TENNESSEE VALLEY AUTHORITY

NUCLEAR POWER GROUP

NUCLEAR SUPPORT

RADIOLOGICAL CONTROL

RADIOLOGICAL IMPACT ASSESSMENT REPORT

BROWNS FERRY NUCLEAR PLANT

JANUARY THROUGH JUNE 1988

Prepared by: _____

Reviewed by: _____

Approved by: _____

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INTRODUCTION

Potential doses to maximum individuals and the population around Browns Ferry are calculated for each quarter as required by BFN Radiological Effluent Technical Specification manual Section F.2. Measured plant releases for the reporting period are used to estimate these doses. Dispersion of radioactive effluents in the environment is estimated in accordance with the guidance provided by Regulatory Guides 1.109, 1.111 and 1.113 using meteorological data and riverflow data measured during the period. Using dose calculation methodologies which are described in detail in the Browns Ferry Offsite Dose Calculation Manual, the doses are calculated and used to determine compliance with the dose limits contained in Browns Ferry's Operating License. In this report, the doses resulting from releases are described and compared to quarterly and annual limits established for Browns Ferry.

SUMMARY OF LIQUID AND GASEOUS EFFLUENT RELEASES - FIRST HALF 1988

Although nuclear plants are designed to contain the radioactive material created by the fission process, small amounts of this material escape from the fuel rods. Also, very small amounts of the structures and components of the systems become activated through the bombardment of neutrons and are worn away. This radioactive material can be transported throughout plant systems and released to the environment.

Airborne Releases

The noble gas fission products do not mix with water and are given off in a gaseous form. A very small amount of solid radioactivity is given off along with these noble gases. The most significant releases are processed so that the radioactive material is filtered and/or decayed prior to release through the plant vents. Sampling and monitoring methods are used to determine the amount of radioactive material released. If these methods indicate that radioactivity in airborne effluents above preset limits, then releases are terminated. Airborne releases for each quarter in the first half of 1988 are listed in Table 1.

Liquid Releases

Some small amounts of radioactive material migrate into the primary coolant water. The primary coolant water is routed through a purification system to remove most of these particles; however, not all are removed. Some of the radioactive liquids may leak from pipes or valves in the system. These liquids are collected in floor and equipment drains and sumps. The collected liquids are then

processed through a clean-up system, composed of storage tanks, recycling systems, and demineralizers, to remove contaminants. The purified water is then monitored to determine the amount of radioactive material remaining in the water prior to its release. Steps are taken to ensure that the amount of radioactivity released to the environment is as low as reasonably achievable (ALARA). If the levels of radioactivity are above preset limits, the releases are circulated through the clean-up system again for additional processing. All radioactivity released from the plant into the Tennessee River is quantified prior to release. Liquid releases for each quarter in the first half of 1988 are given in Table 2.

Effluent Monitoring

Plant paths through which radioactivity is released are monitored. These monitors record the radiation levels for each release. Monitors which are used for liquid releases will automatically alarm and stop any release which is above regulatory limits. Gaseous release monitors also provide alarming mechanisms to allow for the termination of any release above limits.

DOSE LIMITS

The U.S. Nuclear Regulator Commission (NRC) requires nuclear power plants to be designed, built, and operated in such a way that the levels of radioactive material released into unrestricted areas is ALARA. To ensure that this is done, the plant's operating license includes Technical Specifications which govern the release of radioactivity. These Technical Specifications specify limits for the release of radioactive effluents, as well as limits for doses to the general public from the release of these effluents. These limits are set well below the NRC 10 CFR 20 limits which govern the concentrations of radioactivity and exposures permissible in unrestricted areas. This ensures that radioactive effluent releases are ALARA.

The Technical Specification limits for doses at or beyond the site boundary from airborne noble gases releases are:

> Less than or equal to 5 mrad per quarter and 10 mrad per year (per reactor unit) for gamma radiation,
>
> - and -
>
> Less than or equal to 10 mrad per quarter and 20 mrad per year (per reactor unit) for beta radiation.

The Technical Specification limits for the dose to a member of the general public at or beyond the site boundary from iodines and particulates released in airborne effluents is:

> Less than or equal to 7.5 mrem per quarter and 15 mrem per year (per reactor unit) to any organ.

The Technical Specification limits for doses to a member of the general public from radioactive material in liquid effluents released to unrestricted areas, is:

Less than or equal to 4.5 mrem per quarter and 9 mrem per year (for the 3-unit site) to the total body,

- and -

Less than or equal to 15 mrem per quarter and 30 mrem per year (for the 3-unit site) to any organ

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

Less than or equal to 25 mrem per year to the total body,

Less than or equal to 75 mrem per year to the thyroid,

- and -

Less than or equal to 25 mrem per year to any other organ.

DOSE CALCULATIONS

Estimated doses to 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. These pathways are shown in Figure 1. 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. Many of these factors are obtained from NUREG/CR-1004. The values chosen will tend to overestimate the dose to this "maximum" person. In reality, the expected dose to actual individuals is lower. The calculation methods and results of the calculations are presented in the following sections.

DOSES FROM AIRBORNE EFFLUENTS

For airborne effluents, 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 which is then eaten by milk and beef animals.

The concentrations of radioactivity in the air and the soil are estimated by the computer model GELC which uses the actual meteorological conditions to determine the distribution of the effluents in the atmosphere. Again, as many of the parameters as possible are based on actual site specific data. The model that is used to estimate dose, as well as the parameters input to the model, is described in detail in Section 1.0 of the Browns Ferry Nuclear Plant Offsite Dose Calculation Manual.

Airborne Release Points and Meteorological Data

Meteorological data at Browns Ferry are measured continuously. Measurements collected include the wind speed, wind direction, and the temperature at heights of 10, 46 and 91 meters above the ground. Average quarterly joint frequency distributions (JFDs) are calculated for each release point using the appropriate levels of meteorological data. A joint frequency distribution gives the percentage of the time in a quarter 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 not distributed by direction. Stability classes are determined from the vertical temperature gradient between two measurement levels.

There are four routine 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 to determine the dispersion of the airborne effluents. The ground-level JFD is derived from windspeeds and directions measured 10 meters above ground and from the vertical temperature gradient between 10 and 46 meters.

Releases from the radwaste and reactor buildings are considered split-level releases to determine the dispersion of the airborne effluents. This means that portions of the release are treated as elevated while other portions are considered ground-level depending on the ratio of the vertical exit velocity to the horizontal wind velocity. The split-level dispersion approach is implemented using a model that requires two complete average quarterly JFDs for each effluent vent, one for the elevated releases and one for the ground-level 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 gradient between 10 and 46 meters. The elevated portion of the split-level JFD is based on wind speeds and direction measurements at the 46-meter level and the vertical temperature gradient between 46 and 91 meters.

Releases from the stack are considered elevated-level releases to determine the dispersion of the airborne effluents. The JFDs for elevated releases are based on wind directions and wind speeds measured at 91 meters. Stability class D is assumed to persist at the effluent release level of 180 meters for the entire period. For the period January 1, 1978-December 31, 1980, stable conditions (E, F, or G stability) existed in the layer from 46 to 91 meters at Browns Ferry Nuclear Plant (BFN) about 43 percent of the time. Neutral conditions existed about 56 percent of the time. This suggests that the use of a D stability for stack releases is conservative or realistic about 99 percent of the time. The first and second quarter JFDs are listed in Tables 3 and 4, respectively.

The generally open terrain around BFN is not believed to 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. Then, the lower layer (10-46 meters) stability class tends to be more stable than would be expected. However, during this infrequent condition, dose estimates will be conservative.

External Exposure Dose - Airborne Effluents

Dose estimates for maximum external air exposures (gamma-air and beta-air doses) are made for points at and beyond the site boundary. These doses are calculated based on the reported releases for all nuclides (Table 1) for all receptor points shown on Table 5. The reported dose is chosen for the offsite location with the highest calculated exposure during the quarter. The doses calculated for Browns Ferry Nuclear Plant for each quarter in the first half of 1988 are as shown below.

Individual Doses from Airborne Effluents
External Air Exposures (mrad)

	Dose	Location
First Quarter 1988		
γ Air dose	1.7E-10 mrad	Highest offsite exposure[1]
ß Air dose	1.9E-07 mrad	Highest offsite exposure[2]
Second Quarter 1988		
γ Air dose	4.8E-07 mrad	Highest offsite exposure[3]
ß Air dose	2.6E-07 mrad	Highest offsite exposure[4]

[1] Location with highest offsite exposure is 6100 meters in the NW sector.
[2] Location with highest offsite exposure is 1650 meters in the NNW sector.
[3] Location with highest offsite exposure is 1525 meters in the N sector.
[4] Location with highest offsite exposure is 1620 meters in the N sector.

Submersion Dose - Airborne Effluents

External doses to the skin and total body, due to submersion in a cloud of noble gases, are estimated for the nearest residence in each sector. These doses are calculated based on the reported releases for noble gases (Table 1) for all receptor points shown on Table 5. The highest of these exposures is chosen and is assumed to be the maximum individual dose. The submersion doses calculated for Browns Ferry Nuclear Plant for each quarter in the first half of 1988 are as shown below.

Individual Doses from Airborne Effluents
Submersion Exposures (mrad)

	Dose	Location
First Quarter 1988		
Total Body	0.0E-00 mrem	All locations
Skin	0.0E-00 mrem	All locations
Second Quarter 1988		
Total Body	0.0E-00 mrem	All locations
Skin	0.0E-00 mrem	All locations

Organ Dose - Airborne Effluents

Internal doses to organs due to releases of airborne effluents are estimated for the inhalation, ground contamination, and ingestion pathways. The ingestion pathway is further divided into four possible contributing pathways: ingestion of cow milk, ingestion of goat milk, ingestion of beef, and ingestion of vegetables. Doses from applicable pathways are calculated for each real receptor location defined in Table 5. Doses are calculated based on the reported iodine and particulate releases as shown on Table 1. To determine the maximum organ dose, the dose contribution from the three pathways are summed for each receptor. For the ingestion dose, however, only those pathways that exist for each receptor are considered in the sum, i.e., milk ingestion doses are included only for locations where milk is consumed without commercial preparation and vegetable ingestion is included only for those locations where a garden is identified. To conservatively account for beef ingestion, a beef ingestion dose equal to that for the highest site 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 organ doses calculated for Browns Ferry Nuclear Plant for each quarter in the first half of 1988 are shown below.

Individual Doses from Airborne Effluents
Maximum Organ (mrem)

	Organ	Age Group	Dose
First Quarter 1988	GI Tract	Teen	9.1E-05 mrem
			Individual Pathway Contributions:
			Vegetable Ingestion[1] 4.5E-05
			Beef Ingestion [2] 1.7E-06
			Inhalation[1] 2.5E-06
			Ground Contamination[1] 4.2E-05
			Milk Ingestion N/A
Second Quarter 1988	GI Tract	Teen	5.1E-03 mrem
			Individual Pathway Contributions:
			Vegetable Ingestion[3] 2.4E-03
			Beef Ingestion[4] 1.3E-04
			Inhalation[3] 6.0E-06
			Ground Contamination[3] 2.6E-03
			Milk Ingestion N/A

[1] Maximum real receptor is located at 1830 meters in the NNW sector.
[2] Calculated for the site boundary at 1650 meters in the NNW sector.
[3] Maximum real receptor is located at 1830 meters in the NNW sector.
[4] Calculated for the site boundary at 1525 meters in the N sector.

Dose Summary - Airborne Effluents

The table below gives a comparison of the calculated doses for the first half of 1988 to their respective quarterly limits.

Doses from Airborne Effluents - First Half 1988
Browns Ferry Nuclear Plant

Dose Pathway	Quarter	Dose	Quarterly Limit*	Percent of Limit
Airborne-Gamma Air Dose	1	1.7E-10 mrad	5 mrad	< 1 %
	2	4.8E-07 mrad		< 1 %
Airborne-Beta Air Dose	1	1.9E-07 mrad	10 mrad	< 1 %
	2	2.6E-07 mrad		< 1 %
Airborne-Max Organ Dose	1	9.1E-05 mrem	7.5 mrem	< 1 %
	2	5.1E-03 mrem		< 1 %

* Since airborne releases are quantified on a per site basis, and the Technical Specification dose limits are given on a per unit basis, calculated airborne doses are initially compared to the per unit limit. If this limit is exceeded, the release data is reanalyzed to determine which portion of the releases were attributable to each reactor unit. Then these per unit releases can be used to calculate per unit doses which are compared to the per unit dose limits.

As is shown by the table, all calculated quarterly doses were well below the allowable limits established in Browns Ferry's Technical Specifications. For a comparison to previous releases and doses, graphs are presented as Figures 2 and 3 which show corresponding airborne releases and doses for the period 1980 to the present.

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 in the river sediment (recreation).

The concentrations of radioactivity in the Tennessee River are estimated by a computer model which uses measured hydraulic data downstream of Browns Ferry. 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 use factors determined by TVA. The models that are used to estimate doses, as well as the parameters input to the models, are described in the Browns Ferry Nuclear Plant Offsite Dose Calculation Manual.

Liquid Release Points and River Data

Radioactivity concentrations in the Tennessee River are calculated assuming that releases in liquid effluents are continuous. All routine liquid releases from Browns Ferry 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, at Tennessee River mile 283.0. The average river flows past the plant site were 32,020 ft^3/s for the first quarter of 1988 and 10,850 ft^3/s for the second quarter.

Dose Estimates - Liquid Effluents

Doses are calculated for recreation, consumption of fish, and drinking water for locations between the plant site and the mouth of the Tennessee River. The maximum potential recreation dose is calculated for a location immediately downstream from the plant outfall. The maximum 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 (Wheeler Dam). The maximum individual dose from drinking water is assumed to be that calculated at the nearest downstream public water supply (Champion Paper Company). This could be interpreted as indicating that the maximum individual, as assumed for liquid releases from Browns Ferry, is an individual who obtains all of his drinking water at the Champion Paper Company, consumes 21 kg (6.9 kg for a child)

per year of fish caught from the Tennessee River between BFN and Wheeler Dam, and spends 500 hours per year standing on the shoreline just below the outfall from Browns Ferry. Dose estimates for the maximum individual due to liquid effluents for the first half of 1988 are presented below.

Individual Doses from Liquid Effluents
(mrem)

	Organ	Age Group	Dose
First Quarter 1988	Total Body	Adult	1.8E-02 mrem
		Individual Pathway Contributions:	
		Water Ingestion	3.0E-04
		Fish Ingestion	1.7E-02
		Recreation	9.1E-04
	Liver	Adult	2.6E-02 mrem
		Individual Pathway Contributions:	
		Water Ingestion	4.2E-04
		Fish Ingestion	2.5E-02
		Recreation	7.8E-04
Second Quarter 1988	Total Body	Adult	1.3E-01 mrem
		Individual Pathway Contributions:	
		Water Ingestion	1.8E-03
		Fish Ingestion	1.1E-01
		Recreation	2.0E-02
	Liver	Adult	1.7E-01 mrem
		Individual Pathway Contributions:	
		Water Ingestion	2.6E-03
		Fish Ingestion	1.5E-01
		Recreation	1.7E-02

Dose Summary - Liquid Effluents

The table below gives a comparison of the calculated doses for the first half of 1988 to their respective quarterly limits.

Doses from Liquid Effluents - First Half 1988
Browns Ferry Nuclear Plant

Dose Pathway	Quarter	Dose	Quarterly Limit*	Percent of Quarterly Limit
Liquid-Total Body Dose	1	1.8E-02 mrem	4.5 mrem	< 1 %
	2	1.3E-01 mrem		3 %
Liquid-Max Organ Dose	1	2.6E-02 mrem	15 mrem	< 1 %
	2	1.7E-01 mrem		1 %

* The quarterly limit for liquid doses is the total site dose limit (the one-unit dose limit times 3). This is because all liquid radwaste systems are common to all 3 units and the releases cannot be attributed to one particular reactor unit.

As is shown by the table, all calculated quarterly doses were well below the allowable limits established in Browns Ferry's Technical Specifications. For a comparison to previous releases and doses, graphs are presented as Figure 4 which shows corresponding liquid releases and doses for the period 1980 to the present.

POPULATION DOSES

Population doses for highest exposed organ due to airborne effluents are calculated for an estimated 627,000 persons living within a 50-mile radius of the plant site. Ingestion population doses are calculated assuming that each individual consumes milk, vegetables, and meat produced with the sector annulus in which he resides. Doses from external pathways and inhalation are based on the 50-mile human population distribution.

Population doses for total body and the maximum exposed organ 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 actual recreational data on the number of shoreline visits at downstream locations.

Population dose estimates for airborne and liquid effluents are presented below.

Browns Ferry Nuclear Plant
Population Doses - First Half 1988

	Total Body Dose	Maximum Organ Dose (organ)
First Quarter 1988		
Liquid	1.6 man-rem	2.8 man-rem (liver)
Airborne	1.5E-04 man-rem	1.7E-04 man-rem (GI Tract)
Second Quarter 1988		
Liquid	10 man-rem	18 man-rem (liver)
Airborne	4.8E-03 man-rem	5.2E-03 man-rem (GI Tract)

Population doses can be compared to the natural background dose to the same population of about 56,430 man-rem/yr (based on 90 mrem/year for natural background).

DIRECT RADIATION

External gamma radiation levels were measured by thermoluminescent dosimeters (TLDs) deployed around BFN. The quarterly gamma radiation levels determined from these TLDs during this reporting period averaged approximately 19.3 mR/quarter at onsite stations and approximately 16.6 mR/quarter at offsite stations, or approximately 2.7 mR/quarter higher onsite than at offsite stations. This is consistent with levels reported at TVA's nonoperating nuclear power plant construction sites where the average radiation levels onsite are generally 2-6 mR/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.

DOSE TO MEMBERS OF THE PUBLIC INSIDE THE SITE BOUNDARY

No routine activities within the site boundary by members of the public have been identified which would lead to their radiation exposure.

TOTAL DOSE

To determine compliance with 40 CFR 190, annual total dose contributions to the maximum 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 individual is conservatively estimated 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 environmental minitoring program.

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 individual is conservatively estimated by summing the following doses:

the total body air submersion dose for each quarter,

the thyroid dose fron 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 environmental monitoring program.

This dose is compared to the 40 CFR 190 limit for thyroid dose to determine compliance.

Cumulative annual total doses are presented in the following section of this report.

Total Dose from Fuel Cycle - Calendar Year 1988
Browns Ferry Nuclear Plant

Dose	First Quarter	Second Quarter
Total Body or any Organ Dose (except thyroid)		
Total body air submersion dose	0.0E-00	0.0E-00
Critical organ dose (airborne)	9.1E-05	5.1E-03
Total body dose from liquid effluents	1.8E-02	1.3E-01
Maximum organ dose (liquid)	2.6E-02	1.7E-01
Direct radiation dose	0.0E-00	0.0E-00
Total	4.4E-02	3.1E-01
Cumulative Total Dose (Total body or other organ)		3.5E-01
Thyroid Dose		
Total body air submersion dose	0.0E-00	0.0E-00
Thyroid dose (airborne)	4.7E-05	2.6E-03
Total body dose from liquid effluents	1.8E-02	1.3E-01
Thyroid dose (liquid)	1.8E-02	1.2E-01
Direct radiation dose	0.0E-00	0.0E-00
Total (Thyroid)	3.6E-02	2.5E-01
Cumulative Total Dose (Thyroid)		2.9E-01

CONCLUSION

As a result of operation of Browns Ferry Nuclear Plant for the first half of 1988, radioactive effluents were released to the atmosphere and the Tennessee River. The released radioactivity resulted in estimated potential doses to the public which are well below the Technical Specification Limits and Regulatory Guidance. Cumulative doses for the calendar year are given below along with a comparison to the respective annual limits for the doses.

Cumulative Doses from Effluents - Calendar Year 1988
Browns Ferry Nuclear Plant

Dose Pathway	Dose	Annual Limit	Percent of Annual Limit
Airborne-Gamma Air Dose	4.8E-07 mrad	10 mrad[1]	< 1 %
Airborne-Beta Air Dose	4.5E-07 mrad	20 mrad[1]	< 1 %
Airborne-Max Organ Dose	5.2E-03 mrem	15 mrem[1]	< 1 %
Liquid-Total Body Dose	1.5E-01 mrem	9 mrem[2]	1 %
Liquid-Max Organ Dose	2.0E-01 mrem	30 mrem[2]	< 1 %
Total Dose - Thyroid	2.9E-01 mrem	75 mrem	< 1 %
Total Dose - Total Body or Organ other than Thyroid	3.5E-01 mrem	25 mrem	1 %

1 Since airborne releases are quantified on a per site basis, and the Technical Specification dose limits are given on a per unit basis, calculated airborne doses are initially compared to the per unit limit. If this limit is exceeded, the release data is reanalyzed to determine which portion of the releases were attributable to each reactor unit. Then these per unit releases can be used to calculate per unit doses which are compared to the per unit dose limits.

2 The quarterly Technical Specification limit for liquid doses is the total site dose limit (the one-unit dose limit times 3). This is because all liquid radwaste systems are common to all 3 units and the releases cannot be attributed to one particular reactor unit.

TABLE 1

BROWNS FERRY NUCLEAR PLANT - GASEOUS EFFLUENT RELEASES
FIRST QUARTER 1988

Reactor Building Releases		Turbine Building Releases
Tritium	8.87E-02 Ci	None

Radwaste Building Releases		Stack Releases	
Tritium	2.73E-03 Ci	Tritium	8.84E-04 Ci
		Co-60	2.62E-05

SECOND QUARTER 1988

Reactor Building Releases		Turbine Building Releases	
Tritium	1.47E-01 Ci	Tritium	5.65E-03 Ci
Cs-134	2.20E-05	Co-60	2.40E-04
Cs-137	8.40E-05		
Co-60	8.49E-04		

Radwaste Building Releases		Stack Releases	
Tritium	5.16E-03 Ci	Tritium	1.95E-04 Ci
Co-60	5.15E-06	Co-60	3.13E-05

TABLE 2

1988 BROWNS FERRY NUCLEAR PLANT LIQUID EFFLUENT RELEASES
(CURIES)

Nuclide	First Quarter	Second Quarter
H-3	2.94E-01	4.40E-01
Sr-89	<3.93E-04	<3.05E-04
Sr-90	<2.10E-04	<1.81E-04
Fe-55	0.00E+00	<3.16E-03
Mn-54	2.55E-05	1.40E-04
Co-58	<5.11E-04	<8.64E-04
Fe-59	<9.44E-04	<1.86E-03
Co-60	4.71E-03	1.66E-02
Zn-65	1.80E-03	2.62E-03
Mo-99	<4.19E-04	<6.39E-04
I-131	<6.03E-04	<9.66E-04
Cs-134	6.45E-03	1.28E-02
Cs-137	2.32E-02	5.02E-02
Ce-141	<7.11E-04	<1.14E-03
Sb-125	1.52E-05	1.81E-04
Tc-99m	<4.19E-04	<6.39E-04
Xe-133	<1.16E-03	<1.93E-03
Xe-135	<3.32E-04	<5.21E-04
Kr-85	1.60E-03	0.00E-00
Cr-51	<4.62E-03	2.56E-05
Nb-95	<4.61E-04	<7.67E-04
Zr-95	<8.25E-04	<1.37E-03
Ba-140	<2.22E-03	<3.67E-03
La-140	<3.04E-04	<3.54E-04

TABLE 3A (page 1 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
FIRST QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR GROUND-LEVEL RELEASES

STABILITY CLASS A

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.000	0.000	0.000	0.000	0.093	0.000	0.000	0.093
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	0.046	0.000	0.000	0.000	0.000	0.046
SE	0.000	0.000	0.000	0.279	0.186	0.000	0.000	0.000	0.000	0.465
SSE	0.000	0.000	0.000	0.418	0.186	0.000	0.000	0.000	0.000	0.604
S	0.000	0.000	0.000	0.558	0.000	0.000	0.000	0.000	0.000	0.558
SSW	0.000	0.000	0.000	0.093	0.000	0.000	0.000	0.000	0.000	0.093
SW	0.000	0.000	0.000	0.000	0.046	0.046	0.000	0.000	0.000	0.092
WSW	0.000	0.000	0.000	0.000	0.093	0.093	0.000	0.000	0.000	0.186
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	0.279	0.000	0.000	0.279
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.046
NNW	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.046
TOTALS	0.000	0.000	0.000	1.349	0.557	0.185	0.418	0.000	0.000	2.510

STABILITY CLASS B

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.000	0.000	0.000	0.279	0.000	0.000	0.000	0.279
NNE	0.000	0.000	0.000	0.000	0.046	0.093	0.000	0.000	0.000	0.139
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	0.325	0.046	0.000	0.000	0.000	0.000	0.371
SSE	0.000	0.000	0.000	0.046	0.093	0.046	0.000	0.000	0.000	0.185
S	0.000	0.000	0.000	0.046	0.093	0.000	0.000	0.000	0.000	0.139
SSW	0.000	0.000	0.000	0.186	0.000	0.000	0.000	0.000	0.000	0.186
SW	0.000	0.000	0.046	0.046	0.046	0.000	0.000	0.000	0.000	0.138
WSW	0.000	0.000	0.000	0.046	0.000	0.093	0.000	0.000	0.000	0.139
W	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.046
WNW	0.000	0.000	0.000	0.000	0.000	0.093	0.325	0.000	0.000	0.418
NW	0.000	0.000	0.000	0.000	0.000	0.093	0.139	0.000	0.000	0.232
NNW	0.000	0.000	0.000	0.046	0.000	0.232	0.000	0.000	0.000	0.278
TOTALS	0.000	0.000	0.046	0.741	0.324	0.976	0.464	0.000	0.000	2.552

TABLE 3A (page 2 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
FIRST QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR GROUND-LEVEL RELEASES

STABILITY CLASS C

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.000	0.000	0.139	0.186	0.093	0.000	0.000	0.418
NNE	0.000	0.000	0.000	0.000	0.046	0.139	0.000	0.000	0.000	0.185
NE	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.046
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	0.046	0.139	0.000	0.000	0.000	0.000	0.000	0.185
SSE	0.000	0.000	0.093	0.093	0.000	0.000	0.000	0.000	0.000	0.186
S	0.000	0.000	0.046	0.046	0.046	0.000	0.000	0.000	0.000	0.138
SSW	0.000	0.000	0.000	0.139	0.000	0.000	0.000	0.000	0.000	0.139
SW	0.000	0.000	0.046	0.093	0.000	0.000	0.000	0.000	0.000	0.139
WSW	0.000	0.000	0.046	0.046	0.093	0.046	0.000	0.000	0.000	0.231
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	0.000	0.000	0.000	0.418	0.186	0.000	0.000	0.604
NW	0.000	0.000	0.000	0.000	0.046	0.418	0.139	0.000	0.000	0.603
NNW	0.000	0.000	0.000	0.000	0.046	0.186	0.093	0.000	0.000	0.325
TOTALS	0.000	0.000	0.277	0.556	0.462	1.579	0.511	0.000	0.000	3.386

STABILITY CLASS D

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.002	0.046	0.186	1.256	0.651	2.279	0.697	0.000	0.000	5.118
NNE	0.002	0.046	0.139	0.884	1.070	1.396	0.000	0.000	0.000	3.536
NE	0.002	0.000	0.232	0.465	0.465	0.977	0.000	0.000	0.000	2.141
ENE	0.001	0.046	0.093	0.139	0.372	0.093	0.000	0.000	0.000	0.744
E	0.002	0.046	0.186	0.186	0.232	0.000	0.000	0.000	0.000	0.652
ESE	0.002	0.000	0.186	0.372	0.093	0.093	0.000	0.000	0.000	0.746
SE	0.005	0.046	0.465	0.604	0.046	0.000	0.000	0.000	0.000	1.167
SSE	0.007	0.046	0.604	0.604	0.372	0.325	0.000	0.000	0.000	1.959
S	0.006	0.000	0.558	0.418	0.186	0.279	0.000	0.000	0.000	1.448
SSW	0.002	0.000	0.186	0.279	0.000	0.046	0.000	0.000	0.000	0.513
SW	0.005	0.046	0.465	0.186	0.139	0.046	0.000	0.000	0.000	0.888
WSW	0.003	0.046	0.232	0.372	0.279	0.325	0.000	0.000	0.000	1.258
W	0.003	0.000	0.279	0.465	0.744	0.977	0.046	0.000	0.000	2.515
WNW	0.001	0.000	0.139	0.372	0.744	2.419	1.303	0.093	0.000	5.071
NW	0.002	0.046	0.139	0.651	0.791	2.559	2.559	0.046	0.000	6.792
NNW	0.001	0.000	0.093	0.511	1.163	2.373	0.465	0.000	0.000	4.606
TOTALS	0.046	0.414	4.185	7.767	7.349	14.186	5.070	0.139	0.000	39.157

TABLE 3A (page 3 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
FIRST QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR GROUND-LEVEL RELEASES

STABILITY CLASS E

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.010	0.046	0.511	0.418	0.325	0.186	0.000	0.000	0.000	1.497
NNE	0.009	0.046	0.465	0.558	0.325	0.325	0.000	0.000	0.000	1.729
NE	0.014	0.232	0.558	0.232	0.046	0.093	0.000	0.000	0.000	1.176
ENE	0.012	0.046	0.651	0.279	0.000	0.000	0.000	0.000	0.000	0.989
E	0.017	0.093	0.838	0.232	0.046	0.000	0.000	0.000	0.000	1.226
ESE	0.013	0.046	0.697	0.465	0.372	0.000	0.000	0.000	0.000	1.594
SE	0.025	0.186	1.210	1.024	0.232	0.093	0.000	0.000	0.000	2.770
SSE	0.020	0.093	1.024	0.838	0.651	0.232	0.000	0.000	0.000	2.858
S	0.007	0.093	0.325	0.697	1.117	0.744	0.093	0.000	0.000	3.077
SSW	0.007	0.000	0.372	0.186	0.139	0.232	0.000	0.000	0.000	0.937
SW	0.007	0.000	0.372	0.465	0.186	0.000	0.000	0.000	0.000	1.031
WSW	0.007	0.093	0.325	0.325	0.372	0.093	0.000	0.000	0.000	1.216
W	0.007	0.000	0.418	0.186	0.046	0.093	0.000	0.000	0.000	0.750
WNW	0.006	0.046	0.279	0.325	0.093	0.325	0.000	0.000	0.000	1.075
NW	0.012	0.139	0.511	0.372	0.372	0.465	0.279	0.000	0.000	2.151
NNW	0.013	0.139	0.604	0.558	0.465	0.697	0.000	0.000	0.000	2.478
TOTALS	0.186	1.299	9.163	7.163	4.789	3.580	0.372	0.000	0.000	26.552

STABILITY CLASS F

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.011	0.093	0.511	0.558	0.139	0.139	0.000	0.000	0.000	1.452
NNE	0.004	0.046	0.186	0.558	0.325	0.186	0.000	0.000	0.000	1.306
NE	0.006	0.000	0.325	0.000	0.046	0.000	0.000	0.000	0.000	0.377
ENE	0.011	0.139	0.465	0.139	0.000	0.000	0.000	0.000	0.000	0.754
E	0.009	0.000	0.511	0.279	0.000	0.000	0.000	0.000	0.000	0.800
ESE	0.021	0.046	1.117	0.325	0.000	0.046	0.000	0.000	0.000	1.555
SE	0.030	0.093	1.535	0.884	0.279	0.000	0.000	0.000	0.000	2.821
SSE	0.018	0.139	0.838	0.838	0.651	0.139	0.000	0.000	0.000	2.623
S	0.006	0.046	0.279	0.838	0.697	0.697	0.000	0.000	0.000	2.564
SSW	0.005	0.093	0.186	0.093	0.000	0.000	0.000	0.000	0.000	0.377
SW	0.004	0.000	0.232	0.046	0.000	0.046	0.000	0.000	0.000	0.328
WSW	0.001	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.093
W	0.002	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.094
WNW	0.001	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.093
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.011	0.000	0.604	0.372	0.139	0.000	0.000	0.000	0.000	1.127
TOTALS	0.140	0.741	6.929	5.022	2.277	1.254	0.000	0.000	0.000	16.364

TABLE 3A (page 4 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
FIRST QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR GROUND-LEVEL RELEASES

STABILITY CLASS G

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.004	0.093	0.139	0.046	0.000	0.000	0.000	0.000	0.000	0.282
NNE	0.005	0.000	0.279	0.093	0.232	0.093	0.000	0.000	0.000	0.702
NE	0.001	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.047
ENE	0.002	0.000	0.093	0.093	0.000	0.000	0.000	0.000	0.000	0.188
E	0.004	0.000	0.232	0.093	0.000	0.000	0.000	0.000	0.000	0.329
ESE	0.005	0.046	0.232	0.000	0.000	0.000	0.000	0.000	0.000	0.283
SE	0.011	0.093	0.511	0.139	0.046	0.000	0.000	0.000	0.000	0.801
SSE	0.037	0.418	1.628	1.768	0.697	0.186	0.000	0.000	0.000	4.735
S	0.007	0.046	0.325	0.418	0.139	0.139	0.000	0.000	0.000	1.075
SSW	0.001	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.047
SW	0.001	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.047
WSW	0.003	0.046	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.142
W	0.001	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.047
WNW	0.003	0.093	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.189
NW	0.002	0.000	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.095
NNW	0.008	0.000	0.418	0.046	0.000	0.000	0.000	0.000	0.000	0.472
TOTALS	0.095	0.882	4.276	2.697	1.115	0.418	0.000	0.000	0.000	9.482

TABLE 3B (Page 1 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
FIRST QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR SPLIT-LEVEL RELEASES
GROUND-LEVEL PORTION

STABILITY CLASS A

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.000	0.000	0.009
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	0.007	0.000	0.000	0.000	0.000	0.007
SE	0.000	0.000	0.000	0.002	0.024	0.000	0.000	0.000	0.000	0.026
SSE	0.000	0.000	0.000	0.042	0.038	0.000	0.000	0.000	0.000	0.080
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	0.000	0.013	0.000	0.000	0.000	0.000	0.000	0.013
SW	0.000	0.000	0.000	0.000	0.008	0.010	0.000	0.000	0.000	0.018
WSW	0.000	0.000	0.000	0.000	0.014	0.018	0.000	0.000	0.000	0.032
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	0.080	0.000	0.000	0.080
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.010	0.000	0.000	0.010
NNW	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.004
TOTALS	0.000	0.000	0.000	0.092	0.091	0.032	0.099	0.000	0.000	0.314

STABILITY CLASS B

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.000	0.000	0.000	0.037	0.000	0.000	0.000	0.037
NNE	0.000	0.000	0.000	0.000	0.005	0.014	0.000	0.000	0.000	0.019
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	0.006	0.003	0.000	0.000	0.000	0.000	0.009
SSE	0.000	0.000	0.000	0.006	0.017	0.027	0.000	0.000	0.000	0.050
S	0.000	0.000	0.000	0.005	0.017	0.000	0.000	0.000	0.000	0.022
SSW	0.000	0.000	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.012
SW	0.000	0.000	0.000	0.009	0.010	0.000	0.000	0.000	0.000	0.019
WSW	0.000	0.000	0.000	0.000	0.000	0.017	0.000	0.000	0.000	0.017
W	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.005
WNW	0.000	0.000	0.000	0.000	0.000	0.015	0.083	0.000	0.000	0.098
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.029	0.000	0.000	0.029
NNW	0.000	0.000	0.000	0.000	0.000	0.037	0.000	0.000	0.000	0.037
TOTALS	0.000	0.000	0.000	0.038	0.052	0.152	0.112	0.000	0.000	0.354

TABLE 3B (Page 2 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
FIRST QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR SPLIT-LEVEL RELEASES
GROUND-LEVEL PORTION

STABILITY CLASS C

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.000	0.000	0.009	0.025	0.019	0.000	0.000	0.053
NNE	0.000	0.000	0.000	0.000	0.002	0.019	0.000	0.000	0.000	0.021
NE	0.000	0.000	0.000	0.000	0.000	0.006	0.000	0.000	0.000	0.006
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	0.002	0.009	0.000	0.000	0.000	0.000	0.000	0.011
S	0.000	0.000	0.000	0.007	0.009	0.000	0.000	0.000	0.000	0.016
SSW	0.000	0.000	0.000	0.014	0.000	0.000	0.000	0.000	0.000	0.014
SW	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.002
WSW	0.000	0.000	0.000	0.000	0.014	0.013	0.000	0.000	0.000	0.027
W	0.000	0.000	0.000	0.000	0.007	0.021	0.000	0.000	0.000	0.028
WNW	0.000	0.000	0.000	0.000	0.000	0.056	0.051	0.000	0.000	0.107
NW	0.000	0.000	0.000	0.000	0.000	0.063	0.028	0.000	0.000	0.091
NNW	0.000	0.000	0.000	0.000	0.001	0.030	0.018	0.000	0.000	0.049
TOTALS	0.000	0.000	0.002	0.032	0.042	0.233	0.116	0.000	0.000	0.425

STABILITY CLASS D

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.000	0.013	0.057	0.381	0.157	0.000	0.000	0.608
NNE	0.000	0.000	0.000	0.008	0.094	0.217	0.000	0.000	0.000	0.319
NE	0.000	0.000	0.000	0.004	0.027	0.140	0.000	0.000	0.000	0.171
ENE	0.000	0.000	0.000	0.007	0.025	0.005	0.000	0.000	0.000	0.037
E	0.000	0.000	0.000	0.014	0.032	0.000	0.000	0.000	0.000	0.046
ESE	0.000	0.000	0.000	0.017	0.013	0.017	0.000	0.000	0.000	0.047
SE	0.000	0.000	0.004	0.051	0.007	0.000	0.000	0.000	0.000	0.062
SSE	0.000	0.000	0.000	0.068	0.077	0.197	0.000	0.000	0.000	0.342
S	0.000	0.000	0.011	0.047	0.045	0.199	0.000	0.000	0.000	0.302
SSW	0.000	0.000	0.007	0.038	0.000	0.010	0.000	0.000	0.000	0.055
SW	0.000	0.000	0.000	0.024	0.023	0.007	0.000	0.000	0.000	0.054
WSW	0.000	0.000	0.002	0.011	0.033	0.067	0.000	0.000	0.000	0.113
W	0.000	0.000	0.000	0.018	0.079	0.145	0.026	0.000	0.000	0.268
WNW	0.000	0.000	0.000	0.004	0.052	0.359	0.367	0.069	0.000	0.851
NW	0.000	0.000	0.000	0.002	0.056	0.406	0.638	0.042	0.000	1.144
NNW	0.000	0.000	0.000	0.009	0.087	0.408	0.089	0.000	0.000	0.593
TOTALS	0.000	0.000	0.024	0.335	0.707	2.558	1.277	0.111	0.000	5.013

TABLE 3B (Page 3 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
FIRST QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR SPLIT-LEVEL RELEASES
GROUND-LEVEL PORTION

STABILITY CLASS E

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.005	0.027	0.040	0.026	0.000	0.000	0.000	0.098
NNE	0.000	0.000	0.005	0.047	0.031	0.031	0.000	0.000	0.000	0.114
NE	0.000	0.000	0.006	0.016	0.007	0.016	0.000	0.000	0.000	0.045
ENE	0.000	0.000	0.016	0.026	0.000	0.000	0.000	0.000	0.000	0.042
E	0.000	0.000	0.023	0.015	0.006	0.000	0.000	0.000	0.000	0.044
ESE	0.000	0.001	0.012	0.044	0.059	0.000	0.000	0.000	0.000	0.116
SE	0.000	0.000	0.052	0.131	0.040	0.017	0.000	0.000	0.000	0.240
SSE	0.000	0.000	0.057	0.146	0.167	0.189	0.000	0.000	0.000	0.559
S	0.000	0.000	0.019	0.109	0.293	0.464	0.078	0.000	0.000	0.963
SSW	0.000	0.000	0.025	0.029	0.029	0.176	0.000	0.000	0.000	0.259
SW	0.000	0.000	0.030	0.068	0.028	0.000	0.000	0.000	0.000	0.126
WSW	0.000	0.000	0.007	0.033	0.057	0.031	0.000	0.000	0.000	0.128
W	0.000	0.000	0.013	0.017	0.005	0.018	0.000	0.000	0.000	0.053
WNW	0.000	0.000	0.002	0.020	0.013	0.056	0.000	0.000	0.000	0.091
NW	0.000	0.000	0.001	0.010	0.047	0.086	0.049	0.000	0.000	0.193
NNW	0.000	0.000	0.011	0.048	0.068	0.118	0.000	0.000	0.000	0.245
TOTALS	0.000	0.001	0.284	0.786	0.890	1.228	0.127	0.000	0.000	3.317

STABILITY CLASS F

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.009	0.052	0.023	0.000	0.000	0.000	0.000	0.084
NNE	0.000	0.000	0.002	0.042	0.020	0.000	0.000	0.000	0.000	0.064
NE	0.000	0.000	0.013	0.000	0.008	0.000	0.000	0.000	0.000	0.021
ENE	0.000	0.001	0.004	0.001	0.000	0.000	0.000	0.000	0.000	0.006
E	0.000	0.000	0.002	0.003	0.000	0.000	0.000	0.000	0.000	0.005
ESE	0.001	0.000	0.040	0.026	0.000	0.009	0.000	0.000	0.000	0.076
SE	0.002	0.006	0.150	0.141	0.050	0.000	0.000	0.000	0.000	0.349
SSE	0.002	0.005	0.109	0.162	0.233	0.107	0.000	0.000	0.000	0.618
S	0.001	0.003	0.039	0.154	0.217	0.507	0.000	0.000	0.000	0.921
SSW	0.001	0.012	0.031	0.017	0.000	0.000	0.000	0.000	0.000	0.061
SW	0.000	0.000	0.029	0.007	0.000	0.010	0.000	0.000	0.000	0.046
WSW	0.000	0.000	0.006	0.007	0.000	0.000	0.000	0.000	0.000	0.013
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	0.004	0.000	0.000	0.000	0.000	0.000	0.004
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	0.027	0.035	0.024	0.000	0.000	0.000	0.000	0.086
TOTALS	0.007	0.027	0.461	0.651	0.575	0.633	0.000	0.000	0.000	2.354

TABLE 3B (Page 4 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
FIRST QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR SPLIT-LEVEL RELEASES
GROUND-LEVEL PORTION

STABILITY CLASS G

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.001
NNE	0.000	0.000	0.000	0.004	0.008	0.000	0.000	0.000	0.000	0.012
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	0.009	0.000	0.000	0.000	0.000	0.000	0.009
E	0.000	0.000	0.012	0.006	0.000	0.000	0.000	0.000	0.000	0.018
ESE	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.004
SE	0.000	0.000	0.036	0.027	0.000	0.000	0.000	0.000	0.000	0.063
SSE	0.000	0.005	0.273	0.415	0.388	0.183	0.000	0.000	0.000	1.264
S	0.000	0.000	0.049	0.078	0.044	0.103	0.000	0.000	0.000	0.274
SSW	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.008
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003
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	0.004	0.002	0.000	0.000	0.000	0.000	0.000	0.006
TOTALS	0.000	0.008	0.390	0.541	0.440	0.286	0.000	0.000	0.000	1.665

TABLE 3C (Page 1 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
FIRST QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR SPLIT-LEVEL RELEASES
ELEVATED PORTION

STABILITY CLASS A

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
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
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

STABILITY CLASS B

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
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	0.048	0.000	0.000	0.000	0.000	0.000	0.000	0.048
SSE	0.000	0.000	0.048	0.000	0.000	0.000	0.000	0.000	0.000	0.048
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
TOTALS	0.000	0.000	0.096	0.000	0.000	0.000	0.000	0.000	0.000	0.096

TABLE 3C (Page 2 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
FIRST QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR SPLIT-LEVEL RELEASES
ELEVATED PORTION

STABILITY CLASS C

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
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	0.048	0.000	0.000	0.000	0.000	0.000	0.000	0.048
SSE	0.000	0.000	0.000	0.048	0.000	0.000	0.000	0.000	0.000	0.048
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	0.097	0.000	0.000	0.000	0.000	0.000	0.097
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	0.045	0.085	0.040	0.000	0.000	0.170
WNW	0.000	0.000	0.000	0.000	0.000	0.041	0.040	0.000	0.000	0.081
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
TOTALS	0.000	0.000	0.048	0.145	0.045	0.126	0.080	0.000	0.000	0.444

STABILITY CLASS D

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.048	0.193	0.773	0.937	1.942	1.887	0.183	0.000	5.964
NNE	0.000	0.000	0.097	0.773	0.939	1.908	0.674	0.000	0.000	4.392
NE	0.000	0.048	0.048	0.483	0.604	0.925	0.000	0.000	0.000	2.108
ENE	0.000	0.000	0.097	0.193	0.464	0.307	0.000	0.000	0.000	1.061
E	0.000	0.048	0.097	0.242	0.047	0.254	0.000	0.000	0.000	0.688
ESE	0.000	0.000	0.145	0.338	0.140	0.215	0.079	0.000	0.000	0.917
SE	0.000	0.048	0.387	0.773	0.328	0.512	0.275	0.000	0.000	2.323
SSE	0.000	0.048	0.290	0.145	0.188	0.391	1.095	0.401	0.029	2.588
S	0.000	0.048	0.193	0.242	0.186	0.798	1.525	0.507	0.085	3.585
SSW	0.000	0.048	0.242	0.242	0.187	0.848	0.507	0.191	0.036	2.301
SW	0.000	0.000	0.145	0.387	0.187	0.663	0.355	0.064	0.004	1.805
WSW	0.000	0.000	0.048	0.290	0.046	0.795	0.392	0.074	0.000	1.645
W	0.000	0.000	0.242	0.580	0.276	1.311	0.199	0.047	0.000	2.656
WNW	0.000	0.000	0.097	0.435	0.555	1.600	2.002	0.462	0.000	5.152
NW	0.000	0.000	0.097	0.677	0.326	2.311	3.289	0.668	0.007	7.375
NNW	0.000	0.000	0.000	0.387	0.890	1.892	1.808	0.038	0.000	5.016
TOTALS	0.000	0.336	2.418	6.961	6.301	16.675	14.089	2.636	0.161	49.578

TABLE 3C (Page 3 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
FIRST QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR SPLIT-LEVEL RELEASES
ELEVATED PORTION

STABILITY CLASS E

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.004	0.145	0.097	0.290	0.696	0.769	0.159	0.000	0.000	2.160
NNE	0.002	0.000	0.145	0.145	0.515	0.343	0.080	0.000	0.000	1.230
NE	0.002	0.000	0.145	0.290	0.231	0.603	0.080	0.000	0.000	1.351
ENE	0.002	0.000	0.145	0.242	0.279	0.173	0.000	0.000	0.000	0.841
E	0.003	0.048	0.145	0.193	0.510	0.261	0.000	0.000	0.000	1.160
ESE	0.005	0.048	0.242	0.677	0.332	0.549	0.040	0.000	0.000	1.893
SE	0.010	0.097	0.532	0.435	1.025	2.023	0.947	0.108	0.000	5.178
SSE	0.002	0.000	0.097	0.290	0.465	1.577	2.318	0.501	0.032	5.283
S	0.001	0.000	0.048	0.242	0.230	0.919	1.299	0.370	0.006	3.116
SSW	0.000	0.000	0.000	0.193	0.092	0.710	0.356	0.000	0.000	1.351
SW	0.001	0.048	0.000	0.097	0.046	0.669	0.159	0.000	0.000	1.020
WSW	0.002	0.048	0.097	0.048	0.094	0.548	0.039	0.000	0.000	0.876
W	0.002	0.000	0.145	0.290	0.230	0.042	0.000	0.000	0.000	0.709
WNW	0.003	0.048	0.145	0.145	0.232	0.383	0.000	0.000	0.000	0.956
NW	0.006	0.097	0.242	0.193	0.095	0.296	0.159	0.000	0.000	1.088
NNW	0.002	0.048	0.048	0.242	0.421	0.681	0.198	0.000	0.000	1.640
TOTALS	0.047	0.627	2.273	4.013	5.494	10.548	5.835	0.979	0.038	29.855

STABILITY CLASS F

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.006	0.000	0.048	0.048	0.048	0.000	0.000	0.000	0.000	0.150
NNE	0.006	0.000	0.048	0.048	0.046	0.043	0.000	0.000	0.000	0.191
NE	0.006	0.048	0.000	0.000	0.236	0.174	0.000	0.000	0.000	0.464
ENE	0.000	0.000	0.000	0.097	0.095	0.043	0.000	0.000	0.000	0.235
E	0.000	0.000	0.000	0.097	0.092	0.086	0.000	0.000	0.000	0.275
ESE	0.013	0.000	0.097	0.097	0.139	0.089	0.000	0.000	0.000	0.435
SE	0.039	0.000	0.290	0.435	0.606	0.300	0.000	0.000	0.000	1.670
SSE	0.006	0.000	0.048	0.048	0.046	0.466	0.040	0.000	0.000	0.654
S	0.000	0.000	0.000	0.000	0.000	0.084	0.040	0.000	0.000	0.124
SSW	0.013	0.048	0.048	0.000	0.000	0.000	0.000	0.000	0.000	0.109
SW	0.006	0.000	0.048	0.000	0.092	0.167	0.000	0.000	0.000	0.313
WSW	0.000	0.000	0.000	0.000	0.000	0.131	0.000	0.000	0.000	0.131
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	0.045	0.000	0.000	0.000	0.000	0.045
NW	0.000	0.000	0.000	0.048	0.048	0.000	0.000	0.000	0.000	0.096
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TOTALS	0.095	0.096	0.627	0.918	1.493	1.583	0.080	0.000	0.000	4.893

TABLE 3C (Page 4 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
FIRST QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR SPLIT-LEVEL RELEASES
ELEVATED PORTION

STABILITY CLASS G

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
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	0.048	0.000	0.000	0.094	0.000	0.000	0.000	0.000	0.142
E	0.000	0.048	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.048
ESE	0.000	0.048	0.000	0.097	0.000	0.042	0.000	0.000	0.000	0.187
SE	0.000	0.000	0.097	0.483	0.511	0.088	0.000	0.000	0.000	1.179
SSE	0.000	0.000	0.048	0.000	0.000	0.043	0.000	0.000	0.000	0.091
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	0.048	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.048
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
TOTALS	0.000	0.192	0.145	0.580	0.605	0.173	0.000	0.000	0.000	1.695

TABLE 3D

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
FIRST QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR STACK RELEASES

STABILITY CLASS D

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.001	0.000	0.094	0.655	0.983	2.293	2.667	0.983	0.000	7.676
NNE	0.001	0.000	0.094	0.655	0.983	3.042	1.825	0.421	0.000	7.021
NE	0.001	0.000	0.094	0.468	0.655	2.059	1.029	0.234	0.000	4.540
ENE	0.002	0.000	0.140	0.234	0.421	0.983	0.328	0.000	0.000	2.108
E	0.001	0.000	0.094	0.374	0.515	1.029	0.047	0.000	0.000	2.060
ESE	0.003	0.000	0.234	0.702	1.123	0.983	0.421	0.234	0.047	3.747
SE	0.006	0.000	0.421	0.515	0.889	1.451	1.591	1.029	0.328	6.230
SSE	0.003	0.000	0.187	0.421	0.562	2.620	5.569	2.620	0.889	12.871
S	0.005	0.000	0.328	0.281	0.234	1.965	3.884	2.901	1.217	10.815
SSW	0.002	0.000	0.140	0.281	0.187	1.497	1.497	0.889	0.562	5.055
SW	0.003	0.000	0.234	0.328	0.328	0.608	1.497	0.468	0.047	3.513
WSW	0.003	0.047	0.187	0.328	0.281	0.515	2.480	0.515	0.047	4.403
W	0.005	0.047	0.281	0.421	0.562	1.357	1.544	0.094	0.140	4.451
WNW	0.002	0.000	0.140	0.468	0.655	2.199	2.854	1.825	0.468	8.611
NW	0.004	0.000	0.281	0.374	0.421	2.293	3.744	2.480	0.094	9.691
NNW	0.001	0.000	0.094	0.562	0.889	1.685	3.322	0.655	0.000	7.208
TOTALS	0.043	0.094	3.043	7.067	9.688	26.579	34.299	15.348	3.839	100.001

TABLE 4A (Page 1 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
SECOND QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR GROUND-LEVEL RELEASES

STABILITY CLASS A

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.000	0.000	0.047	0.900	0.473	0.000	0.000	1.420
NNE	0.000	0.000	0.000	0.000	0.047	1.136	0.616	0.000	0.000	1.799
NE	0.000	0.000	0.000	0.000	0.047	0.521	0.000	0.000	0.000	0.568
ENE	0.000	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.047
E	0.000	0.000	0.000	0.047	0.095	0.000	0.000	0.000	0.000	0.142
ESE	0.000	0.000	0.000	0.095	0.000	0.000	0.000	0.000	0.000	0.095
SE	0.000	0.000	0.095	1.231	0.000	0.000	0.000	0.000	0.000	1.326
SSE	0.000	0.000	0.237	1.089	0.000	0.000	0.000	0.000	0.000	1.326
S	0.000	0.000	0.142	1.420	0.284	0.000	0.000	0.000	0.000	1.846
SSW	0.000	0.000	0.000	0.473	0.142	0.000	0.000	0.000	0.000	0.615
SW	0.000	0.000	0.000	0.284	0.000	0.000	0.000	0.000	0.000	0.284
WSW	0.000	0.000	0.000	0.095	0.047	0.095	0.000	0.000	0.000	0.237
W	0.000	0.000	0.000	0.047	0.095	0.095	0.000	0.000	0.000	0.237
WNW	0.000	0.000	0.000	0.000	0.095	0.426	0.095	0.000	0.000	0.616
NW	0.000	0.000	0.000	0.000	0.047	0.473	0.616	0.000	0.000	1.136
NNW	0.000	0.000	0.000	0.000	0.000	0.237	0.521	0.142	0.000	0.900
TOTALS	0.000	0.000	0.474	4.782	0.946	3.931	2.321	0.142	0.000	12.596

STABILITY CLASS B

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.000	0.000	0.095	0.142	0.095	0.000	0.000	0.332
NNE	0.000	0.000	0.000	0.000	0.095	0.426	0.095	0.000	0.000	0.616
NE	0.000	0.000	0.000	0.000	0.142	0.142	0.000	0.000	0.000	0.284
ENE	0.000	0.000	0.000	0.000	0.000	0.047	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	0.047	0.000	0.000	0.000	0.000	0.000	0.047
SE	0.000	0.000	0.142	0.331	0.000	0.000	0.000	0.000	0.000	0.473
SSE	0.000	0.000	0.284	0.142	0.000	0.000	0.000	0.000	0.000	0.426
S	0.000	0.000	0.237	0.379	0.095	0.000	0.000	0.000	0.000	0.711
SSW	0.000	0.000	0.047	0.189	0.000	0.000	0.000	0.000	0.000	0.236
SW	0.000	0.000	0.047	0.473	0.047	0.000	0.000	0.000	0.000	0.567
WSW	0.000	0.000	0.000	0.142	0.000	0.142	0.000	0.000	0.000	0.284
W	0.000	0.000	0.000	0.000	0.142	0.047	0.000	0.000	0.000	0.189
WNW	0.000	0.000	0.000	0.095	0.142	0.237	0.047	0.000	0.000	0.521
NW	0.000	0.000	0.000	0.095	0.237	0.568	0.142	0.047	0.000	1.089
NNW	0.000	0.000	0.000	0.000	0.000	0.047	0.047	0.000	0.000	0.094
TOTALS	0.000	0.000	0.757	1.893	0.995	1.798	0.426	0.047	0.000	5.917

TABLE 4A (Page 2 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
SECOND QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR GROUND-LEVEL RELEASES

STABILITY CLASS C

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.047	0.000	0.047	0.142	0.189	0.000	0.000	0.425
NNE	0.000	0.000	0.000	0.000	0.000	0.237	0.047	0.000	0.000	0.284
NE	0.000	0.000	0.000	0.000	0.047	0.095	0.000	0.000	0.000	0.142
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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.284	0.284	0.000	0.000	0.000	0.000	0.000	0.568
SSE	0.000	0.000	0.284	0.142	0.000	0.000	0.000	0.000	0.000	0.426
S	0.000	0.000	0.237	0.379	0.047	0.000	0.000	0.000	0.000	0.663
SSW	0.000	0.000	0.095	0.189	0.095	0.000	0.000	0.000	0.000	0.379
SW	0.000	0.000	0.000	0.095	0.000	0.000	0.000	0.000	0.000	0.095
WSW	0.000	0.000	0.047	0.189	0.095	0.237	0.000	0.000	0.000	0.568
W	0.000	0.000	0.000	0.189	0.379	0.000	0.000	0.000	0.000	0.568
WNW	0.000	0.000	0.000	0.142	0.095	0.237	0.095	0.000	0.000	0.569
NW	0.000	0.000	0.000	0.047	0.095	0.331	0.047	0.000	0.000	0.520
NNW	0.000	0.000	0.000	0.000	0.095	0.095	0.000	0.000	0.000	0.190
TOTALS	0.000	0.000	0.994	1.703	0.995	1.374	0.378	0.000	0.000	5.445

STABILITY CLASS D

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.189	0.379	0.521	0.852	0.095	0.000	0.000	2.036
NNE	0.000	0.000	0.331	0.237	0.284	0.616	0.142	0.000	0.000	1.610
NE	0.000	0.000	0.000	0.473	0.237	0.663	0.047	0.000	0.000	1.420
ENE	0.000	0.000	0.237	0.047	0.142	0.237	0.000	0.000	0.000	0.663
E	0.000	0.000	0.189	0.284	0.095	0.000	0.000	0.000	0.000	0.568
ESE	0.000	0.000	0.284	0.237	0.047	0.000	0.000	0.000	0.000	0.568
SE	0.000	0.000	1.089	0.189	0.237	0.047	0.000	0.000	0.000	1.562
SSE	0.000	0.000	1.468	0.521	0.047	0.095	0.000	0.000	0.000	2.131
S	0.000	0.000	0.900	1.373	0.473	0.095	0.000	0.000	0.000	2.841
SSW	0.000	0.047	0.521	0.616	0.047	0.095	0.000	0.000	0.000	1.326
SW	0.000	0.000	0.284	0.616	0.047	0.000	0.000	0.000	0.000	0.947
WSW	0.000	0.000	0.237	0.758	0.521	0.331	0.000	0.000	0.000	1.847
W	0.000	0.000	0.237	0.616	0.379	0.331	0.095	0.047	0.000	1.705
WNW	0.000	0.000	0.189	0.568	0.521	0.189	0.095	0.426	0.000	1.988
NW	0.000	0.047	0.142	0.284	1.136	0.568	0.237	0.047	0.000	2.461
NNW	0.000	0.000	0.095	0.284	0.331	0.379	0.095	0.000	0.000	1.184
TOTALS	0.000	0.094	6.393	7.483	5.066	4.499	0.806	0.520	0.000	24.861

TABLE 4A (Page 3 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
SECOND QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR GROUND-LEVEL RELEASES

STABILITY CLASS E

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.005	0.047	0.379	0.568	0.379	0.473	0.000	0.000	0.000	1.851
NNE	0.002	0.095	0.095	0.473	0.142	0.331	0.095	0.000	0.000	1.233
NE	0.003	0.095	0.189	0.284	0.521	0.473	0.000	0.000	0.000	1.565
ENE	0.003	0.000	0.237	0.047	0.000	0.000	0.000	0.000	0.000	0.287
E	0.008	0.047	0.616	0.237	0.000	0.000	0.000	0.000	0.000	0.908
ESE	0.014	0.047	1.136	0.379	0.047	0.000	0.000	0.000	0.000	1.623
SE	0.019	0.331	1.326	0.284	0.189	0.000	0.000	0.000	0.000	2.149
SSE	0.018	0.000	1.515	0.331	0.047	0.047	0.000	0.000	0.000	1.958
S	0.018	0.189	1.326	0.947	0.805	0.331	0.000	0.000	0.000	3.617
SSW	0.007	0.095	0.473	0.237	0.095	0.142	0.000	0.000	0.000	1.049
SW	0.010	0.237	0.663	0.047	0.047	0.000	0.000	0.000	0.000	1.004
WSW	0.014	0.095	1.089	0.284	0.189	0.095	0.000	0.000	0.000	1.766
W	0.004	0.047	0.331	0.568	0.284	0.047	0.000	0.000	0.000	1.281
WNW	0.001	0.000	0.095	0.189	0.047	0.047	0.000	0.000	0.000	0.379
NW	0.008	0.189	0.521	0.616	0.142	0.237	0.521	0.000	0.000	2.234
NNW	0.008	0.189	0.521	0.568	0.473	0.379	0.000	0.000	0.000	2.138
TOTALS	0.142	1.703	10.514	6.060	3.408	2.602	0.616	0.000	0.000	25.045

STABILITY CLASS F

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.020	0.426	0.710	0.568	0.331	0.095	0.000	0.000	0.000	2.150
NNE	0.012	0.284	0.379	1.042	0.426	0.047	0.000	0.000	0.000	2.190
NE	0.004	0.095	0.142	0.095	0.095	0.000	0.000	0.000	0.000	0.431
ENE	0.009	0.095	0.426	0.095	0.000	0.000	0.000	0.000	0.000	0.625
E	0.011	0.142	0.473	0.000	0.000	0.000	0.000	0.000	0.000	0.626
ESE	0.007	0.142	0.237	0.095	0.000	0.000	0.000	0.000	0.000	0.481
SE	0.013	0.189	0.521	0.000	0.000	0.000	0.000	0.000	0.000	0.723
SSE	0.014	0.142	0.663	0.095	0.000	0.000	0.000	0.000	0.000	0.914
S	0.011	0.189	0.426	0.189	0.047	0.000	0.000	0.000	0.000	0.862
SSW	0.003	0.095	0.095	0.047	0.000	0.000	0.000	0.000	0.000	0.240
SW	0.006	0.047	0.284	0.000	0.000	0.000	0.000	0.000	0.000	0.337
WSW	0.008	0.095	0.331	0.000	0.000	0.000	0.000	0.000	0.000	0.434
W	0.006	0.189	0.142	0.095	0.047	0.000	0.000	0.000	0.000	0.479
WNW	0.003	0.000	0.189	0.047	0.000	0.000	0.000	0.000	0.000	0.239
NW	0.008	0.237	0.189	0.047	0.000	0.000	0.000	0.000	0.000	0.481
NNW	0.008	0.000	0.473	0.521	0.047	0.095	0.000	0.000	0.000	1.144
TOTALS	0.143	2.367	5.681	2.937	0.993	0.237	0.000	0.000	0.000	12.358

TABLE 4A (Page 4 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
SECOND QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR GROUND-LEVEL RELEASES

STABILITY CLASS G

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.043	0.994	2.083	0.521	0.142	0.000	0.000	0.000	0.000	3.784
NNE	0.017	0.284	0.900	1.705	0.568	0.095	0.000	0.000	0.000	3.570
NE	0.016	0.189	0.947	0.095	0.000	0.000	0.000	0.000	0.000	1.247
ENE	0.015	0.331	0.758	0.095	0.000	0.000	0.000	0.000	0.000	1.199
E	0.006	0.095	0.331	0.000	0.000	0.000	0.000	0.000	0.000	0.432
ESE	0.001	0.047	0.047	0.047	0.000	0.000	0.000	0.000	0.000	0.142
SE	0.002	0.142	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.144
SSE	0.007	0.047	0.426	0.047	0.000	0.000	0.000	0.000	0.000	0.527
S	0.001	0.047	0.047	0.189	0.000	0.000	0.000	0.000	0.000	0.284
SSW	0.001	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.048
SW	0.001	0.095	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.096
WSW	0.001	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.048
W	0.003	0.095	0.095	0.000	0.000	0.000	0.000	0.000	0.000	0.193
WNW	0.003	0.000	0.189	0.000	0.000	0.000	0.000	0.000	0.000	0.192
NW	0.007	0.142	0.379	0.000	0.000	0.000	0.000	0.000	0.000	0.528
NNW	0.019	0.426	0.900	0.000	0.000	0.000	0.000	0.000	0.000	1.345
TOTALS	0.143	3.029	7.103	2.699	0.710	0.095	0.000	0.000	0.000	13.779

TABLE 4B (Page 1 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
SECOND QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR SPLIT-LEVEL RELEASES
GROUND-LEVEL PORTION

STABILITY CLASS A

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.000	0.000	0.003	0.147	0.130	0.000	0.000	0.280
NNE	0.000	0.000	0.000	0.000	0.003	0.188	0.164	0.000	0.000	0.355
NE	0.000	0.000	0.000	0.000	0.005	0.077	0.000	0.000	0.000	0.082
ENE	0.000	0.000	0.000	0.000	0.000	0.006	0.000	0.000	0.000	0.006
E	0.000	0.000	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.008
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	0.023	0.000	0.000	0.000	0.000	0.000	0.023
SSE	0.000	0.000	0.018	0.060	0.000	0.000	0.000	0.000	0.000	0.078
S	0.000	0.000	0.000	0.035	0.075	0.000	0.000	0.000	0.000	0.110
SSW	0.000	0.000	0.000	0.024	0.034	0.000	0.000	0.000	0.000	0.058
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	0.005	0.009	0.017	0.000	0.000	0.000	0.031
W	0.000	0.000	0.000	0.000	0.004	0.018	0.000	0.000	0.000	0.022
WNW	0.000	0.000	0.000	0.000	0.005	0.066	0.009	0.000	0.000	0.080
NW	0.000	0.000	0.000	0.000	0.002	0.068	0.185	0.000	0.000	0.255
NNW	0.000	0.000	0.000	0.000	0.000	0.038	0.150	0.110	0.000	0.298
TOTALS	0.000	0.000	0.018	0.155	0.148	0.625	0.638	0.110	0.000	1.694

STABILITY CLASS B

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.000	0.000	0.009	0.023	0.026	0.000	0.000	0.058
NNE	0.000	0.000	0.000	0.000	0.008	0.065	0.030	0.000	0.000	0.103
NE	0.000	0.000	0.000	0.000	0.009	0.019	0.000	0.000	0.000	0.028
ENE	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.005
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	0.003	0.000	0.000	0.000	0.000	0.000	0.003
SSE	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.001
S	0.000	0.000	0.000	0.000	0.047	0.000	0.000	0.000	0.000	0.047
SSW	0.000	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0.017
SW	0.000	0.000	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.012
WSW	0.000	0.000	0.000	0.000	0.000	0.027	0.000	0.000	0.000	0.027
W	0.000	0.000	0.000	0.000	0.007	0.005	0.000	0.000	0.000	0.012
WNW	0.000	0.000	0.000	0.000	0.006	0.028	0.009	0.000	0.000	0.043
NW	0.000	0.000	0.000	0.000	0.020	0.084	0.030	0.033	0.000	0.167
NNW	0.000	0.000	0.000	0.000	0.000	0.007	0.018	0.000	0.000	0.025
TOTALS	0.000	0.000	0.000	0.033	0.106	0.263	0.113	0.033	0.000	0.548

TABLE 4B (Page 2 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
SECOND QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR SPLIT-LEVEL RELEASES
GROUND-LEVEL PORTION

STABILITY CLASS C

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.000	0.000	0.001	0.019	0.061	0.000	0.000	0.081
NNE	0.000	0.000	0.000	0.000	0.000	0.039	0.010	0.000	0.000	0.049
NE	0.000	0.000	0.000	0.000	0.004	0.010	0.000	0.000	0.000	0.014
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	0.010	0.000	0.000	0.000	0.000	0.000	0.010
SSE	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.008
S	0.000	0.000	0.000	0.039	0.035	0.000	0.000	0.000	0.000	0.074
SSW	0.000	0.000	0.000	0.000	0.019	0.000	0.000	0.000	0.000	0.019
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	0.003	0.000	0.017	0.047	0.000	0.000	0.000	0.067
W	0.000	0.000	0.000	0.000	0.021	0.000	0.000	0.000	0.000	0.021
WNW	0.000	0.000	0.000	0.000	0.005	0.037	0.019	0.000	0.000	0.061
NW	0.000	0.000	0.000	0.000	0.008	0.043	0.011	0.000	0.000	0.062
NNW	0.000	0.000	0.000	0.000	0.007	0.015	0.000	0.000	0.000	0.022
TOTALS	0.000	0.000	0.011	0.049	0.117	0.210	0.101	0.000	0.000	0.488

STABILITY CLASS D

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.000	0.014	0.051	0.142	0.024	0.000	0.000	0.231
NNE	0.000	0.000	0.000	0.003	0.026	0.095	0.040	0.000	0.000	0.164
NE	0.000	0.000	0.000	0.004	0.018	0.097	0.008	0.000	0.000	0.127
ENE	0.000	0.000	0.000	0.000	0.011	0.039	0.000	0.000	0.000	0.050
E	0.000	0.000	0.000	0.017	0.009	0.000	0.000	0.000	0.000	0.026
ESE	0.000	0.000	0.002	0.010	0.009	0.000	0.000	0.000	0.000	0.021
SE	0.000	0.000	0.014	0.013	0.081	0.014	0.000	0.000	0.000	0.122
SSE	0.000	0.000	0.023	0.034	0.010	0.090	0.000	0.000	0.000	0.157
S	0.000	0.000	0.005	0.183	0.113	0.049	0.000	0.000	0.000	0.350
SSW	0.000	0.000	0.016	0.070	0.026	0.043	0.000	0.000	0.000	0.155
SW	0.000	0.000	0.010	0.041	0.005	0.000	0.000	0.000	0.000	0.056
WSW	0.000	0.000	0.003	0.035	0.070	0.063	0.000	0.000	0.000	0.171
W	0.000	0.000	0.000	0.011	0.028	0.058	0.066	0.048	0.000	0.211
WNW	0.000	0.000	0.000	0.001	0.034	0.029	0.033	0.345	0.000	0.442
NW	0.000	0.000	0.000	0.000	0.092	0.086	0.083	0.035	0.000	0.296
NNW	0.000	0.000	0.000	0.005	0.034	0.058	0.023	0.000	0.000	0.120
TOTALS	0.000	0.000	0.073	0.441	0.617	0.863	0.277	0.428	0.000	2.699

TABLE 4B (Page 3 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
SECOND QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR SPLIT-LEVEL RELEASES
GROUND-LEVEL PORTION

STABILITY CLASS E

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.004	0.052	0.055	0.085	0.000	0.000	0.000	0.196
NNE	0.000	0.000	0.000	0.046	0.017	0.059	0.029	0.000	0.000	0.151
NE	0.000	0.000	0.001	0.031	0.078	0.082	0.000	0.000	0.000	0.192
ENE	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.004
E	0.000	0.000	0.010	0.027	0.000	0.000	0.000	0.000	0.000	0.037
ESE	0.000	0.000	0.031	0.038	0.007	0.000	0.000	0.000	0.000	0.076
SE	0.000	0.003	0.055	0.037	0.033	0.000	0.000	0.000	0.000	0.128
SSE	0.001	0.000	0.129	0.052	0.027	0.044	0.000	0.000	0.000	0.253
S	0.000	0.004	0.107	0.146	0.384	0.194	0.000	0.000	0.000	0.835
SSW	0.000	0.003	0.034	0.036	0.019	0.076	0.000	0.000	0.000	0.168
SW	0.000	0.001	0.023	0.007	0.009	0.000	0.000	0.000	0.000	0.040
WSW	0.000	0.000	0.030	0.036	0.035	0.019	0.000	0.000	0.000	0.120
W	0.000	0.000	0.014	0.040	0.035	0.008	0.000	0.000	0.000	0.097
WNW	0.000	0.000	0.001	0.009	0.006	0.007	0.000	0.000	0.000	0.023
NW	0.000	0.000	0.003	0.043	0.019	0.038	0.206	0.000	0.000	0.309
NNW	0.000	0.000	0.008	0.047	0.063	0.068	0.000	0.000	0.000	0.186
TOTALS	0.001	0.011	0.450	0.651	0.787	0.680	0.235	0.000	0.000	2.815

STABILITY CLASS F

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.036	0.074	0.055	0.018	0.000	0.000	0.000	0.183
NNE	0.000	0.000	0.015	0.140	0.070	0.009	0.000	0.000	0.000	0.234
NE	0.000	0.000	0.010	0.013	0.016	0.000	0.000	0.000	0.000	0.039
ENE	0.000	0.000	0.006	0.007	0.000	0.000	0.000	0.000	0.000	0.013
E	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.004
ESE	0.000	0.000	0.012	0.004	0.000	0.000	0.000	0.000	0.000	0.016
SE	0.000	0.000	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.016
SSE	0.000	0.000	0.022	0.021	0.000	0.000	0.000	0.000	0.000	0.043
S	0.000	0.000	0.044	0.036	0.020	0.000	0.000	0.000	0.000	0.100
SSW	0.000	0.006	0.000	0.009	0.000	0.000	0.000	0.000	0.000	0.015
SW	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
WSW	0.000	0.000	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.012
W	0.000	0.000	0.002	0.007	0.006	0.000	0.000	0.000	0.000	0.015
WNW	0.000	0.000	0.002	0.003	0.000	0.000	0.000	0.000	0.000	0.005
NW	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.005
NNW	0.000	0.000	0.020	0.061	0.007	0.015	0.000	0.000	0.000	0.103
TOTALS	0.000	0.007	0.201	0.380	0.174	0.042	0.000	0.000	0.000	0.804

TABLE 4B (Page 4 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
SECOND QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR SPLIT-LEVEL RELEASES
GROUND-LEVEL PORTION

STABILITY CLASS G

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.058	0.051	0.023	0.000	0.000	0.000	0.000	0.132
NNE	0.000	0.000	0.045	0.238	0.098	0.018	0.000	0.000	0.000	0.399
NE	0.000	0.000	0.014	0.015	0.000	0.000	0.000	0.000	0.000	0.029
ENE	0.000	0.000	0.004	0.007	0.000	0.000	0.000	0.000	0.000	0.011
E	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.004
ESE	0.000	0.000	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.006
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	0.023	0.010	0.000	0.000	0.000	0.000	0.000	0.033
S	0.000	0.000	0.008	0.035	0.000	0.000	0.000	0.000	0.000	0.043
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	0.002	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	0.000	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.014
NNW	0.000	0.000	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.023
TOTALS	0.000	0.000	0.199	0.362	0.121	0.018	0.000	0.000	0.000	0.700

TABLE 4C (Page 1 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
SECOND QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR SPLIT-LEVEL RELEASES
ELEVATED PORTION

STABILITY CLASS A

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
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
TOTALS	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

STABILITY CLASS B

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
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	0.048	0.000	0.000	0.000	0.000	0.000	0.048
SSE	0.000	0.000	0.048	0.000	0.000	0.000	0.000	0.000	0.000	0.048
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	0.048	0.000	0.000	0.000	0.000	0.000	0.000	0.048
SW	0.000	0.000	0.000	0.048	0.000	0.000	0.000	0.000	0.000	0.048
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
TOTALS	0.000	0.000	0.096	0.096	0.000	0.000	0.000	0.000	0.000	0.192

TABLE 4C (Page 2 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
SECOND QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR SPLIT-LEVEL RELEASES
ELEVATED PORTION

STABILITY CLASS C

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
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	0.038	0.038	0.000	0.076
NE	0.000	0.000	0.000	0.000	0.000	0.042	0.000	0.000	0.000	0.042
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	0.045	0.000	0.000	0.000	0.000	0.045
ESE	0.000	0.000	0.000	0.000	0.048	0.000	0.000	0.000	0.000	0.048
SE	0.000	0.000	0.096	0.144	0.092	0.000	0.000	0.000	0.000	0.332
SSE	0.000	0.000	0.144	0.144	0.000	0.000	0.000	0.000	0.000	0.288
S	0.000	0.000	0.048	0.000	0.000	0.000	0.000	0.000	0.000	0.048
SSW	0.000	0.000	0.048	0.144	0.000	0.000	0.000	0.000	0.000	0.192
SW	0.000	0.000	0.000	0.192	0.047	0.000	0.039	0.000	0.000	0.278
WSW	0.000	0.000	0.000	0.048	0.000	0.000	0.079	0.000	0.000	0.127
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	0.081	0.039	0.000	0.000	0.120
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
TOTALS	0.000	0.000	0.336	0.672	0.232	0.123	0.195	0.038	0.000	1.596

STABILITY CLASS D

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.096	0.144	0.368	1.634	1.177	0.279	0.000	3.698
NNE	0.000	0.048	0.144	0.144	0.324	1.631	1.802	0.425	0.000	4.518
NE	0.000	0.048	0.144	0.144	0.606	1.288	0.158	0.000	0.000	2.388
ENE	0.000	0.000	0.096	0.144	0.046	0.301	0.159	0.000	0.000	0.746
E	0.000	0.000	0.240	0.096	0.091	0.131	0.000	0.000	0.000	0.558
ESE	0.000	0.000	0.384	0.479	0.234	0.130	0.000	0.000	0.000	1.227
SE	0.000	0.048	0.911	1.438	0.701	0.128	0.156	0.095	0.000	3.477
SSE	0.000	0.048	0.623	1.630	1.065	1.142	0.467	0.040	0.010	5.025
S	0.000	0.000	0.911	0.623	0.228	0.657	1.396	0.595	0.022	4.432
SSW	0.000	0.048	0.144	0.623	0.322	0.910	0.699	0.304	0.000	3.050
SW	0.000	0.000	0.336	1.198	0.182	1.006	0.550	0.023	0.000	3.295
WSW	0.000	0.048	0.048	0.815	0.284	0.171	0.386	0.000	0.000	1.752
W	0.000	0.000	0.192	0.671	0.974	0.467	0.275	0.022	0.014	2.615
WNW	0.000	0.000	0.144	0.671	0.597	1.086	0.313	0.079	0.026	2.916
NW	0.000	0.000	0.096	0.623	0.690	2.208	0.970	0.561	0.000	5.148
NNW	0.000	0.048	0.000	0.192	0.370	0.845	0.543	0.264	0.020	2.282
TOTALS	0.000	0.336	4.509	9.635	7.082	13.735	9.051	2.687	0.092	47.126

TABLE 4C (Page 3 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
SECOND QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR SPLIT-LEVEL RELEASES
ELEVATED PORTION

STABILITY CLASS E

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.002	0.096	0.096	0.144	0.462	0.974	0.196	0.000	0.000	1.970
NNE	0.003	0.048	0.240	0.240	0.324	1.707	0.078	0.000	0.000	2.640
NE	0.004	0.048	0.384	0.192	0.091	0.877	0.356	0.000	0.000	1.952
ENE	0.002	0.000	0.192	0.336	0.092	0.254	0.000	0.000	0.000	0.876
E	0.003	0.000	0.288	0.384	0.188	0.126	0.000	0.000	0.000	0.989
ESE	0.005	0.048	0.479	0.240	0.187	0.254	0.000	0.000	0.000	1.213
SE	0.009	0.000	1.007	0.911	0.504	0.334	0.078	0.000	0.000	2.843
SSE	0.006	0.000	0.623	0.623	0.468	0.338	0.158	0.000	0.000	2.216
S	0.003	0.000	0.336	0.575	0.278	0.541	0.470	0.096	0.000	2.299
SSW	0.002	0.000	0.240	0.623	0.047	0.505	0.314	0.026	0.000	1.757
SW	0.001	0.000	0.096	0.336	0.325	0.385	0.236	0.000	0.000	1.379
WSW	0.002	0.000	0.240	0.575	0.227	0.170	0.039	0.000	0.000	1.253
W	0.002	0.000	0.192	0.623	0.421	0.258	0.039	0.000	0.000	1.535
WNW	0.002	0.096	0.096	0.096	0.277	0.259	0.000	0.000	0.000	0.826
NW	0.003	0.000	0.288	0.575	0.319	0.673	0.039	0.000	0.000	1.897
NNW	0.001	0.048	0.096	0.336	0.417	0.711	0.118	0.000	0.000	1.727
TOTALS	0.050	0.384	4.893	6.809	4.627	8.366	2.121	0.122	0.000	27.371

STABILITY CLASS F

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.002	0.000	0.048	0.288	0.230	0.385	0.080	0.000	0.000	1.033
NNE	0.004	0.000	0.096	0.048	0.047	1.247	0.198	0.000	0.000	1.640
NE	0.004	0.000	0.096	0.096	0.091	0.496	0.158	0.000	0.000	0.941
ENE	0.004	0.048	0.048	0.000	0.185	0.337	0.040	0.000	0.000	0.662
E	0.002	0.000	0.048	0.192	0.186	0.044	0.000	0.000	0.000	0.472
ESE	0.004	0.000	0.096	0.288	0.000	0.044	0.000	0.000	0.000	0.432
SE	0.004	0.000	0.096	0.288	0.000	0.000	0.000	0.000	0.000	0.388
SSE	0.010	0.000	0.240	0.192	0.138	0.086	0.000	0.000	0.000	0.666
S	0.010	0.048	0.192	0.288	0.095	0.044	0.000	0.000	0.000	0.677
SSW	0.010	0.048	0.192	0.048	0.046	0.043	0.000	0.000	0.000	0.387
SW	0.010	0.000	0.240	0.240	0.047	0.044	0.000	0.000	0.000	0.581
WSW	0.008	0.000	0.192	0.096	0.188	0.044	0.000	0.000	0.000	0.528
W	0.002	0.000	0.048	0.096	0.140	0.043	0.000	0.000	0.000	0.329
WNW	0.010	0.048	0.192	0.240	0.138	0.128	0.000	0.000	0.000	0.756
NW	0.004	0.000	0.096	0.240	0.140	0.088	0.000	0.000	0.000	0.568
NNW	0.004	0.000	0.096	0.048	0.047	0.086	0.000	0.000	0.000	0.281
TOTALS	0.092	0.192	2.016	2.688	1.718	3.159	0.476	0.000	0.000	10.341

TABLE 4C (Page 4 of 4)

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
SECOND QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR SPLIT-LEVEL RELEASES
ELEVATED PORTION

STABILITY CLASS G

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.000	0.000	0.000	0.096	0.048	0.043	0.000	0.000	0.000	0.187
NNE	0.000	0.000	0.000	0.048	0.046	0.412	0.276	0.000	0.000	0.782
NE	0.000	0.048	0.000	0.000	0.140	0.459	0.000	0.000	0.000	0.647
ENE	0.000	0.000	0.048	0.048	0.047	0.044	0.000	0.000	0.000	0.187
E	0.000	0.000	0.000	0.096	0.046	0.044	0.000	0.000	0.000	0.186
ESE	0.000	0.000	0.048	0.048	0.000	0.000	0.000	0.000	0.000	0.096
SE	0.000	0.000	0.192	0.000	0.048	0.000	0.000	0.000	0.000	0.240
SSE	0.000	0.048	0.096	0.144	0.045	0.043	0.000	0.000	0.000	0.376
S	0.000	0.048	0.048	0.144	0.093	0.000	0.000	0.000	0.000	0.333
SSW	0.000	0.000	0.000	0.000	0.000	0.084	0.000	0.000	0.000	0.084
SW	0.000	0.000	0.096	0.000	0.000	0.000	0.000	0.000	0.000	0.096
WSW	0.000	0.000	0.000	0.048	0.000	0.000	0.000	0.000	0.000	0.048
W	0.000	0.000	0.000	0.048	0.046	0.042	0.000	0.000	0.000	0.136
WNW	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.046
NW	0.000	0.000	0.000	0.096	0.000	0.000	0.000	0.000	0.000	0.096
NNW	0.000	0.000	0.000	0.048	0.000	0.043	0.000	0.000	0.000	0.091
TOTALS	0.000	0.144	0.528	0.864	0.605	1.214	0.276	0.000	0.000	3.631

GROUND-LEVEL RELEASES = 9.7 PERCENT

ELEVATED RELEASES = 90.3 PERCENT

TABLE 4D

BROWNS FERRY NUCLEAR PLANT METEOROLOGICAL DATA
SECOND QUARTER 1988
JOINT FREQUENCY DISTRIBUTION IN PERCENT
FOR STACK RELEASES

STABILITY CLASS D

	WIND SPEEDS IN METERS PER SECOND FROM THE SECTORS INDICATED									
SECTOR	0.13	0.45	1.10	1.99	2.88	4.45	6.91	9.59	10.95	TOTALS
N	0.012	0.093	0.187	0.327	0.374	2.103	3.692	0.888	0.000	7.676
NNE	0.002	0.000	0.047	0.421	0.421	2.103	4.579	1.776	0.093	9.442
NE	0.010	0.000	0.234	0.140	0.794	2.383	2.804	0.981	0.047	7.393
ENE	0.006	0.000	0.140	0.421	0.327	1.121	0.748	0.421	0.000	3.184
E	0.020	0.047	0.421	0.280	0.374	0.935	0.280	0.000	0.000	2.357
ESE	0.024	0.047	0.514	0.514	0.701	0.794	0.374	0.000	0.000	2.968
SE	0.028	0.000	0.654	1.963	1.495	2.150	0.467	0.607	0.000	7.364
SSE	0.039	0.047	0.841	1.636	1.402	2.196	0.888	0.280	0.140	7.469
S	0.037	0.047	0.794	1.402	0.701	1.215	2.523	1.542	0.467	8.728
SSW	0.033	0.047	0.701	0.607	0.654	1.121	2.009	0.935	0.421	6.528
SW	0.024	0.000	0.561	1.402	0.794	1.028	2.009	0.888	0.047	6.753
WSW	0.012	0.000	0.280	0.981	0.748	1.215	0.514	0.748	0.000	4.498
W	0.004	0.047	0.047	1.028	1.355	1.495	0.607	0.234	0.140	4.957
WNW	0.010	0.093	0.140	0.654	1.729	2.664	0.888	0.187	0.467	6.832
NW	0.008	0.000	0.187	0.888	0.654	2.710	2.243	1.215	0.467	8.372
NNW	0.010	0.047	0.187	0.421	0.935	1.682	1.215	0.701	0.280	5.478
TOTALS	0.279	0.515	5.935	13.085	13.458	26.915	25.840	11.403	2.569	100.001

TABLE 5

BROWNS FERRY NUCLEAR PLANT - RECEPTOR LOCATIONS AND POINTS OF INTEREST

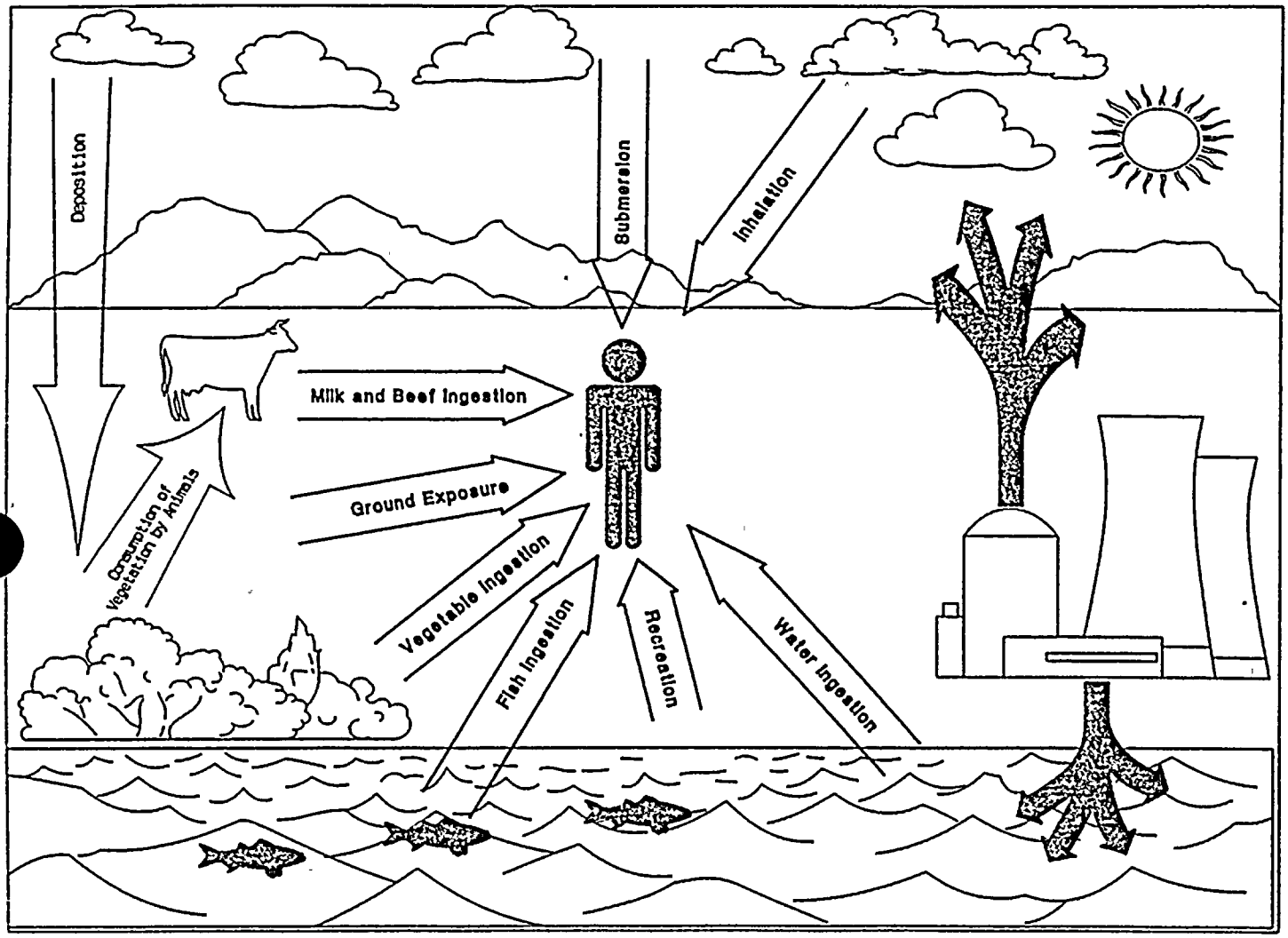
POINT	SECTOR	DISTANCE (m)	POINT	SECTOR	DISTANCE (m)
Site Boundary	N	1525	Site Boundary	NNE	1300
Site Boundary	NE	1250	Site Boundary	ENE	1450
Site Boundary	E	1375	Site Boundary	ESE	1575
Site Boundary	SE	5600	Site Boundary	SSE	2875
Site Boundary	S	2550	Site Boundary	SSW	2425
Site Boundary	SW	2300	Site Boundary	WSW	2500
Site Boundary	W	2550	Site Boundary	WNW	3325
Site Boundary	NW	2275	Site Boundary	NNW	1650
Air Dose Point	NW	5100	Air Dose Point	NW	5500
Air Dose Point	NW	6100	Air Dose Point	NW	6500
Air Dose Point	NW	6800	Air Dose Point	NW	7100
Resident	N	1620	Resident	NNE	2845
Resident	NE	4075	Resident,Garden	ENE	1960
Resident,Garden	E	4437	Resident	ESE	4655
Resident	SE	8100	Resident	SSE	7155
Resident,Garden	S	4460	Resident,Garden	SSW	4155
Resident	SW	4896	Resident,Garden	WSW	4131
Resident	W	2550	Resident,Garden	WNW	4425
Resident,Garden	NW	3500	Resident	NNW	1650
Garden	N	3290	Garden	NE	3980
Garden	NNE	2980	Garden	E	3980
Garden	ESE	4590	Garden	SSE	7190
Garden	SW	5430	Garden	W	3520
Garden	NNW	1830	Milk Cow Child	N	8045
Milk Cow Child	ENE	9450	Milk Cow Child	NNW	10975
Goat Child	NE	10975			

TABLE 6
FIVE-YEAR SUMMARY OF QUARTERLY DOSES*

		Air Submersion				Real Pathway		Liquid Effluents	
		Air-γ	Air-β	Skin	TB	Max. Organ		TB	Max. Organ
Year	QTR	mrad	mrad	mrem	mrem	mrem		mrem	mrem
1983	3	.18	.34	.16	.10	.30	Bone	.25	.33 Liver
	4	.39	.85	.24	.14	.04	Thyroid	.00	.00 Liver
1984	1	.39	.66	.47	.30	.41	Thyroid	.58	.79 Liver
	2	1.19	2.09	1.48	.98	.09	Thyroid	.11	.15 Liver
	3	.51	.98	.48	.31	.08	Thyroid	.10	.12 Liver
	4	.30	.58	.17	.10	.06	Thyroid	.31	.41 Liver
1985	1	.07	.12	.10	.06	.03	Thyroid	.09	.12 Liver
	2	<.001	<.001	<.001	<.001	.017	Bone	.18	.24 Liver
	3	<.001	<.001	0.0	0.0	.01	Bone	.05	.07 Liver
	4	<.001	<.001	0.0	0.0	.01	Bone	.10	.14 Liver
1986	1	<.001	<.001	0.0	0.0	.01	Bone	.08	.11 Liver
	2	<.001	<.001	<.001	<.001	<.001	Liver	.23	.31 Liver
	3	<.001	<.001	0.0	0.0	<.001	Liver	.15	.19 Liver
	4	<.001	<.001	0.0	0.0	<.001	Liver	.03	.04 Liver
1987	1	<.001	<.001	<.001	<.001	.0015	GI Tract	.02	.02 Liver
	2	<.001	<.001	<.001	<.001	.0024	GI Tract	.05	.07 Liver
	3	<.001	<.001	0.0	0.0	.0037	GI Tract	.06	.07 Liver
	4	<.001	<.001	<.001	<.001	.0071	Liver	.09	.12 Liver
1988	1	<.001	<.001	<.001	<.001	.0001	GI Tract	.02	.03 Liver
	2	<.001	<.001	<.001	<.001	.0051	GI Tract	.13	.17 Liver

*Note: All calculated doses are below limits specified in Appendix I to 10 CFR 50.

FIGURE 1
PATHWAYS TO MAN FROM NUCLEAR PLANT EFFLUENTS



0506c

FIGURE 2

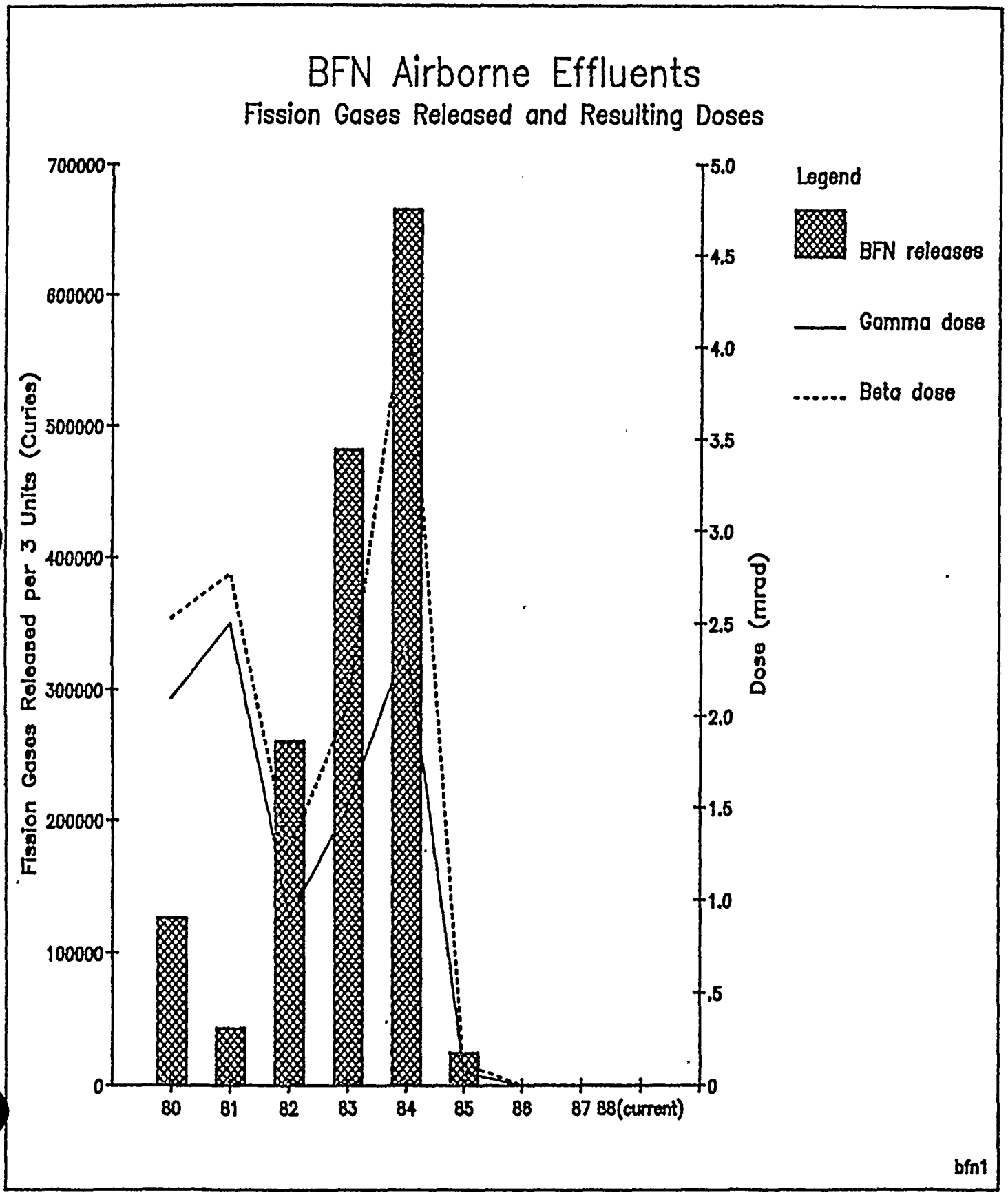

BFN Airborne Effluents
Fission Gases Released and Resulting Doses
Fission Gases Released per 3 Units (Curies)
700000
600000
500000
400000
300000
200000
100000
0
Dose (mrad)
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
.5
0
80
81
82
83
84
85
86
87
88(current)
Legend
BFN releases
Gamma dose
Beta dose
bfn1

FIGURE 3

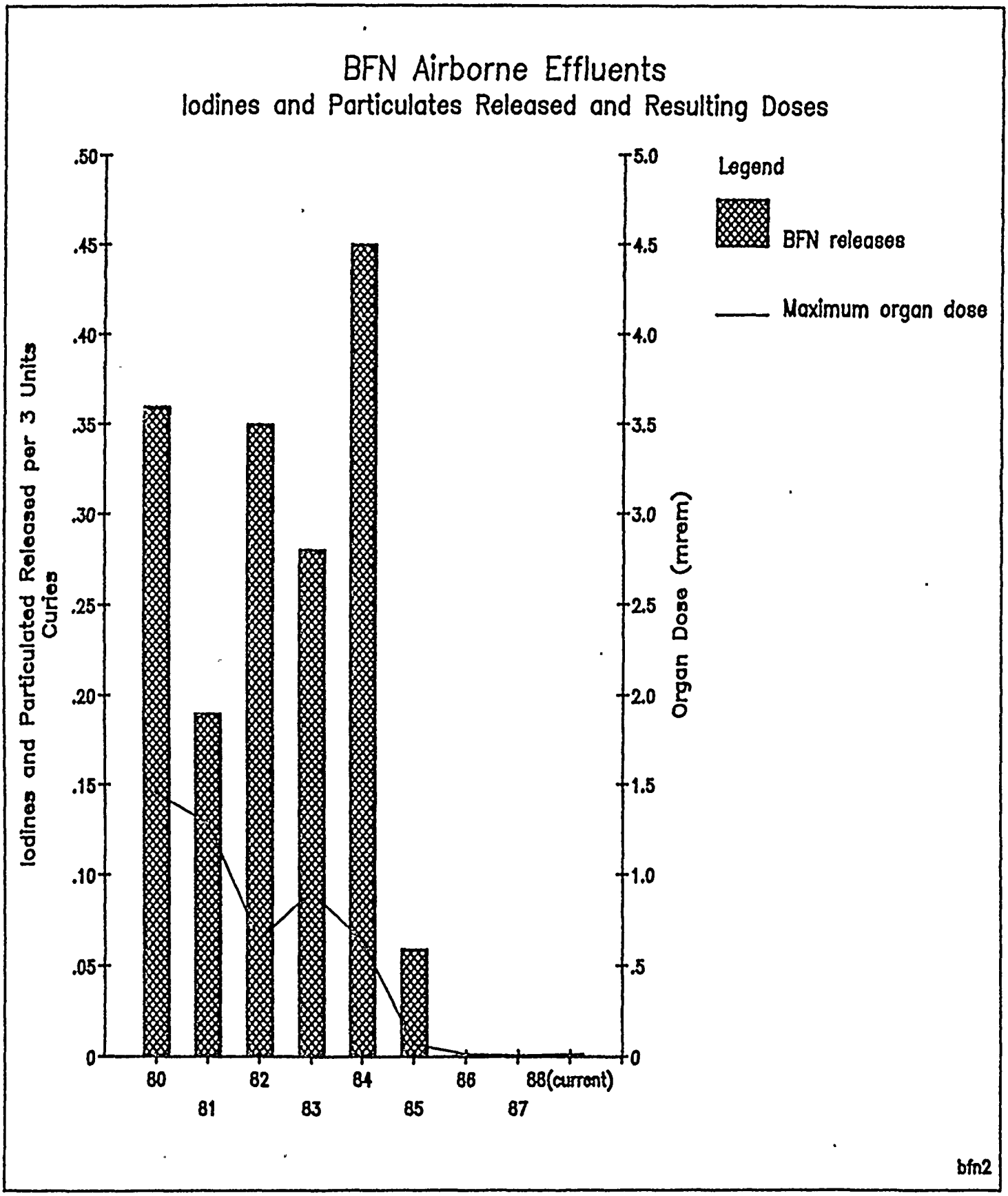
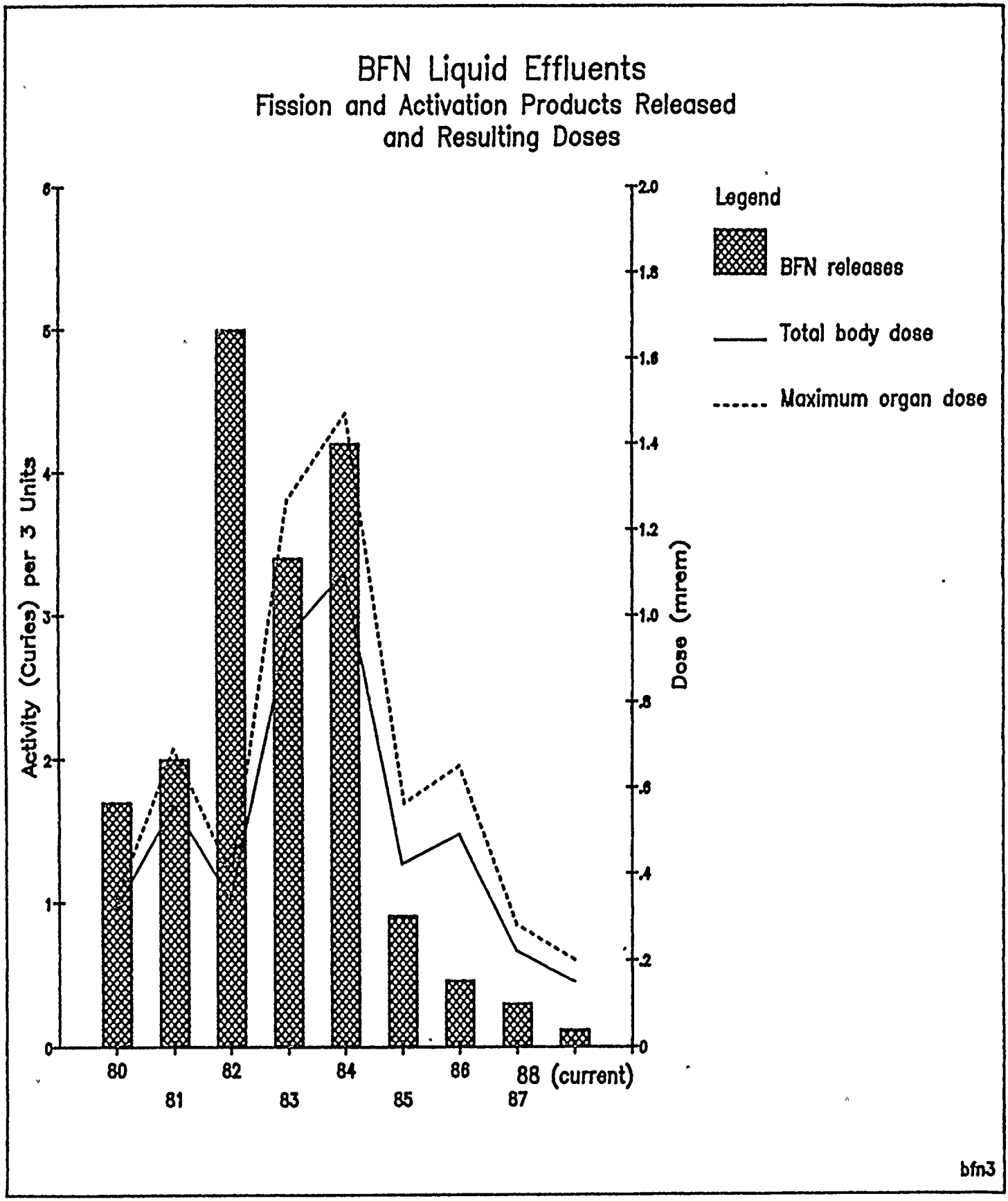

BFN Airborne Effluents
Iodines and Particulates Released and Resulting Doses
Iodines and Particulated Released per 3 Units
Curies
Organ Dose (mrem)
.50
.45
.40
.35
.30
.25
.20
.15
.10
.05
0
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
.5
0
80
81
82
83
84
85
86
87
88(current)
Legend
BFN releases
Maximum organ dose
bfn2

FIGURE 4


BFN Liquid Effluents
Fission and Activation Products Released
and Resulting Doses
Activity (Curies) per 3 Units
Dose (mrem)
Legend
BFN releases
Total body dose
Maximum organ dose
0
1
2
3
4
5
6
0
.2
.4
.6
.8
1.0
1.2
1.4
1.6
1.8
2.0
80
81
82
83
84
85
86
87
88 (current)
bfn3

ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NCULEAR PLANT

INOPERABLE RADIOACTIVE EFFLUENT INSTRUMENTATION REPORT

JANUARY THROUGH JUNE 1988

Inoperable Radioactive Effluent Instrumentation Report

This report is to comply with Radiological Effluent Technical Specifications (RETS) sections 3.2.D.2 and 3.2.K.2 reporting requirements for instruments that are inoperable for more than 30 days. The RETS became effective at BFN on May 6, 1987. This report covers the period from January 1 - June 30, 1988. Because of significant technical specification changes, a large number of radioactive effluent monitoring instruments became technically inoperable on May 6, 1987. RETS were incorporated during a BFN administrative outage. Site resources were, and still are endeavoring to resolve previously identified problem areas. Modifications required to bring BFN effluent monitoring equipment into technical compliance with RETS compete for resources with other regulatory driven modifications. This report explains why the inoperability of each instrument was not corrected in a timely manner.

The instruments that were inoperable for more than 30 days are:

RHR service water monitor (1-RM-90-133)

RHR service water monitor (1-RM-90-134)

RHR service water monitor (2-RM-90-133)

RHR service water monitor (2-RM-90-134)

RHR service water monitor (3-RM-90-133)

RHR service water monitor (3-RM-90-134)

Raw cooling water monitor (1-RM-90-132)

Raw cooling water monitor (2-RM-90-132)

Raw cooling water monitor (3-RM-90-132)

Liquid radwaste effluent monitor (0-RM-90-130)

Liquid radwaste effluent flow rate (77-60 loop)

0151m/4

Stack effluent flow meter (0-FE-90-271)

Stack effluent monitor (0-RM-90-147A)

Stack effluent monitor (0-RM-90-147B)

Off Gas Post Treatment noble gas activity monitor (1-RM-90-265)

Off Gas Post Treatment noble gas activity monitor (1-RM-90-266)

Off Gas Post Treatment noble gas activity monitor (2-RM-90-265)

Off Gas Post Treatment noble gas activity monitor (2-RM-90-266)

Off Gas Post Treatment noble gas activity monitor (3-RM-90-265)

Off Gas Post Treatment noble gas activity monitor (3-RM-90-266)

During the entire reporting period, fuel was off loaded from all three units and all compensatory sampling requirements were met.

0151m

Liquid Process Radiation Monitors

BFN RETS Table 3.2.D requires Residual Heat Removal (RHR) service water monitors (1-RM-90-133, 1-RM-90-134, 2-RM-90-133, 2-RM-90-134, 3-RM-90-133, and 3-RM-90-134) and raw cooling water monitors (1-RM-90-132, 2-RM-90-132, and 3-RM-90-132) to be operable when these systems are in service. Contrary to this requirement, these nine monitors were not available for operation during the entire reporting period.

These monitors were not available for operation because they were not designed to meet the requirements in RETS Table 4.2.D, Footnote 2. This footnote requires that control room annunciation occur if instrument controls are not set in operate mode. Design Change Request (DCR) 1687 R1, was written to correct this problem and was approved on September 29, 1986. Engineering Change Notices (ECNs) P0976 (Unit 1), P0977 (Unit 2), and P0978 (Unit 3) were approved on January 4, 1988, resolving various design problems.

An additional design concern has been identified involving the RHR service water monitors. A DCR is being prepared to replace inadequate flow switches.

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Liquid Radwaste Effluent Instrumentation

BFN RETS Table 3.2.D requires the liquid radwaste effluent monitor (0-RM-90-130) and flow rate (77-60 loop) to be operable during liquid radwaste releases. Contrary to this requirement, these two instruments were inoperable during the majority of this reporting period.

The liquid radwaste effluent monitor was declared inoperable because it does not meet the requirements in RETS Table 4.2.D, Footnote 1. Footnote 1 requires automatic isolation to occur if the instrument encounters an inoperative/downscale failure. The monitor was, however, in service and would have alarmed causing operator action to terminate release. Additionally, the required supplemental sampling requirements were performed. DCR 3417 R1 was written to correct this problem and was approved on February 6, 1987. ECN 5523 was issued June 18, 1987. The modification is complete and the liquid radwaste effluent monitor (90-130) and flow rate loop (77-60) were returned to service on June 30, 1988.

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Stack Radioactive Effluent Instrumentation

The stack effluent noble gas monitors (0-RM-90-147A and B) and the stack effluent flow meter (0-FE-90-271) were inoperable during this reporting period. BFN RETS Table 4.2.K, Footnote 1 requires that the stack noble gas monitors be calibrated using National Bureau of Standards (NBS) traceable radioactive standards. NBS traceable primary calibrations were completed on April 13, 1987. Operability is dependent upon using this primary calibration information in the performance of periodic surveillance instructions (SIs). The upgraded SIs incorporating the new calibration results were delayed in being approved due to new procedural format and walkdown requirements. All applicable surveillance instructions have now been approved.

A modification to include pressure and temperature compensation for the stack flow rate instrument (0-FE-90-271) (ECN 5451) is presently being worked. These components will not be operable by August 31, 1988, as previously reported, due to the recent discovery of a failed internal power supply for the sample flow element. The delivery time for a replacement power supply is 4 weeks. Upon completion of ECN 5451, replacement of failed power supply (DCN H1506A), and required SI testing, the stack effluent monitors (0-RM-90-147A and B) will be declared operable. Fuel was off-loaded for all three units during this period. Results of compensatory lab analyses of stack effluent indicated no anomolies.

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Off Gas Post Treatment

BFN RETS Table 3.2.K requires the off gas post treatment noble gas activity monitors (1-RM-90-265, 1-RM-90-266, 2-RM-90-265, 2-RM-90-266, 3-RM-90-265, and 3-RM-90-266) to be operable at all times. Table 4.2.K requires performance of functional tests and channel calibrations for these radiation monitors. Contrary to the requirements of Table 4.2.K, functional tests and channel calibrations had not been performed and the instruments were taken out of service.

Approval of upgraded surveillance instructions for these monitors was delayed due to enhanced format and walkdown requirements. In addition to procedure problems, sample pump problems were also encountered. All off gas post treatment monitors were operable by May 5, 1988. The off gas systems were not in service during this period.

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