.132	0.190	0.469	0.271	0.041	0.003	1.184
WNW	0.002	0.013	0.079	0.143	0.184	0.474	0.206	0.033	0.002	1.136
NW	0.002	0.012	0.084	0.159	0.162	0.378	0.282	0.089	0.004	1.173
NNW	0.002	0.009	0.079	0.099	0.165	0.372	0.443	0.092	0.001	1.202
Sub total	0.032	0.170	1.533	2.736	3.466	10.055	9.698	2.950	0.757	31.398

Total hours of valid stability observations - 103166
Total hours of stability class E - 32314
Total hours of valid wind direction-wind speed-stability class E - 31964
Total hours of valid wind direction-wind speed-stability observations - 101803

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T measured between 45.30 and 89.59 meters
Wind speed and direction measured at the 92.63 meter level

Mean wind speed = 11.74 mph

Table 7.3 (13 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Stack Releases

Stability Class F (1.5 < Delta-T ≦ 4.0 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	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	0.001	0.004	0.010	0.026	0.032	0.099	0.181	0.063	0.0	0.415
NNE	0.001	0.003	0.014	0.024	0.019	0.129	0.342	0.181	0.0	0.711
NE	0.001	0.001	0.024	0.029	0.033	0.173	0.346	0.215	0.001	0.823
ENE	0.001	0.002	0.015	0.031	0.045	0.188	0.277	0.097	0.0	0.656
E	0.002	0.003	0.034	0.051	0.086	0.220	0.116	0.003	0.001	0.516
ESE	0.002	0.003	0.038	0.073	0.121	0.341	0.274	0.030	0.001	0.883
SE	0.001	0.006	0.027	0.059	0.121	0.353	0.357	0.031	0.004	0.958
SSE	0.001	0.0	0.028	0.045	0.078	0.287	0.225	0.022	0.001	0.687
S	0.001	0.003	0.030	0.051	0.075	0.194	0.225	0.028	0.0	0.607
SSW	0.001	0.001	0.021	0.042	0.052	0.168	0.212	0.062	0.0	0.559
SW	0.001	0.004	0.026	0.029	0.046	0.168	0.191	0.033	0.0	0.498
WSW	0.001	0.002	0.016	0.031	0.050	0.139	0.144	0.002	0.0	0.386
W	0.001	0.009	0.012	0.047	0.036	0.096	0.042	0.002	0.0	0.245
WNW	0.001	0.002	0.013	0.033	0.038	0.070	0.033	0.0	0.0	0.190
NW	0.001	0.005	0.024	0.039	0.030	0.052	0.016	0.003	0.0	0.170
NNW	0.001	0.004	0.029	0.021	0.025	0.057	0.053	0.018	0.0	0.208
Sub total	0.017	0.051	0.360	0.633	0.888	2.733	3.033	0.791	0.008	8.513

Total hours of valid stability observations - 103166
Total hours of stability class F - 8738
Total hours of valid wind direction-wind speed-stability class F - 8666
Total hours of valid wind direction-wind speed-stability observations - 101803

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T measured between 45.30 and 89.59 meters
Wind speed and direction measured at the 92.63 meter level

Mean wind speed = 11.66 mph

Table 7.3 (14 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Stack Releases

Stability Class G (Delta-T > 4.0 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	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	0.005	0.004	0.003	0.004	0.021	0.038	0.006	0.0	0.081
NNE	0.0	0.0	0.002	0.002	0.005	0.041	0.087	0.029	0.002	0.169
NE	0.0	0.001	0.010	0.009	0.007	0.062	0.119	0.061	0.003	0.271
ENE	0.0	0.003	0.006	0.009	0.009	0.060	0.088	0.020	0.001	0.196
E	0.0	0.002	0.011	0.007	0.018	0.089	0.035	0.004	0.0	0.166
ESE	0.0	0.0	0.009	0.024	0.028	0.062	0.055	0.005	0.0	0.183
SE	0.0	0.002	0.013	0.026	0.043	0.118	0.045	0.006	0.0	0.253
SSE	0.0	0.001	0.010	0.020	0.027	0.114	0.082	0.001	0.0	0.254
S	0.0	0.0	0.010	0.019	0.037	0.077	0.038	0.001	0.0	0.182
SSW	0.0	0.0	0.006	0.015	0.021	0.049	0.040	0.005	0.0	0.136
SW	0.0	0.001	0.011	0.013	0.028	0.028	0.052	0.014	0.0	0.148
WSW	0.0	0.001	0.009	0.013	0.008	0.020	0.024	0.002	0.0	0.076
W	0.0	0.0	0.006	0.011	0.008	0.005	0.004	0.0	0.0	0.034
WNW	0.0	0.001	0.013	0.009	0.008	0.005	0.001	0.0	0.0	0.037
NW	0.0	0.001	0.010	0.012	0.009	0.002	0.0	0.0	0.0	0.034
NNW	0.0	0.003	0.008	0.009	0.006	0.006	0.009	0.001	0.0	0.042
Sub total	0.0	0.021	0.136	0.197	0.265	0.758	0.718	0.154	0.006	2.259

Total hours of valid stability observations - 103166
Total hours of stability class G - 2319
Total hours of valid wind direction-wind speed-stability class G - 2300
Total hours of valid wind direction-wind speed-stability observations - 101803

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T measured between 45.30 and 89.59 meters
Wind speed and direction measured at the 92.63 meter level

Mean wind speed = 10.93 mph

Table 7.3 (15 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Split Level Releases - Ground Level Portion

Stability Class A (Delta-T ≦ -1.9 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	≧ 24.5	Total
N	0.0	0.0	0.0	0.0	0.002	0.045	0.028	0.004	0.0	0.078
NNE	0.0	0.0	0.0	0.0	0.003	0.044	0.025	0.001	0.0	0.073
NE	0.0	0.0	0.0	0.0	0.002	0.011	0.003	0.0	0.0	0.016
ENE	0.0	0.0	0.0	0.0	0.001	0.001	0.0	0.0	0.0	0.001
E	0.0	0.0	0.0	0.0	0.001	0.001	0.0	0.0	0.0	0.002
ESE	0.0	0.0	0.0	0.003	0.011	0.002	0.0	0.0	0.0	0.017
SE	0.0	0.0	0.001	0.053	0.044	0.009	0.0	0.0	0.0	0.107
SSE	0.0	0.0	0.004	0.046	0.021	0.008	0.0	0.0	0.0	0.078
S	0.0	0.0	0.002	0.033	0.021	0.012	0.0	0.0	0.0	0.068
SSW	0.0	0.0	0.0	0.010	0.009	0.004	0.0	0.0	0.0	0.023
SW	0.0	0.0	0.0	0.003	0.003	0.001	0.0	0.0	0.0	0.007
WSW	0.0	0.0	0.0	0.003	0.010	0.010	0.002	0.0	0.0	0.025
W	0.0	0.0	0.0	0.0	0.004	0.010	0.002	0.001	0.0	0.016
WNW	0.0	0.0	0.0	0.0	0.003	0.017	0.016	0.005	0.0	0.040
NW	0.0	0.0	0.0	0.0	0.002	0.028	0.035	0.002	0.0	0.067
NNW	0.0	0.0	0.0	0.0	0.001	0.017	0.027	0.016	0.0	0.060
Sub total	0.0	0.0	0.008	0.151	0.137	0.218	0.138	0.028	0.0	0.680

Total hours of valid observations - 101961
Total hours of ground level release - 10832.031
Total hours of stability class A - 718.45
Total hours of ground level stability class A - 693.58

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T measured between 10.03 and 45.30 meters
Wind direction measured at 10.42 meter level
Wind speed measured at 10.42 meter level
Effluent velocity - 12.60 m/s

Table 7.3 (16 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Split Level Releases - Ground Level Portion

Stability Class B (-1.9 < Delta-T ≦ -1.7 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	≧ 24.5	Total
N	0.0	0.0	0.0	0.0	0.006	0.030	0.010	0.002	0.0	0.048
NNE	0.0	0.0	0.0	0.0	0.007	0.035	0.011	0.0	0.0	0.053
NE	0.0	0.0	0.0	0.0	0.003	0.011	0.002	0.0	0.0	0.016
ENE	0.0	0.0	0.0	0.0	0.001	0.001	0.0	0.0	0.0	0.002
E	0.0	0.0	0.0	0.0	0.001	0.0	0.001	0.0	0.0	0.002
ESE	0.0	0.0	0.0	0.002	0.002	0.002	0.0	0.0	0.0	0.006
SE	0.0	0.0	0.001	0.014	0.007	0.003	0.0	0.0	0.0	0.025
SSE	0.0	0.0	0.001	0.012	0.006	0.008	0.0	0.0	0.0	0.026
S	0.0	0.0	0.001	0.012	0.008	0.004	0.0	0.0	0.0	0.025
SSW	0.0	0.0	0.0	0.006	0.003	0.001	0.002	0.0	0.0	0.012
SW	0.0	0.0	0.0	0.002	0.002	0.002	0.0	0.0	0.0	0.005
WSW	0.0	0.0	0.0	0.004	0.009	0.009	0.003	0.0	0.0	0.024
W	0.0	0.0	0.0	0.0	0.007	0.011	0.006	0.001	0.0	0.025
WNW	0.0	0.0	0.0	0.0	0.005	0.023	0.018	0.013	0.0	0.058
NW	0.0	0.0	0.0	0.0	0.004	0.033	0.021	0.004	0.0	0.062
NNW	0.0	0.0	0.0	0.0	0.002	0.026	0.015	0.002	0.0	0.045
Sub total	0.0	0.0	0.003	0.052	0.072	0.198	0.088	0.022	0.0	0.435

Total hours of valid observations - 101961
Total hours of ground level release - 10832.031
Total hours of stability class B - 618.82
Total hours of ground level stability class B - 443.89

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T measured between 10.03 and 45.30 meters
Wind direction measured at 10.42 meter level
Wind speed measured at 10.42 meter level
Effluent velocity - 12.60 m/s

Table 7.3 (17 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Split Level Releases - Ground Level Portion

Stability Class C (-1.7 < Delta-T ≦ -1.5 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	≧ 24.5	Total
N	0.0	0.0	0.0	0.0	0.009	0.033	0.007	0.001	0.0	0.050
NNE	0.0	0.0	0.0	0.001	0.008	0.028	0.006	0.0	0.0	0.043
NE	0.0	0.0	0.0	0.0	0.006	0.011	0.001	0.0	0.0	0.019
ENE	0.0	0.0	0.0	0.0	0.001	0.002	0.0	0.0	0.0	0.003
E	0.0	0.0	0.0	0.0	0.001	0.001	0.001	0.0	0.0	0.003
ESE	0.0	0.0	0.0	0.002	0.002	0.001	0.0	0.0	0.0	0.005
SE	0.0	0.0	0.002	0.012	0.009	0.004	0.001	0.0	0.0	0.028
SSE	0.0	0.0	0.003	0.007	0.005	0.006	0.0	0.0	0.0	0.021
S	0.0	0.0	0.001	0.012	0.009	0.004	0.0	0.0	0.0	0.026
SSW	0.0	0.0	0.0	0.007	0.002	0.001	0.0	0.0	0.0	0.011
SW	0.0	0.0	0.0	0.002	0.002	0.001	0.001	0.0	0.0	0.006
WSW	0.0	0.0	0.0	0.004	0.009	0.013	0.003	0.001	0.0	0.030
W	0.0	0.0	0.0	0.0	0.008	0.013	0.008	0.004	0.0	0.032
WNW	0.0	0.0	0.0	0.0	0.006	0.028	0.018	0.020	0.0	0.072
NW	0.0	0.0	0.0	0.0	0.007	0.029	0.017	0.002	0.001	0.056
NNW	0.0	0.0	0.0	0.0	0.004	0.026	0.014	0.002	0.0	0.046
Sub total	0.0	0.0	0.006	0.049	0.089	0.201	0.076	0.030	0.001	0.452

Total hours of valid observations - 101961
Total hours of ground level release - 10832.031
Total hours of stability class C - 1307.02
Total hours of ground level stability class C - 460.54

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T measured between 10.03 and 45.30 meters
Wind direction measured at 10.42 meter level
Wind speed measured at 10.42 meter level
Effluent velocity - 12.60 m/s

Table 7.3 (18 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Split Level Release - Ground Level Portion

Stability Class D (-1.5 < Delta-T ≦ -0.5 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	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	0.009	0.050	0.182	0.098	0.023	0.001	0.362
NNE	0.0	0.0	0.0	0.010	0.057	0.178	0.046	0.007	0.0	0.297
NE	0.0	0.0	0.0	0.008	0.038	0.068	0.005	0.0	0.0	0.119
ENE	0.0	0.0	0.0	0.011	0.018	0.016	0.001	0.0	0.0	0.047
E	0.0	0.0	0.001	0.022	0.031	0.022	0.003	0.0	0.0	0.078
ESE	0.0	0.0	0.002	0.028	0.032	0.014	0.0	0.0	0.0	0.075
SE	0.0	0.0	0.027	0.117	0.114	0.082	0.004	0.0	0.0	0.344
SSE	0.0	0.0	0.035	0.091	0.052	0.061	0.004	0.0	0.0	0.244
S	0.0	0.0	0.034	0.097	0.059	0.064	0.014	0.001	0.0	0.269
SSW	0.0	0.0	0.014	0.042	0.018	0.026	0.002	0.0	0.0	0.102
SW	0.0	0.0	0.003	0.010	0.005	0.007	0.002	0.001	0.0	0.028
WSW	0.0	0.0	0.004	0.036	0.049	0.065	0.028	0.001	0.0	0.183
W	0.0	0.0	0.001	0.023	0.070	0.103	0.053	0.014	0.0	0.263
WNW	0.0	0.0	0.0	0.003	0.036	0.154	0.164	0.107	0.009	0.472
NW	0.0	0.0	0.0	0.003	0.033	0.126	0.173	0.073	0.011	0.418
NNW	0.0	0.0	0.0	0.007	0.041	0.196	0.157	0.027	0.001	0.428
Sub total	0.0	0.0	0.122	0.517	0.701	1.363	0.753	0.253	0.022	3.732

Total hours of valid observations - 101961
Total hours of ground level release - 10832.031
Total hours of stability class D - 54573.199
Total hours of ground level stability class D - 3804.72

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T measured between 10.03 and 45.30 meters
Wind direction measured at 10.42 meter level
Effluent velocity - 12.60 m/s

Table 7.3 (19 of 28)

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Split Level Releases - Ground Level Portion

Stability Class E (0.5 < Delta-T ≦ 1.5 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	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	0.005	0.040	0.054	0.064	0.021	0.002	0.0	0.185
NNE	0.0	0.0	0.008	0.048	0.068	0.071	0.010	0.001	0.0	0.206
NE	0.0	0.001	0.008	0.044	0.051	0.033	0.003	0.0	0.0	0.140
ENE	0.0	0.001	0.014	0.037	0.023	0.007	0.003	0.001	0.0	0.087
E	0.0	0.0	0.015	0.060	0.024	0.012	0.001	0.0	0.0	0.113
ESE	0.0	0.001	0.021	0.068	0.049	0.022	0.001	0.0	0.0	0.162
SE	0.0	0.004	0.094	0.167	0.122	0.107	0.014	0.0	0.0	0.507
SSE	0.0	0.002	0.070	0.111	0.106	0.164	0.030	0.001	0.0	0.485
S	0.0	0.003	0.068	0.100	0.112	0.281	0.077	0.003	0.0	0.643
SSW	0.0	0.001	0.027	0.033	0.020	0.050	0.005	0.0	0.0	0.135
SW	0.0	0.0	0.007	0.008	0.004	0.006	0.0	0.0	0.0	0.025
WSW	0.0	0.0	0.016	0.043	0.016	0.023	0.013	0.0	0.0	0.111
W	0.0	0.0	0.009	0.049	0.038	0.027	0.006	0.0	0.0	0.129
WNW	0.0	0.0	0.001	0.008	0.015	0.026	0.015	0.003	0.0	0.069
NW	0.0	0.0	0.001	0.015	0.021	0.046	0.025	0.005	0.0	0.112
NNW	0.0	0.0	0.004	0.035	0.059	0.092	0.024	0.004	0.001	0.219
Sub total	0.0	0.014	0.368	0.865	0.784	1.029	0.248	0.020	0.001	3.328

Total hours of valid observations - 101961
Total hours of ground level release - 10832.031
Total hours of stability class E - 32478.371
Total hours of ground level stability class E - 3393.06

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T between 10.03 and 45.30 meters
Wind direction measured at 10.42 meter level
Wind speed measured at 10.42 meter level
Effluent velocity = 12.60 m/s

Table 7.3 (20 of 28)

SPLINT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Split Level Releases - Ground Level Portion

Stability Class F (1.5 < Delta-T ≦ 4.0 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	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	0.014	0.051	0.038	0.010	0.0	0.0	0.0	0.112
NNE	0.0	0.001	0.016	0.068	0.051	0.017	0.0	0.0	0.0	0.152
NE	0.0	0.002	0.012	0.030	0.020	0.003	0.0	0.0	0.0	0.066
ENE	0.0	0.004	0.018	0.031	0.006	0.001	0.0	0.0	0.0	0.061
E	0.0	0.001	0.017	0.034	0.002	0.0	0.0	0.0	0.0	0.054
ESE	0.0	0.002	0.019	0.010	0.001	0.001	0.0	0.0	0.0	0.032
SE	0.0	0.005	0.064	0.052	0.030	0.036	0.002	0.001	0.0	0.191
SSE	0.0	0.005	0.050	0.056	0.060	0.138	0.017	0.002	0.0	0.328
S	0.0	0.003	0.028	0.035	0.054	0.121	0.013	0.001	0.0	0.255
SSW	0.0	0.002	0.007	0.005	0.002	0.003	0.0	0.0	0.0	0.019
SW	0.0	0.001	0.004	0.001	0.001	0.0	0.0	0.0	0.0	0.007
WSW	0.0	0.0	0.004	0.003	0.0	0.0	0.0	0.0	0.0	0.008
W	0.0	0.0	0.003	0.006	0.001	0.001	0.0	0.0	0.0	0.010
WNW	0.0	0.0	0.002	0.002	0.001	0.001	0.0	0.0	0.0	0.006
NW	0.0	0.0	0.002	0.004	0.003	0.002	0.0	0.0	0.0	0.010
NNW	0.0	0.0	0.007	0.031	0.025	0.008	0.0	0.0	0.0	0.071
Sub total	0.0	0.027	0.265	0.418	0.296	0.340	0.032	0.004	0.0	1.383

Total hours of valid observations - 101961
Total hours of ground level release - 10832.031
Total hours of stability class F - 9482
Total hours of ground level stability class F - 1410.51

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T measured between 10.03 and 45.30 meters
Wind speed measured at 10.42 meter level
Effluent velocity = 12.60 m/s

Table 7.3 (21 of 28)

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Split Level Releases - Ground Level Portion

Stability Class G (Delta-T > 4.0 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

	Wind Speed (mph)									
WIND Dir	Calm	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	0.020	0.034	0.007	0.0	0.0	0.0	0.0	0.062
NNE	0.0	0.001	0.022	0.071	0.028	0.002	0.0	0.0	0.0	0.123
NE	0.0	0.001	0.009	0.010	0.004	0.0	0.0	0.0	0.0	0.023
ENE	0.0	0.002	0.008	0.011	0.002	0.0	0.0	0.0	0.0	0.024
E	0.0	0.0	0.009	0.007	0.0	0.0	0.0	0.0	0.0	0.016
ESE	0.0	0.0	0.006	0.0	0.0	0.0	0.0	0.0	0.0	0.006
SE	0.0	0.004	0.027	0.012	0.013	0.007	0.0	0.0	0.0	0.062
SSE	0.0	0.003	0.053	0.065	0.044	0.041	0.0	0.0	0.0	0.206
S	0.0	0.002	0.011	0.022	0.016	0.016	0.0	0.0	0.0	0.067
SSW	0.0	0.001	0.001	0.0	0.0	0.0	0.0	0.0	0.0	0.002
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.001
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.001
W	0.0	0.0	0.001	0.0	0.0	0.0	0.0	0.0	0.0	0.001
WNW	0.0	0.0	0.001	0.0	0.0	0.0	0.0	0.0	0.0	0.001
NW	0.0	0.0	0.002	0.0	0.0	0.0	0.0	0.0	0.0	0.002
NNW	0.0	0.0	0.005	0.009	0.003	0.0	0.0	0.0	0.0	0.017
Sub total	0.0	0.014	0.174	0.242	0.116	0.066	0.0	0.0	0.0	0.614

Total hours of valid observations - 101961
Total hours of ground level release - 10832.031
Total hours of stability class G - 2783.14
Total hours of ground level stability class G - 625.73

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T between 10.03 and 45.30 meters
Wind speed and direction measured at the 10.42 meter level
Effluent velocity = 12.60 m/s

Table 7.3 (22 of 28)

SPLIT JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Split Level Releases - Elevated Portion

Stability Class A (Delta-T ≤ -1.9 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	≥24.5	Total
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.003	0.002	0.0	0.0	0.001	0.0	0.0	0.006
S	0.0	0.0	0.002	0.0	0.0	0.0	0.0	0.0	0.0	0.002
SSW	0.0	0.0	0.002	0.001	0.002	0.0	0.0	0.0	0.0	0.005
SW	0.0	0.0	0.0	0.003	0.002	0.002	0.001	0.0	0.0	0.007
WSW	0.0	0.0	0.0	0.001	0.001	0.002	0.0	0.0	0.0	0.004
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	0.001	0.0	0.0	0.0	0.001
Sub total	0.0	0.0	0.007	0.007	0.005	0.004	0.002	0.0	0.0	0.024

Total hours of valid observations - 101961
Total hours of elevated releases - 91128.969
Total hours of stability class A - 718.45
Total hours of elevated stability class A - 24.87

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T between 45.30 and 89.60 meters
Wind direction measured at 45.67 meter level
Wind speed measured at 45.67 meter level
Effluent velocity = 12.60 m/s

Table 7.3 (23 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Split Level Releases - Elevated Portion

Stability Class B (-1.9 < Delta-T ≦ -1.7 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	≧24.5	Total
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.001	0.0	0.2	0.0	0.0	0.0	0.001
NE	0.0	0.0	0.0	0.001	0.0	0.0	0.0	0.0	0.0	0.001
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	0.001	0.002	0.004	0.001	0.0	0.0	0.008
SE	0.0	0.0	0.010	0.008	0.0	0.004	0.0	0.0	0.0	0.021
SSE	0.0	0.0	0.007	0.009	0.001	0.0	0.0	0.0	0.0	0.017
S	0.0	0.0	0.005	0.008	0.004	0.0	0.0	0.0	0.0	0.017
SSW	0.0	0.0	0.004	0.010	0.005	0.009	0.001	0.0	0.0	0.028
SW	0.0	0.0	0.0	0.022	0.007	0.007	0.001	0.0	0.0	0.036
WSW	0.0	0.0	0.0	0.002	0.006	0.009	0.001	0.0	0.0	0.018
W	0.0	0.0	0.0	0.0	0.006	0.007	0.006	0.002	0.0	0.020
WNW	0.0	0.0	0.0	0.001	0.0	0.002	0.002	0.0	0.0	0.004
NW	0.0	0.0	0.0	0.0	0.0	0.001	0.0	0.0	0.0	0.001
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sub total	0.0	0.0	0.025	0.062	0.029	0.042	0.010	0.002	0.0	0.172

Total hours of valid observations - 101961
Total hours of elevated releases - 91128.969
Total hours of stability class B - 618.82
Total hours of elevated stability class B - 174.930

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T between 45.30 and 89.60 meters
Wind direction measured at 45.67 meter level
Wind speed measured at 45.67 meter level
Effluent velocity = 12.60 m/s

Table 7.3 (24 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Split Level Releases - Elevated Portion

Stability Class C (-1.7 < Delta-T ≤ -1.5 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

	Wind Speed (mph)									
WIND Dir	Calm	0.6-1.4	1.5-3.4	3.5-5.4	5.5-7.4	7.5-12.4	12.5-18.4	18.5-24.4	≥24.5	Total
N	0.0	0.0	0.0	0.0	0.0	0.001	0.0	0.0	0.0	0.001
NNE	0.0	0.0	0.0	0.0	0.003	0.003	0.001	0.001	0.0	0.007
NE	0.0	0.0	0.0	0.0	0.0	0.001	0.0	0.0	0.0	0.001
ENE	0.0	0.0	0.0	0.0	0.0	0.003	0.002	0.0	0.0	0.005
E	0.0	0.0	0.0	0.002	0.004	0.003	0.0	0.0	0.0	0.008
ESE	0.0	0.0	0.0	0.007	0.008	0.012	0.002	0.0	0.0	0.029
SE	0.0	0.0	0.030	0.063	0.010	0.011	0.001	0.0	0.0	0.116
SSE	0.0	0.0	0.020	0.054	0.007	0.004	0.0	0.0	0.0	0.084
S	0.0	0.0	0.027	0.025	0.010	0.001	0.0	0.0	0.0	0.063
SSW	0.0	0.0	0.010	0.030	0.021	0.009	0.001	0.0	0.0	0.071
SW	0.0	0.0	0.011	0.063	0.040	0.022	0.003	0.0	0.0	0.139
WSW	0.0	0.0	0.002	0.025	0.028	0.046	0.006	0.0	0.0	0.108
W	0.0	0.0	0.001	0.004	0.031	0.057	0.015	0.008	0.0	0.117
WNW	0.0	0.0	0.0	0.003	0.003	0.030	0.025	0.003	0.0	0.064
NW	0.0	0.0	0.0	0.002	0.002	0.002	0.010	0.0	0.0	0.015
NNW	0.0	0.0	0.0	0.0	0.0	0.001	0.002	0.0	0.0	0.002
Sub total	0.0	0.0	0.101	0.278	0.166	0.206	0.066	0.013	0.0	0.830

Total hours of valid observations - 101961
Total hours of elevated releases - 91128.969
Total hours of stability class C - 1307.02
Total hours of elevated stability class C - 846.48

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T between 45.30 and 89.60 meters
Wind direction measured at 45.67 meter level
Wind speed and direction measured at 45.67 meter level
Effluent velocity = 12.60 m/s

Table 7.3 (25 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Split Level Releases - Elevated Portion

Stability Class D (-1.5 < Delta-T ≤ -0.5 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	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	0.005	0.120	0.359	0.577	1.660	1.059	0.135	0.003	3.919
NNE	0.0	0.017	0.129	0.416	0.719	1.926	0.915	0.070	0.001	4.193
NE	0.0	0.016	0.124	0.358	0.469	0.904	0.153	0.008	0.0	2.032
ENE	0.0	0.012	0.122	0.245	0.244	0.260	0.034	0.003	0.0	0.920
E	0.0	0.018	0.124	0.219	0.245	0.298	0.088	0.008	0.0	0.999
ESE	0.001	0.010	0.224	0.499	0.561	0.822	0.138	0.005	0.0	2.260
SE	0.002	0.025	0.753	1.509	0.945	1.586	0.834	0.143	0.006	5.803
SSE	0.002	0.036	0.520	0.867	0.705	1.411	0.981	0.277	0.013	4.811
S	0.001	0.012	0.417	0.769	0.603	1.197	1.036	0.320	0.022	4.376
SSW	0.001	0.017	0.240	0.524	0.409	0.792	0.479	0.119	0.006	2.586
SW	0.001	0.016	0.322	0.749	0.425	0.620	0.297	0.053	0.002	2.484
WSW	0.001	0.010	0.178	0.604	0.505	0.575	0.279	0.053	0.001	2.204
W	0.0	0.008	0.111	0.482	0.701	1.163	0.432	0.086	0.004	2.985
WNW	0.0	0.008	0.107	0.330	0.481	1.140	0.823	0.246	0.009	3.145
NW	0.0	0.007	0.110	0.382	0.535	1.281	1.115	0.289	0.007	3.726
NNW	0.0	0.013	0.117	0.277	0.400	1.264	1.092	0.181	0.005	3.348
Sub total	0.012	0.227	3.715	8.588	8.524	16.899	9.754	1.994	0.080	49.792

Total hours of valid observations - 101961
Total hours of elevated release - 91128.969
Total hours of stability class D - 54573.199
Total hours of elevated stability class D - 50768.48

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T between 45.30 and 89.60 meters
Wind speed and direction measured at the 45.67 meter level
Effluent velocity = 12.60 m/s

Table 7.3 (26 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Split Level Releases - Elevated Portion

Stability Class E (-0.5 < Delta-T ≦ 1.5 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	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	0.001	0.019	0.146	0.239	0.369	0.794	0.160	0.001	0.0	1.729
NNE	0.001	0.019	0.159	0.273	0.374	0.935	0.228	0.003	0.0	1.992
NE	0.001	0.021	0.138	0.271	0.320	0.713	0.133	0.002	0.0	1.598
ENE	0.002	0.018	0.179	0.260	0.298	0.407	0.057	0.0	0.0	1.221
E	0.001	0.007	0.111	0.283	0.338	0.558	0.046	0.003	0.0	1.347
ESE	0.003	0.019	0.299	0.587	0.719	0.866	0.069	0.004	0.0	2.566
SE	0.005	0.034	0.558	1.105	1.027	1.327	0.446	0.064	0.004	4.570
SSE	0.003	0.021	0.293	0.612	0.522	0.938	0.659	0.156	0.010	3.214
S	0.002	0.018	0.207	0.453	0.335	0.779	0.437	0.075	0.003	2.309
SSW	0.001	0.014	0.167	0.304	0.277	0.519	0.212	0.020	0.001	1.514
SW	0.002	0.013	0.213	0.331	0.321	0.342	0.102	0.014	0.001	1.337
WSW	0.001	0.015	0.162	0.290	0.256	0.291	0.040	0.005	0.0	1.061
W	0.001	0.007	0.113	0.280	0.316	0.347	0.051	0.001	0.0	1.114
WNW	0.001	0.015	0.082	0.183	0.205	0.243	0.038	0.003	0.0	0.771
NW	0.001	0.012	0.107	0.179	0.183	0.294	0.111	0.003	0.0	0.890
NNW	0.001	0.014	0.109	0.192	0.256	0.563	0.154	0.004	0.0	1.293
Sub total	0.026	0.262	3.043	5.843	6.115	9.916	2.942	0.359	0.018	28.526

Total hours of valid observations - 101961
Total hours of elevated release - 91128.969
Total hours of stability class E - 32478.371
Total hours of elevated stability class E - 29085.311

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T between 45.30 and 89.60 meters
Wind speed and direction measured at the 45.67 meter level
Effluent velocity = 12.60 m/s

Table 7.3 (27 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Split Level Releases - Elevated Portion

Stability Class F (1.5 < Delta-T ≤ 4.0 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	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	0.001	0.002	0.035	0.082	0.066	0.306	0.038	0.0	0.0	0.530
NNE	0.001	0.002	0.038	0.088	0.097	0.438	0.144	0.0	0.0	0.808
NE	0.001	0.005	0.041	0.115	0.135	0.349	0.102	0.0	0.0	0.748
ENE	0.001	0.009	0.037	0.103	0.149	0.255	0.057	0.0	0.0	0.612
E	0.001	0.003	0.031	0.084	0.133	0.269	0.023	0.001	0.0	0.545
ESE	0.003	0.008	0.115	0.243	0.294	0.183	0.002	0.0	0.0	0.848
SE	0.004	0.009	0.162	0.410	0.274	0.177	0.005	0.001	0.0	1.041
SSE	0.002	0.011	0.088	0.147	0.127	0.161	0.022	0.001	0.0	0.559
S	0.002	0.008	0.079	0.120	0.122	0.171	0.023	0.0	0.0	0.525
SSW	0.001	0.013	0.057	0.119	0.121	0.140	0.010	0.0	0.0	0.461
SW	0.001	0.008	0.061	0.101	0.093	0.063	0.0	0.0	0.0	0.327
WSW	0.001	0.004	0.043	0.072	0.080	0.047	0.001	0.0	0.0	0.248
W	0.001	0.007	0.037	0.063	0.063	0.047	0.001	0.0	0.0	0.219
WNW	0.001	0.005	0.026	0.047	0.029	0.024	0.0	0.0	0.0	0.133
NW	0.001	0.005	0.033	0.047	0.029	0.016	0.002	0.0	0.0	0.132
NNW	0.001	0.006	0.025	0.032	0.043	0.068	0.005	0.0	0.0	0.179
Sub total	0.022	0.103	0.910	1.873	1.855	2.717	0.434	0.003	0.0	7.916

Total hours of valid observations - 101961
Total hours of elevated release - 91128.969
Total hours of stability class F - 9482
Total hours of elevated stability class F - 8071.49

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T between 45.30 and 89.60 meters
Wind speed and direction measured at the 45.67 meter level
Effluent velocity = 12.60 m/s

Table 7.3 (28 of 28)

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION

Split Level Releases - Elevated Portion

Stability Class G (Delta-T > 4.0 degrees C per 100 m)

BROWNS FERRY NUCLEAR PLANT

January 1, 1977 - December 31, 1988

		Wind Speed (mph)								
WIND Dir	Calm	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	0.007	0.023	0.022	0.064	0.002	0.0	0.0	0.118
NNE	0.0	0.001	0.013	0.025	0.045	0.130	0.051	0.0	0.0	0.264
NE	0.0	0.002	0.018	0.021	0.051	0.122	0.021	0.0	0.0	0.234
ENE	0.0	0.003	0.005	0.017	0.027	0.071	0.010	0.0	0.0	0.133
E	0.0	0.001	0.003	0.019	0.013	0.043	0.002	0.0	0.0	0.082
ESE	0.001	0.006	0.048	0.103	0.054	0.016	0.0	0.0	0.0	0.229
SE	0.003	0.005	0.107	0.219	0.107	0.035	0.0	0.0	0.0	0.475
SSE	0.001	0.005	0.045	0.064	0.038	0.025	0.0	0.0	0.0	0.177
S	0.001	0.002	0.026	0.040	0.035	0.011	0.0	0.0	0.0	0.116
SSW	0.0	0.003	0.012	0.014	0.030	0.023	0.001	0.0	0.0	0.083
SW	0.0	0.006	0.009	0.008	0.028	0.012	0.0	0.0	0.0	0.063
WSW	0.0	0.001	0.013	0.008	0.0	0.001	0.0	0.0	0.0	0.023
W	0.0	0.0	0.014	0.011	0.005	0.004	0.0	0.0	0.0	0.033
WNW	0.0	0.002	0.009	0.004	0.005	0.002	0.0	0.0	0.0	0.022
NW	0.0	0.006	0.005	0.010	0.008	0.003	0.0	0.0	0.0	0.031
NNW	0.0	0.0	0.012	0.010	0.005	0.007	0.0	0.0	0.0	0.034
Sub total	0.006	0.042	0.344	0.592	0.471	0.568	0.087	0.0	0.0	2.116

Total hours of valid observations - 101961
Total hours of elevated release - 91128.969
Total hours of stability class G - 2783.14
Total hours of elevated stability class G - 2157.41

Meteorological facility: located 1.3 km ESE of BFN
Stability based on Delta-T between 45.30 and 89.60 meters
Wind speed and direction measured at the 45.67 meter level
Effluent velocity = 12.60 m/s

Table 7.4
NOBLE GAS DOSE FACTORS

	Submersion dose mrem/y per µCi/m³		Air dose mrad/y per µCi/m³	
	DFB_i	DFS_i	$DF_{\gamma i}$	$DF_{\beta i}$
Ar-41	8.84E+03	2.69E+03	9.30E+03	3.28E+03
Kr-83m	7.56E-02	---	1.93E+01	2.88E+02
Kr-85m	1.17E+03	1.46E+03	1.23E+03	1.97E+03
Kr-85	1.61E+01	1.34E+03	1.72E+01	1.95E+03
Kr-87	5.92E+03	9.73E+03	6.17E+03	1.03E+04
Kr-88	1.47E+04	2.37E+03	1.52E+04	2.93E+03
Kr-89	1.66E+04	1.01E+04	1.73E+04	1.06E+04
Kr-90	1.56E+04	7.29E+03	1.63E+04	7.83E+03
Xe-131m	9.15E+01	4.76E+02	1.56E+02	1.11E+03
Xe-133m	2.51E+02	9.94E+02	3.27E+02	1.48E+03
Xe-133	2.94E+02	3.06E+02	3.53E+02	1.05E+03
Xe-135m	3.12E+03	7.11E+02	3.36E+03	7.39E+02
Xe-135	1.81E+03	1.86E+03	1.92E+03	2.46E+03
Xe-137	1.42E+03	1.22E+04	1.51E+03	1.27E+04
Xe-138	8.83E+03	4.13E+03	9.21E+03	4.75E+03

Reference:
Regulatory Guide 1.109, Table B-1.

Finite Cloud Dose Factors
mrad/y per µCi/s (B_i) or
mrem/y per µCi/s (V_i)

	Highest Site Boundary Ground Vent Releases NNW Sector at 1650 m		Highest Site Boundary Split Level Vent Releases N Sector at 1525 m		Highest Offsite Location Elevated Vent Releases NW Sector at 8500 m	
	B_i	V_i	B_i	V_i	B_i	V_i
Ar-41	1.30E-03	1.50E-03	1.63E-03	1.87E-03	2.71E-04	3.12E-04
Kr-83m	1.08E-05	1.23E-05	1.31E-05	1.48E-05	2.25E-06	2.55E-06
Kr-85m	7.29E-05	8.57E-05	9.38E-05	1.10E-04	1.52E-05	1.78E-05
Kr-85	2.68E-04	3.11E-04	3.34E-04	3.88E-04	5.56E-05	6.46E-05
Kr-87	8.46E-04	9.72E-04	1.11E-03	1.28E-03	1.76E-04	2.02E-04
Kr-88	1.84E-03	2.09E-03	2.42E-03	2.75E-03	3.82E-04	4.34E-04
Kr-89	1.89E-03	2.17E-03	2.49E-03	2.86E-03	3.94E-04	4.51E-04
Kr-90	1.17E-03	1.36E-03	1.54E-03	1.78E-03	2.44E-04	2.83E-04
Xe-131m	5.87E-05	6.67E-05	7.10E-05	8.08E-05	1.22E-05	1.39E-05
Xe-133m	9.91E-05	1.14E-04	1.22E-04	1.41E-04	2.06E-05	2.37E-05
Xe-133	1.34E-04	1.52E-04	1.61E-04	1.83E-04	2.78E-05	3.15E-05
Xe-135m	7.20E-04	8.43E-04	9.31E-04	1.09E-03	1.50E-04	1.75E-04
Xe-135	4.73E-04	5.54E-04	6.01E-04	7.05E-04	9.83E-05	1.15E-04
Xe-137	6.74E-04	7.68E-04	8.87E-04	1.01E-03	1.40E-04	1.60E-04
Xe-138	1.24E-03	1.43E-03	1.63E-03	1.87E-03	2.59E-04	2.97E-04

Reference: TVA generated values.

Table 7.5
SECTOR ELEMENTS CONSIDERED FOR POPULATION DOSES

Range of Sector Element	Midpoint of Sector Element
Site boundary - 1 mile	0.8 mile
1 - 2 miles	1.5 miles
2 - 3 miles	2.5 miles
3 - 4 miles	3.5 miles
4 - 5 miles	4.5 miles
5 - 10 miles	7.5 miles
10 - 20 miles	15 miles
20 - 30 miles	25 miles
30 - 40 miles	35 miles
40 - 50 miles	45 miles

Table 7.6

BFN 50-MILE POPULATION WITHIN EACH SECTOR ELEMENT

	Distance Range									
	0-1	1-2	2-3	3-4	4-5	5-10	10-20	20-30	30-40	40-50
N	38	0	0	82	133	1338	2887	3172	11844	4190
NNE	0	12	23	155	54	1516	2756	4551	3827	4236
NE	0	3	23	44	123	4560	13356	7431	7554	13972
ENE	0	38	86	102	44	1750	9232	30963	18076	7866
E	0	0	23	7	32	1586	15764	48934	90006	6583
ESE	0	0	12	0	0	123	2466	5115	26482	11164
SE	0	0	0	0	0	8435	22086	7344	8313	21440
SSE	0	0	0	0	0	2483	30555	13272	21617	20244
S	0	0	10	12	46	1525	4758	2533	6218	5550
SSW	0	0	33	40	188	1345	6369	1160	2570	4703
SW	0	0	0	15	111	847	5719	2470	3460	13138
WSW	0	0	10	19	73	244	3461	2895	13472	4772
W	0	84	15	8	17	79	3761	10877	29784	5845
WNW	0	0	4	8	27	36	1970	7936	49335	5307
NW	0	0	76	9	60	826	4145	7270	6059	4242
NNW	0	189	183	63	79	1381	2332	2958	15381	10031

Table 7.7 (1 of 8)
INHALATION DOSE FACTORS
(mrem/pCi inhaled)

ADULT

Nuclide	bone	liver	t body	thyroid	kidney	lung	gi-lli
H-3	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07	1.58E-07
C-14	2.27E-06	4.26E-07	4.26E-07	4.26E-07	4.26E-07	4.26E-07	4.26E-07
Na-24	1.28E-06	1.28E-06	1.28E-06	1.28E-06	1.28E-06	1.28E-06	1.28E-06
P-32	1.65E-04	9.64E-06	6.26E-06	0.00E+00	0.00E+00	0.00E+00	1.08E-05
Cr-51	0.00E+00	0.00E+00	1.25E-08	7.44E-09	2.85E-09	1.80E-06	4.15E-07
Mn-54	0.00E+00	4.95E-06	7.87E-07	0.00E+00	1.23E-06	1.75E-04	9.67E-06
Mn-56	0.00E+00	1.55E-10	2.29E-11	0.00E+00	1.63E-10	1.18E-06	2.53E-06
Fe-55	3.07E-06	2.12E-06	4.93E-07	0.00E+00	0.00E+00	9.01E-06	7.54E-07
Fe-59	1.47E-06	3.47E-06	1.32E-06	0.00E+00	0.00E+00	1.27E-04	2.35E-05
Co-57	0.00E+00	8.65E-08	8.39E-08	0.00E+00	0.00E+00	4.62E-05	3.93E-06
Co-58	0.00E+00	1.98E-07	2.59E-07	0.00E+00	0.00E+00	1.16E-04	1.33E-05
Co-60	0.00E+00	1.44E-06	1.85E-06	0.00E+00	0.00E+00	7.46E-04	3.56E-05
Ni-63	5.40E-05	3.93E-06	1.81E-06	0.00E+00	0.00E+00	2.23E-05	1.67E-06
Ni-65	1.92E-10	2.62E-11	1.14E-11	0.00E+00	0.00E+00	7.00E-07	1.54E-06
Cu-64	0.00E+00	1.83E-10	7.69E-11	0.00E+00	5.78E-10	8.48E-07	6.12E-06
Zn-65	4.05E-06	1.29E-05	5.82E-06	0.00E+00	8.62E-06	1.08E-04	6.68E-06
Zn-69	4.23E-12	8.14E-12	5.65E-13	0.00E+00	5.27E-12	1.15E-07	2.04E-09
Zn-69m	1.02E-09	2.45E-09	2.24E-10	0.00E+00	1.48E-09	2.38E-06	1.71E-05
Br-82	0.00E+00	0.00E+00	1.69E-06	0.00E+00	0.00E+00	0.00E+00	1.30E-06
Br-83	0.00E+00	0.00E+00	3.01E-08	0.00E+00	0.00E+00	0.00E+00	2.90E-08
Br-84	0.00E+00	0.00E+00	3.91E-08	0.00E+00	0.00E+00	0.00E+00	2.05E-13
Br-85	0.00E+00	0.00E+00	1.60E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Rb-86	0.00E+00	1.69E-05	7.37E-06	0.00E+00	0.00E+00	0.00E+00	2.08E-06
Rb-88	0.00E+00	4.84E-08	2.41E-08	0.00E+00	0.00E+00	0.00E+00	4.18E-19
Rb-89	0.00E+00	3.20E-08	2.12E-08	0.00E+00	0.00E+00	0.00E+00	1.16E-21
Sr-89	3.80E-05	0.00E+00	1.09E-06	0.00E+00	0.00E+00	1.75E-04	4.37E-05
Sr-90	1.24E-02	0.00E+00	7.62E-04	0.00E+00	0.00E+00	1.20E-03	9.02E-05
Sr-91	7.74E-09	0.00E+00	3.13E-10	0.00E+00	0.00E+00	4.56E-06	2.39E-05
Sr-92	8.43E-10	0.00E+00	3.64E-11	0.00E+00	0.00E+00	2.06E-06	5.38E-06
Y-90	2.61E-07	0.00E+00	7.01E-09	0.00E+00	0.00E+00	2.12E-05	6.32E-05
Y-91m	3.26E-11	0.00E+00	1.27E-12	0.00E+00	0.00E+00	2.40E-07	1.66E-10
Y-91	5.78E-05	0.00E+00	1.55E-06	0.00E+00	0.00E+00	2.13E-04	4.81E-05
Y-92	1.29E-09	0.00E+00	3.77E-11	0.00E+00	0.00E+00	1.96E-06	9.19E-06
Y-93	1.18E-08	0.00E+00	3.26E-10	0.00E+00	0.00E+00	6.06E-06	5.27E-05
Zr-95	1.34E-05	4.30E-06	2.91E-06	0.00E+00	6.77E-06	2.21E-04	1.88E-05
Zr-97	1.21E-08	2.45E-09	1.13E-09	0.00E+00	3.71E-09	9.84E-06	6.54E-05
Nb-95	1.76E-06	9.77E-07	5.26E-07	0.00E+00	9.67E-07	6.31E-05	1.30E-05
Nb-97	2.78E-11	7.03E-12	2.56E-12	0.00E+00	8.18E-12	3.00E-07	3.02E-08
Mo-99	0.00E+00	1.51E-08	2.87E-09	0.00E+00	3.64E-08	1.14E-05	3.10E-05
Tc-99m	1.29E-13	3.64E-13	4.63E-12	0.00E+00	5.52E-12	9.55E-08	5.20E-07
Tc-101	5.22E-15	7.52E-15	7.38E-14	0.00E+00	1.35E-13	4.99E-08	1.36E-21
Ru-103	1.91E-07	0.00E+00	8.23E-08	0.00E+00	7.29E-07	6.31E-05	1.38E-05
Ru-105	9.88E-11	0.00E+00	3.89E-11	0.00E+00	1.27E-10	1.37E-06	6.02E-06
Ru-106	8.64E-06	0.00E+00	1.09E-06	0.00E+00	1.67E-05	1.17E-03	1.14E-04
Ag-110m	1.35E-06	1.25E-06	7.43E-07	0.00E+00	2.46E-06	5.79E-04	3.78E-05

Table 7.7 (2 of 8)
INHALATION DOSE FACTORS
(mrem/pCi inhaled)

				ADULT			
Nuclide	bone	liver	t body	thyroid	kidney	lung	gi-lli
Sb-124	3.90E-06	7.36E-08	1.55E-06	9.44E-09	0.00E+00	3.10E-04	5.08E-05
Sb-125	6.67E-06	7.44E-08	1.58E-06	6.75E-09	0.00E+00	2.18E-04	1.26E-05
Te-125m	4.27E-07	1.98E-07	5.84E-08	1.31E-07	1.55E-06	3.92E-05	8.83E-06
Te-127m	1.58E-06	7.21E-07	1.96E-07	4.11E-07	5.72E-06	1.20E-04	1.87E-05
Te-127	1.75E-10	8.03E-11	3.87E-11	1.32E-10	6.37E-10	8.14E-07	7.17E-06
Te-129m	1.22E-06	5.84E-07	1.98E-07	4.30E-07	4.57E-06	1.45E-04	4.79E-05
Te-129	6.22E-12	2.99E-12	1.55E-12	4.87E-12	2.34E-11	2.42E-07	1.96E-08
Te-131m	8.74E-09	5.45E-09	3.63E-09	6.88E-09	3.86E-08	1.82E-05	6.95E-05
Te-131	1.39E-12	7.44E-13	4.49E-13	1.17E-12	5.46E-12	1.74E-07	2.30E-09
Te-132	3.25E-08	2.69E-08	2.02E-08	2.37E-08	1.82E-07	3.60E-05	6.37E-05
I-130	5.72E-07	1.68E-06	6.60E-07	1.42E-04	2.61E-06	0.00E+00	9.61E-07
I-131	3.15E-06	4.47E-06	2.56E-06	1.49E-03	7.66E-06	0.00E+00	7.85E-07
I-132	1.45E-07	4.07E-07	1.45E-07	1.43E-05	6.48E-07	0.00E+00	5.08E-08
I-133	1.08E-06	1.85E-06	5.65E-07	2.69E-04	3.23E-06	0.00E+00	1.11E-06
I-134	8.05E-08	2.16E-07	7.69E-08	3.73E-06	3.44E-07	0.00E+00	1.26E-10
I-135	3.35E-07	8.73E-07	3.21E-07	5.60E-05	1.39E-06	0.00E+00	6.56E-07
Cs-134	4.66E-05	1.06E-04	9.10E-05	0.00E+00	3.59E-05	1.22E-05	1.30E-06
Cs-136	4.88E-06	1.83E-05	1.38E-05	0.00E+00	1.07E-05	1.50E-06	1.46E-06
Cs-137	5.98E-05	7.76E-05	5.35E-05	0.00E+00	2.78E-05	9.40E-06	1.05E-06
Cs-138	4.14E-08	7.76E-08	4.05E-08	0.00E+00	6.00E-08	6.07E-09	2.33E-13
Ba-139	1.17E-10	8.32E-14	3.42E-12	0.00E+00	7.78E-14	4.70E-07	1.12E-07
Ba-140	4.88E-06	6.13E-09	3.21E-07	0.00E+00	2.09E-09	1.59E-04	2.73E-05
Ba-141	1.25E-11	9.41E-15	4.20E-13	0.00E+00	8.75E-15	2.42E-07	1.45E-17
Ba-142	3.29E-12	3.38E-15	2.07E-13	0.00E+00	2.86E-15	1.49E-07	1.96E-26
La-140	4.30E-08	2.17E-08	5.73E-09	0.00E+00	0.00E+00	1.70E-05	5.73E-05
La-142	8.54E-11	3.88E-11	9.65E-12	0.00E+00	0.00E+00	7.91E-07	2.64E-07
Ce-141	2.49E-06	1.69E-06	1.91E-07	0.00E+00	7.83E-07	4.52E-05	1.50E-05
Ce-143	2.33E-08	1.72E-08	1.91E-09	0.00E+00	7.60E-09	9.97E-06	2.83E-05
Ce-144	4.29E-04	1.79E-04	2.30E-05	0.00E+00	1.06E-04	9.72E-04	1.02E-04
Pr-143	1.17E-06	4.69E-07	5.80E-08	0.00E+00	2.70E-07	3.51E-05	2.50E-05
Pr-144	3.76E-12	1.56E-12	1.91E-13	0.00E+00	8.81E-13	1.27E-07	2.69E-18
Nd-147	6.59E-07	7.62E-07	4.56E-08	0.00E+00	4.45E-07	2.76E-05	2.16E-05
W-187	1.06E-09	8.85E-10	3.10E-10	0.00E+00	0.00E+00	3.63E-06	1.94E-05
Np-239	2.87E-08	2.82E-09	1.55E-09	0.00E+00	8.75E-09	4.70E-06	1.49E-05

Reference:

Dose Factors for Co-57, Zn-69m, Br-82, Nb-97, Sb-124 and Sb-125 are from NUREG-0172 Age Specific Radiation Dose Commitment Factors for a One Year Chronic Intake, November 1977, Table 8.

All others:

Regulatory Guide 1.109, Table E-7.

NOTE: The tritium dose factor for bone is assumed to be equal to the total body dose factor.

Table 7.7 (3 of 8)
INHALATION DOSE FACTORS
(mrem/pCi inhaled)

Nuclide	bone	liver	t body	TEEN thyroid	kidney	lung	gi-lli
H-3	1.59E-07	1.59E-07	1.59E-07	1.59E-07	1.59E-07	1.59E-07	1.59E-07
C-14	3.25E-06	6.09E-07	6.09E-07	6.09E-07	6.09E-07	6.09E-07	6.09E-07
Na-24	1.72E-06	1.72E-06	1.72E-06	1.72E-06	1.72E-06	1.72E-06	1.72E-06
P-32	2.36E-04	1.37E-05	8.95E-06	0.00E+00	0.00E+00	0.00E+00	1.16E-05
Cr-51	0.00E+00	0.00E+00	1.69E-08	9.37E-09	3.84E-09	2.62E-06	3.75E-07
Mn-54	0.00E+00	6.39E-06	1.05E-06	0.00E+00	1.59E-06	2.48E-04	8.35E-06
Mn-56	0.00E+00	2.12E-10	3.15E-11	0.00E+00	2.24E-10	1.90E-06	7.18E-06
Fe-55	4.18E-06	2.98E-06	6.93E-07	0.00E+00	0.00E+00	1.55E-05	7.99E-07
Fe-59	1.99E-06	4.62E-06	1.79E-06	0.00E+00	0.00E+00	1.91E-04	2.23E-05
Co-57	0.00E+00	1.18E-07	1.15E-07	0.00E+00	0.00E+00	7.33E-05	3.93E-06
Co-58	0.00E+00	2.59E-07	3.47E-07	0.00E+00	0.00E+00	1.68E-04	1.19E-05
Co-60	0.00E+00	1.89E-06	2.48E-06	0.00E+00	0.00E+00	1.09E-03	3.24E-05
Ni-63	7.25E-05	5.43E-06	2.47E-06	0.00E+00	0.00E+00	3.84E-05	1.77E-06
Ni-65	2.73E-10	3.66E-11	1.59E-11	0.00E+00	0.00E+00	1.17E-06	4.59E-06
Cu-64	0.00E+00	2.54E-10	1.06E-10	0.00E+00	8.01E-10	1.39E-06	7.68E-06
Zn-65	4.82E-06	1.67E-05	7.80E-06	0.00E+00	1.08E-05	1.55E-04	5.83E-06
Zn-69	6.04E-12	1.15E-11	8.07E-13	0.00E+00	7.53E-12	1.98E-07	3.56E-08
Zn-69m	1.44E-09	3.39E-09	3.11E-10	0.00E+00	2.06E-09	3.92E-06	2.14E-05
Br-82	0.00E+00	0.00E+00	2.28E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Br-83	0.00E+00	0.00E+00	4.30E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Br-84	0.00E+00	0.00E+00	5.41E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Br-85	0.00E+00	0.00E+00	2.29E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Rb-86	0.00E+00	2.38E-05	1.05E-05	0.00E+00	0.00E+00	0.00E+00	2.21E-06
Rb-88	0.00E+00	6.82E-08	3.40E-08	0.00E+00	0.00E+00	0.00E+00	3.65E-15
Rb-89	0.00E+00	4.40E-08	2.91E-08	0.00E+00	0.00E+00	0.00E+00	4.22E-17
Sr-89	5.43E-05	0.00E+00	1.56E-06	0.00E+00	0.00E+00	3.02E-04	4.64E-05
Sr-90	1.35E-02	0.00E+00	8.35E-04	0.00E+00	0.00E+00	2.06E-03	9.56E-05
Sr-91	1.10E-08	0.00E+00	4.39E-10	0.00E+00	0.00E+00	7.59E-06	3.24E-05
Sr-92	1.19E-09	0.00E+00	5.08E-11	0.00E+00	0.00E+00	3.43E-06	1.49E-05
Y-90	3.73E-07	0.00E+00	1.00E-08	0.00E+00	0.00E+00	3.66E-05	6.99E-05
Y-91m	4.63E-11	0.00E+00	1.77E-12	0.00E+00	0.00E+00	4.00E-07	3.77E-09
Y-91	8.26E-05	0.00E+00	2.21E-06	0.00E+00	0.00E+00	3.67E-04	5.11E-05
Y-92	1.84E-09	0.00E+00	5.36E-11	0.00E+00	0.00E+00	3.35E-06	2.06E-05
Y-93	1.69E-08	0.00E+00	4.65E-10	0.00E+00	0.00E+00	1.04E-05	7.24E-05
Zr-95	1.82E-05	5.73E-06	3.94E-06	0.00E+00	8.42E-06	3.36E-04	1.86E-05
Zr-97	1.72E-08	3.40E-09	1.57E-09	0.00E+00	5.15E-09	1.62E-05	7.88E-05
Nb-95	2.32E-06	1.29E-06	7.08E-07	0.00E+00	1.25E-06	9.39E-05	1.21E-05
Nb-97	3.92E-11	9.72E-12	3.55E-12	0.00E+00	1.14E-11	4.91E-07	2.71E-07
Mo-99	0.00E+00	2.11E-08	4.03E-09	0.00E+00	5.14E-08	1.92E-05	3.36E-05
Tc-99m	1.73E-13	4.83E-13	6.24E-12	0.00E+00	7.20E-12	1.44E-07	7.66E-07
Tc-101	7.40E-15	1.05E-14	1.03E-13	0.00E+00	1.90E-13	8.34E-08	1.09E-16
Ru-103	2.63E-07	0.00E+00	1.12E-07	0.00E+00	9.29E-07	9.79E-05	1.36E-05
Ru-105	1.40E-10	0.00E+00	5.42E-11	0.00E+00	1.76E-10	2.27E-06	1.13E-05
Ru-106	1.23E-05	0.00E+00	1.55E-06	0.00E+00	2.38E-05	2.01E-03	1.20E-04
Ag-110m	1.73E-06	1.64E-06	9.99E-07	0.00E+00	3.13E-06	8.44E-04	3.41E-05

Table 7.7 (4 of 8)
INHALATION DOSE FACTORS
(mrem/pCi inhaled)

Nuclide	bone	liver	t body	TEEN thyroid	kidney	lung	gi-lli
Sb-124	5.38E-06	9.92E-08	2.10E-06	1.22E-08	0.00E+00	4.81E-04	4.98E-05
Sb-125	9.23E-06	1.01E-07	2.15E-06	8.80E-09	0.00E+00	3.42E-04	1.24E-05
Te-125m	6.10E-07	2.80E-07	8.34E-08	1.75E-07	0.00E+00	6.70E-05	9.38E-06
Te-127m	2.25E-06	1.02E-06	2.73E-07	5.48E-07	8.17E-06	2.07E-04	1.99E-05
Te-127	2.51E-10	1.14E-10	5.52E-11	1.77E-10	9.10E-10	1.40E-06	1.01E-05
Te-129m	1.74E-06	8.23E-07	2.81E-07	5.72E-07	6.49E-06	2.47E-04	5.06E-05
Te-129	8.87E-12	4.22E-12	2.20E-12	6.48E-12	3.32E-11	4.12E-07	2.02E-07
Te-131m	1.23E-08	7.51E-09	5.03E-09	9.06E-09	5.49E-08	2.97E-05	7.76E-05
Te-131	1.97E-12	1.04E-12	6.30E-13	1.55E-12	7.72E-12	2.92E-07	1.89E-09
Te-132	4.50E-08	3.63E-08	2.74E-08	3.07E-08	2.44E-07	5.61E-05	5.79E-05
I-130	7.80E-07	2.24E-06	8.96E-07	1.86E-04	3.44E-06	0.00E+00	1.14E-06
I-131	4.43E-06	6.14E-06	3.30E-06	1.83E-03	1.05E-05	0.00E+00	8.11E-07
I-132	1.99E-07	5.47E-07	1.97E-07	1.89E-05	8.65E-07	0.00E+00	1.59E-07
I-133	1.52E-06	2.56E-06	7.78E-07	3.65E-04	4.49E-06	0.00E+00	1.29E-06
I-134	1.11E-07	2.90E-07	1.05E-07	4.94E-06	4.58E-07	0.00E+00	2.55E-09
I-135	4.62E-07	1.18E-06	4.36E-07	7.76E-05	1.86E-06	0.00E+00	8.69E-07
Cs-134	6.28E-05	1.41E-04	6.86E-05	0.00E+00	4.69E-05	1.83E-05	1.22E-06
Cs-136	6.44E-06	2.42E-05	1.71E-05	0.00E+00	1.38E-05	2.22E-06	1.36E-06
Cs-137	8.38E-05	1.06E-04	3.89E-05	0.00E+00	3.80E-05	1.51E-05	1.06E-06
Cs-138	5.82E-08	1.07E-07	5.58E-08	0.00E+00	8.28E-08	9.84E-09	3.38E-11
Ba-139	1.67E-10	1.18E-13	4.87E-12	0.00E+00	1.11E-13	8.08E-07	8.06E-07
Ba-140	6.84E-06	8.38E-09	4.40E-07	0.00E+00	2.85E-09	2.54E-04	2.86E-05
Ba-141	1.78E-11	1.32E-14	5.93E-13	0.00E+00	1.23E-14	4.11E-07	9.33E-14
Ba-142	4.62E-12	4.63E-15	2.84E-13	0.00E+00	3.92E-15	2.39E-07	5.99E-20
La-140	5.99E-08	2.95E-08	7.82E-09	0.00E+00	0.00E+00	2.68E-05	6.09E-05
La-142	1.20E-10	5.31E-11	1.32E-11	0.00E+00	0.00E+00	1.27E-06	1.50E-06
Ce-141	3.55E-06	2.37E-06	2.71E-07	0.00E+00	1.11E-06	7.67E-05	1.58E-05
Ce-143	3.32E-08	2.42E-08	2.70E-09	0.00E+00	1.08E-08	1.63E-05	3.19E-05
Ce-144	6.11E-04	2.53E-04	3.28E-05	0.00E+00	1.51E-04	1.67E-03	1.08E-04
Pr-143	1.67E-06	6.64E-07	8.28E-08	0.00E+00	3.86E-07	6.04E-05	2.67E-05
Pr-144	5.37E-12	2.20E-12	2.72E-13	0.00E+00	1.26E-12	2.19E-07	2.94E-14
Nd-147	9.83E-07	1.07E-06	6.41E-08	0.00E+00	6.28E-07	4.65E-05	2.28E-05
W-187	1.50E-09	1.22E-09	4.29E-10	0.00E+00	0.00E+00	5.92E-06	2.21E-05
Np-239	4.23E-08	3.99E-09	2.21E-09	0.00E+00	1.25E-08	8.11E-06	1.65E-05

Reference:

Dose Factors for Co-57, Zn-69m, Br-82, Nb-97, Sb-124 and Sb-125 are from NUREG-0172 Age Specific Radiation Dose Commitment Factors for a One Year Chronic Intake, November 1977, Table 7.

All others:

Regulatory Guide 1.109, Table E-8.

NOTE: The tritium dose factor for bone is assumed to be equal to the total body dose factor.

Table 7.7 (5 of 8)
INHALATION DOSE FACTORS
(mrem/pCi inhaled)

CHILD

Nuclide	bone	liver	t body	thyroid	kidney	lung	gi-lli
H-3	3.04E-07	3.04E-07	3.04E-07	3.04E-07	3.04E-07	3.04E-07	3.04E-07
C-14	9.70E-06	1.82E-06	1.82E-06	1.82E-06	1.82E-06	1.82E-06	1.82E-06
Na-24	4.35E-06	4.35E-06	4.35E-06	4.35E-06	4.35E-06	4.35E-06	4.35E-06
P-32	7.04E-04	3.09E-05	2.67E-05	0.00E+00	0.00E+00	0.00E+00	1.14E-05
Cr-51	0.00E+00	0.00E+00	4.17E-08	2.31E-08	6.57E-09	4.59E-06	2.93E-07
Mn-54	0.00E+00	1.16E-05	2.57E-06	0.00E+00	2.71E-06	4.26E-04	6.19E-06
Mn-56	0.00E+00	4.48E-10	8.43E-11	0.00E+00	4.52E-10	3.55E-06	3.33E-05
Fe-55	1.28E-05	6.80E-06	2.10E-06	0.00E+00	0.00E+00	3.00E-05	7.75E-07
Fe-59	5.59E-06	9.04E-06	4.51E-06	0.00E+00	0.00E+00	3.43E-04	1.91E-05
Co-57	0.00E+00	2.44E-07	2.88E-07	0.00E+00	0.00E+00	1.37E-04	3.58E-06
Co-58	0.00E+00	4.79E-07	8.55E-07	0.00E+00	0.00E+00	2.99E-04	9.29E-06
Co-60	0.00E+00	3.55E-06	6.12E-06	0.00E+00	0.00E+00	1.91E-03	2.60E-05
Ni-63	2.22E-04	1.25E-05	7.56E-06	0.00E+00	0.00E+00	7.43E-05	1.71E-06
Ni-65	8.08E-10	7.99E-11	4.44E-11	0.00E+00	0.00E+00	2.21E-06	2.27E-05
Cu-64	0.00E+00	5.39E-10	2.90E-10	0.00E+00	1.63E-09	2.59E-06	9.92E-06
Zn-65	1.15E-05	3.06E-05	1.90E-05	0.00E+00	1.93E-05	2.69E-04	4.41E-06
Zn-69	1.81E-11	2.61E-11	2.41E-12	0.00E+00	1.58E-11	3.84E-07	2.75E-06
Zn-69m	4.26E-09	7.28E-09	8.59E-10	0.00E+00	4.22E-09	7.36E-06	2.71E-05
Br-82	0.00E+00	0.00E+00	5.66E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Br-83	0.00E+00	0.00E+00	1.28E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Br-84	0.00E+00	0.00E+00	1.48E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Br-85	0.00E+00	0.00E+00	6.84E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Rb-86	0.00E+00	5.36E-05	3.09E-05	0.00E+00	0.00E+00	0.00E+00	2.16E-06
Rb-88	0.00E+00	1.52E-07	9.90E-08	0.00E+00	0.00E+00	0.00E+00	4.66E-09
Rb-89	0.00E+00	9.33E-08	7.83E-08	0.00E+00	0.00E+00	0.00E+00	5.11E-10
Sr-89	1.62E-04	0.00E+00	4.66E-06	0.00E+00	0.00E+00	5.83E-04	4.52E-05
Sr-90	2.73E-02	0.00E+00	1.74E-03	0.00E+00	0.00E+00	3.99E-03	9.28E-05
Sr-91	3.28E-08	0.00E+00	1.24E-09	0.00E+00	0.00E+00	1.44E-05	4.70E-05
Sr-92	3.54E-09	0.00E+00	1.42E-10	0.00E+00	0.00E+00	6.49E-06	6.55E-05
Y-90	1.11E-06	0.00E+00	2.99E-08	0.00E+00	0.00E+00	7.07E-05	7.24E-05
Y-91m	1.37E-10	0.00E+00	4.98E-12	0.00E+00	0.00E+00	7.60E-07	4.64E-07
Y-91	2.47E-04	0.00E+00	6.59E-06	0.00E+00	0.00E+00	7.10E-04	4.97E-05
Y-92	5.50E-09	0.00E+00	1.57E-10	0.00E+00	0.00E+00	6.46E-06	6.46E-05
Y-93	5.04E-08	0.00E+00	1.38E-09	0.00E+00	0.00E+00	2.01E-05	1.05E-04
Zr-95	5.13E-05	1.13E-05	1.00E-05	0.00E+00	1.61E-05	6.03E-04	1.65E-05
Zr-97	5.07E-08	7.34E-09	4.32E-09	0.00E+00	1.05E-08	3.06E-05	9.49E-05
Nb-95	6.35E-06	2.48E-06	1.77E-06	0.00E+00	2.33E-06	1.66E-04	1.00E-05
Nb-97	1.16E-10	2.08E-11	9.74E-12	0.00E+00	2.31E-11	9.23E-07	7.52E-06
Mo-99	0.00E+00	4.66E-08	1.15E-08	0.00E+00	1.06E-07	3.66E-05	3.42E-05
Tc-99m	4.81E-13	9.41E-13	1.56E-11	0.00E+00	1.37E-11	2.57E-07	1.30E-06
Tc-101	2.19E-14	2.30E-14	2.91E-13	0.00E+00	3.92E-13	1.58E-07	4.41E-09
Ru-103	7.55E-07	0.00E+00	2.90E-07	0.00E+00	1.90E-06	1.79E-04	1.21E-05
Ru-105	4.13E-10	0.00E+00	1.50E-10	0.00E+00	3.63E-10	4.30E-06	2.69E-05
Ru-106	3.68E-05	0.00E+00	4.57E-06	0.00E+00	4.97E-05	3.87E-03	1.16E-04
Ag-110m	4.56E-06	3.08E-06	2.47E-06	0.00E+00	5.74E-06	1.48E-03	2.71E-05

Table 7.7 (6 of 8)
INHALATION DOSE FACTORS
(mrem/pCi inhaled)

CHILD

Nuclide	bone	liver	t body	thyroid	kidney	lung	gi-lli
Sb-124	1.55E-05	2.00E-07	5.41E-06	3.41E-08	0.00E+00	8.76E-04	4.43E-05
Sb-125	2.66E-05	2.05E-07	5.59E-06	2.46E-08	0.00E+00	6.27E-04	1.09E-05
Te-125m	1.82E-06	6.29E-07	2.47E-07	5.20E-07	0.00E+00	1.29E-04	9.13E-06
Te-127m	6.72E-06	2.31E-06	8.16E-07	1.64E-06	1.72E-05	4.00E-04	1.93E-05
Te-127	7.49E-10	2.57E-10	1.65E-10	5.30E-10	1.91E-09	2.71E-06	1.52E-05
Te-129m	5.19E-06	1.85E-06	8.22E-07	1.71E-06	1.36E-05	4.76E-04	4.91E-05
Te-129	2.64E-11	9.45E-12	6.44E-12	1.93E-11	6.94E-11	7.93E-07	6.89E-06
Te-131m	3.63E-08	1.60E-08	1.37E-08	2.64E-08	1.08E-07	5.56E-05	8.32E-05
Te-131	5.87E-12	2.28E-12	1.78E-12	4.59E-12	1.59E-11	5.55E-07	3.60E-07
Te-132	1.30E-07	7.36E-08	7.12E-08	8.58E-08	4.79E-07	1.02E-04	3.72E-05
I-130	2.21E-06	4.43E-06	2.28E-06	4.99E-04	6.61E-06	0.00E+00	1.38E-06
I-131	1.30E-05	1.30E-05	7.37E-06	4.39E-03	2.13E-05	0.00E+00	7.68E-07
I-132	5.72E-07	1.10E-06	5.07E-07	5.23E-05	1.69E-06	0.00E+00	8.65E-07
I-133	4.48E-06	5.49E-06	2.08E-06	1.04E-03	9.13E-06	0.00E+00	1.48E-06
I-134	3.17E-07	5.84E-07	2.69E-07	1.37E-05	8.92E-07	0.00E+00	2.58E-07
I-135	1.33E-06	2.36E-06	1.12E-06	2.14E-04	3.62E-06	0.00E+00	1.20E-06
Cs-134	1.76E-04	2.74E-04	6.07E-05	0.00E+00	8.93E-05	3.27E-05	1.04E-06
Cs-136	1.76E-05	4.62E-05	3.14E-05	0.00E+00	2.58E-05	3.93E-06	1.13E-06
Cs-137	2.45E-04	2.23E-04	3.47E-05	0.00E+00	7.63E-05	2.81E-05	9.78E-07
Cs-138	1.71E-07	2.27E-07	1.50E-07	0.00E+00	1.68E-07	1.84E-08	7.29E-08
Ba-139	4.98E-10	2.66E-13	1.45E-11	0.00E+00	2.33E-13	1.56E-06	1.56E-05
Ba-140	2.00E-05	1.75E-08	1.17E-06	0.00E+00	5.71E-09	4.71E-04	2.75E-05
Ba-141	5.29E-11	2.95E-14	1.72E-12	0.00E+00	2.56E-14	7.89E-07	7.44E-08
Ba-142	1.35E-11	9.73E-15	7.54E-13	0.00E+00	7.87E-15	4.44E-07	7.41E-10
La-140	1.74E-07	6.08E-08	2.04E-08	0.00E+00	0.00E+00	4.94E-05	6.10E-05
La-142	3.50E-10	1.11E-10	3.49E-11	0.00E+00	0.00E+00	2.35E-06	2.05E-05
Ce-141	1.06E-05	5.28E-06	7.83E-07	0.00E+00	2.31E-06	1.47E-04	1.53E-05
Ce-143	9.89E-08	5.37E-08	7.77E-09	0.00E+00	2.26E-08	3.12E-05	3.44E-05
Ce-144	1.83E-03	5.72E-04	9.77E-05	0.00E+00	3.17E-04	3.23E-03	1.05E-04
Pr-143	4.99E-06	1.50E-06	2.47E-07	0.00E+00	8.11E-07	1.17E-04	2.63E-05
Pr-144	1.61E-11	4.99E-12	8.10E-13	0.00E+00	2.64E-12	4.23E-07	5.32E-08
Nd-147	2.92E-06	2.36E-06	1.84E-07	0.00E+00	1.30E-06	8.87E-05	2.22E-05
W-187	4.41E-09	2.61E-09	1.17E-09	0.00E+00	0.00E+00	1.11E-05	2.46E-05
Np-239	1.26E-07	9.04E-09	6.35E-09	0.00E+00	2.63E-08	1.57E-05	1.73E-05

Reference:

Dose Factors for Co-57, Zn-69m, Br-82, Nb-97, Sb-124 and Sb-125 are from NUREG-0172 Age Specific Radiation Dose Commitment Factors for a One Year Chronic Intake, November 1977, Table 6.

All others:

Regulatory Guide 1.109, Table E-9.

NOTE: The tritium dose factor for bone is assumed to be equal to the total body dose factor.

Table 7.7 (7 of 8)
INHALATION DOSE FACTORS
(mrem/pCi inhaled)

INFANT

Nuclide	bone	liver	t body	thyroid	kidney	lung	gi-lli
H-3	4.62E-07	4.62E-07	4.62E-07	4.62E-07	4.62E-07	4.62E-07	4.62E-07
C-14	1.89E-05	3.79E-06	3.79E-06	3.79E-06	3.79E-06	3.79E-06	3.79E-06
Na-24	7.54E-06	7.54E-06	7.54E-06	7.54E-06	7.54E-06	7.54E-06	7.54E-06
P-32	1.45E-03	8.03E+05	5.53E-05	0.00E+00	0.00E+00	0.00E+00	1.15E-05
Cr-51	0.00E+00	0.00E+00	6.39E-08	4.11E-08	9.45E-09	9.17E-06	2.55E-07
Mn-54	0.00E+00	1.81E-05	3.56E-06	0.00E+00	3.56E-06	7.14E-04	5.04E-06
Mn-56	0.00E+00	1.10E-09	1.58E-10	0.00E+00	7.86E-10	8.95E-06	5.12E-05
Fe-55	1.41E-05	8.39E-06	2.38E-06	0.00E+00	0.00E+00	6.21E-05	7.82E-07
Fe-59	9.69E-06	1.68E-05	6.77E-06	0.00E+00	0.00E+00	7.25E-04	1.77E-05
Co-57	0.00E+00	4.65E-07	4.58E-07	0.00E+00	0.00E+00	2.71E-04	3.47E-06
Co-58	0.00E+00	8.71E-07	1.30E-06	0.00E+00	0.00E+00	5.55E-04	7.95E-06
Co-60	0.00E+00	5.73E-06	8.41E-06	0.00E+00	0.00E+00	3.22E-03	2.28E-05
Ni-63	2.42E-04	1.46E-05	8.29E-06	0.00E+00	0.00E+00	1.49E-04	1.73E-06
Ni-65	1.71E-09	2.03E-10	8.79E-11	0.00E+00	0.00E+00	5.80E-06	3.58E-05
Cu-64	0.00E+00	1.34E-09	5.53E-10	0.00E+00	2.84E-09	6.64E-06	1.07E-05
Zn-65	1.38E-05	4.47E-05	2.22E-05	0.00E+00	2.32E-05	4.62E-04	3.67E-05
Zn-69	3.85E-11	6.91E-11	5.13E-12	0.00E+00	2.87E-11	1.05E-06	9.44E-06
Zn-69m	8.98E-09	1.84E-08	1.67E-09	0.00E+00	7.45E-09	1.91E-05	2.92E-05
Br-82	0.00E+00	0.00E+00	9.49E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Br-83	0.00E+00	0.00E+00	2.72E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Br-84	0.00E+00	0.00E+00	2.86E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Br-85	0.00E+00	0.00E+00	1.46E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Rb-86	0.00E+00	1.36E-04	6.30E-05	0.00E+00	0.00E+00	0.00E+00	2.17E-06
Rb-88	0.00E+00	3.98E-07	2.05E-07	0.00E+00	0.00E+00	0.00E+00	2.42E-07
Rb-89	0.00E+00	2.29E-07	1.47E-07	0.00E+00	0.00E+00	0.00E+00	4.87E-08
Sr-89	2.84E-04	0.00E+00	8.15E-06	0.00E+00	0.00E+00	1.45E-03	4.57E-05
Sr-90	2.92E-02	0.00E+00	1.85E-03	0.00E+00	0.00E+00	8.03E-03	9.36E-05
Sr-91	6.83E-08	0.00E+00	2.47E-09	0.00E+00	0.00E+00	3.76E-05	5.24E-05
Sr-92	7.50E-09	0.00E+00	2.79E-10	0.00E+00	0.00E+00	1.70E-05	1.00E-04
Y-90	2.35E-06	0.00E+00	6.30E-08	0.00E+00	0.00E+00	1.92E-04	7.43E-05
Y-91m	2.91E-10	0.00E+00	9.90E-12	0.00E+00	0.00E+00	1.99E-06	1.68E-06
Y-91	4.20E-04	0.00E+00	1.12E-05	0.00E+00	0.00E+00	1.75E-03	5.02E-05
Y-92	1.17E-08	0.00E+00	3.29E-10	0.00E+00	0.00E+00	1.75E-05	9.04E-05
Y-93	1.07E-07	0.00E+00	2.91E-09	0.00E+00	0.00E+00	5.46E-05	1.19E-04
Zr-95	8.24E-05	1.99E-05	1.45E-05	0.00E+00	2.22E-05	1.25E-03	1.55E-05
Zr-97	1.07E-07	1.83E-08	8.36E-09	0.00E+00	1.85E-08	7.88E-05	1.00E-04
Nb-95	1.12E-05	4.59E-06	2.70E-06	0.00E+00	3.37E-06	3.42E-04	9.05E-06
Nb-97	2.44E-10	5.21E-11	1.88E-11	0.00E+00	4.07E-11	2.37E-06	1.92E-05
Mo-99	0.00E+00	1.18E-07	2.31E-08	0.00E+00	1.89E-07	9.63E-05	3.48E-05
Tc-99m	9.98E-13	2.06E-12	2.66E-11	0.00E+00	2.22E-11	5.79E-07	1.45E-06
Tc-101	4.65E-14	5.88E-14	5.80E-13	0.00E+00	6.99E-13	4.17E-07	6.03E-07
Ru-103	1.44E-06	0.00E+00	4.85E-07	0.00E+00	3.03E-06	3.94E-04	1.15E-05
Ru-105	8.74E-10	0.00E+00	2.93E-10	0.00E+00	6.42E-10	1.12E-05	3.46E-05
Ru-106	6.20E-05	0.00E+00	7.77E-06	0.00E+00	7.61E-05	8.26E-03	1.17E-04
Ag-110m	7.13E-06	5.16E-06	3.57E-06	0.00E+00	7.80E-06	2.62E-03	2.36E-05

Table 7.7 (8 of 8)
INHALATION DOSE FACTORS
(mrem/pCi inhaled)

				INFANT			
Nuclide	bone	liver	t body	thyroid	kidney	lung	gi-lli
Sb-124	2.71E-05	3.97E-07	8.56E-06	7.18E-08	0.00E+00	1.89E-03	4.22E-05
Sb-125	3.69E-05	3.41E-07	7.78E-06	4.45E-08	0.00E+00	1.17E-03	1.05E-05
Te-125m	3.40E-06	1.42E-06	4.70E-07	1.16E-06	0.00E+00	3.19E-04	9.22E-06
Te-127m	1.19E-05	4.93E-06	1.48E-06	3.48E-06	2.68E-05	9.37E-04	1.95E-05
Te-127	1.59E-09	6.81E-10	3.49E-10	1.32E-09	3.47E-09	7.39E-06	1.74E-05
Te-129m	1.01E-05	4.35E-06	1.59E-06	3.91E-06	2.27E-05	1.20E-03	4.93E-05
Te-129	5.63E-11	2.48E-11	1.34E-11	4.82E-11	1.25E-10	2.14E-06	1.88E-05
Te-131m	7.62E-08	3.93E-08	2.59E-08	6.38E-08	1.89E-07	1.42E-04	8.51E-05
Te-131	1.24E-11	5.87E-12	3.57E-12	1.13E-11	2.85E-11	1.47E-06	5.87E-06
Te-132	2.66E-07	1.69E-07	1.26E-07	1.99E-07	7.39E-07	2.43E-04	3.15E-05
I-130	4.54E-06	9.91E-06	3.98E-06	1.14E-03	1.09E-05	0.00E+00	1.42E-06
I-131	2.71E-05	3.17E-05	1.40E-05	1.06E-02	3.70E-05	0.00E+00	7.56E-07
I-132	1.21E-06	2.53E-06	8.99E-07	1.21E-04	2.82E-06	0.00E+00	1.36E-06
I-133	9.46E-06	1.37E-05	4.00E-06	2.54E-03	1.60E-05	0.00E+00	1.54E-06
I-134	6.58E-07	1.34E-06	4.75E-07	3.18E-05	1.49E-06	0.00E+00	9.21E-07
I-135	2.76E-06	5.43E-06	1.98E-06	4.97E-04	6.05E-06	0.00E+00	1.31E-06
Cs-134	2.83E-04	5.02E-04	5.32E-05	0.00E+00	1.36E-04	5.69E-05	9.53E-07
Cs-136	3.45E-05	9.61E-05	3.78E-05	0.00E+00	4.03E-05	8.40E-06	1.02E-06
Cs-137	3.92E-04	4.37E-04	3.25E-05	0.00E+00	1.23E-04	5.09E-05	9.53E-07
Cs-138	3.61E-07	5.58E-07	2.84E-07	0.00E+00	2.93E-07	4.67E-08	6.26E-07
Ba-139	1.06E-09	7.03E-13	3.07E-11	0.00E+00	4.23E-13	4.25E-06	3.64E-05
Ba-140	4.00E-05	4.00E-08	2.07E-06	0.00E+00	9.59E-09	1.14E-03	2.74E-05
Ba-141	1.12E-10	7.70E-14	3.55E-12	0.00E+00	4.64E-14	2.12E-06	3.39E-06
Ba-142	2.84E-11	2.36E-14	1.40E-12	0.00E+00	1.36E-14	1.11E-06	4.95E-07
La-140	3.61E-07	1.43E-07	3.68E-08	0.00E+00	0.00E+00	1.20E-04	6.06E-05
La-142	7.36E-10	2.69E-10	6.46E-11	0.00E+00	0.00E+00	5.87E-06	4.25E-05
Ce-141	1.98E-05	1.19E-05	1.42E-06	0.00E+00	3.75E-06	3.69E-04	1.54E-05
Ce-143	2.09E-07	1.38E-07	1.58E-08	0.00E+00	4.03E-08	8.30E-05	3.55E-05
Ce-144	2.28E-03	8.65E-04	1.26E-04	0.00E+00	3.84E-04	7.03E-03	1.06E-04
Pr-143	1.00E-05	3.74E-06	4.99E-07	0.00E+00	1.41E-06	3.09E-04	2.66E-05
Pr-144	3.42E-11	1.32E-11	1.72E-12	0.00E+00	4.80E-12	1.15E-06	3.06E-06
Nd-147	5.67E-06	5.81E-06	3.57E-07	0.00E+00	2.25E-06	2.30E-04	2.23E-05
W-187	9.26E-09	6.44E-09	2.23E-09	0.00E+00	0.00E+00	2.83E-05	2.54E-05
Np-239	2.65E-07	2.37E-08	1.34E-08	0.00E+00	4.73E-08	4.25E-05	1.78E-05

Reference:

Dose Factors for Co-57, Zn-69m, Br-82, Nb-97, Sb-124 and Sb-125 are from NUREG-0172 Age Specific Radiation Dose Commitment Factors for a One Year Chronic Intake, November 1977, Table 5.

All others:

Regulatory Guide 1.109, Table E-10.

NOTE: The tritium dose factor for bone is assumed to be equal to the total body dose factor.

Figure 7.1

OFFGAS SYSTEM AND STANDBY GAS TREATMENT SYSTEM EFFLUENT MONITORING

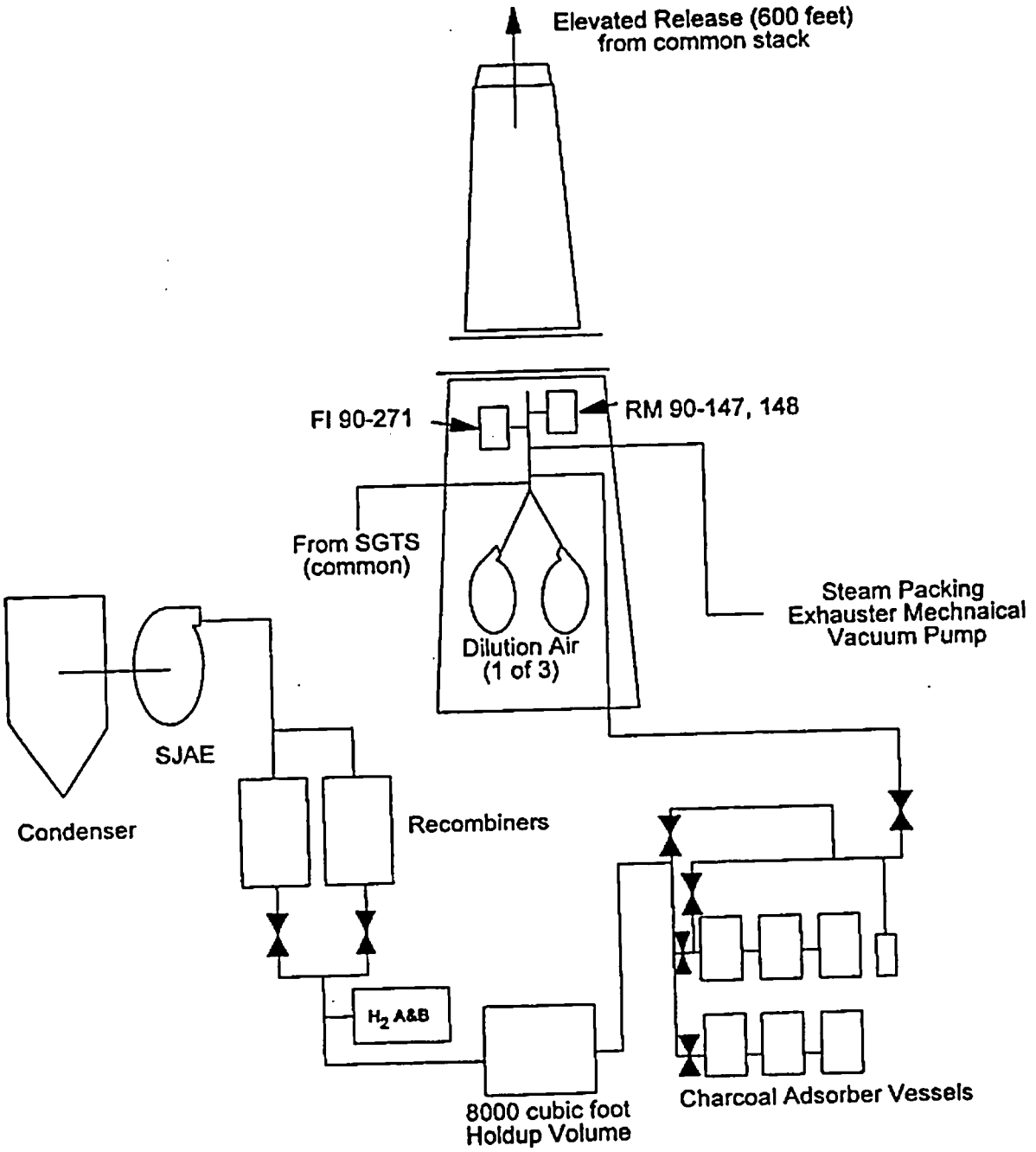
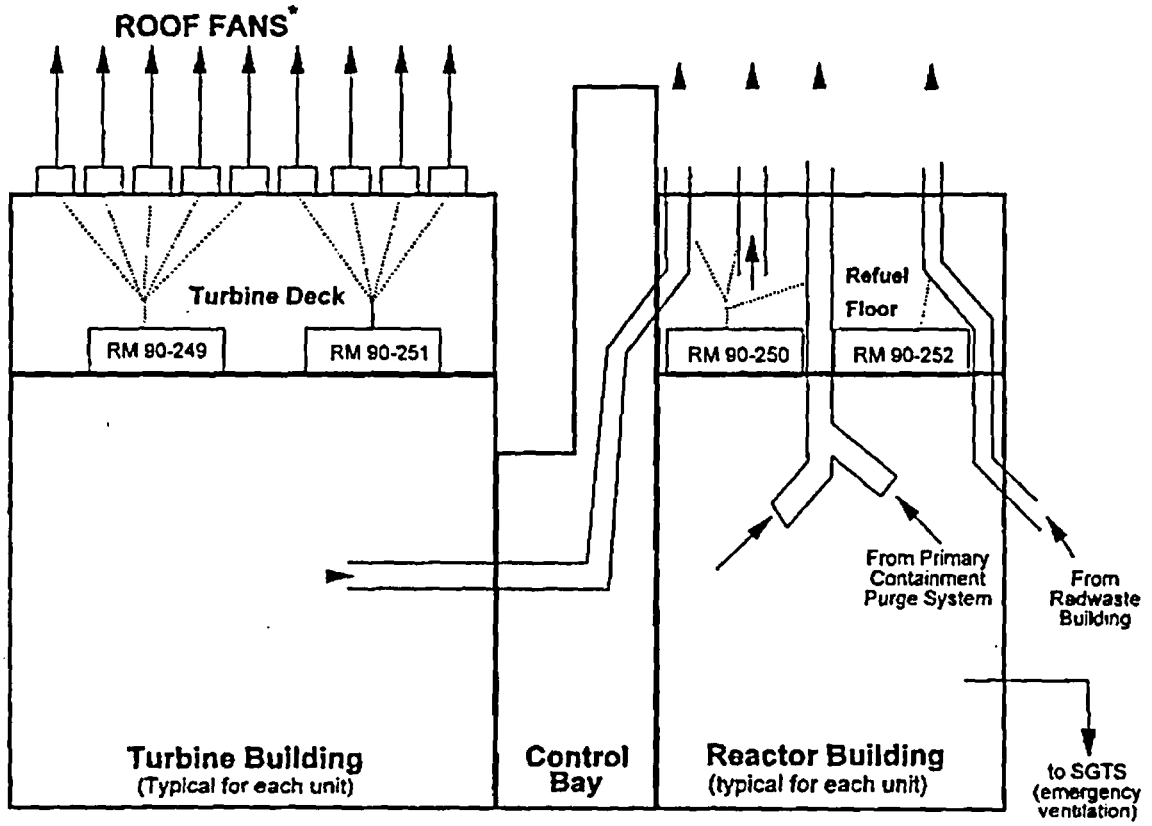
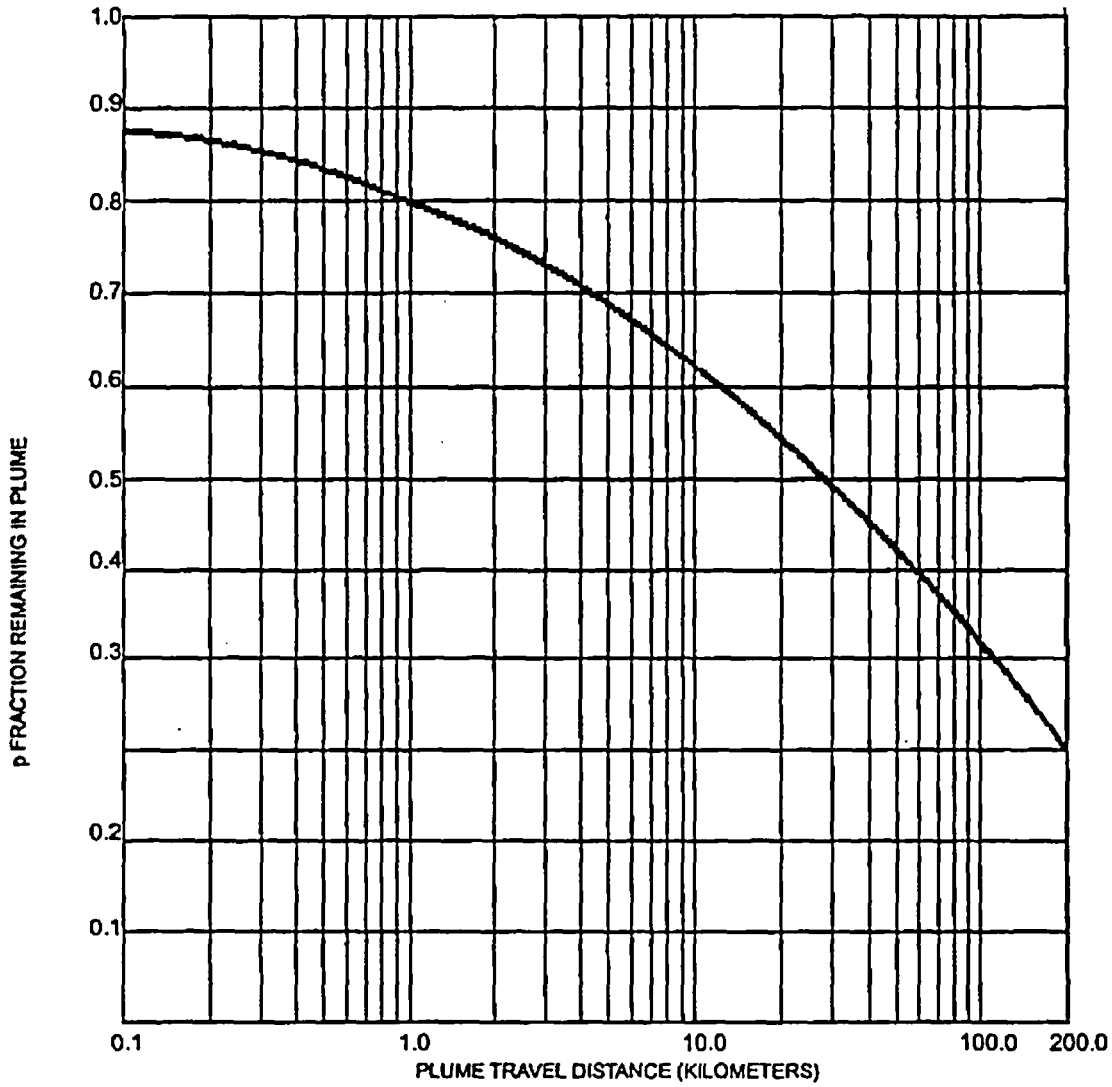


Figure 7.2
NORMAL BUILDING VENTILATION



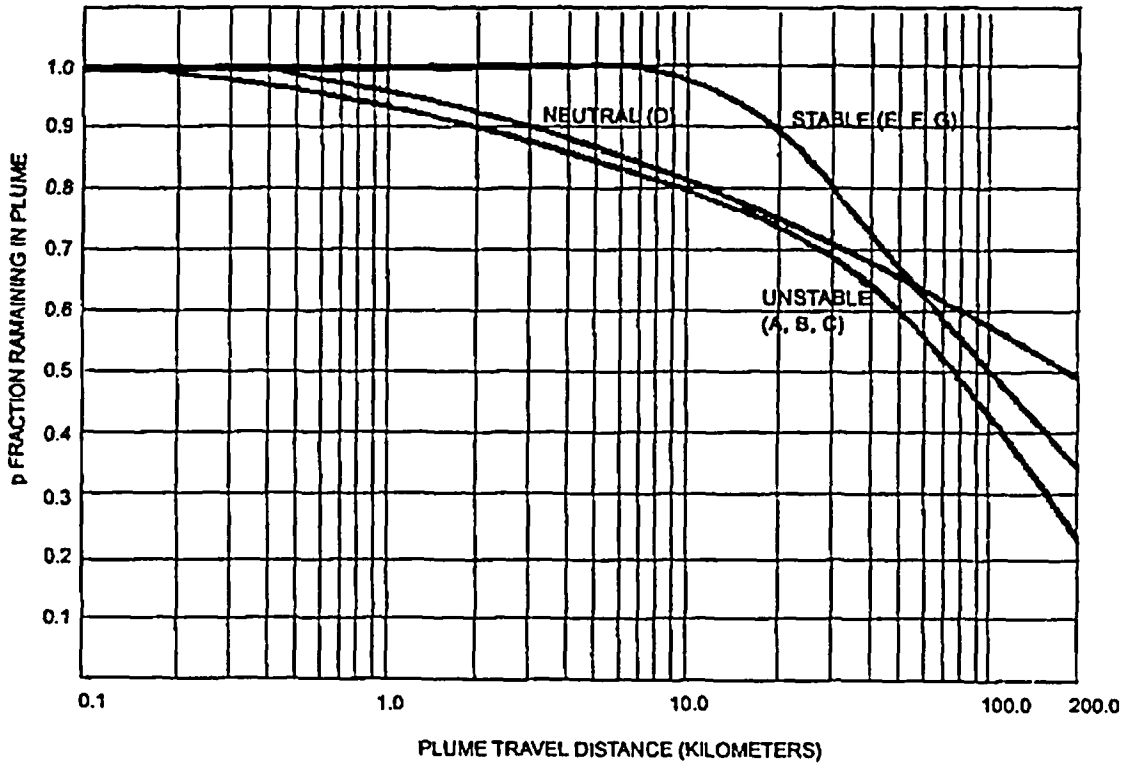
* Used seasonally to control temperature

Figure 7.3
PLUME DEPLETION EFFECT
(Page 1 of 4)



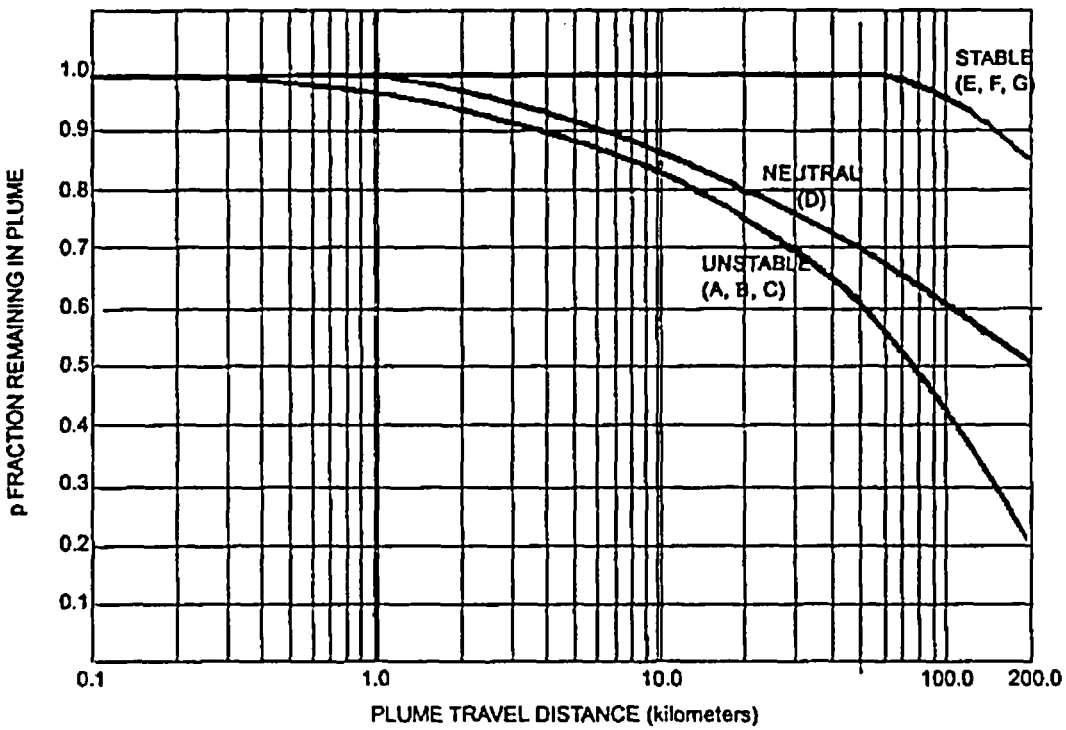
Plume Depletion Effect for Ground-Level Releases (All Stability Classes)

Figure 7.3
PLUME DEPLETION EFFECT
(Page 2 of 4)



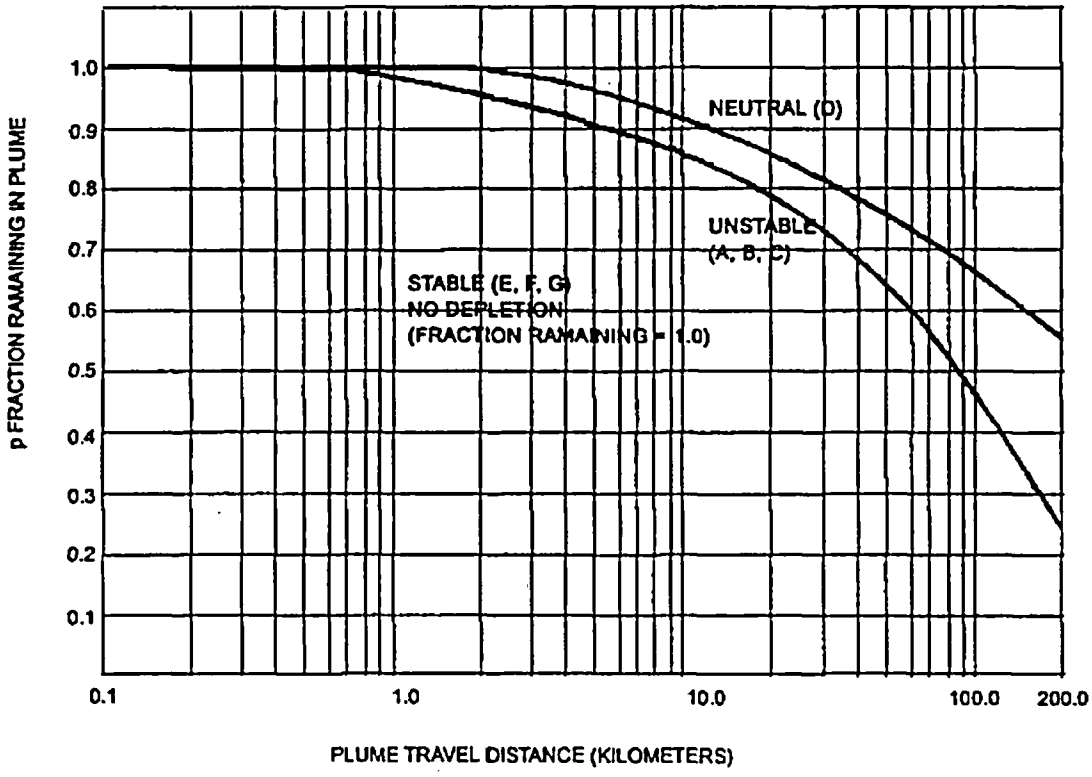
Plume Depletion Effect for 30 meter Releases (Letters denote Pasquill Stability Class)

Figure 7.3
PLUME DEPLETION EFFECT
(Page 3 of 4)



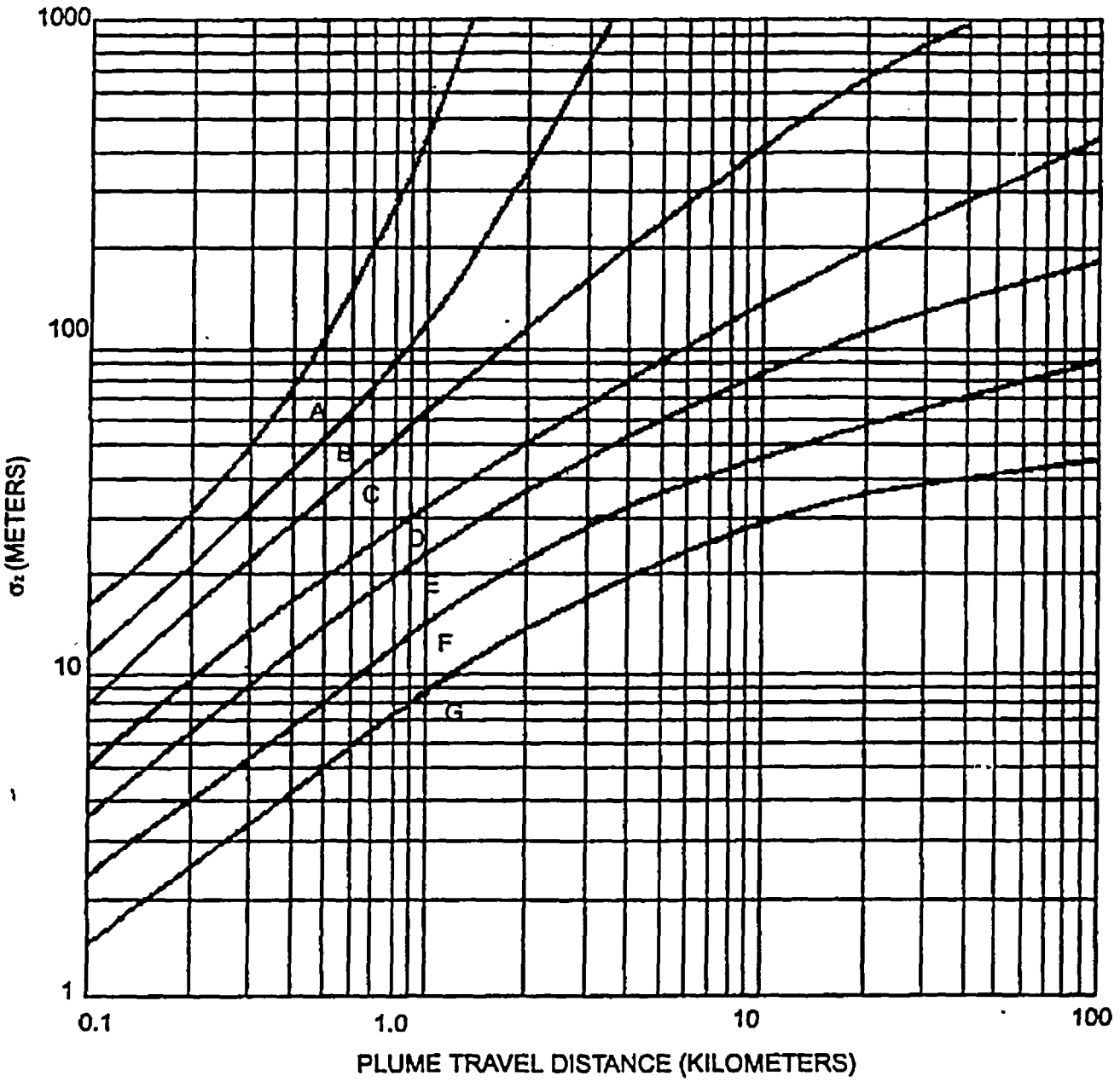
Plume Depletion Effect for 60 meter Releases (Letters denote Pasquill Stability Class)

Figure 7.3
PLUME DEPLETION EFFECT
(Page 4 of 4)



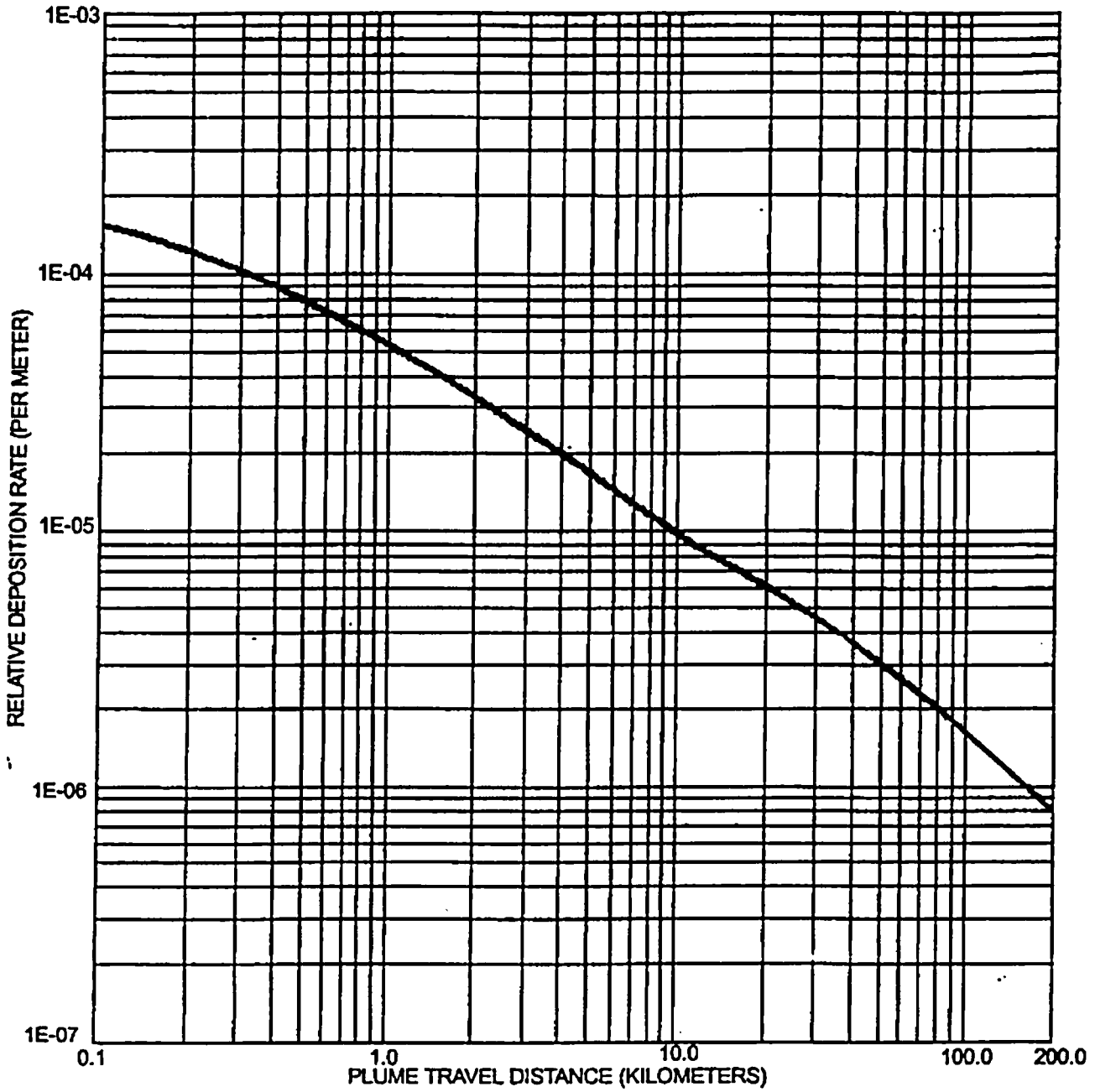
Plume Depletion Effect for 100 meter Releases (Letters denote Pasquill Stability Class)

Figure 7.4
VERTICAL STANDARD DEVIATION OF MATERIAL IN A PLUME



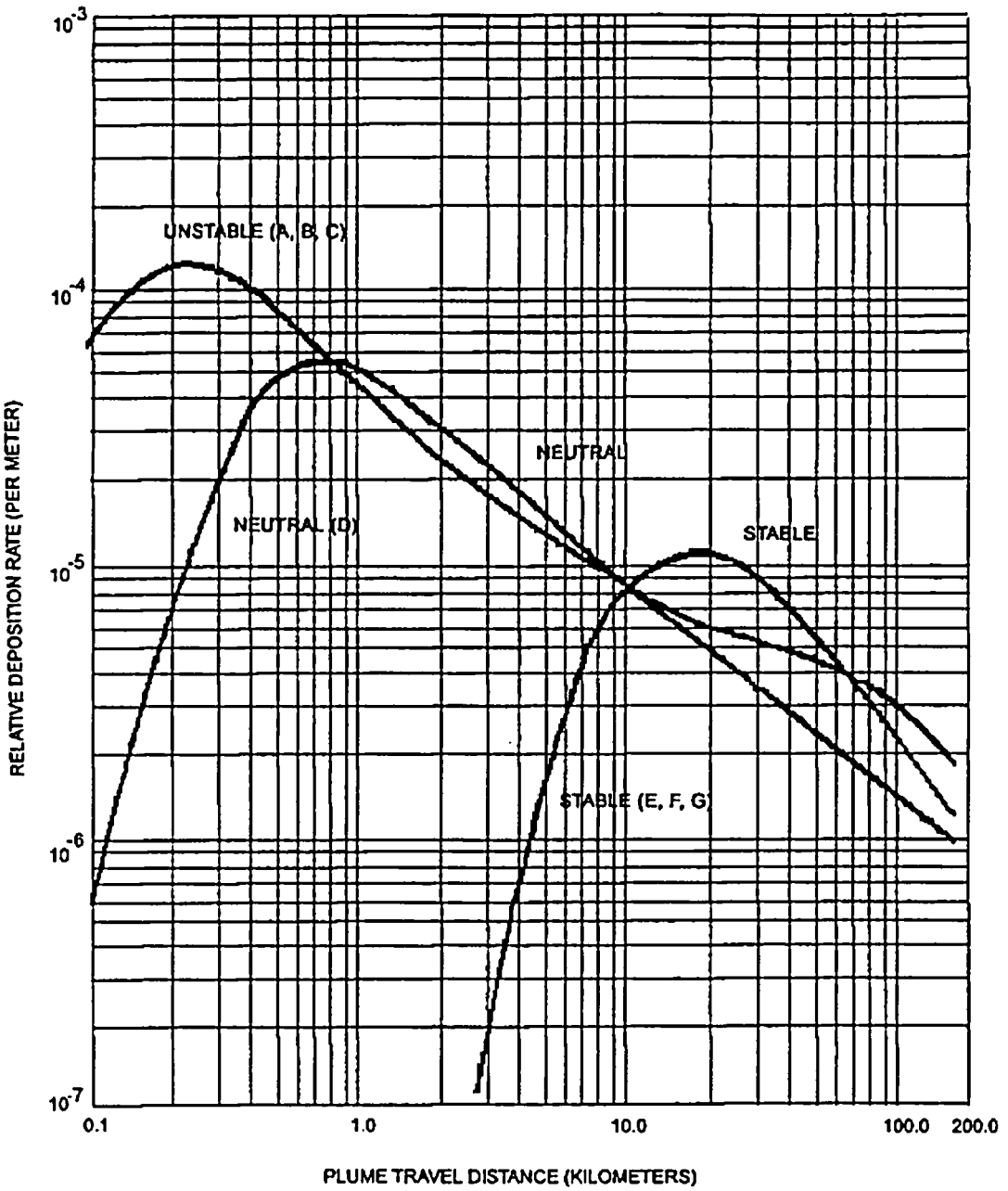
Vertical Standard Deviation of Material in a Plume
(Letters denote Pasquill Stability Class)

Figure 7.5
RELATIVE DEPOSITION
(Page 1 of 4)



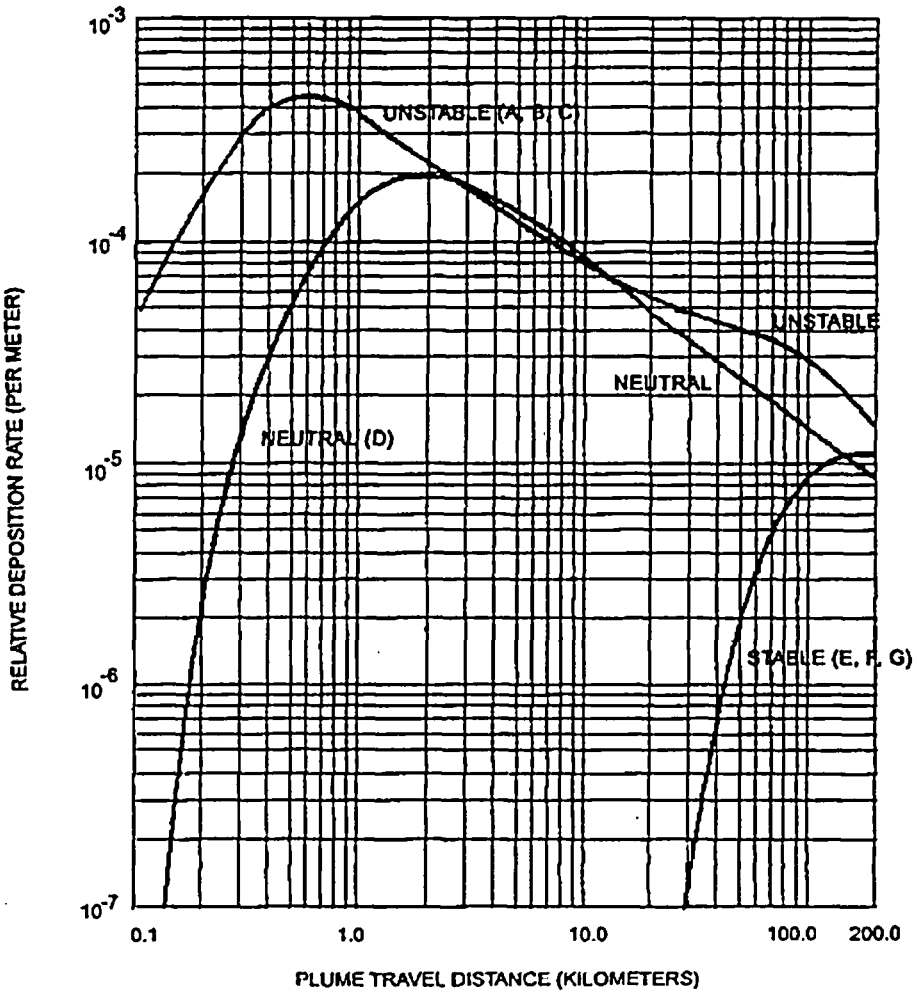
Relative Deposition for Ground-Level Releases (All Atmospheric Stability Classes)

Figure 7.5
RELATIVE DEPOSITION
(Page 2 of 4)



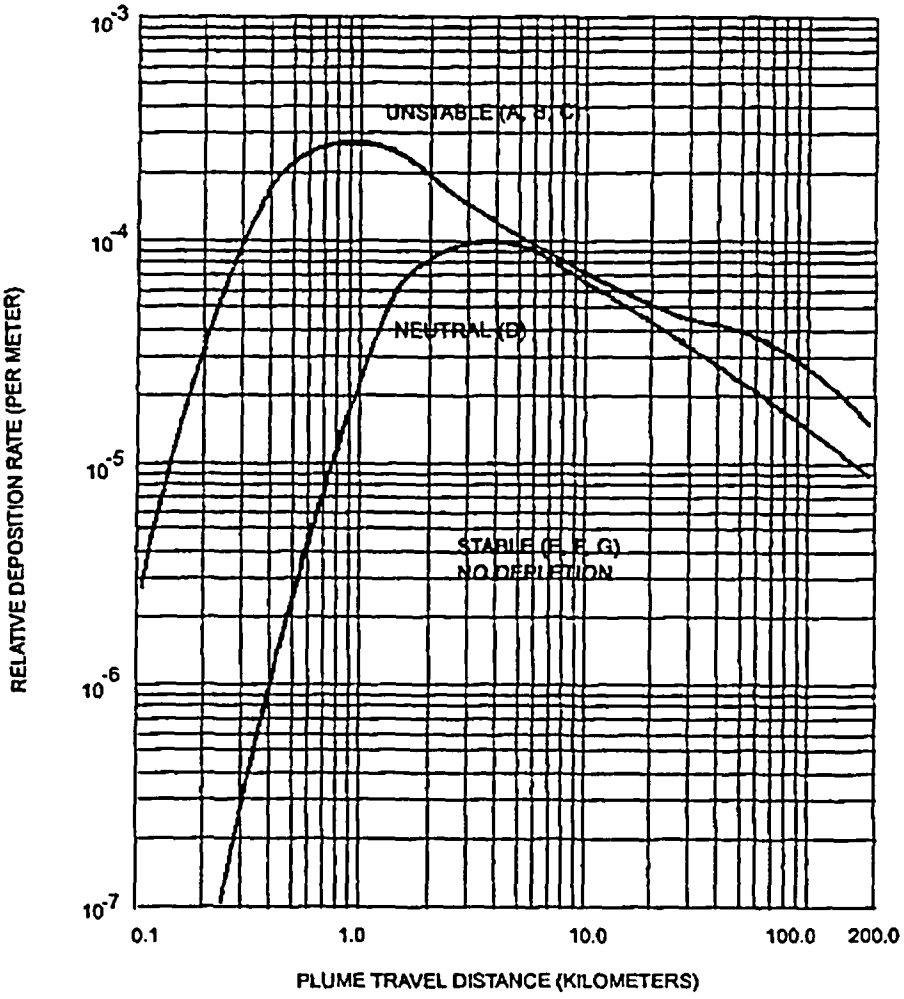
Plume Depletion Effect for 30 meter Releases (Letters denote Pasquill Stability Class)

Figure 7.5
RELATIVE DEPOSITION
(Page 3 of 4)



Plume Depletion Effect for 60 meter Releases (Letters denote Pasquill Stability Class)

Figure 7.5
RELATIVE DEPOSITION
(Page 4 of 4)



Plume Depletion Effect for 100 meter Releases (Letters denote Pasquill Stability Class)

SECTION 8.0

TOTAL DOSE

8.0 TOTAL DOSE

To determine compliance with 40 CFR 190, the annual dose contributions to the maximum individual from BFN radioactive effluents and all other nearby uranium fuel cycle sources will be considered. The annual dose to the maximum individual will be conservatively estimated by: first, summing the total body air submersion dose, and the maximum (critical) organ dose (except thyroid) from gaseous effluents; the total body dose, and maximum organ dose (except thyroid) from liquid effluents for each quarter calculated in accordance with Sections 6.6 and 7.7. Then to this sum for each quarter is added any identifiable increase in direct radiation dose levels attributable to the plant as determined by the REMP outlined in Section 9.0. These quarterly sums are then conservatively summed for the four calendar quarters to estimate the maximum individual dose for the year. This dose is compared to the limit in Control 1.2.3, i.e., 25 mrem per year to the total body or any organ (except thyroid), to determine compliance.

The total annual thyroid dose to the maximum individual will be conservatively estimated in the following manner. For each calendar quarter, a total dose will be obtained by summing the total body gaseous submersion dose, the gaseous thyroid dose, the liquid total body dose, and the liquid thyroid dose. To this sum for each quarter is added any identifiable increase in direct radiation dose levels attributable to the plant as determined by the REMP outlined in Section 9.0. These quarterly sums are then added together to estimate the maximum individual thyroid dose for the year. This dose is compared to the limit in Control 1.2.3, i.e., 75 mrem per year to determine compliance.

SECTION 9.0

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

9.1 MONITORING PROGRAM DESCRIPTION

A Radiological Environmental Monitoring Program (REMP) as described in Tables 9.1, 9.2, and 9.3 and in Figures 9.1, 9.2, and 9.3 shall be conducted. Results of this program shall be reported in accordance with ODCM Administrative Control 5.1.

The atmospheric REMP shall consist of 11 monitoring stations from which samples of air particulates and radioiodine shall be collected.

The terrestrial monitoring program shall consist of the collection of milk, soil, drinking water, and food crops as provided in Tables 9.1 and 9.2. In addition, direct gamma radiation levels will be measured at 40 or more locations in the vicinity of the plant.

The reservoir sampling program shall consist of the collection of samples of surface water, sediment, and fish.

9.2 DETECTION CAPABILITIES

Analytical techniques shall be such that the detection capabilities listed in Table 2.3-2 are achieved.

9.3 LAND USE CENSUS

A land use survey shall be conducted in accordance with the requirements in Control 1.3.2. The results of the survey shall be reported in the Annual Radiological Environmental Operating Report.

9.4 INTERLABORATORY COMPARISON PROGRAM

Analyses shall be performed on radioactive materials supplied as part of an Interlaboratory Comparison Program which has been approved by the NRC. A summary of the results obtained in the intercomparison shall be included in the Annual Radiological Environmental Operating Report.

If analyses are not performed as required corrective actions taken to prevent a recurrence shall be reported in the Annual Radiological Environmental Operating Report.

Table 9.1 (1 of 5)
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Samples and Sample Locations	Sampling and Collection Frequency	Type and Frequency of Analysis
AIRBORNE			
Particulates	6 samples from locations (in different sectors) at or near the site boundary (LM-1, LM-2, LM-3, LM-4, LM-6, and LM-7) 2 samples from control locations greater than 10 miles from the plant (RM-1 and RM-6) 3 samples from locations in communities approximately 10 miles from the plant (PM-1, PM-2 and PM-3)	Continuous sampler operation with sample collection as required by dust loading but at least once per 7 days.	Particulate sampler. Analyze for gross beta radioactivity ≥24 hrs following filter change. Perform gamma isotopic analysis on each sample when gross beta activity is >10 times the average of control samples. Perform gamma isotopic analysis on composite (by location) sample at least once per 31 days.
Radioiodine	Same locations as air particulates	Continuous sampler operation with charcoal canister collection at least once per 7 days	I-131 every 7 days
SOIL	Samples from same locations as air particulates	Once every year	Gamma scan, Sr-89, Sr-90 once per year
DIRECT	2 or more dosimeters placed at locations (in different sectors) at or near the site boundary in each of the 16 sectors	At least once per 92 days	Gamma dose once per 92 days

Table 9.1 (2 of 5)
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Samples and Sample Locations	Sampling and Collection Frequency	Type and Frequency of Analysis
DIRECT (continued)	2 or more dosimeters placed at stations located approximately 5 miles from the plant in each of the 16 sectors	At least once per 92 days.	Gamma dose once per 92 days.
	2 or more dosimeters in at least 8 additional locations of special interest		
WATERBORNE			
Surface	1 sample upstream (TRM 306.0) 1 sample immediately downstream of discharge (TRM 293.5)	Collected by automatic sequential-type sampler with composite sample taken at least once per 31 days[a].	Gamma scan at least once per 31 days. Composite for tritium at least once per 92 days
Drinking	1 sample at the first potable surface water supply downstream from the plant (TRM 286.5)	Collected by automatic sequential-type sampler with composite sample taken at least once per 31 days[a,b]	Gross beta and gamma scan at least once per 31 days. Composite for tritium at least once per 92 days.

[a] Composite samples shall be collected by collecting an aliquot at intervals not exceeding 2 hours.

[b] This assumes that the nearest drinking water intake is >3.0 mile downstream of the plant discharge. If a drinking water intake is constructed within 3.0 miles downstream of the plant discharge, sampling and analysis shall be every 2 weeks.

Table 9.1 (3 of 5)
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Samples and Sample Locations	Sampling and Collection Frequency	Type and Frequency of Analysis
Drinking (continued)	4 additional samples of potable surface water downstream from the plant(TRM 282.6, TRM 274.9, TRM 259.8, and TRM 259.6)	Grab sample taken at least once per 31 days.	Gross beta and gamma scan at least once per 31 days. Composite for tritium at least once per 92 days
	1 sample at a control location[c] (TRM 306)	Collected by automatic sequential-type sampler with composite sample taken at least once per 31 days[a]	
GROUND	1 sample adjacent to the plant (well #6)	Collected by automatic sequential-type sampler with composite sample taken at least once per 31 days.	Composite for gamma scan and tritium at least once per 92 days.
	1 sample at a control location upgradient from the plant (Farm Bn)	Grab sample taken at least once per 31 days.	Composite for gamma scan and tritium at least once per 92 days.
AQUATIC			
Shoreline Sediment	1 sample upstream from a recreational area (TRM 305)	At least once per 184 days	Gamma scan of each sample

[a] Composite samples shall be collected by collecting an aliquot at intervals not exceeding 2 hours.
[c] The surface water control sample shall be considered a control for the drinking water sample.

Table 9.1 (4 of 5)
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Samples and Sample Locations	Sampling and Collection Frequency	Type and Frequency of Analysis
Shoreline Sediment (continued)	1 sample from each of at least two downstream locations with with recreational use. (TRM 293 and 279.5)	At least once per 184 days	Gamma scan of each sample
INGESTION			
Milk	***	At least once per 15 days when animals are on pasture; at least once per 31 days at other times.	Gamma scan and I-131 on each sample. Sr-89 and Sr-90 at least once per 92 days
	****		

*** Samples from milking animals in three locations within 5 km distance having the highest dose potential as identified in the annual land use survey. If there are none, then one sample from milking animals in each of three areas between 5 to 8 km distant where doses are calculated to be greater than 1 mrem per year. Milk samples will be collected as required by FSAR Section 2.6.2.2. There are currently no locations meeting this criteria; however, a dairy farm between 9 and 15 km is being sampled.

**** One sample from milking at a control location 15 to 30 km distant and in the least prevalent wind direction. Samples are not required from the control location if no indicator locations are sampled.

Fish	2 samples representing commercial and game species in Guntersville Reservoir above the plant	At least once per 184 days	Gamma scan at least once per 184 days on edible portions.
	2 samples representing commercial and game species in Wheeler Reservoir near the plant		

Table 9.1 (5 of 5)
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Samples and Sample Locations	Sampling and Collection Frequency	Type and Frequency of Analysis
Fruits & Vegetables	Samples of food crops such as corn, green beans, tomatoes, and potatoes grown at private gardens and/or farms in the immediate vicinity of the plant 1 sample of each of the same foods grown at greater than 10 miles distance from the plant	At least once per year at time of harvest	Gamma scan on edible portion
Vegetation (pasturage)	Samples from farms producing milk but not providing a milk sample. Control sample from 1 control dairy farm. Vegetation sampled only if milk is produced but not sampled.	Once per 31 days	I-131, gamma scan once per 31 days.

Table 9.2
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SAMPLING LOCATIONS

Map Location Number [a]	Station	Sector	Approximate Distance (Miles)	Indicator (I) or Control (C)	Samples Collected[b]
1	PM-1	NW	13.8	I	AP, CF, S
2	PM-2	NE	10.9	I	AP, CF, S
3	PM-3	SSE	7.5	I	AP, CF, S
4	LM-7	W	2.1	I	AP, CF, S
5	RM-1	W	31.0	C	AP, CF, S
6	RM-6	E	23.4	C	AP, CF, S
7	LM-1	NNW	1.0	I	AP, CF, S
8	LM-2	NNE	0.9	I	AP, CF, S
9	LM-3	ENE	0.9	I	AP, CF, S
10	LM-4	NNW	1.7	I	AP, CF, S
11	LM-6	SSW	3.0	I	AP, CF, S
12	Farm B	NNW	6.8	I	M
13	Farm Bn	N	5.0	I	W
19	Farm R	SW	12.5	C	M
22	Well #6	NW	0.02	I	W
23	TRM[c] 282.6	-	11.4[d]	I	PW
24	TRM 306.0	-	12.0[d]	C	PW, SW
25	TRM 259.6	-	34.4[d]	I	PW
26	TRM 274.9	-	19.1[d]	I	PW
28	TRM 293.5	-	0.5[d]	I	SW
34	Farm Be	NW	28.8	C	M
70	TRM 259.8	-	34.2[d]	I	PW
71	TRM 286.5	-	7.5[d]	I	PW
72	TRM 305		11.0[d]	C	SS
73	TRM 293		1.0[d]	I	SS
74	TRM 279.5		14.5[d]	I	SS
	Wheeler Reservoir (TRM 275-349)			I/C	F
	Guntersville Reservoir (TRM 349-424)			C	F

a See Figures 9.1, 9.2, and 9.3

b Sample codes:

AP = Air particulate filter
CF = Charcoal Filter
F = Fish
W = Well Water
S = Soil
SW = Surface Water
V = Vegetation
SS = Shoreline Sediment
M = Milk
PW = Public Water

c TRM = Tennessee River Mile

d Miles from plant discharge (TRM 294)

Table 9.3
THERMOLUMINESCENT DOSIMETRY LOCATIONS

Map Location Number	Station	Sector	Approximate Distance (Miles)	Onsite (On)[a] or Offsite (Off)
1	NW-3	NW	13.8	Off
2	NE-3	NE	10.9	Off
3	SSE-2	SSE	7.5	Off
5	W-3	W	31.0	Off
6	E-3	E	23.1	Off
7	N-1	NNW	1.0	On
8	NNE-1	NNE	0.9	On
9	ENE-1	ENE	0.9	On
10	NNW-2	NNW	1.7	On
38	N-2	N	5.0	Off
39	NNE-2	NNE	0.7	On
40	NNE-3	NNE	5.2	Off
41	NE-1	NE	0.8	On
42	NE-2	NE	5.0	Off
43	ENE-2	ENE	6.2	Off
44	E-1	E	0.8	On
45	E-2	E	5.2	Off
46	ESE-1	ESE	0.9	On
47	ESE-2	ESE	3.0	Off
48	SE-1	SE	0.5	On
49	SE-2	SE	5.4	Off
50	SSE-1	SSE	5.1	Off
51	S-1	S	3.1	Off
52	S-2	S	4.8	Off
53	SSW-1	SSW	3.0	Off
54	SSW-2	SSW	4.4	Off
55	SW-1	SW	1.9	On
56	SW-2	SW	4.7	Off
57	SW-3	SW	6.0	Off
58	WSW-1	WSW	2.7	Off
59	WSW-2	WSW	5.1	Off
60	WSW-3	WSW	10.5	Off
61	W-1	W	1.9	On
62	W-2	W	4.7	Off
63	W-4	W	31.7	Off
64	WNW-1	WNW	3.3	Off
65	WNW-2	WNW	4.4	Off
66	NW-1	NW	2.2	Off
67	NW-2	NW	5.3	Off
68	NNW-1	NNW	1.0	On
69	NNW-3	NNW	5.2	Off
75	N-1A	N	1.0	ON

[a]TLDs designated onsite are those located two miles or less from the plant. TLDs designated offsite are those located more than two miles from the plant.

Figure 9.1
RADIOLOGICAL ENVIRONMENTAL SAMPLING LOCATIONS
WITHIN 1 MILE OF THE PLANT

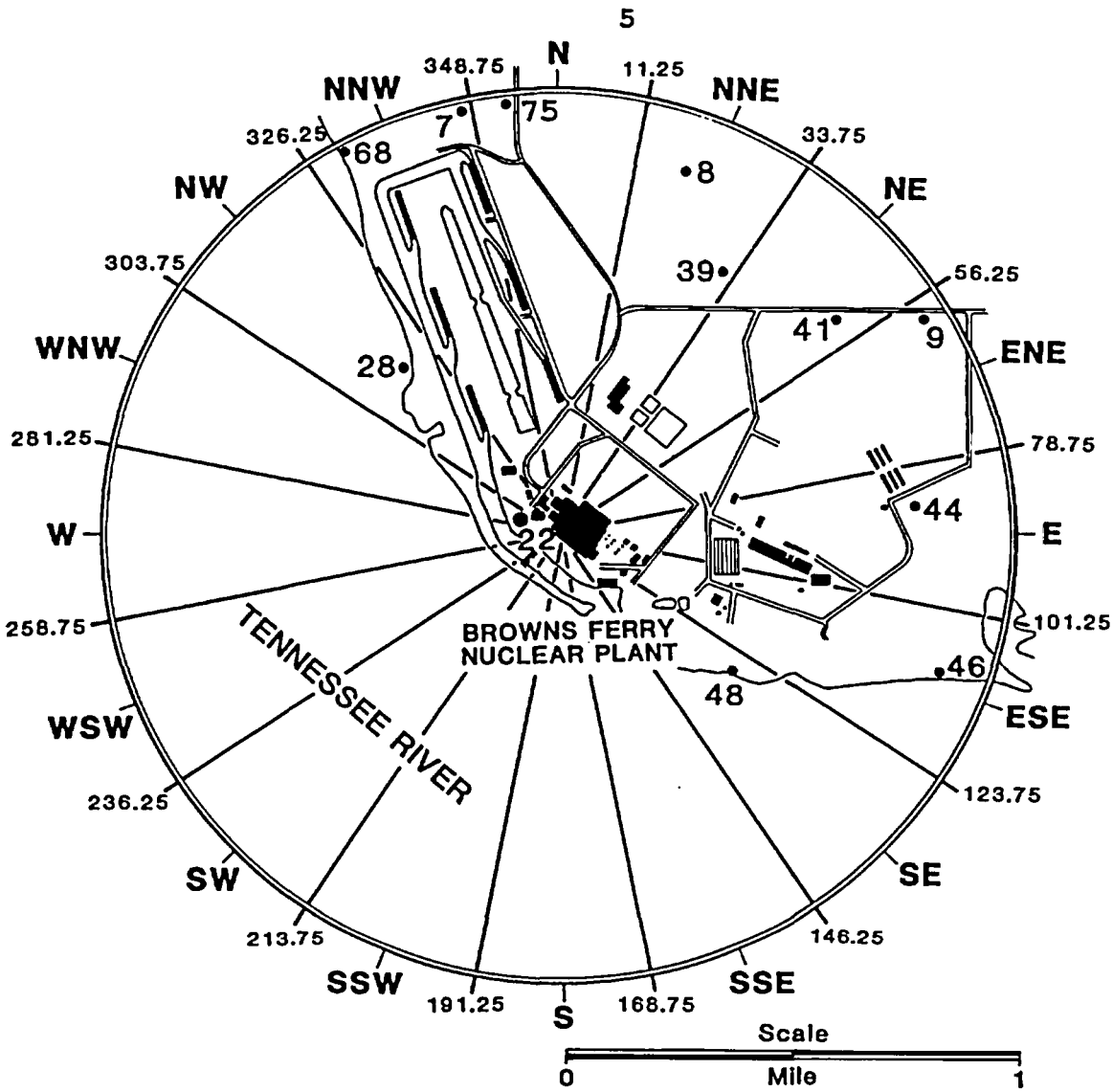


Figure 9.2

RADIOLOGICAL ENVIRONMENTAL SAMPLING LOCATIONS
FROM 1 TO 5 MILES FROM THE PLANT

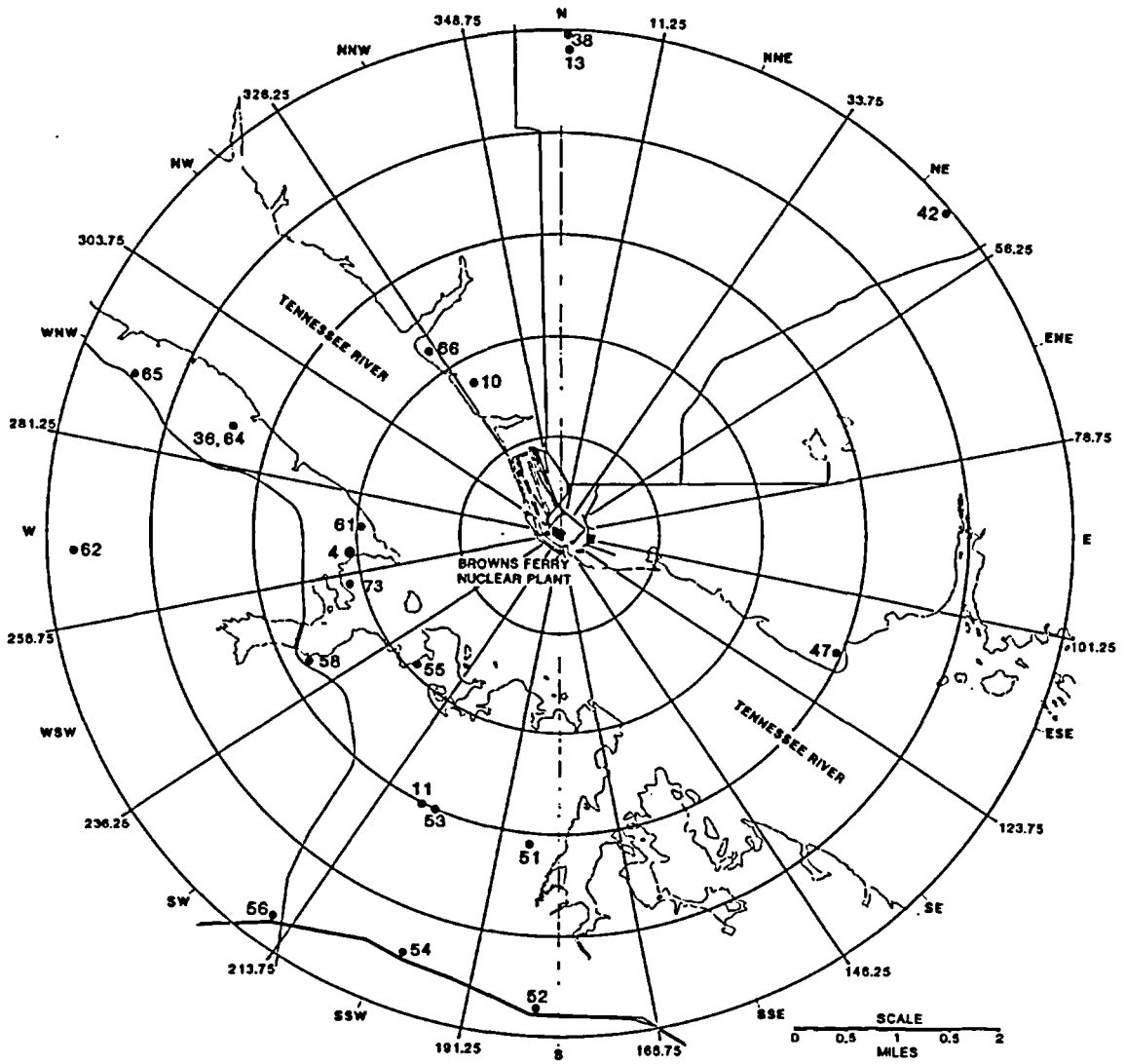
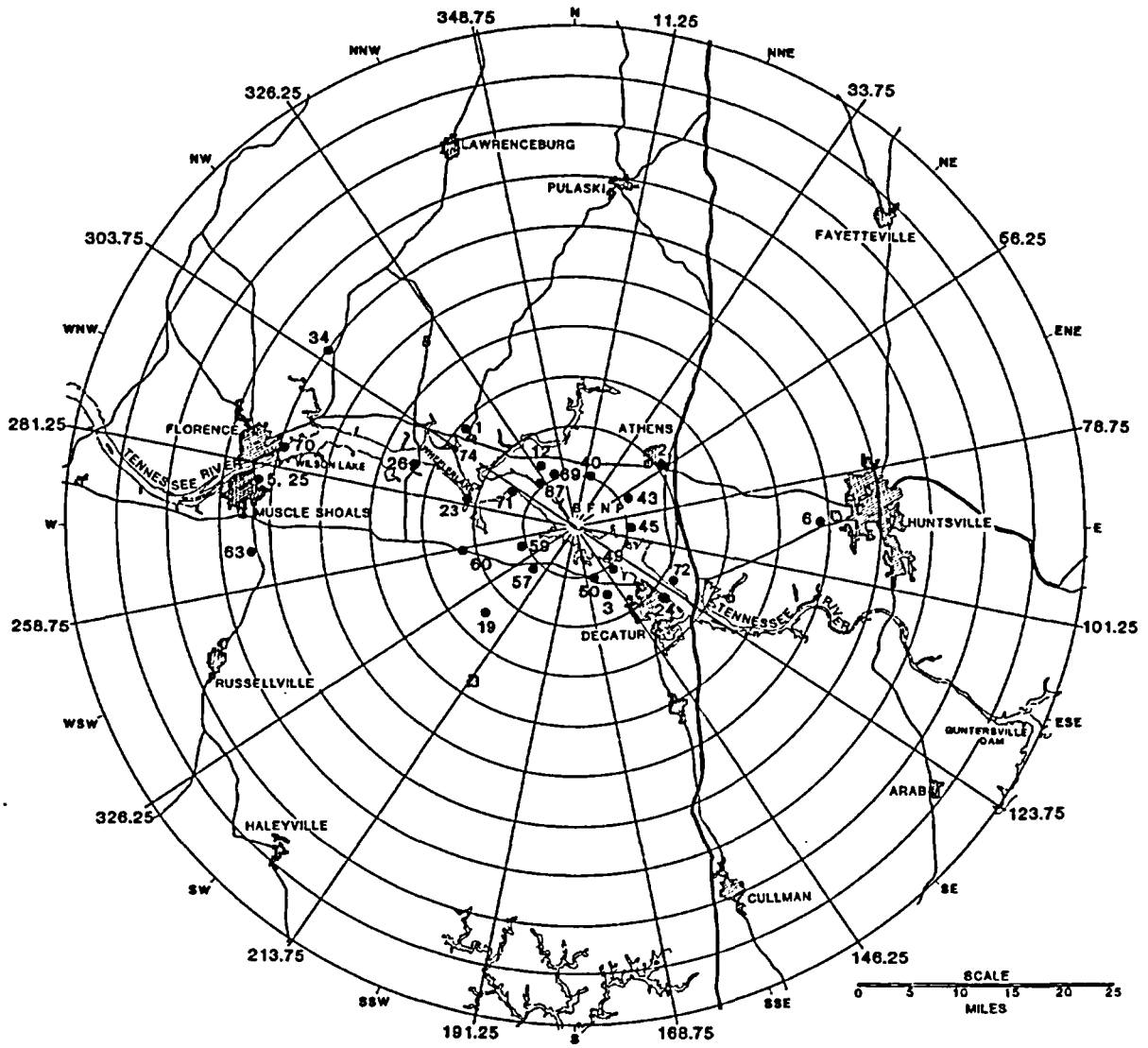


Figure 9.3

RADIOLOGICAL ENVIRONMENTAL SAMPLING LOCATIONS
GREATER THAN 5 MILES FROM THE PLANT



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