ENTERGY

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March 31, 1994

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Subject: River Bend Station - Unit 1
Docket No. 50-458
Radioactive Effluent Release Report
File No.: G9.5, G4.25

RBG- 40455

Gentlemen:

Enclosed is the annual radioactive effluent release report for the period of January 1, to December 31, 1993. This report is submitted in accordance with Technical Specification 6.9.1.8 of Appendix A to River Bend Station (RBS) License Number NPF-47.

Please advise me at (504) 336-6225 should you have any questions.

Sincerely,

James J. Fisicaro

James J. Fisicaro
Director-Nuclear Safety

JJF/kvm

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RIVER BEND STATION
ANNUAL

RADIOACTIVE EFFLUENT RELEASE REPORT

JANUARY 1 - DECEMBER 31, 1993

TABLE OF CONTENTS

XVI. TABLES

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

FACILITY: River Bend Station, Unit 1

LICENSEE: Entergy Operations, Incorporated

REPORT PERIOD: January 1, 1993 through December 31, 1993

I. INTRODUCTION

Enclosed is the Annual Radioactive Effluent Release Report for the period of January 1, 1993 through December 31, 1993. This report is submitted in accordance with Technical Specification 6.9.1.8 of Appendix A to River Bend Station (RBS) License Number NPF-47.

II. SUPPLEMENTAL INFORMATION

A. Regulatory Limits

1. 10CFR20 Limits

a. Fission and Activation Gases

In accordance with Technical Specification 3.11.2.1, the dose rate due to noble gases released in gaseous effluent from the site to areas at and beyond the **SITE BOUNDARY** shall be limited to less than or equal to 500 millirems/year (mrems/yr) to the total body and less than or equal to 3000 mrems/yr to the skin:

DR_{TB} = Dose rate to the total body in mrems/yr

$$= \sum_{i=1}^{n} K_i \quad \overline{(X/Q)} \quad \dot{Q}_i \leq 500 \text{ mrems/yr}$$

and

DR_{SKIN} = Dose rate to the skin in mrems/yr

$$= \sum_{i=1}^{n} (L_i + 1.1M_i) \quad \overline{(X/Q)} \quad \dot{Q}_i \leq 3000 \text{ mrems/yr}$$

(above terms defined in RBS Offsite Dose Calculation Manual Procedure, ODCM)

b. Radioiodine and Particulate

In accordance with Technical Specification 3.11.2.1, the dose rate due to Iodine-131, Iodine-133, Tritium, and all radionuclides in particulate form with half-lives greater than 8 days released in gaseous effluent from the site to areas at and beyond the **SITE BOUNDARY** shall be limited to less than or equal to 1500 mrems/yr to any organ:

Inhalation $DR_{I\&8DP\tau}$ = Dose rate to the organ τ for the age Pathway group of interest from iodines, tritium, and 8 day particulate via the inhalation pathway in mrems/yr

$$= \sum_{i=1}^{n} P_i \quad \overline{(X/Q)} \quad \dot{Q}_i \leq 1500 \text{ mrems/yr}$$

(above terms defined in RBS ODCM)

c. Liquid Effluent

In accordance with Technical Specification 3.11.1.1, the concentration of radioactive material released in liquid effluent to **UNRESTRICTED AREAS** shall be limited to the concentrations specified in 10CFR20, Appendix B, Table II, Column 2 for radionuclides other than dissolved and entrained noble gases. For dissolved or entrained noblegases, the concentration shall be limited to 2.0E-0 microcurie/ml total activity.

2. 10CFR50, Appendix I Limits

a. Fission and Activation Gases

In accordance with Technical Specification 3.11.2.2, the air dose due to noble gases released in gaseous effluent to areas at or beyond the **SITE BOUNDARY** shall be limited to:

$D_{Gamma\text{-}Air}$ = The gamma air dose from radioactive noble gases in millirad (mrad)

$$= 3.17E\text{-}8 \sum_{i=1}^{n} M_i \, (X/Q) \, \overline{Q_i} \quad \leq 5 \text{ mrads/qtr} \quad \leq 10 \text{ mrads/yr}$$

$D_{Beta\text{-}Air}$ = Beta air dose from radioactive noble gases in mrad

$$= 3.17E\text{-}8 \sum_{i=1}^{n} N_i \, (X/Q) \, \overline{Q_i} \quad \leq 10 \text{ mrads/qtr} \quad \leq 20 \text{ mrads/yr}$$

(above terms defined in RBS ODCM)

b. Radioiodine and Particulate

In accordance with Technical Specification 3.11.2.3, the dose to a **MEMBER OF THE PUBLIC** from iodine-131, iodine-133, tritium and all radionuclides in particulate form with half-lives greater than 8 days, in gaseous effluent releases to areas at and beyond the **SITE BOUNDARY** shall be limited to:

$D_{I\&8DP\tau}$ = Dose in mrem to the organ (τ) of a specified age group from radioiodine, tritium, and 8 day particulate via the pathway of interest

$$= \quad 3.17E\text{-}08 \ (F_o) \sum_{i=1}^{n} P_{i\tau} \ \overline{(X/Q)} \ Q_i$$

and

$$= \quad 3.17E\text{-}08 \ (F_o) \sum_{i=1}^{n} R_{i\tau} \ \overline{(D/Q)} \ Q_i$$

and

D_τ = Dose in mrem to the organ (τ) of a specified age group from radioiodine, tritium, and 8 day particulate from all pathways

$$= \sum_{z=1}^{n} D_{I\&8DP\tau} \quad \leq 7.5 \text{ mrem/qtr} \quad \leq 15 \text{ mrem/yr}$$

(above terms defined RBS ODCM)

c. Liquid Effluent

In accordance with Technical Specification 3.11.1.2, the dose or dose commitment to a **MEMBER OF THE PUBLIC** from radioactive materials in liquid effluent released to **UNRESTRICTED AREAS** shall be limited to:

$$D_{i\tau} = \frac{A_{i\tau} \ \Delta t \ Q_i}{(DF) \ D_w}$$

$$D_{TOTAL\tau} = \sum_{i=1}^{n} D_{i\tau}$$

$D_{TOTAL\tau}$ = Total dose commitment to the organ (τ) due to all releases during the desired time interval in mrem

and D_{TOTAL} Total Body ≤ 1.5 mrem/qtr

≤ 3 mrem/yr

D_{TOTAL} Any Organ ≤ 5 mrem/qtr

≤ 10 mrem/yr

(above terms defined in RBS ODCM)

3. 40CFR190 Limits

In accordance with Technical Specification 3.11.4, the annual (calendar year) dose or dose commitment to any **MEMBER OF THE PUBLIC**, due to releases of radioactivity and to radiation from uranium fuel cycle sources, shall be limited to:

≤ 25 mrems to the total body or any organ (except the thyroid)

≤ 75 mrems to the thyroid

4. Miscellaneous Limits

a. Ventilation Exhaust Treatment System

An accordance with Technical Specification 3.11.2.5, the **VENTILATION EXHAUST TREATMENT SYSTEM** shall be used to reduce radioactive materials in gaseous waste prior to their discharge when the projected doses, due to gaseous effluent releases to areas at and beyond the **SITE BOUNDARY** would exceed 0.3 mrem to any organ in a 31 day period.

b. Liquid Radwaste Treatment System

In accordance with Technical Specification 3.11.1.3, the liquid radwaste treatment system shall be used to reduce the radioactive materials in liquid wastes prior to their discharge when the projected doses, due to the liquid effluent, to **UNRESTRICTED AREAS** would exceed 0.06 mrem to the total body or 0.2 mrem to any organ in a 31 day period.

B. Maximum Permissible Concentrations

1. Gaseous Releases

The River Bend Station (RBS) Radiological Effluent Technical Specifications (RETS) for gaseous releases are based on the dose rate restrictions of 10CFR20, rather than the maximum permissible concentrations (MPC) listed in 10CFR20 Appendix B, Table II, Column I.

2. Liquid Releases

The maximum permissible concentration of radioactive materials in liquid effluent is limited by 10CFR20, Appendix B, Table II, Column 2. The MPC chosen is the most conservative value (i.e., the lowest) of either the soluble or insoluble MPC for each radionuclide.

C. Average Energy

Period	E-Bar (MeV/dis)
01/01/93 - 07/01/93	1.49
07/02/93 - 12/31/93	1.93

D. Measurements and Approximations of Total Radioactivity

1. Gaseous Effluent

a. Fission and Activation Gases

Periodic grab samples are obtained from the main plant exhaust duct, fuel building exhaust vent and radwaste building exhaust vent. These samples are analyzed utilizing high purity germanium detectors coupled to computerized pulse height analyzers. The sampling and analysis frequencies are described in Table 1. Sampling and analysis of these effluent streams provide noble gas radionuclide relative abundances which can then be applied to the noble gas gross activity and gross activity release rate to obtain nuclide specific activities and release rates. The noble gas gross activity released within a specific time period is determined by integrating the stack monitor release rate over the considered time period. If no activity was detected between stack grab samples and significant increase in hourly averages were recorded, the nuclide relative abundances of the last sample which indicated the presence of activity was utilized to obtain nuclide specific activities. Correction factors for the monitors are derived and applied for each sampling period whenever noble gas radionuclides are detected in the effluent stream.

b. Particulate and Iodines

Particulate and iodines are continuously sampled from the three release points utilizing a particulate filter and charcoal cartridge in line with a sample pump(stack monitor pump). These filters and charcoal cartridges are removed and analyzed in accordance with the frequencies specified in Table 1. Analysis is performed to identify and quantify radionuclides utilizing high purity germanium detectors coupled to computerized pulse height analyzers. Given the nuclide specific activity concentrations, process flow rate, and time which the sample covered; the nuclide specific activity released to the environment can be obtained. Due to the continuous sampling process, it is assumed that the radioactive material is released to the environment at a constant rate within the sampling period. Sr-89 and Sr-90 are quantitatively analyzed by counting the digested filter precipitate with a gas flow proportional counter. Gross alpha analysis is performed using a zinc sulfide scintillation counter.

c. Tritium

Tritium grab samples are obtained from the three release points at the specified frequencies listed in Table 1 utilizing an ice bath condensation collection method. The collected sample is then analyzed utilizing a liquid scintillation counter. Given the tritium concentration, process flow rate, and time period for which the sample is obtained, the tritium activity released to the environment can be determined. Due to the frequency of sampling, it is assumed that the tritium is released to the environment at a constant rate within the time period for which the sample is obtained.

2. Liquid Effluent

Representative grab samples are obtained from the appropriate sample recovery tank and analyzed prior to release of the tank in accordance with the frequencies listed in Table 2. Analysis for gamma emitting nuclides (including dissolved and entrained noble gases) is performed utilizing a high resolution germanium detector coupled to a computerized pulse height analyzer. Tritium concentration is determined utilizing a Liquid Scintillation Counter. Sr-89 and Sr-90 are quantitatively analyzed by counting the precipitate with a gas flow proportional counter. Fe-55 is counted with a liquid scintillation counter after digestion of the iron. Gross alpha analysis is performed using a zinc sulfide scintillation counter.

Given the nuclide specific activity concentration and total volume of the tank that was released, the activity of each nuclide released to the environment can be determined.

E. Batch Releases

1. Liquid

1st and 2nd Quarter 1993

a.	Number of batch releases	: 393
b.	Total time period for batch releases	: 1,661.17 hr
c.	Maximum time period for batch releases	: 8.10 hr
d.	Average time period for batch releases	: 4.23 hr
e.	Minimum time period for a batch release	: 1.08 hr
f.	Average stream flow during periods of release of effluent into a flowing stream	: 59.32 gpm

3rd and 4th quarter 1993

a.	Number of batch releases	: 293
b.	Total time period for batch releases	: 1,000.97 hr
c.	Maximum time period for batch releases	: 5.72 hr
d.	Average time period for batch releases	: 3.42 hr
e.	Minimum time period for a batch release	: 0.02 hr
f.	Average stream flow during periods of release of effluent into a flowing stream	: 71.03 gpm

2. Gaseous

All gaseous releases from River Bend Station are considered continuous releases.

F. Abnormal Releases

No abnormal liquid or gaseous release occurred during the reporting period of January 1, 1993 through December 31, 1993.

G. Estimate of Total Error

1. Liquid

The maximum error associated with sample collection, laboratory analysis, and discharge volume are collectively estimated to be:

Fission and Activation Products	:	± 14.2%
Tritium	:	± 14.2%
Dissolved and Entrained Noble Gases	:	± 14.2%
Gross Alpha Radioactivity	:	± 14.2%

2. Gaseous

The maximum errors (not including sample line loss)associated with sample flow, process flow, sample collection, monitor accuracy and laboratory analysis are collectively estimated to be:

Fission and Activation Gases	:	± 37.0%
Iodines	:	± 18.6%
Particulate	:	± 18.6%
Tritium	:	± 18.2%

3. Determination of Total Error

The total error (i.e., collective error due to sample collection, laboratory analysis, sample flow, process flow,monitor accuracy, etc.) is calculated using the following equation:

$$E_T = \sqrt{(E_1)^2 + (E_2)^2 + \ldots (E_n)^2}$$

where:

E_T = total error

$E_1, E_2 \ldots E_n$ = individual errors due to sample collection, laboratory analysis, sample flow, process flow, monitor accuracy, etc.

III. GASEOUS EFFLUENT SUMMARY INFORMATION

Refer to Tables 3, 4 and 5 for "Summation of All Releases" and "Nuclides Released", respectively. It should be noted that an entry of "0.00E+00" Curie (Ci) or microcurie/second (uCi/sec) in this section does not indicate the absence of a radionuclide; but, rather,indicates that the concentration of the particular radionuclide was below the lower limit of detection (LLD) as listed in Table 1.

IV. LIQUID EFFLUENT SUMMARY INFORMATION

Refer to Table 6 for "Summation of All Releases and Nuclides Released".It should be noted that an entry of "0.00E+00" Ci or uCi/ml in this section does not indicate the absence of a radionuclide; but, rather, indicates that the concentration of the particular radionuclide was below the lower limit of detection (LLD) as listed in Table 2.

V. SOLID WASTE

Refer to Table 7, for"Solid Waste and Irradiated Fuel Shipments".

VI. RADIOLOGICAL IMPACT ON MAN

The total body,skin thyroid and other organ doses to a member of the public from the uranium fuel cycle and direct radiation (40CFR190 compliance) calculated in accordance with the ODCM, was less than 1 mrem for the total body, skin and other organs; and was 1.23 mrem for the thyroid.

Doses to the maximally exposed individual offsite was calculated using measured effluent and annual average meteorological data. These doses can be found in Tables 8 through 10.

In addition, doses were calculated for a maximally - exposed member of the public inside the site boundary. Parameters and assumptions utilized to make this determination can be found in Table 11. The results of the calculations can be found in Table 12. The maximally exposed member of the public on site was the private driver who delivers an employee to work and returns later that day to pick him/her up. It should be noted that liquid effluent pathway dose was not considered since these individuals would not engage in activities that would allow exposure to this pathway.

VII. METEOROLOGICAL DATA

See Tables 13 for the cumulative joint frequency distributions and Annual average data for continuous releases.

VIII. RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION OPERABILITY

The minimum number of channels required to be **OPERABLE** as described in Table 3.3.7.10-1 of Technical Specification 3.3.7.10 was, if inoperable at any time in the period 1/1/93 through 12/31/93, restored to operable status within the required time. Reporting of these inoperable channels in this report is, therefore, not required.

IX. RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION OPERABILITY

The minimum number of channels required to be **OPERABLE** as described in Table 3.3.7.11-1 of Technical Specification 3.3.7.11 was, if inoperable at any time in the period 1/1/93 through 12/31/93, restored to operable status within the required time. Reporting of these inoperable channels in this report is therefore, not required.

X. LIQUID HOLD UP TANKS

The maximum quantity of radioactive material, excluding tritium and dissolved or entrained noble gases, contained in any unprotected outdoor tank during the period of 1/1/93 through 12/31/93 was less than or equal to the 10 curie limit as required by Technical Specification 3.11.1.4.

XI. RADIOLOGICAL ENVIRONMENTAL MONITORING

There were no changes in sampling locations for the "Radiological Environmental Monitoring Program" (REMP) during the reporting period 1/1/93 through 12/31/93.

XII. LAND USE CENSUS

The land use census, as required by Technical Specification 4.12.2, did not identify any location(s) that would yield a calculated dose or dose commitment greater than the values calculated.

XIII. OFFSITE DOSE CALCULATION MANUAL (ODCM)

The ODCM changes for the period 1/1/93 through 12/31/93 are:

The River Bend Station off-site dose calculation manual has been revised to incorporate new software for the calculation of doses from radiological effluents. The changes also incorporates the use of annual average rather than real time meteorological information for the determination of doses due to gaseous effluents. No other changes in the calculation methodology are included in this revision. This revision will be effective for the 1993 calculations. The summary, including the rational and description as necessary, of the changes to the ODCM are as follows:

(1) Steps 2.2.1, 2.2.2.1, 2.3.2.1, 5.3.2, 5.4.2, 5.5.2, 5.6.2, and Table 4.1 #2

Typographical errors were corrected.

(2) Steps 2.5.2, 3.5.2

These changes will allow the addition of anticipated dose from non-routine liquid and gaseous effluent to the dose projections.

(3) Steps 3.2, 3.4.1.2.B, 3.4.2.5, 5.2.7

These changes incorporate the use of annual average meteorological data for the determination of doses due to gaseous effluents.

(4) Step 3.4.2.5

The change allows for calculation of organ doses due to releases of radioiodines (I-131,I-133), tritium and particulates for specific occupancy times at given receptor locations.

(5) Step 3.1, Appendix F Table F-1

This change incorporates the distinction of the fuel building vent and the radwaste building vent as ground level release points. The main plant vent remains a conditionally elevated or mixed-mode release point.

(6) Steps 3.3.1.2.1, 3.3.2.2, 3.4.1.1.b, 3.4.1.2.B, Appendix C Table C-1

These changes incorporate a modification of noble gas dose transfer factor units from mrem(mrad)/sec/uCi/cubic meter to mrem(mrad)/yr/uCi/cubic meter for dose,dose rate, and monitor setpoint calculations.

(7) Steps 3.3.1.2.2,3.3.2.2, 3.4.1.3, 3.4.2.3, Appendix C Table C-2, Appendix C Table C-3, Appendix C Table C-4, Appendix C Table C-5

These changes incorporate the deletion of the limited analysis approach for dose, dose rate, and monitor setpoint calculation using effective dose factors. The effective factors, which are based on the typical radionuclide distribution based on past operating data, will no longer be applicable. Operating experience demonstrates that isotopic analysis are available for all effluent streams.

(8) Appendix B Table B-1

Existing (A_i) table includes total body and critical organ dose parameters only. Revised table includes dose parameters for all organs as listed in Regulatory Guide 1.109 individually.

(9) Appendix F Table F-1

This change incorporates a description of on-site receptor locations with the corresponding dispersion and deposition coefficients.

(10) Appendix G

The existing Appendix G dose conversion factor (P_i) are now found in Appendix I. A calculation parameter table has been inserted. This change incorporates into the ODCM specific parameters used in the calculation of doses due to gaseous and liquid effluents. The (P_i) tables are now found in Appendix I.

(11) Appendix H Table H-1

The existing table H-1 "MPC in Air in Unrestricted Areas" has been deleted and a calculation parameter table inserted. This change incorporates into the ODCM the specific parameters used in the calculation of doses to member of the public inside site boundary. The MPC data can now be found in Appendix A.

(12) Appendix I Tables I-1 through I-19

Current (R_i, P_i) dose factor tables have been regenerated using up to date site specific calculational parameters. RBS has reviewed the dose factors to ensure assumptions are in agreement with reference and site documents.

XIV. MAJOR CHANGES TO RADIOACTIVE LIQUID, GASEOUS, AND SOLID WASTE TREATMENT SYSTEMS

There were no major changes to the radioactive liquid, gaseous, and solid waste treatment systems for the period of 1/1/93 through 12/31/93.

XV. PROCESS CONTROL PROGRAM (PCP)

No changes were made to the RBS "Process Control Program" (PCP) for the period 1/1/93 through 12/31/93.

TABLE 1
RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

GASEOUS RELEASE TYPE	SAMPLING FREQUENCY	MINIMUM ANALYSIS FREQUENCY	TYPE OF ACTIVITY ANALYSIS	LOWER LIMIT OF DETECTION (LLD) uCi/ml
A. Main Plant Exhaust Duct	M Grab Sample	M	Principal Gamma Emitters	1.00E-04
			H-3	1.00E-06
B Fuel Building Ventilation Exhaust Duct	M Grab Sample	M	Principal Gamma Emitters	1.00E-04
			H-3	1.00E-06
C. Radwaste Building Ventilation Exhaust Duct	M Grab Sample	M	Principal Gamma Emitters	1.00E-04
D. All Release Types as listed in A, B, & C Above	Continuous	W Charcoal Sample	I-131	1.00E-12
			I-133	1.00E-10
	Continuous	W Particulate Sample	Principal Gamma Emitters (I-131,Others)	1.00E-11
	Continuous	M Composite Particulate Sample	Gross Alpha	1.00E-11
	Continuous	Q Composite Particulate Sample	Sr-89, Sr-90	1.00E-11
	Continuous	Noble Gas Monitor	Noble Gases Gross Beta or Gamma	1.00E-06

W = AT LEAST ONCE PER 7 DAYS
M = AT LEAST ONCE PER 31 DAYS
Q = AT LEAST ONCE PER 92 DAYS

TABLE 2
RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

LIQUID RELEASE TYPE	SAMPLING FREQUENCY	MINIMUM ANALYSIS FREQUENCY	TYPE OF ACTIVITY ANALYSIS	LOWER LIMIT OF DETECTION (LLD) uCi/ml
A. Batch Waste Release (Liquid Radwaste Recovery Sample Tanks	P Each Batch	P Each Batch	Principal Gamma Emitters: except for Ce-144	5.00E-07
				5.00E-06
			I-131	1.00E-06
	P One Batch/M	M	Dissolved and Entrained Gases (Gamma Emitters)	1.00E-05
	P Each Batch	M Composite	H-3	1.00E-05
			Gross Alpha	1.00E-07
	P Each Batch	Q Composite	Sr-89, Sr-90	5.00E-08
			Fe-55	1.00E-06

P = Prior to each radioactive release
M = At least once per 31 days
Q = At least once per 92 days

TABLE 3
Effluent and Waste Disposal Annual Report 1993 Year
Gaseous Effluent - Summation of All Releases 1/2 Quarters

	Unit	Quarter 1	Quarter 2	Estimated Total Error %
A. Noble Gases				
1. Total Release	Ci	8.85E+01	8.41E+01	3.70E+01
2. Average release rate for period	uCi/sec	1.13E+01	1.07E+01	
3. Percent of technical specification limit (1)	%	1.77E+00	2.39E-01	
B. Iodines				
1. Total I-131 and I-133	I-131 Ci	9.71E-03	1.89E-03	1.86E+01
	I-133 Ci	3.90E-02	9.95E-04	1.86E+01
2. Average release rate for period uCi/sec	I-131	1.23E-03	2.43E-04	
	I-133	4.95E-03	1.27E-04	
3. I-131 + I-133 contribution percent of technical specification limit	%	5.41E+00	9.65E-01	
C. Particulate				
1. Particulate with half lives of > 8 days	Ci	5.84E-05	2.02E-04	1.86E+01
2. Average release rate for period	uCi/sec	7.41E-06	2.57E-05	
3. Percent of technical specification limit	%	6.39E-02	6.16E-02	
4. Gross alpha radioactivity	Ci	0.00E+00	0.00E+00	

TABLE 3
Effluent and Waste Disposal Annual Report 1993 Year
Gaseous Effluent - Summation of All Releases 1/2 Quarters

	Unit	Quarter 1	Quarter 2	Estimated Total Error %
D. Tritium				
1. Total Release	Ci	1.21E+00	4.44E-01	1.82E+01
2. Average release rate for period	uCi/sec	1.54E-01	5.64E-02	
3. Percent of technical Specification limit	%	4.94E-02	5.39E-02	

(1) Either the gamma air dose limit of 5 mrads/qtr or beta air dose limit of 10 mrads/qtr (T.S. 3.11.2.2.a), which ever is most limiting.

TABLE 3
Effluent and Waste Disposal Annual Report 1993 Year
Gaseous Effluent - Summation of All Releases 3/4 Quarters

	Unit	Quarter 3	Quarter 4	Estimated Total Error %
A. Noble Gases				
1. Total Release	Ci	2.82E+02	2.43E+02	3.70E+01
2. Average release rate for period	uCi/sec	3.58E+01	3.08E+01	
3. Percent of technical specification limit (1)	%	1.25E+00	3.73E+00	
B. Iodines				
1. Total I-131 and I-133	I-131 Ci / I-133 Ci	1.87E-03 / 1.01E-02	8.42E-03 / 4.85E-02	1.86E+01 / 1.86E+01
2. Average release rate for period uCi/sec	I-131 / I-133	2.37E-04 / 1.28E-03	1.06E-03 / 6.15E-03	
3. I-131 + I-133 contribution percent of technical specification limit	%	1.15E+00	4.48E+00	
C. Particulate				
1. Particulate with half lives of > 8 days	Ci	5.56E-04	5.55E-04	1.86E+01
2. Average release rate for period	uCi/sec	7.06E-05	7.04E-05	
3. Percent of technical specification limit	%	1.13E-01	9.73E-02	
4. Gross alpha radioactivity	Ci	0.00E+00	0.00E+00	

TABLE 3
Effluent and Waste Disposal Annual Report 1993 Year
Gaseous Effluent - Summation of All Releases 3/4 Quarters

	Unit	Quarter 3	Quarter 4	Estimated Total Error %
D. Tritium				
1. Total Release	Ci	9.29E-01	2.82E+00	1.82E+01
2. Average release rate for period	uCi/sec	1.18E-01	3.58E-01	
3. Percent of technical Specification limit	%	6.09E-02	6.41E-02	

(1) Either the gamma air dose limit of 5 mrads/qtr or beta air dose limit of 10 mrads/qtr (T.S. 3.11.2.2.a), which ever is most limiting.

TABLE 4*
River Bend Station
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT - 1994
GASEOUS EFFLUENTS - CONDITIONALLY ELEVATED RELEASES
Unit: 1
Starting : 1-Jan-1993 Ending : 30-Jun-1993

		CONTINUOUS MODE		BATCH MODE	
NUCLIDES RELEASED	UNIT	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
XE-137	CURIES	1.89E+00	0.00E+00	0.00E+00	0.00E+00
KR-88	CURIES	8.10E-01	5.42E-01	0.00E+00	0.00E+00
KR-85M	CURIES	6.61E+00	1.48E+00	0.00E+00	0.00E+00
KR-87	CURIES	2.54E+00	2.26E+00	0.00E+00	0.00E+00
XE-138	CURIES	5.42E+00	4.42E+00	0.00E+00	0.00E+00
XE-135M	CURIES	1.06E+01	4.51E+00	0.00E+00	0.00E+00
XE-135	CURIES	1.56E+01	5.38E+00	0.00E+00	0.00E+00
XE-133	CURIES	9.70E+00	6.55E+01	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	5.31E+01	8.41E+01	0.00E+00	0.00E+00
IODINES					
I-133	CURIES	3.88E-02	9.02E-04	0.00E+00	0.00E+00
I-131	CURIES	8.94E-03	1.80E-03	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	4.77E-02	2.71E-03	0.00E+00	0.00E+00
PARTICULATES					
SR-90	CURIES	1.20E-06	3.78E-07	0.00E+00	0.00E+00
SR-89	CURIES	3.57E-08	5.13E-05	0.00E+00	0.00E+00
CO-60	CURIES	2.55E-05	1.25E-04	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	2.67E-05	1.76E-04	0.00E+00	0.00E+00
H-3	CURIES	1.05E+00	2.38E-01	0.00E+00	0.00E+00

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 1 for typical minimum detectable concentrations.

TABLE 4*
River Bend Station
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT - 1994
GASEOUS EFFLUENTS - CONDITIONALLY ELEVATED RELEASES
Unit: 1
Starting : 1-Jul-1993 Ending : 31-Dec-1993

		CONTINUOUS MODE		BATCH MODE	
NUCLIDES RELEASED	UNIT	QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
AR-41	CURIES	0.00E+00	9.22E-03	0.00E+00	0.00E+00
XE-133M	CURIES	1.58E+00	5.45E-02	0.00E+00	0.00E+00
KR-88	CURIES	4.65E-01	1.38E-01	0.00E+00	0.00E+00
XE-137	CURIES	4.45E+01	6.18E-01	0.00E+00	0.00E+00
KR-85M	CURIES	2.37E+00	1.55E+00	0.00E+00	0.00E+00
KR-87	CURIES	3.07E+00	9.47E+00	0.00E+00	0.00E+00
XE-133	CURIES	1.13E+02	3.21E+01	0.00E+00	0.00E+00
XE-135M	CURIES	2.89E+01	4.24E+01	0.00E+00	0.00E+00
XE-135	CURIES	7.30E+01	4.29E+01	0.00E+00	0.00E+00
XE-138	CURIES	7.48E+00	5.82E+01	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	2.74E+02	1.88E+02	0.00E+00	0.00E+00
IODINES					
I-131	CURIES	1.70E-03	8.17E-03	0.00E+00	0.00E+00
I-133	CURIES	9.80E-03	4.81E-02	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	1.15E-02	5.63E-02	0.00E+00	0.00E+00
PARTICULATES					
MN-54	CURIES	2.92E-06	0.00E+00	0.00E+00	0.00E+00
CR-51	CURIES	1.74E-04	0.00E+00	0.00E+00	0.00E+00
SR-90	CURIES	3.02E-06	4.26E-06	0.00E+00	0.00E+00
CO-60	CURIES	9.34E-05	5.67E-06	0.00E+00	0.00E+00
SR-89	CURIES	1.75E-04	6.78E-05	0.00E+00	0.00E+00
RU-106	CURIES	0.00E+00	7.04E-05	0.00E+00	0.00E+00
BA-140	CURIES	7.75E-05	3.84E-04	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	5.26E-04	5.32E-04	0.00E+00	0.00E+00
H-3	CURIES	6.60E-01	2.58E+00	0.00E+00	0.00E+00

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 1 for typical minimum detectable concentrations.

TABLE 5*
River Bend Station
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT - 1994
GASEOUS EFFLUENTS - GROUND LEVEL RELEASES
Unit: 1
Starting : 1-Jan-1993 Ending : 30-Jun-1993

		CONTINUOUS MODE		BATCH MODE	
NUCLIDES RELEASED	UNIT	QUARTER 1	QUARTER 2	QUARTER 1	QUARTER 2
FISSION GASES					
XE-135M	CURIES	6.05E-01	0.00E+00	0.00E+00	0.00E+00
XE-133	CURIES	9.42E+00	0.00E+00	0.00E+00	0.00E+00
XE-135	CURIES	2.53E+01	1.42E-02	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	3.53E+01	1.42E-02	0.00E+00	0.00E+00
IODINES					
I-131	CURIES	7.67E-04	9.08E-05	0.00E+00	0.00E+00
I-133	CURIES	2.14E-04	9.29E-05	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	9.81E-04	1.84E-04	0.00E+00	0.00E+00
PARTICULATES					
SR-90	CURIES	8.49E-08	3.05E-07	0.00E+00	0.00E+00
SR-89	CURIES	2.39E-06	3.84E-07	0.00E+00	0.00E+00
CO-60	CURIES	2.91E-05	2.46E-05	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	3.16E-05	2.53E-05	0.00E+00	0.00E+00
H-3	CURIES	1.53E-01	2.06E-01	0.00E+00	0.00E+00

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 1 for typical minimum detectable concentrations.

TABLE 5*
River Bend Station
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT - 1994
GASEOUS EFFLUENTS - GROUND LEVEL RELEASES
Unit: 1
Starting : 1-Jul-1993 Ending : 31-Dec-1993

		CONTINUOUS MODE		BATCH MODE	
NUCLIDES RELEASED	UNIT	QUARTER 3	QUARTER 4	QUARTER 3	QUARTER 4
FISSION GASES					
KR-85M	CURIES	9.73E-02	0.00E+00	0.00E+00	0.00E+00
XE-133M	CURIES	0.00E+00	2.51E+00	0.00E+00	0.00E+00
XE-135M	CURIES	7.15E-01	3.46E+00	0.00E+00	0.00E+00
XE-133	CURIES	2.45E+00	2.07E+01	0.00E+00	0.00E+00
XE-135	CURIES	4.53E+00	2.82E+01	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	7.80E+00	5.49E+01	0.00E+00	0.00E+00
IODINES					
I-131	CURIES	1.73E-04	2.54E-04	0.00E+00	0.00E+00
I-133	CURIES	2.47E-04	3.79E-04	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	4.21E-04	6.33E-04	0.00E+00	0.00E+00
PARTICULATES					
SR-90	CURIES	2.30E-08	2.28E-07	0.00E+00	0.00E+00
SR-89	CURIES	5.49E-06	4.26E-07	0.00E+00	0.00E+00
CO-60	CURIES	2.44E-05	2.20E-05	0.00E+00	0.00E+00
TOTAL FOR PERIOD	CURIES	2.99E-05	2.26E-05	0.00E+00	0.00E+00
H-3	CURIES	2.69E-01	2.40E-01	0.00E+00	0.00E+00

* Zeroes in this table indicate that no radioactivity was present at detectable levels. See Table 1 for typical minimum detectable concentrations.

TABLE 6

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT 1993 YEAR
LIQUID EFFLUENT - SUMMATION OF ALL RELEASES

	Unit	Quarter 1	Quarter 2	Est. Total Error %
A. Fission and activation products				
1. Total release (not including tritium, gases, alpha)	Ci	7.51E-02	1.37E-01	1.42E+01
2. Average diluted concentration during period	uCi/ml	7.29E-08	1.33E-07	
3. Percent of applicable limit (1)	%	6.01E+00	1.10E+01	
B. Tritium				
1. Total release	Ci	5.68E+00	8.30E+00	1.42E+01
2. Average diluted concentration during period	uCi/ml	5.52E-06	7.04E-06	
3. Percent of applicable limit (2)	%	1.84E-01	2.35E-01	
C. Dissolved and entrained gases				
1. Total release	Ci	1.86E-01	4.88E-01	1.42E+01
2. Average diluted concentration during period	uCi/ml	1.81E-07	4.14E-07	
3. Percent of applicable limit (3)	%	9.04E-02	2.07E-01	
D. Gross alpha radioactivity				
1. Total release	Ci	0.00E+00	0.00E+00	1.42E+01

TABLE 6

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT 1993 YEAR
LIQUID EFFLUENT - SUMMATION OF ALL RELEASES

Unit	Quarter 1	Quarter 2	Est. Total Error %

E. Volume of waste released (prior to dilution)

Liters	6.25E+06	1.62E+07	8.73E-01

F. Volume of dilution water

Liters	1.02E+09	1.16E+09	5.70E-01

(1) 25% of the 5 Ci annual limit (1.25 Ci) for liquid releases is the applicable limit from 10CFR50 Appendix I, except for tritium and dissolved or entrained noble gases.

(2) 10CFR20, Appendix B, Table II, Column 2 MPC limit of 3.00-03 uCi/ml for tritium.

(3) Technical Specification 3.11.1.1 limit of 2.00E-04 uCi/ml for dissolved or entrained noble gases in liquid effluent.

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT 1993 YEAR
LIQUID EFFLUENT 1/2 QUARTERS

G. Particulate

		Continuous Mode		Batch Mode	
Nuclides Released	Unit	Quarter 1	Quarter 2	Quarter 1	Quarter 2
Hydrogen-3	Ci	N/A	N/A	5.68E+00	8.30E+00
Silver-110m	Ci	N/A	N/A	0.00E+00	6.09E-05
Arsenic-76	Ci	N/A	N/A	0.00E+00	1.08E-04
Barium-140	Ci	N/A	N/A	1.36E-03	2.44E-04
Cadmium-109	Ci	N/A	N/A	0.00E+00	0.00E+00
Cerium-141	Ci	N/A	N/A	5.75E-04	6.34E-04
Cerium-144	Ci	N/A	N/A	0.00E+00	2.14E-04
Cobalt-58	Ci	N/A	N/A	5.47E-04	2.83E-03
Cobalt-60	Ci	N/A	N/A	1.21E-02	4.40E-02
Chromium-51	Ci	N/A	N/A	1.79E-02	1.23E-02
Cesium-134	Ci	N/A	N/A	0.00E+00	7.34E-05
Cesium-137	Ci	N/A	N/A	0.00E+00	2.14E-04
Iron-55	Ci	N/A	N/A	2.65E-02	6.18E-03
Iron-59	Ci	N/A	N/A	1.26E-04	2.38E-03
Iodine-131	Ci	N/A	N/A	1.75E-03	8.99E-04
Iodine-133	Ci	N/A	N/A	7.42E-04	4.69E-04
Iodine-135	Ci	N/A	N/A	0.00E+00	1.12E-05
Lanthanum-140	Ci	N/A	N/A	8.82E-03	5.43E-03
Manganese-54	Ci	N/A	N/A	1.96E-03	8.78E-03
Molybdenum-99	Ci	N/A	N/A	5.83E-04	5.71E-05
Niobium-95	Ci	N/A	N/A	1.29E-05	4.43E-04
Niobium-97	Ci	N/A	N/A	1.10E-05	2.66E-05
Neptunium-239	Ci	N/A	N/A	0.00E+00	4.61E-04
Rhodium-105	Ci	N/A	N/A	1.56E-04	3.98E-04
Ruthenium-103	Ci	N/A	N/A	4.70E-05	3.70E-04
Ruthenium-105	Ci	N/A	N/A	1.63E-04	4.60E-02
Ruthenium-106	Ci	N/A	N/A	0.00E+00	0.00E+00

G. Particulate

		Continuous Mode		Batch Mode	
Nuclides Released	Unit	Quarter 1	Quarter 2	Quarter 1	Quarter 2
Antimony-122	Ci	N/A	N/A	0.00E+00	0.00E+00
Antimony-124	Ci	N/A	N/A	2.24E-05	2.40E-04
Tin-113	Ci	N/A	N/A	0.00E+00	2.36E-05
Strontium-89	Ci	N/A	N/A	7.86E-04	7.02E-04
Strontium-90	Ci	N/A	N/A	1.58E-05	8.57E-05
Strontium-92	Ci	N/A	N/A	0.00E+00	2.69E-05
Technetium-101	Ci	N/A	N/A	7.28E-12	8.42E-05
Technetium-99m	Ci	N/A	N/A	2.15E-04	6.46E-05
Tellurium-132	Ci	N/A	N/A	0.00E+00	5.19E-05
Yttrium-91M	Ci	N/A	N/A	0.00E+00	8.27E-06
Yttrium-92	Ci	N/A	N/A	1.81E-04	6.85E-04
Zinc-65	Ci	N/A	N/A	4.77E-04	1.83E-03
Zinc-69m	Ci	N/A	N/A	2.27E-13	0.00E+00
Zirconium-95	Ci	N/A	N/A	0.00E+00	1.29E-04
Total For Period	Ci	N/A	N/A	7.50E-02	1.37E-01

H. DISSOLVED AND ENTRAINED GASES

		Continuous Mode		Batch Mode	
Nuclides Released	Unit	Quarter 1	Quarter 2	Quarter 1	Quarter 2
Krypton-88	Ci	N/A	N/A	0.00E+00	0.00E+00
Xenon-131m	Ci	N/A	N/A	1.13E-03	4.88E-03
Xenon-133	Ci	N/A	N/A	8.98E-02	2.63E-01
Xenon-133m	Ci	N/A	N/A	4.07E-03	8.31E-03
Xenon-135	Ci	N/A	N/A	9.12E-02	2.12E-01
Xenon-135m	Ci	N/A	N/A	0.00E+00	4.90E-06
Unidentified	Ci	N/A	N/A	N/A	N/A
Total For Period	Ci	N/A	N/A	1.86E-01	4.88E-01

TABLE 6

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT 1993 YEAR
LIQUID EFFLUENT - SUMMATION OF ALL RELEASES

	Unit	Quarter 3	Quarter 4	Est.Total Error %
A. Fission and activation products				
1. Total release (not including tritium, gases, alpha)	Ci	2.36E-01	5.25E-01	1.42E+01
2. Average diluted concentration during period	uCi/ml	2.28E-07	4.27E-07	
3. Percent of applicable limit (1)	%	1.89E+01	4.20E+01	
B. Tritium				
1. Total release	Ci	5.81E+00	1.04E+01	1.42E+01
2. Average diluted concentration during period	uCi/ml	5.61E-06	8.47E-06	
3. Percent of applicable limit (2)	%	1.87E-01	2.82E-01	
C. Dissolved and entrained gases				
1. Total release	Ci	2.71E-01	2.42E-01	1.42E+01
2. Average diluted concentration during period	uCi/ml	2.61E-07	1.96E-07	
3. Percent of applicable limit (3)	%	1.31E-01	9.82E-02	
D. Gross alpha radioactivity				
1. Total release	Ci	0.00E+00	0.00E+00	1.42E+01

Unit	Quarter 3	Quarter 4	Est. Total Error %
E. Volume of waste released (prior to dilution)			
Liters	9.52E+06	6.60E+06	8.73E-01
F. Volume of dilution water			
Liters	1.03E+09	1.22E+09	5.70E-01

(1) 25% of the 5 Ci annual limit (1.25 Ci) for liquid releases is the applicable limit from 10CFR50 Appendix I, except for tritium and dissolved or entrained noble gases.

(2) 10CFR20, Appendix B, Table II, Column 2 MPC limit of 3.00-03 uCi/ml for tritium.

(3) Technical Specification 3.11.1.1 limit of 2.00E-04 uCi/ml for dissolved or entrained noble gases in liquid effluent.

EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT 1993 YEAR
LIQUID EFFLUENT 3/4 QUARTERS

G. Particulate

		Continuous Mode		Batch Mode	
Nuclides Released	Unit	Quarter 3	Quarter 4	Quarter 3	Quarter 4
Hydrogen-3	Ci	N/A	N/A	5.81E+00	1.04E+01
Silver-110m	Ci	N/A	N/A	1.58E-05	1.30E-04
Arsenic-76	Ci	N/A	N/A	7.08E-05	3.42E-05
Barium-140	Ci	N/A	N/A	9.28E-04	7.77E-03
Cadmium-109	Ci	N/A	N/A	1.86E-05	0.00E+00
Cerium-141	Ci	N/A	N/A	7.50E-04	8.44E-03
Cerium-144	Ci	N/A	N/A	1.31E-04	9.16E-04
Cobalt-57	Ci	N/A	N/A	0.00E+00	5.80E-06
Cobalt-58	Ci	N/A	N/A	2.69E-03	4.48E-03
Cobalt-60	Ci	N/A	N/A	4.29E-02	5.26E-02
Chromium-51	Ci	N/A	N/A	2.20E-02	1.96E-01
Cesium-134	Ci	N/A	N/A	1.53E-04	3.71E-05
Cesium-137	Ci	N/A	N/A	5.05E-04	1.45E-03
Copper-64	Ci	N/A	N/A	0.00E+00	1.38E-03
Iron-55	Ci	N/A	N/A	1.13E-01	7.38E-03
Iron-59	Ci	N/A	N/A	2.37E-03	8.65E-03
Iodine-131	Ci	N/A	N/A	2.34E-03	7.47E-03
Iodine-133	Ci	N/A	N/A	1.01E-03	1.16E-03
Iodine-135	Ci	N/A	N/A	1.70E-05	3.41E-05
Lanthanum-140	Ci	N/A	N/A	2.09E-02	1.50E-01
Manganese-54	Ci	N/A	N/A	1.01E-02	2.21E-02
Molybdenum-99	Ci	N/A	N/A	6.54E-04	1.32E-03
Sodium-24	Ci	N/A	N/A	0.00E+00	4.99E-04
Niobium-95	Ci	N/A	N/A	4.33E-04	1.80E-03
Niobium-97	Ci	N/A	N/A	2.00E-05	1.45E-04
Neptunium-239	Ci	N/A	N/A	7.58E-03	3.19E-02
Rhodium-105	Ci	N/A	N/A	7.09E-04	9.36E-04
Ruthenium-103	Ci	N/A	N/A	3.60E-04	2.31E-03
Ruthenium-105	Ci	N/A	N/A	2.28E-04	5.29E-04
Ruthenium-106	Ci	N/A	N/A	6.59E-05	1.75E-04

G. Particulate

		Continuous Mode		Batch Mode	
Nuclides Released	Unit	Quarter 3	Quarter 4	Quarter 3	Quarter 4
Antimony-122	Ci	N/A	N/A	6.15E-06	2.91E-05
Antimony-124	Ci	N/A	N/A	2.01E-04	1.31E-03
Tin-113	Ci	N/A	N/A	8.89E-06	1.11E-04
Strontium-89	Ci	N/A	N/A	6.75F-04	3.17E-03
Strontium-90	Ci	N/A	N/A	9.26E-05	1.18E-04
Strontium-92	Ci	N/A	N/A	5.37E-06	5.32E-06
Technetium-101	Ci	N/A	N/A	9.23E-04	3.75E-03
Technetium-99m	Ci	N/A	N/A	7.43E-04	8.38E-04
Tellurium-132	Ci	N/A	N/A	8.73E-05	0.00E+00
Yttrium-91M	Ci	N/A	N/A	0.00E+00	0.00E+00
Yttrium-92	Ci	N/A	N/A	2.48E-04	6.63E-04
Zinc-65	Ci	N/A	N/A	3.08E-03	4.77E-03
Zinc-69m	Ci	N/A	N/A	0.00E+00	0.00E+00
Zirconium-95	Ci	N/A	N/A	5.97E-05	1.05E-03
Total For Period	Ci	N/A	N/A	2.36E-01	5.25E-01

H. DISSOLVED AND ENTRAINED GASES

		Continuous Mode		Batch Mode	
Nuclides Released	Unit	Quarter 3	Quarter 4	Quarter 3	Quarter 4
Krypton-88	Ci	N/A	N/A	4.37E-06	0.00E+00
Xenon-131m	Ci	N/A	N/A	9.09E-04	4.11E-04
Xenon-133	Ci	N/A	N/A	1.50E-01	1.11E-01
Xenon-133m	Ci	N/A	N/A	6.51E-03	4.65E-03
Xenon-135	Ci	N/A	N/A	1.13E-01	1.25E-01
Xenon-135m	Ci	N/A	N/A	0.00E+00	0.00E+00
Xenon-137	Ci	N/A	N/A	0.00E+00	3.74E-04
Unidentified	Ci	N/A	N/A	N/A	N/A
Total For Period	Ci	N/A	N/A	2.71E-01	2.42E-01

TABLE 7
Effluent and Waste Disposal Annual Report 1993 Year
Solid Waste and Irradiated Fuel Shipments
Reporting Period 01/01/93 to 12/31/93 Quarters 1,2,3,4

A. Solid Waste Shipped for Burial or Disposal (Not irradiated fuel)

1. Type of Waste	Unit	12 Month Period	Waste Class	Estimated Total Error %
a. Spent resins, filter sludges evaporator bottoms, etc.	**m^3 Ci	1.08E+02 1.50E+02	A-U A-S B	See Below
b. Dry compressible wastes, contaminated equipment, etc.	**m^3 Ci	5.44E+01 1.62E+00	A-U	See Below
c. Irradiated components, control rods, etc.	**m^3 Ci	0.00E+00 0.00E+00	N/A	N/A
d. Other (None)	**m^3 Ci	0.00E+00 0.00E+00	N/A	N/A

** - Volume considered to be the total disposal volume of the container.

Radwaste Estimated Error (%)

Waste types considered are processed solid waste (i.e., resin, filter media...) and non-compactible/compactible dry active waste.

1. Possible Errors
   a. Volume
   b. Representative sampling
   c. Instrument/counting
   d. Dose to Curie calculations

2. Volume Error
   Radwaste vendor personnel have stated that level indication can be determined to ±0.5 inches. This correlates to approximately 1.0%. Container manufacturer stated design tolerance allows for 1.0% deviation from container dimensions.

3. Representative Sampling Error
   Sampling error for processed resins is based upon obtaining a representative sample from the waste being processed using an iso-lock sampler. Sampling error for dry active waste is based upon obtaining a representative sample from the material being packaged. This error is assumed to be ±10%, which is consistent with industry standards.

4. Instrument/Counting Error
   The error caused by sample geometry, counting time, sample activity and instrument background is estimated to be ±10%. The error for radiological survey instrumentation is estimated to be ±20%.

5. Dose to Curie Calculations
The Dose to Curie method used to calculate activity suffers from analytical accuracy in that certain important parameters are neglected. These parameters are geometry of package, measuring instrument characteristics, build-up, internal attenuation effect, and external media attenuation. An activity correction factor is applied to provide adjustment for these factors.

2. ESTIMATES OF MAJOR NUCLIDES BY WASTE STREAM

Type of Waste	Spent Resins, Filter Sludges, Evaporator Bottoms, Etc.		Dry Compressible Waste, Contaminated Equipment, Etc.		Irradiated Components Control Rods, Etc.	Other (None)
Principle Radionuclides (Identity and % Abundance)	Isotope	Percent Abundance	Isotope	Percent Abundance	N/A	N/A
	Co-60	5.45E+01%	Fe-55	4.77E+01%		
	Mn-54	1.11E+01%	Co-60	2.67E+01%		
	Sr-89	9.19E+00%	Cr-51	8.78E+00%		
	Fe-55	9.08E+00%	Mn-54	5.25E+00%		
	Cs-137	4.74E+00%	Sr-89	3.51E+00%		
	Cs-134	3.51E+00%	Zn-65	3.31E+00%		
	Zn-65	3.04E+00%	Cs-137	2.27E+00%		
	Co-58	2.60E+00%	Co-58	1.65E+00%		
	Sr-90	9.20E-01%	Fe-59	5.15E-01%		
	Ni-63	5.51E-01%	Sr-90	1.74E-01%		
	Cr-51	2.33E-01%	Cs-134	1.49E-01%		
	Ce-144	1.92E-01%				
	C-14	1.28E-01%				
	Fe-59	6.10E-02%				
	I-131	5.60E-02%				
	Ba/La-140	5.10E-02%				
	H-3	2.40E-02%				
	Pu-238	4.00E-03%				
	Ce-141	1.00E-03%				
Above Determined By: A. Measurement B. Estimation C. Measurement and Correlation	C		C		N/A	N/A
Type of Container	Strong, Tight Liners		Strong, Tight Containers		N/A	N/A
Solidification Agent or Absorbent	None		None		N/A	N/A

3. SOLID WASTE DISPOSITION

Number of Shipments	Mode of Transportation	Destination
75	Truck	Barnwell, S.C.

B. IRRADIATED FUEL SHIPMENTS (Disposition)

Number of Shipments	Mode of Transportation	Destination
Zero (0)	N/A	N/A

TABLE 8

Maximum Individual Doses Due to
Noble Gas Releases
1993

	Critical Sector	Critical Distance	Total Body Dose* (mrem)	Skin Dose* (mrem)
1st Quarter	WNW	994m	8.30E-02	1.77E-01
2nd Quarter	WNW	994m	1.06E-02	2.10E-02
3rd Quarter	WNW	994m	5.84E-02	1.66E-01
4th Quarter	WNW	994m	1.75E-01	3.39E-01
Annual Total			3.27E-01	7.05E-01

*All age groups equally exposed

TABLE 9

Maximum Individual Doses Due To Gaseous Releases (H3, Radioiodine and Particulate) 1993

Significant Organ Dose (mrem)					
	Critical Sector	Critical* Distance	Critical Age Group	Critical Organ	Critical Dose
1st Quarter	WNW	994m	Child	Thyroid	4.06E-01
2nd Quarter	WNW	994m	Child	Thyroid	7.23E-02
3rd Quarter	WNW	994m	Child	Thyroid	8.66E-02
4th Quarter	WNW	994m	Child	Thyroid	3.36E-01
Annual Total					9.01E-01

*The 994m maximum individual includes a "control cow" at 4.5 miles in the WNW sector

TABLE 10

Maximum Individual Doses (Liquid)
1993

Critical Receptor: Edge of Initial Mixing Zone

	Total Body Dose (mrem)		Significant Organ Dose (mrem)		
	Critical Age	Dose	Critical Age	Critical Organ	Dose
1st Quarter	Adult	1.46E-03	Adult	GI Tract	1.91E-02
2nd Quarter	Adult	7.16E-03	Adult	CI Tract	7.63E-02
3rd Quarter	Adult	8.43E-03	Adult	GI Tract	7.72E-02
4th Quarter	Adult	1.07E-02	Adult	GI Tract	1.52E-01
Annual Total	Adult	2.77E-02	Adult	GI Tract	3.25E-01

TABLE 11

ASSUMPTIONS/PARAMETERS FOR DOSES TO A MEMBER OF THE PUBLIC INSIDE SITE BOUNDARY

MEMBER OF THE PUBLIC	LOCATION	DISTANCE[1] METERS	SECTOR	DURATION (HR/YEAR)
Private Drivers	North Parking Lot	275	N	1.25E+02
Employee Candidate[2]	Service Building	115[2]	ENE	8.76E+00
People Entering Site Without Consent	Alligator Bayou	2500	SW	4.00E+01
Casual Drivers	Main Admin Building	500	WNW	76

(1) The approximate distance from main plant vent exhaust to location.

(2) Midpoint of building

(3) An individual is assumed to be on site 0.25/hr in the morning and 0.25/hr in the evening.

(4) An individual is assumed to be on site 0.5 hr/day.

TABLE 12

DOSES TO MEMBERS OF THE PUBLIC ON SITE FROM GASEOUS RELEASES 1993

MEMBER OF THE PUBLIC	RECEPTOR LOCATION	QUARTER	CRITICAL AGE GROUP	CRITICAL ORGAN	CRITICAL ORGAN DOSE (MREM)	TOTAL BODY DOSE (MREM)
Private Drivers	North Parking Lot at 275 m N	1st Quarter	Adult	Thyroid	7.08E-03	4.95E-03
		2nd Quarter	Adult	Thyroid	1.25E-03	9.77E-04
		3rd Quarter	Adult	Thyroid	4.60E-03	4.10E-03
		4th Quarter	Adult	Thyroid	1.29E-02	1.11E-02
		Annual Total	Adult	Thyroid	2.58E-02	2.11E-02
Employee Candidate	Services Building 115m ENE	1st Quarter	Adult	Thyroid	1.59E-03	1.17-03
		2nd Quarter	Adult	Thyroid	2.09E-04	1.55E-04
		3rd Quarter	Adult	Thyroid	8.69E-04	7.67E-04
		4th Quarter	Adult	Thyroid	2.68E-03	2.35E-03
		Annual Total			5.35E-03	4.43E-03

TABLE 12

DOSES TO MEMBERS OF THE PUBLIC ON SITE FROM GASEOUS RELEASES 1993

MEMBER OF THE PUBLIC	RECEPTOR LOCATION	QUARTER	CRITICAL AGE GROUP	CRITICAL ORGAN	CRITICAL ORGAN DOSE (MREM)	TOTAL BODY DOSE (MREM)
People Entering Site Without Consent	Alligator Bayou at 2500 m SW	1st Quarter	Adult	Thyroid	5.34E-05	3.58E-05
		2nd Quarter	Adult	Thyroid	1.02E-05	8.04E-06
		3rd Quarter	Adult	Thyroid	3.83E-05	3.43E-05
		4th Quarter	Adult	Thyroid	1.04E-04	8.82E-05
		Annual Total			2.06E-04	1.66E-04
Casual Driver	Main Admin at 500 m WNW	1st Quarter	Adult	Thyroid	2.54E-03	1.75E-03
		2nd Quarter	Adult	Thyroid	4.69E-04	3.69E-04
		3rd Quarter	Adult	Thyroid	1.73E-03	1.54E-03
		4th Quarter	Adult	Thyroid	4.76E-03	4.08E-03
		Annual Total			9.50E-03	7.74E-03

TABLE 13
METEOROLOGICAL DATA
JOINT FREQUENCY TABLES

1993

RIVER BEND STATION
JOINT FREQUENCY TABLE
ALL STABILITY CLASSES

FROM 1/ 1/93 0:00 TO 3/31/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	3	8	39	147	33	4	0	0	0	234
NNE	0	0	0	1	13	81	112	15	2	0	0	0	224
NE	0	0	3	1	8	43	106	28	0	0	0	0	189
ENE	0	0	1	2	4	24	62	36	3	0	0	0	132
E	0	0	0	6	13	16	25	12	2	0	0	0	74
ESE	0	0	0	7	5	15	106	105	19	0	0	0	257
SE	0	1	2	7	6	9	64	21	12	0	0	0	122
SSE	0	0	0	3	6	17	22	6	3	0	0	0	57
S	0	0	0	1	6	13	45	12	6	0	0	0	83
SSW	0	0	1	4	4	13	51	15	0	0	0	0	88
SW	0	0	1	3	6	24	29	6	0	0	0	0	69
WSW	0	2	1	8	17	37	37	2	0	0	0	0	104
W	0	0	1	5	11	43	53	10	0	0	0	0	123
WNW	0	0	0	6	11	29	63	12	0	0	0	0	121
NW	0	0	0	2	12	32	60	13	13	2	0	0	134
NNW	0	2	0	2	7	34	75	23	6	0	0	0	149
TOTAL	0	5	10	61	137	169	1037	349	70	2	0	0	2160

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 2160
TOTAL HOURS FOR THE PERIOD: 2160

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS A

FROM 1/ 1/93 0:00 TO 3/31/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	0	0	4	5	1	0	0	0	10
NNE	0	0	0	0	0	1	9	1	0	0	0	0	11
NE	0	0	0	0	0	0	3	6	0	0	0	0	9
ENE	0	0	0	0	0	1	4	2	0	0	0	0	7
E	0	0	0	0	0	0	0	1	0	0	0	0	1
ESE	0	0	0	0	0	0	5	13	0	0	0	0	18
SE	0	0	0	0	0	0	2	0	3	0	0	0	5
SSE	0	0	0	0	0	0	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	3	0	0	0	0	0	3
W	0	0	0	0	0	0	4	6	0	0	0	0	10
WNW	0	0	0	0	0	0	0	2	0	0	0	0	2
NW	0	0	0	0	1	0	0	1	3	0	0	0	5
NNW	0	0	0	0	0	0	0	3	2	0	0	0	5
TOTAL	0	0	0	0	1	2	34	40	9	0	0	0	86

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 86
TOTAL HOURS FOR THE PERIOD: 86

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS B

FROM 1/ 1/93 0:00 TO 3/31/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	0	1	11	8	0	0	0	0	20
NNE	0	0	0	0	0	1	8	3	0	0	0	0	12
NE	0	0	0	0	0	4	1	1	0	0	0	0	6
ENE	0	0	0	0	0	3	3	2	0	0	0	0	8
E	0	0	0	0	0	1	1	0	0	0	0	0	2
ESE	0	0	0	0	0	2	7	3	0	0	0	0	12
SE	0	0	0	0	1	2	4	5	2	0	0	0	14
SSE	0	0	0	0	0	1	2	0	0	0	0	0	3
S	0	0	0	0	0	0	4	0	0	0	0	0	4
SSW	0	0	0	0	0	0	6	0	0	0	0	0	6
SW	0	0	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	3	15	2	0	0	0	0	20
W	0	0	0	0	0	2	12	4	0	0	0	0	18
WNW	0	0	0	0	0	0	3	4	0	0	0	0	7
NW	0	0	0	0	0	0	0	3	3	0	0	0	6
NNW	0	0	0	0	0	0	1	8	0	0	0	0	9
TOTAL	0	0	0	0	1	20	78	43	5	0	0	0	147

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 147
TOTAL HOURS FOR THE PERIOD: 147

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS C

FROM 1/ 1/93 0:00 TO 3/31/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	0	1	5	4	0	0	0	0	10
NNE	0	0	0	0	0	3	5	2	0	0	0	0	10
NE	0	0	0	0	0	3	4	0	0	0	0	0	7
ENE	0	0	0	0	0	0	2	0	0	0	0	0	2
E	0	0	0	0	1	0	0	1	0	0	0	0	2
ESE	0	0	0	0	1	1	0	1	0	0	0	0	3
SE	0	0	0	0	0	1	1	2	1	0	0	0	5
SSE	0	0	0	0	0	0	1	0	2	0	0	0	3
S	0	0	0	0	0	0	4	2	0	0	0	0	6
SSW	0	0	0	0	0	1	4	1	0	0	0	0	6
SW	0	0	0	0	0	1	0	2	0	0	0	0	3
WSW	0	0	0	0	2	5	9	0	0	0	0	0	16
W	0	0	0	0	0	3	11	0	0	0	0	0	14
WNW	0	0	0	0	0	2	7	0	0	0	0	0	9
NW	0	0	0	0	0	2	0	0	1	1	0	0	4
NNW	0	0	0	0	0	1	8	2	0	0	0	0	11
TOTAL	0	0	0	0	4	24	61	17	4	1	0	0	111

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 111
TOTAL HOURS FOR THE PERIOD: 111

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS D

FROM 1/ 1/93 0:00 TO 3/31/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	6	24	99	15	3	0	0	0	147
NNE	0	0	0	0	11	47	58	8	2	0	0	0	126
NE	0	0	1	0	5	19	46	15	0	0	0	0	86
ENE	0	0	0	2	2	2	27	20	1	0	0	0	54
E	0	0	0	6	3	1	10	7	1	0	0	0	28
ESE	0	0	0	1	4	5	37	47	9	0	0	0	103
SE	0	0	0	3	2	2	19	13	6	0	0	0	45
SSE	0	0	0	1	2	5	11	6	1	0	0	0	26
S	0	0	0	0	2	4	19	9	6	0	0	0	40
SSW	0	0	1	2	1	7	21	14	0	0	0	0	46
SW	0	0	0	2	3	6	6	4	0	0	0	0	21
WSW	0	0	0	2	8	17	6	0	0	0	0	0	33
W	0	0	0	0	6	20	16	0	0	0	0	0	42
WNW	0	0	0	0	2	8	16	4	0	0	0	0	30
NW	0	0	0	1	4	9	19	8	5	1	0	0	47
NNW	0	0	0	0	4	19	39	8	4	0	0	0	74
TOTAL	0	0	2	20	65	193	449	178	38	1	0	0	948

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 948
TOTAL HOURS FOR THE PERIOD: 948

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS E

FROM 1/ 1/93 0:00 TO 3/31/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	1	9	19	1	0	0	0	0	30
NNE	0	0	0	0	2	17	28	1	0	0	0	0	48
NE	0	0	0	0	2	7	42	6	0	0	0	0	57
ENE	0	0	1	0	1	12	16	9	2	0	0	0	41
E	0	0	0	0	3	4	12	3	1	0	0	0	23
ESE	0	0	0	1	0	0	42	41	10	0	0	0	94
SE	0	0	0	1	0	4	22	1	0	0	0	0	28
SSE	0	0	0	1	0	3	3	0	0	0	0	0	7
S	0	0	0	1	0	3	13	1	0	0	0	0	18
SSW	0	0	0	2	1	1	17	0	0	0	0	0	21
SW	0	0	0	1	0	6	12	0	0	0	0	0	19
WSW	0	0	0	4	2	5	1	0	0	0	0	0	12
W	0	0	0	0	2	10	3	0	0	0	0	0	15
WNW	0	0	0	1	1	5	20	2	0	0	0	0	29
NW	0	0	0	1	5	12	17	1	1	0	0	0	37
NNW	0	0	0	0	1	6	19	2	0	0	0	0	28
TOTAL	0	0	1	13	21	104	286	68	14	0	0	0	507

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 507
TOTAL HOURS FOR THE PERIOD: 507

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS F

FROM 1/ 1/93 0:00 TO 3/31/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	0	3	7	0	0	0	0	0	10
NNE	0	0	0	0	0	4	4	0	0	0	0	0	8
NE	0	0	1	0	0	6	9	0	0	0	0	0	16
ENE	0	0	0	0	0	1	9	2	0	0	0	0	12
E	0	0	0	0	2	3	2	0	0	0	0	0	7
ESE	0	0	0	2	0	1	8	0	0	0	0	0	11
SE	0	0	0	0	0	0	10	0	0	0	0	0	10
SSE	0	0	0	1	0	3	2	0	0	0	0	0	6
S	0	0	0	0	0	2	0	0	0	0	0	0	2
SSW	0	0	0	0	0	1	1	0	0	0	0	0	2
SW	0	0	0	0	1	5	9	0	0	0	0	0	15
WSW	0	0	1	2	1	1	0	0	0	0	0	0	5
W	0	0	0	0	0	0	0	0	0	0	0	0	0
WNW	0	0	0	1	3	5	9	0	0	0	0	0	18
NW	0	0	0	0	0	4	15	0	0	0	0	0	19
NNW	0	0	0	0	1	4	5	0	0	0	0	0	10
TOTAL	0	0	2	6	8	13	90	2	0	0	0	0	151

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 151
TOTAL HOURS FOR THE PERIOD: 151

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS G

FROM 1/ 1/93 0:00 TO 3/31/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	3	1	1	2	0	0	0	0	0	7
NNE	0	0	0	1	0	8	0	0	0	0	0	0	9
NE	0	0	1	1	1	4	1	0	0	0	0	0	8
ENE	0	0	0	0	1	5	1	1	0	0	0	0	8
E	0	0	0	0	4	7	0	0	0	0	0	0	11
ESE	0	0	0	3	0	6	7	0	0	0	0	0	16
SE	0	1	2	3	3	0	6	0	0	0	0	0	15
SSE	0	0	0	0	4	5	3	0	0	0	0	0	12
S	0	0	0	0	4	4	5	0	0	0	0	0	13
SSW	0	0	0	0	2	3	2	0	0	0	0	0	7
SW	0	0	1	0	2	6	2	0	0	0	0	0	11
WSW	0	2	0	0	4	6	3	0	0	0	0	0	15
W	0	0	1	5	3	8	7	0	0	0	0	0	24
WNW	0	0	0	4	5	9	8	0	0	0	0	0	26
NW	0	0	0	0	2	5	9	0	0	0	0	0	16
NNW	0	2	0	2	1	4	3	0	0	0	0	0	12
TOTAL	0	5	5	22	37	81	59	1	0	0	0	0	210

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 210
TOTAL HOURS FOR THE PERIOD: 210

RIVER BEND STATION
JOINT FREQUENCY TABLE
ALL STABILITY CLASSES

FROM 1/ 1/93 0:00 TO 3/31/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	3	6	7	36	40	98	74	5	0	0	0	0	269
NNE	3	4	5	37	54	80	27	1	0	0	0	0	211
NE	5	15	5	29	42	65	19	0	0	0	0	0	180
ENE	6	19	29	19	14	41	26	0	0	0	0	0	154
E	3	14	9	18	21	15	0	0	0	0	0	0	80
ESE	2	8	9	23	27	70	11	0	0	0	0	0	150
SE	0	3	6	48	33	80	43	2	0	0	0	0	215
SSE	0	1	5	7	9	11	16	3	1	0	0	0	53
S	0	2	3	7	6	28	36	6	1	0	0	0	89
SSW	3	2	2	11	13	25	36	0	0	0	0	0	92
SW	2	5	6	11	12	6	7	0	0	0	0	0	49
WSW	1	9	3	14	13	45	16	0	0	0	0	0	103
W	1	12	11	14	13	34	13	0	0	0	0	0	98
WNW	3	8	24	36	21	31	13	0	0	0	0	0	136
NW	1	6	11	28	18	31	26	7	2	0	0	0	130
NNW	3	4	5	12	19	57	40	10	1	0	0	0	151
TOTAL	36	118	142	350	455	717	403	34	5	0	0	0	2160

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 2160
TOTAL HOURS FOR THE PERIOD: 2160

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS A

FROM 1/ 1/93 0:00 TO 3/31/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	0	1	6	1	0	0	0	0	8
NNE	0	0	0	0	0	5	6	0	0	0	0	0	11
NE	0	0	0	0	0	1	7	0	0	0	0	0	8
ENE	0	0	0	0	0	6	1	0	0	0	0	0	7
E	0	0	0	0	0	1	0	0	0	0	0	0	1
ESE	0	0	0	0	0	8	4	0	0	0	0	0	12
SE	0	0	0	0	0	5	5	1	0	0	0	0	11
SSE	0	0	0	0	0	0	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	1	4	0	0	0	0	0	5
W	0	0	0	0	0	0	5	0	0	0	0	0	5
WNW	0	0	0	0	0	0	5	0	0	0	0	0	5
NW	0	0	0	1	0	0	1	1	0	0	0	0	3
NNW	0	0	0	0	0	0	6	4	0	0	0	0	10
TOTAL	0	0	0	1	0	28	50	7	0	0	0	0	86

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 86
TOTAL HOURS FOR THE PERIOD: 86

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS B

FROM 1/ 1/93 0:00 TO 3/31/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	0	5	17	0	0	0	0	0	22
NNE	0	0	0	0	0	9	6	0	0	0	0	0	15
NE	0	0	0	0	0	1	1	0	0	0	0	0	2
ENE	0	0	0	0	1	3	3	0	0	0	0	0	7
E	0	0	0	0	2	2	0	0	0	0	0	0	4
ESE	0	0	0	0	5	2	0	0	0	0	0	0	7
SE	0	0	0	0	2	7	7	0	0	0	0	0	16
SSE	0	0	0	0	2	0	3	0	0	0	0	0	5
S	0	0	0	0	0	1	3	0	0	0	0	0	4
SSW	0	0	0	0	0	2	4	0	0	0	0	0	6
SW	0	0	0	0	0	1	1	0	0	0	0	0	2
WSW	0	0	0	0	0	14	9	0	0	0	0	0	23
W	0	0	0	0	0	4	7	0	0	0	0	0	11
WNW	0	0	0	0	0	3	4	0	0	0	0	0	7
NW	0	0	0	0	0	0	5	0	0	0	0	0	5
NNW	0	0	0	0	0	0	8	2	1	0	0	0	11
TOTAL	0	0	0	0	12	54	78	2	1	0	0	0	147

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 147
TOTAL HOURS FOR THE PERIOD: 147

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS C

FROM 1/ 1/93 0:00 TO 3/31/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	1	4	11	0	0	0	0	0	16
NNE	0	0	0	0	2	2	3	0	0	0	0	0	7
NE	0	0	0	0	1	4	0	0	0	0	0	0	5
ENE	0	0	0	0	0	2	1	0	0	0	0	0	3
E	0	0	0	1	0	0	0	0	0	0	0	0	1
ESE	0	0	0	0	1	0	0	0	0	0	0	0	1
SE	0	0	0	0	1	3	2	1	0	0	0	0	7
SSE	0	0	0	0	0	0	1	1	1	0	0	0	3
S	0	0	0	0	0	0	6	0	0	0	0	0	6
SSW	0	0	0	0	0	1	5	0	0	0	0	0	6
SW	0	0	0	0	0	1	2	0	0	0	0	0	3
WSW	0	0	0	1	1	13	3	0	0	0	0	0	18
W	0	0	0	0	0	11	1	0	0	0	0	0	12
WNW	0	0	0	0	1	5	0	0	0	0	0	0	6
NW	0	0	0	0	0	2	3	1	1	0	0	0	7
NNW	0	0	0	0	0	3	7	0	0	0	0	0	10
TOTAL	0	0	0	2	8	51	45	3	2	0	0	0	111

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 111
TOTAL HOURS FOR THE PERIOD: 111

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS D

FROM 1/ 1/93 0:00 TO 3/31/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	8	30	77	39	4	0	0	0	0	158
NNE	0	0	0	14	34	51	12	1	0	0	0	0	112
NE	0	1	0	11	23	38	11	0	0	0	0	0	84
ENE	0	0	1	5	7	21	13	0	0	0	0	0	47
E	0	0	0	4	11	10	0	0	0	0	0	0	25
ESE	0	0	1	11	9	31	6	0	0	0	0	0	58
SE	0	0	2	8	12	48	22	0	0	0	0	0	92
SSE	0	0	0	2	4	8	11	2	0	0	0	0	27
S	0	0	0	2	3	13	20	6	1	0	0	0	45
SSW	0	0	1	3	3	16	26	0	0	0	0	0	49
SW	0	0	1	2	10	1	4	0	0	0	0	0	18
WSW	0	0	0	9	11	16	0	0	0	0	0	0	36
W	0	0	2	4	10	18	0	0	0	0	0	0	34
WNW	0	0	1	7	6	16	4	0	0	0	0	0	34
NW	0	0	0	6	6	16	16	4	1	0	0	0	49
NNW	0	0	0	5	12	42	17	4	0	0	0	0	80
TOTAL	0	1	9	101	191	422	201	21	2	0	0	0	948

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 948
TOTAL HOURS FOR THE PERIOD: 948

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS E

FROM 1/ 1/93 0:00 TO 3/31/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	1	21	9	11	1	0	0	0	0	0	43
NNE	0	1	1	15	17	13	0	0	0	0	0	0	47
NE	0	1	0	11	17	18	0	0	0	0	0	0	47
ENE	0	0	3	8	5	7	8	0	0	0	0	0	31
E	0	1	2	10	8	2	0	0	0	0	0	0	23
ESE	0	1	4	7	12	29	1	0	0	0	0	0	54
SE	0	0	2	28	17	17	7	0	0	0	0	0	71
SSE	0	0	0	3	2	3	0	0	0	0	0	0	8
S	0	1	1	4	3	13	6	0	0	0	0	0	28
SSW	0	0	0	2	9	4	1	0	0	0	0	0	16
SW	0	0	1	5	2	3	0	0	0	0	0	0	11
WSW	0	1	4	4	1	1	0	0	0	0	0	0	11
W	0	3	2	8	3	1	0	0	0	0	0	0	17
WNW	0	2	3	18	13	7	0	0	0	0	0	0	43
NW	0	1	3	8	7	12	1	1	0	0	0	0	33
NNW	0	1	1	2	6	12	2	0	0	0	0	0	24
TOTAL	0	13	28	154	131	153	27	1	0	0	0	0	507

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 507
TOTAL HOURS FOR THE PERIOD: 507

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS F

FROM 1/ 1/93 0:00 TO 3/31/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	1	2	6	0	0	0	0	0	0	0	0	9
NNE	0	1	3	7	0	0	0	0	0	0	0	0	11
NE	0	1	1	5	1	3	0	0	0	0	0	0	11
ENE	0	0	3	2	1	2	0	0	0	0	0	0	8
E	0	3	1	2	0	0	0	0	0	0	0	0	6
ESE	0	2	3	3	0	0	0	0	0	0	0	0	8
SE	0	1	2	10	1	0	0	0	0	0	0	0	14
SSE	0	0	3	2	1	0	0	0	0	0	0	0	6
S	0	0	2	0	0	0	0	0	0	0	0	0	2
SSW	1	0	1	6	1	0	0	0	0	0	0	0	9
SW	0	2	2	4	0	0	0	0	0	0	0	0	8
WSW	0	3	1	0	0	0	0	0	0	0	0	0	4
W	0	4	3	1	0	0	0	0	0	0	0	0	8
WNW	0	1	8	7	0	0	0	0	0	0	0	0	16
NW	0	1	4	11	5	1	0	0	0	0	0	0	22
NNW	0	1	2	5	1	0	0	0	0	0	0	0	9
TOTAL	1	21	41	71	11	6	0	0	0	0	0	0	151

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 151
TOTAL HOURS FOR THE PERIOD: 151

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS G

FROM 1/ 1/93 0:00 TO 3/31/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	3	5	4	1	0	0	0	0	0	0	0	0	13
NNE	3	2	1	1	1	0	0	0	0	0	0	0	8
NE	5	12	4	2	0	0	0	0	0	0	0	0	23
ENE	6	19	22	4	0	0	0	0	0	0	0	0	51
E	3	10	6	1	0	0	0	0	0	0	0	0	20
ESE	2	5	1	2	0	0	0	0	0	0	0	0	10
SE	0	2	0	2	0	0	0	0	0	0	0	0	4
SSE	0	1	2	0	0	0	1	0	0	0	0	0	4
S	0	1	0	1	0	1	1	0	0	0	0	0	4
SSW	2	2	0	0	0	2	0	0	0	0	0	0	6
SW	2	3	2	0	0	0	0	0	0	0	0	0	7
WSW	1	5	0	0	0	0	0	0	0	0	0	0	6
W	1	5	4	1	0	0	0	0	0	0	0	0	11
WNW	3	5	12	4	1	0	0	0	0	0	0	0	25
NW	1	4	4	2	0	0	0	0	0	0	0	0	11
NNW	3	2	2	0	0	0	0	0	0	0	0	0	7
TOTAL	35	83	64	21	2	3	2	0	0	0	0	0	210

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 210
TOTAL HOURS FOR THE PERIOD: 210

RIVER BEND STATION
JOINT FREQUENCY TABLE
ALL STABILITY CLASSES

FROM 4/ 1/93 0:00 TO 6/30/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	2	10	19	49	4	0	0	0	0	84
NNE	0	0	0	6	10	36	42	4	0	0	0	0	98
NE	0	0	2	7	15	31	35	5	1	0	0	0	96
ENE	0	0	0	10	14	39	53	5	4	0	0	0	125
E	0	0	0	8	17	42	57	5	2	0	0	0	131
ESE	0	1	0	6	18	66	132	22	5	1	0	0	251
SE	0	2	2	4	14	55	101	17	8	2	0	0	205
SSE	0	1	1	7	12	60	83	25	8	0	0	0	197
S	0	0	1	5	16	84	161	42	8	0	0	0	317
SSW	0	1	0	4	16	50	105	24	3	0	0	0	203
SW	0	0	1	6	10	46	20	1	0	0	0	0	84
WSW	0	0	1	3	10	24	18	0	0	0	0	0	56
W	0	0	1	6	11	30	26	6	0	0	0	0	80
WNW	0	0	0	5	6	14	25	21	2	0	0	0	73
NW	0	0	0	0	9	26	31	12	6	0	0	0	84
NNW	0	1	0	8	7	20	48	10	1	0	0	0	95
TOTAL	0	6	9	87	195	642	986	203	48	3	0	0	2179

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 5
NUMBER OF VALID HOURS: 2179
TOTAL HOURS FOR THE PERIOD: 2184

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS A

FROM 4/ 1/93 0:00 TO 6/30/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	0	0	5	1	0	0	0	0	6
NNE	0	0	0	0	0	0	5	0	0	0	0	0	5
NE	0	0	0	0	1	2	4	2	0	0	0	0	9
ENE	0	0	0	0	0	1	7	1	0	0	0	0	9
E	0	0	0	0	0	4	9	0	0	0	0	0	13
ESE	0	0	0	0	0	2	17	5	1	1	0	0	26
SE	0	0	0	0	0	3	3	4	2	0	0	0	12
SSE	0	0	0	0	0	2	5	7	0	0	0	0	14
S	0	0	0	0	0	2	15	16	0	0	0	0	33
SSW	0	0	0	0	0	0	4	14	0	0	0	0	18
SW	0	0	0	1	0	1	0	0	0	0	0	0	2
WSW	0	0	0	0	0	1	2	0	0	0	0	0	3
W	0	0	1	0	0	2	3	1	0	0	0	0	7
WNW	0	0	0	0	0	0	2	4	2	0	0	0	8
NW	0	0	0	0	0	0	0	0	1	0	0	0	1
NNW	0	0	0	0	0	0	2	2	1	0	0	0	5
TOTAL	0	0	1	1	1	20	83	57	7	1	0	0	171

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 171
TOTAL HOURS FOR THE PERIOD: 171

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS B

FROM 4/ 1/93 0:00 TO 6/30/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	0	3	9	1	0	0	0	0	13
NNE	0	0	0	0	1	0	5	0	0	0	0	0	6
NE	0	0	0	0	1	3	2	0	0	0	0	0	6
ENE	0	0	0	0	0	1	2	0	0	0	0	0	3
E	0	0	0	1	1	1	6	1	0	0	0	0	10
ESE	0	0	0	0	2	0	7	2	0	0	0	0	11
SE	0	0	0	0	2	5	6	3	3	0	0	0	19
SSE	0	0	0	0	1	6	7	5	0	0	0	0	19
S	0	0	0	0	0	5	27	7	4	0	0	0	43
SSW	0	0	0	0	1	4	22	1	0	0	0	0	28
SW	0	0	0	0	1	5	6	0	0	0	0	0	12
WSW	0	0	0	0	0	0	8	0	0	0	0	0	8
W	0	0	0	1	0	7	8	1	0	0	0	0	17
WNW	0	0	0	0	0	1	3	10	0	0	0	0	14
NW	0	0	0	0	0	5	7	2	1	0	0	0	15
NNW	0	0	0	0	1	2	17	2	0	0	0	0	22
TOTAL	0	0	0	2	11	48	142	35	8	0	0	0	246

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 246
TOTAL HOURS FOR THE PERIOD: 246

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS C

FROM 4/ 1/93 0:00 TO 6/30/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	0	1	3	1	0	0	0	0	5
NNE	0	0	0	0	0	1	1	0	0	0	0	0	2
NE	0	0	0	0	1	0	2	0	0	0	0	0	3
ENE	0	0	0	0	1	0	2	0	0	0	0	0	3
E	0	0	0	0	0	2	3	1	0	0	0	0	6
ESE	0	0	0	0	2	2	2	1	0	0	0	0	7
SE	0	0	0	0	0	1	5	1	0	0	0	0	7
SSE	0	0	0	0	2	0	6	2	0	0	0	0	10
S	0	0	0	0	1	5	11	7	1	0	0	0	25
SSW	0	0	0	0	0	5	12	1	0	0	0	0	18
SW	0	0	0	0	0	5	1	0	0	0	0	0	6
WSW	0	0	0	0	2	5	1	0	0	0	0	0	8
W	0	0	0	0	1	7	3	0	0	0	0	0	11
WNW	0	0	0	0	0	2	0	2	0	0	0	0	4
NW	0	0	0	0	1	1	2	1	2	0	0	0	7
NNW	0	0	0	0	1	2	3	2	0	0	0	0	8
TOTAL	0	0	0	0	12	39	57	19	3	0	0	0	130

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 130
TOTAL HOURS FOR THE PERIOD: 130

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS D

FROM 4/ 1/93 0:00 TO 6/30/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	3	6	15	0	0	0	0	0	24
NNE	0	0	0	2	4	11	13	2	0	0	0	0	32
NE	0	0	0	3	3	10	4	0	0	0	0	0	20
ENE	0	0	0	3	5	9	10	1	4	0	0	0	32
E	0	0	0	4	6	7	11	2	2	0	0	0	32
ESE	0	1	0	1	4	12	33	7	4	0	0	0	62
SE	0	1	0	1	4	11	30	7	2	0	0	0	56
SSE	0	1	0	2	5	12	23	9	8	0	0	0	60
S	0	0	0	2	1	18	24	10	3	0	0	0	58
SSW	0	1	0	2	6	9	27	5	3	0	0	0	53
SW	0	0	0	2	7	10	6	1	0	0	0	0	26
WSW	0	0	1	2	2	7	3	0	0	0	0	0	15
W	0	0	0	4	7	7	6	4	0	0	0	0	28
WNW	0	0	0	3	1	3	4	5	0	0	0	0	16
NW	0	0	0	0	4	8	9	8	0	0	0	0	29
NNW	0	1	0	7	2	6	16	3	0	0	0	0	35
TOTAL	0	5	1	38	64	146	234	64	26	0	0	0	578

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 578
TOTAL HOURS FOR THE PERIOD: 578

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS E

FROM 4/ 1/93 0:00 TO 6/30/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	1	2	6	11	0	0	0	0	0	20
NNE	0	0	0	2	2	12	11	1	0	0	0	0	28
NE	0	0	1	2	5	7	14	3	1	0	0	0	33
ENE	0	0	0	4	4	20	24	3	0	0	0	0	55
E	0	0	0	0	5	15	20	1	0	0	0	0	41
ESE	0	0	0	3	1	21	55	7	0	0	0	0	87
SE	0	0	0	2	2	16	42	2	1	2	0	0	67
SSE	0	0	1	3	3	17	40	2	0	0	0	0	66
S	0	0	0	1	6	28	78	2	0	0	0	0	115
SSW	0	0	0	2	4	22	33	3	0	0	0	0	64
SW	0	0	1	0	1	13	5	0	0	0	0	0	20
WSW	0	0	0	0	2	4	1	0	0	0	0	0	7
W	0	0	0	0	1	5	3	0	0	0	0	0	9
WNW	0	0	0	0	0	1	11	0	0	0	0	0	12
NW	0	0	0	0	1	4	7	1	2	0	0	0	15
NNW	0	0	0	1	0	1	4	1	0	0	0	0	7
TOTAL	0	0	3	21	39	192	359	26	4	2	0	0	646

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 646
TOTAL HOURS FOR THE PERIOD: 646

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS F

FROM 4/ 1/93 0:00 TO 6/30/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	3	1	3	1	0	0	0	0	8
NNE	0	0	0	1	2	2	6	1	0	0	0	0	12
NE	0	0	1	0	0	4	5	0	0	0	0	0	10
ENE	0	0	0	1	1	2	3	0	0	0	0	0	7
E	0	0	0	2	4	8	4	0	0	0	0	0	18
ESE	0	0	0	1	4	11	14	0	0	0	0	0	30
SE	0	1	0	0	3	5	8	0	0	0	0	0	17
SSE	0	0	0	2	0	10	0	0	0	0	0	0	12
S	0	0	0	1	5	15	4	0	0	0	0	0	25
SSW	0	0	0	0	1	3	5	0	0	0	0	0	9
SW	0	0	0	0	0	4	2	0	0	0	0	0	6
WSW	0	0	0	0	2	4	3	0	0	0	0	0	9
W	0	0	0	1	0	1	3	0	0	0	0	0	5
WNW	0	0	0	1	2	4	3	0	0	0	0	0	10
NW	0	0	0	0	1	4	2	0	0	0	0	0	7
NNW	0	0	0	0	2	4	2	0	0	0	0	0	8
TOTAL	0	1	1	10	30	82	67	2	0	0	0	0	193

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 193
TOTAL HOURS FOR THE PERIOD: 193

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS G

FROM 4/ 1/93 0:00 TO 6/30/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	1	2	2	3	0	0	0	0	0	8
NNE	0	0	0	1	1	10	1	0	0	0	0	0	13
NE	0	0	0	2	4	5	4	0	0	0	0	0	15
ENE	0	0	0	2	3	6	5	0	0	0	0	0	16
E	0	0	0	1	1	5	4	0	0	0	0	0	11
ESE	0	0	0	1	5	18	4	0	0	0	0	0	28
SE	0	0	2	1	3	14	7	0	0	0	0	0	27
SSE	0	0	0	0	1	13	2	0	0	0	0	0	16
S	0	0	1	1	3	11	2	0	0	0	0	0	18
SSW	0	0	0	0	4	7	2	0	0	0	0	0	13
SW	0	0	0	3	1	8	0	0	0	0	0	0	12
WSW	0	0	0	1	2	3	0	0	0	0	0	0	6
W	0	0	0	0	2	1	0	0	0	0	0	0	3
WNW	0	0	0	1	3	3	2	0	0	0	0	0	9
NW	0	0	0	0	2	4	4	0	0	0	0	0	10
NNW	0	0	0	0	1	5	4	0	0	0	0	0	10
TOTAL	0	0	3	15	38	115	44	0	0	0	0	0	215

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 215
TOTAL HOURS FOR THE PERIOD: 215

RIVER BEND STATION
JOINT FREQUENCY TABLE
ALL STABILITY CLASSES

FROM 4/ 1/93 0:00 TO 6/30/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22- .50	.51- .75	.76- 1.0	1.1- 1.5	1.6- 2.0	2.1- 3.0	3.1- 5.0	5.1- 7.0	7.1- 10.0	10.1- 13.0	13.1- 18.0	>18	TOT.
N	8	13	7	10	18	31	16	1	0	0	0	0	104
NNE	14	17	11	31	18	29	5	0	0	0	0	0	125
NE	25	23	22	22	15	13	2	0	0	0	0	0	122
ENE	21	48	28	25	16	7	7	0	0	0	0	0	152
E	9	21	27	24	16	14	0	0	0	0	0	0	111
ESE	6	11	29	33	27	21	1	0	0	0	0	0	128
SE	1	9	30	69	59	56	18	4	0	0	0	0	246
SSE	2	8	10	30	30	67	53	9	0	0	0	0	209
S	2	5	8	29	49	111	89	15	1	0	0	0	309
SSW	3	2	7	31	24	45	53	3	0	0	0	0	168
SW	4	7	9	26	17	15	3	0	0	0	0	0	81
WSW	7	4	5	9	9	13	1	0	0	0	0	0	48
W	2	2	5	12	8	20	4	0	0	0	0	0	53
WNW	4	12	9	11	15	13	24	1	0	0	0	0	89
NW	8	16	11	17	13	18	26	5	0	0	0	0	114
NNW	19	8	11	10	10	31	24	0	0	0	0	0	113
TOTAL	135	206	229	389	344	504	326	38	1	0	0	0	2172

NUMBER OF CALMS: 7
NUMBER OF INVALID HOURS: 5
NUMBER OF VALID HOURS: 2179
TOTAL HOURS FOR THE PERIOD: 2184

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS A

FROM 4/ 1/93 0:00 TO 6/30/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	0	3	3	1	0	0	0	0	7
NNE	0	0	0	0	0	6	0	0	0	0	0	0	6
NE	0	0	0	0	4	7	1	0	0	0	0	0	12
ENE	0	0	0	0	0	3	1	0	0	0	0	0	4
E	0	0	0	0	4	4	0	0	0	0	0	0	8
ESE	0	0	0	0	7	11	1	0	0	0	0	0	19
SE	0	0	0	0	3	12	8	0	0	0	0	0	23
SSE	0	0	0	0	0	5	10	0	0	0	0	0	15
S	0	0	0	0	0	6	25	3	0	0	0	0	34
SSW	0	0	0	0	0	3	15	0	0	0	0	0	18
SW	0	0	0	1	0	1	0	0	0	0	0	0	2
WSW	0	0	0	0	0	1	1	0	0	0	0	0	2
W	0	0	0	0	0	3	1	0	0	0	0	0	4
WNW	0	0	1	0	0	1	6	1	0	0	0	0	9
NW	0	0	0	0	0	1	1	2	0	0	0	0	4
NNW	0	0	0	0	0	1	3	0	0	0	0	0	4
TOTAL	0	0	1	1	18	68	76	7	0	0	0	0	171

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 171
TOTAL HOURS FOR THE PERIOD: 171

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS B

FROM 4/ 1/93 0:00 TO 6/30/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	1	9	4	0	0	0	0	0	14
NNE	0	0	0	0	2	6	0	0	0	0	0	0	8
NE	0	0	0	0	3	0	0	0	0	0	0	0	3
ENE	0	0	0	0	2	1	0	0	0	0	0	0	3
E	0	0	0	2	1	3	0	0	0	0	0	0	6
ESE	0	0	0	1	3	5	0	0	0	0	0	0	9
SE	0	0	0	1	3	6	3	1	0	0	0	0	14
SSE	0	0	0	0	5	12	10	0	0	0	0	0	27
S	0	0	0	0	2	21	20	6	0	0	0	0	49
SSW	0	0	0	1	0	12	13	0	0	0	0	0	26
SW	0	0	0	0	2	10	2	0	0	0	0	0	14
WSW	0	0	0	0	0	5	0	0	0	0	0	0	5
W	0	0	0	1	2	8	1	0	0	0	0	0	12
WNW	0	0	0	1	1	2	12	0	0	0	0	0	16
NW	0	0	0	0	4	7	7	1	0	0	0	0	19
NNW	0	0	0	0	1	10	10	0	0	0	0	0	21
TOTAL	0	0	0	7	32	117	82	8	0	0	0	0	246

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 246
TOTAL HOURS FOR THE PERIOD: 246

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS C

FROM 4/ 1/93 0:00 TO 6/30/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	0	2	3	0	0	0	0	0	5
NNE	0	0	0	1	1	2	0	0	0	0	0	0	4
NE	0	0	0	0	1	1	0	0	0	0	0	0	2
ENE	0	0	0	0	1	0	0	0	0	0	0	0	1
E	0	0	0	1	2	3	0	0	0	0	0	0	6
ESE	0	0	0	2	2	0	0	0	0	0	0	0	4
SE	0	0	0	0	2	4	1	0	0	0	0	0	7
SSE	0	0	0	1	1	2	8	0	0	0	0	0	12
S	0	0	0	1	0	7	13	3	0	0	0	0	24
SSW	0	0	0	1	0	12	9	0	0	0	0	0	22
SW	0	0	0	0	4	1	0	0	0	0	0	0	5
WSW	0	0	0	1	4	4	0	0	0	0	0	0	9
W	0	0	0	1	1	5	1	0	0	0	0	0	8
WNW	0	0	0	0	3	1	1	0	0	0	0	0	5
NW	0	0	0	0	1	2	4	1	0	0	0	0	8
NNW	0	0	0	0	1	3	4	0	0	0	0	0	8
TOTAL	0	0	0	9	24	49	44	4	0	0	0	0	130

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 130
TOTAL HOURS FOR THE PERIOD: 130

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS D

FROM 4/ 1/93 0:00 TO 6/30/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	1	1	3	11	11	6	0	0	0	0	0	33
NNE	0	0	1	10	9	8	3	0	0	0	0	0	31
NE	0	0	5	9	5	0	0	0	0	0	0	0	19
ENE	0	0	5	12	6	1	6	0	0	0	0	0	30
E	0	1	2	9	6	3	0	0	0	0	0	0	21
ESE	0	2	3	12	9	5	0	0	0	0	0	0	31
SE	0	0	2	23	23	22	6	1	0	0	0	0	77
SSE	0	1	3	11	10	24	21	8	0	0	0	0	78
S	0	0	0	3	5	29	25	3	1	0	0	0	66
SSW	0	1	0	4	13	11	14	3	0	0	0	0	46
SW	0	0	2	12	10	3	0	0	0	0	0	0	27
WSW	0	1	1	6	4	2	0	0	0	0	0	0	14
W	0	0	0	7	5	3	1	0	0	0	0	0	16
WNW	0	0	2	5	4	7	5	0	0	0	0	0	23
NW	0	0	1	7	3	6	12	0	0	0	0	0	29
NNW	1	1	4	5	6	14	6	0	0	0	0	0	37
TOTAL	1	8	32	138	129	149	105	15	1	0	0	0	578

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 578
TOTAL HOURS FOR THE PERIOD: 578

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS E

FROM 4/ 1/93 0:00 TO 6/30/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	1	3	2	5	6	5	0	0	0	0	0	0	22
NNE	1	9	6	11	6	7	1	0	0	0	0	0	41
NE	1	4	9	10	2	5	1	0	0	0	0	0	32
ENE	1	6	12	11	7	2	0	0	0	0	0	0	39
E	0	4	14	12	3	1	0	0	0	0	0	0	34
ESE	1	4	19	17	6	0	0	0	0	0	0	0	47
SE	0	2	20	41	28	12	0	2	0	0	0	0	105
SSE	0	1	5	18	14	24	4	1	0	0	0	0	67
S	0	3	7	19	40	48	6	0	0	0	0	0	123
SSW	1	0	6	19	11	7	2	0	0	0	0	0	46
SW	2	4	7	8	1	0	1	0	0	0	0	0	23
WSW	3	1	4	2	1	1	0	0	0	0	0	0	12
W	0	1	1	2	0	1	0	0	0	0	0	0	5
WNW	0	0	3	5	5	2	0	0	0	0	0	0	15
NW	0	4	2	5	4	2	2	1	0	0	0	0	20
NNW	1	1	3	4	2	3	1	0	0	0	0	0	15
TOTAL	12	47	120	189	136	120	18	4	0	0	0	0	646

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 646
TOTAL HOURS FOR THE PERIOD: 646

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS F

FROM 4/ 1/93 0:00 TO 6/30/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	1	5	2	2	0	1	0	0	0	0	0	0	11
NNE	2	3	3	8	0	0	1	0	0	0	0	0	17
NE	1	9	6	2	0	0	0	0	0	0	0	0	18
ENE	1	8	7	2	0	0	0	0	0	0	0	0	18
E	1	3	9	0	0	0	0	0	0	0	0	0	13
ESE	2	3	7	1	0	0	0	0	0	0	0	0	13
SE	1	5	8	4	0	0	0	0	0	0	0	0	18
SSE	1	6	1	0	0	0	0	0	0	0	0	0	8
S	0	2	1	6	2	0	0	0	0	0	0	0	11
SSW	1	1	1	6	0	0	0	0	0	0	0	0	9
SW	2	1	0	5	0	0	0	0	0	0	0	0	8
WSW	4	2	0	0	0	0	0	0	0	0	0	0	6
W	1	1	3	1	0	0	0	0	0	0	0	0	6
WNW	1	7	1	0	2	0	0	0	0	0	0	0	11
NW	2	4	4	4	0	0	0	0	0	0	0	0	14
NNW	5	4	1	1	0	0	0	0	0	0	0	0	11
TOTAL	26	64	54	42	4	1	1	0	0	0	0	0	192

NUMBER OF CALMS: 1
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 193
TOTAL HOURS FOR THE PERIOD: 193

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS G

FROM 4/ 1/93 0:00 TO 6/30/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	6	4	2	0	0	0	0	0	0	0	0	0	12
NNE	11	5	1	1	0	0	0	0	0	0	0	0	18
NE	23	10	2	1	0	0	0	0	0	0	0	0	36
ENE	19	34	4	0	0	0	0	0	0	0	0	0	57
E	8	13	2	0	0	0	0	0	0	0	0	0	23
ESE	3	2	0	0	0	0	0	0	0	0	0	0	5
SE	0	2	0	0	0	0	0	0	0	0	0	0	2
SSE	1	0	1	0	0	0	0	0	0	0	0	0	2
S	2	0	0	0	0	0	0	0	0	0	0	0	2
SSW	1	0	0	0	0	0	0	0	0	0	0	0	1
SW	0	2	0	0	0	0	0	0	0	0	0	0	2
WSW	0	0	0	0	0	0	0	0	0	0	0	0	0
W	1	0	1	0	0	0	0	0	0	0	0	0	2
WNW	3	5	2	0	0	0	0	0	0	0	0	0	10
NW	6	8	4	1	1	0	0	0	0	0	0	0	20
NNW	12	2	3	0	0	0	0	0	0	0	0	0	17
TOTAL	96	87	22	3	1	0	0	0	0	0	0	0	209

NUMBER OF CALMS: 6
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 215
TOTAL HOURS FOR THE PERIOD: 215

RIVER BEND STATION
JOINT FREQUENCY TABLE
ALL STABILITY CLASSES

FROM 1/ 1/93 0:00 TO 9/30/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	19	17	13	31	27	28	5	0	0	0	0	0	140
NNE	27	20	28	26	30	17	1	0	0	0	0	0	149
NE	21	20	20	31	16	19	0	0	0	0	0	0	127
ENE	10	26	13	10	9	11	1	0	0	0	0	0	82
E	4	19	15	17	6	6	1	0	0	0	0	0	68
ESE	4	17	20	19	11	8	0	0	0	0	0	0	79
SE	0	13	24	33	20	14	1	0	0	0	0	0	105
SSE	6	18	18	21	21	22	8	1	0	0	0	0	115
S	4	5	15	38	34	33	34	1	0	0	0	0	164
SSW	5	9	19	40	33	34	7	0	0	0	0	0	147
SW	3	21	18	37	21	27	8	0	0	0	0	0	135
WSW	14	30	31	26	35	47	3	0	0	0	0	0	186
W	11	30	16	29	43	63	3	0	0	0	0	0	195
WNW	17	27	23	22	25	50	3	0	0	0	0	0	167
NW	26	40	20	32	30	27	2	0	0	0	0	0	177
NNW	22	17	17	20	22	25	12	0	0	0	0	0	135
TOTAL	193	329	312	432	383	431	89	2	0	0	0	0	2171

NUMBER OF CALMS: 13
NUMBER OF INVALID HOURS: 24
NUMBER OF VALID HOURS: 2184
TOTAL HOURS FOR THE PERIOD: 2208

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS A

FROM 7/ 1/93 0:00 TO 9/30/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	0	0	3	0	0	0	0	0	3
NNE	0	0	0	1	0	2	0	0	0	0	0	0	3
NE	0	0	0	0	1	8	0	0	0	0	0	0	9
ENE	0	0	0	0	1	6	0	0	0	0	0	0	7
E	0	0	0	0	2	3	1	0	0	0	0	0	6
ESE	0	0	0	0	1	7	0	0	0	0	0	0	8
SE	0	0	0	0	4	4	1	0	0	0	0	0	9
SSE	0	0	0	0	0	4	2	0	0	0	0	0	6
S	0	0	0	0	0	5	15	0	0	0	0	0	20
SSW	0	0	0	0	1	4	2	0	0	0	0	0	7
SW	0	0	0	0	1	1	5	0	0	0	0	0	7
WSW	0	0	0	0	3	16	2	0	0	0	0	0	21
W	0	0	0	1	4	27	1	0	0	0	0	0	33
WNW	0	0	0	2	1	16	1	0	0	0	0	0	20
NW	0	0	0	0	0	6	0	0	0	0	0	0	6
NNW	0	0	0	0	1	6	1	0	0	0	0	0	8
TOTAL	0	0	0	4	20	115	34	0	0	0	0	0	173

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 173
TOTAL HOURS FOR THE PERIOD: 173

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS B

FROM 7/ 1/93 0:00 TO 9/30/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22- .50	.51- .75	.76- 1.0	1.1- 1.5	1.6- 2.0	2.1- 3.0	3.1- 5.0	5.1- 7.0	7.1- 10.0	10.1- 13.0	13.1- 18.0	>18	TOT.
N	0	0	0	2	3	11	2	0	0	0	0	0	18
NNE	0	0	0	0	2	6	0	0	0	0	0	0	8
NE	0	0	1	0	2	2	0	0	0	0	0	0	5
ENE	0	0	0	0	4	2	0	0	0	0	0	0	6
E	0	0	0	0	3	1	0	0	0	0	0	0	4
ESE	0	0	0	0	5	0	0	0	0	0	0	0	5
SE	0	0	0	0	3	3	0	0	0	0	0	0	6
SSE	0	0	0	0	2	2	4	0	0	0	0	0	8
S	0	0	0	0	1	7	10	1	0	0	0	0	19
SSW	0	0	0	1	3	11	0	0	0	0	0	0	15
SW	0	0	0	0	4	10	1	0	0	0	0	0	15
WSW	0	0	0	0	11	21	0	0	0	0	0	0	32
W	0	0	0	2	21	32	0	0	0	0	0	0	55
WNW	0	0	0	0	7	31	0	0	0	0	0	0	38
NW	0	0	0	1	6	13	1	0	0	0	0	0	21
NNW	0	0	0	1	6	5	6	0	0	0	0	0	18
TOTAL	0	0	1	7	83	157	24	1	0	0	0	0	273

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 273
TOTAL HOURS FOR THE PERIOD: 273

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS C

FROM 7/ 1/93 0:00 TO 9/30/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	2	3	0	0	0	0	0	0	5
NNE	0	0	0	1	3	2	0	0	0	0	0	0	6
NE	0	0	0	0	1	1	0	0	0	0	0	0	2
ENE	0	0	0	1	2	0	0	0	0	0	0	0	3
E	0	0	0	0	0	1	0	0	0	0	0	0	1
ESE	0	0	0	0	1	0	0	0	0	0	0	0	1
SE	0	0	0	1	0	2	0	0	0	0	0	0	3
SSE	0	0	0	1	3	1	0	1	0	0	0	0	6
S	0	0	0	1	4	3	3	0	0	0	0	0	11
SSW	0	0	0	1	3	4	2	0	0	0	0	0	10
SW	0	0	0	0	3	4	2	0	0	0	0	0	9
WSW	0	0	0	0	12	5	1	0	0	0	0	0	18
W	0	0	0	4	12	4	0	0	0	0	0	0	20
WNW	0	0	0	0	8	0	0	0	0	0	0	0	8
NW	0	0	0	2	7	4	0	0	0	0	0	0	13
NNW	0	0	0	0	5	4	1	0	0	0	0	0	10
TOTAL	0	0	0	12	66	38	9	1	0	0	0	0	126

NUMBER OF CALMS: 1
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 127
TOTAL HOURS FOR THE PERIOD: 127

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS D

FROM 7/ 1/93 0:00 TO 9/30/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	1	0	0	16	20	7	0	0	0	0	0	0	44
NNE	0	0	4	6	20	7	1	0	0	0	0	0	38
NE	0	0	1	9	8	1	0	0	0	0	0	0	19
ENE	0	0	2	4	2	2	1	0	0	0	0	0	11
E	0	1	5	7	1	0	0	0	0	0	0	0	14
ESE	0	0	5	13	3	1	0	0	0	0	0	0	22
SE	0	1	3	11	6	5	0	0	0	0	0	0	26
SSE	0	0	3	5	9	11	2	0	0	0	0	0	30
S	0	0	3	6	7	12	6	0	0	0	0	0	34
SSW	0	0	1	6	10	12	3	0	0	0	0	0	32
SW	0	0	0	16	11	10	0	0	0	0	0	0	37
WSW	0	1	4	16	9	1	0	0	0	0	0	0	31
W	0	0	4	17	6	0	1	0	0	0	0	0	28
WNW	0	0	1	12	9	2	2	0	0	0	0	0	26
NW	0	0	2	13	14	4	0	0	0	0	0	0	33
NNW	0	0	1	13	9	7	4	0	0	0	0	0	34
TOTAL	1	3	39	170	144	82	20	0	0	0	0	0	459

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 2
NUMBER OF VALID HOURS: 459
TOTAL HOURS FOR THE PERIOD: 461

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS E

FROM 7/ 1/93 0:00 TO 9/30/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	1	5	10	4	1	4	0	0	0	0	0	0	25
NNE	1	6	9	3	1	0	0	0	0	0	0	0	20
NE	2	9	15	13	4	7	0	0	0	0	0	0	50
ENE	2	17	11	5	0	1	0	0	0	0	0	0	36
E	0	12	10	7	0	1	0	0	0	0	0	0	30
ESE	0	13	14	4	1	0	0	0	0	0	0	0	32
SE	0	5	18	19	7	0	0	0	0	0	0	0	49
SSE	1	6	13	12	7	4	0	0	0	0	0	0	43
S	2	2	7	26	20	6	0	0	0	0	0	0	63
SSW	1	2	14	28	16	3	0	0	0	0	0	0	64
SW	1	11	12	18	2	2	0	0	0	0	0	0	46
WSW	2	16	16	10	0	3	0	0	0	0	0	0	47
W	0	11	7	4	0	0	1	0	0	0	0	0	23
WNW	0	5	13	6	0	1	0	0	0	0	0	0	25
NW	1	6	9	12	1	0	0	0	0	0	0	0	29
NNW	1	6	6	4	1	2	0	0	0	0	0	0	20
TOTAL	15	132	184	175	61	34	1	0	0	0	0	0	602

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 602
TOTAL HOURS FOR THE PERIOD: 602

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS F

FROM 7/ 1/93 0:00 TO 9/30/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	7	9	3	7	1	1	0	0	0	0	0	0	28
NNE	13	10	10	12	4	0	0	0	0	0	0	0	49
NE	11	7	3	9	0	0	0	0	0	0	0	0	30
ENE	3	8	1	0	0	0	0	0	0	0	0	0	12
E	1	5	0	1	0	0	0	0	0	0	0	0	7
ESE	3	4	1	2	0	0	0	0	0	0	0	0	10
SE	0	6	3	2	0	0	0	0	0	0	0	0	11
SSE	3	10	1	3	0	0	0	0	0	0	0	0	17
S	2	1	5	5	2	0	0	0	0	0	0	0	15
SSW	1	4	4	3	0	0	0	0	0	0	0	0	12
SW	2	7	5	3	0	0	0	0	0	0	0	0	17
WSW	7	12	10	0	0	1	0	0	0	0	0	0	30
W	8	14	5	1	0	0	0	0	0	0	0	0	28
WNW	8	17	9	2	0	0	0	0	0	0	0	0	36
NW	9	13	7	4	2	0	1	0	0	0	0	0	36
NNW	7	6	6	0	0	1	0	0	0	0	0	0	20
TOTAL	85	133	73	54	9	3	1	0	0	0	0	0	358

NUMBER OF CALMS: 4
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 362
TOTAL HOURS FOR THE PERIOD: 362

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS G

FROM 7/ 1/93 0:00 TO 9/30/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	10	3	0	2	0	2	0	0	0	0	0	0	17
NNE	13	4	5	3	0	0	0	0	0	0	0	0	25
NE	8	4	0	0	0	0	0	0	0	0	0	0	12
ENE	5	1	1	0	0	0	0	0	0	0	0	0	7
E	3	1	0	2	0	0	0	0	0	0	0	0	6
ESE	1	0	0	0	0	0	0	0	0	0	0	0	1
SE	0	1	0	0	0	0	0	0	0	0	0	0	1
SSE	2	2	1	0	0	0	0	0	0	0	0	0	5
S	0	2	0	0	0	0	0	0	0	0	0	0	2
SSW	3	3	0	1	0	0	0	0	0	0	0	0	7
SW	0	3	1	0	0	0	0	0	0	0	0	0	4
WSW	5	1	1	0	0	0	0	0	0	0	0	0	7
W	3	5	0	0	0	0	0	0	0	0	0	0	8
WNW	9	5	0	0	0	0	0	0	0	0	0	0	14
NW	16	21	2	0	0	0	0	0	0	0	0	0	39
NNW	14	5	4	2	0	0	0	0	0	0	0	0	25
TOTAL	92	61	15	10	0	2	0	0	0	0	0	0	180

NUMBER OF CALMS: 8
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 188
TOTAL HOURS FOR THE PERIOD: 188

RIVER BEND STATION
JOINT FREQUENCY TABLE
ALL STABILITY CLASSES

FROM 7/ 1/93 0:00 TO 9/30/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22- .50	.51- .75	.76- 1.0	1.1- 1.5	1.6- 2.0	2.1- 3.0	3.1- 5.0	5.1- 7.0	7.1- 10.0	10.1- 13.0	13.1- 18.0	>18	TOT.
N	2	3	3	6	8	42	23	0	0	0	0	0	87
NNE	1	3	2	9	12	44	23	1	0	0	0	0	95
NE	1	0	2	7	11	44	52	4	0	0	0	0	121
ENE	0	1	1	11	20	47	33	9	0	0	0	0	122
E	0	2	2	21	16	21	17	6	0	0	0	0	85
ESE	1	2	2	14	39	44	24	4	0	0	0	0	130
SE	0	1	3	18	26	48	47	1	0	0	0	0	144
SSE	0	2	3	13	23	45	27	1	1	0	0	0	115
S	0	0	5	10	27	79	57	18	0	0	0	0	196
SSW	0	1	0	11	21	83	59	3	0	0	0	0	178
SW	0	1	2	22	30	67	33	1	0	0	0	0	156
WSW	0	0	2	13	38	114	29	1	0	0	0	0	197
W	1	0	2	21	27	120	48	1	0	0	0	0	220
WNW	0	0	2	12	28	75	28	1	0	0	0	0	146
NW	0	1	0	11	27	48	15	1	0	0	0	0	103
NNW	0	1	1	14	12	32	24	4	0	0	0	0	88
TOTAL	6	18	32	213	365	953	539	56	1	0	0	0	2183

NUMBER OF CALMS: 1
NUMBER OF INVALID HOURS: 24
NUMBER OF VALID HOURS: 2184
TOTAL HOURS FOR THE PERIOD: 2208

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS A

FROM 1/ 1/93 0:00 TO 9/30/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	0	0	2	0	0	0	0	0	2
NNE	0	0	0	0	0	2	1	0	0	0	0	0	3
NE	0	0	0	0	0	1	5	0	0	0	0	0	6
ENE	0	0	0	0	0	3	6	0	0	0	0	0	9
E	0	0	0	0	0	1	6	3	0	0	0	0	10
ESE	0	0	0	0	0	4	[illegible]	3	0	0	0	0	11
SE	0	0	0	0	0	1	[illegible]	1	0	0	0	0	5
SSE	0	0	0	0	0	0	5	0	0	0	0	0	5
S	0	0	0	0	0	2	7	10	0	0	0	0	19
SSW	0	0	0	0	0	3	3	0	0	0	0	0	6
SW	0	0	0	0	0	2	4	1	0	0	0	0	7
WSW	0	0	0	0	1	8	15	0	0	0	0	0	24
W	0	0	0	1	1	13	28	0	0	0	0	0	43
WNW	0	0	0	0	1	3	5	0	0	0	0	0	9
NW	0	0	0	0	0	4	4	0	0	0	0	0	8
NNW	0	0	0	0	0	3	3	0	0	0	0	0	6
TOTAL	0	0	0	1	3	50	101	18	0	0	0	0	173

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 173
TOTAL HOURS FOR THE PERIOD: 173

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS B

FROM 7/ 1/93 0:00 TO 9/30/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	1	0	8	3	0	0	0	0	0	12
NNE	0	0	0	0	1	6	3	0	0	0	0	0	10
NE	0	0	0	1	1	2	2	0	0	0	0	0	6
ENE	0	0	0	0	0	5	4	0	0	0	0	0	9
E	0	0	0	0	0	4	1	0	0	0	0	0	5
ESE	0	0	0	0	0	5	0	0	0	0	0	0	5
SE	0	0	0	0	0	5	2	0	0	0	0	0	7
SSE	0	0	0	0	0	0	5	1	0	0	0	0	6
S	0	0	0	0	2	4	5	5	0	0	0	0	16
SSW	0	0	0	0	1	4	11	0	0	0	0	0	16
SW	0	0	0	0	1	7	6	0	0	0	0	0	14
WSW	0	0	0	0	3	19	9	0	0	0	0	0	31
W	0	0	0	0	3	48	16	0	0	0	0	0	67
WNW	0	0	0	0	1	22	9	0	0	0	0	0	32
NW	0	0	0	0	5	12	4	0	0	0	0	0	21
NNW	0	0	0	1	0	5	8	2	0	0	0	0	16
TOTAL	0	0	0	3	18	156	88	8	0	0	0	0	273

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 273
TOTAL HOURS FOR THE PERIOD: 273

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS C

FROM 7/ 1/93 0:00 TO 9/30/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	0	0	3	0	0	0	0	0	3
NNE	0	0	0	0	2	3	1	0	0	0	0	0	6
NE	0	0	0	0	0	2	0	0	0	0	0	0	2
ENE	0	0	0	0	0	1	3	0	0	0	0	0	4
E	0	0	0	0	1	0	0	1	0	0	0	0	2
ESE	0	0	0	0	0	2	0	0	0	0	0	0	2
SE	0	0	0	0	2	0	2	0	0	0	0	0	4
SSE	0	0	0	0	0	3	0	0	1	0	0	0	4
S	0	0	0	0	2	3	2	2	0	0	0	0	9
SSW	0	0	0	0	2	2	4	1	0	0	0	0	9
SW	0	0	0	0	2	2	7	0	0	0	0	0	11
WSW	0	0	0	0	6	12	1	1	0	0	0	0	20
W	0	0	0	1	7	11	0	0	0	0	0	0	19
WNW	0	0	0	0	3	8	1	0	0	0	0	0	12
NW	0	0	0	1	3	5	0	0	0	0	0	0	9
NNW	0	0	0	1	2	3	4	0	0	0	0	0	10
TOTAL	0	0	0	3	32	57	28	5	1	0	0	0	126

NUMBER OF CALMS: 1
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 127
TOTAL HOURS FOR THE PERIOD: 127

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS D

FROM 7/ 1/93 0:00 TO 9/30/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	1	0	1	1	4	20	3	0	0	0	0	0	30
NNE	0	0	2	4	3	19	9	1	0	0	0	0	38
NE	0	0	0	0	5	14	9	0	0	0	0	0	28
ENE	0	0	0	3	5	9	2	3	0	0	0	0	22
E	0	0	0	3	4	4	5	0	0	0	0	0	16
ESE	0	0	0	6	7	3	3	0	0	0	0	0	19
SE	0	0	0	0	6	6	14	0	0	0	0	0	26
SSE	0	0	1	8	5	6	8	0	0	0	0	0	28
S	0	0	0	1	3	14	10	1	0	0	0	0	29
SSW	0	0	0	3	3	11	13	2	0	0	0	0	32
SW	0	0	2	9	8	12	6	0	0	0	0	0	37
WSW	0	0	1	5	14	10	0	0	0	0	0	0	30
W	0	0	1	11	8	9	2	1	0	0	0	0	32
WNW	0	0	0	6	13	16	4	1	0	0	0	0	40
NW	0	0	0	5	11	7	3	0	0	0	0	0	26
NNW	0	0	0	7	3	9	5	2	0	0	0	0	26
TOTAL	1	0	8	72	102	169	96	11	0	0	0	0	459

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 2
NUMBER OF VALID HOURS: 459
TOTAL HOURS FOR THE PERIOD: 461

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS E

FROM 7/ 1/93 0:00 TO 9/30/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	1	1	1	2	2	6	3	0	0	0	0	0	16
NNE	0	0	0	1	2	4	1	0	0	0	0	0	8
NE	1	0	0	2	4	17	10	1	0	0	0	0	35
ENE	0	0	0	3	5	23	9	6	0	0	0	0	46
E	0	1	1	11	4	8	4	2	0	0	0	0	31
ESE	1	2	2	1	21	19	14	1	0	0	0	0	61
SE	0	0	1	6	11	20	18	0	0	0	0	0	56
SSE	0	2	0	3	10	19	6	0	0	0	0	0	40
S	0	0	3	3	9	26	27	0	0	0	0	0	68
SSW	0	0	0	3	4	35	24	0	0	0	0	0	66
SW	0	1	0	3	4	28	10	0	0	0	0	0	46
WSW	0	0	0	3	1	43	4	0	0	0	0	0	51
W	0	0	1	4	4	13	1	0	0	0	0	0	23
WNW	0	0	0	0	5	14	6	0	0	0	0	0	25
NW	0	0	0	1	2	12	1	0	0	0	0	0	16
NNW	0	1	0	0	2	8	3	0	0	0	0	0	14
TOTAL	3	8	9	46	90	295	141	10	0	0	0	0	602

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 602
TOTAL HOURS FOR THE PERIOD: 602

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS F

FROM 7/ 1/93 0:00 TO 9/30/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	1	1	2	2	4	4	0	0	0	0	0	14
NNE	0	2	0	1	2	4	6	0	0	0	0	0	15
NE	0	0	1	3	1	4	19	3	0	0	0	0	31
ENE	0	1	1	1	9	5	9	0	0	0	0	0	26
E	0	1	0	4	3	2	1	0	0	0	0	0	11
ESE	0	0	0	5	7	8	1	0	0	0	0	0	21
SE	0	0	1	6	6	8	7	0	0	0	0	0	28
SSE	0	0	2	1	4	12	1	0	0	0	0	0	20
S	0	0	1	6	6	21	2	0	0	0	0	0	36
SSW	0	1	0	3	6	22	2	0	0	0	0	0	34
SW	0	0	0	6	6	8	0	0	0	0	0	0	20
WSW	0	0	0	3	11	21	0	0	0	0	0	0	35
W	1	0	0	1	3	19	1	0	0	0	0	0	25
WNW	0	0	1	1	3	12	3	0	0	0	0	0	20
NW	0	1	0	3	5	4	3	1	0	0	0	0	17
NNW	0	0	0	2	3	3	1	0	0	0	0	0	9
TOTAL	1	7	8	48	77	157	60	4	0	0	0	0	362

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 362
TOTAL HOURS FOR THE PERIOD: 362

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS G

FROM 7/ 1/93 0:00 TO 9/30/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22- .50	.51- .75	.76- 1.0	1.1- 1.5	1.6- 2.0	2.1- 3.0	3.1- 5.0	5.1- 7.0	7.1 10.0	10.1- 13.0	13.1- 18.0	>18	TOT.
N	0	1	0	0	0	4	5	0	0	0	0	0	10
NNE	1	1	0	3	2	6	2	0	0	0	0	0	15
NE	0	0	1	1	0	4	7	0	0	0	0	0	13
ENE	0	0	0	4	1	1	0	0	0	0	0	0	6
E	0	0	1	3	4	2	0	0	0	0	0	0	10
ESE	0	0	0	2	4	3	2	0	0	0	0	0	11
SE	0	1	1	6	1	8	1	0	0	0	0	0	18
SSE	0	0	0	1	4	5	2	0	0	0	0	0	12
S	0	0	1	0	5	9	4	0	0	0	0	0	19
SSW	0	0	0	2	5	6	2	0	0	0	0	0	15
SW	0	0	0	4	9	8	0	0	0	0	0	0	21
WSW	0	0	1	2	2	1	0	0	0	0	0	0	6
W	0	0	0	3	1	7	0	0	0	0	0	0	11
WNW	0	0	1	5	2	0	0	0	0	0	0	0	8
NW	0	0	0	1	1	4	0	0	0	0	0	0	6
NNW	0	0	1	3	2	1	0	0	0	0	0	0	7
TOTAL	1	3	7	40	43	69	25	0	0	0	0	0	188

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 188
TOTAL HOURS FOR THE PERIOD: 188

RIVER BEND STATION
JOINT FREQUENCY TABLE
ALL STABILITY CLASSES

FROM 10/ 1/93 0:00 TO 12/31/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	7	9	9	33	48	82	53	1	0	0	0	0	242
NNE	14	16	17	59	61	46	12	0	0	0	0	0	225
NE	11	21	17	50	33	24	0	0	0	0	0	0	156
ENE	11	31	16	39	22	8	0	0	0	0	0	0	127
E	9	30	13	31	17	5	0	0	0	0	0	0	105
ESE	3	10	28	31	21	9	0	0	0	0	0	0	102
SE	2	9	19	53	90	90	11	0	0	0	0	0	274
SSE	2	3	5	17	34	58	64	5	0	0	0	0	188
S	1	2	2	16	12	47	36	6	0	0	0	0	122
SSW	1	2	5	10	11	18	10	0	0	0	0	0	57
SW	0	2	3	7	9	5	1	0	0	0	0	0	27
WSW	1	5	3	9	13	11	1	0	0	0	0	0	43
W		10	7	7	20	12	2	0	0	0	0	0	64
WNW	6	11	9	14	14	15	10	1	0	0	0	0	80
NW	10	8	22	21	17	16	28	2	0	0	0	0	124
NNW	8	7	17	34	35	65	77	7	0	0	0	0	250
TOTAL	92	176	192	431	457	511	305	22	0	0	0	0	2186

NUMBER OF CALMS: 8
NUMBER OF INVALID HOURS: 14
NUMBER OF VALID HOURS: 2194
TOTAL HOURS FOR THE PERIOD: 2208

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS A

FROM 10/ 1/93 0:00 TO 12/31/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	1	2	4	0	0	0	0	0	7
NNE	0	0	0	0	0	5	0	0	0	0	0	0	5
NE	0	0	0	0	0	3	0	0	0	0	0	0	3
ENE	0	0	0	0	2	5	0	0	0	0	0	0	7
E	0	0	0	0	1	3	0	0	0	0	0	0	4
ESE	0	0	0	1	2	2	0	0	0	0	0	0	5
SE	0	0	0	0	0	25	3	0	0	0	0	0	28
SSE	0	0	0	0	0	4	4	0	0	0	0	0	8
S	0	0	0	0	0	6	11	0	0	0	0	0	17
SSW	0	0	0	1	0	2	0	0	0	0	0	0	3
SW	0	0	0	0	0	1	0	0	0	0	0	0	1
WSW	0	0	0	0	0	3	0	0	0	0	0	0	3
W	0	0	0	0	0	2	0	0	0	0	0	0	2
WNW	0	0	0	0	0	2	1	0	0	0	0	0	3
NW	0	0	0	0	0	0	4	0	0	0	0	0	4
NNW	0	0	0	0	0	1	9	0	0	0	0	0	10
TOTAL	0	0	0	2	6	66	36	0	0	0	0	0	110

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 110
TOTAL HOURS FOR THE PERIOD: 110

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS B

FROM 10/ 1/93 0:00 TO 12/31/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22- .50	.51- .75	.76- 1.0	1.1- 1.5	1.6- 2.0	2.1- 3.0	3.1- 5.0	5.1- 7.0	7.1- 10.0	10.1- 13.0	13.1- 18.0	>18	TOT.
N	0	0	0	1	1	14	9	0	0	0	0	0	25
NNE	0	0	0	0	2	8	4	0	0	0	0	0	14
NE	0	0	0	0	3	6	0	0	0	0	0	0	9
ENE	0	0	0	1	3	0	0	0	0	0	0	0	4
E	0	0	0	0	2	1	0	0	0	0	0	0	3
ESE	0	0	0	2	2	1	0	0	0	0	0	0	5
SE	0	0	0	0	2	11	1	0	0	0	0	0	14
SSE	0	0	0	0	2	3	9	1	0	0	0	0	15
S	0	0	0	0	0	5	5	0	0	0	0	0	10
SSW	0	0	0	0	2	4	4	0	0	0	0	0	10
SW	0	0	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	6	0	0	0	0	0	0	6
W	0	0	0	0	2	4	0	0	0	0	0	0	6
WNW	0	0	0	0	2	2	1	0	0	0	0	0	5
NW	0	0	0	0	0	3	4	0	0	0	0	0	7
NNW	0	0	0	0	0	10	14	0	0	0	0	0	24
TOTAL	0	0	0	4	23	78	51	1	0	0	0	0	157

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 157
TOTAL HOURS FOR THE PERIOD: 157

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS C

FROM 10/ 1/93 0:00 TO 12/31/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	0	11	2	0	0	0	0	0	13
NNE	0	0	0	0	3	3	1	0	0	0	0	0	7
NE	0	0	0	1	1	1	0	0	0	0	0	0	3
ENE	0	0	0	0	1	1	0	0	0	0	0	0	2
E	0	0	0	1	3	0	0	0	0	0	0	0	4
ESE	0	0	0	1	3	0	0	0	0	0	0	0	4
SE	0	0	0	0	4	1	1	0	0	0	0	0	6
SSE	0	0	0	0	3	3	3	0	0	0	0	0	9
S	0	0	0	0	0	2	6	0	0	0	0	0	8
SSW	0	0	0	0	1	3	2	0	0	0	0	0	6
SW	0	0	0	0	1	0	0	0	0	0	0	0	1
WSW	0	0	0	0	1	0	1	0	0	0	0	0	2
W	0	0	0	0	1	1	0	0	0	0	0	0	2
WNW	0	0	0	0	1	1	2	1	0	0	0	0	5
NW	0	0	0	0	1	0	2	1	0	0	0	0	4
NNW	0	0	0	0	2	2	4	0	0	0	0	0	8
TOTAL	0	0	0	3	26	29	24	2	0	0	0	0	84

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 84
TOTAL HOURS FOR THE PERIOD: 84

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS D

FROM 10/ 1/93 0:00 TO 12/31/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	3	7	16	16	36	1	0	0	0	0	109
NNE	0	1	2	9	28	24	7	0	0	0	0	0	71
NE	0	1	0	18	12	8	0	0	0	0	0	0	39
ENE	0	0	3	11	8	1	0	0	0	0	0	0	23
E	0	0	0	13	7	0	0	0	0	0	0	0	20
ESE	0	0	2	10	4	5	0	0	0	0	0	0	21
SE	0	0	1	15	29	24	3	0	0	0	0	0	72
SSE	0	0	0	1	11	23	42	4	0	0	0	0	81
S	0	0	0	5	6	16	12	5	0	0	0	0	44
SSW	0	0	0	3	6	5	3	0	0	0	0	0	17
SW	0	0	0	3	3	4	1	0	0	0	0	0	11
WSW	0	0	1	4	10	2	0	0	0	0	0	0	17
W	0	0	1	6	12	5	2	0	0	0	0	0	26
WNW	0	1	1	4	4	6	4	0	0	0	0	0	20
NW	0	0	3	4	7	9	17	1	0	0	0	0	41
NNW	0	0	1	6	11	39	50	7	0	0	0	0	114
TOTAL	0	3	18	119	174	217	177	18	0	0	0	0	726

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 1
NUMBER OF VALID HOURS: 726
TOTAL HOURS FOR THE PERIOD: 727

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS E

FROM 10/ 1/93 0:00 TO 12/31/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	1	1	1	13	25	8	2	0	0	0	0	0	51
NNE	0	5	10	36	27	6	0	0	0	0	0	0	84
NE	0	3	9	18	14	6	0	0	0	0	0	0	50
ENE	0	3	6	11	4	1	0	0	0	0	0	0	25
E	0	4	5	10	4	1	0	0	0	0	0	0	24
ESE	0	4	12	13	8	1	0	0	0	0	0	0	38
SE	0	3	9	29	49	26	3	0	0	0	0	0	119
SSE	0	0	3	9	17	25	6	0	0	0	0	0	60
S	0	0	1	9	6	18	2	1	0	0	0	0	37
SSW	0	0	2	6	2	4	1	0	0	0	0	0	15
SW	0	0	1	2	5	0	0	0	0	0	0	0	8
WSW	0	0	0	4	2	0	0	0	0	0	0	0	6
W	0	5	1	1	5	0	0	0	0	0	0	0	12
WNW	1	0	2	2	5	4	2	0	0	0	0	0	16
NW	1	1	5	5	9	4	1	0	0	0	0	0	26
NNW	0	0	5	15	18	13	0	0	0	0	0	0	51
TOTAL	3	29	72	183	200	117	17	1	0	0	0	0	622

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 622
TOTAL HOURS FOR THE PERIOD: 622

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS G

FROM 10/ 1/93 0:00 TO 12/31/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	6	8	3	0	0	0	0	0	0	0	0	0	17
NNE	12	9	1	2	0	0	0	0	0	0	0	0	24
NE	11	10	4	2	1	0	0	0	0	0	0	0	28
ENE	11	26	3	7	1	0	0	0	0	0	0	0	48
E	9	22	3	0	0	0	0	0	0	0	0	0	34
ESE	3	3	4	2	0	0	0	0	0	0	0	0	12
SE	2	3	2	0	0	2	0	0	0	0	0	0	9
SSE	2	2	1	0	0	0	0	0	0	0	0	0	5
S	0	0	0	1	0	0	0	0	0	0	0	0	1
SSW	1	1	2	0	0	0	0	0	0	0	0	0	4
SW	0	2	0	0	0	0	0	0	0	0	0	0	2
WSW	1	3	2	0	0	0	0	0	0	0	0	0	6
W	5	5	3	0	0	0	0	0	0	0	0	0	13
WNW	4	8	4	1	0	0	0	0	0	0	0	0	17
NW	8	6	8	3	0	0	0	0	0	0	0	0	25
NNW	8	7	6	2	0	0	0	0	0	0	0	0	23
TOTAL	83	115	46	20	2	2	0	0	0	0	0	0	268

NUMBER OF CALMS: 8
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 276
TOTAL HOURS FOR THE PERIOD: 276

RIVER BEND STATION
JOINT FREQUENCY TABLE
ALL STABILITY CLASSES

FROM 10/ 1/93 0:00 TO 12/31/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	1	2	6	5	49	154	14	2	0	0	0	233
NNE	0	0	1	2	14	64	99	7	0	0	0	0	187
NE	0	0	0	6	15	67	107	6	0	0	0	0	201
ENE	0	0	0	8	17	35	84	10	0	0	0	0	154
E	0	0	1	4	19	43	23	0	0	0	0	0	90
ESE	0	0	1	4	12	50	143	48	0	0	0	0	258
SE	0	0	0	4	3	28	115	22	3	0	0	0	175
SSE	0	0	0	2	8	38	79	35	2	0	0	0	164
S	0	0	0	6	9	37	73	8	5	0	0	0	138
SSW	0	0	2	5	9	24	27	6	0	0	0	0	73
SW	0	0	0	4	8	15	9	0	0	0	0	0	36
WSW	0	1	2	6	9	25	25	2	0	0	0	0	70
W	0	0	0	2	3	27	27	3	0	0	0	0	62
WNW	0	0	2	1	4	23	28	12	3	0	0	0	73
NW	0	0	0	2	4	15	39	17	1	0	0	0	78
NNW	0	0	1	4	6	32	119	31	9	0	0	0	202
TOTAL	0	2	12	66	145	572	1151	221	25	0	0	0	2194

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 14
NUMBER OF VALID HOURS: 2194
TOTAL HOURS FOR THE PERIOD: 2208

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS A

FROM 10/ 1/93 0:00 TO 12/31/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	0	0	6	1	0	0	0	0	7
NNE	0	0	0	0	1	0	3	0	0	0	0	0	4
NE	0	0	0	0	0	1	4	0	0	0	0	0	5
ENE	0	0	0	0	0	1	7	0	0	0	0	0	8
E	0	0	0	0	0	1	4	0	0	0	0	0	5
ESE	0	0	0	0	0	2	14	4	0	0	0	0	20
SE	0	0	0	0	0	1	11	4	0	0	0	0	16
SSE	0	0	0	0	0	0	6	0	0	0	0	0	6
S	0	0	0	0	0	3	10	1	0	0	0	0	14
SSW	0	0	0	0	1	0	1	0	0	0	0	0	2
SW	0	0	0	0	0	2	0	0	0	0	0	0	2
WSW	0	0	0	0	0	1	2	0	0	0	0	0	3
W	0	0	0	0	0	1	1	0	0	0	0	0	2
WNW	0	0	0	0	0	1	2	0	0	0	0	0	3
NW	0	0	0	0	0	0	2	3	0	0	0	0	5
NNW	0	0	0	0	0	0	3	5	0	0	0	0	8
TOTAL	0	0	0	0	2	14	76	18	0	0	0	0	110

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 110
TOTAL HOURS FOR THE PERIOD: 110

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS B

FROM 10/ 1/93 0:00 TO 12/31/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	1	0	1	17	1	0	0	0	0	20
NNE	0	0	0	0	0	6	9	1	0	0	0	0	16
NE	0	0	0	0	0	6	2	0	0	0	0	0	8
ENE	0	0	0	1	2	2	2	0	0	0	0	0	7
E	0	0	0	0	2	4	1	0	0	0	0	0	7
ESE	0	0	0	0	0	2	7	2	0	0	0	0	11
SE	0	0	0	0	0	1	6	1	0	0	0	0	8
SSE	0	0	0	0	0	2	8	4	0	0	0	0	14
S	0	0	0	0	0	2	3	1	0	0	0	0	6
SSW	0	0	0	0	0	2	5	2	0	0	0	0	9
SW	0	0	0	0	0	2	0	0	0	0	0	0	2
WSW	0	0	0	0	0	3	2	0	0	0	0	0	5
W	0	0	0	0	1	6	2	0	0	0	0	0	9
WNW	0	0	0	0	0	2	1	1	0	0	0	0	4
NW	0	0	0	0	0	1	4	1	0	0	0	0	6
NNW	0	0	0	0	0	4	17	4	0	0	0	0	25
TOTAL	0	0	0	2	5	46	86	18	0	0	0	0	157

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 157
TOTAL HOURS FOR THE PERIOD: 157

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS F

FROM 10/ 1/93 0:00 TO 12/31/93 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	2	12	5	1	0	0	0	0	0	0	20
NNE	2	1	4	12	1	0	0	0	0	0	0	0	20
NE	0	7	4	11	2	0	0	0	0	0	0	0	24
ENE	0	2	4	9	3	0	0	0	0	0	0	0	18
E	0	4	5	7	0	0	0	0	0	0	0	0	16
ESE	0	3	10	2	2	0	0	0	0	0	0	0	17
SE	0	3	7	9	6	1	0	0	0	0	0	0	26
SSE	0	1	1	7	1	0	0	0	0	0	0	0	10
S	1	2	1	1	0	0	0	0	0	0	0	0	5
SSW	0	1	1	0	0	0	0	0	0	0	0	0	2
SW	0	0	2	2	0	0	0	0	0	0	0	0	4
WSW	0	2	0	1	0	0	0	0	0	0	0	0	3
W	1	0	2	0	0	0	0	0	0	0	0	0	3
WNW	1	2	2	7	2	0	0	0	0	0	0	0	14
NW	1	1	6	9	0	0	0	0	0	0	0	0	17
NNW	0	0	5	11	4	0	0	0	0	0	0	0	20
TOTAL	6	29	56	100	26	2	0	0	0	0	0	0	219

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 219
TOTAL HOURS FOR THE PERIOD: 219

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS C

FROM 10/ 1/93 0:00 TO 12/31/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	0	6	4	0	0	0	0	0	10
NNE	0	0	0	0	0	4	5	1	0	0	0	0	10
NE	0	0	0	0	1	0	1	0	0	0	0	0	2
ENE	0	0	0	0	1	2	1	0	0	0	0	0	4
E	0	0	0	1	1	1	0	0	0	0	0	0	3
ESE	0	0	0	1	1	3	1	0	0	0	0	0	6
SE	0	0	0	0	0	3	1	1	0	0	0	0	5
SSE	0	0	0	0	1	3	2	2	0	0	0	0	8
S	0	0	0	0	0	2	4	2	0	0	0	0	8
SSW	0	0	0	0	0	1	4	1	0	0	0	0	6
SW	0	0	0	0	0	1	0	0	0	0	0	0	1
WSW	0	0	0	0	0	1	0	1	0	0	0	0	2
W	0	0	0	0	1	1	1	1	0	0	0	0	4
WNW	0	0	0	0	0	1	0	1	2	0	0	0	4
NW	0	0	0	0	1	0	1	1	0	0	0	0	3
NNW	0	0	0	0	2	1	3	2	0	0	0	0	8
TOTAL	0	0	0	2	9	30	28	13	2	0	0	0	84

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 84
TOTAL HOURS FOR THE PERIOD: 84

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS D

FROM 10/ 1/93 0:00 TO 12/31/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	1	4	3	21	59	12	2	0	0	0	102
NNE	0	0	1	1	7	13	33	5	0	0	0	0	60
NE	0	0	0	2	8	23	22	1	0	0	0	0	56
ENE	0	0	0	3	5	12	21	2	0	0	0	0	43
E	0	0	1	1	2	7	7	0	0	0	0	0	18
ESE	0	0	0	1	6	11	28	15	0	0	0	0	61
SE	0	0	0	1	0	9	17	11	1	0	0	0	39
SSE	0	0	0	0	3	9	21	25	2	0	0	0	60
S	0	0	0	2	2	11	25	4	4	0	0	0	48
SSW	0	0	0	2	2	10	3	3	0	0	0	0	20
SW	0	0	0	2	3	3	3	0	0	0	0	0	11
WSW	0	0	0	2	5	5	6	1	0	0	0	0	19
W	0	0	0	2	0	9	15	2	0	0	0	0	28
WNW	0	0	1	1	3	6	4	7	1	0	0	0	23
NW	0	0	0	1	2	6	12	11	1	0	0	0	33
NNW	0	0	1	3	2	10	60	20	9	0	0	0	105
TOTAL	0	0	5	28	53	165	336	119	20	0	0	0	726

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 1
NUMBER OF VALID HOURS: 726
TOTAL HOURS FOR THE PERIOD: 727

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS E

FROM 10/ 1/93 0:00 TO 12/31/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	1	1	0	1	13	42	0	0	0	0	0	58
NNE	0	0	0	0	2	24	35	0	0	0	0	0	61
NE	0	0	0	2	5	26	45	4	0	0	0	0	82
ENE	0	0	0	1	6	11	20	7	0	0	0	0	45
E	0	0	0	1	2	7	7	0	0	0	0	0	17
ESE	0	0	0	0	1	10	64	21	0	0	0	0	96
SE	0	0	0	1	1	3	50	5	2	0	0	0	62
SSE	0	0	0	0	2	11	29	4	0	0	0	0	46
S	0	0	0	1	3	9	29	0	1	0	0	0	43
SSW	0	0	1	2	3	4	13	0	0	0	0	0	23
SW	0	0	0	0	2	0	4	0	0	0	0	0	6
WSW	0	0	0	0	1	2	8	0	0	0	0	0	11
W	0	0	0	0	1	3	6	0	0	0	0	0	10
WNW	0	0	0	0	0	2	7	2	0	0	0	0	11
NW	0	0	0	0	0	1	12	1	0	0	0	0	14
NNW	0	0	0	0	1	12	24	0	0	0	0	0	37
TOTAL	0	1	2	8	31	138	395	44	3	0	0	0	622

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 622
TOTAL HOURS FOR THE PERIOD: 622

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS F

FROM 10/ 1/93 0:00 TO 12/31/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	1	0	3	23	0	0	0	0	0	27
NNE	0	0	0	0	2	9	10	0	0	0	0	0	21
NE	0	0	0	2	1	6	21	1	0	0	0	0	31
ENE	0	0	0	1	0	4	17	1	0	0	0	0	23
E	0	0	0	0	5	6	0	0	0	0	0	0	11
ESE	0	0	0	1	0	7	19	2	0	0	0	0	29
SE	0	0	0	0	1	4	18	0	0	0	0	0	23
SSE	0	0	0	0	0	4	9	0	0	0	0	0	13
S	0	0	0	0	1	2	2	0	0	0	0	0	5
SSW	0	0	0	0	0	0	0	0	0	0	0	0	0
SW	0	0	0	0	0	1	1	0	0	0	0	0	2
WSW	0	0	0	1	0	1	2	0	0	0	0	0	4
W	0	0	0	0	0	2	0	0	0	0	0	0	2
WNW	0	0	0	0	0	1	9	1	0	0	0	0	11
NW	0	0	0	0	1	2	5	0	0	0	0	0	8
NNW	0	0	0	0	0	2	7	0	0	0	0	0	9
TOTAL	0	0	0	6	11	54	143	5	0	0	0	0	219

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 219
TOTAL HOURS FOR THE PERIOD: 219

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS G

FROM 10/ 1/93 0:00 TO 12/31/93 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22-.50	.51-.75	.76-1.0	1.1-1.5	1.6-2.0	2.1-3.0	3.1-5.0	5.1-7.0	7.1-10.0	10.1-13.0	13.1-18.0	>18	TOT.
N	0	0	0	0	1	5	3	0	0	0	0	0	9
NNE	0	0	0	1	2	8	4	0	0	0	0	0	15
NE	0	0	0	0	0	5	12	0	0	0	0	0	17
ENE	0	0	0	2	3	3	16	0	0	0	0	0	24
E	0	0	0	1	7	17	4	0	0	0	0	0	29
ESE	0	0	1	1	4	15	10	4	0	0	0	0	35
SE	0	0	0	2	1	7	12	0	0	0	0	0	22
SSE	0	0	0	2	2	9	4	0	0	0	0	0	17
S	0	0	0	3	3	8	0	0	0	0	0	0	14
SSW	0	0	1	1	3	7	1	0	0	0	0	0	13
SW	0	0	0	2	3	6	1	0	0	0	0	0	12
WSW	0	1	2	3	3	12	5	0	0	0	0	0	26
W	0	0	0	0	0	5	2	0	0	0	0	0	7
WNW	0	0	1	0	1	10	5	0	0	0	0	0	17
NW	0	0	0	1	0	5	3	0	0	0	0	0	9
NNW	0	0	0	1	1	3	5	0	0	0	0	0	10
TOTAL	0	1	5	20	34	125	87	4	0	0	0	0	276

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 276
TOTAL HOURS FOR THE PERIOD: 276

TABLE 14
ATMOSPHERIC DISPERSION FACTORS
(X/Q FACTORS) (D/Q FACTORS)

1993

ATMOSPHERIC DISPERSION AND DEPOSITION RATES FOR THE MAXIMUM INDIVIDUAL DOSE CALCULATIONS*			
Analysis	Location (meters)	Ground Level Releases	Mixed Mode Releases
Gamma air dose (3) and Beta Air Dose	994 m WNW (Containment)	CHI/Q - 421.0	CHI/Q - 33.1
Maximum Receptor (4)	994 m WNW	CHI/Q - 421.0 D/Q - 50.3	CHI/Q - 33.1 D/Q - 18.1
Resident			
Garden			
Meat Animal			
Immersion			
Milk Animal (5)	7,000 m WNW	CHI/Q - 3.58 D/Q - 0.38	CHI/Q - .870 D/Q - .223
Other On-Site Receptors (6)	115 m ENE	CHI/Q - 5977.0 D/Q - 529.7	CHI/Q - 407.5 D/Q - 46.9
	275 m N	CHI/Q - 1644.0 D/Q - 345.6	CHI/Q - 169.1 D/Q - 68.4
	500 m WNW	CHI/Q - 916.7 D/Q - 148.1	CHI/Q - 105.4 D/Q - 45.6
	2500 SW	CHI/Q - 34.45 D/Q - 3.35	CHI/Q - 4.65 D/Q - 1.40

* Reference 1.2.11 and 1.2.12

Notes:

(1) All CHI/Q = 10-7 sec/m^3

(2) All D/Q = 10-9 m^{-2}

(3) Maximum offsite location (property boundary) with highest CHI/Q (unoccupied).

(4) Maximum hypothetical occupied offsite location with highest CHI/Q and D/Q.

(5) No milk animal within 5 mile radius, hypothetical location in worst sector.

(6) Other on site receptors.

ATTACHMENT 1

OFF-SITE DOSE CALCULATION MANUAL
(ODCM) REVISION

1993

RIVER BEND STATION
APPROVAL SHEET
STATION OPERATING PROCEDURES

NO. RSP-0008 TITLE OFFSITE DOSE CALCULATION MANUAL (ODCM)

PROCEDURE

SAFETY RELATED YES [X] NO [ ]

QA APPLICABLE YES [X] NO [ ]

REV. NO.	PAGES ISSUED	FINAL REVIEW SIGNATURE/DATE	APPROVED BY SIGNATURE/DATE	EFFECT DATE
0	1 Thru 112	[signature] 7/11/86	[signature] 7/11/86	07/11/86
1	1 THRU 111	[signature] 8/12/87	[signature] 8/12/87	08/13/87
2	1 thru 110	[signature] 7/28/88	[signature] 7/28/88	07/29/88
3	1 thru 110	[signature] 2/13/89	[signature] 2/14/89	02/14/89
4	1 thru 125	[signature] 5/28/93	[signature] 0268 6/1/93 6/4/93	6/11/93

Table of Contents

Appendices PAGE

Figures

Attachments

1.0 INTRODUCTION

1.1 PURPOSE

This manual provides a concise description of the environmental dose models and techniques used to calculate offsite doses resulting from measured or projected releases of radioactive materials from Gulf States Utilities' River Bend Nuclear Station. It also provides the methodology for calculating effluent monitoring setpoints and allowable release rates to ensure compliance with the Radiological Effluent Technical Specifications (RETS) of Gulf States Utilities, River Bend Station. This manual also contains a description of the Radiological Environmental Monitoring Program which includes sample point descriptions for both onsite and offsite locations and sampling and analysis frequencies.

The ODCM follows the methodology and models suggested by the "Guidance Manual for Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants" (NUREG-0133, dated October 1978) and "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I" (Regulatory Guide 1.109, Rev. 1, dated October 1977). Alternate calculational methods may be used from those presented as long as the overall methodology does not change or as long as the alternative methods provide results that are more limiting. Also, as available, the most up-to-date revision of Regulatory Guide 1.109 dose conversion factors and site-specific environmental transfer factors may be substituted for those currently included and used in this document.

1.2 REFERENCES

1.2.1 NUREG 0133; Guidance Manual for Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants; October, 1978.

1.2.2 REG. GUIDE 1.109, Rev. 1, October, 1977; Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Compliance with 10 CFR Part 50, Appendix I.

1.2.3 U.S. Code of Federal Regulations; 10CFR20.

1.2.4 River Bend Environmental Report, OLS.

1.2.5 REG. GUIDE 1.111; Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water - Cooled Reactors.

1.2.6 River Bend Station USAR

1.2.7 River Bend Environmental Report, CPS.

1.2.8 U.S. Code Of Federal Regulations, 10CFR50.

1.2.9 U.S. Code of Federal Regulations, 40CFR190.

1.2.10 NUREG 0543, Methods for Demonstrating LWR Compliance with the EPA Uranium Fuel Cycle Standard (40CFR Part 190)

1.2.11 River Bend Station Radiological Environmental Operating Report for 1985

1.2.12 River Bend Technical Specifications

1.3 DEFINITIONS

1.3.1 MEMBER(s) OF THE PUBLIC -

MEMBER(S) OF THE PUBLIC shall include all persons who are not occupationally associated with the plant. This category does not include employees of the utility, its contractors or vendors. Also excluded from this category are persons who enter the site to service equipment or to make deliveries. This category does include persons who use portions of the site for recreational, occupational or other purposes not associated with the plant.

1.3.2 OFFSITE DOSE CALCULATION MANUAL -

The OFFSITE DOSE CALCULATION MANUAL shall contain the methodology and parameters used in the calculation of offsite doses due to radioactive gaseous and liquid effluents and in the calculation of gaseous and liquid effluent monitoring alarm/trip setpoints. It shall also contain a table and figure defining current radiological environmental monitoring sample locations.

1.3.3 SITE BOUNDARY -

The SITE BOUNDARY shall be that line beyond which the land is not owned, leased, or otherwise controlled by the licensee.

1.3.4 UNRESTRICTED AREA -

An UNRESTRICTED AREA shall be any area at or beyond the SITE BOUNDARY access to which is not controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials, or any area within the site boundary used for residential quarters or for industrial, commercial, institutional, and/or recreational purposes.

1.3.5 VENTILATION EXHAUST TREATMENT SYSTEM -

A VENTILATION EXHAUST TREATMENT SYSTEM is any system designed and installed to reduce gaseous radioiodine and/or radioactive material in particulate form in effluents by passing ventilation or vent exhaust gases through charcoal absorbers and HEPA filters prior to the release to the environment (such a system is not considered to have any effect on noble gas effluents). Engineered Safety Feature (ESF) atmospheric cleanup systems are not considered to be VENTILATION EXHAUST TREATMENT SYSTEM components.

1.4 REQUIRED EQUIPMENT

1.4.1 None

1.5 PRECAUTIONS AND LIMITATIONS

1.5.1 As per Technical Specification 6.14, Licensee-initiated changes to the ODCM/Procedure shall be submitted to the Commission in the Radioactive Effluent Release Report for the period in which the change(s) was made effective.

1.5.2 No changes(s) shall be made to the ODCM/Procedure that will reduce the accuracy or reliability of dose calculations or setpoint determinations.

1.5.3 Any change(s) shall be made in accordance with Technical Specification 6.14. The change(s) should be recorded on the ODCM Revision Sheet (Attachment 1). Major rewrite procedure revisions do not require the use of the ODCM Revision sheet.

1.6 PREREQUISITES

1.6.1 None

2.0 LIQUID EFFLUENT METHODOLOGY

2.1 River Bend Site Description

The River Bend Station Updated Safety Analysis Report (USAR) contains the official description of the site characteristics. The description that follows is a brief summary for dose calculation purposes:

The River Bend Station (RBS) is on a site in West Feliciana Parish, Louisiana, located approximately 24 miles north-northwest of Baton Rouge, Louisiana. This site is just east of the Mississippi River which is used as the source of the RBS major water requirements and which receives the RBS liquid effluents.

The reactor is a General Electric boiling water reactor of the BWR-6 or 1972 product line. Containment is of the Mark 3 design, a free-standing cylindrical steel structure surrounded by a reinforced concrete shield building.

2.2 Compliance with 10CFR20 (Liquids)

2.2.1 Requirements

In accordance with Technical Specification 3.11.1.1, the concentration of radioactive material released in liquid effluents to Unrestricted Areas (Figure 1) shall be limited to the concentrations specified in 10CFR20, Appendix B, Table II, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2×10^{-4} uCi/ml total activity. The concentration of radionuclides in liquid waste is determined by sampling and analysis in accordance with Technical Specification Table 4.11.1.1.1-1.

2.2.2 Methodology

This section describes the calculational method to be used to determine F_L, the fraction of 10CFR20 limits of release concentrations of liquid radioactive effluents.

2.2.2.1 General Approach

Liquid effluent releases from River Bend Station are discharged through the cooling tower water blowdown which is directed to the Mississippi River. Principal sources of radwaste are from floor drains, phase separators/backwash tank subsystem, sample recovery tanks, and reactor water cleanup (as shown in Figure 4). The liquid radwaste system is operated as a batch system. Only one tank of liquid radwaste is released at a time and is considered a batch.

The radioactive content of each batch release will be determined prior to release in accordance with Table 4.11.1.1.1-1 of the RBS Technical Specifications. Compliance with 10CFR20 limits will be determined with the following equation:

$$F_L = \frac{f_1}{f_1 + f_2} \sum_{i=1}^{n} \frac{C_i}{(MPC)_i} \qquad 2.2.2.1\text{-}1$$

where:

F_L = The fraction of 10CFR20 MPC limits resulting from the release source being discharged

f_1 = The undiluted release rate of the release source at the monitor location, in gpm

f_2 = The cooling tower blowdown release rate, in gpm

C_i = The undiluted concentration of nuclide (i), in uCi/ml from sample assay.

$(MPC)_i$ = Maximum Permissible Concentration of nuclide (i) from Appendix A. in uCi/ml

as long as F_L is less than 1.0, the concentration of the tank is within compliance with 10CFR20 limits.

2.2.2.2 Simplified Approach

For purposes of simplifying the calculations, the value of 3×10^{-8} uCi/ml (unidentified 10CFR20 MPC value) could be substituted for $(MPC)_i$ and the cumulative concentration (C-Total = sum of all identified radionuclide concentrations) or the gross beta-gamma concentration should be substituted for C_i. As long as the diluted concentration (C-Total x $f_1/(f_1 + f_2)$) is less than 3×10^{-8} uCi/ml, the nuclide by nuclide calculation is not required to demonstrate compliance with 10CFR20 MPC limits.

2.3 Determination of Setpoints for Radioactive Liquid Effluent Monitors

2.3.1 Requirements

Technical Specification 3.3.7.10 requires the radioactive liquid effluent monitor be operable with their high alarm/trip setpoints set to ensure that limits of Technical Specification 3.11.1.1 are not exceeded. The high alarm/trip setpoints shall be determined and adjusted by the methodology which follows.

The high alarm setpoint for the liquid effluent radiation monitor is derived from the concentration limit provided in 10CFR20, Appendix B, Table II, Column 2 applied at the restricted area boundary where the discharge flows into the Mississippi River.

Liquid Monitor Setpoints calculated in accordance with the Methodology presented in this section will be regarded as upper bounds for the actual high alarm setpoints. That is, a lower high alarm setpoint may be established on the monitor, if desired. Alert level setpoints should be established at an appropriate level to give sufficient warning prior to reaching the high alarm setpoint.

2.3.1.2 Liquid Effluent Monitors

Two General Atomics RD-53 monitors are provided to ensure compliance with Technical Specification limits for liquid releases. The RD-53 is an offline gamma scintillation (NaI) monitor designed for detecting radioactivity in liquids. Each Monitor consists of a removable sample canister surrounded by Pb shielding. A well inside the canister holds the detector within the sample fluid. The two monitors are as follows:

1. Cooling Tower Blowdown Line Monitor (1RMS-RE108)

   a. Range: 10^1 to 10^7 cpm

2. Liquid Radwaste Effluent Monitor (1RMS-RE107)

   a. Range: 10^1 to 10^7 cpm

2.3.2 Methodology

The high alarm setpoint does not consider dilution, dispersion, or decay of radioactive material beyond the site boundary. That is, the alarm setpoint is based on a concentration limit at the end of the blowdown line discharge.

2.3.2.1 Liquid Radwaste Effluent Monitor (1RMS-RE107)

A sample of each batch of liquid radwaste is analyzed for I-131 and other principal gamma emitters as specified in Table 4.11.1.1.1-1 of Technical Specification 3.11.1.1, for total activity concentration prior to release. The fraction F_L of the 10CFR20 MPC limits for unrestricted areas is determined in accordance with the preceding section for the activity concentration released.

The liquid radwaste effluent monitor will terminate a liquid radwaste discharge if activity levels exceed the Technical Specifications limits. The automatic actions associated with a trip of the monitor are:

1. 1LWS-FV197 closes
2. 1LWS-AOV258 opens

An alarm will also be annunciated in the main control room.

The liquid radwaste effluent line radiation monitor alarm setpoint is determined with the equation:

$$S = \frac{A}{F_L} \times g \qquad 2.3.2\text{-}1$$

where:

S = the radiation monitor setpoint (cpm or uCi/ml)

A = the sum of concentrations of gamma-emitting radio-nuclides in the sample, as measured in the laboratory.

F_L = the fraction of 10CFR20 MPC limits resulting from the release source being discharged.

g = the ratio of effluent radiation monitor counting rate to laboratory counting rate or activity concentration in a given batch of liquid (cpm per cpm/ml, cpm per uCi/ml, or uCi/ml per uCi/ml)

Note: A/F_L represents the counting rate of a liquid waste stream that would have the same radionuclide distribution as the given batch, but that would produce a concentration of 1.0 MPC at the point of discharge into the Unrestricted Area.

2.3.2.2 Cooling Tower Blowdown Line Monitor (1RMS-RE108)

The cooling tower monitor alarms at high levels of radioactivity in the normal plant service water / circulating water effluent to the Mississippi River. An alarm will be annunciated in the main control room if predetermined setpoints are exceeded.

The cooling tower monitor alarm setpoint is determined by the equation:

$$S = 2 \times BKG \qquad 2.3.2.2\text{-}1$$

where:

S = the radiation monitor setpoint (cpm or uCi/ml)

BKG = monitor background value (cpm or uCi/ml)

The cooling tower blowdown line is not expected to be a contaminated stream and normally would serve as a dilution source for the final radwaste system effluent discharge. Any significant upward fluctuation in the background level is indicative of a release which could approach 10CFR50 Appendix I limits or 10CFR20 limits when combined with the liquid radwaste effluent.

2.4 Determining the Dose for Radioactive Liquid Effluents

2.4.1 Requirements

Technical Specification 3.11.1.2 requires the dose or dose commitment to a person offsite due to radioactive material released in liquid effluents be calculated on a cumulative basis at least every 31 days. Dose or dose commitment shall be limited to:

a) Less than or equal to 1.5 mrems to the total body and to less than or equal to 5 mrems to any organ, during any calendar quarter; and

b) Less than or equal to 3 mrems to the total body and less than or equal to 10 mrems to any organ during any calendar year.

2.4.2 Methodology

This section provides the methodology to calculate dose to all age groups and organs from all radionuclides identified in the liquid effluents.

The method is based on the methodology suggested by Sections 4.3 and 4.3.1 of NUREG-0133, Rev. 1 , November 1978. The dose factors A_{it} for all viable pathways are listed in Appendix B.

The following equation provides a dose calculation to the total body or any organ for a given age group based on actual release conditions.

$$D_{i\tau} = \frac{A_{i\tau} * \Delta t * Q_i}{DF * D_w} \qquad 2.4.2\text{-}1$$

$$D_{TOTAL\ \tau} = \sum_{i=1}^{n} D_{i\tau} \qquad 2.4.2\text{-}2$$

where:

$D_{TOTAL\ \tau}$ = The total dose commitment to the organ (τ) due to all releases during the desired time period in mrem.

$D_{i\tau}$ = Dose commitment from radionuclide (i) received by organ (τ) of the adult age group during the time period (mrem).

$A_{i\tau}$ = Site related dose commitment factor to the total body or any organ (τ) for each identified radionuclide (i). The $A_{i\tau}$ values listed in Appendix B are site-related to RBS (mrem/hr per uCi/ml).

Δt = The total time for all batch releases that occurred in the period (hrs).

Q_i = The total quantity of nuclide (i) released during the interval Δt (uCi).

D_w = The near field dilution factor. Site specific value is 77.4.

DF = The total volume of dilution that occurred during the time period (ml).

The doses associated with each isotope may then be summed to provide the cumulative dose over a desired time period (e.g., sum all doses during a 31 day period, calendar quarter, or a year).

2.5 Projecting Dose for Radioactive Liquid Effluents

2.5.1 Requirements

Technical Specification 3.11.1.3 requires the liquid radwaste treatment system be used to reduce the radioactive materials in liquid wastes prior to their discharge when projected doses due to liquid effluents, to unrestricted areas (Figure 1) would exceed 0.06 mrem to the total body or 0.2 mrem to any organ in a 31 day period.

2.5.2 Methodology

The following calculational methodology shall be performed at least once per 31 day period:

$$L_{PD} = \frac{\Sigma D_{TOTAL\ \tau}}{X_D} * 31 + D_{PA} \qquad 2.5.2\text{-}1$$

L_{PD} = Projected dose commitment (mrem) to organ (τ) during the 31 day period from liquid effluents.

X_D = Number of days to date in the current quarter

D_{PA} = The anticipated dose contribution to the total body or any organ τ, due to planned activities during the next 31 day period, if those activities will result in liquid releases that are in addition to routine liquid effluents. If only routine liquid effluents are anticipated, $D_{PA} = 0$.

$D_{Total\ \tau}$ = The total dose commitment to the organ (τ) due to all releases during the desired time period in mrem.

3.0 GASEOUS EFFLUENT METHODOLOGY

3.1 Introduction

The River Bend Station discharges gaseous effluents through the Main Plant Exhaust Duct, Fuel Building Exhaust Duct, and Radwaste Building Exhaust Duct. The location of these release points in relation to the River Bend site is found in Figure 3. The gaseous effluent streams, radioactivity monitoring points, and effluent discharge points are shown schematically in Figure 2. All gaseous effluent releases from the Radwaste Building Exhaust Duct and Fuel Building Exhaust Duct are assumed to be ground level releases. The Main Plant Exhaust Duct routine releases are treated as a wake split (conditionally elevated) release.

3.2 Data Requirements for Gaseous Effluents

For the purpose of estimating offsite radionuclide concentrations and radiation doses, measured radionuclide concentrations in gaseous effluents and in ventilation air exhausted from the station are relied upon. Table 4.11.2.1.2-1 in the Technical Specifications identifies the radionuclides in gaseous discharges for which sampling and analysis is done.

When a nuclide concentration is below the LLD for the analysis, it is not reported as being present in the sample.

Historical annual average meteorological information will be used to calculate off-site dose and monitor set points. Modelling will be performed in accordance with the methodologies described in Reg. Guide 1.111 . Rev. 1.

3.3 Instantaneous Release Rate and Setpoint Determination

3.3.1 Instantaneous Release Rate Determination

The instantaneous release rate determination is performed to show compliance with the limits set forth in 10CFR20.

3.3.1.1 Requirements

Technical Specification 3.11.2.1 states that the dose rate due to radioactive materials released in gaseous effluents from the site to areas at and beyond the site boundary (see Figure 1) shall be limited to the following:

a. For noble gases: Less than or equal to 500 mrem/year to the total body and less than or equal to 3,000 mrem/year to the skin; and

b. For I-131, I-133, tritium, and for all radionuclides in particulate form with half-lives greater than 8 days: less than or equal to 1,500 mrem/year to any organ.

3.3.1.2 Methodology

3.3.1.2.1 Total Body and Skin Instantaneous Dose Rate Calculations

To determine the dose rate from noble gases in unrestricted areas, the following formulae are used:

$$DR_{TB} = \sum_{i=1}^{n} (K_i)\ (\overline{X/Q})\ (\dot{Q}_i) \qquad 3.3.1.2.1\text{-}1$$

$$DR_{skin} = \sum_{i=1}^{n} (L_i + 1.1\ M_i)\ (\overline{X/Q})\ (\dot{Q}_i) \qquad 3.3.1.2.1\text{-}2$$

where:

DR_{skin} = Dose rate to the skin in mrem/year.

DR_{TB} = Dose rate to the total body in mrem/year.

K_i = The total body dose factor due to gamma emissions for each identified noble gas radionuclide (i) in mrem/yr per uCi/m^3. Appendix C.

L_i = Skin dose factor due to beta emissions for each identified noble gas radionuclide (i) in mrem/yr per uCi/m^3. Appendix C.

M_i = The air dose factor due to gamma emissions for each identified noble gas radionuclide (i) in mrad/yr per uCi/m^3. Appendix C.

$\overline{(X/Q)}$ = The highest calculated annual average relative dispersion factor for any area at or beyond the unrestricted area boundary for all Sectors (sec/m^3). Appendix F.

$\dot{Q}_i$ = The release rate of radionuclide (i) in gaseous effluents from all releases in uCi/sec.

1.1 = Conversion factor for M_i from mrad to mrem.

In order to comply with the limits of 10CFR20, $DR_{TB} \leq 500$ mrem/year and $DR_{skin} \leq 3{,}000$ mrem/year must be met at the most limiting location, at or beyond the site boundary.

The X/Q values utilized in equations 3.3.1.2.1-1 and 3.3.1.2.1-2 are based upon maximum long-term annual average (X/Q) in the unrestricted area. Appendix F lists the maximum X/Q values for the RBS release points at the appropriate receptor locations.

To select the most limiting location, the highest X/Q for each release point is used (from Appendix F):

$$(X/Q)_{MM} = 3.31 \times 10^{-6} \text{ sec/m}^3$$

$$(X/Q)_{GRD} = 4.21 \times 10^{-5} \text{ sec/m}^3$$

where:

$(X/Q)_{MM}$ = Chi/Q for Main Plant exhaust duct (mixed mode)

$(X/Q)_{GRD}$ = Chi/Q for Radwaste Building exhaust duct (ground level) and for Fuel Building exhaust duct (ground level)

Appendix F contains the maximum X/Q and D/Q values used in calculating individual doses.

Release rates for all release points must be considered at the same time. If releases are occurring at the same time, the total instantaneous dose for all releases must be less than the limits of Technical Specification 3.11.2.1. An administrative control limits the release rates for each of the three release points to 1/3 the total Technical Specification doses.

3.3.1.2.2 Radioiodine, Tritium, and 8-day Particulate Dose Rate Calculations

The following calculational method is provided for determining the dose rate from radioiodine (I-131, I-133), Tritium and particulates with half-lives greater than 8 days and to determine if they are within the limits listed in Section 3.3.1.1-b.

In the calculation to show compliance with 10CFR20, only the inhalation pathway is considered, since it is the most limiting pathway.

Inhalation Pathway:

$$D^{R}_{I\&8DP\tau} = \sum_{i=1}^{n} (P_i)\ (\overline{X/Q})\ (\dot{Q}_i) \qquad 3.3.1.2.2\text{-}1$$

where:

$DR_{I\&8DP\tau}$ = Dose rate to the organ τ for the I-131 age group of interest from radioiodines (I-133), tritium and 8 day particulates via the inhalation pathway (mrem/yr).

Q_i = Release rate of nuclide (i), (uCi/sec).

$(\overline{X/Q})$ = The highest calculated annual average relative dispersion factor for any area at or beyond the unrestricted area boundary for all Sectors (sec/m^3). Appendix F.

P_i = The dose factor for applicable environmental pathway (mrem/yr per uCi/m^3). Appendix I.

Values for P_i were calculated for a child using the inhalation pathway methodology of NUREG-0133. The P_i values are presented in Appendix I.

3.3.2 Setpoint Determination

3.3.2.1 Requirements

Instrumentation is provided to monitor beta-gamma radiation from radioactive materials released from the River Bend Station in gaseous effluents. Each release point process monitor listed in Tech. Spec. Table 4.11.2.1.2-1 includes an alarm (HIGH ALARM) that is set to report when the radioactive noble gas in gaseous effluents (Main Plant exhaust duct, Fuel Building exhaust duct and/or Radwaste Building exhaust duct) is expected to cause a noble gas concentration at ground level offsite resulting in a dose rate equal to or greater than 500 mrem/yr to the total body and/or 3000 mrem/yr to the skin.

The ALERT alarm is set to report when the radioactive noble gas in gaseous effluents (Main Plant exhaust duct, Fuel Building exhaust duct and/or Radwaste Building exhaust duct) is expected to cause a noble gas concentration at ground level offsite that would result in meeting or exceeding either the 5 mrad per quarter gamma air dose or 10 mrad per quarter beta air dose limit (Technical Specification 3.11.2.2). It is permissible to set the ALERT alarm at twice (2.0) normal (approximately 100 % unit power) detector background if nuisance alarms would result from setpoints based on gamma and beta air dose. (Reference 1.2.12)

The distribution of radioactive noble gases in a gaseous effluent stream is determined by gamma spectrum analysis of identifiable radionuclides in effluent gas sample(s). Results of one or more previous analyses may be averaged to obtain a representative spectrum. In the event the distribution is urobtainable from measured data, the distribution of radioactive noble gases based on past data or calculated by the BWR-GALE code appearing in Appendix D may be assumed.

To allow for multiple sources of releases from the three different release points, the allowable operating setpoints will be administratively controlled to allocate one-third (1/3) of the total allowable release to each of the release sources.

3.3.2.2 Methodology

a. HIGH ALARM Setpoint Determination

This section describes the methodology for determining HIGH ALARM setpoints for the three release points:

i. Wide Range Gas Monitor (WRGM)

Step 1

Determine $\dot{Q}_{TB}$ as follows:

$$\dot{Q}_{TB} = \frac{(500)}{(\overline{X/Q}) \sum_{i=1}^{n} (K_i)(f_i)} \qquad 3.3.2.2\text{-}1$$

where:

$\dot{Q}_{TB}$ = maximum acceptable total release rate of all noble gas radionuclides in the gaseous effluent (uCi/sec).

$(\overline{X/Q})$ = The highest calculated annual average relative dispersion factor for any area at or beyond the unrestricted area boundary for all Sectors (sec/m^3). Appendix F.

K_i = The total whole body dose factor due to gamma emissions from noble gas radionuclide (i) (mrem/yr per uCi/m^3) from Appendix C, Table C-1.

f_i = Fraction of noble gas radionuclide (i) to total noble gas concentration.

500 = Whole body exposure limits of 500 mrem/year.

3.17×10^{-8} = Inverse of number of seconds per year in year/sec.

Step 2

Determine $\dot{Q}_s$ as follows:

$$\dot{Q}_s = \frac{(3{,}000)}{(\overline{X/Q}) \sum_{i=1}^{n} [(L_i + 1.1M_i)f_i]} \qquad 3.3.2.2\text{-}2$$

$\dot{Q}_s$ = the maximum acceptable release rate of all gas radionuclides in the gaseous effluent [uCi/sec])

$L_i + 1.1M_i$ = Total skin dose factor due to emission from noble gas radionuclide (i) mrem/yr/uCi/m^3 from Appendix C.

$(\overline{X/Q})$ = The highest calculated annual average relative dispersion factor for any area at or beyond the unrestricted area boundary for all Sectors (sec/m^3). Appendix F.

3000 = Skin exposure limit of 3000 mrem/year

Step 3

Select the lower of the $\dot{Q}$ values ($\dot{Q}_{TB}$ or $\dot{Q}_s$) obtained in Step 1 and Step 2.

NOTE

Actual alarm setpoint in the data-base may be modified to account for loop accuracy.

Step 4

Multiply the $\dot{Q}$ value selected in Step 3 by 0.33. By multiplying the $\dot{Q}$ value by a factor of 0.33, the allowable operating setpoints will be administratively controlled to allocate one-third (1/3) of the total allowable release rate to each of the release points. The resultant product will be the actual ODCM release rate HIGH ALARM setpoint for the appropriate WRGM Monitor.

ii. Particulate and Gas Monitor (P&G) (gas channel only).

Step 1

Perform Steps 1 through 3 of Section 3.3.2.2a.i above

Step 2

Determine C_m (the maximum acceptable total radioactivity concentration of all noble gases radionuclides for all release points in the gaseous effluent [uCi/cc]):

$$C_m = \frac{(2.12 \times 10^{-3})\ Q}{F} \qquad 3.3.2.2\text{-}3$$

where: 2.12×10^{-3} = Unit conversion factor to convert uCi/sec/cfm to uCi/cc.

Q = lower of the two $\dot{Q}$ values, $\dot{Q}_{TB}$ or $\dot{Q}_s$.

F = The maximum acceptable effluent flow rate at the point of release based on design flow rates (cfm)

NOTE

.Actual alarm setpoint in the data-base may be modified to account for loop accuracy.

Step 3

Multiply the C_m value determined in Step 2 by 0.33. By multiplying the C_m value by a factor of 0.33, the allowable operating setpoints will be administratively controlled to allocate one-third (1/3) of the total allowable release to each of the release points. The resultant product will be the actual ODCM activity concentration HIGH ALARM setpoint for the appropriate P&G monitor gas channel.

b. ALERT Setpoint Determination (Reference 1.2.12)

i. Wide Range Gas Monitor (WRGM)

Step 1

Determine $\dot{Q}_{G\text{-}A}$ utilizing one of the following methods:

$$\dot{Q}_{G\text{-}A} = \frac{(4)(5)}{\overline{(X/Q)} \sum_{i=1}^{n} M_i\ f_i} \qquad 3.3.2.2\text{-}4$$

Where:

$\dot{Q}_{G-A}$ = maximum acceptable total release rate of all noble gas radionuclides in the gaseous effluent [uCi/sec]

$(\overline{X/Q})$ = The highest calculated annual average relative dispersion factor for any area at or beyond the unrestricted area boundary for all Sectors (sec/m^3). Appendix F.

5 = 5 mrads/quarter gamma air dose limit at the unrestricted area boundary.

M_i = The gamma air dose factor for radioactive noble gas nuclide (i) in $mrad\text{-}m^3/uCi\text{-}yr$ (Appendix C).

f_i = The fractional abundance of noble gas radionuclide i

4 = Number of Quarters Per Year

Step 2

Determine $\dot{Q}_{B-A}$ utilizing one of the following methods:

$$\dot{Q}_{B-A} = \frac{(4)(10)}{(\overline{X/Q}) \sum_{i=1}^{n} (N_i)(f_i)} \qquad 3.3.2.2\text{-}5$$

Where:

$\dot{Q}_{B-A}$ = maximum acceptable total release rate of all noble gas radionuclides in the gaseous effluents (uCi/sec).

$(\overline{X/Q})$ = The highest calculated annual average relative dispersion factor for an area at or beyond the unrestricted area boundary for all sectors (sec/m^3) (Appendix F).

10 = 10 mrad/quarter (92 days) beta air dose limit at the unrestricted area BOUNDARY.

N_i = The air dose factor due to beta emissions from each noble gas radionuclide i.

f_i = The fractional abundance of noble gas radionuclide i.

4 = Number of Quarters Per Year

Step 3

Select the lower of the $\dot{Q}$ values obtained in Steps 1 and 2, either $\dot{Q}_{G-A}$ or $\dot{Q}_{B-A}$.

Step 4

Multiply the $\dot{Q}$ value selected in Step 3 by 0.33. By multiplying the $\dot{Q}$ value by this factor, the allowable operating setpoints will be administratively controlled to allocate one-third (1/3) of the total allowable release rate to each of the release points. The resultant product will be the actual ODCM ALERT setpoint to be entered into the applicable WRGM's RM-80.

Step 5

If the actual ODCM ALERT setpoint determined in Step 4 is less than two (2.0) times the detector background, it is permissible to enter an ALERT setpoint equal to two (2.0) times the normal (approximately 100% unit power) detector background to reduce the possibility of nuisance alarms. The twice background setpoint should provide sufficient indication that an offsite dose limit could possibly be exceeded.

ii. Particulate and Gas Monitor (P&G) (gas channel only)

Step 1

Perform Steps 1 through 3 of Section 3.3.2.2.b.i above.

Step 2

Determine C_m (the maximum acceptable total radioactivity concentration of all noble gas radionuclides for all release points in gaseous effluent [uCi/cc]):

$$C_m = \frac{(2.12 \times 10^{-3})\ Q}{F} \qquad 3.3.2.2\text{-}6$$

Where: 2.12×10^{-3} = Unit conversion factor to convert uCi/sec/cfm to uCi/cc.

Q = Lower of the two $\dot{Q}$ values, $\dot{Q}_{G\text{-}A}$ or $\dot{Q}_{B\text{-}A}$

F = The maximum acceptable effluent flow rate at the point of release based on design flow rates (cfm).

Step 3

Multiply the C_m value determined in Step 2 by 0.33. By multiplying the C_m value by this factor, the allowable operating setpoints will be administratively controlled to allocate (1/3) of the total allowable release to each of the release points. The resultant product will be the actual ODCM activity concentration ALERT setpoint. This value is the setpoint to be entered into the applicable P&G monitor's RM-80.

Step 4

If the actual ODCM ALERT setpoint determined in Step 3 is less than two (2.0) times the gas detector background, it is permissible to enter an ALERT setpoint equal to two (2.0) times the normal (approximately 100% unit power) gas detector background to reduce the possibility of nuisance alarms. The twice background setpoint should provide sufficient indication that an offsite dose limit could possibly be exceeded.

3.4 Cumulative Dose Determination for Radioactive Gaseous Effluents

3.4.1 Noble Gases

3.4.1.1 Air Dose

A. Requirements

1. Technical Specification 3.11.2.2 states that the air dose due to noble gases released in gaseous effluents from each reactor unit to areas at and beyond the site boundary (see Figure 1) shall be limited to the following:

   i. During any calendar quarter: less than or equal to 5 mrads for gamma radiation and less than or equal to 10 mrads for beta radiation; and

   ii. During any calendar year: less than or equal to 10 mrads for gamma radiation and less than or equal to 20 mrads for beta radiation.

B. Methodology

This section provides the methodology to calculate the gamma and beta air doses to a maximum receptor location at the site boundary from all noble gas radionuclides identified in the gaseous effluents.

The method is based on the methodology suggested by sections 5.3 and 5.3.1 of NUREG-0133, Rev. 1, November, 1978. The dose factors for beta and gamma air dose are listed in Appendix C and are obtained from Table B-1 of RG 1.109, Revision 1, October 1977.

The following equations provide for air dose calculations based on actual noble gas releases during a specific time interval for radioactive gaseous release sources at the site boundary:

$$D_{Gamma\text{-}Air} = 3.17E\text{-}8 \sum_{i=1}^{n} (M_i)\ (\overline{X/Q})\ (Q_i) \qquad 3.4.1.1b\text{-}1$$

$$D_{Beta\text{-}Air} = 3.17E\text{-}8 \sum_{i=1}^{n} (N_i)\ (\overline{X/Q})\ (Q_i) \qquad 3.4.1.1b\text{-}2$$

where:

$D_{Gamma\text{-}Air}$ = The gamma air dose from radioactive noble gases in mrad.

M_i = The gamma air dose factor for radioactive noble gas nuclide (i) in mrad-m^3/uCi-yr (Appendix C).

3.17E-8 = Inverse of number of Seconds Per Year in Year/Sec.

$(\overline{X/Q})$ = The highest calculated annual average relative dispersion factor (sec/m^3) (Appendix F).

Q_i = The number of uCi of nuclide (i) released during the period of interest.

$D_{Beta\text{-}Air}$ = Beta air dose from radioactive noble gases in mrad.

N_i = The beta air dose factor for radioactive noble gas nuclide (i) in mrad-m^3/uCi-yr (Appendix C), Table C-1.

3.4.1.2 Total Body and Skin Dose

A. Requirements

1. Technical Specification 3.11.4 states that the annual (calendar year) dose or dose commitment to any MEMBER OF THE PUBLIC, due to releases of radioactivity and to radiation from uranium fuel cycle sources, shall be limited to less than or equal to 25 mrems to the total body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrems.

2. Technical Specification 6.9.1.8 (Semi-Annual Effluent Release Report) requires that an assessment of radiation doses to the likely most-exposed MEMBER OF THE PUBLIC from reactor releases and other nearby uranium fuel cycle sources (including doses from primary effluent pathways and direct radiation) be performed for the previous calendar year to show conformance with 40 CFR190, Environmental Radiation Protection Standards for Nuclear Power Operation.

   Cummulative doses from liquid effluents and gaseous pathways (radioiodines (I-131, I-133), Tritium and particulates with T 1/2 > 8 days) are determined in accordance with Sections 2.4.2 and 3.4.2.5. Cummulative total body and skin doses from noble gas releases are determined in accordance with Section 3.4.1.2b.

B. Methodology

This section provides the methodology to calculate the total body and skin doses to the likely most-exposed MEMBER OF THE PUBLIC from all noble gas radionuclides identified in the gaseous effluents.

The method is based on the methodology suggested in Section C.2 and Appendix B of RG 1.109, Revision 1, October, 1977. The dose transfer factors required for the calculations are listed in Appendix C of this document and are obtained from Table B-1 of RG 1.109, Revision 1, October, 1977.

Doses to the total body and to the skin, due to actual noble gas releases during a specific time interval, at the location of the likely most exposed MEMBER OF THE PUBLIC, are calculated as follows:

$$D_{\text{Total Body}} = \frac{(S_F)(F_o)\ \Sigma\ (K_i)(\overline{X/Q})\ (Q_i)(T)}{(5.256E+5)} \quad \text{which Reduces to}$$

$$D_{\text{Total Body}} = (S_F)(F_o)\ (3.17E\text{-}8) \sum_{i=1}^{n} (K_i)(\overline{X/Q})(Q_i) \qquad 3.4.1.2b.\text{-}1$$

$$D_{\text{Skin}} = \frac{(S_F)(F_o)\ \Sigma\ (L+1.1M)_i\ (\overline{X/Q})(Q_i)(T)}{(5.256E+5)} \quad \text{Which Reduces To}$$

$$D_{\text{Skin}} = (S_F)(F_o)\ (3.17E\text{-}8) \sum_{i=1}^{n} (L_i + 1.1M_i)(\overline{X/Q})(Q_i) \qquad 3.4.1.2b.\text{-}2$$

Where:

$D_{Total\ Body}$ = The total body dose from radioactive noble gases in mrem.

K_i = The total whole body dose factor due to gamma emmissions from noble gas radionuclide (i) (mrem/sec per uCi/m^3) from Appendix C, Table C-1.

$(\overline{X/Q})$ = The highest calculated annual average relative dispersion factor for an area at or beyond the unrestricted area boundary for all sectors (sec/m^3)(Appendix F).

NOTE

When calculating $D_{Total\ Body}$ and D_{Skin} for determining 40CFR190 compliance as reported in the Semiannual Radioactive Effluent Release Report, X/Q values based on either historical annual-average meteorological data, or on data for the actual period of release, may be used.

Q_i = Release rate of nuclide(i), (µCi/sec)

Q_i = The number of µCi of noble gas nuclide (i) released during the period of interest.

T = Time period of Interest in Minutes

D_{Skin} = The skin dose from radioactive noble gases in mrem.

M_i = The gamma air dose factor due to gamma emissions from each noble gas radionuclide (i) released.

F_o = Occupancy Factor defined for the receptor at the given location

3.17E-8 = Inverse of the number of seconds per year in yr/sec

L_i = The skin dose factor due to beta emissions from noble gas radionuclide (i) (mrem/sec per µCi/m^3) from Appendix C, Table C-1.

1.1 = Average ratio of tissue to air energy absorption coefficients.

S_F = 0.7, attenuation factor accounting for shielding provided by residential structures for maximally exposed individual.

5.256E+5 = minutes per year

3.4.1.3 Radioiodine, Tritium, and 8 Day Particulate Dose to Any Organ from Cumulative Releases

A Requirements

1. Technical Specification 3.11.2.3 states that the dose to a Member of the Public from Radioiodines (I-131, I-133), Tritium, and Particulates with T 1/2 > 8days in gaseous effluents released, from each reactor unit, to areas at and beyond the site boundary shall be limited to the following:

   i. During any calendar quarter: less than or equal to 7.5 mrem to any organ; and

   ii. During any calendar year: less than or equal to 15 mrem to any organ.

   The dose to a member of the Public shall be determined at least once per 31 days for the current calendar quarter and current calendar year.

2. Tech Specification 3.11.4 states that the Annual (Calendar year) dose or dose commitment to any Member of the Public, due to releases of radioactivity and to radiation from Uranium Fuel Cycle sources, shall be limited to less than or equal to 25 mrems to the total body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrems.

B. Methodology

1. The following calculational method is provided for determining the organ dose due to releases of radioiodines (I131, I133), trituim and particulates. It is based on Section 5.3.1 of NUREG-0133, Rev. 1, November 1978. The equation can be used for any age group provided that the appropriate dose factors are used and the total dose reflects only those pathways that are applicable to the age group. The total dose to an organ can then be determined by summing thje pathways that apply to the receptor. The equations are:

Inhalation Pathways:

$$D_{I\&IDPt} = (3.17 \times 10^{-8})\,(F_o) \sum_{i=1}^{n} (P_{i\tau})\ \overline{(X/Q)}\ (Q_i) \qquad 3.4.1.3\text{-}1$$

Ground Plane Pathway:

$$D_{I\&8DP\tau} = (3.17 \times 10^{-8})(F_o) \sum_{i=1}^{n} (R_{i\tau}) \overline{(D/Q)} (Q_i) \qquad 3.4.1.3\text{-}2$$

Contaminated Forage/Cow/Milk Pathway:

$$D_{I\&8DP\tau} = (3.17 \times 10^{-8})(F_o) \sum_{i=1}^{n} (R_{i\tau}) \overline{(D/Q)} (Q_i) \qquad 3.4.1.3\text{-}3$$

Contaminated Forage/Goat/Milk Pathway:

$$D_{I\&8DP\tau} = (3.17 \times 10^{-8})(F_o) \sum_{i=1}^{n} (R_{i\tau}) \overline{(D/Q)} (Q_i) \qquad 3.4.1.3\text{-}4$$

Contaminated Forage/Meats:

$$D_{I\&8DP\tau} = (3.17 \times 10^{-8})(F_o) \sum_{i=1}^{n} (R_{i\tau}) \overline{(D/Q)} (Q_i) \qquad 3.4.1.3\text{-}5$$

Fresh Fruits and Vegetables:

$$D_{I\&8DP\tau} = (3.17 \times 10^{-8})(F_o) \sum_{i=1}^{n} (R_{i\tau}) \overline{(D/Q)} (Q_i) \qquad 3.4.1.3\text{-}6$$

Total Dose:

$$D_\tau = \sum_{z=1}^{n} D_{I\&8DP\tau} \qquad 3.4.1.3\text{-}7$$

where:

$D_{I\&8DP\tau}$ = Dose to the organ (τ) for the age group of interest from radioiodines (I-131, I-133), tritium and 8-day particulates via the pathway of interest.

F_o = Occupancy factor defined for the receptor at the given location.

D_τ = Total dose in mrem to the organ (τ) of a specified age group summed over all applicable pathways (Z).

z = All the applicable pathways for the age group of interest.

$P_{i\tau}$ = Inhalation dose conversion factor mrem/yr per uCi/m^3

Q_i = The number of uCi of nuclide (i) released during the year of interest.

$R_{i\tau}$ = The dose factor for nuclide (i) for pathway (Z) to organ (τ) of the specified age group. For tritium, a site-specific absolute humidity (H) value of 12.9 gm/m^3 was used for calculation. (See Appendix I.) The units are:

$\frac{\text{mrem-m}^3}{\text{yr-}\mu\text{Ci}}$ for pathways using $\overline{(X/Q)}$

or

$\frac{\text{mrem-m}^2\text{-sec}}{\text{yr-}\mu\text{Ci}}$ for pathways using $\overline{(D/Q)}$

$\overline{(D/Q)}$ = A long-term relative deposition value for elevated and ground level releases (m^{-2}).

$\overline{(X/Q)}$ = The X/Q value for a specific location where the receptor is located (Sec/m^3).

3.17×10^{-8} = The inverse of the number of seconds per year (years/sec).

NOTE

When calculating organ doses due to the release of C-14 and/or tritium (H-3), (X/Q) values (not D/Q values) must be used for cow milk, goat milk, meat and vegetation pathway calculations.

3.5 Dose Projection - Determination of Need to Operate Ventilation Exhaust Treatment System

3.5.1 Requirement

Technical Specification 3.11.2.5 requires that the ventilation exhaust treatment system be used to reduce radioactive material in waste prior to discharge when the projected dose due to gaseous effluents (radioiodines (I-131, I-133), particulates T 1/2 > 8 days and H-3) would exceed 0.3 mrem to any organ in a 31 day period.

NOTE

The ventilation exhaust treatment system does not reduce the noble gas concentration in plant effluents (See Definition 1.3.5).

3.5.2 Methodology

The following calculation method is provided for determining the projected doses:

$$G_{PD} = \frac{\Sigma D_{\tau}}{X_D} * 31 + D_{PA} \qquad 3.5.2\text{-}1$$

where:

G_{PD} = Projected dose due to radioiodines (I-131, I-133), particulates with $T_{1/2}$ > 8 days and H-3 during the current 31 day period (mrem).

X_D = The number of days to date in the current quarter

D_{τ} = Cumulative total dose due to radioiodines (I-131, I-133), particulates with T 1/2 > 8 days and H-3 during the current quarter (mrem).

D_{PA} = The anticipated dose contribution to the total body or any organ τ, due to planned activities during the next 31 day period, if those activities will result in gaseous releases that are in addition to routine gaseous effluents. If only routine effluents are anticipated, $D_{PA} = 0$. This value may be adjusted to account for any changes in operating conditions that could significnatly alter actual releases, such as failed fuel or changes in ventilation flow rate.

A dose projection would be based on the latest results of the monthly calculations of the dose due to radioiodines (I-131, I-133), particulates with T 1/2 > 8 days, and H-3 (Section 3.4.1.3).

4.0 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Table 4.1 contains the sample point description, sampling and collection frequency, analysis, and analysis frequency for various exposure pathways in the vicinity of RBS for the radiological monitoring program. Figures 1 and 5 indicate the locations of the various onsite and offsite sampling points and TLD locations.

This section describes only those elements of the radiological environmental monitoring program required by the RBS Technical Specifications. Additional exposure pathways, sample points, analyses, and/or frequencies are performed as described in ER-OLS Section 6.2.

Samples of groundwater are taken from onsite wells located to intercept any potential contamination of the Upland Terrace Aquifer so that any such contamination would be detected before migrating beyond RBS site boundaries.

TABLE 4.1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Sample Point, Description, Distance, and Direction	Sampling and Collection Frequency	Type and Frequency of Analysis
1. Airborne Particulates and I-131	Samples from 5 locations:		
	AA1. River Bend Training Center; 1.7 km N.	Continuous air sampler with filter collection weekly or as required by dust loading, whichever is more frequent.	Charcoal cartridge: analysis weekly for I-131. Particulate sampler: gross beta activity following filter changes; composite for gamma isotopic quarterly.
	AR1. River Bend Station North Access Road at Gate #3; 0.8 km NNW.		
	AP1. Near River Bend Station Onsite Garden #1; 0.9 km WNW.		
	AQS2. St. Francis Substation on US Hwy. (Bus.) 61 in St. Francisville; 5.8 km NW (Community Location).		
	ALC. Parlange Power Center in Oscar; 20 km SW (Control).		

TABLE 4.1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
(Page 2)

Exposure Pathway and/or Sample	Sample Point, Description, Distance, and Direction	Sampling and Collection Frequency	Type and Frequency of Analysis
2. Direct Radiation	Measurements from 40 locations:		
	INDICATOR STATIONS		
	TA1. River Bend Training Center; 1.7 km N.	Thermoluminescence dosimeters (TLDs); deployment/retrieval quarterly.	Gamma dose quarterly.
	TA2. GSU utility pole #246 at Jct. of LA Hwy. 10 and WF2 in Elm Park; 8 km N.		
	TB1. River Bend Station iron yard area; 0.5 km NNE.		
	TB2. Stub pole at Jct. LA Hwy. 965 and Audubon Lane (WF17); 5 km NNE.		
	TC1. Stub pole at Jct. US Hwy. 61 and Old Highway 61; 1.7 km NE.		
	TC2. Stub pole along LA Hwy. 966, 0.6 km S of Jct. LA Hwys. 966 and 965; 7 km NE.		
	TD1. Stub pole along WF7, 150m S of Jct. WF7 and US Hwy. 61; 1.6 km ENE.		
	TD2. Stub pole along LA Hwy. 966, 4 km S of Jct. LA Hwys. 966 and 965; 6.3 km ENE.		

TABLE 4.1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
(Page 3)

Exposure Pathway and/or Sample	Sample Point, Description, Distance, and Direction	Sampling and Collection Frequency	Type and Frequency of Analysis
	TE1. Stub pole along WF7, 1 km S of Jct. WF7 and US Hwy. 61; 1.3 km NE.		
	TE2. Gravel Power Center on LA Hwy. 68, 2 km N of Jct. LA Hwys. 68 and 964; 10 km E.		
	TF1. Stub pole along WF7, 1.6 km S of Jct. WF7 and US Hwy. 61; 1.3 km ESE.		
	TF2. on LA Hwy. 954, 0.6 km N of Jct. LA Hwy. 954 and US Hwy. 61; 6 km ESE.		
	TG1. Stub pole along WF7, 2 km S of Jct. WF7 and US Hwy. 61; 1.6 km SE.		
	TG2. Telephone pole at gate to Marathon Tank Farm on US Hwy. 61, near Delombre, 7.5 km SE.		
	TH1. Stub pole at Illinois Central Gulf RR crossing of WF7 (near Grants Bayou); 1.7 km SSE.		
	TH2. First telephone pole on LA Hwy. 964 N of entrance to papermill; 5.5 km SSE.		

TABLE 4.1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
(Page 4)

Exposure Pathway and/or Sample	Sample Point, Description, Distance, and Direction	Sampling and Collection Frequency	Type and Frequency of Analysis
	TJ1. Stub pole near River Bend Station Gate #23 on Powell Station Road (LA Hwy. 965); 1.5 km S.		
	TJ2. Large tree along River Road, 100 m N of papermill intake structure; 5.8 km S.		
	TK1. GSU utility pole #L10178 on Powell Station Road (LA Hwy. 965), 20 m S of River Bend Station River Access Road; 0.9 km SSW.		
	TK2. Stub pole at Jct. LA Hwys. 414 and 415; 8 km SSW.		
	TL1. Second utility pole on Powell Station Road (LA Hwy. 965) S of former Illinois Central Gulf RR crossing; 1.0 km SW.		
	TL2. Second utility pole along LA Hwy. 415 E of Louisiana and Arkansas RR crossing (near Patin's Dike); 9.5 km SW.		
	TM1. First utility pole on Powell Station Road (LA Hwy. 965) N of former Illinois Central Gulf RR crossing; 0.9 km WSW.		

TABLE 4.1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
(Page 5)

Exposure Pathway and/or Sample	Sample Point, Description, Distance, and Direction	Sampling and Collection Frequency	Type and Frequency of Analysis
	TM2. Utility pole along LA Hwy. 981, about 3 km S of Jct. LA Hwys. 981 and 10 (west bank ferry landing); 4.2 km WSW.		
	TN1. Utility pole along Powell Station Road (LA Hwy. 965), between River Bend Station Gates #13 and 14; 0.9 km W.		
	TN2. Utility pole with electrical meter near west bank ferry landing (LA Hwy. 10); 6.0 km W.		
	TP1. Near River Bend Station Onsite Garden #1; 0.9 km WNW.		
	TP2. Stub pole about 1.5 km N of Illinois Central Gulf RR trestle on Tunica Street, western outskirts of St. Francisville, 7.3 km WNW.		
	TQ1. GSU property sign pole along Powell Station Road (LA Hwy. 965), about 1 km N of River Bend Station North Access Road; 1.4 km NW.		
	TQ2. GSU pole with street lights at Jct. North Commerce and American Beauty Streets, St. Francisville; 6.9 km NW.		

TABLE 4.1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
(Page 6)

Exposure Pathway and/or Sample	Sample Point, Description, Distance, and Direction	Sampling and Collection Frequency	Type and Frequency of Analysis
	TR1. River Bend Station North Access Road across from Main Plant entrance; 0.8 km NNW.		
	TR2. Tree on north side of WF2 past gravel road to the south, about 1.8 km E of Jct. WF2 and US Hwy 61; 8 km NNW.		
	CONTROL/SPECIAL STATIONS		
	TAC. Telephone pole along US Hwy. 61 about 200 m N of Hamilton Station Water Tower, near Wakefield; 18 km N (Control).		
	TLC. Parisnge Power Center in Oscar; 20 km SW (Control).		
	TQS1. Behind Pentecostal Church (opposite West Feliciana Hospital) near Jct. US Hwy. 61 and Ferdinand Street; 4 km NW (Special).		
	TQS2. St. Francis Substation on U.S. Hwy. (Bus.) 61 in St. Francisville; 5.8 km NW (Special).		
	TLS. Utility pole near False River Academy sign at edge of New Roads; 9.9 km SW (Special).		
	TCS. Utility pole at gate to East Louisiana State Hospital in Jackson; 12.3 km NE (Special).		

TABLE 4.1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
(Page 7)

Exposure Pathway and/or Sample	Sample Point, Description, Distance, and Direction	Sampling and Collection Frequency	Type and Frequency of Analysis
	IGS. GSU Service Center compound in Zachary; 17 km SE (Special).		
	IHS. Roof of GSU Service Office Building, North Blvd., Baton Rouge; 40 km SSE (Special).		
3. Waterborne	SURFACE WATER (1)		
	SWU. Mississippi River about 4 km upstream from the plant liquid discharge outfall, near LA Hwy. 10 ferry crossing.	Weekly grabs composited over monthly and quarterly periods.	Monthly composite: gamma isotopic analysis; Quarterly composite: tritium analysis.
	SWD. Mississippi River about 4 km downstream from plant liquid discharge outfall, near papermill.		
	Discharge Line. At blowdown line along River Access Road.	Hourly grabs composited over monthly and quarterly periods.	
	GROUNDWATER		
	WU. Upland Terrace Aquifer well upgradient from plant, about 470 m NNE.	Quarterly grab.	Gamma isotopic and tritium analyses quarterly.
	WD. Upland Terrace Aquifer well downgradient from plant, about 470 m SW.		

TABLE 4.1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
(Page 8)

	Exposure Pathway and/or Sample	Sample Point, Description, Distance, and Direction	Sampling and Collection Frequency	Type and Frequency of Analysis
		SHORELINE SEDIMENT		
		SED. Mississippi River about 4 km downstream from plant liquid discharge outfall, near papermill.	Semiannual grab.	Gamma isotopic analysis semi-annually.
4.	Ingestion	FISH AND INVERTEBRATES		
		FU. One sample of each of three commercially and/or recreationally important species from upstream area not influenced by plant discharge.	Seasonally when available or semiannually.	Gamma isotopic analysis on edible portions.
		FD. One sample of each of three commercially and/or recreationally important species from downstream area influenced by plant discharge.		

TABLE 4.1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM
(Page 9)

Exposure Pathway and/or Sample	Sample Point, Description, Distance, and Direction	Sampling and Collection Frequency	Type and Frequency of Analysis
PRODUCE			
	G1/G2. Two samples of each of three different kinds of leafy vegetables from onsite gardens near the site boundary of highest calculated annual average ground-level D/Q if three milk sampling areas not available (2).	Monthly during growing season.	Gamma isotopic and I-131 analyses monthly.
	CQC. One sample of each of three similar vegetables from LA State Penitentiary at Angola, 35 km NW (Control).		

NOTES:

1. The upstream sample will be taken at a distance beyond influence of the plant discharge. The downstream sample will be taken in an area beyond but near the mixing zone.

2. If milk-producing animals become available within a 5-km radius of the plant, up to 3 samples from these animals will be analyzed in lieu of the leafy vegetable samples from onsite gardens in high dose-potential areas.

5.0 40CFR190 CONSIDERATIONS

5.1 Compliance with 40CFR190

Compliance with 40CFR190 as prescribed by Technical Specification 3.11.4 is to be demonstrated only when one or more of Technical Specification(s) 3.11.1.2.a, 3.11.1.2.b, 3.11.2.2.a, 3.11.2.2.b, 3.11.2.3a, and 3.11.2.3.b, including direct radiation are exceeded by a factor of 2. Once this occurs, GSU has 30 days to submit a report in accordance with Specification 3.11.4.

5.2 Calculations Evaluating Conformance with 40CFR190

To perform the calculations to evaluate conformance with 40CFR190, an effort is made to develop doses that are realistic by removing assumptions that lead to overestimates of dose to a Member of the Public (i.e., calculations for compliance with 10CFR50 Appendix I). To accomplish this, the following calculational rules are used:

5.2.1 Doses to Members of the Public via the liquid release pathway are considered to be < 1 mrem/yr (Ref NUREG-0543).

5.2.2 Doses to a member of the Public due to a milk pathway will be evaluated only as can be shown to exist. Otherwise, doses via this pathway will be estimated as < 1 mrem/yr.

5.2.3 Environmental sampling data which demonstrate that no pathway exists may be used to delete a pathway to man from a calculation.

5.2.4 To sum numbers represented as "less than" (<) , use the value of the largest number in the group.

e.g., <5 + <1 + <1 + <3 = < 5

5.2.5 When doses via direct radiation are added to doses via inhalation pathway, they will be calculated for the same distance in the same sector.

5.2.6 The calculational locations for a Member of the Public will only be at residences or places of employment.

Note: Additional assumptions may be used to provide situation specific parameters, provided they are documented along with their concomitant bases.

5.3 Calculations of Total Body Dose

Estimates will be made for each of the following exposure pathways to the same location by age class. Only those age classes known to exist at a location are considered.

5.3.1 Direct Radiation (from storage tanks, N-16 sources, etc.)

The component of dose to a Member of the Public due to direct radiation will be determined by thermoluminescent dosimeters (TLDs).

5.3.2 Inhalation Dose

The inhalation dose will be determined at the calculational locations for each age group according to the methods outlined in Section 3.0 of this manual.

5.3.3 Ingestion Pathway (cow milk, goat milk, meat, vegetation)

The dose via the ingestion pathway will be calculated at the consumer locations for the consumers at risk. If no milk pathway exists in a sector, the dose via this pathway will be treated as < 1 mrem/yr.

5.3.4 Total Body Noble Gas Immersion Dose

This dose will be calculated in accordance with Section 3.4.1.2b. for the maximally exposed MEMBER OF THE PUBLIC in the limiting sector.

5.3.5 Ground Plane Deposition

5.3.6 Other Uranium Fuel Cycle Sources

The dose from other fuel sources will be treated as < 1 mrem/yr.

5.4 Thyroid Dose

The dose to the thyroid will be calculated for the limiting sector as the sum of:

5.4.1 Direct Radiation (from storage tanks, N-16 sources, etc.)

The component of dose to the thyroid due to direct radiation will be determined by thermoluminescent dosimeters (TLDs).

5.4.2 Inhalation Dose

The inhalation dose to the thyroid will be determined at the calculational locations for each age group according to the methods outlined in Section 3.0 of this manual.

5.4.3 Ingestion Pathway (cow milk, goat milk, meat, vegetation)

The dose to the thyroid via the ingestion pathway will be calculated at the consumer locations for the consumers at risk. If no milk pathway exists in a sector, the dose via this pathway will be treated as < 1 mrem/yr.

5.4.4 Noble Gas Immersion Dose

It is assumed that an external total body dose from noble gases irradiates internal body organs at the same numerical rate (Reference 1.2.11). This dose for the thyroid will therefore be equal to the dose calculated in Step 5.3.4 above.

5.4.5 Ground Plane Deposition

5.4.6 Other Uranium Fuel Cycle Sources

The dose from other fuel cycle sources will be treated as < 1 mrem/yr.

5.5 Organ Dose (other than thyroid and skin)

The dose to any organ will be calculated for the limiting sector as the sum of:

5.5.1 Direct Radiation (from storage tanks, N-16 sources, etc.)

The component of dose to an organ due to direct radiation will be determined by thermoluminescent dosimeters (TLDs).

5.5.2 Inhalation Dose

The inhalation dose to an organ will be determined at the calculational locations for each age group according to the methods outlined in Section 3.0 of this manual.

5.5.3 Ingestion Pathway (cow milk, goat milk, meat, vegetation)

The dose to an organ via the ingestion pathway will be calculated at the consumer locations for the consumers at risk. If no milk pathway exists in a sector, the dose via this pathway will be treated as < 1 mrem/yr.

5.5.4 Noble Gas Immersion Dose

It is assumed that an external total body dose from noble gases irradiates internal body organs at the same numerical rate (Reference 1.2.11). This dose for an organ will therefore be equal to the dose calculated in Step 5.3.4 above.

5.5.5 Ground Plane Deposition

5.5.6 Other Uranium Fuel Cycle Sources

The dose from other fuel cycle sources will be treated as < 1 mrem/yr.

5.6 Skin Dose

The dose to the skin will be calculated for the limiting sector as the sum of:

5.6.1 Direct Radiation (from storage tanks, N-16 sources, etc.)

The component of dose to the skin due to direct radiation will be determined by thermoluminescent dosimeters (TLDs).

5.6.2 Inhalation Dose

The inhalation dose to the skin (only tritium is considered) will be determined at the calculational locations for each age group according to the methods outlined in Section 3.0 of this manual.

5.6.3 Ingestion Pathway (cow milk, goat milk, meat, vegetation)

The dose to the skin via the ingestion pathway (only tritium and C-14 considered) will be calculated at the consumer locations for the consumers at risk. If no milk pathway exists in a sector, the dose via this pathway will be treated as < 1 mrem/yr.

5.6.4 Skin Noble Gas Immersion Dose

This dose will be calculated in accordance with Section 3.4.1.2b for the maximally exposed MEMBER OF THE PUBLIC in the limiting sector(s).

5.6.5 Ground Plane Deposition

5.6.6 Other Uranium Fuel Cycle Sources

This dose from other fuel cycle sources will be treated as < 1 mrem/yr.

6.0 INTERLABORATORY COMPARISON STUDIES

6.1 Requirement

Technical Specification 3.12.3 states "Analyses shall be performed on radioactive materials supplied as part of an Interlaboratory Comparison Program that has been approved by the Commission."

6.2 Program

6.2.1 Environmental Sample Analyses Comparison Program

Environmental samples from the River Bend Station are to be analyzed by the River Bend Station Environmental Services Group or by a qualified contracting laboratory. These laboratories will participate in the U.S. Environmental Protection Agency's Environmental Radioactivity Laboratory Intercomparison Studies (Crosscheck) Program or an equivalent program. This participation will include all of the determinations (sample-radionuclide combinations) that are offered by EPA and that are also included in the licensee's environmental monitoring program. Results of the Interlaboratory Program will be included in the Annual Radiological Environmental Operating Report.

6.2.2 Effluent Release Analyses Program

RBS Chemistry Group will perform sample analyses for gamma-emitting radionuclides in effluent releases. The radiochemistry laboratory will participate annually in a corporate interlaboratory comparison study or an equivalent study. The results of these studies will be provided to the NRC upon request.

6.2.3 Abnormal Results

If the GSU laboratory or vendor laboratory results lie at greater than three (3) standard deviations from the "recognized value," an evaluation will be performed to identify any recommended remedial actions to reduce anomalous errors. Complete documentation on the evaluation will be available to RBS Environmental Services Group and will be provided to the NRC upon request.

APPENDIX A
MPC VALUES

MAXIMUM PERMISSIBLE CONCENTRATIONS (uCi/ml)

REPORT 1

MAXIMUM PERMISSIBLE CONCENTRATIONS (uCi/ml)

Nuclide	Air Res Sol	Water Res Sol	Air Unres Sol	Water Unres Sol	Air Res Insol	Water Res Insol	Air Unres Insol	Water Unres Insol
H-3	0E+00	0E+00	0E+00	3E-03	0E+00	0E+00	0E+00	3E-03
BE-7	0E+00	0E+00	0E+00	2E-03	0E+00	0E+00	0E+00	2E-03
C-14	0E+00	0E+00	1E-07	8E-04	0E+00	0E+00	1E-06	0E+00
NA-24	0E+00	0E+00	4E-08	2E-04	0E+00	0E+00	5E-09	3E-05
P-32	0E+00	0E+00	2E-09	2E-05	0E+00	0E+00	3E-09	2E-05
CR-51	0E+00	0E+00	4E-07	2E-03	0E+00	0E+00	8E-08	2E-03
MN-54	0E+00	0E+00	1E-08	1E-04	0E+00	0E+00	1E-09	1E-04
MN-56	0E+00	0E+00	3E-08	1E-04	0E+00	0E+00	2E-08	1E-04
FE-55	0E+00	0E+00	3E-08	8E-04	0E+00	0E+00	3E-08	2E-03
FE-59	0E+00	0E+00	5E-09	6E-05	0E+00	0E+00	2E-09	5E-05
CO-56	0E+00	0E+00	1E-10	3E-06	0E+00	0E+00	1E-10	3E-06
CO-57	0E+00	0E+00	1E-07	5E-04	0E+00	0E+00	6E-09	4E-04
CO-58	0E+00	0E+00	3E-08	1E-04	0E+00	0E+00	2E-09	9E-05
CO-60	0E+00	0E+00	1E-08	5E-05	0E+00	0E+00	3E-10	3E-05
NI-63	0E+00	0E+00	2E-09	3E-05	0E+00	0E+00	1E-08	7E-04
NI-65	0E+00	0E+00	3E-08	1E-04	0E+00	0E+00	2E-08	1E-04
CU-64	0E+00	0E+00	7E-08	3E-04	0E+00	0E+00	4E-08	2E-04
ZN-65	0E+00	0E+00	4E-09	1E-04	0E+00	0E+00	2E-09	2E-04
ZN-69	0E+00	0E+00	2E-07	2E-03	0E+00	0E+00	3E-07	2E-03
ZN-69M	0E+00	0E+00	1E-08	7E-05	0E+00	0E+00	1E-08	6E-05
SE-75	0E+00	0E+00	4E-08	3E-04	0E+00	0E+00	4E-09	3E-04
BR-82	0E+00	0E+00	4E-08	3E-04	0E+00	0E+00	6E-09	4E-05
BR-83	0E+00	0E+00	1E-10	3E-06	0E+00	0E+00	1E-10	3E-06
BR-84	0E+00	0E+00	3E-08	3E-06	0E+00	0E+00	3E-08	3E-06
BR-85	0E+00	0E+00	3E-08	3E-06	0E+00	0E+00	3E-08	3E-06
RB-86	0E+00	0E+00	1E-08	7E-05	0E+00	0E+00	2E-09	2E-05
RB-88	0E+00	0E+00	3E-08	3E-06	0E+00	0E+00	3E-08	3E-06
RB-89	0E+00	0E+00	3E-08	3E-06	0E+00	0E+00	3E-08	3E-06
SR-85	0E+00	0E+00	8E-09	1E-04	0E+00	0E+00	4E-09	2E-04
SR-89	0E+00	0E+00	3E-10	3E-06	0E+00	0E+00	1E-09	3E-05
SR-90	0E+00	0E+00	3E-11	3E-07	0E+00	0E+00	2E-10	4E-05
SR-91	0E+00	0E+00	2E-08	7E-05	0E+00	0E+00	9E-09	5E-05
SR-92	0E+00	0E+00	2E-08	7E-05	0E+00	0E+00	1E-08	6E-05
Y-88	0E+00	0E+00	1E-10	3E-06	0E+00	0E+00	1E-10	3E-06
Y-90	0E+00	0E+00	4E-09	2E-05	0E+00	0E+00	3E-09	2E-05
Y-91M	0E+00	0E+00	8E-07	3E-03	0E+00	0E+00	6E-07	3E-03
Y-91	0E+00	0E+00	1E-09	3E-05	0E+00	0E+00	1E-09	3E-05
Y-92	0E+00	0E+00	1E-08	6E-05	0E+00	0E+00	1E-08	6E-05
Y-93	0E+00	0E+00	6E-09	3E-05	0E+00	0E+00	5E-09	3E-05
ZR-95	0E+00	0E+00	4E-09	6E-05	0E+00	0E+00	1E-09	6E-05
ZR-97	0E+00	0E+00	4E-09	2E-05	0E+00	0E+00	3E-09	2E-05
NB-94	0E+00	0E+00	1E-10	3E-06	0E+00	0E+00	1E-10	3E-06
NB-95	0E+00	0E+00	2E-08	1E-04	0E+00	0E+00	3E-09	1E-04
NB-97	0E+00	0E+00	2E-07	9E-04	0E+00	0E+00	2E-07	9E-04
MO-90	0E+00	0E+00	1E-10	3E-06	0E+00	0E+00	1E-10	3E-06
MO-99	0E+00	0E+00	3E-08	2E-04	0E+00	0E+00	7E-09	4E-05
TC-99M	0E+00	0E+00	1E-06	6E-03	0E+00	0E+00	5E-07	3E-03
TC-101	0E+00	0E+00	3E-08	3E-06	0E+00	0E+00	3E-08	3E-06
RU-103	0E+00	0E+00	2E-08	8E-05	0E+00	0E+00	3E-09	8E-05

REPORT 1

MAXIMUM PERMISSIBLE CONCENTRATIONS (uCi/ml)

Nuclide	Air Res Sol	Water Res Sol	Air Unres Sol	Water Unres Sol	Air Res Insol	Water Res Insol	Air Unres Insol	Water Unres Insol
RU-105	0E+00	0E+00	2E-08	1E-04	0E+00	0E+00	2E-08	1E-04
RU-106	0E+00	0E+00	3E-09	1E-05	0E+00	0E+00	2E-10	1E-05
AG-110M	0E+00	0E+00	7E-09	3E-05	0E+00	0E+00	3E-10	3E-05
CD-109	0E+00	0E+00	2E-09	2E-04	0E+00	0E+00	3E-09	2E-04
CD-113M	0E+00	0E+00	1E-10	3E-06	0E+00	0E+00	1E-10	3E-06
SN-113	0E+00	0E+00	1E-08	9E-05	0E+00	0E+00	2E-09	8E-05
SN-117M	0E+00	0E+00	1E-10	3E-06	0E+00	0E+00	1E-10	3E-06
SB-122	0E+00	0E+00	6E-09	3E-05	0E+00	0E+00	5E-09	3E-05
SB-124	0E+00	0E+00	5E-09	2E-05	0E+00	0E+00	7E-10	2E-05
SB-125	0E+00	0E+00	2E-08	1E-04	0E+00	0E+00	9E-10	1E-04
SB-126	0E+00	0E+00	1E-10	3E-06	0E+00	0E+00	1E-10	3E-06
SB-127	0E+00	0E+00	1E-10	3E-06	0E+00	0E+00	1E-10	3E-06
TE-125M	0E+00	0E+00	1E-08	2E-04	0E+00	0E+00	4E-09	1E-04
TE-127M	0E+00	0E+00	5E-09	6E-05	0E+00	0E+00	1E-09	5E-05
TE-127	0E+00	0E+00	6E-08	3E-04	0E+00	0E+00	3E-08	2E-04
TE-129M	0E+00	0E+00	3E-09	3E-05	0E+00	0E+00	1E-09	2E-05
TE-129	0E+00	0E+00	2E-07	8E-04	0E+00	0E+00	1E-07	8E-04
TE-131M	0E+00	0E+00	1E-08	6E-05	0E+00	0E+00	6E-09	4E-05
TE-131	0E+00	0E+00	3E-08	3E-06	0E+00	0E+00	3E-08	3E-06
TE-132	0E+00	0E+00	7E-09	3E-05	0E+00	0E+00	4E-09	2E-05
I-130	0E+00	0E+00	1E-10	3E-06	0E+00	0E+00	1E-10	3E-06
I-131	0E+00	0E+00	1E-10	3E-07	0E+00	0E+00	1E-08	6E-05
I-132	0E+00	0E+00	3E-09	8E-06	0E+00	0E+00	3E-08	2E-04
I-133	0E+00	0E+00	4E-10	1E-06	0E+00	0E+00	7E-09	4E-05
I-134	0E+00	0E+00	6E-09	2E-05	0E+00	0E+00	1E-07	6E-04
I-135	0E+00	0E+00	1E-09	4E-06	0E+00	0E+00	1E-08	7E-05
CS-134	0E+00	0E+00	1E-09	9E-06	0E+00	0E+00	4E-10	4E-05
CS-135	0E+00	0E+00	2E-08	1E-04	0E+00	0E+00	3E-09	2E-04
CS-136	0E+00	0E+00	1E-08	9E-05	0E+00	0E+00	6E-09	6E-05
CS-137	0E+00	0E+00	2E-09	2E-05	0E+00	0E+00	5E-10	4E-05
CS-138	0E+00	0E+00	3E-08	3E-06	0E+00	0E+00	3E-08	3E-06
BA-133	0E+00	0E+00	1E-10	3E-06	0E+00	0E+00	1E-10	3E-06
BA-139	0E+00	0E+00	3E-08	3E-06	0E+00	0E+00	3E-08	3E-06
BA-140	0E+00	0E+00	4E-09	3E-05	0E+00	0E+00	1E-09	2E-05
BA-141	0E+00	0E+00	3E-08	3E-06	0E+00	0E+00	3E-08	3E-06
BA-142	0E+00	0E+00	3E-08	3E-06	0E+00	0E+00	3E-08	3E-06
LA-140	0E+00	0E+00	5E-09	2E-05	0E+00	0E+00	4E-09	2E-05
LA-142	0E+00	0E+00	3E-08	3E-06	0E+00	0E+00	3E-08	3E-06
CE-139	0E+00	0E+00	1E-10	3E-06	0E+00	0E+00	1E-10	3E-06
CE-141	0E+00	0E+00	2E-08	9E-05	0E+00	0E+00	5E-09	9E-05
CE-143	0E+00	0E+00	9E-09	4E-05	0E+00	0E+00	7E-09	4E-05
CE-144	0E+00	0E+00	3E-10	1E-05	0E+00	0E+00	2E-10	1E-05
PR-143	0E+00	0E+00	1E-08	5E-05	0E+00	0E+00	6E-09	5E-05
PR-144	0E+00	0E+00	3E-08	3E-06	0E+00	0E+00	3E-08	3E-06
ND-147	0E+00	0E+00	1E-08	6E-05	0E+00	0E+00	8E-09	6E-05
EU-152	0E+00	0E+00	4E-10	8E-05	0E+00	0E+00	6E-10	8E-05
W-187	0E+00	0E+00	2E-08	7E-05	0E+00	0E+00	1E-08	6E-05
NP-239	0E+00	0E+00	3E-08	1E-04	0E+00	0E+00	2E-08	1E-04
AR-41	0E+00	0E+00	4E-08	2E-04	0E+00	0E+00	4E-08	2E-04

REPORT 1

MAXIMUM PERMISSIBLE CONCENTRATIONS (uCi/ml)

Nuclide	Air Res Sol	Water Res Sol	Air Unres Sol	Water Unres Sol	Air Res Insol	Water Res Insol	Air Unres Insol	Water Unres Insol
KR-83M	0E+00	0E+00	3E-08	2E-04	0E+00	0E+00	3E-08	2E-04
KR-85M	0E+00	0E+00	1E-07	2E-04	0E+00	0E+00	1E-07	2E-04
KR-85	0E+00	0E+00	3E-07	2E-04	0E+00	0E+00	3E-07	2E-04
KR-87	0E+00	0E+00	2E-08	2E-04	0E+00	0E+00	2E-08	2E-04
KR-88	0E+00	0E+00	2E-08	2E-04	0E+00	0E+00	2E-08	2E-04
KR-89	0E+00	0E+00	3E-08	2E-04	0E+00	0E+00	3E-08	2E-04
KR-90	0E+00	0E+00	3E-08	2E-04	0E+00	0E+00	3E-08	2E-04
XE-131M	0E+00	0E+00	4E-07	2E-04	0E+00	0E+00	4E-07	2E-04
XE-133M	0E+00	0E+00	3E-07	2E-04	0E+00	0E+00	3E-07	2E-04
XE-133	0E+00	0E+00	3E-07	2E-04	0E+00	0E+00	3E-07	2E-04
XE-135M	0E+00	0E+00	3E-08	2E-04	0E+00	0E+00	3E-08	2E-04
XE-135	0E+00	0E+00	1E-07	2E-04	0E+00	0E+00	1E-07	2E-04
XE-137	0E+00	0E+00	3E-08	2E-04	0E+00	0E+00	3E-08	2E-04
XE-138	0E+00	0E+00	3E-08	2E-04	0E+00	0E+00	3E-08	2E-04
G-ALPHA	0E+00	0E+00	2E-14	3E-08	0E+00	0E+00	2E-14	3E-08
G-BETA	0E+00	0E+00	1E-10	3E-06	0E+00	0E+00	1E-10	3E-06
OTHER	0E+00	0E+00	1E-10	3E-06	0E+00	0E+00	1E-10	3E-06
RH-105	0E+00	0E+00	3E-08	1E-04	0E+00	0E+00	2E-08	1E-04
AR-76	0E+00	0E+00	4E-09	2E-05	0E+00	0E+00	3E-09	2E-05

End of Report

APPENDIX B

LIQUID ENVIRONMENTAL DOSE TRANSFER FACTORS

$A_{i\,\tau}$

TABLE B-1

DOSE FACTOR TABLE : A(i,3) - Adult, liquid

Units are mrem/hr per uCi/ml

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
H-3	0.00E+00	2.81E-01	2.81E-01	2.81E-01	2.81E-01	2.81E-01	2.81E-01	0.00E+00
C-14	4.81E+04	9.22E+03	9.22E+03	9.22E+03	9.22E+03	9.22E+03	9.22E+03	0.00E+00
NA-24	6.02E+02	6.02E+02	6.02E+02	6.02E+02	6.02E+02	6.02E+02	6.02E+02	0.00E+00
P-32	4.85E+07	3.01E+06	1.87E+06	0.00E+00	0.00E+00	0.00E+00	5.45E+06	0.00E+00
CR-51	0.00E+00	0.00E+00	4.31E+00	2.58E+00	9.50E-01	5.72E+00	1.08E+03	0.00E+00
MN-54	0.00E+00	2.39E+05	4.56E+04	0.00E+00	7.12E+04	0.00E+00	7.33E+05	0.00E+00
MN-56	0.00E+00	6.02E+03	1.07E+03	0.00E+00	7.64E+03	0.00E+00	1.92E+05	0.00E+00
FE-55	5.68E+03	3.93E+03	9.16E+02	0.00E+00	0.00E+00	2.19E+03	2.25E+03	0.00E+00
FE-59	8.97E+03	2.11E+04	8.08E+03	0.00E+00	0.00E+00	5.89E+03	7.03E+04	0.00E+00
CO-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	0.00E+00	1.74E+02	3.91E+02	0.00E+00	0.00E+00	0.00E+00	3.54E+03	0.00E+00
CO-60	0.00E+00	5.01E+02	1.11E+03	0.00E+00	0.00E+00	0.00E+00	9.41E+03	0.00E+00
NI-63	3.86E+04	2.68E+03	1.29E+03	0.00E+00	0.00E+00	0.00E+00	5.58E+02	0.00E+00
NI-65	1.57E+02	2.04E+01	9.29E+00	0.00E+00	0.00E+00	0.00E+00	5.17E+02	0.00E+00
CU-64	0.00E+00	2.90E+01	1.36E+01	0.00E+00	7.31E+01	0.00E+00	2.47E+03	0.00E+00
ZN-65	5.09E+04	1.62E+05	7.31E+04	0.00E+00	1.08E+05	0.00E+00	1.02E+05	0.00E+00
ZN-69	1.08E+02	2.07E+02	1.44E+01	0.00E+00	1.34E+02	0.00E+00	3.11E+01	0.00E+00
ZN-69M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	4.81E+01	0.00E+00	0.00E+00	0.00E+00	6.92E+01	0.00E+00
BR-84	0.00E+00	0.00E+00	6.23E+01	0.00E+00	0.00E+00	0.00E+00	4.89E-04	0.00E+00
BR-85	0.00E+00	0.00E+00	2.56E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	1.13E+05	5.28E+04	0.00E+00	0.00E+00	0.00E+00	2.23E+04	0.00E+00
RB-88	0.00E+00	3.25E+02	1.72E+02	0.00E+00	0.00E+00	0.00E+00	4.49E-09	0.00E+00
RB-89	0.00E+00	2.15E+02	1.51E+02	0.00E+00	0.00E+00	0.00E+00	1.25E-11	0.00E+00
SR-89	3.97E+04	0.00E+00	1.14E+03	0.00E+00	0.00E+00	0.00E+00	6.38E+03	0.00E+00
SR-90	9.78E+05	0.00E+00	2.40E+05	0.00E+00	0.00E+00	0.00E+00	2.83E+04	0.00E+00
SR-91	7.32E+02	0.00E+00	2.96E+01	0.00E+00	0.00E+00	0.00E+00	3.48E+03	0.00E+00
SR-92	2.77E+02	0.00E+00	1.20E+01	0.00E+00	0.00E+00	0.00E+00	5.50E+03	0.00E+00
Y-90	6.07E+00	0.00E+00	1.63E-01	0.00E+00	0.00E+00	0.00E+00	6.44E+04	0.00E+00
Y-91M	5.74E-02	0.00E+00	2.22E-03	0.00E+00	0.00E+00	0.00E+00	1.68E-01	0.00E+00
Y-91	8.90E+01	0.00E+00	2.38E+00	0.00E+00	0.00E+00	0.00E+00	4.90E+04	0.00E+00
Y-92	5.33E-01	0.00E+00	1.56E-02	0.00E+00	0.00E+00	0.00E+00	9.34E+03	0.00E+00
Y-93	1.69E+00	0.00E+00	4.67E-02	0.00E+00	0.00E+00	0.00E+00	5.36E+04	0.00E+00
ZR-95	3.57E-01	1.14E-01	7.75E-02	0.00E+00	1.80E-01	0.00E+00	3.63E+02	0.00E+00
ZR-97	1.97E-02	3.98E-03	1.82E-03	0.00E+00	6.01E-03	0.00E+00	1.23E+03	0.00E+00
NB-95	4.48E+02	2.49E+02	1.34E+02	0.00E+00	2.46E+02	0.00E+00	1.51E+06	0.00E+00
NB-97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	0.00E+00	1.28E+02	2.44E+01	0.00E+00	2.90E+02	0.00E+00	2.97E+02	0.00E+00
TC-99M	9.59E-03	2.71E-02	3.45E-01	0.00E+00	4.12E-01	1.33E-02	1.60E+01	0.00E+00
TC-101	9.86E-03	1.42E-02	1.39E-01	0.00E+00	2.56E-01	7.26E-03	4.27E-14	0.00E+00
RU-103	3.61E+01	0.00E+00	1.56E+01	0.00E+00	1.38E+02	0.00E+00	4.22E+03	0.00E+00
RU-105	3.01E+00	0.00E+00	1.19E+00	0.00E+00	3.89E+01	0.00E+00	1.84E+03	0.00E+00
RU-106	5.37E+02	0.00E+00	6.80E+01	0.00E+00	1.04E+03	0.00E+00	3.48E+04	0.00E+00
AG-110M	5.38E-04	4.98E-04	2.95E-04	0.00E+00	9.78E-04	0.00E+00	2.03E-01	0.00E+00
SB-124	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE B-1

DOSE FACTOR TABLE : A(i,3) - Adult, liquid

Units are mrem/hr per uCi/ml

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
SB-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	1.19E+04	4.31E+03	1.59E+03	3.58E+03	4.84E+04	0.00E+00	4.75E+04	0.00E+00
TE-127M	3.01E+04	1.08E+04	3.66E+03	7.69E+03	1.22E+05	0.00E+00	1.01E+05	0.00E+00
TE-127	4.89E+02	1.75E+02	1.06E+02	3.62E+02	1.99E+03	0.00E+00	3.86E+04	0.00E+00
TE-129M	5.11E+04	1.91E+04	8.09E+03	1.75E+04	2.13E+05	0.00E+00	2.57E+05	0.00E+00
TE-129	1.39E+02	5.24E+01	3.40E+01	1.07E+02	5.86E+02	0.00E+00	1.05E+02	0.00E+00
TE-131M	7.69E+03	3.76E+03	3.13E+03	5.95E+03	3.81E+04	0.00E+00	3.73E+05	0.00E+00
TE-131	8.75E+01	3.66E+01	2.76E+01	7.20E+01	3.83E+02	0.00E+00	1.24E+01	0.00E+00
TE-132	1.12E+04	7.24E+03	6.80E+03	8.00E+03	6.97E+04	0.00E+00	3.43E+05	0.00E+00
I-130	2.94E+01	8.66E+01	3.42E+01	7.34E+03	1.35E+02	0.00E+00	7.46E+01	0.00E+00
I-131	1.62E+02	2.31E+02	1.32E+02	7.57E+04	3.96E+02	0.00E+00	6.10E+01	0.00E+00
I-132	7.88E+00	2.11E+01	7.38E+00	7.38E+02	3.36E+01	0.00E+00	3.96E+00	0.00E+00
I-133	5.51E+01	9.59E+01	2.92E+01	1.41E+04	1.67E+02	0.00E+00	8.62E+01	0.00E+00
I-134	4.12E+00	1.12E+01	4.00E+00	1.94E+02	1.78E+01	0.00E+00	9.75E-03	0.00E+00
I-135	1.72E+01	4.50E+01	1.66E+01	2.97E+03	7.22E+01	0.00E+00	5.09E+01	0.00E+00
CS-134	3.34E+05	7.94E+05	6.49E+05	0.00E+00	2.57E+05	8.53E+04	1.39E+04	0.00E+00
CS-136	3.49E+04	1.38E+05	9.93E+04	0.00E+00	7.68E+04	1.05E+04	1.57E+04	0.00E+00
CS-137	4.28E+05	5.85E+05	3.83E+05	0.00E+00	1.99E+05	6.60E+04	1.13E+04	0.00E+00
CS-138	2.96E+02	5.85E+02	2.90E+02	0.00E+00	4.30E+02	4.25E+01	2.50E-03	0.00E+00
BA-139	1.20E+01	8.55E-03	3.52E-01	0.00E+00	8.00E-03	4.85E-03	2.13E+01	0.00E+00
BA-140	2.51E+03	3.16E+00	1.65E+02	0.00E+00	1.07E+00	1.81E+00	5.17E+03	0.00E+00
BA-141	5.83E+00	4.41E-03	1.97E-01	0.00E+00	4.10E-03	2.50E-03	2.75E-09	0.00E+00
BA-142	2.64E+00	2.71E-03	1.66E-01	0.00E+00	2.29E-03	1.54E-03	3.71E-18	0.00E+00
LA-140	1.58E+00	7.95E-01	2.10E-01	0.00E+00	0.00E+00	0.00E+00	5.84E+04	0.00E+00
LA-142	8.08E-02	3.67E-02	9.15E-03	0.00E+00	0.00E+00	0.00E+00	2.68E+02	0.00E+00
CE-141	5.37E+00	3.63E+00	4.12E-01	0.00E+00	1.69E+00	0.00E+00	1.39E+04	0.00E+00
CE-143	9.46E-01	7.00E+02	7.74E-02	0.00E+00	3.08E-01	0.00E+00	2.61E+04	0.00E+00
CE-144	2.80E+02	1.17E+02	1.50E+01	0.00E+00	6.94E+01	0.00E+00	9.46E+04	0.00E+00
PR-143	5.80E+00	2.33E+00	2.88E-01	0.00E+00	1.34E+00	0.00E+00	2.54E+04	0.00E+00
PR-144	1.90E-02	7.89E-03	9.65E-04	0.00E+00	4.45E-03	0.00E+00	2.73E-09	0.00E+00
ND-147	3.97E+00	4.59E+00	2.74E-01	0.00E+00	2.68E+00	0.00E+00	2.20E+04	0.00E+00
W-187	2.97E+02	2.48E+02	8.68E+01	0.00E+00	0.00E+00	0.00E+00	8.13E+04	0.00E+00
NP-239	3.00E-01	2.95E-02	1.63E-02	0.00E+00	9.21E-02	0.00E+00	6.06E+03	0.00E+00

APPENDIX C

NOBLE GAS DOSE TRANSFER FACTORS

TABLE C-1

REPORT 1

FACTORS FOR EXPOSURE TO A SEMI-INFINITE CLOUD
OF NOBLE GASES

Nuclide	Dose to People +		Dose to Air #	
	Gamma-Body K(i)	Beta-Skin L(i)	Gamma M(i)	Beta N(i)
AR-41	8.840E+03	2.690E+03	9.300E+03	3.280E+03
KR-83M	7.560E-02	0.000E+00	1.930E+01	2.880E+02
KR-85	1.610E+01	1.340E+03	1.720E+01	1.950E+03
KR-85M	1.170E+03	1.460E+03	1.230E+03	1.970E+03
KR-87	5.920E+03	9.730E+03	6.170E+03	1.030E+04
KR-88	1.470E+04	2.370E+03	1.520E+04	2.930E+03
KR-89	1.660E+04	1.010E+04	1.730E+04	1.060E+04
KR-90	1.560E+04	7.290E+03	1.630E+04	7.830E+03
XE-131M	9.150E+01	4.760E+02	1.560E+02	1.110E+03
XE-133	2.940E+02	3.060E+02	3.530E+02	1.050E+03
XE-133M	2.510E+02	9.940E+02	3.270E+02	1.480E+03
XE-135	1.810E+03	1.860E+03	1.920E+03	2.460E+03
XE-135M	3.120E+03	7.110E+02	3.360E+03	7.390E+02
XE-137	1.420E+03	1.220E+04	1.510E+03	1.270E+04
XE-138	8.830E+03	4.130E+03	9.210E+03	4.750E+03

+ -- mrem/yr per uCi/cu.m

-- mrad/yr per uCi/cu.m

End of Report

APPENDIX D
(RESERVED)

APPENDIX E

X/Q AND D/Q VALUES FOR RESTRICTED AREA BOUNDARY

Long Term Diffusion Estimates

E.1 Objective

Annual average CHI/Q and D/Q estimates for continuous and intermittent releases were calculated for each of the sixteen 22.5-deg sectors at receptor locations used to determine the maximum individual and population dose receptors.

The methodology described in Regulatory Guide 1.111, Rev. 1 provided guidance for the aforementioned analysis. The resultant CHI/Q and D/Q values for the maximum individual dose receptors are displayed in Appendix F.

E.2 Calculation Techniques

Nomenclature

2.032	=	$(2/\pi)^{1/2}\ (2\pi/16)^{-1}$	(dimensionless)
π	=	3.14159...	(dimensionless)
exp	=	2.71828...	(dimensionless)
E_T	=	Entrainment coefficient	(dimensionless)
Ω_T	=	Terrain recirculation factor	(dimensionless)
x	=	Downwind receptor distance	(m)
σ_z	=	Vertical dispersion (plume spread) coefficient	(m)
$\bar{u}_{30}$	=	30-ft average wind speed corresponding to a given hour of onsite meteorological data	(m sec^{-1})
$\bar{u}_{150}$	=	150-ft average wind speed corresponding to a given hour of onsite meteorological data	(m sec^{-1})
(CHI/Q)	=	Average concentration normalized by source strength	(sec m^{-3})

(CHI/Q_D)	=	Depleted CHI/Q	$(sec\ m^{-3})$
F_M	=	Momentum flux	$(m^4\ sec^{-3})$
h_b	=	Maximum adjacent building height	(m)
h_r	=	Release height	(m)
h_e	=	Effective release height	(m)
h_{pr}	=	Nonbuoyant plume rise	(m)
h_t	=	Topographic height of receptor above plant grade	(m)
d	=	Stack or vent diameter	(m)
u_e	=	Efflux velocity	$(m\ sec^{-1})$
N	=	Total number of valid hours of onsite wind data in all sectors for applicable averaging period	(dimensionless)
δ/Q	=	Relative deposition rate normalized by source strength	(m^{-1})
D/Q	=	Relative deposition per unit area normalized by source strength	(m^{-2})
G	=	Ground release (subscript)	(dimensionless)
i	=	Index for atmospheric stability group (Classes A through G)	(dimensionless)
j	=	Index for number of hours	(dimensionless)
k	=	Index for a particular receptor distance	(dimensionless)
ℓ	=	Index for a particular 22.5-deg sector	(dimensionless)
n	=	Number of hours onsite wind data in a particular 22.5-deg sector	(dimensionless)
S	=	Stability parameter	(sec^{-2})

E.3 CHI/Q Modeling Technique

Annual average values of relative concentrations were calculated for continuous gaseous releases of activity from the containment building vent and the radwaste building vent according to the straight-line airflow (Gaussian) model described in Regulatory Guide 1.111, Rev. 1. An adjustment was made to the model to characterize the regional airflow pattern. The equation of this model is as follows:

$$\left(\frac{CHI}{Q}\right)_{kl} = \frac{2.032}{N}\sum_{j=1}^{n_l}\left(\frac{\Omega}{x}\right)_k\left[\frac{E_T}{\bar{u}_{30}\left(\sigma_{z_k}^2+cA_b/\pi\right)^{1/2}} + \frac{(1-E_T)\exp^{-\frac{1}{2}\left(\frac{h_e}{\sigma_{z_k}}\right)^2}}{\bar{u}_{150}\,\sigma_{z_k}}\right] \qquad \text{E.3-1}$$

Since the River Bend Station site is located in relatively open terrain, the terrain recirculation factor $(\Omega)_k$ (presented in Figure 2 of Regulatory Guide 1.111) was applied.

The entrainment coefficient (E_T) is a function of the ratio of efflux velocity (u_e) to elevated wind speed (u_{150}) for the conditionally elevated release points.

For vent releases occuring below the level of a nearby structure, 100 percent downwash (total entrainment) is conservatively assumed (E_T = 1). For vent releases occuring between 1 and 2 times the height of a nearby structure, a conditionally elevated release is assumed, and the entrainment coefficient is defined as follows:

E_T = 0.0 when $u_e/\bar{u}_{150} > 5.0$ (totally elevated)

E_T = 0.30-0.06 $(u_e/\bar{u}_{150})$

when $1.5 < u_e/\bar{u}_{150} \leq 5.0$ (partially entrained)

E_T = 2.58-1.58 $(u_e/\bar{u}_{150})$

when $1.0 < u_e/\bar{u}_{150} \leq 1.5$ (partially entrained)

E_T = 1.0 when $u_e/\bar{u}_{150} \leq 1.0$ (totally entrained)

Within 5 km in each downwind sector, Equation E.3-1 was evaluated by sector at the property and restricted area boundaries and nearest resident, vegetable garden, milk cow, and meat animal. There were no goats whose milk is consumed in the area of interest. This evaluation was performed for each continuously emitting release point and the intermittent release from the mechanical vacuum pump with onsite data collected during the period of March 17, 1977 through March 16, 1979.

The effective release height was computed from the following equation:

$$h_e = h_r - (h_t)_k + h_{pr} \qquad \text{E.3-2}$$

Where the downwash correction factor (as defined by Equation (5) in Regulatory Guide 1.111, Rev. 1) is included in the equation for h_{pr} (see Equation E.3-4).

Values of topographic heights were conservatively assessed as the maximum height within a particular annulus-sector (annsect). An annsect is an area bounded by a 22.5-deg sector and any two radial distances from the release point.

For A-D stability conditions, plume rise for nonbuoyant sources was calculated by the following algorithm:

when:

$$u_e/\bar{u}_{150} > 1.5$$

$$h_{pr} = 1.44 \; (u_e/\bar{u}_{150})^{2/3} \; (x/d)^{1/3} \; d \qquad \text{E.3-3}$$

when:

$$u_e/\bar{u}_{150} < 1.5,$$

$$h_{pr} = 1.44 \quad (u_e/\bar{u}_{150})^{2/3} \quad (x/d)^{1/3} \quad (d-3) \; [1.5 - (u_e/u_{150}) \; d] \qquad \text{E.3-4}$$

and

$$h_{pr} \leq 3 \quad (u_e/\bar{u}_{150}) \qquad \text{E.3-5}$$

The result from Equation E.3-3 or E.3-4 (whichever condition exists) is then compared to Equation E.3-5 and the smaller value of h_{pr} is used.

For E-G stability conditions, Equations E.3-3, E.3-4, and E.3-5 are compared with:

$$h_{pr} = 4 \; (F_m/s)^{\frac{1}{2}}$$

and,

$$h_{pr} = 1.5 \quad (F_m/\bar{u}_{150})^{1/3} \quad S^{-1/6}$$

where:

$$F_m = \frac{(u_e)^2 \; d^2}{4}$$

and the smallest value was chosen.

In the ground level portion of Equation E.3-1, the vertical dispersion term:

$$(\sigma_{z_{i,k}}^2 + 0.5h_b/\pi)^{\frac{1}{2}}$$

was constrained to be less than or equal to $1.732\sigma_{z_{ik}}$

E.4 (CHI/Q) and D/Q Modeling Techniques

Annual average depleted relative concentration values were conservatively assumed to be equal to annual average relative concentration values ($CHI/Q = (CHI/Q)_D$). Therefore, no credit was taken for attendant plume depletion of radioiodines and particulates.

Annual average relative deposition values were calculated using Regulatory Guide 1.111, Rev. 1 with the following equation:

$$\left(\frac{D}{Q}\right)_{ikl} = \left(\frac{\delta}{x}\right)_k \left(\frac{2+N}{2\pi}\right)^{-1} \left\{\sum_{j=1}^{n_l}\left[n_j \left|\left(\frac{\delta}{Q}\right)_{G_k} F_T + \frac{1}{n_l}\sum_{n=1}^{J}\left[1-\left(F_T\right)_j\right] n_{jl}\left(\frac{\delta}{Q}\right)_{ik}\right|\right]\right\} \qquad \text{E.4-1}$$

For the conditionally elevated release points, Figures 6 through 9 of Regulatory Guide 1.111, Rev. 1 were used to calculate the $(\delta/Q)_G$ and $(\delta/Q)_i$ values, while for the ground level release points, Figure 6 was utilized to calculate the $(\delta/Q)_G$ value.

E.5 Methodology Employed for Intermittent Release

The methodology employed in the calculation of intermittent release CHI/Qs and D/Qs was as follows:

1. Two-hour sector-averaged CHI/Q values were calculated without terrain recirculation factors.

2. The 15 percent, 1 hour value was plotted at 2 hours on log-log coordinates, while the annual average value was plotted at 8,760 hr. A straight line connecting the two points was drawn.

3. Log-log interpolation based on total ground intermittent release hours versus annual hours yielded a CHI/Q multiplier.

4. The multiplier was applied to annual average CHI/Q and D/Q values to obtain intermittent CHI/Q and D/Q values.

For River Bend Station, a 320 hr/yr intermittent release through the containment building vent from the mechanical vacuum pump was evaluated.

TABLE E-1

ANNUAL AVERAGE CHI/Q VALUES x 10^{-7} (sec/m^3)
FOR RESTRICTED AREA BOUNDARY

Sector	Mixed Mode Releases (Continuous)	Ground Level Releases Exhaust (Continuous)
S	11.4	105
SSW	19.7	186
SW	16.4	215
WSW	19.5	326
W	23.6	654
WNW	33.1	421
NW	15.7	262
NNW	14.8	138
N	18.8	180
NNE	24.9	211
NE	16.6	150
ENE	12.2	146
E	9.07	168
ESE	10.4	154
SE	8.19	93.1
SSE	7.69	45.6

TABLE E-2

ANNUAL AVERAGE D/Q VALUES x 10^{-9} (m^{-2})
FOR RESTRICTED AREA BOUNDARY

Sector	Mixed Mode Releases (Continuous)	Ground Level Releases (Continuous)
S	7.61	21.4
SSW	11.3	39.6
SW	10.4	36.1
WSW	9.79	38.5
W	13.8	68.8
WNW	18.0	50.3
NW	8.68	40.8
NNW	10.5	24.7
N	11.8	28.6
NNE	11.2	27.1
NE	8.26	22.3
ENE	9.73	22.7
E	7.75	23.0
ESE	7.76	24.6
SE	6.60	17.2
SSE	5.34	11.8

APPENDIX F

MAXIMUM X/Q AND D/Q VALUES FOR INDIVIDUAL LOCATIONS

TABLE F - 1

ATMOSPHERIC DISPERSION AND DEPOSITION RATES FOR THE MAXIMUM INDIVIDUAL DOSE CALCULATIONS*			
Analysis	Location (meters)	Ground level Releases	Mixed Mode Releases
Gamma air dose (3) and Beta Air Dose	994 m WNW (Containment)	CHI/Q - 421.0	CHI/Q - 33.1
Maximum Receptor (4)	994 m WNW	CHI/Q - 421.0	CHI/Q - 33.1
Resident		D/Q - 50.3	D/Q - 18.1
Garden			
Meat animal			
Immersion			
Milk animal (5)	7,000 m NNW	CHI/Q - 3.58 D/Q - 0.38	CHI/Q - .870 D/Q - .223
Other on-site Receptors (6)	115 m ENE	CHI/Q - 5977.0 D/Q - 529.7	CHI/Q - 407.5 D/Q - 46.9
	275 m N	CHI/Q - 1644.0 D/Q - 345.6	CHI/Q - 169.1 D/Q - 68.4
	500 WNW	CHI/Q - 916.7 D/Q - 148.1	CHI/Q - 105.4 D/Q - 45.6
	2500 SW	CHI/Q - 34.45 D/Q - 3.35	CHI/Q - 4.65 D/Q - 1.40

* Reference 1.2.11 and 1.2.12

Notes:
(1) All CHI/Q = 10-7 sec/m^3
(2) All D/Q = 10-9 m^{-2}
(3) Maximum offsite location (property boundary) with highest CHI/Q (unoccupied).
(4) Maximum occupied offsite location with highest CHI/Q and D/Q.
(5) No milk animal within 5 miles radius, hypothetical location in worst sector.
(6) Other on-site receptors.

APPENDIX G

CALCULATIONAL PARAMETERS

TABLE G-1

REPORT 1

DOSE FACTOR CALCULATION PARAMETERS

Code	Description	Value	Units	
csf	Harvest stored feed to cow	7.776E+06	seconds	(csf)
dw	Drinking Water Dilution Factor	2.480E+04	none	(dw)
esf	Stored feed exp. to deposition	5.184E+06	seconds	(esf)
fg	Fraction Stored Veg. Intake	7.600E-01	none	(fg)
fi	Fraction Vegetation Irrigated	1.000E-01	none	(fi)
fl	Fraction Leafy Veg. Intake	1.000E+00	none	(fl)
fpc	Fraction Year Cow On Pasture	1.000E+00	none	(fpc)
fpg	Fraction Year Goat On Pasture	1.000E+00	none	(fpg)
fsc	Fraction Cow Feed-Pasture Grass	1.000E+00	none	(fsc)
fsg	Fraction Goat Feed-Pasture Grass	1.000E+00	none	(fsg)
gsf	Harvest stored feed to goat	7.776E+06	seconds	(gsf)
h	Absolute Humidity	1.290E+01	gm/m3	(h)
kc	Water to sediment xfer coeff.	7.220E-02	L/kg hr	(kc)
ksf	Liq conv fact pCi*ml*yr/uCi*l*hr	1.142E+05		(ksf)
lv	Water Content of Leafy Veg.	9.200E-01	L/kg	(lv)
lw	Surface Weather Decay Constant	5.730E-07	1/seconds	(lw)
lwr	Iodine Surface Wx Decay Constant	5.730E-07	1/seconds	(lwr)
mtv	Mass density of sediment	4.000E+01	kg/m2	(mtv)
p	Effective surface density, soil	2.400E+02	kg/m2	(p)
p14	Fractional equilibrium ratio	1.000E+00	none	(p14)
qfc	Cow's Feed Consumption Rate	5.000E+01	kg/day	(qfc)
qfg	Goat's Feed Consumption Rate	6.000E+00	kg/day	(qfg)
rl	Fraction Deposited Liquid	2.500E-01	none	(rl)
rp	Fraction Deposited Particulate	2.000E-01	none	(rp)
rr	Fraction Deposited Radioiodine	1.000E+00	none	(rr)
sf	Shielding Factor	7.000E-01	none	(sf)
* tb	Long term sediment exposure	0.000E+00	seconds	(tb)
tbl	Long term sediment exp. liquid	4.716E+08	seconds	(tbl)
tei	Veg. Exposure in Growing Season	5.184E+06	seconds	(tei)
tem	Seasonal forage exposure (milk)	2.592E+06	seconds	(tem)
tev	Seasonal crop exposure (veg.)	8.000E+06	seconds	(tev)
tfh	Fresh Fish Transit Time	0.000E+00	seconds	(tfh)
tgm	Time, goat milking to receptor	1.728E+05	seconds	(tgm)
thi	Transit Time-Harvest Irrig. Veg.	8.640E+04	seconds	(thi)
thv	Transit Time-Harvest-Stored Veg.	5.184E+06	seconds	(thv)
ti	Fresh Non-Fish Transit Time	0.000E+00	seconds	(ti)
tl	Transit Time-Harvest-Leafy Veg.	8.640E+04	seconds	(tl)
tmc	Time, cow milking to receptor	1.728E+05	seconds	(tmc)
ts	Time, slaughter to consumer	1.728E+06	seconds	(ts)
tw	Drinking Water Transit Time	0.000E+00	seconds	(tw)
yiv	Irrigated Veg. Areal Density	2.000E+00	kg/m2	(yiv)
yp	Pasture Grass Areal Density	7.000E-01	kg/m2	(yp)
ys	Stored Feed Areal Density	2.000E+00	kg/m2	(ys)
ysv	Stored Vegetable Areal Density	2.000E+00	kg/m2	(ysv)
yv	Vegetation Areal Density	2.000E+00	kg/m2	(yv)

* tb-needs to be 4.716E+08 when calculating Ground Plane Dose Factors

TABLE G-2

STABLE ELEMENT TRANSFER FACTORS

Nuclide	Milk Cow	Milk Goat	Meat	Veg./Soil
H-3	1.000E-02	1.700E-01	1.200E-02	4.800E+00
C-14	1.200E-02	1.000E-01	3.100E-02	5.500E+00
NA-24	4.000E-02	4.000E-02	3.000E-02	5.200E-02
P-32	2.500E-02	2.500E-01	4.600E-02	1.100E+00
CR-51	2.200E-03	2.200E-03	2.400E-03	2.500E-04
MN-54	2.500E-04	2.500E-04	8.000E-04	2.900E-02
MN-56	2.500E-04	2.500E-04	8.000E-04	2.900E-02
FE-55	1.200E-03	1.300E-04	4.000E-02	6.600E-04
FE-59	1.200E-03	1.300E-04	4.000E-02	6.600E-04
CO-57	1.000E-03	1.000E-03	1.300E-02	9.400E-03
CO-58	1.000E-03	1.000E-03	1.300E-02	9.400E-03
CO-60	1.000E-03	1.000E-03	1.300E-02	9.400E-03
NI-63	6.700E-03	6.700E-03	5.300E-02	1.900E-02
NI-65	6.700E-03	6.700E-03	5.300E-02	1.900E-02
CU-64	1.400E-02	1.300E-02	8.000E-03	1.200E-01
ZN-65	3.900E-02	3.900E-02	3.000E-02	4.000E-01
ZN-69	3.900E-02	3.900E-02	3.000E-02	4.000E-01
ZN-69M	3.900E-02	3.900E-02	3.000E-02	4.000E-01
BR-82	5.000E-02	5.000E-02	2.600E-02	7.600E-01
BR-83	5.000E-02	5.000E-02	2.600E-02	7.600E-01
BR-84	5.000E-02	5.000E-02	2.600E-02	7.600E-01
BR-85	5.000E-02	5.000E-02	2.600E-02	7.600E-01
RB-86	3.000E-02	3.000E-02	3.100E-02	1.300E-01
RB-88	3.000E-02	3.000E-02	3.100E-02	1.300E-01
RB-89	3.000E-02	3.000E-02	3.100E-02	1.300E-01
SR-89	8.000E-04	1.400E-02	6.000E-04	1.700E-02
SR-90	8.000E-04	1.400E-02	6.000E-04	1.700E-02
SR-91	8.000E-04	1.400E-02	6.000E-04	1.700E-02
SR-92	8.000E-04	1.400E-02	6.000E-04	1.700E-02
Y-90	1.000E-05	1.000E-05	4.600E-03	2.600E-03
Y-91M	1.000E-05	1.000E-05	4.600E-03	2.600E-03
Y-91	1.000E-05	1.000E-05	4.600E-03	2.600E-03
Y-92	1.000E-05	1.000E-05	4.600E-03	2.600E-03
Y-93	1.000E-05	1.000E-05	4.600E-03	2.600E-03
ZR-95	5.000E-06	5.000E-06	3.400E-02	1.700E-04
ZR-97	5.000E-06	5.000E-06	3.400E-02	1.700E-04
NB-95	2.500E-03	2.500E-03	2.800E-01	9.400E-03
NB-97	2.500E-03	2.500E-03	2.800E-01	9.400E-03
MO-99	7.500E-03	7.500E-03	8.000E-03	1.200E-01
TC-99M	2.500E-02	2.500E-02	4.000E-01	2.500E-01
TC-101	2.500E-02	2.500E-02	4.000E-01	2.500E-01
RU-103	1.000E-06	1.000E-06	4.000E-01	5.000E-02
RU-105	1.000E-06	1.000E-06	4.000E-01	5.000E-02
RU-106	1.000E-06	1.000E-06	4.000E-01	5.000E-02
AG-110M	5.000E-02	5.000E-02	1.700E-02	1.500E-01
SB-124	1.500E-03	1.500E-03	0.000E+00	0.000E+00
SB-125	1.500E-03	1.500E-03	0.000E+00	0.000E+00
TE-125M	1.000E-03	1.000E-03	7.700E-02	1.300E+00
TE-127M	1.000E-03	1.000E-03	7.700E-02	1.300E+00
TE-127	1.000E-03	1.000E-03	7.700E-02	1.300E+00
TE-129M	1.000E-03	1.000E-03	7.700E-02	1.300E+00

TABLE G-2

STABLE ELEMENT TRANSFER FACTORS

Nuclide	Milk Cow	Milk Goat	Meat	Veg./Soil
TE-129	1.000E-03	1.000E-03	7.700E-02	1.300E+00
TE-131M	1.000E-03	1.000E-03	7.700E-02	1.300E+00
TE-131	1.000E-03	1.000E-03	7.700E-02	1.300E+00
TE-132	1.000E-03	1.000E-03	7.700E-02	1.300E+00
I-130	6.000E-03	6.000E-02	2.900E-03	2.000E-02
I-131	6.000E-03	6.000E-02	2.900E-03	2.000E-02
I-132	6.000E-03	6.000E-02	2.900E-03	2.000E-02
I-133	6.000E-03	6.000E-02	2.900E-03	2.000E-02
I-134	6.000E-03	6.000E-02	2.900E-03	2.000E-02
I-135	6.000E-03	6.000E-02	2.900E-03	2.000E-02
CS-134	1.200E-02	3.000E-01	4.000E-03	1.000E-02
CS-136	1.200E-02	3.000E-01	4.000E-03	1.000E-02
CS-137	1.200E-02	3.000E-01	4.000E-03	1.000E-02
CS-138	1.200E-02	3.000E-01	4.000E-03	1.000E-02
BA-139	4.000E-04	4.000E-04	3.200E-03	5.000E-03
BA-140	4.000E-04	4.000E-04	3.200E-03	5.000E-03
BA-141	4.000E-04	4.000E-04	3.200E-03	5.000E-03
LA-140	5.000E-06	5.000E-06	2.000E-04	2.500E-03
LA-142	5.000E-06	5.000E-06	2.000E-04	2.500E-03
CE-141	1.000E-04	1.000E-04	1.200E-03	2.500E-03
CE-143	1.000E-04	1.000E-04	1.200E-03	2.500E-03
CE-144	1.000E-04	1.000E-04	1.200E-03	2.500E-03
PR-143	5.000E-06	5.000E-06	4.700E-03	2.500E-03
PR-144	5.000E-06	5.000E-06	4.700E-03	2.500E-03
ND-147	5.000E-06	5.000E-06	3.300E-03	2.400E-03
W-187	5.000E-04	5.000E-04	1.300E-03	1.800E-02
NP-239	5.000E-06	5.000E-06	2.000E-04	2.500E-03

Units --> Milk - days/liter
Meat - days/kg
Soil - unitless

End of Report

TABLE G-3

REPORT 1

BIOACCUMULATION FACTORS

Nuclide	Freshwater Fish	Freshwater Non-Fish	Saltwater Fish	Saltwater Non-Fish
H-3	9.000E-01	9.000E-01	9.000E-01	9.300E-01
C-14	4.600E+03	9.100E+03	1.800E+03	1.400E+03
NA-24	1.000E+02	2.000E+02	6.700E-02	1.900E-01
P-32	1.000E+05	2.000E+04	2.900E+04	3.000E+04
CR-51	2.000E+02	2.000E+03	4.000E+02	2.000E+03
MN-54	4.000E+02	9.000E+04	5.500E+02	4.000E+02
MN-56	4.000E+02	9.000E+04	5.500E+02	4.000E+02
FE-55	1.000E+02	3.200E+03	3.000E+03	2.000E+04
FE-59	1.000E+02	3.200E+03	3.000E+03	2.000E+04
CO-57	5.000E+01	2.000E+02	1.000E+02	1.000E+03
CO-58	5.000E+01	2.000E+02	1.000E+02	1.000E+03
CO-60	5.000E+01	2.000E+02	1.000E+02	1.000E+03
NI-63	1.000E+02	1.000E+02	1.000E+02	2.500E+02
NI-65	1.000E+02	1.000E+02	1.000E+02	2.500E+02
CU-64	5.000E+01	4.000E+02	6.700E+02	1.700E+03
ZN-65	2.000E+03	1.000E+04	2.000E+03	5.000E+04
ZN-69	2.000E+03	1.000E+04	2.000E+03	5.000E+04
ZN-69M	2.000E+03	1.000E+04	2.000E+03	5.000E+04
BR-82	4.200E+02	3.300E+02	1.500E-02	3.100E+00
BR-83	4.200E+02	3.300E+02	1.500E-02	3.100E+00
BR-84	4.200E+02	3.300E+02	1.500E-02	3.100E+00
BR-85	4.200E+02	3.300E+02	1.500E-02	3.100E+00
RB-86	2.000E+03	1.000E+03	8.300E+00	1.700E+01
RB-88	2.000E+03	1.000E+03	8.300E+00	1.700E+01
RB-89	2.000E+03	1.000E+03	8.300E+00	1.700E+01
SR-89	3.000E+01	1.000E+02	2.000E+00	2.000E+01
SR-90	3.000E+01	1.000E+02	2.000E+00	2.000E+01
SR-91	3.000E+01	1.000E+02	2.000E+00	2.000E+01
SR-92	3.000E+01	1.000E+02	2.000E+00	2.000E+01
Y-90	2.500E+01	1.000E+03	2.500E+01	1.000E+03
Y-91M	2.500E+01	1.000E+03	2.500E+01	1.000E+03
Y-91	2.500E+01	1.000E+03	2.500E+01	1.000E+03
Y-92	2.500E+01	1.000E+03	2.500E+01	1.000E+03
Y-93	2.500E+01	1.000E+03	2.500E+01	1.000E+03
ZR-95	3.300E+00	6.700E+00	2.000E+02	8.000E+01
ZR-97	3.300E+00	6.700E+00	2.000E+02	8.000E+01
NB-95	3.000E+04	1.000E+02	3.000E+04	1.000E+02
NB-97	3.000E+04	1.000E+02	3.000E+04	1.000E+02
MO-99	1.000E+01	1.000E+01	1.000E+01	1.000E+01
TC-99M	1.500E+01	5.000E+00	1.000E+01	5.000E+01
TC-101	1.500E+01	5.000E+00	1.000E+01	5.000E+01
RU-103	1.000E+01	3.000E+02	3.000E+00	1.000E+03
RU-105	1.000E+01	3.000E+02	3.000E+00	1.000E+03
RU-106	1.000E+01	3.000E+02	3.000E+00	1.000E+03
AG-110M	0.000E+00	0.000E+00	0.000E+00	0.000E+00
SB-124	0.000E+00	0.000E+00	0.000E+00	0.000E+00
SB-125	0.000E+00	0.000E+00	0.000E+00	0.000E+00
TE-125M	4.000E+02	6.100E+03	1.000E+01	1.000E+02
TE-127M	4.000E+02	6.100E+03	1.000E+01	1.000E+02

TABLE G-3

REPORT 1

BIOACCUMULATION FACTORS

Nuclide	Freshwater Fish	Freshwater Non-Fish	Saltwater Fish	Saltwater Non-Fish
TE-127	4.000E+02	6.100E+03	1.000E+01	1.000E+02
TE-129M	4.000E+02	6.100E+03	1.000E+01	1.000E+02
TE-129	4.000E+02	6.100E+03	1.000E+01	1.000E+02
TE-131M	4.000E+02	6.100E+03	1.000E+01	1.000E+02
TE-131	4.000E+02	6.100E+03	1.000E+01	1.000E+02
TE-132	4.000E+02	6.100E+03	1.000E+01	1.000E+02
I-130	1.500E+01	5.000E+00	1.000E+01	5.000E+01
I-131	1.500E+01	5.000E+00	1.000E+01	5.000E+01
I-132	1.500E+01	5.000E+00	1.000E+01	5.000E+01
I-133	1.500E+01	5.000E+00	1.000E+01	5.000E+01
I-134	1.500E+01	5.000E+00	1.000E+01	5.000E+01
I-135	1.500E+01	5.000E+00	1.000E+01	5.000E+01
CS-134	2.000E+03	1.000E+03	4.000E+01	2.500E+01
CS-136	2.000E+03	1.000E+03	4.000E+01	2.500E+01
CS-137	2.000E+03	1.000E+03	4.000E+01	2.500E+01
CS-138	2.000E+03	1.000E+03	4.000E+01	2.500E+01
BA-139	4.000E+00	2.000E+02	1.000E+01	1.000E+02
BA-140	4.000E+00	2.000E+02	1.000E+01	1.000E+02
BA-141	4.000E+00	2.000E+02	1.000E+01	1.000E+02
BA-142	4.000E+00	2.000E+02	1.000E+01	1.000E+02
LA-140	2.500E+01	1.000E+03	2.500E+01	1.000E+03
LA-142	2.500E+01	1.000E+03	2.500E+01	1.000E+03
CE-141	1.000E+00	1.000E+03	1.000E+01	6.000E+02
CE-143	1.000E+00	1.000E+03	1.000E+01	6.000E+02
CE-144	1.000E+00	1.000E+03	1.000E+01	6.000E+02
PR-143	2.500E+01	1.000E+03	2.500E+01	1.000E+03
PR-144	2.500E+01	1.000E+03	2.500E+01	1.000E+03
ND-147	2.500E+01	1.000E+03	2.500E+01	1.000E+03
W-187	1.200E+03	1.000E+01	3.000E+01	3.000E+01
NP-239	1.000E+01	4.000E+02	1.000E+01	1.000E+01
RH-105	1.000E+01	3.000E+02	1.000E+01	2.000E+03

Units --> pCi/kg per pCi/liter

End of Report

TABLE G-4

INDIVIDUAL USAGE FACTORS

Description	Infant	Child	Teenager	Adult	Units
Fresh Non-Fish	0.000E+00	1.700E+00	3.800E+00	5.000E+00	kg/year
Drinking Water	3.300E+02	5.100E+02	5.100E+02	7.300E+02	liters/year
Milk	3.300E+02	3.300E+02	4.000E+02	3.100E+02	liters/year
Shoreline Rec.	0.000E+00	1.400E+01	6.700E+01	1.200E+01	hours/year
Fresh Fish	0.000E+00	6.900E+00	1.600E+01	2.100E+01	kg/year
Fresh Leafy Veg.	0.000E+00	2.600E+01	4.200E+01	6.400E+01	kg/year
Stored Veg.	0.000E+00	5.200E+02	6.300E+02	5.200E+02	kg/year
Irrigated Veg.	0.000E+00	2.600E+01	4.200E+01	6.400E+01	kg/year
Breathing	1.400E+03	3.700E+03	8.000E+03	8.000E+03	m3/year
Meat	0.000E+00	4.100E+01	6.500E+01	1.100E+02	kg/year

End of Report

APPENDIX H

PARAMETERS FOR DOSES TO MEMBER OF
THE PUBLIC INSIDE SITE BOUNDARY

TABLE H-1

ASSUMPTIONS/PARAMETERS FOR DOSES TO A MEMBER OF THE PUBLIC INSIDE SITE BOUNDARY

MEMBER OF THE PUBLIC	LOCATION	DISTANCE[1] METERS	SECTOR	DURATION (HR/YEAR)
Private Drivers	North Parking Lot	275	N	125[3]
Employee Candidate	Service Building	115[2]	ENE	5
People Entering Site Without Consent	Alligator Bayou	2500	SW	40
Casual Drivers	Main Admin Building	500	WNW	76[4]

(1) The approximate distance from main plant vent exhaust to location.

(2) Midpoint of building

(3) An individual is assumed to be on site 0.25/hr in the morning and 0.25/hr in the evening, 5 days per week, 50 weeks per year (0.5 hr/day * 5 days/week * 50 weeks/year = 125 hours).

(4) An individual is assumed to be on site 0.5 hr/day.

(5) Liquid pathways dose is not considered due to nature of activities that individuals are engaged in.

APPENDIX I

ENVIRONMENTAL DOSE TRANSFER FACTORS
FOR GASEOUS EFFLUENTS

TABLE I-1

DOSE FACTOR TABLE : P(i) - Adult, inhalation

Units are mrem/yr per uCi/cu.m

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
H-3	0.00E+00	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	0.00E+00
C-14	1.82E+04	3.41E+03	3.41E+03	3.41E+03	3.41E+03	3.41E+03	3.41E+03	0.00E+00
NA-24	1.02E+04	1.02E+04	1.02E+04	1.02E+04	1.02E+04	1.02E+04	1.02E+04	0.00E+00
P-32	1.32E+06	7.71E+04	5.01E+04	0.00E+00	0.00E+00	0.00E+00	8.64E+04	0.00E+00
CR-51	0.00E+00	0.00E+00	1.00E+02	5.95E+01	2.28E+01	1.44E+04	3.32E+03	0.00E+00
MN-54	0.00E+00	3.96E+04	6.30E+03	0.00E+00	9.84E+03	1.40E+06	7.74E+04	0.00E+00
MN-56	0.00E+00	1.24E+00	1.83E-01	0.00E+00	1.30E+00	9.44E+03	2.02E+04	0.00E+00
FE-55	2.46E+04	1.70E+04	3.94E+03	0.00E+00	0.00E+00	7.21E+04	6.03E+03	0.00E+00
FE-59	1.18E+04	2.78E+04	1.06E+04	0.00E+00	0.00E+00	1.02E+06	1.88E+05	0.00E+00
CO-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	0.00E+00	1.58E+03	2.07E+03	0.00E+00	0.00E+00	9.28E+05	1.06E+05	0.00E+00
CO-60	0.00E+00	1.15E+04	1.48E+04	0.00E+00	0.00E+00	5.97E+06	2.85E+05	0.00E+00
NI-63	4.32E+05	3.14E+04	1.45E+04	0.00E+00	0.00E+00	1.78E+05	1.34E+04	0.00E+00
NI-65	1.54E+00	2.10E-01	9.12E-02	0.00E+00	0.00E+00	5.60E+03	1.23E+04	0.00E+00
CU-64	0.00E+00	1.46E+00	6.15E-01	0.00E+00	4.62E+00	6.78E+03	4.90E+04	0.00E+00
ZN-65	3.24E+04	1.03E+05	4.66E+04	0.00E+00	6.90E+04	8.64E+05	5.34E+04	0.00E+00
ZN-69	3.38E-02	6.51E-02	4.52E-03	0.00E+00	4.22E-02	9.20E+02	1.63E+01	0.00E+00
ZN-69M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	2.41E+02	0.00E+00	0.00E+00	0.00E+00	2.32E+02	0.00E+00
BR-84	0.00E+00	0.00E+00	3.13E+02	0.00E+00	0.00E+00	0.00E+00	1.64E-03	0.00E+00
BR-85	0.00E+00	0.00E+00	1.28E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	1.35E+05	5.90E+04	0.00E+00	0.00E+00	0.00E+00	1.66E+04	0.00E+00
RB-88	0.00E+00	3.87E+02	1.93E+02	0.00E+00	0.00E+00	0.00E+00	3.34E-09	0.00E+00
RB-89	0.00E+00	2.56E+02	1.70E+02	0.00E+00	0.00E+00	0.00E+00	9.28E-12	0.00E+00
SR-89	3.04E+05	0.00E+00	8.72E+03	0.00E+00	0.00E+00	1.40E+06	3.50E+05	0.00E+00
SR-90	9.92E+07	0.00E+00	6.10E+06	0.00E+00	0.00E+00	9.60E+06	7.22E+05	0.00E+00
SR-91	6.19E+01	0.00E+00	2.50E+00	0.00E+00	0.00E+00	3.65E+04	1.91E+05	0.00E+00
SR-92	6.74E+00	0.00E+00	2.91E-01	0.00E+00	0.00E+00	1.65E+04	4.30E+04	0.00E+00
Y-90	2.09E+03	0.00E+00	5.61E+01	0.00E+00	0.00E+00	1.70E+05	5.06E+05	0.00E+00
Y-91M	2.61E-01	0.00E+00	1.02E-02	0.00E+00	0.00E+00	1.92E+03	1.33E+00	0.00E+00
Y-91	4.62E+05	0.00E+00	1.24E+04	0.00E+00	0.00E+00	1.70E+06	3.85E+05	0.00E+00
Y-92	1.03E+01	0.00E+00	3.02E-01	0.00E+00	0.00E+00	1.57E+04	7.35E+04	0.00E+00
Y-93	9.44E+01	0.00E+00	2.61E+00	0.00E+00	0.00E+00	4.85E+04	4.22E+05	0.00E+00
ZR-95	1.07E+05	3.44E+04	2.33E+04	0.00E+00	5.42E+04	1.77E+06	1.50E+05	0.00E+00
ZR-97	9.68E+01	1.96E+01	9.04E+00	0.00E+00	2.97E+01	7.87E+04	5.23E+05	0.00E+00
NB-95	1.41E+04	7.82E+03	4.21E+03	0.00E+00	7.74E+03	5.05E+05	1.04E+05	0.00E+00
NB-97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	0.00E+00	1.21E+02	2.30E+01	0.00E+00	2.91E+02	9.12E+04	2.48E+05	0.00E+00
TC-99M	1.03E-03	2.91E-03	3.70E-02	0.00E+00	4.42E-02	7.64E+02	4.16E+03	0.00E+00
TC-101	4.18E-05	6.02E-05	5.90E-04	0.00E+00	1.08E-03	3.99E+02	1.09E-11	0.00E+00
RU-103	1.53E+03	0.00E+00	6.58E+02	0.00E+00	5.83E+03	5.05E+05	1.10E+05	0.00E+00
RU-105	7.90E-01	0.00E+00	3.11E-01	0.00E+00	1.02E+00	1.10E+04	4.82E+04	0.00E+00
RU-106	6.91E+04	0.00E+00	8.72E+03	0.00E+00	1.34E+05	9.36E+06	9.12E+05	0.00E+00
AG-110M	0.00E+00	1.00E+04	5.94E+03	0.00E+00	1.97E+04	4.63E+06	3.02E+05	0.00E+00
SB-124	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE I-1

DOSE FACTOR TABLE : P(i) - Adult, inhalation

Units are mrem/yr per uCi/cu.m

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
SB-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	3.42E+03	1.58E+03	4.67E+02	1.05E+03	1.24E+04	3.14E+05	7.06E+04	0.00E+00
TE-127M	1.26E+04	5.77E+03	1.57E+03	3.29E+03	4.58E+04	9.60E+05	1.50E+05	0.00E+00
TE-127	1.40E+00	6.42E-01	3.10E-01	1.06E+00	5.10E+00	6.51E+03	5.74E+04	0.00E+00
TE-129M	9.76E+03	4.67E+03	1.58E+03	3.44E+03	3.66E+04	1.16E+06	3.83E+05	0.00E+00
TE-129	4.98E-02	2.39E-02	1.24E-02	3.90E-02	1.87E-01	1.94E+03	1.57E+02	0.00E+00
TE-131M	6.99E+01	4.36E+01	2.90E+01	5.50E+01	3.09E+02	1.46E+05	5.56E+05	0.00E+00
TE-131	1.11E-02	5.95E-03	3.59E-03	9.36E-03	4.37E-02	1.39E+03	1.84E+01	0.00E+00
TE-132	2.60E+02	2.15E+02	1.62E+02	1.90E+02	1.46E+03	2.88E+05	5.10E+05	0.00E+00
I-130	4.58E+03	1.34E+04	5.28E+03	1.14E+06	2.09E+04	0.00E+00	7.69E+03	0.00E+00
I-131	2.52E+04	3.58E+04	2.05E+04	1.19E+07	6.13E+04	0.00E+00	6.28E+03	0.00E+00
I-132	1.16E+03	3.26E+03	1.16E+03	1.14E+05	5.18E+03	0.00E+00	4.06E+02	0.00E+00
I-133	8.64E+03	1.48E+04	4.52E+03	2.15E+06	2.58E+04	0.00E+00	8.88E+03	0.00E+00
I-134	6.44E+02	1.73E+03	6.15E+02	2.98E+04	2.75E+03	0.00E+00	1.01E+00	0.00E+00
I-135	2.68E+03	6.98E+03	2.57E+03	4.48E+05	1.11E+04	0.00E+00	5.25E+03	0.00E+00
CS-134	3.73E+05	8.48E+05	7.28E+05	0.00E+00	2.87E+05	9.76E+04	1.04E+04	0.00E+00
CS-136	3.90E+04	1.46E+05	1.10E+05	0.00E+00	8.56E+04	1.20E+04	1.17E+04	0.00E+00
CS-137	4.78E+05	6.21E+05	4.28E+05	0.00E+00	2.22E+05	7.52E+04	8.40E+03	0.00E+00
CS-138	3.31E+02	6.21E+02	3.24E+02	0.00E+00	4.80E+02	4.86E+01	1.86E-03	0.00E+00
BA-139	9.36E-01	0.00E+00	2.74E-02	0.00E+00	6.22E-04	3.76E+03	8.96E+02	0.00E+00
BA-140	3.90E+04	4.90E+01	0.00E+00	0.00E+00	1.67E+01	1.27E+06	2.18E+05	0.00E+00
BA-141	1.00E-01	7.53E-05	3.36E-03	0.00E+00	7.00E-05	1.94E+03	1.16E-07	0.00E+00
BA-142	2.63E-02	2.70E-05	1.66E-03	0.00E+00	0.00E+00	1.19E+03	1.57E-16	0.00E+00
LA-140	3.44E+02	1.74E+02	4.58E+01	0.00E+00	0.00E+00	1.36E+05	4.58E+05	0.00E+00
LA-142	6.83E-01	3.10E-01	7.72E-02	0.00E+00	0.00E+00	6.33E+03	2.11E+03	0.00E+00
CE-141	1.99E+04	1.35E+04	1.53E+03	0.00E+00	6.26E+03	3.62E+05	1.20E+05	0.00E+00
CE-143	1.86E+02	1.38E+02	1.53E+01	0.00E+00	6.08E+01	7.98E+04	2.26E+05	0.00E+00
CE-144	3.43E+06	1.43E+06	1.84E+05	0.00E+00	8.48E+05	7.78E+06	8.16E+05	0.00E+00
PR-143	9.36E+03	3.75E+03	4.64E+02	0.00E+00	2.16E+03	2.81E+05	2.00E+05	0.00E+00
PR-144	3.01E-02	1.25E-02	1.53E-03	0.00E+00	7.05E-03	1.02E+03	2.15E-08	0.00E+00
ND-147	5.27E+03	6.10E+03	3.65E+02	0.00E+00	3.56E+03	2.21E+05	1.73E+05	0.00E+00
W-187	8.48E+00	7.08E+00	2.48E+00	0.00E+00	0.00E+00	2.90E+04	1.55E+05	0.00E+00
NP-239	2.30E+02	2.26E+01	1.24E+01	0.00E+00	7.00E+01	3.76E+04	1.19E+05	0.00E+00

TABLE I-2

27-APR-93 12:14:19 Page 1
EM-DM-DO REPORT 2

DOSE FACTOR TABLE : P(i) - Teen, inhalation,

Units are mrem/yr per uCi/cu.m

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
H-3	0.00E+00	1.27E+03	1.27E+03	1.27E+03	1.27E+03	1.27E+03	1.27E+03	0.00E+00
C-14	2.60E+04	4.87E+03	4.87E+03	4.87E+03	4.87E+03	4.87E+03	4.87E+03	0.00E+00
NA-24	1.38E+04	1.38E+04	1.38E+04	1.38E+04	1.38E+04	1.38E+04	1.38E+04	0.00E+00
P-32	1.89E+06	1.10E+05	7.16E+04	0.00E+00	0.00E+00	0.00E+00	9.28E+04	0.00E+00
CR-51	0.00E+00	0.00E+00	1.35E+02	7.50E+01	3.07E+01	2.10E+04	3.00E+03	0.00E+00
MN-54	0.00E+00	5.11E+04	8.40E+03	0.00E+00	1.27E+04	1.98E+06	6.68E+04	0.00E+00
MN-56	0.00E+00	1.70E+00	2.52E-01	0.00E+00	1.79E+00	1.52E+04	5.74E+04	0.00E+00
FE-55	3.34E+04	2.38E+04	5.54E+03	0.00E+00	0.00E+00	1.24E+05	6.39E+03	0.00E+00
FE-59	1.59E+04	3.70E+04	1.43E+04	0.00E+00	0.00E+00	1.53E+06	1.78E+05	0.00E+00
CO-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	0.00E+00	2.07E+03	2.78E+03	0.00E+00	0.00E+00	1.34E+06	9.52E+04	0.00E+00
CO-60	0.00E+00	1.51E+04	1.98E+04	0.00E+00	0.00E+00	8.72E+06	2.59E+05	0.00E+00
NI-63	5.80E+05	4.34E+04	1.98E+04	0.00E+00	0.00E+00	3.07E+05	1.42E+04	0.00E+00
NI-65	2.18E+00	2.93E-01	1.27E-01	0.00E+00	0.00E+00	9.36E+03	3.67E+04	0.00E+00
CU-64	0.00E+00	2.03E+00	8.48E-01	0.00E+00	6.41E+00	1.11E+04	6.14E+04	0.00E+00
ZN-65	3.86E+04	1.34E+05	6.24E+04	0.00E+00	8.64E+04	1.24E+06	4.66E+04	0.00E+00
ZN-69	4.83E-02	9.20E-02	6.46E-03	0.00E+00	6.02E-02	1.58E+03	2.85E+02	0.00E+00
ZN-69M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	3.44E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	4.33E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	0.00E+00	0.00E+00	1.83E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	1.90E+05	8.40E+04	0.00E+00	0.00E+00	0.00E+00	1.77E+04	0.00E+00
RB-88	0.00E+00	5.46E+02	2.72E+02	0.00E+00	0.00E+00	0.00E+00	2.92E-05	0.00E+00
RB-89	0.00E+00	3.52E+02	2.33E+02	0.00E+00	0.00E+00	0.00E+00	3.38E-07	0.00E+00
SR-89	4.34E+05	0.00E+00	1.25E+04	0.00E+00	0.00E+00	2.42E+06	3.71E+05	0.00E+00
SR-90	1.08E+08	0.00E+00	6.68E+06	0.00E+00	0.00E+00	1.65E+07	7.65E+05	0.00E+00
SR-91	8.80E+01	0.00E+00	3.51E+00	0.00E+00	0.00E+00	6.07E+04	2.59E+05	0.00E+00
SR-92	9.52E+00	0.00E+00	4.06E-01	0.00E+00	0.00E+00	2.74E+04	1.19E+05	0.00E+00
Y-90	2.98E+03	0.00E+00	8.00E+01	0.00E+00	0.00E+00	2.93E+05	5.59E+05	0.00E+00
Y-91M	3.70E-01	0.00E+00	1.42E-02	0.00E+00	0.00E+00	3.20E+03	3.02E+01	0.00E+00
Y-91	6.61E+05	0.00E+00	1.77E+04	0.00E+00	0.00E+00	2.94E+06	4.09E+05	0.00E+00
Y-92	1.47E+01	0.00E+00	4.29E-01	0.00E+00	0.00E+00	2.68E+04	1.65E+05	0.00E+00
Y-93	1.35E+02	0.00E+00	3.72E+00	0.00E+00	0.00E+00	8.32E+04	5.79E+05	0.00E+00
ZR-95	1.46E+05	4.58E+04	3.15E+04	0.00E+00	6.74E+04	2.69E+06	1.49E+05	0.00E+00
ZR-97	1.38E+02	2.72E+01	1.26E+01	0.00E+00	4.12E+01	1.30E+05	6.30E+05	0.00E+00
NB-95	1.86E+04	1.03E+04	5.66E+03	0.00E+00	1.00E+04	7.51E+05	9.68E+04	0.00E+00
NB-97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	0.00E+00	1.69E+02	3.22E+01	0.00E+00	4.11E+02	1.54E+05	2.69E+05	0.00E+00
TC-99M	1.38E-03	3.86E-03	4.99E-02	0.00E+00	5.76E-02	1.15E+03	6.13E+03	0.00E+00
TC-101	5.92E-05	8.40E-05	8.24E-04	0.00E+00	1.52E-03	6.67E+02	8.72E-07	0.00E+00
RU-103	2.10E+03	0.00E+00	8.96E+02	0.00E+00	7.43E+03	7.83E+05	1.09E+05	0.00E+00
RU-105	1.12E+00	0.00E+00	4.34E-01	0.00E+00	1.41E+00	1.82E+04	9.04E+04	0.00E+00
RU-106	9.84E+04	0.00E+00	1.24E+04	0.00E+00	1.90E+05	1.61E+07	9.60E+05	0.00E+00
AG-110M	1.38E+04	1.31E+04	7.99E+03	0.00E+00	2.50E+04	6.75E+06	2.73E+05	0.00E+00
SB-124	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE I-2

DOSE FACTOR TABLE : P(i) - Teen, inhalation,

Units are mrem/yr per uCi/cu.m

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
SB-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	4.88E+03	2.24E+03	6.67E+02	1.40E+03	0.00E+00	5.36E+05	7.50E+04	0.00E+00
TE-127M	1.80E+04	8.16E+03	2.18E+03	4.38E+03	6.54E+04	1.66E+06	1.59E+05	0.00E+00
TE-127	2.01E+00	9.12E-01	4.42E-01	1.42E+00	7.28E+00	1.12E+04	8.08E+04	0.00E+00
TE-129M	1.39E+04	6.58E+03	2.25E+03	4.58E+03	5.19E+04	1.98E+06	4.05E+05	0.00E+00
TE-129	7.10E-02	3.38E-02	1.76E-02	5.18E-02	2.66E-01	3.30E+03	1.62E+03	0.00E+00
TE-131M	9.84E+01	6.01E+01	4.02E+01	7.25E+01	4.39E+02	2.38E+05	6.21E+05	0.00E+00
TE-131	1.58E-02	8.32E-03	5.04E-03	1.24E-02	6.18E-02	2.34E+03	1.51E+01	0.00E+00
TE-132	3.60E+02	2.90E+02	2.19E+02	2.46E+02	1.95E+03	4.49E+05	4.63E+05	0.00E+00
I-130	6.24E+03	1.79E+04	7.17E+03	1.49E+06	2.75E+04	0.00E+00	9.12E+03	0.00E+00
I-131	3.54E+04	4.91E+04	2.64E+04	1.46E+07	8.40E+04	0.00E+00	6.49E+03	0.00E+00
I-132	1.59E+03	4.38E+03	1.58E+03	1.51E+05	6.92E+03	0.00E+00	1.27E+03	0.00E+00
I-133	1.22E+04	2.05E+04	6.22E+03	2.92E+06	3.59E+04	0.00E+00	1.03E+04	0.00E+00
I-134	8.88E+02	2.32E+03	8.40E+02	3.95E+04	3.66E+03	0.00E+00	2.04E+01	0.00E+00
I-135	3.70E+03	9.44E+03	3.49E+03	6.21E+05	1.49E+04	0.00E+00	6.95E+03	0.00E+00
CS-134	5.02E+05	1.13E+06	5.49E+05	0.00E+00	3.75E+05	1.46E+05	9.76E+03	0.00E+00
CS-136	5.15E+04	1.94E+05	1.37E+05	0.00E+00	1.10E+05	1.78E+04	1.09E+04	0.00E+00
CS-137	6.70E+05	8.48E+05	3.11E+05	0.00E+00	3.04E+05	1.21E+05	8.48E+03	0.00E+00
CS-138	4.66E+02	8.56E+02	4.46E+02	0.00E+00	6.62E+02	7.87E+01	2.70E-01	0.00E+00
BA-139	1.34E+00	9.44E-04	3.90E-02	0.00E+00	8.88E-04	6.46E+03	6.45E+03	0.00E+00
BA-140	5.47E+04	6.70E+01	3.52E+03	0.00E+00	2.28E+01	2.03E+06	2.29E+05	0.00E+00
BA-141	1.42E-01	1.06E-04	4.74E-03	0.00E+00	9.84E-05	3.29E+03	7.46E-04	0.00E+00
BA-142	3.70E-02	3.70E-05	2.27E-03	0.00E+00	3.14E-05	1.91E+03	4.79E-10	0.00E+00
LA-140	4.79E+02	2.36E+02	6.26E+01	0.00E+00	0.00E+00	2.14E+05	4.87E+05	0.00E+00
LA-142	9.60E-01	4.25E-01	1.06E-01	0.00E+00	0.00E+00	1.02E+04	1.20E+04	0.00E+00
CE-141	2.84E+04	1.90E+04	2.17E+03	0.00E+00	8.88E+03	6.14E+05	1.26E+05	0.00E+00
CE-143	2.66E+02	1.94E+02	2.16E+01	0.00E+00	8.64E+01	1.30E+05	2.55E+05	0.00E+00
CE-144	4.89E+06	2.02E+06	2.62E+05	0.00E+00	1.21E+06	1.34E+07	8.64E+05	0.00E+00
PR-143	1.34E+04	5.31E+03	6.62E+02	0.00E+00	3.09E+03	4.83E+05	2.14E+05	0.00E+00
PR-144	4.30E-02	1.76E-02	2.18E-03	0.00E+00	1.01E-02	1.75E+03	2.35E-04	0.00E+00
ND-147	7.86E+03	8.56E+03	5.13E+02	0.00E+00	5.02E+03	3.72E+05	1.82E+05	0.00E+00
W-187	1.20E+01	9.76E+00	3.43E+00	0.00E+00	0.00E+00	4.74E+04	1.77E+05	0.00E+00
NP-239	3.38E+02	3.19E+01	1.77E+01	0.00E+00	1.00E+02	6.49E+04	1.32E+05	0.00E+00

TABLE I-3

27-APR-93 11:39:00 Page 1
EM-DM-DO REPORT 2

DOSE FACTOR TABLE : P(i) - Child, inhalation

Units are mrem/yr per uCi/cu.m

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
H-3	0.00E+00	1.12E+03	1.12E+03	1.12E+03	1.12E+03	1.12E+03	1.12E+03	0.00E+00
C-14	3.59E+04	6.73E+03	6.73E+03	6.73E+03	6.73E+03	6.73E+03	6.73E+03	0.00E+00
NA-24	1.61E+04	1.61E+04	1.61E+04	1.61E+04	1.61E+04	1.61E+04	1.61E+04	0.00E+00
P-32	2.60E+06	1.14E+05	9.88E+04	0.00E+00	0.00E+00	0.00E+00	4.22E+04	0.00E+00
CR-51	0.00E+00	0.00E+00	1.54E+02	8.55E+01	2.43E+01	1.70E+04	1.08E+03	0.00E+00
MN-54	0.00E+00	4.29E+04	9.51E+03	0.00E+00	1.00E+04	1.58E+06	2.29E+04	0.00E+00
MN-56	0.00E+00	1.66E+00	3.12E-01	0.00E+00	1.67E+00	1.31E+04	1.23E+05	0.00E+00
FE-55	4.74E+04	2.52E+04	7.77E+03	0.00E+00	0.00E+00	1.11E+05	2.87E+03	0.00E+00
FE-59	2.07E+04	3.34E+04	1.67E+04	0.00E+00	0.00E+00	1.27E+06	7.07E+04	0.00E+00
CO-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	0.00E+00	1.77E+03	3.16E+03	0.00E+00	0.00E+00	1.11E+06	3.44E+04	0.00E+00
CO-60	0.00E+00	1.31E+04	2.26E+04	0.00E+00	0.00E+00	7.07E+06	9.62E+04	0.00E+00
NI-63	8.21E+05	4.63E+04	2.80E+04	0.00E+00	0.00E+00	2.75E+05	6.33E+03	0.00E+00
NI-65	2.99E+00	2.96E-01	1.64E-01	0.00E+00	0.00E+00	8.18E+03	8.40E+04	0.00E+00
CU-64	0.00E+00	1.99E+00	1.07E+00	0.00E+00	6.03E+00	9.58E+03	3.67E+04	0.00E+00
ZN-65	4.26E+04	1.13E+05	7.03E+04	0.00E+00	7.14E+04	9.95E+05	1.63E+04	0.00E+00
ZN-69	6.70E-02	9.66E-02	8.92E-03	0.00E+00	5.85E-02	1.42E+03	1.02E+04	0.00E+00
ZN-69M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	4.74E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	5.48E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	0.00E+00	0.00E+00	2.53E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	1.98E+05	1.14E+05	0.00E+00	0.00E+00	0.00E+00	7.99E+03	0.00E+00
RB-88	0.00E+00	5.62E+02	3.66E+02	0.00E+00	0.00E+00	0.00E+00	1.72E+01	0.00E+00
RB-89	0.00E+00	3.45E+02	2.90E+02	0.00E+00	0.00E+00	0.00E+00	1.89E+00	0.00E+00
SR-89	5.99E+05	0.00E+00	1.72E+04	0.00E+00	0.00E+00	2.16E+06	1.67E+05	0.00E+00
SR-90	1.01E+08	0.00E+00	6.44E+06	0.00E+00	0.00E+00	1.48E+07	3.43E+05	0.00E+00
SR-91	1.21E+02	0.00E+00	4.59E+00	0.00E+00	0.00E+00	5.33E+04	1.74E+05	0.00E+00
SR-92	1.31E+01	0.00E+00	5.25E-01	0.00E+00	0.00E+00	2.40E+04	2.42E+05	0.00E+00
Y-90	4.11E+03	0.00E+00	1.11E+02	0.00E+00	0.00E+00	2.62E+05	2.68E+05	0.00E+00
Y-91M	5.07E-01	0.00E+00	1.84E-02	0.00E+00	0.00E+00	2.81E+03	1.72E+03	0.00E+00
Y-91	9.14E+05	0.00E+00	2.44E+04	0.00E+00	0.00E+00	2.63E+06	1.84E+05	0.00E+00
Y-92	2.04E+01	0.00E+00	5.81E-01	0.00E+00	0.00E+00	2.39E+04	2.39E+05	0.00E+00
Y-93	1.86E+02	0.00E+00	5.11E+00	0.00E+00	0.00E+00	7.44E+04	3.89E+05	0.00E+00
ZR-95	1.90E+05	4.18E+04	3.70E+04	0.00E+00	5.96E+04	2.23E+06	6.11E+04	0.00E+00
ZR-97	1.88E+02	2.72E+01	1.60E+01	0.00E+00	3.88E+01	1.13E+05	3.51E+05	0.00E+00
NB-95	2.35E+04	9.18E+03	6.55E+03	0.00E+00	8.62E+03	6.14E+05	3.70E+04	0.00E+00
NB-97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	0.00E+00	1.72E+02	4.25E+01	0.00E+00	3.92E+02	1.35E+05	1.27E+05	0.00E+00
TC-99M	1.78E-03	3.48E-03	5.77E-02	0.00E+00	5.07E-02	9.51E+02	4.81E+03	0.00E+00
TC-101	8.10E-05	8.51E-05	1.08E-03	0.00E+00	1.45E-03	5.85E+02	1.63E+01	0.00E+00
RU-103	2.79E+03	0.00E+00	1.07E+03	0.00E+00	7.03E+03	6.62E+05	4.48E+04	0.00E+00
RU-105	1.53E+00	0.00E+00	5.55E-01	0.00E+00	1.34E+00	1.59E+04	9.95E+04	0.00E+00
RU-106	1.36E+05	0.00E+00	1.69E+04	0.00E+00	1.84E+05	1.43E+07	4.29E+05	0.00E+00
AG-110M	1.69E+04	1.14E+04	9.14E+03	0.00E+00	2.12E+04	5.48E+06	1.00E+05	0.00E+00
SB-124	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE I-3

DOSE FACTOR TABLE : P(i) - Child, inhalation

Units are mrem/yr per uCi/cu.m

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
SB-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	6.73E+03	2.33E+03	9.14E+02	1.92E+03	0.00E+00	4.77E+05	3.38E+04	0.00E+00
TE-127M	2.49E+04	8.55E+03	3.02E+03	6.07E+03	6.36E+04	1.48E+06	7.14E+04	0.00E+00
TE-127	2.77E+00	9.51E-01	6.10E-01	1.96E+00	7.07E+00	1.00E+04	5.62E+04	0.00E+00
TE-129M	1.92E+04	6.85E+03	3.04E+03	6.33E+03	5.03E+04	1.76E+06	1.82E+05	0.00E+00
TE-129	9.77E-02	3.50E-02	2.38E-02	7.14E-02	2.57E-01	2.93E+03	2.55E+04	0.00E+00
TE-131M	1.34E+02	5.92E+01	5.07E+01	9.77E+01	4.00E+02	2.06E+05	3.08E+05	0.00E+00
TE-131	2.17E-02	8.44E-03	6.59E-03	1.70E-02	5.88E-02	2.05E+03	1.33E+03	0.00E+00
TE-132	4.81E+02	2.72E+02	2.63E+02	3.17E+02	1.77E+03	3.77E+05	1.38E+05	0.00E+00
I-130	8.18E+03	1.64E+04	8.44E+03	1.85E+06	2.45E+04	0.00E+00	5.11E+03	0.00E+00
I-131	4.81E+04	4.81E+04	2.73E+04	1.62E+07	7.88E+04	0.00E+00	2.84E+03	0.00E+00
I-132	2.12E+03	4.07E+03	1.88E+03	1.94E+05	6.25E+03	0.00E+00	3.20E+03	0.00E+00
I-133	1.66E+04	2.03E+04	7.70E+03	3.85E+06	3.38E+04	0.00E+00	5.48E+03	0.00E+00
I-134	1.17E+03	2.16E+03	9.95E+02	5.07E+04	3.30E+03	0.00E+00	9.55E+02	0.00E+00
I-135	4.92E+03	8.73E+03	4.14E+03	7.92E+05	1.34E+04	0.00E+00	4.44E+03	0.00E+00
CS-134	6.51E+05	1.01E+06	2.25E+05	0.00E+00	3.30E+05	1.21E+05	3.85E+03	0.00E+00
CS-136	6.51E+04	1.71E+05	1.16E+05	0.00E+00	9.55E+04	1.45E+04	4.18E+03	0.00E+00
CS-137	9.07E+05	8.25E+05	1.28E+05	0.00E+00	2.82E+05	1.04E+05	3.62E+03	0.00E+00
CS-138	6.33E+02	8.40E+02	5.55E+02	0.00E+00	6.22E+02	6.81E+01	2.70E+02	0.00E+00
BA-139	1.84E+00	9.84E-04	5.36E-02	0.00E+00	8.62E-04	5.77E+03	5.77E+04	0.00E+00
BA-140	7.40E+04	6.48E+01	4.33E+03	0.00E+00	2.11E+01	1.74E+06	1.02E+05	0.00E+00
BA-141	1.96E-01	1.09E-04	6.36E-03	0.00E+00	9.47E-05	2.92E+03	2.75E+02	0.00E+00
BA-142	4.99E-02	3.60E-05	2.79E-03	0.00E+00	2.91E-05	1.64E+03	2.74E+00	0.00E+00
LA-140	6.44E+02	2.25E+02	7.55E+01	0.00E+00	0.00E+00	1.83E+05	2.26E+05	0.00E+00
LA-142	1.29E+00	4.11E-01	1.29E-01	0.00E+00	0.00E+00	8.70E+03	7.59E+04	0.00E+00
CE-141	3.92E+04	1.95E+04	2.90E+03	0.00E+00	8.55E+03	5.44E+05	5.66E+04	0.00E+00
CE-143	3.66E+02	1.99E+02	2.87E+01	0.00E+00	8.36E+01	1.15E+05	1.27E+05	0.00E+00
CE-144	6.77E+06	2.12E+06	3.61E+05	0.00E+00	1.17E+06	1.20E+07	3.89E+05	0.00E+00
PR-143	1.85E+04	5.55E+03	9.14E+02	0.00E+00	3.00E+03	4.33E+05	9.73E+04	0.00E+00
PR-144	5.96E-02	1.85E-02	3.00E-03	0.00E+00	9.77E-03	1.57E+03	1.97E+02	0.00E+00
ND-147	1.08E+04	8.73E+03	6.81E+02	0.00E+00	4.81E+03	3.28E+05	8.21E+04	0.00E+00
W-187	1.63E+01	9.66E+00	4.33E+00	0.00E+00	0.00E+00	4.11E+04	9.10E+04	0.00E+00
NP-239	4.66E+02	3.34E+01	2.35E+01	0.00E+00	9.73E+01	5.81E+04	6.40E+04	0.00E+00

TABLE I-4

DOSE FACTOR TABLE : P(i) - Infant, inhalation

Units are mrem/yr per uCi/cu.m

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
H-3	0.00E+00	6.47E+02	6.47E+02	6.47E+02	6.47E+02	6.47E+02	6.47E+02	0.00E+00
C-14	2.65E+04	5.31E+03	5.31E+03	5.31E+03	5.31E+03	5.31E+03	5.31E+03	0.00E+00
NA-24	1.06E+04	1.06E+04	1.06E+04	1.06E+04	1.06E+04	1.06E+04	1.06E+04	0.00E+00
P-32	2.03E+06	1.12E+05	7.74E+04	0.00E+00	0.00E+00	0.00E+00	1.61E+04	0.00E+00
CR-51	0.00E+00	0.00E+00	8.95E+01	5.75E+01	1.32E+01	1.28E+04	3.57E+02	0.00E+00
MN-54	0.00E+00	2.53E+04	4.98E+03	0.00E+00	4.98E+03	1.00E+06	7.06E+03	0.00E+00
MN-56	0.00E+00	1.54E+00	2.21E-01	0.00E+00	1.10E+00	1.25E+04	7.17E+04	0.00E+00
FE-55	1.97E+04	1.17E+04	3.33E+03	0.00E+00	0.00E+00	8.69E+04	1.09E+03	0.00E+00
FE-59	1.36E+04	2.35E+04	9.48E+03	0.00E+00	0.00E+00	1.02E+06	2.48E+04	0.00E+00
CO-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	0.00E+00	1.22E+03	1.82E+03	0.00E+00	0.00E+00	7.77E+05	1.11E+04	0.00E+00
CO-60	0.00E+00	8.02E+03	1.18E+04	0.00E+00	0.00E+00	4.51E+06	3.19E+04	0.00E+00
NI-63	3.39E+05	2.04E+04	1.16E+04	0.00E+00	0.00E+00	2.09E+05	2.42E+03	0.00E+00
NI-65	2.39E+00	2.84E-01	1.23E-01	0.00E+00	0.00E+00	8.12E+03	5.01E+04	0.00E+00
CU-64	0.00E+00	1.88E+00	7.74E-01	0.00E+00	3.98E+00	9.30E+03	1.50E+04	0.00E+00
ZN-65	1.93E+04	6.26E+04	3.11E+04	0.00E+00	3.25E+04	6.47E+05	5.14E+04	0.00E+00
ZN-69	5.39E-02	9.67E-02	7.18E-03	0.00E+00	4.02E-02	1.47E+03	1.32E+04	0.00E+00
ZN-69M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	3.81E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	4.00E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	0.00E+00	0.00E+00	2.04E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	1.90E+05	8.82E+04	0.00E+00	0.00E+00	0.00E+00	3.04E+03	0.00E+00
RB-88	0.00E+00	5.57E+02	2.87E+02	0.00E+00	0.00E+00	0.00E+00	3.39E+02	0.00E+00
RB-89	0.00E+00	3.21E+02	2.06E+02	0.00E+00	0.00E+00	0.00E+00	6.82E+01	0.00E+00
SR-89	3.98E+05	0.00E+00	1.14E+04	0.00E+00	0.00E+00	2.03E+06	6.40E+04	0.00E+00
SR-90	4.09E+07	0.00E+00	2.59E+06	0.00E+00	0.00E+00	1.12E+07	1.31E+05	0.00E+00
SR-91	9.56E+01	0.00E+00	3.46E+00	0.00E+00	0.00E+00	5.26E+04	7.34E+04	0.00E+00
SR-92	1.05E+01	0.00E+00	3.91E-01	0.00E+00	0.00E+00	2.38E+04	1.40E+05	0.00E+00
Y-90	3.29E+03	0.00E+00	8.82E+01	0.00E+00	0.00E+00	2.69E+05	1.04E+05	0.00E+00
Y-91M	4.07E-01	0.00E+00	1.39E-02	0.00E+00	0.00E+00	2.79E+03	2.35E+03	0.00E+00
Y-91	5.88E+05	0.00E+00	1.57E+04	0.00E+00	0.00E+00	2.45E+06	7.03E+04	0.00E+00
Y-92	1.64E+01	0.00E+00	4.61E-01	0.00E+00	0.00E+00	2.45E+04	1.27E+05	0.00E+00
Y-93	1.50E+02	0.00E+00	4.07E+00	0.00E+00	0.00E+00	7.64E+04	1.67E+05	0.00E+00
ZR-95	1.15E+05	2.79E+04	2.03E+04	0.00E+00	3.11E+04	1.75E+06	2.17E+04	0.00E+00
ZR-97	1.50E+02	2.56E+01	1.17E+01	0.00E+00	2.59E+01	1.10E+05	1.40E+05	0.00E+00
NB-95	1.57E+04	6.43E+03	3.78E+03	0.00E+00	4.72E+03	4.79E+05	1.27E+04	0.00E+00
NB-97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	0.00E+00	1.65E+02	3.23E+01	0.00E+00	2.65E+02	1.35E+05	4.87E+04	0.00E+00
TC-99M	1.40E-03	2.88E-03	3.72E-02	0.00E+00	3.11E-02	8.11E+02	2.03E+03	0.00E+00
TC-101	6.51E-05	8.23E-05	8.12E-04	0.00E+00	9.79E-04	5.84E+02	8.44E+02	0.00E+00
RU-103	2.02E+03	0.00E+00	6.79E+02	0.00E+00	4.24E+03	5.52E+05	1.61E+04	0.00E+00
RU-105	1.22E+00	0.00E+00	4.10E-01	0.00E+00	8.99E-01	1.57E+04	4.84E+04	0.00E+00
RU-106	8.68E+04	0.00E+00	1.09E+04	0.00E+00	1.07E+05	1.16E+07	1.64E+05	0.00E+00
AG-110M	9.98E+03	7.22E+03	5.00E+03	0.00E+00	1.09E+04	3.67E+06	3.30E+04	0.00E+00
SB-124	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE I-4

DOSE FACTOR TABLE : P(i) - Infant, inhalation

Units are mrem/yr per uCi/cu.m

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
SB-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	4.76E+03	1.99E+03	6.58E+02	1.62E+03	0.00E+00	4.47E+05	1.29E+04	0.00E+00
TE-127M	1.67E+04	6.90E+03	2.07E+03	4.87E+03	3.75E+04	1.31E+06	2.73E+04	0.00E+00
TE-127	2.23E+00	9.53E-01	4.89E-01	1.85E+00	4.86E+00	1.03E+04	2.44E+04	0.00E+00
TE-129M	1.41E+04	6.09E+03	2.23E+03	5.47E+03	3.18E+04	1.68E+06	6.90E+04	0.00E+00
TE-129	7.88E-02	3.47E-02	1.88E-02	6.75E-02	1.75E-01	3.00E+03	2.63E+04	0.00E+00
TE-131M	1.07E+02	5.50E+01	3.63E+01	8.93E+01	2.65E+02	1.99E+05	1.19E+05	0.00E+00
TE-131	1.74E-02	8.22E-03	5.00E-03	1.58E-02	3.99E-02	2.06E+03	8.22E+03	0.00E+00
TE-132	3.72E+02	2.37E+02	1.76E+02	2.79E+02	1.03E+03	3.40E+05	4.41E+04	0.00E+00
I-130	6.36E+03	1.39E+04	5.57E+03	1.60E+06	1.53E+04	0.00E+00	1.99E+03	0.00E+00
I-131	3.79E+04	4.44E+04	1.96E+04	1.48E+07	5.18E+04	0.00E+00	1.06E+03	0.00E+00
I-132	1.69E+03	3.54E+03	1.26E+03	1.69E+05	3.95E+03	0.00E+00	1.90E+03	0.00E+00
I-133	1.32E+04	1.92E+04	5.60E+03	3.56E+06	2.24E+04	0.00E+00	2.16E+03	0.00E+00
I-134	9.21E+02	1.88E+03	6.65E+02	4.45E+04	2.09E+03	0.00E+00	1.29E+03	0.00E+00
I-135	3.86E+03	7.60E+03	2.77E+03	6.96E+05	8.47E+03	0.00E+00	1.83E+03	0.00E+00
CS-134	3.96E+05	7.03E+05	7.45E+04	0.00E+00	1.90E+05	7.97E+04	1.33E+03	0.00E+00
CS-136	4.83E+04	1.35E+05	5.29E+04	0.00E+00	5.64E+04	1.18E+04	1.43E+03	0.00E+00
CS-137	5.49E+05	6.12E+05	4.55E+04	0.00E+00	1.72E+05	7.13E+04	1.33E+03	0.00E+00
CS-138	5.05E+02	7.81E+02	3.98E+02	0.00E+00	4.10E+02	6.54E+01	8.76E+02	0.00E+00
BA-139	1.48E+00	9.84E-04	4.30E-02	0.00E+00	5.92E-04	5.95E+03	5.10E+04	0.00E+00
BA-140	5.60E+04	5.60E+01	2.90E+03	0.00E+00	1.34E+01	1.60E+06	3.84E+04	0.00E+00
BA-141	1.57E-01	1.08E-04	4.97E-03	0.00E+00	6.50E-05	2.97E+03	4.75E+03	0.00E+00
BA-142	3.98E-02	3.30E-05	1.96E-03	0.00E+00	1.90E-05	1.55E+03	6.93E+02	0.00E+00
LA-140	5.05E+02	2.00E+02	5.15E+01	0.00E+00	0.00E+00	1.68E+05	8.48E+04	0.00E+00
LA-142	1.03E+00	3.77E-01	9.04E-02	0.00E+00	0.00E+00	8.22E+03	5.95E+04	0.00E+00
CE-141	2.77E+04	1.67E+04	1.99E+03	0.00E+00	5.25E+03	5.17E+05	2.16E+04	0.00E+00
CE-143	2.93E+02	1.93E+02	2.21E+01	0.00E+00	5.64E+01	1.16E+05	4.97E+04	0.00E+00
CE-144	3.19E+06	1.21E+06	1.76E+05	0.00E+00	5.38E+05	9.84E+06	1.48E+05	0.00E+00
PR-143	1.40E+04	5.24E+03	6.99E+02	0.00E+00	1.97E+03	4.33E+05	3.72E+04	0.00E+00
PR-144	4.79E-02	1.85E-02	2.41E-03	0.00E+00	6.72E-03	1.61E+03	4.28E+03	0.00E+00
ND-147	7.94E+03	8.13E+03	5.00E+02	0.00E+00	3.15E+03	3.22E+05	3.12E+04	0.00E+00
W-187	1.30E+01	9.02E+00	3.12E+00	0.00E+00	0.00E+00	3.96E+04	3.56E+04	0.00E+00
NP-239	3.71E+02	3.32E+01	1.88E+01	0.00E+00	6.62E+01	5.95E+04	2.49E+04	0.00E+00

TABLE I-5

DOSE FACTOR TABLE : R(i) - All , gr. plane

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
H-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
C-14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NA-24	1.19E+07	1.19E+07	1.19E+07	1.19E+07	1.19E+07	1.19E+07	1.19E+07	1.39E+07
P-32	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CR-51	4.66E+06	4.66E+06	4.66E+06	4.66E+06	4.66E+06	4.66E+06	4.66E+06	5.51E+06
MN-54	1.39E+09	1.39E+09	1.39E+09	1.39E+09	1.39E+09	1.39E+09	1.39E+09	1.62E+09
MN-56	9.03E+05	9.03E+05	9.03E+05	9.03E+05	9.03E+05	9.03E+05	9.03E+05	1.07E+06
FE-55	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-59	2.73E+08	2.73E+08	2.73E+08	2.73E+08	2.73E+08	2.73E+08	2.73E+08	3.21E+08
CO-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	3.79E+08	3.79E+08	3.79E+08	3.79E+08	3.79E+08	3.79E+08	3.79E+08	4.44E+08
CO-60	2.15E+10	2.15E+10	2.15E+10	2.15E+10	2.15E+10	2.15E+10	2.15E+10	2.53E+10
NI-63	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NI-65	2.97E+05	2.97E+05	2.97E+05	2.97E+05	2.97E+05	2.97E+05	2.97E+05	3.45E+05
CU-64	6.07E+05	6.07E+05	6.07E+05	6.07E+05	6.07E+05	6.07E+05	6.07E+05	6.88E+05
ZN-65	7.47E+08	7.47E+08	7.47E+08	7.47E+08	7.47E+08	7.47E+08	7.47E+08	8.59E+08
ZN-69	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZN-69M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	4.87E+03	4.87E+03	4.87E+03	4.87E+03	4.87E+03	4.87E+03	4.87E+03	7.08E+03
BR-84	2.03E+05	2.03E+05	2.03E+05	2.03E+05	2.03E+05	2.03E+05	2.03E+05	2.36E+05
BR-85	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	8.99E+06	8.99E+06	8.99E+06	8.99E+06	8.99E+06	8.99E+06	8.99E+06	1.03E+07
RB-88	3.31E+04	3.31E+04	3.31E+04	3.31E+04	3.31E+04	3.31E+04	3.31E+04	3.78E+04
RB-89	1.23E+05	1.23E+05	1.23E+05	1.23E+05	1.23E+05	1.23E+05	1.23E+05	1.48E+05
SR-89	2.16E+04	2.16E+04	2.16E+04	2.16E+04	2.16E+04	2.16E+04	2.16E+04	2.51E+04
SR-91	2.15E+06	2.15E+06	2.15E+06	2.15E+06	2.15E+06	2.15E+06	2.15E+06	2.51E+06
SR-92	7.77E+05	7.77E+05	7.77E+05	7.77E+05	7.77E+05	7.77E+05	7.77E+05	8.63E+05
Y-90	4.49E+03	4.49E+03	4.49E+03	4.49E+03	4.49E+03	4.49E+03	4.49E+03	5.31E+03
Y-91M	1.00E+05	1.00E+05	1.00E+05	1.00E+05	1.00E+05	1.00E+05	1.00E+05	1.16E+05
Y-91	1.07E+06	1.07E+06	1.07E+06	1.07E+06	1.07E+06	1.07E+06	1.07E+06	1.21E+06
Y-92	1.80E+05	1.80E+05	1.80E+05	1.80E+05	1.80E+05	1.80E+05	1.80E+05	2.14E+05
Y-93	1.83E+05	1.83E+05	1.83E+05	1.83E+05	1.83E+05	1.83E+05	1.83E+05	2.51E+05
ZR-95	2.45E+08	2.45E+08	2.45E+08	2.45E+08	2.45E+08	2.45E+08	2.45E+08	2.84E+08
ZR-97	2.96E+06	2.96E+06	2.96E+06	2.96E+06	2.96E+06	2.96E+06	2.96E+06	3.44E+06
NB-95	1.37E+08	1.37E+08	1.37E+08	1.37E+08	1.37E+08	1.37E+08	1.37E+08	1.61E+08
NB-97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	3.99E+06	3.99E+06	3.99E+06	3.99E+06	3.99E+06	3.99E+06	3.99E+06	4.63E+06
TC-99M	1.84E+05	1.84E+05	1.84E+05	1.84E+05	1.84E+05	1.84E+05	1.84E+05	2.11E+05
TC-101	2.04E+04	2.04E+04	2.04E+04	2.04E+04	2.04E+04	2.04E+04	2.04E+04	2.26E+04
RU-103	1.08E+08	1.08E+08	1.08E+08	1.08E+08	1.08E+08	1.08E+08	1.08E+08	1.26E+08
RU-105	6.36E+05	6.36E+05	6.36E+05	6.36E+05	6.36E+05	6.36E+05	6.36E+05	7.21E+05
RU-106	4.22E+08	4.22E+08	4.22E+08	4.22E+08	4.22E+08	4.22E+08	4.22E+08	5.07E+08
AG-110M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.01E+09
SB-124	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SB-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE I-5

DOSE FACTOR TABLE : R(i) - All , gr. plane

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
TE-125M	1.55E+06	1.55E+06	1.55E+06	1.55E+06	1.55E+06	1.55E+06	1.55E+06	2.13E+06
TE-127M	9.16E+04	9.16E+04	9.16E+04	9.16E+04	9.16E+04	9.16E+04	9.16E+04	1.08E+05
TE-127	2.98E+03	2.98E+03	2.98E+03	2.98E+03	2.98E+03	2.98E+03	2.98E+03	3.28E+03
TE-129M	1.98E+07	1.98E+07	1.98E+07	1.98E+07	1.98E+07	1.98E+07	1.98E+07	2.31E+07
TE-129	2.62E+04	2.62E+04	2.62E+04	2.62E+04	2.62E+04	2.62E+04	2.62E+04	3.10E+04
TE-131M	8.03E+06	8.03E+06	8.03E+06	8.03E+06	8.03E+06	8.03E+06	8.03E+06	9.46E+06
TE-131	2.92E+04	2.92E+04	2.92E+04	2.92E+04	2.92E+04	2.92E+04	2.92E+04	3.45E+07
TE-132	4.23E+06	4.23E+06	4.23E+06	4.23E+06	4.23E+06	4.23E+06	4.23E+06	4.98E+06
I-130	5.51E+06	5.51E+06	5.51E+06	5.51E+06	5.51E+06	5.51E+06	5.51E+06	6.69E+06
I-131	1.72E+07	1.72E+07	1.72E+07	1.72E+07	1.72E+07	1.72E+07	1.72E+07	2.09E+07
I-132	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.46E+06
I-133	2.45E+06	2.45E+06	2.45E+06	2.45E+06	2.45E+06	2.45E+06	2.45E+06	2.98E+06
I-134	4.47E+05	4.47E+05	4.47E+05	4.47E+05	4.47E+05	4.47E+05	4.47E+05	5.30E+05
I-135	2.53E+06	2.53E+06	2.53E+06	2.53E+06	2.53E+06	2.53E+06	2.53E+06	2.95E+06
CS-134	6.86E+09	6.86E+09	6.86E+09	6.86E+09	6.86E+09	6.86E+09	6.86E+09	8.00E+09
CS-136	1.51E+08	1.51E+08	1.51E+08	1.51E+08	1.51E+08	1.51E+08	1.51E+08	1.71E+08
CS-137	1.03E+10	1.03E+10	1.03E+10	1.03E+10	1.03E+10	1.03E+10	1.03E+10	1.20E+10
CS-138	3.59E+05	3.59E+05	3.59E+05	3.59E+05	3.59E+05	3.59E+05	3.59E+05	4.10E+05
BA-139	1.06E+05	1.06E+05	1.06E+05	1.06E+05	1.06E+05	1.06E+05	1.06E+05	1.19E+05
BA-140	2.05E+07	2.05E+07	2.05E+07	2.05E+07	2.05E+07	2.05E+07	2.05E+07	2.35E+07
BA-141	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.75E+04
BA-142	4.49E+04	4.49E+04	4.49E+04	4.49E+04	4.49E+04	4.49E+04	4.49E+04	5.11E+04
LA-140	1.92E+07	1.92E+07	1.92E+07	1.92E+07	1.92E+07	1.92E+07	1.92E+07	2.18E+07
LA-142	7.60E+05	7.60E+05	7.60E+05	7.60E+05	7.60E+05	7.60E+05	7.60E+05	9.11E+05
CE-141	1.37E+07	1.37E+07	1.37E+07	1.37E+07	1.37E+07	1.37E+07	1.37E+07	1.54E+07
CE-143	2.31E+06	2.31E+06	2.31E+06	2.31E+06	2.31E+06	2.31E+06	2.31E+06	2.63E+06
CE-144	6.95E+07	6.95E+07	6.95E+07	6.95E+07	6.95E+07	6.95E+07	6.95E+07	8.04E+07
PR-143	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PR-144	1.83E+03	1.83E+03	1.83E+03	1.83E+03	1.83E+03	1.83E+03	1.83E+03	2.11E+03
ND-147	8.39E+06	8.39E+06	8.39E+06	8.39E+06	8.39E+06	8.39E+06	8.39E+06	1.01E+07
W-187	2.35E+06	2.35E+06	2.35E+06	2.35E+06	2.35E+06	2.35E+06	2.35E+06	2.73E+06
NP-239	1.71E+06	1.71E+06	1.71E+06	1.71E+06	1.71E+06	1.71E+06	1.71E+06	1.98E+06

TABLE I-6

DOSE FACTOR TABLE : R(i) - Adult, cows milk

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
H-3	0.00E+00	4.73E+02	4.73E+02	4.73E+02	4.73E+02	4.73E+02	4.73E+02	0.00E+00
C-14	3.63E+05	7.26E+04	7.26E+04	7.26E+04	7.26E+04	7.26E+04	7.26E+04	0.00E+00
NA-24	2.44E+06	2.44E+06	2.44E+06	2.44E+06	2.44E+06	2.44E+06	2.44E+06	0.00E+00
P-32	1.62E+10	1.01E+09	6.26E+08	0.00E+00	0.00E+00	0.00E+00	1.82E+09	0.00E+00
CR-51	0.00E+00	0.00E+00	2.55E+04	1.53E+04	5.62E+03	3.39E+04	6.42E+06	0.00E+00
MN-54	0.00E+00	6.63E+06	1.27E+06	0.00E+00	1.97E+06	0.00E+00	2.03E+07	0.00E+00
MN-56	0.00E+00	4.21E-03	7.47E-04	0.00E+00	5.34E-03	0.00E+00	1.34E-01	0.00E+00
FE-55	1.95E+07	1.35E+07	3.15E+06	0.00E+00	0.00E+00	7.53E+06	7.75E+06	0.00E+00
FE-59	2.55E+07	5.99E+07	2.30E+07	0.00E+00	0.00E+00	1.67E+07	2.00E+08	0.00E+00
CO-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	0.00E+00	3.92E+06	8.78E+06	0.00E+00	0.00E+00	0.00E+00	7.94E+07	0.00E+00
CO-60	0.00E+00	1.27E+07	2.81E+07	0.00E+00	0.00E+00	0.00E+00	2.39E+08	0.00E+00
NI-63	5.21E+09	3.61E+08	1.75E+08	0.00E+00	0.00E+00	0.00E+00	7.53E+07	0.00E+00
NI-65	3.76E-01	4.88E-02	2.23E-02	0.00E+00	0.00E+00	0.00E+00	1.24E+00	0.00E+00
CU-64	0.00E+00	2.39E+04	1.12E+04	0.00E+00	6.03E+04	0.00E+00	2.04E+06	0.00E+00
ZN-65	1.09E+09	3.46E+09	1.56E+09	0.00E+00	2.31E+09	0.00E+00	2.18E+09	0.00E+00
ZN-69	2.18E-12	4.17E-12	2.90E-13	0.00E+00	2.71E-12	0.00E+00	6.26E-13	0.00E+00
ZN-69M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	9.87E-02	0.00E+00	0.00E+00	0.00E+00	1.42E-01	0.00E+00
BR-84	0.00E+00	0.00E+00	1.73E-23	0.00E+00	0.00E+00	0.00E+00	1.36E-28	0.00E+00
BR-85	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	2.40E+09	1.12E+09	0.00E+00	0.00E+00	0.00E+00	4.74E+08	0.00E+00
RB-88	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-89	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	1.23E+09	0.00E+00	3.54E+07	0.00E+00	0.00E+00	0.00E+00	1.98E+08	0.00E+00
SR-90	3.62E+10	0.00E+00	8.89E+09	0.00E+00	0.00E+00	0.00E+00	1.05E+09	0.00E+00
SR-91	2.90E+04	0.00E+00	1.17E+03	0.00E+00	0.00E+00	0.00E+00	1.38E+05	0.00E+00
SR-92	4.95E-01	0.00E+00	2.14E-02	0.00E+00	0.00E+00	0.00E+00	9.81E+00	0.00E+00
Y-90	7.09E+01	0.00E+00	1.90E+00	0.00E+00	0.00E+00	0.00E+00	7.51E+05	0.00E+00
Y-91M	6.27E-20	0.00E+00	2.43E-21	0.00E+00	0.00E+00	0.00E+00	1.84E-19	0.00E+00
Y-91	7.22E+03	0.00E+00	1.93E+02	0.00E+00	0.00E+00	0.00E+00	3.98E+06	0.00E+00
Y-92	5.64E-05	0.00E+00	1.65E-06	0.00E+00	0.00E+00	0.00E+00	9.88E-01	0.00E+00
Y-93	2.24E-01	0.00E+00	6.19E-03	0.00E+00	0.00E+00	0.00E+00	7.11E+03	0.00E+00
ZR-95	7.89E+02	2.53E+02	1.71E+02	0.00E+00	3.97E+02	0.00E+00	8.02E+05	0.00E+00
ZR-97	4.34E-01	8.76E-02	4.01E-02	0.00E+00	1.32E-01	0.00E+00	2.71E+04	0.00E+00
NB-95	7.22E+04	4.02E+04	2.16E+04	0.00E+00	3.97E+04	0.00E+00	2.44E+08	0.00E+00
NB-97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	0.00E+00	2.48E+07	4.71E+06	0.00E+00	5.61E+07	0.00E+00	5.74E+07	0.00E+00
TC-99M	3.34E+00	9.44E+00	1.20E+02	0.00E+00	1.43E+02	4.63E+00	5.59E+03	0.00E+00
TC-101	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	8.82E+02	0.00E+00	3.80E+02	0.00E+00	3.37E+03	0.00E+00	1.03E+05	0.00E+00
RU-105	8.64E-04	0.00E+00	3.41E-04	0.00E+00	1.12E-02	0.00E+00	5.29E-01	0.00E+00
RU-106	1.60E+04	0.00E+00	2.03E+03	0.00E+00	3.10E+04	0.00E+00	1.04E+06	0.00E+00
AG-110M	4.61E+07	4.26E+07	2.53E+07	0.00E+00	8.38E+07	0.00E+00	1.74E+10	0.00E+00
SB-124	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE I-6

DOSE FACTOR TABLE : R(i) - Adult, cows milk

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
SB-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	1.37E+07	4.97E+06	1.84E+06	4.12E+06	5.58E+07	0.00E+00	5.48E+07	0.00E+00
TE-127M	3.72E+07	1.33E+07	4.53E+06	9.51E+06	1.51E+08	0.00E+00	1.25E+08	0.00E+00
TE-127	6.56E+02	2.35E+02	1.42E+02	4.86E+02	2.67E+03	0.00E+00	5.17E+04	0.00E+00
TE-129M	5.29E+07	1.97E+07	8.37E+06	1.82E+07	2.21E+08	0.00E+00	2.66E+08	0.00E+00
TE-129	2.92E-10	1.10E-10	7.11E-11	2.24E-10	1.23E-09	0.00E+00	2.20E-10	0.00E+00
TE-131M	3.62E+05	1.77E+05	1.47E+05	2.80E+05	1.79E+06	0.00E+00	1.76E+07	0.00E+00
TE-131	3.95E-33	1.65E-33	1.25E-33	3.25E-33	1.73E-32	0.00E+00	5.60E-34	0.00E+00
TE-132	2.40E+06	1.55E+06	1.46E+06	1.72E+06	1.50E+07	0.00E+00	7.35E+07	0.00E+00
I-130	4.21E+05	1.24E+06	4.90E+05	1.05E+08	1.94E+06	0.00E+00	1.07E+06	0.00E+00
I-131	2.91E+08	4.16E+08	2.38E+08	1.36E+11	7.13E+08	0.00E+00	1.10E+08	0.00E+00
I-132	1.67E-01	4.47E-01	1.56E-01	1.56E+01	7.12E-01	0.00E+00	8.39E-02	0.00E+00
I-133	3.88E+06	6.74E+06	2.06E+06	9.91E+08	1.18E+07	0.00E+00	6.06E+06	0.00E+00
I-134	2.11E-12	5.72E-12	2.05E-12	9.92E-11	9.10E-12	0.00E+00	4.99E-15	0.00E+00
I-135	1.29E+04	3.38E+04	1.25E+04	2.23E+06	5.42E+04	0.00E+00	3.82E+04	0.00E+00
CS-134	4.41E+09	1.05E+10	8.57E+09	0.00E+00	3.39E+09	1.13E+09	1.84E+08	0.00E+00
CS-136	2.51E+08	9.91E+08	7.13E+08	0.00E+00	5.51E+08	7.56E+07	1.13E+08	0.00E+00
CS-137	5.71E+09	7.81E+09	5.12E+09	0.00E+00	2.65E+09	8.82E+08	1.51E+08	0.00E+00
CS-138	9.72E-24	1.92E-23	9.50E-24	0.00E+00	1.41E-23	1.39E-24	8.18E-[illegible]	0.00E+00
BA-139	4.54E-08	3.24E-11	1.33E-09	0.00E+00	3.03E-11	1.84E-11	8.06E-[illegible]	0.00E+00
BA-140	2.57E+07	3.23E+04	1.68E+06	0.00E+00	1.10E+04	1.85E+04	5.29E+[illegible]	0.00E+00
BA-141	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-142	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LA-140	4.52E+00	2.28E+00	6.01E-01	0.00E+00	0.00E+00	0.00E+00	1.67E+05	0.00E+00
LA-142	1.90E-11	8.66E-12	2.16E-12	0.00E+00	0.00E+00	0.00E+00	6.32E-08	0.00E+00
CE-141	4.27E+03	2.89E+03	3.27E+02	0.00E+00	1.34E+03	0.00E+00	1.10E+07	0.00E+00
CE-143	4.16E+01	3.08E+04	3.40E+00	0.00E+00	1.35E+01	0.00E+00	1.15E+06	0.00E+00
CE-144	2.82E+05	1.18E+05	1.52E+04	0.00E+00	7.00E+04	0.00E+00	9.55E+07	0.00E+00
PR-143	1.50E+02	6.02E+01	7.44E+00	0.00E+00	3.48E+01	0.00E+00	6.58E+05	0.00E+00
PR-144	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ND-147	9.10E+01	1.05E+02	6.29E+00	0.00E+00	6.15E+01	0.00E+00	5.05E+05	0.00E+00
W-187	6.52E+03	5.45E+03	1.90E+03	0.00E+00	0.00E+00	0.00E+00	1.78E+06	0.00E+00
NP-239	3.67E+00	3.61E-01	1.99E-01	0.00E+00	1.13E+00	0.00E+00	7.41E+04	0.00E+00

TABLE I-7

Page 1
REPORT 2

DOSE FACTOR TABLE : R(i) - Teen, cows milk

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
H-3	0.00E+00	6.16E+02	6.16E+02	6.16E+02	6.16E+02	6.16E+02	6.16E+02	0.00E+00
C-14	6.70E+05	1.34E+05	1.34E+05	1.34E+05	1.34E+05	1.34E+05	1.34E+05	0.00E+00
NA-24	4.27E+06	4.27E+06	4.27E+06	4.27E+06	4.27E+06	4.27E+06	4.27E+06	0.00E+00
P-32	2.99E+10	1.85E+09	1.16E+09	0.00E+00	0.00E+00	0.00E+00	2.51E+09	0.00E+00
CR-51	0.00E+00	0.00E+00	4.46E+04	2.48E+04	9.77E+03	6.36E+04	7.49E+06	0.00E+00
MN-54	0.00E+00	1.10E+07	2.19E+06	0.00E+00	3.30E+06	0.00E+00	2.27E+07	0.00E+00
MN-56	0.00E+00	7.46E-03	1.33E-03	0.00E+00	9.45E-03	0.00E+00	4.91E-01	0.00E+00
FE-55	3.47E+07	2.46E+07	5.73E+06	0.00E+00	0.00E+00	1.56E+07	1.06E+07	0.00E+00
FE-59	4.45E+07	1.04E+08	4.01E+07	0.00E+00	0.00E+00	3.27E+07	2.45E+08	0.00E+00
CO-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	0.00E+00	6.60E+06	1.52E+07	0.00E+00	0.00E+00	0.00E+00	9.09E+07	0.00E+00
CO-60	0.00E+00	2.16E+07	4.86E+07	0.00E+00	0.00E+00	0.00E+00	2.81E+08	0.00E+00
NI-63	9.15E+09	6.46E+08	3.10E+08	0.00E+00	0.00E+00	0.00E+00	1.03E+08	0.00E+00
NI-65	6.87E-01	8.78E-02	4.00E-02	0.00E+00	0.00E+00	0.00E+00	4.76E+00	0.00E+00
CU-64	0.00E+00	4.26E+04	2.00E+04	0.00E+00	1.08E+05	0.00E+00	3.30E+06	0.00E+00
ZN-65	1.67E+09	5.79E+09	2.70E+09	0.00E+00	3.71E+09	0.00E+00	2.45E+09	0.00E+00
ZN-69	4.01E-12	7.65E-12	5.35E-13	0.00E+00	5.00E-12	0.00E+00	1.41E-11	0.00E+00
ZN-69M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	1.82E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	3.09E-23	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	4.38E+09	2.06E+09	0.00E+00	0.00E+00	0.00E+00	6.48E+08	0.00E+00
RB-88	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-89	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	2.27E+09	0.00E+00	6.51E+07	0.00E+00	0.00E+00	0.00E+00	2.71E+08	0.00E+00
SR-90	5.12E+10	0.00E+00	1.26E+10	0.00E+00	0.00E+00	0.00E+00	1.44E+09	0.00E+00
SR-91	5.33E+04	0.00E+00	2.12E+03	0.00E+00	0.00E+00	0.00E+00	2.42E+05	0.00E+00
SR-92	9.07E-01	0.00E+00	3.86E-02	0.00E+00	0.00E+00	0.00E+00	2.31E+01	0.00E+00
Y-90	1.30E+02	0.00E+00	3.51E+00	0.00E+00	0.00E+00	0.00E+00	1.07E+06	0.00E+00
Y-91M	1.15E-19	0.00E+00	4.39E-21	0.00E+00	0.00E+00	0.00E+00	5.42E-18	0.00E+00
Y-91	1.33E+04	0.00E+00	3.56E+02	0.00E+00	0.00E+00	0.00E+00	5.45E+06	0.00E+00
Y-92	1.04E-04	0.00E+00	3.01E-06	0.00E+00	0.00E+00	0.00E+00	2.86E+00	0.00E+00
Y-93	4.13E-01	0.00E+00	1.13E-02	0.00E+00	0.00E+00	0.00E+00	1.26E+04	0.00E+00
ZR-95	1.38E+03	4.35E+02	2.99E+02	0.00E+00	6.40E+02	0.00E+00	1.00E+06	0.00E+00
ZR-97	7.90E-01	1.56E-01	7.20E-02	0.00E+00	2.37E-01	0.00E+00	4.23E+04	0.00E+00
NB-95	1.23E+05	6.83E+04	3.76E+04	0.00E+00	6.62E+04	0.00E+00	2.92E+08	0.00E+00
NB-97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	0.00E+00	4.47E+07	8.53E+06	0.00E+00	1.02E+08	0.00E+00	8.01E+07	0.00E+00
TC-99M	5.80E+00	1.62E+01	2.10E+02	0.00E+00	2.41E+02	8.97E+00	1.06E+04	0.00E+00
TC-101	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	1.57E+03	0.00E+00	6.71E+02	0.00E+00	5.53E+03	0.00E+00	1.31E+05	0.00E+00
RU-105	1.58E-03	0.00E+00	6.13E-04	0.00E+00	1.99E-02	0.00E+00	1.27E+00	0.00E+00
RU-106	2.95E+04	0.00E+00	3.72E+03	0.00E+00	5.69E+04	0.00E+00	1.41E+06	0.00E+00
AG-110M	7.62E+07	7.21E+07	4.39E+07	0.00E+00	1.38E+08	0.00E+00	2.03E+10	0.00E+00
SB-124	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE I-7

DOSE FACTOR TABLE : R(i) - Teen, cows milk

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
SB-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	2.53E+07	9.11E+06	3.38E+06	7.06E+06	0.00E+00	0.00E+00	7.46E+07	0.00E+00
TE-127M	6.86E+07	2.43E+07	8.16E+06	1.63E+07	2.78E+08	0.00E+00	1.71E+08	0.00E+00
TE-127	1.22E+03	4.31E+02	2.61E+02	8.38E+02	4.92E+03	0.00E+00	9.38E+04	0.00E+00
TE-129M	9.67E+07	3.59E+07	1.53E+07	3.12E+07	4.04E+08	0.00E+00	3.63E+08	0.00E+00
TE-129	5.37E-10	2.00E-10	1.31E-10	3.84E-10	2.25E-09	0.00E+00	2.94E-09	0.00E+00
TE-131M	6.58E+05	3.15E+05	2.63E+05	4.75E+05	3.29E+06	0.00E+00	2.53E+07	0.00E+00
TE-131	7.22E-33	2.98E-33	2.26E-33	5.57E-33	3.16E-32	0.00E+00	5.93E-34	0.00E+00
TE-132	4.29E+06	2.72E+06	2.56E+06	2.87E+06	2.61E+07	0.00E+00	8.61E+07	0.00E+00
I-130	7.41E+05	2.14E+06	8.56E+05	1.75E+08	3.30E+06	0.00E+00	1.65E+06	0.00E+00
I-131	5.28E+08	7.39E+08	3.97E+08	2.16E+11	1.27E+09	0.00E+00	1.46E+08	0.00E+00
I-132	2.96E-01	7.75E-01	2.78E-01	2.61E+01	1.22E+00	0.00E+00	3.38E-01	0.00E+00
I-133	7.08E+06	1.20E+07	3.66E+06	1.68E+09	2.11E+07	0.00E+00	9.09E+06	0.00E+00
I-134	3.74E-12	9.92E-12	3.56E-12	1.65E-10	1.56E-11	0.00E+00	1.31E-13	0.00E+00
I-135	2.29E+04	5.90E+04	2.19E+04	3.80E+06	9.33E+04	0.00E+00	6.54E+04	0.00E+00
CS-134	7.65E+09	1.80E+10	8.36E+09	0.00E+00	5.72E+09	2.19E+09	2.24E+08	0.00E+00
CS-136	4.27E+08	1.68E+09	1.13E+09	0.00E+00	9.15E+08	1.44E+08	1.35E+08	0.00E+00
CS-137	1.04E+10	1.38E+10	4.80E+09	0.00E+00	4.69E+09	1.82E+09	1.96E+08	0.00E+00
CS-138	1.76E-23	3.38E-23	1.69E-23	0.00E+00	2.50E-23	2.91E-24	1.54E-26	0.00E+00
BA-139	8.40E-08	5.91E-11	2.45E-09	0.00E+00	5.57E-11	4.07E-11	7.50E-07	0.00E+00
BA-140	4.64E+07	5.68E+04	2.99E+06	0.00E+00	1.93E+04	3.82E+04	7.15E+07	0.00E+00
BA-141	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-142	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LA-140	8.11E+00	3.98E+00	1.06E+00	0.00E+00	0.00E+00	0.00E+00	2.29E+05	0.00E+00
LA-142	3.43E-11	1.53E-11	3.80E-12	0.00E+00	0.00E+00	0.00E+00	4.64E-07	0.00E+00
CE-141	7.82E+03	5.22E+03	6.00E+02	0.00E+00	2.46E+03	0.00E+00	1.49E+07	0.00E+00
CE-143	7.65E+01	5.56E+04	6.21E+00	0.00E+00	2.50E+01	0.00E+00	1.67E+06	0.00E+00
CE-144	5.20E+05	2.15E+05	2.79E+04	0.00E+00	1.28E+05	0.00E+00	1.31E+08	0.00E+00
PR-143	2.76E+02	1.10E+02	1.37E+01	0.00E+00	6.40E+01	0.00E+00	9.08E+05	0.00E+00
PR-144	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ND-147	1.75E+02	1.90E+02	1.14E+01	0.00E+00	1.12E+02	0.00E+00	6.87E+05	0.00E+00
W-187	1.19E+04	9.71E+03	3.40E+03	0.00E+00	0.00E+00	0.00E+00	2.63E+06	0.00E+00
NP-239	7.01E+00	6.61E-01	3.67E-01	0.00E+00	2.08E+00	0.00E+00	1.06E+05	0.00E+00

TABLE I-8

DOSE FACTOR TABLE : R(i) - Child, cows milk

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
H-3	0.00E+00	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	9.73E+02	0.00E+00
C-14	1.65E+06	3.29E+05	3.29E+05	3.29E+05	3.29E+05	3.29E+05	3.29E+05	0.00E+00
NA-24	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	8.88E+06	0.00E+00
P-32	7.37E+10	3.45E+09	2.84E+09	0.00E+00	0.00E+00	0.00E+00	2.04E+09	0.00E+00
CR-51	0.00E+00	0.00E+00	9.09E+04	5.05E+04	1.38E+04	9.21E+04	4.82E+06	0.00E+00
MN-54	0.00E+00	1.65E+07	4.40E+06	0.00E+00	4.63E+06	0.00E+00	1.39E+07	0.00E+00
MN-56	0.00E+00	1.30E-02	2.94E-03	0.00E+00	1.57E-02	0.00E+00	1.89E+00	0.00E+00
FE-55	8.70E+07	4.61E+07	1.43E+07	0.00E+00	0.00E+00	2.61E+07	8.55E+06	0.00E+00
FE-59	1.03E+08	1.67E+08	8.31E+07	0.00E+00	0.00E+00	4.84E+07	1.74E+08	0.00E+00
CO-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	0.00E+00	1.01E+07	3.08E+07	0.00E+00	0.00E+00	0.00E+00	5.88E+07	0.00E+00
CO-60	0.00E+00	3.35E+07	9.88E+07	0.00E+00	0.00E+00	0.00E+00	1.86E+08	0.00E+00
NI-63	2.29E+10	1.23E+09	7.80E+08	0.00E+00	0.00E+00	0.00E+00	8.27E+07	0.00E+00
NI-65	1.68E+00	1.58E-01	9.24E-02	0.00E+00	0.00E+00	0.00E+00	1.94E+01	0.00E+00
CU-64	0.00E+00	7.48E+04	4.52E+04	0.00E+00	1.81E+05	0.00E+00	3.51E+06	0.00E+00
ZN-65	3.27E+09	8.72E+09	5.43E+09	0.00E+00	5.50E+09	0.00E+00	1.53E+09	0.00E+00
ZN-69	9.87E-12	1.43E-11	1.32E-12	0.00E+00	8.65E-12	0.00E+00	8.99E-10	0.00E+00
ZN-69M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	4.47E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	7.00E-23	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	8.12E+09	4.99E+09	0.00E+00	0.00E+00	0.00E+00	5.22E+08	0.00E+00
RB-88	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-89	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	5.63E+09	0.00E+00	1.61E+08	0.00E+00	0.00E+00	0.00E+00	2.18E+08	0.00E+00
SR-90	8.65E+10	0.00E+00	2.19E+10	0.00E+00	0.00E+00	0.00E+00	1.16E+09	0.00E+00
SR-91	1.31E+05	0.00E+00	4.94E+03	0.00E+00	0.00E+00	0.00E+00	2.89E+05	0.00E+00
SR-92	2.21E+00	0.00E+00	8.88E-02	0.00E+00	0.00E+00	0.00E+00	4.19E+01	0.00E+00
Y-90	3.22E+02	0.00E+00	8.63E+00	0.00E+00	0.00E+00	0.00E+00	9.18E+05	0.00E+00
Y-91M	2.80E-19	0.00E+00	1.02E-20	0.00E+00	0.00E+00	0.00E+00	5.49E-16	0.00E+00
Y-91	3.28E+04	0.00E+00	8.78E+02	0.00E+00	0.00E+00	0.00E+00	4.37E+06	0.00E+00
Y-92	2.56E-04	0.00E+00	7.32E-06	0.00E+00	0.00E+00	0.00E+00	7.39E+00	0.00E+00
Y-93	1.02E+00	0.00E+00	2.79E-02	0.00E+00	0.00E+00	0.00E+00	1.51E+04	0.00E+00
ZR-95	3.20E+03	7.04E+02	6.27E+02	0.00E+00	1.01E+03	0.00E+00	7.35E+05	0.00E+00
ZR-97	1.92E+00	2.78E-01	1.64E-01	0.00E+00	3.99E-01	0.00E+00	4.21E+04	0.00E+00
NB-95	2.78E+05	1.08E+05	7.74E+04	0.00E+00	1.02E+05	0.00E+00	2.00E+08	0.00E+00
NB-97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	0.00E+00	8.14E+07	2.01E+07	0.00E+00	1.74E+08	0.00E+00	6.73E+07	0.00E+00
TC-99M	1.33E+01	2.61E+01	4.32E+02	0.00E+00	3.79E+02	1.32E+01	1.48E+04	0.00E+00
TC-101	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	3.71E+03	0.00E+00	1.43E+03	0.00E+00	9.34E+03	0.00E+00	9.59E+04	0.00E+00
RU-105	3.85E-03	0.00E+00	1.40E-03	0.00E+00	3.39E-02	0.00E+00	2.51E+00	0.00E+00
RU-106	7.26E+04	0.00E+00	9.06E+03	0.00E+00	9.81E+04	0.00E+00	1.13E+06	0.00E+00
AG-110M	1.65E+08	1.12E+08	8.92E+07	0.00E+00	2.08E+08	0.00E+00	1.33E+10	0.00E+00
SB-124	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE I-8

DOSE FACTOR TABLE : R(i) - Child, cows milk

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
SB-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	6.21E+07	1.68E+07	8.28E+06	1.74E+07	0.00E+00	0.00E+00	5.99E+07	0.00E+00
TE-127M	1.69E+08	4.55E+07	2.01E+07	4.04E+07	4.82E+08	0.00E+00	1.37E+08	0.00E+00
TE-127	2.99E+03	8.06E+02	6.41E+02	2.07E+03	8.50E+03	0.00E+00	1.17E+05	0.00E+00
TE-129M	2.38E+08	6.65E+07	3.70E+07	7.68E+07	7.00E+08	0.00E+00	2.91E+08	0.00E+00
TE-129	1.33E-09	3.70E-10	3.15E-10	9.46E-10	3.88E-09	0.00E+00	8.25E-08	0.00E+00
TE-131M	1.60E+06	5.54E+05	5.89E+05	1.14E+06	5.36E+06	0.00E+00	2.25E+07	0.00E+00
TE-131	1.77E-32	5.40E-33	5.27E-33	1.36E-32	5.36E-32	0.00E+00	9.31E-32	0.00E+00
TE-132	1.02E+07	4.54E+06	5.48E+06	6.61E+06	4.21E+07	0.00E+00	4.57E+07	0.00E+00
I-130	1.73E+06	3.50E+06	1.80E+06	3.86E+08	5.23E+06	0.00E+00	1.64E+06	0.00E+00
I-131	1.28E+09	1.29E+09	7.32E+08	4.26E+11	2.11E+09	0.00E+00	1.15E+08	0.00E+00
I-132	7.01E-01	1.29E+00	5.92E-01	5.97E+01	1.97E+00	0.00E+00	1.52E+00	0.00E+00
I-133	1.72E+07	2.13E+07	8.05E+06	3.95E+09	3.55E+07	0.00E+00	8.57E+06	0.00E+00
I-134	8.87E-12	1.65E-11	7.57E-12	3.79E-10	2.52E-11	0.00E+00	1.09E-11	0.00E+00
I-135	5.43E+04	9.77E+04	4.62E+04	8.66E+06	1.50E+05	0.00E+00	7.45E+04	0.00E+00
CS-134	1.77E+10	2.90E+10	6.11E+09	0.00E+00	8.98E+09	3.22E+09	1.56E+08	0.00E+00
CS-136	9.65E+08	2.65E+09	1.72E+09	0.00E+00	1.41E+09	2.11E+08	9.32E+07	0.00E+00
CS-137	2.50E+10	2.39E+10	3.53E+09	0.00E+00	7.78E+09	2.80E+09	1.50E+08	0.00E+00
CS-138	4.27E-23	5.94E-23	3.77E-23	0.00E+00	4.18E-23	4.50E-24	2.74E-23	0.00E+00
BA-139	2.06E-07	1.10E-10	5.98E-09	0.00E+00	9.62E-11	6.48E-11	1.19E-05	0.00E+00
BA-140	1.12E+08	9.80E+04	6.53E+06	0.00E+00	3.19E+04	5.84E+04	5.67E+07	0.00E+00
BA-141	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-142	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LA-140	1.94E+01	6.79E+00	2.29E+00	0.00E+00	0.00E+00	0.00E+00	1.89E+05	0.00E+00
LA-142	8.30E-11	2.64E-11	8.28E-12	0.00E+00	0.00E+00	0.00E+00	5.24E-06	0.00E+00
CE-141	1.93E+04	9.61E+03	1.43E+03	0.00E+00	4.21E+03	0.00E+00	1.20E+07	0.00E+00
CE-143	1.88E+02	1.02E+05	1.47E+01	0.00E+00	4.27E+01	0.00E+00	1.49E+06	0.00E+00
CE-144	1.28E+06	4.02E+05	6.84E+04	0.00E+00	2.22E+05	0.00E+00	1.05E+08	0.00E+00
PR-143	6.83E+02	2.05E+02	3.39E+01	0.00E+00	1.11E+02	0.00E+00	7.37E+05	0.00E+00
PR-144	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ND-147	4.29E+02	3.48E+02	2.69E+01	0.00E+00	1.91E+02	0.00E+00	5.51E+05	0.00E+00
W-187	2.89E+04	1.71E+04	7.68E+03	0.00E+00	0.00E+00	0.00E+00	2.40E+06	0.00E+00
NP-239	1.73E+01	1.24E+00	8.71E-01	0.00E+00	3.58E+00	0.00E+00	9.17E+04	0.00E+00

TABLE I-9

DOSE FACTOR TABLE : R(i) - Infant, cows milk

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
H-3	0.00E+00	1.48E+03	1.48E+03	1.48E+03	1.48E+03	1.48E+03	1.48E+03	0.00E+00
C-14	3.23E+06	6.89E+05	6.89E+05	6.89E+05	6.89E+05	6.89E+05	6.89E+05	0.00E+00
NA-24	1.55E+07	1.55E+07	1.55E+07	1.55E+07	1.55E+07	1.55E+07	1.55E+07	0.00E+00
P-32	1.52E+11	8.93E+09	5.88E+09	0.00E+00	0.00E+00	0.00E+00	2.05E+09	0.00E+00
CR-51	0.00E+00	0.00E+00	1.44E+05	9.40E+04	2.05E+04	1.83E+05	4.20E+06	0.00E+00
MN-54	0.00E+00	3.07E+07	6.97E+06	0.00E+00	6.81E+06	0.00E+00	1.13E+07	0.00E+00
MN-56	0.00E+00	3.19E-02	5.49E-03	0.00E+00	2.74E-02	0.00E+00	2.90E+00	0.00E+00
FE-55	1.05E+08	6.79E+07	1.82E+07	0.00E+00	0.00E+00	3.32E+07	8.62E+06	0.00E+00
FE-59	1.92E+08	3.36E+08	1.32E+08	0.00E+00	0.00E+00	9.94E+07	1.61E+08	0.00E+00
CO-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	0.00E+00	2.02E+07	5.03E+07	0.00E+00	0.00E+00	0.00E+00	5.02E+07	0.00E+00
CO-60	0.00E+00	6.84E+07	1.62E+08	0.00E+00	0.00E+00	0.00E+00	1.63E+08	0.00E+00
NI-63	2.70E+10	1.67E+09	9.38E+08	0.00E+00	0.00E+00	0.00E+00	8.31E+07	0.00E+00
NI-65	3.56E+00	4.03E-01	1.83E-01	0.00E+00	0.00E+00	0.00E+00	3.07E+01	0.00E+00
CU-64	0.00E+00	1.86E+05	8.61E+04	0.00E+00	3.15E+05	0.00E+00	3.82E+06	0.00E+00
ZN-65	4.40E+09	1.51E+10	6.95E+09	0.00E+00	7.31E+09	0.00E+00	1.27E+10	0.00E+00
ZN-69	2.10E-11	3.79E-11	2.82E-12	0.00E+00	1.57E-11	0.00E+00	3.09E-09	0.00E+00
ZN-69M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	9.49E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	1.35E-22	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	2.06E+10	1.02E+10	0.00E+00	0.00E+00	0.00E+00	5.27E+08	0.00E+00
RB-88	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-89	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	1.07E+10	0.00E+00	3.07E+08	0.00E+00	0.00E+00	0.00E+00	2.20E+08	0.00E+00
SR-90	9.41E+10	0.00E+00	2.40E+10	0.00E+00	0.00E+00	0.00E+00	1.18E+09	0.00E+00
SR-91	2.73E+05	0.00E+00	9.87E+03	0.00E+00	0.00E+00	0.00E+00	3.23E+05	0.00E+00
SR-92	4.71E+00	0.00E+00	1.75E-01	0.00E+00	0.00E+00	0.00E+00	5.08E+01	0.00E+00
Y-90	6.82E+02	0.00E+00	1.83E+01	0.00E+00	0.00E+00	0.00E+00	9.41E+05	0.00E+00
Y-91M	5.94E-19	0.00E+00	2.03E-20	0.00E+00	0.00E+00	0.00E+00	1.98E-15	0.00E+00
Y-91	6.16E+04	0.00E+00	1.64E+03	0.00E+00	0.00E+00	0.00E+00	4.42E+06	0.00E+00
Y-92	5.44E-04	0.00E+00	1.53E-05	0.00E+00	0.00E+00	0.00E+00	1.04E+01	0.00E+00
Y-93	2.16E+00	0.00E+00	5.90E-02	0.00E+00	0.00E+00	0.00E+00	1.71E+04	0.00E+00
ZR-95	5.69E+03	1.39E+03	9.83E+02	0.00E+00	1.49E+03	0.00E+00	6.91E+05	0.00E+00
ZR-97	4.07E+00	6.99E-01	3.19E-01	0.00E+00	7.04E-01	0.00E+00	4.46E+04	0.00E+00
NB-95	5.19E+05	2.14E+05	1.24E+05	0.00E+00	1.53E+05	0.00E+00	1.80E+08	0.00E+00
NB-97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	0.00E+00	2.08E+08	4.06E+07	0.00E+00	3.11E+08	0.00E+00	6.85E+07	0.00E+00
TC-99M	2.77E+01	5.70E+01	7.35E+02	0.00E+00	6.14E+02	2.98E+01	1.66E+04	0.00E+00
TC-101	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	7.51E+03	0.00E+00	2.51E+03	0.00E+00	1.56E+04	0.00E+00	9.14E+04	0.00E+00
RU-105	8.12E-03	0.00E+00	2.74E-03	0.00E+00	5.97E-02	0.00E+00	3.23E+00	0.00E+00
RU-106	1.50E+05	0.00E+00	1.87E+04	0.00E+00	1.77E+05	0.00E+00	1.14E+06	0.00E+00
AG-110M	3.05E+08	2.23E+08	1.48E+08	0.00E+00	3.19E+08	0.00E+00	1.16E+10	0.00E+00
SB-124	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE I-9

DOSE FACTOR TABLE : R(i) - Infant, cows milk

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
SB-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	1.27E+08	4.24E+07	1.72E+07	4.27E+07	0.00E+00	0.00E+00	6.05E+07	0.00E+00
TE-127M	3.42E+08	1.14E+08	4.14E+07	9.89E+07	8.43E+08	0.00E+00	1.38E+08	0.00E+00
TE-127	6.34E+03	2.13E+03	1.36E+03	5.16E+03	1.55E+04	0.00E+00	1.33E+05	0.00E+00
TE-129M	4.89E+08	1.68E+08	7.54E+07	1.88E+08	1.22E+09	0.00E+00	2.92E+08	0.00E+00
TE-129	2.81E-09	9.69E-10	6.56E-10	2.36E-09	7.00E-09	0.00E+00	2.25E-07	0.00E+00
TE-131M	3.38E+06	1.36E+06	1.12E+06	2.76E+06	9.37E+06	0.00E+00	2.29E+07	0.00E+00
TE-131	3.76E-32	1.39E-32	1.05E-32	3.35E-32	9.61E-32	0.00E+00	1.52E-30	0.00E+00
TE-132	2.11E+07	1.05E+07	9.75E+06	1.54E+07	6.53E+07	0.00E+00	3.87E+07	0.00E+00
I-130	3.56E+06	7.83E+06	3.14E+06	8.78E+08	8.60E+06	0.00E+00	1.68E+06	0.00E+00
I-131	2.67E+09	3.15E+09	1.38E+09	1.03E+12	3.68E+09	0.00E+00	1.12E+08	0.00E+00
I-132	1.45E+00	2.95E+00	1.05E+00	1.38E+02	3.29E+00	0.00E+00	2.39E+00	0.00E+00
I-133	3.63E+07	5.29E+07	1.55E+07	9.62E+09	6.22E+07	0.00E+00	8.95E+06	0.00E+00
I-134	1.84E-11	3.77E-11	1.34E-11	8.78E-10	4.21E-11	0.00E+00	3.89E-11	0.00E+00
I-135	1.13E+05	2.25E+05	8.19E+04	2.01E+07	2.50E+05	0.00E+00	8.13E+04	0.00E+00
CS-134	2.84E+10	5.30E+10	5.36E+09	0.00E+00	1.37E+10	5.60E+09	1.44E+08	0.00E+00
CS-136	1.88E+09	5.54E+09	2.07E+09	0.00E+00	2.21E+09	4.51E+08	8.41E+07	0.00E+00
CS-137	3.98E+10	4.66E+10	3.30E+09	0.00E+00	1.25E+10	5.07E+09	1.46E+08	0.00E+00
CS-138	9.01E-23	1.47E-22	7.10E-23	0.00E+00	7.31E-23	1.14E-23	2.34E-22	0.00E+00
BA-139	4.39E-07	2.91E-10	1.27E-08	0.00E+00	1.75E-10	1.77E-10	2.78E-05	0.00E+00
BA-140	2.30E+08	2.30E+05	1.19E+07	0.00E+00	5.47E+04	1.41E+05	5.66E+07	0.00E+00
BA-141	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-142	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LA-140	4.06E+01	1.60E+01	4.11E+00	0.00E+00	0.00E+00	0.00E+00	1.88E+05	0.00E+00
LA-142	1.74E-10	6.40E-11	1.53E-11	0.00E+00	0.00E+00	0.00E+00	1.09E-05	0.00E+00
CE-141	3.82E+04	2.33E+04	2.74E+03	0.00E+00	7.18E+03	0.00E+00	1.20E+07	0.00E+00
CE-143	3.97E+02	2.64E+05	3.01E+01	0.00E+00	7.68E+01	0.00E+00	1.54E+06	0.00E+00
CE-144	1.84E+06	7.52E+05	1.03E+05	0.00E+00	3.04E+05	0.00E+00	1.05E+08	0.00E+00
PR-143	1.41E+03	5.28E+02	7.00E+01	0.00E+00	1.96E+02	0.00E+00	7.45E+05	0.00E+00
PR-144	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ND-147	8.51E+02	8.74E+02	5.36E+01	0.00E+00	3.37E+02	0.00E+00	5.54E+05	0.00E+00
W-187	6.08E+04	4.23E+04	1.46E+04	0.00E+00	0.00E+00	0.00E+00	2.49E+06	0.00E+00
NP-239	3.65E+01	3.26E+00	1.84E+00	0.00E+00	6.51E+00	0.00E+00	9.43E+04	0.00E+00

TABLE I-10

DOSE FACTOR TABLE : R(i) - Adult, goats milk

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
H-3	0.00E+00	9.65E+02	9.65E+02	9.65E+02	9.65E+02	9.65E+02	9.65E+02	0.00E+00
C-14	3.63E+05	7.26E+04	7.26E+04	7.26E+04	7.26E+04	7.26E+04	7.26E+04	0.00E+00
NA-24	2.93E+05	2.93E+05	2.93E+05	2.93E+05	2.93E+05	2.93E+05	2.93E+05	0.00E+00
P-32	1.94E+10	1.21E+09	7.51E+08	0.00E+00	0.00E+00	0.00E+00	2.18E+09	0.00E+00
CR-51	0.00E+00	0.00E+00	3.06E+03	1.83E+03	6.75E+02	4.06E+03	7.70E+05	0.00E+00
MN-54	0.00E+00	7.96E+05	1.52E+05	0.00E+00	2.37E+05	0.00E+00	2.44E+06	0.00E+00
MN-56	0.00E+00	5.05E-04	8.96E-05	0.00E+00	6.41E-04	0.00E+00	1.61E-02	0.00E+00
FE-55	2.54E+05	1.76E+05	4.09E+04	0.00E+00	0.00E+00	9.79E+04	1.01E+05	0.00E+00
FE-59	3.31E+05	7.79E+05	2.98E+05	0.00E+00	0.00E+00	2.18E+05	2.60E+06	0.00E+00
CO-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	0.00E+00	4.70E+05	1.05E+06	0.00E+00	0.00E+00	0.00E+00	9.53E+06	0.00E+00
CO-60	0.00E+00	1.53E+06	3.37E+06	0.00E+00	0.00E+00	0.00E+00	2.87E+07	0.00E+00
NI-63	6.25E+08	4.33E+07	2.10E+07	0.00E+00	0.00E+00	0.00E+00	9.03E+06	0.00E+00
NI-65	4.51E-02	5.86E-03	2.67E-03	0.00E+00	0.00E+00	0.00E+00	1.49E-01	0.00E+00
CU-64	0.00E+00	2.66E+03	1.25E+03	0.00E+00	6.71E+03	0.00E+00	2.27E+05	0.00E+00
ZN-65	1.30E+08	4.15E+08	1.88E+08	0.00E+00	2.78E+08	0.00E+00	2.61E+08	0.00E+00
ZN-69	2.62E-13	5.00E-13	3.48E-14	0.00E+00	3.25E-13	0.00E+00	7.52E-14	0.00E+00
ZN-69M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	1.18E-02	0.00E+00	0.00E+00	0.00E+00	1.71E-02	0.00E+00
BR-84	0.00E+00	0.00E+00	2.08E-24	0.00E+00	0.00E+00	0.00E+00	1.63E-29	0.00E+00
BR-85	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	2.88E+08	1.34E+08	0.00E+00	0.00E+00	0.00E+00	5.68E+07	0.00E+00
RB-88	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-89	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	2.59E+09	0.00E+00	7.43E+07	0.00E+00	0.00E+00	0.00E+00	4.15E+08	0.00E+00
SR-90	7.61E+10	0.00E+00	1.87E+10	0.00E+00	0.00E+00	0.00E+00	2.20E+09	0.00E+00
SR-91	6.10E+04	0.00E+00	2.46E+03	0.00E+00	0.00E+00	0.00E+00	2.90E+05	0.00E+00
SR-92	1.04E+00	0.00E+00	4.50E-02	0.00E+00	0.00E+00	0.00E+00	2.06E+01	0.00E+00
Y-90	8.50E+00	0.00E+00	2.28E-01	0.00E+00	0.00E+00	0.00E+00	9.02E+04	0.00E+00
Y-91M	7.52E-21	0.00E+00	2.91E-22	0.00E+00	0.00E+00	0.00E+00	2.21E-20	0.00E+00
Y-91	8.67E+02	0.00E+00	2.32E+01	0.00E+00	0.00E+00	0.00E+00	4.77E+05	0.00E+00
Y-92	6.77E-06	0.00E+00	1.98E-07	0.00E+00	0.00E+00	0.00E+00	1.19E-01	0.00E+00
Y-93	2.69E-02	0.00E+00	7.43E-04	0.00E+00	0.00E+00	0.00E+00	8.53E+02	0.00E+00
ZR-95	9.47E+01	3.04E+01	2.06E+01	0.00E+00	4.76E+01	0.00E+00	9.62E+04	0.00E+00
ZR-97	5.21E-02	1.05E-02	4.81E-03	0.00E+00	1.59E-02	0.00E+00	3.26E+03	0.00E+00
NB-95	8.67E+03	4.82E+03	2.59E+03	0.00E+00	4.77E+03	0.00E+00	2.93E+07	0.00E+00
NB-97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	0.00E+00	2.97E+06	5.66E+05	0.00E+00	6.73E+06	0.00E+00	6.89E+06	0.00E+00
TC-99M	4.01E-01	1.13E+00	1.44E+01	0.00E+00	1.72E+01	5.55E-01	6.71E+02	0.00E+00
TC-101	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	1.06E+02	0.00E+00	4.56E+01	0.00E+00	4.04E+02	0.00E+00	1.24E+04	0.00E+00
RU-105	1.04E-04	0.00E+00	4.09E-05	0.00E+00	1.34E-03	0.00E+00	6.34E-02	0.00E+00
RU-106	1.92E+03	0.00E+00	2.43E+02	0.00E+00	3.71E+03	0.00E+00	1.25E+05	0.00E+00
AG-110M	5.53E+06	5.12E+06	3.04E+06	0.00E+00	1.01E+07	0.00E+00	2.09E+09	0.00E+00
SB-124	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE I-10

DOSE FACTOR TABLE : R(i) - Adult, goats milk

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
SB-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	1.65E+06	5.96E+05	2.20E+05	4.95E+05	6.69E+06	0.00E+00	6.57E+06	0.00E+00
TE-127M	4.47E+06	1.60E+06	5.44E+05	1.14E+06	1.81E+07	0.00E+00	1.50E+07	0.00E+00
TE-127	7.87E+01	2.82E+01	1.70E+01	5.83E+01	3.20E+02	0.00E+00	6.21E+03	0.00E+00
TE-129M	6.34E+06	2.37E+06	1.00E+06	2.18E+06	2.65E+07	0.00E+00	3.19E+07	0.00E+00
TE-129	3.50E-11	1.32E-11	8.53E-12	2.69E-11	1.47E-10	0.00E+00	2.64E-11	0.00E+00
TE-131M	4.34E+04	2.12E+04	1.77E+04	3.36E+04	2.15E+05	0.00E+00	2.11E+06	0.00E+00
TE-131	4.74E-34	1.98E-34	1.50E-34	3.90E-34	2.08E-33	0.00E+00	6.72E-35	0.00E+00
TE-132	2.88E+05	1.86E+05	1.75E+05	2.06E+05	1.80E+06	0.00E+00	8.82E+06	0.00E+00
I-130	5.06E+05	1.49E+06	5.89E+05	1.26E+08	2.33E+06	0.00E+00	1.28E+06	0.00E+00
I-131	3.49E+08	4.99E+08	2.86E+08	1.64E+11	8.56E+08	0.00E+00	1.32E+08	0.00E+00
I-132	2.00E-01	5.36E-01	1.88E-01	1.88E+01	8.54E-01	0.00E+00	1.01E-01	0.00E+00
I-133	4.65E+06	8.09E+06	2.47E+06	1.19E+09	1.41E+07	0.00E+00	7.27E+06	0.00E+00
I-134	2.53E-12	6.87E-12	2.46E-12	1.19E-10	1.09E-11	0.00E+00	5.99E-15	0.00E+00
I-135	1.55E+04	4.06E+04	1.50E+04	2.68E+06	6.51E+04	0.00E+00	4.58E+04	0.00E+00
CS-134	1.32E+10	3.15E+10	2.57E+10	0.00E+00	1.02E+10	3.38E+09	5.51E+08	0.00E+00
CS-136	7.53E+08	2.97E+09	2.14E+09	0.00E+00	1.65E+09	2.27E+08	3.38E+08	0.00E+00
CS-137	1.71E+10	2.34E+10	1.54E+10	0.00E+00	7.96E+09	2.65E+09	4.54E+08	0.00E+00
CS-138	2.91E-23	5.76E-23	2.85E-23	0.00E+00	4.23E-23	4.18E-24	2.46E-28	0.00E+00
BA-139	5.45E-09	3.88E-12	1.60E-10	0.00E+00	3.63E-12	2.20E-12	9.67E-09	0.00E+00
BA-140	3.08E+06	3.87E+03	2.02E+05	0.00E+00	1.32E+03	2.22E+03	6.35E+06	0.00E+00
BA-141	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-142	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LA-140	5.42E-01	2.73E-01	7.22E-02	0.00E+00	0.00E+00	0.00E+00	2.00E+04	0.00E+00
LA-142	2.28E-12	1.04E-12	2.59E-13	0.00E+00	0.00E+00	0.00E+00	7.58E-09	0.00E+00
CE-141	5.12E+02	3.46E+02	3.93E+01	0.00E+00	1.61E+02	0.00E+00	1.32E+06	0.00E+00
CE-143	4.99E+00	3.69E+03	4.09E-01	0.00E+00	1.63E+00	0.00E+00	1.38E+05	0.00E+00
CE-144	3.39E+04	1.42E+04	1.82E+03	0.00E+00	8.40E+03	0.00E+00	1.15E+07	0.00E+00
PR-143	1.80E+01	7.23E+00	8.93E-01	0.00E+00	4.17E+00	0.00E+00	7.89E+04	0.00E+00
PR-144	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ND-147	1.09E+01	1.26E+01	7.55E-01	0.00E+00	7.37E+00	0.00E+00	6.06E+04	0.00E+00
W-187	7.82E+02	6.54E+02	2.29E+02	0.00E+00	0.00E+00	0.00E+00	2.14E+05	0.00E+00
NP-239	4.41E-01	4.34E-02	2.39E-02	0.00E+00	1.35E-01	0.00E+00	8.89E+03	0.00E+00

TABLE I-11

DOSE FACTOR TABLE : R(i) - Teen, goats milk

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
H-3	0.00E+00	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	1.26E+03	0.00E+00
C-14	6.70E+05	1.34E+05	1.34E+05	1.34E+05	1.34E+05	1.34E+05	1.34E+05	0.00E+00
NA-24	5.12E+05	5.12E+05	5.12E+05	5.12E+05	5.12E+05	5.12E+05	5.12E+05	0.00E+00
P-32	3.58E+10	2.22E+09	1.39E+09	0.00E+00	0.00E+00	0.00E+00	3.01E+09	0.00E+00
CR-51	0.00E+00	0.00E+00	5.35E+03	2.97E+03	1.17E+03	7.64E+03	8.99E+05	0.00E+00
MN-54	0.00E+00	1.33E+06	2.63E+05	0.00E+00	3.95E+05	0.00E+00	2.72E+06	0.00E+00
MN-56	0.00E+00	8.95E-04	1.59E-04	0.00E+00	1.13E-03	0.00E+00	5.89E-02	0.00E+00
FE-55	4.51E+05	3.19E+05	7.45E+04	0.00E+00	0.00E+00	2.03E+05	1.38E+05	0.00E+00
FE-59	5.78E+05	1.35E+06	5.21E+05	0.00E+00	0.00E+00	4.25E+05	3.19E+06	0.00E+00
CO-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	0.00E+00	7.92E+05	1.82E+06	0.00E+00	0.00E+00	0.00E+00	1.09E+07	0.00E+00
CO-60	0.00E+00	2.59E+06	5.83E+06	0.00E+00	0.00E+00	0.00E+00	3.37E+07	0.00E+00
NI-63	1.10E+09	7.75E+07	3.72E+07	0.00E+00	0.00E+00	0.00E+00	1.23E+07	0.00E+00
NI-65	8.25E-02	1.05E-02	4.80E-03	0.00E+00	0.00E+00	0.00E+00	5.72E-01	0.00E+00
CU-64	0.00E+00	4.74E+03	2.23E+03	0.00E+00	1.20E+04	0.00E+00	3.68E+05	0.00E+00
ZN-65	2.00E+08	6.95E+08	3.24E+08	0.00E+00	4.45E+08	0.00E+00	2.94E+08	0.00E+00
ZN-69	4.82E-13	9.18E-13	6.42E-14	0.00E+00	6.00E-13	0.00E+00	1.69E-12	0.00E+00
ZN-69M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	2.18E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	3.71E-24	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	5.25E+08	2.47E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-88	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.77E+07	0.00E+00
RB-89	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	4.77E+09	0.00E+00	1.37E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-90	1.07E+11	0.00E+00	2.65E+10	0.00E+00	0.00E+00	0.00E+00	5.69E+08	0.00E+00
SR-91	1.12E+05	0.00E+00	4.46E+03	0.00E+00	0.00E+00	0.00E+00	3.02E+09	0.00E+00
SR-92	1.90E+00	0.00E+00	8.11E-02	0.00E+00	0.00E+00	0.00E+00	5.08E+05	0.00E+00
Y-90	1.56E+01	0.00E+00	4.21E-01	0.00E+00	0.00E+00	0.00E+00	4.85E+01	0.00E+00
Y-91M	1.38E-20	0.00E+00	5.26E-22	0.00E+00	0.00E+00	0.00E+00	1.29E+05	0.00E+00
Y-91	1.59E+03	0.00E+00	4.28E+01	0.00E+00	0.00E+00	0.00E+00	6.50E-19	0.00E+00
Y-92	1.25E-05	0.00E+00	3.62E-07	0.00E+00	0.00E+00	0.00E+00	6.54E+05	0.00E+00
Y-93	4.96E-02	0.00E+00	1.36E-03	0.00E+00	0.00E+00	0.00E+00	3.43E-01	0.00E+00
ZR-95	1.66E+02	5.22E+01	3.59E+01	0.00E+00	7.67E+01	0.00E+00	1.52E+03	0.00E+00
ZR-97	9.48E-02	1.88E-02	8.64E-03	0.00E+00	2.84E-02	0.00E+00	1.21E+05	0.00E+00
NB-95	1.48E+04	8.20E+03	4.51E+03	0.00E+00	7.95E+03	0.00E+00	5.08E+03	0.00E+00
NB-97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.51E+07	0.00E+00
MO-99	0.00E+00	5.37E+06	1.02E+06	0.00E+00	1.23E+07	0.00E+00	9.61E+06	0.00E+00
TC-99M	6.96E-01	1.94E+00	2.51E+01	0.00E+00	2.89E+01	1.08E+00	1.27E+03	0.00E+00
TC-101	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	1.88E+02	0.00E+00	8.05E+01	0.00E+00	6.64E+02	0.00E+00	1.57E+04	0.00E+00
RU-105	1.89E-04	0.00E+00	7.35E-05	0.00E+00	2.39E-03	0.00E+00	1.53E-01	0.00E+00
RU-106	3.54E+03	0.00E+00	4.46E+02	0.00E+00	6.82E+03	0.00E+00	1.70E+05	0.00E+00
AG-110M	9.14E+06	8.65E+06	5.26E+06	0.00E+00	1.65E+07	0.00E+00	2.43E+09	0.00E+00
SB-124	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE I-11

DOSE FACTOR TABLE : R(i) - Teen, goats milk

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
SB-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	3.03E+06	1.09E+06	4.06E+05	8.48E+05	0.00E+00	0.00E+00	8.95E+06	0.00E+00
TE-127M	8.23E+06	2.92E+06	9.79E+05	1.96E+06	3.34E+07	0.00E+00	2.05E+07	0.00E+00
TE-127	1.46E+02	5.17E+01	3.14E+01	1.01E+02	5.91E+02	0.00E+00	1.13E+04	0.00E+00
TE-129M	1.16E+07	4.31E+06	1.84E+06	3.74E+06	4.85E+07	0.00E+00	4.36E+07	0.00E+00
TE-129	6.45E-11	2.40E-11	1.57E-11	4.61E-11	2.71E-10	0.00E+00	3.53E-10	0.00E+00
TE-131M	7.89E+04	3.79E+04	3.16E+04	5.69E+04	3.95E+05	0.00E+00	3.04E+06	0.00E+00
TE-131	8.67E-34	3.57E-34	2.71E-34	6.68E-34	3.79E-33	0.00E+00	7.11E-35	0.00E+00
TE-132	5.15E+05	3.26E+05	3.07E+05	3.44E+05	3.13E+06	0.00E+00	1.03E+07	0.00E+00
I-130	8.89E+05	2.57E+06	1.03E+06	2.10E+08	3.96E+06	0.00E+00	1.98E+06	0.00E+00
I-131	6.33E+08	8.87E+08	4.76E+08	2.59E+11	1.53E+09	0.00E+00	1.75E+08	0.00E+00
I-132	3.55E-01	9.30E-01	3.34E-01	3.13E+01	1.47E+00	0.00E+00	4.05E-01	0.00E+00
I-133	8.50E+06	1.44E+07	4.40E+06	2.01E+09	2.53E+07	0.00E+00	1.09E+07	0.00E+00
I-134	4.49E-12	1.19E-11	4.28E-12	1.98E-10	1.88E-11	0.00E+00	1.57E-13	0.00E+00
I-135	2.75E+04	7.09E+04	2.63E+04	4.56E+06	1.12E+05	0.00E+00	7.85E+04	0.00E+00
CS-134	2.30E+10	5.40E+10	2.51E+10	0.00E+00	1.72E+10	6.56E+09	6.72E+08	0.00E+00
CS-136	1.28E+09	5.04E+09	3.39E+09	0.00E+00	2.75E+09	4.33E+08	4.06E+08	0.00E+00
CS-137	3.11E+10	4.13E+10	1.44E+10	0.00E+00	1.41E+10	5.47E+09	5.88E+08	0.00E+00
CS-138	5.29E-23	1.02E-22	5.08E-23	0.00E+00	7.49E-23	8.72E-24	4.61E-26	0.00E+00
BA-139	1.01E-08	7.09E-12	2.94E-10	0.00E+00	6.69E-12	4.89E-12	8.99E-08	0.00E+00
BA-140	5.56E+06	6.82E+03	3.58E+05	0.00E+00	2.31E+03	4.58E+03	8.58E+06	0.00E+00
BA-141	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-142	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LA-140	9.73E-01	4.78E-01	1.27E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LA-142	4.12E-12	1.83E-12	4.56E-13	0.00E+00	0.00E+00	0.00E+00	2.75E+04	0.00E+00
CE-141	9.39E+02	6.27E+02	7.20E+01	0.00E+00	2.95E+02	0.00E+00	5.57E-08	0.00E+00
CE-143	9.18E+00	6.68E+03	7.46E-01	0.00E+00	2.99E+00	0.00E+00	1.79E+06	0.00E+00
CE-144	6.24E+04	2.58E+04	3.35E+03	0.00E+00	1.54E+04	0.00E+00	2.01E+05	0.00E+00
PR-143	3.31E+01	1.32E+01	1.65E+00	0.00E+00	7.68E+00	0.00E+00	1.57E+07	0.00E+00
PR-144	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E+05	0.00E+00
ND-147	2.10E+01	2.28E+01	1.37E+00	0.00E+00	1.34E+01	0.00E+00	0.00E+00	0.00E+00
W-187	1.43E+03	1.17E+03	4.08E+02	0.00E+00	0.00E+00	0.00E+00	8.24E+04	0.00E+00
NP-239	8.42E-01	7.94E-02	4.41E-02	0.00E+00	2.49E-01	0.00E+00	3.15E+05	0.00E+00
							1.28E+04	0.00E+00

TABLE I-12

DOSE FACTOR TABLE : R(i) - Child, goats milk

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
H-3	0.00E+00	1.99E+03	1.99E+03	1.99E+03	1.99E+03	1.99E+03	1.99E+03	0.00E+00
C-14	1.65E+06	3.29E+05	3.29E+05	3.29E+05	3.29E+05	3.29E+05	3.29E+05	0.00E+00
NA-24	1.07E+06	1.07E+06	1.07E+06	1.07E+06	1.07E+06	1.07E+06	1.07E+06	0.00E+00
P-32	8.84E+10	4.14E+09	3.41E+09	0.00E+00	0.00E+00	0.00E+00	2.44E+09	0.00E+00
CR-51	0.00E+00	0.00E+00	1.09E+04	6.05E+03	1.65E+03	1.11E+04	5.79E+05	0.00E+00
MN-54	0.00E+00	1.98E+06	5.28E+05	0.00E+00	5.56E+05	0.00E+00	1.66E+06	0.00E+00
MN-56	0.00E+00	1.56E-03	3.53E-04	0.00E+00	1.89E-03	0.00E+00	2.26E-01	0.00E+00
FE-55	1.13E+06	6.00E+05	1.86E+05	0.00E+00	0.00E+00	3.39E+05	1.11E+05	0.00E+00
FE-59	1.34E+06	2.17E+06	1.08E+06	0.00E+00	0.00E+00	6.29E+05	2.26E+06	0.00E+00
CO-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	0.00E+00	1.21E+06	3.70E+06	0.00E+00	0.00E+00	0.00E+00	7.05E+06	0.00E+00
CO-60	0.00E+00	4.02E+06	1.19E+07	0.00E+00	0.00E+00	0.00E+00	2.23E+07	0.00E+00
NI-63	2.75E+09	1.47E+08	9.36E+07	0.00E+00	0.00E+00	0.00E+00	9.92E+06	0.00E+00
NI-65	2.02E-01	1.90E-02	1.11E-02	0.00E+00	0.00E+00	0.00E+00	2.33E+00	0.00E+00
CU-64	0.00E+00	8.34E+03	5.04E+03	0.00E+00	2.02E+04	0.00E+00	3.91E+05	0.00E+00
ZN-65	3.93E+08	1.05E+09	6.51E+08	0.00E+00	6.60E+08	0.00E+00	1.84E+08	0.00E+00
ZN-69	1.18E-12	1.71E-12	1.58E-13	0.00E+00	1.04E-12	0.00E+00	1.08E-10	0.00E+00
ZN-69M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	5.36E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	8.40E-24	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	9.74E+08	5.99E+08	0.00E+00	0.00E+00	0.00E+00	6.27E+07	0.00E+00
RB-88	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-89	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	1.18E+10	0.00E+00	3.37E+08	0.00E+00	0.00E+00	0.00E+00	4.57E+08	0.00E+00
SR-90	1.82E+11	0.00E+00	4.60E+10	0.00E+00	0.00E+00	0.00E+00	2.45E+09	0.00E+00
SR-91	2.75E+05	0.00E+00	1.04E+04	0.00E+00	0.00E+00	0.00E+00	6.07E+05	0.00E+00
SR-92	4.65E+00	0.00E+00	1.86E-01	0.00E+00	0.00E+00	0.00E+00	8.81E+01	0.00E+00
Y-90	3.87E+01	0.00E+00	1.04E+00	0.00E+00	0.00E+00	0.00E+00	1.10E+05	0.00E+00
Y-91M	3.36E-20	0.00E+00	1.22E-21	0.00E+00	0.00E+00	0.00E+00	6.59E-17	0.00E+00
Y-91	3.94E+03	0.00E+00	1.05E+02	0.00E+00	0.00E+00	0.00E+00	5.25E+05	0.00E+00
Y-92	3.07E-05	0.00E+00	8.78E-07	0.00E+00	0.00E+00	0.00E+00	8.87E-01	0.00E+00
Y-93	1.22E-01	0.00E+00	3.35E-03	0.00E+00	0.00E+00	0.00E+00	1.82E+03	0.00E+00
ZR-95	3.85E+02	8.45E+01	7.53E+01	0.00E+00	1.21E+02	0.00E+00	8.82E+04	0.00E+00
ZR-97	2.31E-01	3.33E-02	1.97E-02	0.00E+00	4.79E-02	0.00E+00	5.05E+03	0.00E+00
NB-95	3.34E+04	1.30E+04	9.29E+03	0.00E+00	1.22E+04	0.00E+00	2.40E+07	0.00E+00
NB-97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	0.00E+00	9.77E+06	2.42E+06	0.00E+00	2.09E+07	0.00E+00	8.08E+06	0.00E+00
TC-99M	1.60E+00	3.13E+00	5.19E+01	0.00E+00	4.55E+01	1.59E+00	1.78E+03	0.00E+00
TC-101	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	4.45E+02	0.00E+00	1.71E+02	0.00E+00	1.12E+03	0.00E+00	1.15E+04	0.00E+00
RU-105	4.62E-04	0.00E+00	1.68E-04	0.00E+00	4.06E-03	0.00E+00	3.02E-01	0.00E+00
RU-106	8.71E+03	0.00E+00	1.09E+03	0.00E+00	1.18E+04	0.00E+00	1.36E+05	0.00E+00
AG-110M	1.98E+07	1.34E+07	1.07E+07	0.00E+00	2.50E+07	0.00E+00	1.59E+09	0.00E+00
SB-124	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE I-12

DOSE FACTOR TABLE : R(i) - Child, goats milk

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
SB-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	7.45E+06	2.02E+06	9.94E+05	2.09E+06	0.00E+00	0.00E+00	7.19E+06	0.00E+00
TE-127M	2.03E+07	5.46E+06	2.41E+06	4.85E+06	5.79E+07	0.00E+00	1.64E+07	0.00E+00
TE-127	3.59E+02	9.67E+01	7.69E+01	2.48E+02	1.02E+03	0.00E+00	1.40E+04	0.00E+00
TE-129M	2.86E+07	7.99E+06	4.44E+06	9.22E+06	8.40E+07	0.00E+00	3.49E+07	0.00E+00
TE-129	1.59E-10	4.44E-11	3.78E-11	1.14E-10	4.65E-10	0.00E+00	9.90E-09	0.00E+00
TE-131M	1.92E+05	6.65E+04	7.07E+04	1.37E+05	6.43E+05	0.00E+00	2.70E+06	0.00E+00
TE-131	2.13E-33	6.48E-34	6.33E-34	1.63E-33	6.43E-33	0.00E+00	1.12E-32	0.00E+00
TE-132	1.23E+06	5.44E+05	6.57E+05	7.93E+05	5.05E+06	0.00E+00	5.48E+06	0.00E+00
I-130	2.08E+06	4.20E+06	2.16E+06	4.63E+08	6.28E+06	0.00E+00	1.97E+06	0.00E+00
I-131	1.54E+09	1.55E+09	8.78E+08	5.11E+11	2.54E+09	0.00E+00	1.38E+08	0.00E+00
I-132	8.41E-01	1.54E+00	7.10E-01	7.17E+01	2.36E+00	0.00E+00	1.82E+00	0.00E+00
I-133	2.06E+07	2.55E+07	9.66E+06	4.74E+09	4.25E+07	0.00E+00	1.03E+07	0.00E+00
I-134	1.06E-11	1.98E-11	9.09E-12	4.54E-10	3.02E-11	0.00E+00	1.31E-11	0.00E+00
I-135	6.52E+04	1.17E+05	5.55E+04	1.04E+07	1.80E+05	0.00E+00	8.94E+04	0.00E+00
CS-134	5.30E+10	8.69E+10	1.83E+10	0.00E+00	2.69E+10	9.66E+09	4.68E+08	0.00E+00
CS-136	2.89E+09	7.95E+09	5.15E+09	0.00E+00	4.24E+09	6.32E+08	2.80E+08	0.00E+00
CS-137	7.49E+10	7.17E+10	1.06E+10	0.00E+00	2.33E+10	8.40E+09	4.49E+08	0.00E+00
CS-138	1.28E-22	1.78E-22	1.13E-22	0.00E+00	1.25E-22	1.35E-23	8.21E-23	0.00E+00
BA-139	2.48E-08	1.32E-11	7.18E-10	0.00E+00	1.15E-11	7.78E-12	1.43E-06	0.00E+00
BA-140	1.34E+07	1.18E+04	7.84E+05	0.00E+00	3.83E+03	7.01E+03	6.80E+06	0.00E+00
BA-141	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-142	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LA-140	2.33E+00	8.14E-01	2.75E-01	0.00E+00	0.00E+00	0.00E+00	2.27E+04	0.00E+00
LA-142	9.95E-12	3.17E-12	9.94E-13	0.00E+00	0.00E+00	0.00E+00	6.29E-07	0.00E+00
CE-141	2.31E+03	1.15E+03	1.71E+02	0.00E+00	5.05E+02	0.00E+00	1.44E+06	0.00E+00
CE-143	2.25E+01	1.22E+04	1.77E+00	0.00E+00	5.12E+00	0.00E+00	1.79E+05	0.00E+00
CE-144	1.54E+05	4.82E+04	8.21E+03	0.00E+00	2.67E+04	0.00E+00	1.26E+07	0.00E+00
PR-143	8.19E+01	2.46E+01	4.07E+00	0.00E+00	1.33E+01	0.00E+00	8.84E+04	0.00E+00
PR-144	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ND-147	5.15E+01	4.17E+01	3.23E+00	0.00E+00	2.29E+01	0.00E+00	6.61E+04	0.00E+00
W-187	3.47E+03	2.05E+03	9.21E+02	0.00E+00	0.00E+00	0.00E+00	2.89E+05	0.00E+00
NP-239	2.07E+00	1.49E-01	1.05E-01	0.00E+00	4.30E-01	0.00E+00	1.10E+04	0.00E+00

TABLE I-13

DOSE FACTOR TABLE : R(i) - Infant, goats milk

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
H-3	0.00E+00	3.01E+03	3.01E+03	3.01E+03	3.01E+03	3.01E+03	3.01E+03	0.00E+00
C-14	3.23E+06	6.89E+05	6.89E+05	6.89E+05	6.89E+05	6.89E+05	6.89E+05	0.00E+00
NA-24	1.85E+06	1.85E+06	1.85E+06	1.85E+06	1.85E+06	1.85E+06	1.85E+06	0.00E+00
P-32	1.82E+11	1.07E+10	7.06E+09	0.00E+00	0.00E+00	0.00E+00	2.46E+09	0.00E+00
CR-51	0.00E+00	0.00E+00	1.73E+04	1.13E+04	2.46E+03	2.19E+04	5.04E+05	0.00E+00
MN-54	0.00E+00	3.69E+06	8.36E+05	0.00E+00	8.17E+05	0.00E+00	1.36E+06	0.00E+00
MN-56	0.00E+00	3.82E-03	6.59E-04	0.00E+00	3.29E-03	0.00E+00	3.47E-01	0.00E+00
FE-55	1.37E+06	8.83E+05	2.36E+05	0.00E+00	0.00E+00	4.32E+05	1.12E+05	0.00E+00
FE-59	2.50E+06	4.37E+06	1.72E+06	0.00E+00	0.00E+00	1.29E+06	2.09E+06	0.00E+00
CO-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	0.00E+00	2.42E+06	6.03E+06	0.00E+00	0.00E+00	0.00E+00	6.03E+06	0.00E+00
CO-60	0.00E+00	8.21E+06	1.94E+07	0.00E+00	0.00E+00	0.00E+00	1.95E+07	0.00E+00
NI-63	3.24E+09	2.01E+08	1.13E+08	0.00E+00	0.00E+00	0.00E+00	9.98E+06	0.00E+00
NI-65	4.27E-01	4.83E-02	2.20E-02	0.00E+00	0.00E+00	0.00E+00	3.68E+00	0.00E+00
CU-64	0.00E+00	2.07E+04	9.60E+03	0.00E+00	3.51E+04	0.00E+00	4.25E+05	0.00E+00
ZN-65	5.28E+08	1.81E+09	8.35E+08	0.00E+00	8.78E+08	0.00E+00	1.53E+09	0.00E+00
ZN-69	2.52E-12	4.54E-12	3.38E-13	0.00E+00	1.89E-12	0.00E+00	3.70E-10	0.00E+00
ZN-69M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	1.14E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	1.62E-23	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	2.47E+09	1.22E+09	0.00E+00	0.00E+00	0.00E+00	6.33E+07	0.00E+00
RB-88	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB 89	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	2.25E+10	0.00E+00	6.44E+08	0.00E+00	0.00E+00	0.00E+00	4.62E+08	0.00E+00
SR-90	1.98E+11	0.00E+00	5.03E+10	0.00E+00	0.00E+00	0.00E+00	2.47E+09	0.00E+00
SR-91	5.73E+05	0.00E+00	2.07E+04	0.00E+00	0.00E+00	0.00E+00	6.78E+05	0.00E+00
SR-92	9.89E+00	0.00E+00	3.67E-01	0.00E+00	0.00E+00	0.00E+00	1.07E+02	0.00E+00
Y-90	8.18E+01	0.00E+00	2.19E+00	0.00E+00	0.00E+00	0.00E+00	1.13E+05	0.00E+00
Y-91M	7.13E-20	0.00E+00	2.43E-21	0.00E+00	0.00E+00	0.00E+00	2.38E-16	0.00E+00
Y-91	7.40E+03	0.00E+00	1.97E+02	0.00E+00	0.00E+00	0.00E+00	5.30E+05	0.00E+00
Y-92	6.52E-05	0.00E+00	1.83E-06	0.00E+00	0.00E+00	0.00E+00	1.24E+00	0.00E+00
Y-93	2.60E-01	0.00E+00	7.08E-03	0.00E+00	0.00E+00	0.00E+00	2.05E+03	0.00E+00
ZR-95	6.83E+02	1.66E+02	1.18E+02	0.00E+00	1.79E+02	0.00E+00	8.29E+04	0.00E+00
ZR-97	4.89E-01	8.38E-02	3.83E-02	0.00E+00	8.45E-02	0.00E+00	5.35E+03	0.00E+00
NB-95	6.23E+04	2.57E+04	1.48E+04	0.00E+00	1.84E+04	0.00E+00	2.17E+07	0.00E+00
NB-97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	0.00E+00	2.50E+07	4.87E+06	0.00E+00	3.73E+07	0.00E+00	8.23E+06	0.00E+00
TC-99M	3.32E+00	6.84E+00	8.82E+01	0.00E+00	7.36E+01	3.58E+00	1.99E+03	0.00E+00
TC-101	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	9.02E+02	0.00E+00	3.02E+02	0.00E+00	1.88E+03	0.00E+00	1.10E+04	0.00E+00
RU-105	9.75E-04	0.00E+00	3.28E-04	0.00E+00	7.17E-03	0.00E+00	3.88E-01	0.00E+00
RU-106	1.79E+04	0.00E+00	2.24E+03	0.00E+00	2.12E+04	0.00E+00	1.36E+05	0.00E+00
AG-110M	3.67E+07	2.68E+07	1.77E+07	0.00E+00	3.83E+07	0.00E+00	1.39E+09	0.00E+00
SB-124	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE I-13

DOSE FACTOR TABLE : R(i) - Infant, goats milk

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
SB-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	1.52E+07	5.09E+06	2.06E+06	5.12E+06	0.00E+00	0.00E+00	7.26E+06	0.00E+00
TE-127M	4.11E+07	1.36E+07	4.97E+06	1.19E+07	1.01E+08	0.00E+00	1.66E+07	0.00E+00
TE-127	7.61E+02	2.55E+02	1.64E+02	6.20E+02	1.86E+03	0.00E+00	1.60E+04	0.00E+00
TE-129M	5.87E+07	2.01E+07	9.04E+06	2.25E+07	1.47E+08	0.00E+00	3.51E+07	0.00E+00
TE-129	3.37E-10	1.16E-10	7.87E-11	2.83E-10	8.40E-10	0.00E+00	2.70E-08	0.00E+00
TE-131M	4.06E+05	1.63E+05	1.35E+05	3.31E+05	1.12E+06	0.00E+00	2.75E+06	0.00E+00
TE-131	4.51E-33	1.67E-33	1.27E-33	4.02E-33	1.15E-32	0.00E+00	1.82E-31	0.00E+00
TE-132	2.53E+06	1.25E+06	1.17E+06	1.85E+06	7.84E+06	0.00E+00	4.64E+06	0.00E+00
I-130	4.27E+06	9.40E+06	3.77E+06	1.05E+09	1.03E+07	0.00E+00	2.01E+06	0.00E+00
I-131	3.21E+09	3.78E+09	1.66E+09	1.24E+12	4.41E+09	0.00E+00	1.35E+08	0.00E+00
I-132	1.74E+00	3.54E+00	1.26E+00	1.66E+02	3.95E+00	0.00E+00	2.87E+00	0.00E+00
I-133	4.36E+07	6.35E+07	1.86E+07	1.15E+10	7.46E+07	0.00E+00	1.07E+07	0.00E+00
I-134	2.21E-11	4.52E-11	1.61E-11	1.05E-09	5.05E-11	0.00E+00	4.67E-11	0.00E+00
I-135	1.36E+05	2.70E+05	9.83E+04	2.42E+07	3.00E+05	0.00E+00	9.76E+04	0.00E+00
CS-134	8.53E+10	1.59E+11	1.61E+10	0.00E+00	4.10E+10	1.68E+10	4.32E+08	0.00E+00
CS-136	5.65E+09	1.66E+10	6.21E+09	0.00E+00	6.62E+09	1.35E+09	2.52E+08	0.00E+00
CS-137	1.19E+11	1.40E+11	9.91E+09	0.00E+00	3.75E+10	1.52E+10	4.37E+08	0.00E+00
CS-138	2.70E-22	4.40E-22	2.13E-22	0.00E+00	2.19E-22	3.42E-23	7.03E-22	0.00E+00
BA-139	5.27E-08	3.49E-11	1.53E-09	0.00E+00	2.10E-11	2.12E-11	3.34E-06	0.00E+00
BA-140	2.76E+07	2.76E+04	1.42E+06	0.00E+00	6.56E+03	1.70E+04	6.79E+06	0.00E+00
BA-141	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-142	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LA-140	4.87E+00	1.92E+00	4.94E-01	0.00E+00	0.00E+00	0.00E+00	2.25E+04	0.00E+00
LA-142	2.09E-11	7.67E-12	1.84E-12	0.00E+00	0.00E+00	0.00E+00	1.30E-06	0.00E+00
CE-141	4.58E+03	2.79E+03	3.29E+02	0.00E+00	8.62E+02	0.00E+00	1.44E+06	0.00E+00
CE-143	4.77E+01	3.16E+04	3.61E+00	0.00E+00	9.21E+00	0.00E+00	1.85E+05	0.00E+00
CE-144	2.20E+05	9.02E+04	1.23E+04	0.00E+00	3.64E+04	0.00E+00	1.26E+07	0.00E+00
PR-143	1.70E+02	6.34E+01	8.40E+00	0.00E+00	2.36E+01	0.00E+00	8.95E+04	0.00E+00
PR-144	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ND-147	1.02E+02	1.05E+02	6.43E+00	0.00E+00	4.05E+01	0.00E+00	6.65E+04	0.00E+00
W-187	7.30E+03	5.08E+03	1.75E+03	0.00E+00	0.00E+00	0.00E+00	2.98E+05	0.00E+00
NP-239	4.38E+00	3.92E-01	2.21E-01	0.00E+00	7.81E-01	0.00E+00	1.13E+04	0.00E+00

TABLE I-14

DOSE FACTOR TABLE : R(i) - Adult, meat

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
H-3	0.00E+00	2.01E+02	2.01E+02	2.01E+02	2.01E+02	2.01E+02	2.01E+02	0.00E+00
C-14	3.33E+05	6.66E+04	6.66E+04	6.66E+04	6.66E+04	6.66E+04	6.66E+04	0.00E+00
NA-24	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	1.39E-03	0.00E+00
P-32	4.41E+09	2.74E+08	1.71E+08	0.00E+00	0.00E+00	0.00E+00	4.96E+08	0.00E+00
CR-51	0.00E+00	0.00E+00	6.30E+03	3.76E+03	1.39E+03	8.36E+03	1.58E+06	0.00E+00
MN-54	0.00E+00	7.24E+06	1.38E+06	0.00E+00	2.15E+06	0.00E+00	2.22E+07	0.00E+00
MN-56	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-55	2.28E+08	1.58E+08	3.68E+07	0.00E+00	0.00E+00	8.80E+07	9.05E+07	0.00E+00
FE-59	2.28E+08	5.36E+08	2.05E+08	0.00E+00	0.00E+00	1.50E+08	1.79E+09	0.00E+00
CO-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	0.00E+00	1.52E+07	3.40E+07	0.00E+00	0.00E+00	0.00E+00	3.07E+08	0.00E+00
CO-60	0.00E+00	5.84E+07	1.29E+08	0.00E+00	0.00E+00	0.00E+00	1.10E+09	0.00E+00
NI-63	1.46E+10	1.01E+09	4.90E+08	0.00E+00	0.00E+00	0.00E+00	2.11E+08	0.00E+00
NI-65	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CU-64	0.00E+00	2.79E-07	1.31E-07	0.00E+00	7.03E-07	0.00E+00	2.38E-05	0.00E+00
ZN-65	2.82E+08	8.97E+08	4.05E+08	0.00E+00	6.00E+08	0.00E+00	5.65E+08	0.00E+00
ZN-69	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZN-69M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	4.51E+08	2.10E+08	0.00E+00	0.00E+00	0.00E+00	8.90E+07	0.00E+00
RB-88	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-89	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	2.56E+08	0.00E+00	7.36E+06	0.00E+00	0.00E+00	0.00E+00	4.11E+07	0.00E+00
SR-90	9.63E+09	0.00E+00	2.36E+09	0.00E+00	0.00E+00	0.00E+00	2.78E+08	0.00E+00
SR-91	1.58E-10	0.00E+00	6.39E-12	0.00E+00	0.00E+00	0.00E+00	7.53E-10	0.00E+00
SR-92	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-90	1.08E+02	0.00E+00	2.90E+00	0.00E+00	0.00E+00	0.00E+00	1.15E+06	0.00E+00
Y-91M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-91	9.53E+05	0.00E+00	2.55E+04	0.00E+00	0.00E+00	0.00E+00	5.24E+08	0.00E+00
Y-92	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-93	4.87E-12	0.00E+00	1.35E-13	0.00E+00	0.00E+00	0.00E+00	1.55E-07	0.00E+00
ZR-95	1.57E+06	5.02E+05	3.40E+05	0.00E+00	7.88E+05	0.00E+00	1.59E+09	0.00E+00
ZR-97	2.11E-05	4.27E-06	1.95E-06	0.00E+00	6.44E-06	0.00E+00	1.32E+00	0.00E+00
NB-95	2.01E+06	1.12E+06	6.01E+05	0.00E+00	1.11E+06	0.00E+00	6.79E+09	0.00E+00
NB-97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	0.00E+00	1.01E+05	1.91E+04	0.00E+00	2.28E+05	0.00E+00	2.33E+05	0.00E+00
TC-99M	4.74E-21	1.34E-20	1.71E-19	0.00E+00	2.04E-19	6.57E-21	7.93E-18	0.00E+00
TC-101	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	9.12E+07	0.00E+00	3.93E+07	0.00E+00	3.48E+08	0.00E+00	1.06E+10	0.00E+00
RU-105	6.30E-28	0.00E+00	2.49E-28	0.00E+00	8.14E-27	0.00E+00	3.85E-25	0.00E+00
RU-106	2.20E+09	0.00E+00	2.78E+08	0.00E+00	4.25E+09	0.00E+00	1.42E+11	0.00E+00
AG-110M	5.29E+06	4.89E+06	2.91E+06	0.00E+00	9.62E+06	0.00E+00	2.00E+09	0.00E+00
SB-124	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE I-14

DOSE FACTOR TABLE : R(i) - Adult, meat

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
SB-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	3.02E+08	1.09E+08	4.05E+07	9.09E+07	1.23E+09	0.00E+00	1.21E+09	0.00E+00
TE-127M	9.07E+08	3.24E+08	1.10E+08	2.32E+08	3.68E+09	0.00E+00	3.04E+09	0.00E+00
TE-127	2.21E-10	7.94E-11	4.78E-11	1.64E-10	9.01E-10	0.00E+00	1.74E-08	0.00E+00
TE-129M	9.96E+08	3.72E+08	1.58E+08	3.42E+08	4.16E+09	0.00E+00	5.02E+09	0.00E+00
TE-129	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-131M	4.57E+02	2.23E+02	1.86E+02	3.54E+02	2.26E+03	0.00E+00	2.22E+04	0.00E+00
TE-131	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-132	1.43E+06	9.22E+05	8.66E+05	1.02E+06	8.88E+06	0.00E+00	4.36E+07	0.00E+00
I-130	2.18E-06	6.42E-06	2.53E-06	5.44E-04	1.00E-05	0.00E+00	5.52E-06	0.00E+00
I-131	1.06E+07	1.51E+07	8.66E+06	4.95E+09	2.59E+07	0.00E+00	3.99E+06	0.00E+00
I-132	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-133	3.72E-01	6.47E-01	1.97E-01	9.51E+01	1.13E+00	0.00E+00	5.82E-01	0.00E+00
I-134	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-135	4.69E-17	1.23E-16	4.53E-17	8.10E-15	1.97E-16	0.00E+00	1.39E-16	0.00E+00
CS-134	5.13E+08	1.22E+09	9.98E+08	0.00E+00	3.95E+08	1.31E+08	2.14E+07	0.00E+00
CS-136	1.15E+07	4.54E+07	3.27E+07	0.00E+00	2.53E+07	3.46E+06	5.16E+06	0.00E+00
CS-137	6.75E+08	9.23E+08	6.05E+08	0.00E+00	3.13E+08	1.04E+08	1.79E+07	0.00E+00
CS-138	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-139	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-140	2.75E+07	3.45E+04	1.80E+06	0.00E+00	1.17E+04	1.98E+04	5.66E+07	0.00E+00
BA-141	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-142	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LA-140	3.74E-02	1.89E-02	4.98E-03	0.00E+00	0.00E+00	0.00E+00	1.38E+03	0.00E+00
LA-142	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-141	1.24E+04	8.37E+03	9.49E+02	0.00E+00	3.89E+03	0.00E+00	3.20E+07	0.00E+00
CE-143	2.03E-02	1.50E+01	1.66E-03	0.00E+00	6.61E-03	0.00E+00	5.61E+02	0.00E+00
CE-144	1.15E+06	4.81E+05	6.18E+04	0.00E+00	2.85E+05	0.00E+00	3.89E+08	0.00E+00
PR-143	2.00E+04	8.00E+03	9.89E+02	0.00E+00	4.62E+03	0.00E+00	8.74E+07	0.00E+00
PR-144	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ND-147	6.84E+03	7.90E+03	4.73E+02	0.00E+00	4.62E+03	0.00E+00	3.79E+07	0.00E+00
W-187	2.08E-02	1.74E-02	6.09E-03	0.00E+00	0.00E+00	0.00E+00	5.70E+00	0.00E+00
NP-239	2.61E-01	2.56E-02	1.41E-02	0.00E+00	8.00E-02	0.00E+00	5.26E+03	0.00E+00

TABLE I-15

DOSE FACTOR TABLE : R(i) - Teen, meat

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
H-3	0.00E+00	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	1.20E+02	0.00E+00
C-14	2.81E+05	5.62E+04	5.62E+04	5.62E+04	5.62E+04	5.62E+04	5.62E+04	0.00E+00
NA-24	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	1.11E-03	0.00E+00
P-32	3.73E+09	2.31E+08	1.45E+08	0.00E+00	0.00E+00	0.00E+00	3.13E+08	0.00E+00
CR-51	0.00E+00	0.00E+00	5.04E+03	2.80E+03	1.10E+03	7.19E+03	8.46E+05	0.00E+00
MN-54	0.00E+00	5.52E+06	1.09E+06	0.00E+00	1.65E+06	0.00E+00	1.13E+07	0.00E+00
MN-56	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-55	1.85E+08	1.31E+08	3.07E+07	0.00E+00	0.00E+00	8.34E+07	5.69E+07	0.00E+00
FE-59	1.82E+08	4.25E+08	1.64E+08	0.00E+00	0.00E+00	1.34E+08	1.01E+09	0.00E+00
CO-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	0.00E+00	1.17E+07	2.69E+07	0.00E+00	0.00E+00	0.00E+00	1.61E+08	0.00E+00
CO-60	0.00E+00	4.53E+07	1.02E+08	0.00E+00	0.00E+00	0.00E+00	5.90E+08	0.00E+00
NI-63	1.18E+10	8.30E+08	3.98E+08	0.00E+00	0.00E+00	0.00E+00	1.32E+08	0.00E+00
NI-65	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CU-64	0.00E+00	2.28E-07	1.07E-07	0.00E+00	5.76E-07	0.00E+00	1.77E-05	0.00E+00
ZN-65	1.98E+08	6.88E+08	3.21E+08	0.00E+00	4.40E+08	0.00E+00	2.91E+08	0.00E+00
ZN-69	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZN-69M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	3.77E+08	1.77E+08	0.00E+00	0.00E+00	0.00E+00	5.57E+07	0.00E+00
RB-88	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-89	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	2.16E+08	0.00E+00	6.20E+06	0.00E+00	0.00E+00	0.00E+00	2.58E+07	0.00E+00
SR-90	6.23E+09	0.00E+00	1.54E+09	0.00E+00	0.00E+00	0.00E+00	1.75E+08	0.00E+00
SR-91	1.33E-10	0.00E+00	5.29E-12	0.00E+00	0.00E+00	0.00E+00	6.03E-10	0.00E+00
SR-92	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-90	9.11E+01	0.00E+00	2.45E+00	0.00E+00	0.00E+00	0.00E+00	7.51E+05	0.00E+00
Y-91M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-91	8.03E+05	0.00E+00	2.15E+04	0.00E+00	0.00E+00	0.00E+00	3.29E+08	0.00E+00
Y-92	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-93	4.11E-12	0.00E+00	1.13E-13	0.00E+00	0.00E+00	0.00E+00	1.26E-07	0.00E+00
ZR-95	1.25E+06	3.96E+05	2.72E+05	0.00E+00	5.82E+05	0.00E+00	9.13E+08	0.00E+00
ZR-97	1.76E-05	3.49E-06	1.61E-06	0.00E+00	5.29E-06	0.00E+00	9.44E-01	0.00E+00
NB-95	1.57E+06	8.71E+05	4.79E+05	0.00E+00	8.44E+05	0.00E+00	3.72E+09	0.00E+00
NB-97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	0.00E+00	8.31E+04	1.58E+04	0.00E+00	1.90E+05	0.00E+00	1.49E+05	0.00E+00
TC-99M	3.77E-21	1.05E-20	1.36E-19	0.00E+00	1.57E-19	5.83E-21	6.90E-18	0.00E+00
TC-101	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	7.43E+07	0.00E+00	3.17E+07	0.00E+00	2.62E+08	0.00E+00	6.20E+09	0.00E+00
RU-105	5.27E-28	0.00E+00	2.04E-28	0.00E+00	6.65E-27	0.00E+00	4.25E-25	0.00E+00
RU-106	1.85E+09	0.00E+00	2.34E+08	0.00E+00	3.57E+09	0.00E+00	8.89E+10	0.00E+00
AG-110M	4.00E+06	3.79E+06	2.31E+06	0.00E+00	7.23E+06	0.00E+00	1.06E+09	0.00E+00
SB-124	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE I-15

DOSE FACTOR TABLE : R(i) - Teen, meat

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
SB-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	2.55E+08	9.19E+07	3.41E+07	7.13E+07	0.00E+00	0.00E+00	7.53E+08	0.00E+00
TE-127M	7.65E+08	2.71E+08	9.10E+07	1.92E+08	3.10E+09	0.00E+00	1.91E+09	0.00E+00
TE-127	1.88E-10	6.65E-11	4.04E-11	1.29E-10	7.60E-10	0.00E+00	1.45E-08	0.00E+00
TE-129M	8.34E+08	3.10E+08	1.32E+08	2.69E+08	3.49E+09	0.00E+00	3.13E+09	0.00E+00
TE-129	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-131M	3.81E+02	1.83E+02	1.52E+02	2.75E+02	1.90E+03	0.00E+00	1.47E+04	0.00E+00
TE-131	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-132	1.17E+06	7.39E+05	6.95E+05	7.79E+05	7.09E+06	0.00E+00	2.34E+07	0.00E+00
I-130	1.75E-06	5.07E-06	2.02E-06	4.13E-04	7.80E-06	0.00E+00	3.89E-06	0.00E+00
I-131	8.78E+06	1.23E+07	6.60E+06	3.59E+09	2.12E+07	0.00E+00	2.43E+06	0.00E+00
I-132	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-133	3.11E-01	5.28E-01	1.61E-01	7.37E+01	9.26E-01	0.00E+00	3.99E-01	0.00E+00
I-134	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-135	3.82E-17	9.82E-17	3.64E-17	6.32E-15	1.55E-16	0.00E+00	1.09E-16	0.00E+00
CS-134	4.08E+08	9.60E+08	4.45E+08	0.00E+00	3.05E+08	1.16E+08	1.19E+07	0.00E+00
CS-136	8.97E+06	3.53E+07	2.37E+07	0.00E+00	1.92E+07	3.03E+06	2.84E+06	0.00E+00
CS-137	5.60E+08	7.46E+08	2.60E+08	0.00E+00	2.54E+08	9.86E+07	1.06E+07	0.00E+00
CS-138	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-139	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-140	2.27E+07	2.78E+04	1.46E+06	0.00E+00	9.44E+03	1.87E+04	3.50E+07	0.00E+00
BA-141	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-142	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LA-140	3.08E-02	1.51E-02	4.02E-03	0.00E+00	0.00E+00	0.00E+00	8.69E+02	0.00E+00
LA-142	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-141	1.04E+04	6.94E+03	7.97E+02	0.00E+00	3.27E+03	0.00E+00	1.98E+07	0.00E+00
CE-143	1.71E-02	1.24E+01	1.39E-03	0.00E+00	5.58E-03	0.00E+00	3.74E+02	0.00E+00
CE-144	9.70E+05	4.01E+05	5.21E+04	0.00E+00	2.40E+05	0.00E+00	2.44E+08	0.00E+00
PR-143	1.68E+04	6.70E+03	8.36E+02	0.00E+00	3.90E+03	0.00E+00	5.52E+07	0.00E+00
PR-144	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ND-147	6.02E+03	6.55E+03	3.92E+02	0.00E+00	3.85E+03	0.00E+00	2.36E+07	0.00E+00
W-187	1.74E-02	1.42E-02	4.98E-03	0.00E+00	0.00E+00	0.00E+00	3.85E+00	0.00E+00
NP-239	2.28E-01	2.15E-02	1.19E-02	0.00E+00	6.75E-02	0.00E+00	3.46E+03	0.00E+00

TABLE I-16

DOSE FACTOR TABLE : R(i) - Child, meat

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
H-3	0.00E+00	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	1.45E+02	0.00E+00
C-14	5.29E+05	1.06E+05	1.06E+05	1.06E+05	1.06E+05	1.06E+05	1.06E+05	0.00E+00
NA-24	1.77E-03	1.77E-03	1.77E-03	1.77E-03	1.77E-03	1.77E-03	1.77E-03	0.00E+00
P-32	7.03E+09	3.29E+08	2.71E+08	0.00E+00	0.00E+00	0.00E+00	1.94E+08	0.00E+00
CR-51	0.00E+00	0.00E+00	7.85E+03	4.36E+03	1.19E+03	7.96E+03	4.16E+05	0.00E+00
MN-54	0.00E+00	6.31E+06	1.68E+06	0.00E+00	1.77E+06	0.00E+00	5.30E+06	0.00E+00
MN-56	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-55	3.56E+08	1.89E+08	5.85E+07	0.00E+00	0.00E+00	1.07E+08	3.50E+07	0.00E+00
FE-59	3.23E+08	5.23E+08	2.60E+08	0.00E+00	0.00E+00	1.51E+08	5.44E+08	0.00E+00
CO-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	0.00E+00	1.36E+07	4.18E+07	0.00E+00	0.00E+00	0.00E+00	7.96E+07	0.00E+00
CO-60	0.00E+00	5.38E+07	1.59E+08	0.00E+00	0.00E+00	0.00E+00	2.98E+08	0.00E+00
NI-63	2.25E+10	1.21E+09	7.66E+08	0.00E+00	0.00E+00	0.00E+00	8.13E+07	0.00E+00
NI-65	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CU-64	0.00E+00	3.06E-07	1.85E-07	0.00E+00	7.39E-07	0.00E+00	1.44E-05	0.00E+00
ZN-65	2.97E+08	7.92E+08	4.93E+08	0.00E+00	4.99E+08	0.00E+00	1.39E+08	0.00E+00
ZN-69	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZN-69M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	5.34E+08	3.28E+08	0.00E+00	0.00E+00	0.00E+00	3.44E+07	0.00E+00
RB-88	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-89	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	4.10E+08	0.00E+00	1.17E+07	0.00E+00	0.00E+00	0.00E+00	1.59E+07	0.00E+00
SR-90	8.05E+09	0.00E+00	2.04E+09	0.00E+00	0.00E+00	0.00E+00	1.08E+08	0.00E+00
SR-91	2.50E-10	0.00E+00	9.42E-12	0.00E+00	0.00E+00	0.00E+00	5.51E-10	0.00E+00
SR-92	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-90	1.72E+02	0.00E+00	4.61E+00	0.00E+00	0.00E+00	0.00E+00	4.91E+05	0.00E+00
Y-91M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-91	1.52E+06	0.00E+00	4.05E+04	0.00E+00	0.00E+00	0.00E+00	2.02E+08	0.00E+00
Y-92	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Y-93	7.73E-12	0.00E+00	2.12E-13	0.00E+00	0.00E+00	0.00E+00	1.15E-07	0.00E+00
ZR-95	2.23E+06	4.90E+05	4.36E+05	0.00E+00	7.01E+05	0.00E+00	5.11E+08	0.00E+00
ZR-97	3.28E-05	4.74E-06	2.80E-06	0.00E+00	6.80E-06	0.00E+00	7.18E-01	0.00E+00
NB-95	2.71E+06	1.06E+06	7.54E+05	0.00E+00	9.92E+05	0.00E+00	1.95E+09	0.00E+00
NB-97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	0.00E+00	1.16E+05	2.86E+04	0.00E+00	2.47E+05	0.00E+00	9.56E+04	0.00E+00
TC-99M	6.61E-21	1.30E-20	2.15E-19	0.00E+00	1.88E-19	6.58E-21	7.37E-18	0.00E+00
TC-101	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RU-103	1.34E+08	0.00E+00	5.16E+07	0.00E+00	3.38E+08	0.00E+00	3.47E+09	0.00E+00
RU-105	9.83E-28	0.00E+00	3.57E-28	0.00E+00	8.64E-27	0.00E+00	6.42E-25	0.00E+00
RU-106	3.49E+09	0.00E+00	4.35E+08	0.00E+00	4.71E+09	0.00E+00	5.43E+10	0.00E+00
AG-110M	6.64E+06	4.49E+06	3.59E+06	0.00E+00	8.36E+06	0.00E+00	5.34E+08	0.00E+00
SB-124	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE I-16

DOSE FACTOR TABLE : R(i) - Child, meat

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
SB-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	4.79E+08	1.30E+08	6.39E+07	1.34E+08	0.00E+00	0.00E+00	4.62E+08	0.00E+00
TE-127M	1.44E+09	3.88E+08	1.71E+08	3.45E+08	4.11E+09	0.00E+00	1.17E+09	0.00E+00
TE-127	3.53E-10	9.51E-11	7.57E-11	2.44E-10	1.00E-09	0.00E+00	1.38E-08	0.00E+00
TE-129M	1.57E+09	4.39E+08	2.44E+08	5.07E+08	4.62E+09	0.00E+00	1.92E+09	0.00E+00
TE-129	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-131M	7.09E+02	2.45E+02	2.61E+02	5.04E+02	2.37E+03	0.00E+00	9.94E+03	0.00E+00
TE-131	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-132	2.13E+06	9.43E+05	1.14E+06	1.37E+06	8.75E+06	0.00E+00	9.49E+06	0.00E+00
I-130	3.13E-06	6.33E-06	3.26E-06	6.97E-04	9.46E-06	0.00E+00	2.96E-06	0.00E+00
I-131	1.63E+07	1.64E+07	9.30E+06	5.41E+09	2.69E+07	0.00E+00	1.46E+06	0.00E+00
I-132	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-133	5.78E-01	7.15E-01	2.70E-01	1.33E+02	1.19E+00	0.00E+00	2.88E-01	0.00E+00
I-134	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-135	6.91E-17	1.24E-16	5.88E-17	1.10E-14	1.91E-16	0.00E+00	9.47E-17	0.00E+00
CS-134	7.19E+08	1.18E+09	2.49E+08	0.00E+00	3.66E+08	1.31E+08	6.36E+06	0.00E+00
CS-136	1.55E+07	4.25E+07	2.75E+07	0.00E+00	2.27E+07	3.38E+06	1.50E+06	0.00E+00
CS-137	1.03E+09	9.88E+08	1.46E+08	0.00E+00	3.22E+08	1.16E+08	6.19E+06	0.00E+00
CS-138	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-139	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-140	4.19E+07	3.67E+04	2.45E+06	0.00E+00	1.20E+04	2.19E+04	2.12E+07	0.00E+00
BA-141	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BA-142	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LA-140	5.64E-02	1.97E-02	6.64E-03	0.00E+00	0.00E+00	0.00E+00	5.49E+02	0.00E+00
LA-142	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CE-141	1.96E+04	9.76E+03	1.45E+03	0.00E+00	4.28E+03	0.00E+00	1.22E+07	0.00E+00
CE-143	3.21E-02	1.74E+01	2.52E-03	0.00E+00	7.29E-03	0.00E+00	2.55E+02	0.00E+00
CE-144	1.83E+06	5.73E+05	9.76E+04	0.00E+00	3.17E+05	0.00E+00	1.49E+08	0.00E+00
PR-143	3.18E+04	9.54E+03	1.58E+03	0.00E+00	5.17E+03	0.00E+00	3.43E+07	0.00E+00
PR-144	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ND-147	1.13E+04	9.16E+03	7.09E+02	0.00E+00	5.02E+03	0.00E+00	1.45E+07	0.00E+00
W-187	3.23E-02	1.91E-02	8.59E-03	0.00E+00	0.00E+00	0.00E+00	2.69E+00	0.00E+00
NP-239	4.29E-01	3.08E-02	2.16E-02	0.00E+00	8.90E-02	0.00E+00	2.28E+03	0.00E+00

TABLE I-17

DOSE FACTOR TABLE : R(i) - Adult, vegetation

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
H-3	0.00E+00	1.40E+03	1.40E+03	1.40E+03	1.40E+03	1.40E+03	1.40E+03	0.00E+00
C-14	8.97E+05	1.79E+05	1.79E+05	1.79E+05	1.79E+05	1.79E+05	1.79E+05	0.00E+00
NA-24	2.68E+05	2.68E+05	2.68E+05	2.68E+05	2.68E+05	2.68E+05	2.68E+05	0.00E+00
P-32	1.40E+09	8.72E+07	5.42E+07	0.00E+00	0.00E+00	0.00E+00	1.58E+08	0.00E+00
CR-51	0.00E+00	0.00E+00	4.64E+04	2.77E+04	1.02E+04	6.15E+04	1.17E+07	0.00E+00
MN-54	0.00E+00	3.10E+08	5.92E+07	0.00E+00	9.23E+07	0.00E+00	9.50E+08	0.00E+00
MN-56	0.00E+00	1.54E+01	2.74E+00	0.00E+00	1.96E+01	0.00E+00	4.92E+02	0.00E+00
FE-55	2.08E+08	1.43E+08	3.34E+07	0.00E+00	0.00E+00	8.00E+07	8.23E+07	0.00E+00
FE-59	1.26E+08	2.96E+08	1.13E+08	0.00E+00	0.00E+00	8.26E+07	9.85E+08	0.00E+00
CO-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	0.00E+00	3.06E+07	6.86E+07	0.00E+00	0.00E+00	0.00E+00	6.20E+08	0.00E+00
CO-60	0.00E+00	1.65E+08	3.65E+08	0.00E+00	0.00E+00	0.00E+00	3.11E+09	0.00E+00
NI-63	1.03E+10	7.14E+08	3.45E+08	0.00E+00	0.00E+00	0.00E+00	1.49E+08	0.00E+00
NI-65	5.96E+01	7.75E+00	3.54E+00	0.00E+00	0.00E+00	0.00E+00	1.97E+02	0.00E+00
CU-64	0.00E+00	9.14E+03	4.29E+03	0.00E+00	2.31E+04	0.00E+00	7.79E+05	0.00E+00
ZN-65	3.15E+08	1.00E+09	4.53E+08	0.00E+00	6.70E+08	0.00E+00	6.31E+08	0.00E+00
ZN-69	5.06E-06	9.67E-06	6.72E-07	0.00E+00	6.28E-06	0.00E+00	1.45E-06	0.00E+00
ZN-69M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	3.01E+00	0.00E+00	0.00E+00	0.00E+00	4.33E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	2.14E-11	0.00E+00	0.00E+00	0.00E+00	1.68E-16	0.00E+00
BR-85	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	2.19E+08	1.02E+08	0.00E+00	0.00E+00	0.00E+00	4.32E+07	0.00E+00
RB-88	0.00E+00	2.64E-22	1.40E-22	0.00E+00	0.00E+00	0.00E+00	3.65E-33	0.00E+00
RB-89	0.00E+00	2.88E-26	2.03E-26	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	9.94E+09	0.00E+00	2.85E+08	0.00E+00	0.00E+00	0.00E+00	1.59E+09	0.00E+00
SR-90	5.98E+11	0.00E+00	1.47E+11	0.00E+00	0.00E+00	0.00E+00	1.73E+10	0.00E+00
SR-91	3.02E+05	0.00E+00	1.22E+04	0.00E+00	0.00E+00	0.00E+00	1.44E+06	0.00E+00
SR-92	4.15E+02	0.00E+00	1.79E+01	0.00E+00	0.00E+00	0.00E+00	8.21E+03	0.00E+00
Y-90	1.33E+04	0.00E+00	3.56E+02	0.00E+00	0.00E+00	0.00E+00	1.41E+08	0.00E+00
Y-91M	4.76E-09	0.00E+00	1.84E-10	0.00E+00	0.00E+00	0.00E+00	1.40E-08	0.00E+00
Y-91	5.09E+06	0.00E+00	1.36E+05	0.00E+00	0.00E+00	0.00E+00	2.80E+09	0.00E+00
Y-92	8.96E-01	0.00E+00	2.62E-02	0.00E+00	0.00E+00	0.00E+00	1.57E+04	0.00E+00
Y-93	1.68E+02	0.00E+00	4.65E+00	0.00E+00	0.00E+00	0.00E+00	5.34E+06	0.00E+00
ZR-95	1.17E+06	3.75E+05	2.54E+05	0.00E+00	5.89E+05	0.00E+00	1.19E+09	0.00E+00
ZR-97	3.36E+02	6.78E+01	3.10E+01	0.00E+00	1.02E+02	0.00E+00	2.10E+07	0.00E+00
NB-95	1.42E+05	7.90E+04	4.25E+04	0.00E+00	7.81E+04	0.00E+00	4.80E+08	0.00E+00
NB-97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	0.00E+00	6.14E+06	1.17E+06	0.00E+00	1.39E+07	0.00E+00	1.42E+07	0.00E+00
TC-99M	3.06E+00	8.66E+00	1.10E+02	0.00E+00	1.31E+02	4.24E+00	5.12E+03	0.00E+00
TC-101	5.93E-31	8.55E-31	8.39E-30	0.00E+00	1.54E-29	4.37E-31	0.00E+00	0.00E+00
RU-103	4.76E+06	0.00E+00	2.05E+06	0.00E+00	1.82E+07	0.00E+00	5.56E+08	0.00E+00
RU-105	5.29E+01	0.00E+00	2.09E+01	0.00E+00	6.84E+02	0.00E+00	3.24E+04	0.00E+00
RU-106	1.91E+08	0.00E+00	2.42E+07	0.00E+00	3.69E+08	0.00E+00	1.24E+10	0.00E+00
AG-110M	1.05E+07	9.67E+06	5.74E+06	0.00E+00	1.90E+07	0.00E+00	3.95E+09	0.00E+00
SB-124	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE I-17

DOSE FACTOR TABLE : R(i) - Adult, vegetation

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
SB-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	9.62E+07	3.49E+07	1.29E+07	2.89E+07	3.91E+08	0.00E+00	3.84E+08	0.00E+00
TE-127M	[illegible]47E+08	1.24E+08	4.23E+07	8.87E+07	1.41E+09	0.00E+00	1.16E+09	0.00E+00
TE-127	5.[illegible]1E+03	2.02E+03	1.21E+03	4.16E+03	2.29E+04	0.00E+00	4.43E+05	0.00E+00
TE-129M	2.51E+08	9.36E+07	3.97E+07	8.61E+07	1.05E+09	0.00E+00	1.26E+09	0.00E+00
TE-129	7.13E-04	2.68E-04	1.74E-04	5.48E-04	3.00E-03	0.00E+00	5.38E-04	0.00E+00
TE-131M	9.10E+05	4.45E+05	3.71E+05	7.05E+05	4.51E+06	0.00E+00	4.42E+07	0.00E+00
TE-131	1.25E-15	5.21E-16	3.94E-16	1.03E-15	5.47E-15	0.00E+00	1.77E-16	0.00E+00
TE-132	4.30E+06	2.78E+06	2.61E+06	3.07E+06	2.68E+07	0.00E+00	1.31E+08	0.00E+00
I-130	3.90E+05	1.15E+06	4.54E+05	9.75E+07	1.79E+06	0.00E+00	9.90E+05	0.00E+00
I-131	8.07E+07	1.15E+08	6.61E+07	3.78E+10	1.98E+08	0.00E+00	3.04E+07	0.00E+00
I-132	5.57E+01	1.49E+02	5.21E+01	5.21E+03	2.37E+02	0.00E+00	2.80E+01	0.00E+00
I-133	2.08E+06	3.61E+06	1.10E+06	5.31E+08	6.31E+06	0.00E+00	3.25E+06	0.00E+00
I-134	8.84E-05	2.40E-04	8.59E-05	4.16E-03	3.82E-04	0.00E+00	2.09E-07	0.00E+00
I-135	3.85E+04	1.01E+05	3.72E+04	6.65E+06	1.62E+05	0.00E+00	1.14E+05	0.00E+00
CS-134	4.62E+09	1.10E+10	8.99E+09	0.00E+00	3.56E+09	1.18E+09	1.92E+08	0.00E+00
CS-136	4.26E+07	1.68E+08	1.21E+08	0.00E+00	9.37E+07	1.28E+07	1.91E+07	0.00E+00
CS-137	6.29E+09	8.61E+09	5.64E+09	0.00E+00	2.92E+09	9.71E+08	1.67E+08	0.00E+00
CS-138	3.39E-11	6.70E-11	3.32E-11	0.00E+00	4.92E-11	4.86E-12	2.86E-16	0.00E+00
BA-139	2.70E-02	1.92E-05	7.91E-04	0.00E+00	1.80E-05	1.09E-05	4.79E-02	0.00E+00
BA-140	1.28E+08	1.61E+05	8.41E+06	0.00E+00	5.48E+04	9.23E+04	2.64E+08	0.00E+00
BA-141	8.94E-22	6.76E-25	3.02E-23	0.00E+00	6.28E-25	3.83E-25	4.21E-31	0.00E+00
BA-142	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LA-140	1.97E+03	9.95E+02	2.63E+02	0.00E+00	0.00E+00	0.00E+00	7.30E+07	0.00E+00
LA-142	1.92E-04	8.75E-05	2.18E-05	0.00E+00	0.00E+00	0.00E+00	6.39E-01	0.00E+00
CE-141	1.97E+05	1.33E+05	1.51E+04	0.00E+00	6.18E+04	0.00E+00	5.09E+08	0.00E+00
CE-143	9.95E+02	7.36E+05	8.14E+01	0.00E+00	3.24E+02	0.00E+00	2.75E+07	0.00E+00
CE-144	3.26E+07	1.36E+07	1.75E+06	0.00E+00	8.09E+06	0.00E+00	1.10E+10	0.00E+00
PR-143	6.25E+04	2.51E+04	3.10E+03	0.00E+00	1.45E+04	0.00E+00	2.74E+08	0.00E+00
PR-144	2.36E-26	9.81E-27	1.20E-27	0.00E+00	5.53E-27	0.00E+00	3.40E-33	0.00E+00
ND-147	3.33E+04	3.85E+04	2.30E+03	0.00E+00	2.25E+04	0.00E+00	1.85E+08	0.00E+00
W-187	3.79E+04	3.17E+04	1.11E+04	0.00E+00	0.00E+00	0.00E+00	1.04E+07	0.00E+00
NP-239	1.43E+03	1.40E+02	7.73E+01	0.00E+00	4.37E+02	0.00E+00	2.88E+07	0.00E+00

TABLE I-18

DOSE FACTOR TABLE : R(i) - Teen, vegetation

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
H-3	0.00E+00	1.60E+03	1.60E+03	1.60E+03	1.60E+03	1.60E+03	1.60E+03	0.00E+00
C-14	1.45E+06	2.91E+05	2.91E+05	2.91E+05	2.91E+05	2.91E+05	2.91E+05	0.00E+00
NA-24	2.38E+05	2.38E+05	2.38E+05	2.38E+05	2.38E+05	2.38E+05	2.38E+05	0.00E+00
P-32	1.61E+09	9.95E+07	6.23E+07	0.00E+00	0.00E+00	0.00E+00	1.35E+08	0.00E+00
CR-51	0.00E+00	0.00E+00	6.16E+04	3.42E+04	1.35E+04	8.79E+04	1.03E+07	0.00E+00
MN-54	0.00E+00	4.51E+08	8.94E+07	0.00E+00	1.34E+08	0.00E+00	9.24E+08	0.00E+00
MN-56	0.00E+00	1.39E+01	2.47E+00	0.00E+00	1.76E+01	0.00E+00	9.16E+02	0.00E+00
FE-55	3.23E+08	2.29E+08	5.34E+07	0.00E+00	0.00E+00	1.45E+08	9.90E+07	0.00E+00
FE-59	1.79E+08	4.17E+08	1.61E+08	0.00E+00	0.00E+00	1.32E+08	9.87E+08	0.00E+00
CO-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	0.00E+00	4.34E+07	1.00E+08	0.00E+00	0.00E+00	0.00E+00	5.98E+08	0.00E+00
CO-60	0.00E+00	2.46E+08	5.54E+08	0.00E+00	0.00E+00	0.00E+00	3.21E+09	0.00E+00
NI-63	1.59E+10	1.12E+09	5.39E+08	0.00E+00	0.00E+00	0.00E+00	1.79E+08	0.00E+00
NI-65	5.55E+01	7.09E+00	3.23E+00	0.00E+00	0.00E+00	0.00E+00	3.85E+02	0.00E+00
CU-64	0.00E+00	8.28E+03	3.90E+03	0.00E+00	2.10E+04	0.00E+00	6.43E+05	0.00E+00
ZN-65	4.20E+08	1.46E+09	6.81E+08	0.00E+00	9.34E+08	0.00E+00	6.18E+08	0.00E+00
ZN-69	4.73E-06	9.02E-06	6.31E-07	0.00E+00	5.89E-06	0.00E+00	1.66E-05	0.00E+00
ZN-69M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	2.82E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	1.95E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	2.73E+08	1.28E+08	0.00E+00	0.00E+00	0.00E+00	4.04E+07	0.00E+00
RB-88	0.00E+00	2.44E-22	1.30E-22	0.00E+00	0.00E+00	0.00E+00	2.09E-29	0.00E+00
RB-89	0.00E+00	2.59E-26	1.83E-26	0.00E+00	0.00E+00	0.00E+00	3.98E-35	0.00E+00
SR-89	1.51E+10	0.00E+00	4.32E+08	0.00E+00	0.00E+00	0.00E+00	1.80E+09	0.00E+00
SR-90	7.43E+11	0.00E+00	1.84E+11	0.00E+00	0.00E+00	0.00E+00	2.09E+10	0.00E+00
SR-91	2.82E+05	0.00E+00	1.12E+04	0.00E+00	0.00E+00	0.00E+00	1.28E+06	0.00E+00
SR-92	3.86E+02	0.00E+00	1.65E+01	0.00E+00	0.00E+00	0.00E+00	9.83E+03	0.00E+00
Y-90	1.24E+04	0.00E+00	3.34E+02	0.00E+00	0.00E+00	0.00E+00	1.02E+08	0.00E+00
Y-91M	4.43E-09	0.00E+00	1.69E-10	0.00E+00	0.00E+00	0.00E+00	2.09E-07	0.00E+00
Y-91	7.81E+06	0.00E+00	2.09E+05	0.00E+00	0.00E+00	0.00E+00	3.20E+09	0.00E+00
Y-92	8.42E-01	0.00E+00	2.43E-02	0.00E+00	0.00E+00	0.00E+00	2.31E+04	0.00E+00
Y-93	1.58E+02	0.00E+00	4.33E+00	0.00E+00	0.00E+00	0.00E+00	4.82E+06	0.00E+00
ZR-95	1.71E+06	5.41E+05	3.72E+05	0.00E+00	7.95E+05	0.00E+00	1.25E+09	0.00E+00
ZR-97	3.11E+02	6.15E+01	2.83E+01	0.00E+00	9.33E+01	0.00E+00	1.67E+07	0.00E+00
NB-95	1.92E+05	1.06E+05	5.86E+04	0.00E+00	1.03E+05	0.00E+00	4.55E+08	0.00E+00
NB-97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	0.00E+00	5.64E+06	1.08E+06	0.00E+00	1.29E+07	0.00E+00	1.01E+07	0.00E+00
TC-99M	2.70E+00	7.54E+00	9.77E+01	0.00E+00	1.12E+02	4.18E+00	4.95E+03	0.00E+00
TC-101	5.52E-31	7.85E-31	7.71E-30	0.00E+00	1.42E-29	4.78E-31	1.34E-37	0.00E+00
RU-103	6.80E+06	0.00E+00	2.91E+06	0.00E+00	2.40E+07	0.00E+00	5.68E+08	0.00E+00
RU-105	4.92E+01	0.00E+00	1.91E+01	0.00E+00	6.20E+02	0.00E+00	3.97E+04	0.00E+00
RU-106	3.07E+08	0.00E+00	3.87E+07	0.00E+00	5.92E+08	0.00E+00	1.47E+10	0.00E+00
AG-110M	1.50E+07	1.42E+07	8.65E+06	0.00E+00	2.71E+07	0.00E+00	4.00E+09	0.00E+00
SB-124	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE I-18

DOSE FACTOR TABLE : R(i) - Teen, vegetation

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
SB-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	1.48E+08	5.32E+07	1.97E+07	4.13E+07	0.00E+00	0.00E+00	4.36E+08	0.00E+00
TE-127M	5.48E+08	1.94E+08	6.52E+07	1.30E+08	2.22E+09	0.00E+00	1.37E+09	0.00E+00
TE-127	5.29E+03	1.88E+03	1.14E+03	3.65E+03	2.14E+04	0.00E+00	4.09E+05	0.00E+00
TE-129M	3.61E+08	1.34E+08	5.71E+07	1.16E+08	1.51E+09	0.00E+00	1.35E+09	0.00E+00
TE-129	6.68E-04	2.49E-04	1.63E-04	4.77E-04	2.80E-03	0.00E+00	3.65E-03	0.00E+00
TE-131M	8.42E+05	4.04E+05	3.37E+05	6.07E+05	4.21E+06	0.00E+00	3.24E+07	0.00E+00
TE-131	1.16E-15	4.78E-16	3.62E-16	8.93E-16	5.07E-15	0.00E+00	9.52E-17	0.00E+00
TE-132	3.90E+06	2.47E+06	2.33E+06	2.61E+06	2.37E+07	0.00E+00	7.83E+07	0.00E+00
I-130	3.49E+05	1.01E+06	4.03E+05	8.22E+07	1.55E+06	0.00E+00	7.75E+05	0.00E+00
I-131	7.67E+07	1.07E+08	5.77E+07	3.14E+10	1.85E+08	0.00E+00	2.13E+07	0.00E+00
I-132	5.02E+01	1.31E+02	4.72E+01	4.43E+03	2.07E+02	0.00E+00	5.72E+01	0.00E+00
I-133	1.93E+06	3.27E+06	9.99E+05	4.57E+08	5.74E+06	0.00E+00	2.48E+06	0.00E+00
I-134	7.99E-05	2.12E-04	7.61E-05	3.53E-03	3.34E-04	0.00E+00	2.79E-06	0.00E+00
I-135	3.48E+04	8.96E+04	3.32E+04	5.76E+06	1.42E+05	0.00E+00	9.93E+04	0.00E+00
CS-134	7.03E+09	1.66E+10	7.68E+09	0.00E+00	5.26E+09	2.01E+09	2.06E+08	0.00E+00
CS-136	4.37E+07	1.72E+08	1.15E+08	0.00E+00	9.36E+07	1.47E+07	1.38E+07	0.00E+00
CS-137	1.00E+10	1.33E+10	4.65E+09	0.00E+00	4.54E+09	1.76E+09	1.90E+08	0.00E+00
CS-138	3.13E-11	6.01E-11	3.00E-11	0.00E+00	4.44E-11	5.16E-12	2.73E-14	0.00E+00
BA-139	2.54E-02	1.79E-05	7.40E-04	0.00E+00	1.69E-05	1.23E-05	2.27E-01	0.00E+00
BA-140	1.38E+08	1.69E+05	8.89E+06	0.00E+00	5.73E+04	1.14E+05	2.13E+08	0.00E+00
BA-141	8.36E-22	6.24E-25	2.79E-23	0.00E+00	5.79E-25	4.27E-25	1.78E-27	0.00E+00
BA-142	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LA-140	1.80E+03	8.86E+02	2.36E+02	0.00E+00	0.00E+00	0.00E+00	5.09E+07	0.00E+00
LA-142	1.77E-04	7.84E-05	1.95E-05	0.00E+00	0.00E+00	0.00E+00	2.39E+00	0.00E+00
CE-141	2.82E+05	1.89E+05	2.17E+04	0.00E+00	8.87E+04	0.00E+00	5.39E+08	0.00E+00
CE-143	9.30E+02	6.77E+05	7.56E+01	0.00E+00	3.04E+02	0.00E+00	2.04E+07	0.00E+00
CE-144	5.23E+07	2.16E+07	2.81E+06	0.00E+00	1.29E+07	0.00E+00	1.32E+10	0.00E+00
PR-143	6.99E+04	2.79E+04	3.48E+03	0.00E+00	1.62E+04	0.00E+00	2.30E+08	0.00E+00
PR-144	2.22E-26	9.07E-27	1.12E-27	0.00E+00	5.20E-27	0.00E+00	2.44E-29	0.00E+00
ND-147	3.62E+04	3.93E+04	2.36E+03	0.00E+00	2.31E+04	0.00E+00	1.42E+08	0.00E+00
W-187	3.52E+04	2.87E+04	1.01E+04	0.00E+00	0.00E+00	0.00E+00	7.77E+06	0.00E+00
NP-239	1.38E+03	1.31E+02	7.25E+01	0.00E+00	4.10E+02	0.00E+00	2.10E+07	0.00E+00

TABLE I-19

DOSE FACTOR TABLE : R(i) - Child, vegetation

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
H-3	0.00E+00	2.49E+03	2.49E+03	2.49E+03	2.49E+03	2.49E+03	2.49E+03	0.00E+00
C-14	3.50E+06	7.01E+05	7.01E+05	7.01E+05	7.01E+05	7.01E+05	7.01E+05	0.00E+00
NA-24	3.71E+05	3.71E+05	3.71E+05	3.71E+05	3.71E+05	3.71E+05	3.71E+05	0.00E+00
P-32	3.36E+09	1.57E+08	1.30E+08	0.00E+00	0.00E+00	0.00E+00	9.30E+07	0.00E+00
CR-51	0.00E+00	0.00E+00	1.17E+05	6.49E+04	1.77E+04	1.18E+05	6.20E+06	0.00E+00
MN-54	0.00E+00	6.59E+08	1.76E+08	0.00E+00	1.85E+08	0.00E+00	5.53E+08	0.00E+00
MN-56	0.00E+00	1.82E+01	4.11E+00	0.00E+00	2.20E+01	0.00E+00	2.64E+03	0.00E+00
FE-55	7.94E+08	4.21E+08	1.30E+08	0.00E+00	0.00E+00	2.38E+08	7.80E+07	0.00E+00
FE-59	3.96E+08	6.41E+08	3.19E+08	0.00E+00	0.00E+00	1.86E+08	6.68E+08	0.00E+00
CO-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	0.00E+00	6.41E+07	1.96E+08	0.00E+00	0.00E+00	0.00E+00	3.74E+08	0.00E+00
CO-60	0.00E+00	3.75E+08	1.10E+09	0.00E+00	0.00E+00	0.00E+00	2.07E+09	0.00E+00
NI-63	3.91E+10	2.09E+09	1.33E+09	0.00E+00	0.00E+00	0.00E+00	1.41E+08	0.00E+00
NI-65	1.02E+02	9.59E+00	5.60E+00	0.00E+00	0.00E+00	0.00E+00	1.17E+03	0.00E+00
CU-64	0.00E+00	1.09E+04	6.60E+03	0.00E+00	2.64E+04	0.00E+00	5.13E+05	0.00E+00
ZN-65	8.06E+08	2.15E+09	1.34E+09	0.00E+00	1.35E+09	0.00E+00	3.77E+08	0.00E+00
ZN-69	8.73E-06	1.26E-05	1.17E-06	0.00E+00	7.66E-06	0.00E+00	7.96E-04	0.00E+00
ZN-69M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	5.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	3.30E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	4.51E+08	2.78E+08	0.00E+00	0.00E+00	0.00E+00	2.90E+07	0.00E+00
RB-88	0.00E+00	3.37E-22	2.34E-22	0.00E+00	0.00E+00	0.00E+00	1.65E-23	0.00E+00
RB-89	0.00E+00	3.42E-26	3.04E-26	0.00E+00	0.00E+00	0.00E+00	2.98E-28	0.00E+00
SR-89	3.58E+10	0.00E+00	1.02E+09	0.00E+00	0.00E+00	0.00E+00	1.39E+09	0.00E+00
SR-90	1.23E+12	0.00E+00	3.12E+11	0.00E+00	0.00E+00	0.00E+00	1.66E+10	0.00E+00
SR-91	5.20E+05	0.00E+00	1.96E+04	0.00E+00	0.00E+00	0.00E+00	1.15E+06	0.00E+00
SR-92	7.07E+02	0.00E+00	2.84E+01	0.00E+00	0.00E+00	0.00E+00	1.34E+04	0.00E+00
Y-90	2.30E+04	0.00E+00	6.17E+02	0.00E+00	0.00E+00	0.00E+00	6.56E+07	0.00E+00
Y-91M	8.12E-09	0.00E+00	2.95E-10	0.00E+00	0.00E+00	0.00E+00	1.59E-05	0.00E+00
Y-91	1.86E+07	0.00E+00	4.97E+05	0.00E+00	0.00E+00	0.00E+00	2.47E+09	0.00E+00
Y-92	1.55E+00	0.00E+00	4.43E-02	0.00E+00	0.00E+00	0.00E+00	4.48E+04	0.00E+00
Y-93	2.91E+02	0.00E+00	7.98E+00	0.00E+00	0.00E+00	0.00E+00	4.34E+06	0.00E+00
ZR-95	3.84E+06	8.44E+05	7.52E+05	0.00E+00	1.21E+06	0.00E+00	8.81E+08	0.00E+00
ZR-97	5.68E+02	8.20E+01	4.84E+01	0.00E+00	1.18E+02	0.00E+00	1.24E+07	0.00E+00
NB-95	4.09E+05	1.59E+05	1.14E+05	0.00E+00	1.50E+05	0.00E+00	2.95E+08	0.00E+00
NB-97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MO-99	0.00E+00	7.70E+06	1.91E+06	0.00E+00	1.64E+07	0.00E+00	6.37E+06	0.00E+00
TC-99M	4.65E+00	9.12E+00	1.51E+02	0.00E+00	1.32E+02	4.63E+00	5.19E+03	0.00E+00
TC-101	1.02E-30	1.06E-30	1.35E-29	0.00E+00	1.81E-29	5.62E-31	3.38E-30	0.00E+00
RU-103	1.53E+07	0.00E+00	5.88E+06	0.00E+00	3.85E+07	0.00E+00	3.95E+08	0.00E+00
RU-105	9.01E+01	0.00E+00	3.27E+01	0.00E+00	7.92E+02	0.00E+00	5.88E+04	0.00E+00
RU-106	7.39E+08	0.00E+00	9.22E+07	0.00E+00	9.98E+08	0.00E+00	1.15E+10	0.00E+00
AG-110M	3.19E+07	2.15E+07	1.72E+07	0.00E+00	4.01E+07	0.00E+00	2.56E+09	0.00E+00
SB-124	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE I-19

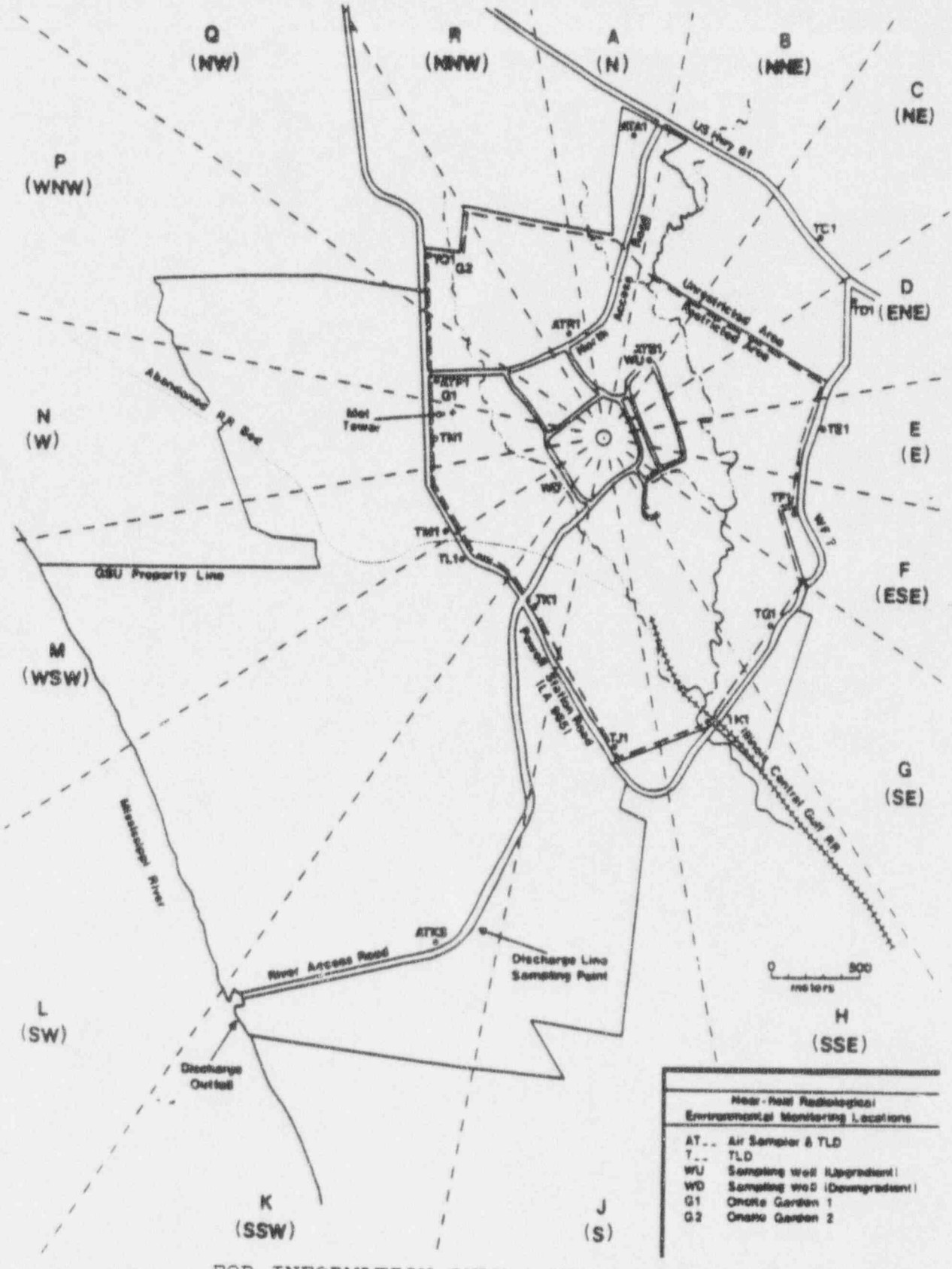
DOSE FACTOR TABLE : R(i) - Child, vegetation

Units are m2*mrem/yr per uCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	Gitract	Skin
SB-125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TE-125M	3.49E+08	9.47E+07	4.66E+07	9.80E+07	0.00E+00	0.00E+00	3.37E+08	0.00E+00
TE-127M	1.31E+09	3.54E+08	1.56E+08	3.14E+08	3.75E+09	0.00E+00	1.06E+09	0.00E+00
TE-127	9.76E+03	2.63E+03	2.09E+03	6.76E+03	2.78E+04	0.00E+00	3.81E+05	0.00E+00
TE-129M	8.39E+08	2.34E+08	1.30E+08	2.71E+08	2.46E+09	0.00E+00	1.02E+09	0.00E+00
TE-129	1.24E-03	3.45E-04	2.94E-04	8.82E-04	3.62E-03	0.00E+00	7.70E-02	0.00E+00
TE-131M	1.54E+06	5.32E+05	5.66E+05	1.09E+06	5.15E+06	0.00E+00	2.16E+07	0.00E+00
TE-131	2.14E-15	6.51E-16	6.35E-16	1.63E-15	6.46E-15	0.00E+00	1.12E-14	0.00E+00
TE-132	6.99E+06	3.10E+06	3.74E+06	4.51E+06	2.87E+07	0.00E+00	3.12E+07	0.00E+00
I-130	6.12E+05	1.24E+06	6.37E+05	1.36E+08	1.85E+06	0.00E+00	5.78E+05	0.00E+00
I-131	1.43E+08	1.44E+08	8.16E+07	4.75E+10	2.36E+08	0.00E+00	1.28E+07	0.00E+00
I-132	8.91E+01	1.64E+02	7.53E+01	7.60E+03	2.51E+02	0.00E+00	1.93E+02	0.00E+00
I-133	3.52E+06	4.35E+06	1.65E+06	8.08E+08	7.25E+06	0.00E+00	1.75E+06	0.00E+00
I-134	1.42E-04	2.64E-04	1.21E-04	6.07E-03	4.03E-04	0.00E+00	1.75E-04	0.00E+00
I-135	6.18E+04	1.11E+05	5.26E+04	9.86E+06	1.71E+05	0.00E+00	8.48E+04	0.00E+00
CS-134	1.59E+10	2.61E+10	5.50E+09	0.00E+00	8.08E+09	2.90E+09	1.41E+08	0.00E+00
CS-136	8.23E+07	2.26E+08	1.46E+08	0.00E+00	1.20E+08	1.80E+07	7.95E+06	0.00E+00
CS-137	2.37E+10	2.27E+10	3.35E+09	0.00E+00	7.39E+09	2.66E+09	1.42E+08	0.00E+00
CS-138	5.69E-11	7.91E-11	5.02E-11	0.00E+00	5.57E-11	5.99E-12	3.64E-11	0.00E+00
BA-139	4.69E-02	2.50E-05	1.36E-03	0.00E+00	2.18E-05	1.47E-05	2.70E+00	0.00E+00
BA-140	2.76E+08	2.42E+05	1.61E+07	0.00E+00	7.88E+04	1.44E+05	1.40E+08	0.00E+00
BA-141	1.54E-21	8.64E-25	5.02E-23	0.00E+00	7.47E-25	5.07E-24	8.79E-22	0.00E+00
BA-142	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
LA-140	3.24E+03	1.13E+03	3.82E+02	0.00E+00	0.00E+00	0.00E+00	3.16E+07	0.00E+00
LA-142	3.20E-04	1.02E-04	3.19E-05	0.00E+00	0.00E+00	0.00E+00	2.02E+01	0.00E+00
CE-141	6.55E+05	3.26E+05	4.85E+04	0.00E+00	1.43E+05	0.00E+00	4.07E+08	0.00E+00
CE-143	1.71E+03	9.29E+05	1.35E+02	0.00E+00	3.90E+02	0.00E+00	1.36E+07	0.00E+00
CE-144	1.26E+08	3.95E+07	6.73E+06	0.00E+00	2.19E+07	0.00E+00	1.03E+10	0.00E+00
PR-143	1.45E+05	4.36E+04	7.21E+03	0.00E+00	2.36E+04	0.00E+00	1.57E+08	0.00E+00
PR-144	4.11E-26	1.27E-26	2.07E-27	0.00E+00	6.73E-27	0.00E+00	2.74E-23	0.00E+00
ND-147	7.14E+04	5.78E+04	4.48E+03	0.00E+00	3.17E+04	0.00E+00	9.16E+07	0.00E+00
W-187	6.41E+04	3.79E+04	1.70E+04	0.00E+00	0.00E+00	0.00E+00	5.33E+06	0.00E+00
NP-239	2.56E+03	1.83E+02	1.29E+02	0.00E+00	5.31E+02	0.00E+00	1.36E+07	0.00E+00

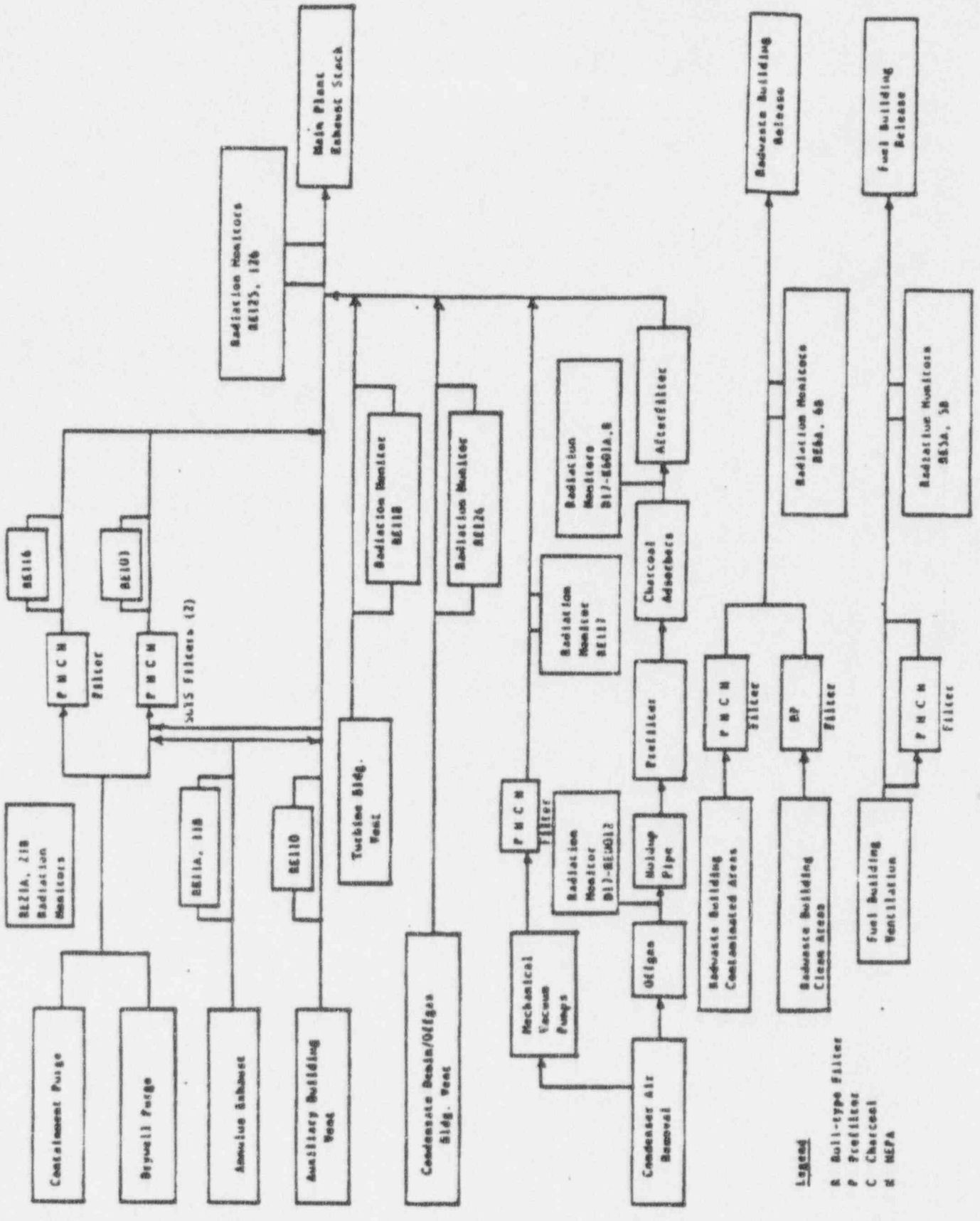
FIGURE - 1

RESTRICTED AREA AND NEAR-FIELD ENVIRONMENTAL MONITORING LOCATIONS



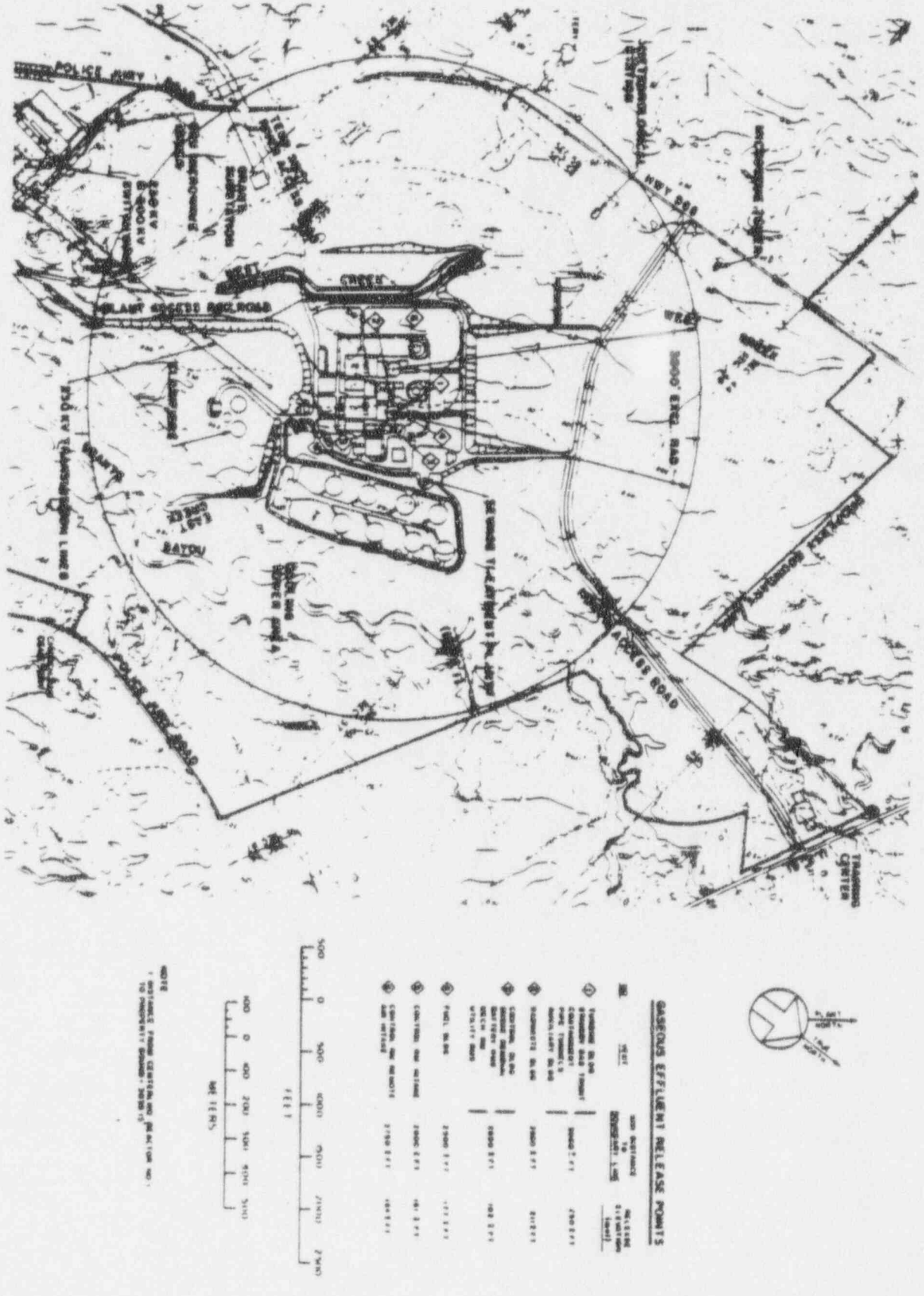
FOR INFORMATION ONLY - NOT A PERMANENT RECORD

FIGURE - 2 SCHEMATIC OF GASEOUS RADWASTE SYSTEM



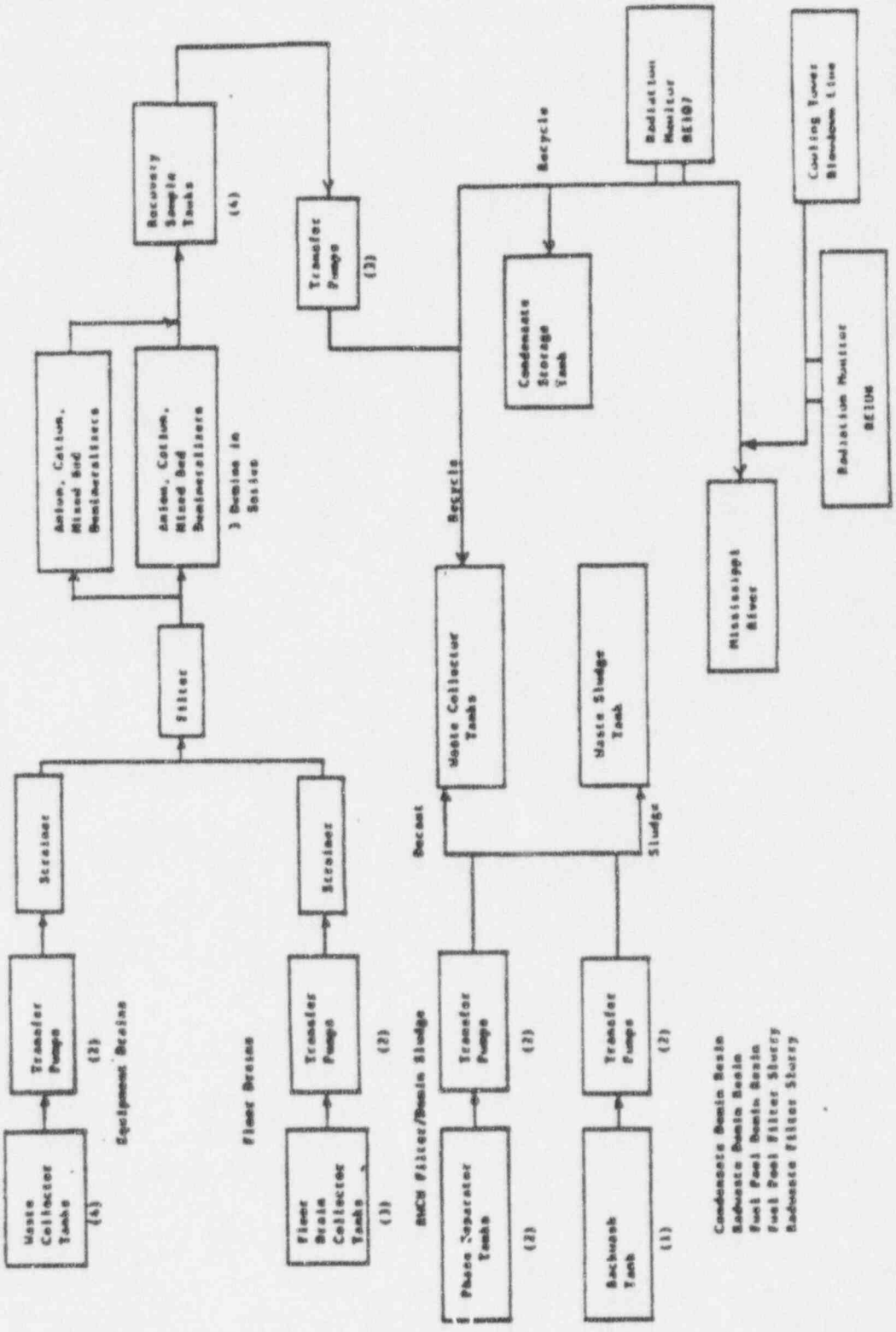
FOR INFORMATION ONLY - NOT A PERMANENT RECORD

FIGURE - 3 EFFLUENT RELEASE POINTS



FOR INFORMATION ONLY - NOT A PERMANENT RECORD

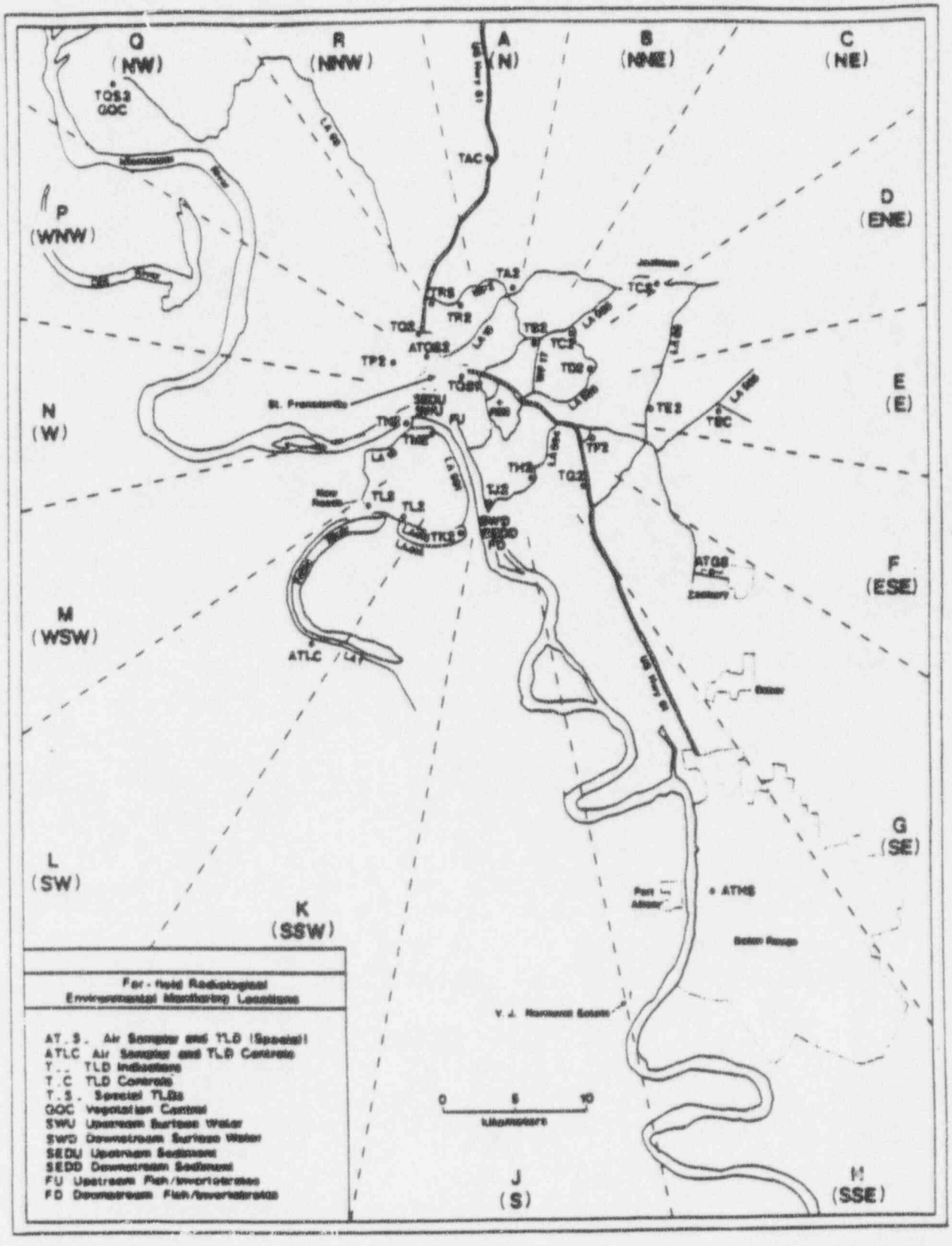
FIGURE - 4 SCHEMATIC OF LIQUID RADWASTE SYSTEM



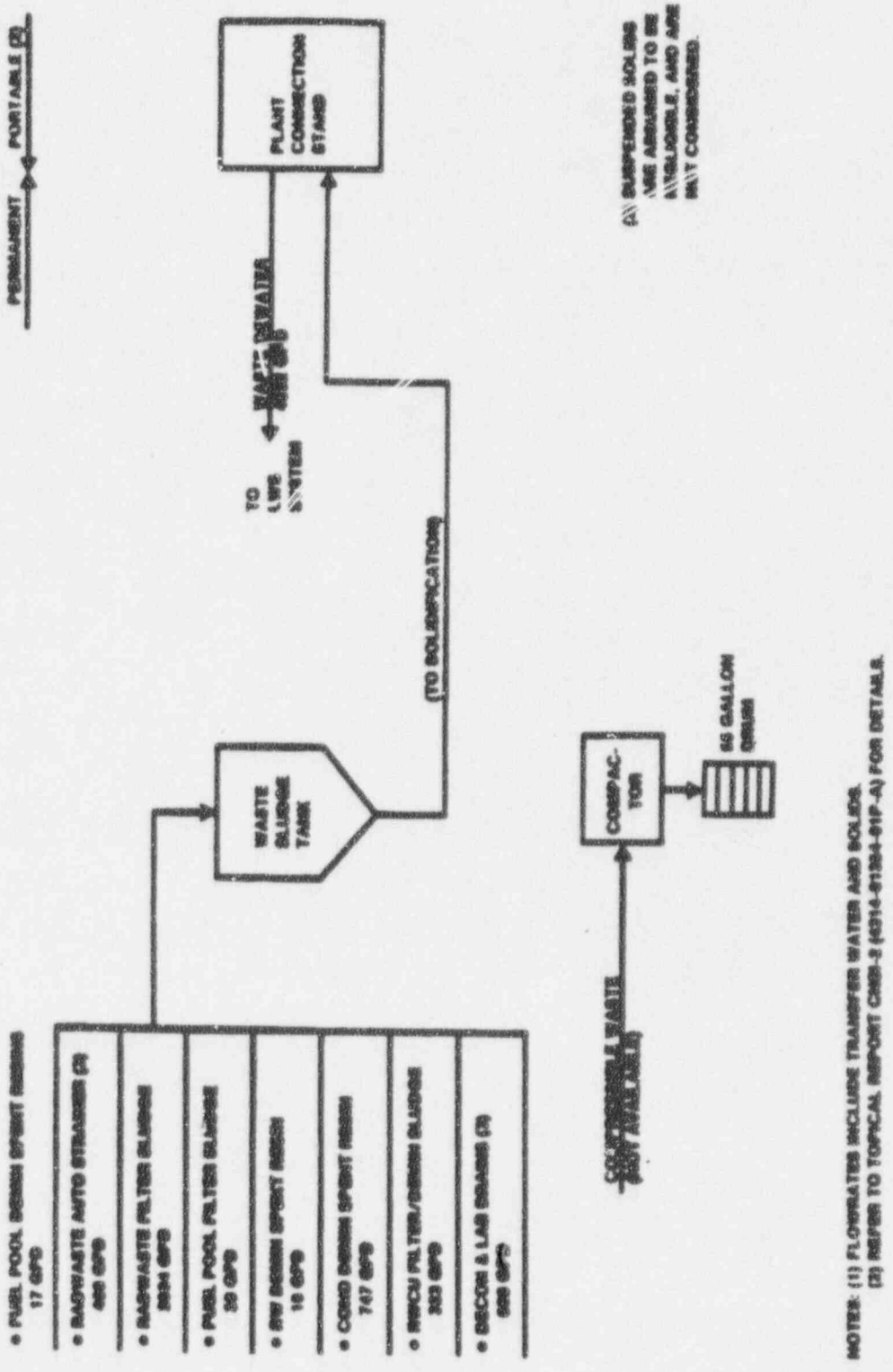
FOR INFORMATION ONLY - NOT A PERMANENT RECORD

FIGURE - 5

FAR-FIELD RADIOLOGICAL ENVIRONMENTAL MONITORING LOCATIONS_



FOR INFORMA' ON ONLY - NOT A PERMANENT RECORD



ATTACHMENT - 1	ODCM/PROCEDURE REVISION SHEET NO. _____

DESCRIBE THE INFORMATION TO BE CHANGED INCLUDE THE RATIONALE FOR AND A COMPLETE DESCRIPTION OF THE CHANGE(S) MADE TO THE ODCM:

COMMENTS: _____

WILL THIS CHANGE REDUCE THE ACCURACY OR RELIABILITY OF DOSE CALCULATIONS OR SETPOINT DETERMINATIONS (TECHNICAL SPECIFICATION 6.14)? YES____ NO____

WILL THIS CHANGE REQUIRED REVISION TO LOWER TIER IMPLEMENTING PROCEDURES OR COMPUTER PROGRAMS. YES____ NO____

THESE CHANGES HAVE BEEN REVIEWED AND FOUND ACCEPTABLE, PURSUANT TO TECHNICAL SPECIFICATION 6.5.2.

REVIEWED, RADIOLOGICAL ENGINEERING SUPERVISOR: _____/_____
DATE

REVIEWED, DIRECTOR - RADIOLOGICAL PROGRAMS: _____/_____
DATE

PROCEDURE CROSS – REFEkENCE SHEET (LICENSEE COMMITMENTS)

PROCEDURE RSP-0008 REVISION 4 B

REFERENCE	PARAGRAPH	REMARKS
4.11.1.1-1	2.2.1 2.2.2.1	COMPLIANCE WITH 10CFR20 LIMITS
3.11.1.1	2.2.1	COMPLIANCE WITH 10CFR20 LIMITS
6.14	1.5.1 1.5.3	REPORTING OF ODCM CHANGES USE OF ODCM REVISION SHEET
3.3.7.10	2.3.1	LIQUID MONITOR SETPOINTS
3.11.1.1	2.3.1	LIQUID CONCENTRATION LIMITS
4.11.1.1.1-1	2.3.2.1	LIQUID SAMPLING
3.11.1.1	2.3.2.1	LIQUID SAMPLING
3.11.1.2	2.4.1	LIQUID DOSE LIMITS
3.11.1.3	2.5.1	LIQUID RADWASTE TREATMENT SYSTEM
4.11.2.1.2-1	3.2	GASEOUS SAMPLING
3.11.2.1	3.3.1.1	GAS 10CFR20 LIMITS
3.11.2.1	3.3.1.2.1 ~~3.3.1.1.2~~ F/10/92	GAS 10CFR20 LIMITS
QAFR P-86-3-003	3.3.1.2.2	(DELETED) EFFECTIVE DOSE FACTORS N/A
4.11.2.1.2-1	3.3.2.1	GASEOUS SAMPLING
QAFR P-86-3-004	3.3.2.1	GASEOUS SETPOINTS
QAFR P-86-3-003	3.3.2.2	(DELETED) EFFECTIVE DOSE FACTORS N/A

PROCEDURE CROSS – REFEKENCE SHEET (LICENSEE COMMITMENTS)

PROCEDURE RSP-0008 **REVISION** 4

REFERENCE	PARAGRAPH	REMARKS
QAFR P-86-3-004	3.3.2.2	GASEOUS SETPOINTS
3.11.2.2	3.4.1.1.A	GAS 10CFR50 LIMITS
QAFR P-86-3-005	3.4.1.2	TOTAL BODY AND SKIN DOSE METHODOLOGY
3.4.11	3.4.1.2A	GAS 40CFR190 LIMITS
6.9.18	3.4.1.2.B	SEMI-ANNUAL EFFLUENT RELEASE REPORT
QAFR P-86-3-003	3.4.13	(DELETED) EFFECTIVE DOSE FACTORS N/A
3.11.2.2	3.4.1.3	(DELETED) EFFECTIVE DOSE FACTORS N/A
3.11.2.3	3.4.1.3.A.1	GAS 10CFR50 LIMITS
3.4.11	3.4.1.3.A.2	GAS 40CFR190 LIMITS
3.11.2.3	3.4.2.3	(DELETED)
3.11.2.5	3.5.1	GAS TREATMENT SYSTEM
QAFR P-86-3-002	3.5.1	GAS TREATMENT SYSTEM
3.11.1	5.1	COMPLIANCE WITH 40CFR190
3.11.2	5.1	COMPLIANCE WITH 40CFR40
3.11.4	5.1	40CFR190 REPORTING REQUIREMENTS
3.12.3	6.1	INTERLAB COMPARISON PROGRAM

PROCEDURE CROSS – REFERENCE SHEET (LICENSEE COMMITMENTS)

PROCEDURE RSP-0008 REVISION 4

REFERENCE	PARAGRAPH	REMARKS
QAFR P-86-3-003	TABLE C-2	(DELETED) ISOTOPIC MIXTURES NO LONGER USED
6.5.2	ATT. 1	TECHNICAL REVIEW

ATTACHMENT 1	ODCM/PROCEDURE REVISION SHEET NO. 93-01

DESCRIBE THE INFORMATION TO BE CHANGED INCLUDE THE RATIONALE FOR AND A COMPLETE DESCRIPTION OF THE CHANGE(S) MADE TO THE ODCM:

THE RIVER BEND STATION OFF-SITE DOSE CALCULATION MANUAL HAS BEEN REVISED TO INCORPORATE NEW SOFTWARE FOR THE CALCULATION OF DOSES FROM RADIOLOGICAL EFFLUENTS. THE CHANGE ALSO INCORPORATES THE USE OF ANNUAL AVERAGE RATHER THAN REAL-TIME METEORLOGICAL INFORMATION FOR THE DETERMINATION OF DOSES DUE TO GASEOUS EFFLUENTS. NO OTHER CHANGES IN CALCULATION METHODOLOGY ARE INCLUDED IN THIS REVISION. THIS REVISION WILL BE EFFECTIVE FOR 1993 CALCULATIONS.

ATTACHED IS A SUMMARY, INCLUDING THE RATIONAL AND DESCRIPTION, AS NECESSARY, OF THE CHANGE(S) MADE TO THE ODCM.

COMMENTS:

WILL THIS CHANGE REDUCE THE ACCURACY OR RELIABILITY OF DOSE CALCULATIONS OR SETPOINT DETERMINATIONS (TECHNICAL SPECIFICATION 6.14)? YES_____ NO X

WILL THIS CHANGE REQUIRE REVISION TO LOWER TIER IMPLEMENTING PROCEDURES OR COMPUTER PROGRAMS. YES X NO_____

THESE CHANGES HAVE BEEN REVIEWED AND FOUND ACCEPTABLE, PURSUANT TO TECHNICAL SPECIFICATION 6.5.2

REVIEWED, RADIOLOGICAL ENGINEERING SUPERVISOR: [signature] DATE 3/25/94

REVIEWED, DIRECTOR-RADIOLOGICAL PROGRAMS: [signature] DATE 3/25/94

The RBS Offsite Dose Calculaton Manual "RSP-0008" changes are as follows:

(1) Steps 2.2.1, 2.2.2.1, 2.3.2.1, 5.3.2, 5.4.2, 5.5.2, 5.6.2, and Table 4.1 #2

Typographical errors corrected.

(2) Steps 2.5.2, 3.5.2

These changes will allow the addition of anticipated dose from non-routine liquid and gaseous effluents to dose projections.

(3) Steps 3.2, 3.4.1.2.B, 3.4.2.5, 5.2.7

These changes incorporate the use of Annual Average meteorological data for the determination of doses due to gaseous effluents.

(4) Step 3.4.2.5

The change allows for calculation of organ doses due to releases of Radioiodines(I-131, I-133), Tritium, and particulates for specific occupancy times at given receptor locations.

(5) Step 3.1, Appendix F Table F-1

This change incorporates the distinction of the Fuel Building vent and Radwaste building vent as Ground Level release points. The Main Plant vent remains a Conditionlly Elevated or Mixed-Mode release point.

(6) Steps 3.3.1.2.1, 3.3.2.2, 3.4.1.1.B, 3.4.1.2.B, Appendix C Table C-1

These changes incorporate a modification of Noble Gas Dose Transfer Factor units from mrem(mrad)/sec/uCi/cu.m. to mrem(mrad)/yr/uCi/cu.m. for dose, dose rate, and monitor setpoint calculations.

(7) Steps 3.3.1.2.2, 3.3.2.2, 3.4.1.3, 3.4.2.3, Appendix C Table C-2, Appendix C Table C-3, Appendix C Table C-4, Appendix C Table C-5

These changes incorporate the deletion of the Limited Analysis approach for dose, dose rate, and monitor setpoint calculations using effective dose factors. The effective factors, which are based on the typical radionuclide distribution based on past operating data, will no longer be applicable. Operating experience demonstrates that isotopic analyses are available for all effluent streams.

(8) Appendix B Table B-1

Existing (Ai) table includes Total Body and Critical Organ dose parameters only. Revised table includes dose parameters for all organs as listed in Regulatory Guide 1.109 individually.

(9) Appendix F Table F-1

This change incorporates a description of other on-site receptor locations with the corresponding dispersion and deposition coefficients.

(10)Appendix G

The existing Appendix G Dose Conversion Factor (Pi) table has been deleted and Calculational Parameters tables inserted. This change incorporates into the ODCM specific parameters used in the calculation of doses due to gaseous and liquid effluents. The (Pi) tables are are now found in Appendix I.

(11) Appendix H Table H-1

The existing Table H-1 "MPC in Air in Unrestricted Areas" has been deleted and a Calculational Parameters table inserted. This change incorporates into the ODCM the specific parameters used in the calculation of doses to Member of the Public Inside Site Boundary. The MPC data can now be found in Appendix A.

(12) Appendix I Tables I-1 through I-19

Current (Ri, Pi) dose factor tables have been regenerated using up-to-date site specific calculational parameters. RBS has revisited the dose factors to ensure assumptions are in agreement with reference and site specific documents.