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May 1, 2003

U.S. Nuclear Regulatory Commission
ATTN.: Document Control Desk
Washington, DC 20555-0001

Subject: Radioactive Effluent Release Report for 2002
River Bend Station - Unit 1
License No. NPF-47
Docket No. 50-458

File Nos.: G9.5, G9.25.1.5

RBG-46112
RBF1-03-0076

Ladies and Gentlemen:

Enclosed is the River Bend Station (RBS) Annual Radioactive Effluent Release Report for the period January 1, 2002, through December 31, 2002. This report is submitted in accordance with the RBS Technical Specifications, Section 5.6.3.

Should you have any questions regarding the enclosed information, please contact Mr. Arlie D. Wells at (225) 381-4477.

Sincerely,

JW Leavines for

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RJK/dlm
enclosure

IE48
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2002 ANNUAL EFFLUENT RELEASE REPORT

PREPARED BY: Wm J Fuller 1136 4/7/03

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APPROVED BY: [signature] 0349 4/28/03

TABLE OF CONTENTS

TABLES

I. INTRODUCTION

This is the annual Radioactive Effluent Release Report for the period of January 1, 2002 through December 31, 2002. This report is submitted in accordance with Technical Specification 5.6.3 of Appendix A to River Bend Station (RBS) License Number NPF-47.

II. SUPPLEMENTAL INFORMATION

A. Regulatory Limits

1. 10CFR50, Appendix I Limits

a. Fission and Activation Gases

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

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

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

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

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

b. Radioiodine (I-131 & I-133) and Particulate

In accordance with Technical Requirement 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) for the age group of interest from radioiodine (I-131, I-133, tritium, and 8 day particulate via the pathway of interest.

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

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

$D_\tau = \sum_{z=1} D_{I\&8DP\tau}$ ≤ 7.5 mrem/qtr
≤ 15 mrem/yr

(above terms defined in the RBS ODCM)

c. Liquid Effluent

In accordance with Technical Requirement 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:

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

and

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

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

and

D_{TOTAL}	Total Body	$\leq$ 1.5 mrem/qtr $\leq$ 3 mrem/yr
D_{TOTAL}	Any Organ	$\leq$ 5 mrem/qtr $\leq$ 10 mrem/yr

(above terms defined in RBS ODCM)

2. 40CFR190 Limits

In accordance with Technical Requirement 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:

$\leq$ 25 mrem to the total body or any organ (except the thyroid)

$\leq$ 75 mrem to the thyroid

3. Miscellaneous Limits

a. Technical Requirement 3.11.2.1 - Fission and Activation Gases

In accordance with Technical Requirement 3.11.2.1, the dose rate due to radioactive materials released in gaseous effluents from the site to areas at and beyond the SITE BOUNDARY shall be less than or equal to 500 millirems/year (mrem/yr) to the total body and less than or equal to 3000 mrem/yr to the skin:

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

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

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

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

(above terms defined in RBS ODCM)

b. Technical Requirement 3.11.2.1 - Radioiodine (I-131 & I-133) and Particulate

In accordance with Technical Requirement 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 effluents from the site to areas at and beyond the SITE BOUNDARY shall be limited to less than or equal to 1500 mrem/yr to any organ:

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

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

(above terms defined in RBS ODCM)

c. Technical Requirement 3.11.1.1 - Liquid Effluent

In accordance with Technical Requirement 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 2, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2.0E-04 microcuries/milliliter total activity.

d. Technical Requirement 3.11.2.5 - Ventilation Exhaust Treatment System

In accordance with Technical Requirement 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 and beyond the SITE BOUNDARY would exceed 0.3 mrem to any organ in a 31-day period.

e. Technical Requirement 3.11.1.3 - Liquid Radwaste Treatment System

In accordance with Technical Requirement 3.11.1.3, the liquid radwaste treatment system shall be used to reduce the radioactive materials in liquid waste 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. Effluent Concentration Limits

1. Gaseous Releases

The concentrations of radioactive gaseous releases are based on the dose rate restrictions in RBS Technical Requirements, rather than the Effluent Concentration Limits (ECL) listed in 10CFR20 Appendix B, Table 2, Column 1.

2. Liquid Releases

The Effluent Concentration Limits of radioactive materials in liquid effluent is limited by 10CFR20, Appendix B, Table 2, Column 2.

C. 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 abundance 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 a significant increase in hourly averages was recorded, the nuclide relative abundance 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 Radioiodine (I-131 & I-133)

Particulates and Radioiodine (I-131 & I-133) 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.

D. Batch Releases

1. Liquid Effluents - BATCH MODE

EFFLUENT AND WASTE DISPOSAL REPORT
SUPPLEMENTAL INFORMATION
LIQUID EFFLUENTS - BATCH MODE

REPORT FOR 2002	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
Number of releases		36	29	43	40	148
Total release time	minutes	1.15E+04	9.02E+03	1.36E+04	1.50E+04	4.92E+04
Maximum release time	minutes	1.75E+03	3.30E+02	7.09E+02	4.99E+02	1.75E+03
Average release time	minutes	3.20E+02	3.11E+02	3.17E+02	3.74E+02	3.32E+02
Minimum release time	minutes	3.00E+00	2.90E+02	2.83E+02	2.80E+02	3.00E+00
Average stream flow during periods of release of effluent into a flowing stream	ft^3/sec	608,157	894,626	267,598	362,130	

The Mississippi River stream flow is obtained by averaging data from the U. S. Army Corp of Engineers flow gauge at Tarbert Landing.

2. Gaseous Effluents – BATCH MODE

There was one release of gaseous effluents from River Bend Station during 2002 that was treated as a batch release. See the Abnormal Release section below for more details.

EFFLUENT AND WASTE DISPOSAL REPORT
SUPPLEMENTAL INFORMATION
GASEOUS EFFLUENTS - BATCH MODE

REPORT FOR 2002	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
Number of releases		0	0	1	0	1
Total release time	minutes	0.00E+00	0.00E+00	1.20E+02	0.00E+00	1.20E+02
Maximum release time	minutes	0.00E+00	0.00E+00	1.20E+02	0.00E+00	1.20E+02
Average release time	minutes	0.00E+00	0.00E+00	1.20E+02	0.00E+00	1.20E+02
Minimum release time	minutes	0.00E+00	0.00E+00	1.20E+02	0.00E+00	1.20E+02

E. Abnormal Releases

During the reporting period of January 1, 2002 through December 31, 2002, there were no liquid abnormal releases and one gaseous abnormal release. On September 18, 2002, after a plant scram, steam was observed rising from the Condensate Storage Tank (CST). The source of the steam was from heated water that entered above the CST water level and then flashed for about two hours. The details of the event are documented in Condition Reports 2002-1372 and 2002-1384. Meteorological data was not available during the two hour time frame because the Meteorological Tower was out-of-service for calibration. The total curies released are reported in Table 5B.

F. Estimate of Total Error

1. Liquid

The maximum error associated with sample collection, laboratory analysis, and discharge volume is 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:

Noble 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:

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

where:

E_T = total error

$E_1, E_2 ... E_n$ = 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 indicates that the concentration of the particular radionuclide was below the Lower Limit of Detection (LLD) as listed in Table 1. Also, any nuclide not appearing in the tables was < LLD for all four quarters.

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 indicates that the concentration of the particular radionuclide was below the Lower Limit of Detection (LLD) as listed in Table 2. Also, any nuclide not appearing in the tables was < LLD for all four quarters.

V. SOLID WASTE

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

VI. RADIOLOGICAL IMPACT ON MAN (40CFR190 compliance)

An assessment was made of radiation doses to the likely most-exposed member of the public from River Bend and other nearby uranium fuel cycle sources (none within five miles). 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 mrem to the total body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrem.

Total Body	=	4.38E-02 mrem
Skin	=	3.53E-02 mrem
Thyroid	=	9.63E-02 mrem
Other Organ	=	4.64E-02 mrem

In addition, an assessment of doses was made for members of the public due to their activities 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 lawn service provider who works around the General Services Building lawn eight hours per day, 5 days per week, 13 weeks per year. 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 and 14 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 3.3.11.2-1 of Technical Requirement 3.3.11.2 were, if inoperable at any time in the period 1/1/02 through 12/31/02, 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 3.3.11.3-1 of Technical Requirement 3.3.11.3 were, if inoperable at any time in the period 1/1/02 through 12/31/02, 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 1/1/02 through 12/31/02 was less than or equal to the 10 curie limit as required by Technical Specification 5.5.8.b.

XI. RADIOLOGICAL ENVIRONMENTAL MONITORING

There were no changes in radiological environmental monitoring locations during the reporting period 1/1/02 through 12/31/02.

XII. LAND USE CENSUS

The Land Use Census, as required by Technical Requirement 3.12.2, did not identify any location(s) that would yield a calculated dose or dose commitment greater than the values calculated. In addition, the milk animal census identified no milk production for human consumption within 8 km (5 miles) of River Bend Station.

XIII. OFFSITE DOSE CALCULATION MANUAL (ODCM)

A revision to the ODCM was made in 2002. A copy of the ODCM is located in Attachment 2 of this document. Each change, except where information was deleted (see below for summary), is identified by markings in the margin of the affected pages, clearly indicating the area of the page that was changed, and indicate the date (i.e., month and year) the change was implemented. All changes were implemented in October 2002.

- Delete reference to Step 8.6 in the Table of contents and delete Step 8.6 because TRM 3.11.2.4 has been deleted. This will match a corresponding TRM change (LAR 2001-034). The Post-Treatment Monitors are now checked in TRM 3.3.7.8.2
- Steps 4.1, 4.3 and 4.4 – Title change
- Step 5.1 – Reword step for clarity
- Step 10.3 – Change the unmarked sentences right after Step 10.3 into a NOTE above Step 10.3 because the verbiage applies to all steps in the section, not just Step 10.3.
- Reword Step 11.1 and 11.2 because the EPA is no longer involved in the crosscheck program and the Commission no longer approves the program. This will match a corresponding TRM change.
- Reworded Step 11.2.3 because the last sentence did not make sense.
- Reword Table 4-1, Airborne Particulate and I-131 Type and Frequency of Analysis by adding "every two weeks" to the particulate sampler statement. This will match a corresponding TRM change.
- Table 4-1-2 (Direct Radiation) – Change the Type and Frequency of Analysis to match the TRM Table 3.12.1-1
- Table 4-1-4 (Ingestion) – Change the Sampling and Collection Frequency to match the TRM Table 3.12.1-1 – corresponds to a TRM change.
- Correct typographical errors in Table B-1
    a. P-32 Lung
    b. Y-92 Bone
    c. Zr-95 GI
    d. I-133 Thyroid
    e. W-187

- Correct typographical errors in Table I-1.
  a. Fe-55 GI
  b. Co-60 Liver
  c. Ni-63 Kidney
  d. Br-84 Thyroid
  e. Br-85 GI
  f. Y-90 Bone
  g. Tc-101 Liver
  h. Ba-139 Liver
  i. Ba-140 Total Body
  j. Ba-142 Kidney
- Correct typographical errors in Table I-3.
  a. Ru-105 Kidney
- Correct typographical errors in Table I-5.
  a. Pr-144 GI
- Correct typographical error in Table I-6
  a. I-132 Thyroid
- Correct typographical errors in Table I-8
  a. C-14 Thyroid
  b. I-132 Thyroid
- Correct typographical error in Table I-11
  a. H-3 Kidney
- Correct typographical error in Table I-13
  a. Mo-99 Lung
- Correct typographical error in Table I-17
  a. Zn-69 Kidney and GI

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 1/1/02 through 12/31/02.

XV. PROCESS CONTROL PROGRAM (PCP)

During the year 2002, the PCP was modified with the following changes:

- Change the procedure classification to Quality vs Non-Quality
- Addition of vendor requirement for placement on QSL when performing services under 10CFR61 and 10CFR71 requirements
- Updated Section 8 to include all EN-S site commitments

These changes are editorial in nature and did not reduce the overall conformance of the solidified waste product to existing criteria for solid wastes.

TABLE 1
Effluent and Waste Disposal Annual Report 2002 Year
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 H-3	1.00E-04 1.00E-06
B. Fuel Building Ventilation Exhaust Duct	M Grab Sample	M	Principal Gamma Emitters H-3	1.00E-04 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 I-133	1.00E-12 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
Effluent and Waste Disposal Annual Report 2002 Year
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 I-131	5.00E-07 5.00E-06 1.00E-06
	P One Batch/M	M	Dissolved and Entrained Gases (Gamma Emitters)	1.00E-05
	P Each Batch	M Composite	H-3 Gross Alpha	1.00E-05 1.00E-07
	P Each Batch	Q Composite	Sr-89, Sr-90 Fe-55	5.00E-08 1.00E-06

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

EFFLUENT AND WASTE DISPOSAL REPORT
TABLE 3
GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

REPORT FOR 2002	Units	QTR 1	QTR 2	QTR 3	QTR 4	EST. TOTAL ERROR %
Fission and Activation Gases						
1. Total Release	Ci	2.27E+00	6.12E+00	6.89E+00	1.23E+01	3.70E+01
2. Avg. Release Rate	uCi/sec	2.92E-01	7.79E-01	8.67E-01	1.54E+00	
3. % of Applicable Limit (1)		5.10E-02	6.86E-02	7.68E-02	7.39E-02	
Iodine-131						
1. Total Release	Ci	1.33E-04	1.53E-04	1.64E-04	1.04E-03	1.86E+01
2. Avg. Release Rate	uCi/sec	1.71E-05	1.95E-05	2.07E-05	1.31E-04	
3. % of Applicable Limit		5.86E-02	7.09E-02	6.98E-02	4.43E-01	
Particulates Half Life >= 8 days						
1. Total Release	Ci	2.76E-04	2.14E-04	2.59E-04	2.36E-04	1.86E+01
2. Avg. Release Rate	uCi/sec	3.55E-05	2.72E-05	3.25E-05	2.97E-05	
3. % of Applicable Limit		5.08E-02	4.20E-02	5.24E-02	5.90E-02	
Tritium						
1. Total Release	Ci	1.77E+00	2.49E+00	6.66E+00	4.22E+00	1.82E+01
2. Avg. Release Rate	uCi/sec	2.27E-01	3.17E-01	8.37E-01	5.31E-01	
3. % of Applicable Limit		5.34E-02	5.24E-02	8.32E-02	8.18E-02	

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

EFFLUENT AND WASTE DISPOSAL REPORT
TABLE 4
GASEOUS EFFLUENTS - MIXED MODE RELEASES - CONTINUOUS MODE

REPORT FOR 2002	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
Fission and Activation Gases						
AR-41	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-85	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
KR-85M	Ci	0.00E+00	0.00E+00	0.00E+00	4.48E-02	4.48E-02
KR-87	Ci	0.00E+00	0.00E+00	0.00E+00	1.09E+00	1.09E+00
KR-88	Ci	0.00E+00	0.00E+00	0.00E+00	1.71E-01	1.71E-01
XE-131M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-133	Ci	1.90E-01	3.74E+00	2.93E+00	3.21E+00	1.01E+01
XE-133M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-135	Ci	1.47E+00	1.28E+00	2.19E+00	4.09E+00	9.02E+00
XE-135M	Ci	4.46E-02	1.54E-01	5.49E-01	2.76E+00	3.51E+00
XE-137	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-138	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Totals for Period...	Ci	1.70E+00	5.17E+00	5.67E+00	1.14E+01	2.39E+01
Iodines						
I-131	Ci	1.31E-04	1.47E-04	1.64E-04	1.04E-03	1.48E-03
I-132	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-133	Ci	1.06E-03	9.89E-04	1.18E-03	2.48E-03	5.71E-03
I-135	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Totals for Period...	Ci	1.19E-03	1.14E-03	1.34E-03	3.52E-03	7.19E-03
Particulates Half Life >= 8 days						
BA-140	Ci	5.80E-06	2.13E-05	3.91E-06	4.81E-06	3.58E-05
CO-58	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-60	Ci	6.95E-05	8.07E-05	8.72E-05	8.22E-05	3.20E-04
CR-51	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-134	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CS-137	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-59	Ci	0.00E+00	0.00E+00	0.00E+00	2.01E-05	2.01E-05
MN-54	Ci	6.80E-05	3.35E-05	1.22E-05	3.18E-05	1.45E-04
SR-89	Ci	5.74E-05	4.05E-05	4.81E-05	5.34E-05	1.99E-04
Totals for Period...	Ci	2.01E-04	1.76E-04	1.51E-04	1.92E-04	7.20E-04
Tritium						
H-3	Ci	1.05E+00	1.86E+00	5.87E+00	3.25E+00	1.20E+01
Totals for Period...	Ci	1.05E+00	1.86E+00	5.87E+00	3.25E+00	1.20E+01

EFFLUENT AND WASTE DISPOSAL REPORT
TABLE 5A
GASEOUS EFFLUENTS - GROUND RELEASES - CONTINUOUS MODE

REPORT FOR 2002	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
Fission and Activation Gases						
XE-133	Ci	5.08E-02	3.54E-02	4.72E-03	7.95E-01	8.86E-01
XE-135	Ci	4.51E-02	5.87E-01	5.36E-01	1.04E-02	1.18E+00
XE-135M	Ci	4.66E-01	3.25E-01	4.33E-02	8.82E-02	9.22E-01
Totals for Period...	Ci	5.62E-01	9.47E-01	1.74E+00	8.94E-01	4.15E+00
Iodines						
I-131	Ci	1.98E-06	5.75E-06	6.23E-08	6.33E-07	8.42E-06
I-133	Ci	4.86E-06	3.86E-05	5.91E-06	0.00E+00	4.94E-05
Totals for Period...	Ci	6.84E-06	4.44E-05	5.97E-06	6.33E-07	5.78E-05
Particulates Half Life >= 8 days						
CE-141	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-57	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-58	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-60	Ci	5.56E-05	2.90E-05	2.91E-05	3.57E-05	1.49E-04
CS-137	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FE-59	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MN-54	Ci	1.95E-05	9.00E-06	2.67E-06	7.97E-06	3.91E-05
NB-95	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ZN-65	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Totals for Period...	Ci	7.51E-05	3.80E-05	3.18E-05	4.37E-05	1.88E-04
Tritium						
H-3	Ci	7.14E-01	6.37E-01	7.84E-01	9.70E-01	3.11E+00
Totals for Period...	Ci	7.14E-01	6.37E-01	7.84E-01	9.70E-01	3.11E+00

EFFLUENT AND WASTE DISPOSAL REPORT
TABLE 5B
GASEOUS EFFLUENTS - GROUND RELEASES - BATCH MODE

REPORT FOR 2002	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
Fission and Activation Gases						
XE-133	Ci	0.00E+00	0.00E+00	6.23E-02	0.00E+00	6.23E-02
XE-135	Ci	0.00E+00	0.00E+00	5.72E-01	0.00E+00	5.72E-01
XE-135M	Ci	0.00E+00	0.00E+00	7.42E-03	0.00E+00	7.42E-03
Totals for Period...	Ci	0.00E+00	0.00E+00	6.42E-01	0.00E+00	6.42E-01
Iodines						
** No Nuclide Activities **		.....	.....	.....	.....	.....
Particulates Half Life >= 8 days						
CO-60	Ci	0.00E+00	0.00E+00	2.07E-05	0.00E+00	2.07E-05
MN-54	Ci	0.00E+00	0.00E+00	2.66E-05	0.00E+00	2.66E-05
ZN-65	Ci	0.00E+00	0.00E+00	2.82E-05	0.00E+00	2.82E-05
Totals for Period...	Ci	0.00E+00	0.00E+00	7.55E-05	0.00E+00	7.55E-05
Tritium						
** No Nuclide Activities **		.....	.....	.....	.....	.....

EFFLUENT AND WASTE DISPOSAL REPORT
TABLE 6A
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

REPORT FOR 2002	Units	QTR 1	QTR 2	QTR 3	QTR 4	EST. TOTAL ERROR %
Fission and Activation Gases						
1. Total Release	Ci	8.01E-03	1.85E-02	6.20E-02	2.03E-02	1.42E+01
2. Avg. Diluted Conc.	uCi/ml	5.51E-09	1.22E-08	4.23E-08	1.36E-08	
3. % of Applicable Limit (1)		1.95E-02	9.09E-02	5.36E-01	1.53E-01	
Tritium						
1. Total Release	Ci	1.55E+01	1.40E+01	2.57E+01	3.68E+01	1.42E+01
2. Avg. Diluted Conc.	uCi/ml	1.07E-05	9.27E-06	1.76E-05	2.48E-05	
3. % of Applicable Limit (1)		2.81E-04	1.92E-04	5.49E-04	8.48E-04	
Dissolved and Entrained Gases						
1. Total Release	Ci	8.04E-03	1.30E-02	8.30E-03	1.04E-02	1.42E+01
2. Avg. Diluted Conc.	uCi/ml	5.52E-09	8.61E-09	5.67E-08	6.99E-09	
3. % of Applicable Limit (2)		2.77E-03	4.30E-03	2.84E-03	3.51E-03	
Gross Alpha Radioactivity						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.42E+01
Volume of liquid waste	liters	2.04E+06	1.67E+06	2.56E+06	2.50E+06	8.73E-01
Volume of dil. water	liters	1.45E+09	1.51E+09	1.46E+09	1.48E+09	5.70E-01

(1) The most limiting dose compared to the total body and critical organ limits of TRM 3.11.1.2.a.

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

EFFLUENT AND WASTE DISPOSAL REPORT
TABLE 6B

LIQUID EFFLUENTS - BATCH MODE

REPORT FOR 2002	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
Fission and Activation Gases						
AG-110M	Ci	8.65E-05	2.07E-04	6.85E-04	1.08E-04	1.09E-03
CE-141	Ci	0.00E+00	0.00E+00	5.67E-06	0.00E+00	5.67E-06
CO-58	Ci	9.78E-06	2.25E-04	6.28E-04	1.40E-04	1.00E-03
CO-60	Ci	7.99E-04	3.05E-03	1.07E-02	2.72E-03	1.73E-02
CR-51	Ci	5.92E-04	1.19E-03	3.72E-03	8.53E-04	6.36E-03
FE-55	Ci	4.70E-03	2.01E-03	5.02E-03	5.50E-03	1.72E-02
FE-59	Ci	1.67E-04	3.15E-03	8.48E-03	2.22E-03	1.40E-02
I-131	Ci	7.70E-05	2.34E-06	0.00E+00	6.87E-05	1.48E-04
I-133	Ci	6.23E-05	3.14E-06	0.00E+00	3.81E-05	1.04E-04
LA-140	Ci	1.11E-05	2.94E-05	5.13E-05	0.00E+00	9.19E-05
MN-54	Ci	1.32E-03	8.00E-03	3.06E-02	8.07E-03	4.80E-02
MO-99	Ci	5.86E-05	2.73E-06	0.00E+00	0.00E+00	6.14E-05
NA-24	Ci	8.76E-07	2.10E-06	3.26E-06	3.87E-06	1.01E-05
NB-95	Ci	2.59E-06	4.75E-05	1.65E-04	5.78E-05	2.73E-04
NB-97	Ci	5.98E-05	6.05E-05	6.59E-05	4.99E-05	2.36E-04
SB-122	Ci	0.00E+00	3.20E-05	0.00E+00	0.00E+00	3.20E-05
SB-124	Ci	0.00E+00	1.91E-04	5.82E-04	1.17E-04	8.89E-04
SN-113	Ci	0.00E+00	1.08E-04	3.67E-04	8.30E-05	5.58E-04
SR-89	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-92	Ci	2.25E-05	7.50E-05	3.20E-04	3.39E-05	4.51E-04
TC-99M	Ci	4.49E-05	2.78E-06	0.00E+00	0.00E+00	4.77E-05
ZN-65	Ci	0.00E+00	8.07E-05	5.53E-04	2.13E-04	8.47E-04
ZR-97	Ci	0.00E+00	0.00E+00	1.18E-05	0.00E+00	1.18E-05
Totals for Period...	Ci	8.01E-03	1.85E-02	6.20E-02	2.03E-02	1.09E-01
Tritium						
H-3	Ci	1.55E+01	1.40E+01	2.57E+01	3.68E+01	9.20E+01
Totals for Period...	Ci	1.55E+01	1.40E+01	2.57E+01	3.68E+01	9.20E+01
Dissolved and Entrained Gases						
XE-133	Ci	4.82E-03	5.40E-03	4.39E-03	3.88E-03	1.85E-02
XE-133M	Ci	1.81E-04	1.67E-04	6.81E-05	3.23E-05	4.48E-04
XE-135	Ci	3.04E-03	7.42E-03	3.84E-03	6.47E-03	2.08E-02
Totals for Period...	Ci	8.04E-03	1.30E-02	8.30E-03	1.04E-02	3.97E-02
Gross Alpha Radioactivity						
** No Nuclide Activities **		.....	.....	.....	.....	.....

EFFLUENT AND WASTE DISPOSAL REPORT
TABLE 6C
LIQUID EFFLUENTS - CONTINUOUS MODE

REPORT FOR 2002	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
Fission and Activation Gases						
** No Nuclide Activities **		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tritium						
** No Nuclide Activities **		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Dissolved and Entrained Gases						
** No Nuclide Activities **		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Gross Alpha Radioactivity						
** No Nuclide Activities **		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

No liquid releases were made in the continuous mode in 2002.

TABLE 7

Effluent and Waste Disposal Annual Report 2002 Year
Solid Waste and Irradiated Fuel Shipments
Reporting Period from 01/01/02 to 12/31/02

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

1. Type of Waste	Units	12 Month Period	Waste Class	Estimated Error %
Spent Resins, Filter Sludges, Evaporator Bottoms, Etc.	m3	1.26E+01	A	See Below
	Ci	3.13E+02	A	
	m3	2.46E+00	B	
	Ci	8.66E+02	B	
	m3	1.04E+00	C	
	Ci	4.16E+02	C	
Dry Compressible Wastes, Contaminated Equipment Etc.	m3	3.06E+01	A	See Below
	Ci	1.57E+01	A	
Irradiated Components, Control Rods, Etc.	m3	0.00E+00	N/A	N/A
	Ci	0.00E+00		
Other	m3	0.00E+00	N/A	See Below
	Ci	0.00E+00		

Note: Volume considered being 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
   Level indication for processed resins 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. Volume error is not applicable to dry active waste.

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 from dry active waste is based upon obtaining a representative sample from the material being packaged. This error is estimated to be +/- 10% for all waste types, 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%. This error is applicable to all waste types.

5. Dose to Curie Calculations Error

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. This error is applicable to all waste types.

Effluent and Waste Disposal Annual Report 2002 Year
Solid Waste and Irradiated Fuel Shipments
Reporting Period from 01/01/02 to 12/31/02
Table 7 (continued)

2. Estimates of Major Nuclides by Waste Stream

Resins, Filters and Evaporator Bottoms, Etc. (Min 1%) Isotope	% Abundance	Dry Compressible Wastes, Contaminated Equipment, Etc. (Min 1%) Isotope	% Abundance	Other (Min 1%) Isotope	% Abundance
H-3	1.070	Mn-54	6.849	N/A	N/A
Mn-54	12.637	Fe-55	64.552		
Fe-55	64.611	C0-60	21.240		
Co-60	17.775	Ni-63	1.379		
Zn-65	2.162	Zn-65	3.032		
		Cs-137	1.386		

Determined by Measurement & Correlation.
Packaged in Strong, Tight Liners.
No Solidification Agent or Absorbent Used.
No Irradiated Components, Control Rods, Etc. were shipped in 2002.

3. Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
15	Truck	Barnwell, SC
76	Truck	Clive, UT

B. No Irradiated Components, Control Rods, Etc. were shipped in 2002.

Irradiated Fuel Shipments Disposition

Number of Shipments	Mode of Transportation	Destination
0	N/A	N/A

TABLE 8
Effluent and Waste Disposal Annual Report 2002 Year
Maximum Individual Doses Due to
Noble Gas Releases

	Critical Sector	Critical Distance	Gamma Dose * (mrad)	Beta Dose * (mrad)
1st Quarter	WNW	994m	2.55E-03	1.08E-03
2nd Quarter	WNW	994m	3.43E-03	3.05E-03
3rd Quarter	WNW	994m	3.84E-03	4.71E-03
4th Quarter	WNW	994m	3.69E-03	4.09E-03
Annual Total	WNW	994m	1.35E-02	1.29E-02

* All age groups equally exposed

TABLE 9
Effluent and Waste Disposal Annual Report 2002 Year
Maximum Individual Doses Due To
Gaseous Releases (H3, Radioiodine (I-131 & I-133) and Particulates)

Significant Organ Dose (mrem)					
	Critical Sector	**Critical Distance**	**Critical Age Group**	**Critical Organ**	**Critical Dose**
1st Quarter	WNW	994m	Child	Thyroid	1.22E-02
2nd Quarter	WNW	994m	Child	Thyroid	1.24E-02
3rd Quarter	WNW	994m	Child	Thyroid	1.54E-02
4th Quarter	WNW	994m	Child	Thyroid	4.38E-02
Annual Total	WNW	994m	Child	Thyroid	8.38E-02

TABLE 10
Effluent and Waste Disposal Annual Report 2002 Year
Maximum Individual Doses Due to Liquid Releases

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	6.90E-05	Adult	GI Tract	9.79E-04
2nd Quarter	Adult	2.97E-04	Adult	GI Tract	4.55E-03
3rd Quarter	Adult	1.74E-03	Adult	GI Tract	2.68E-02
4th Quarter	Adult	5.17E-04	Adult	GI Tract	7.67E-03
Annual Total	Adult	2.59E-03	Adult	GI Tract	3.94E-02

TABLE 11
Effluent and Waste Disposal Annual Report 2002 Year
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[2]
Lawn Service Provider	General Services Building	115	ENE	5.20E+02[3]
People Entering Site Without Consent	Alligator Bayou	2500	SW	4.00E+01
National Guard	Activity Center	994	WNW	1.39E+03[5]

(1) The approximate distance from main plant vent exhaust to location.
(2) 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. Due to access limitations at RBS, this is extremely conservative for 2002. Also, the adult age group is the only age group considered in this category.
(3) Lawn Service Provider works around the General Services Building lawn eight hours per day, 5 days per week, 13 weeks per year.
(4) Liquid pathways dose is not considered due to the nature of activities that individuals are engaged in.
(5) National Guard/State Police are being evaluated, if applicable, for dose while stationed on site as members of the public.

TABLE 12
Effluent and Waste Disposal Annual Report 2002 Year

DOSES TO MEMBERS OF THE PUBLIC ON SITE

FROM GASEOUS RELEASES 2002

Dose calc based on Durations	Critical Organ Dose Annual (mrem)	Gamma Dose Annual (mrad)	Beta Dose Annual (mrad)	Annual Duration Factor
Private Drivers	5.37E-03	3.64E-03	3.95E-03	1.43E-02
Lawn Service Provider	6.65E-02	5.50E-02	6.00E-02	5.94E-02
Alligator Bayou	2.98E-05	2.53E-05	2.65E-05	4.57E-03
National Guard	1.32E-02	1.03E-02	1.13E-02	1.59E-01

Table 13
Effluent and Waste Disposal Annual Report 2002 Year
Meteorological Data - Joint Frequency Tables

RIVER BEND STATION
JOINT FREQUENCY TABLE
ALL STABILITY CLASSES

FROM 1/ 1/ 2 0:00 TO 3/31/ 2 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	5	3	17	23	40	82	76	1	0	0	0	0	247
NNE	8	7	8	25	40	58	20	1	0	0	0	0	167
NE	5	5	7	10	30	49	12	0	0	0	0	0	118
ENE	3	11	13	16	10	11	9	0	0	0	0	0	73
E	8	9	23	16	10	11	1	1	0	0	0	0	79
ESE	3	15	27	27	25	30	6	0	0	0	0	0	133
SE	3	9	15	69	88	114	22	0	0	0	0	0	320
SSE	3	3	5	25	17	72	55	10	0	0	0	0	190
S	1	2	3	14	27	76	87	21	0	0	0	0	231
SSW	0	3	4	10	11	24	33	3	0	0	0	0	88
SW	2	1	3	3	3	7	7	0	0	0	0	0	26
WSW	2	2	3	3	6	6	3	0	0	0	0	0	25
W	2	5	5	3	2	8	2	0	0	0	0	0	27
WNW	4	12	11	10	3	15	13	2	0	0	0	0	70
NW	6	8	18	15	15	41	47	7	0	0	0	0	157
NNW	6	8	6	12	17	50	88	12	0	0	0	0	199
TOTAL	61	103	168	281	344	654	481	58	0	0	0	0	2150

NUMBER OF CALMS: 8
NUMBER OF INVALID HOURS: 2
NUMBER OF VALID HOURS: 2158
TOTAL HOURS FOR THE PERIOD: 2160

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS A

FROM 1/ 1/ 2 0:00 TO 3/31/ 2 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	0	0	6	1	0	0	0	0	0	7
NE	0	0	0	0	2	10	5	0	0	0	0	0	17
ENE	0	0	0	0	0	2	1	0	0	0	0	0	3
E	0	0	0	0	0	1	0	0	0	0	0	0	1
ESE	0	0	0	2	1	5	0	0	0	0	0	0	8
SE	0	0	0	0	1	13	7	0	0	0	0	0	21
SSE	0	0	0	0	1	3	2	0	0	0	0	0	6
S	0	0	0	0	0	0	1	1	0	0	0	0	2
SSW	0	0	0	0	0	2	0	0	0	0	0	0	2
SW	0	0	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	4	1	0	0	0	0	5
TOTAL	0	0	0	2	5	42	24	2	0	0	0	0	75

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 75
TOTAL HOURS FOR THE PERIOD: 75

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS B

FROM 1/ 1/ 2 0:00 TO 3/31/ 2 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	2	0	0	0	0	0	5
NNE	0	0	0	0	1	5	4	0	0	0	0	0	10
NE	0	0	0	0	1	5	0	0	0	0	0	0	6
ENE	0	0	0	0	1	0	0	0	0	0	0	0	1
E	0	0	0	0	1	0	0	0	0	0	0	0	1
ESE	0	0	0	1	1	1	0	0	0	0	0	0	3
SE	0	0	0	0	6	7	1	0	0	0	0	0	14
SSE	0	0	0	0	0	4	3	0	0	0	0	0	7
S	0	0	0	0	0	0	8	1	0	0	0	0	9
SSW	0	0	0	0	0	2	2	0	0	0	0	0	4
SW	0	0	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	6	1	0	0	0	0	7
NNW	0	0	0	0	0	3	8	1	0	0	0	0	12
TOTAL	0	0	0	1	11	30	34	3	0	0	0	0	79

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 79
TOTAL HOURS FOR THE PERIOD: 79

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS C

FROM 1/ 1/ 2 0:00 TO 3/31/ 2 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	5	10	0	0	0	0	0	16
NNE	0	0	0	0	6	3	1	1	0	0	0	0	11
NE	0	0	0	0	2	2	0	0	0	0	0	0	4
ENE	0	0	0	0	0	1	0	0	0	0	0	0	1
E	0	0	0	1	0	0	0	0	0	0	0	0	1
ESE	0	0	0	0	0	1	0	0	0	0	0	0	1
SE	0	0	0	2	1	4	0	0	0	0	0	0	7
SSE	0	0	0	0	0	2	6	1	0	0	0	0	9
S	0	0	0	0	0	2	9	5	0	0	0	0	16
SSW	0	0	0	0	0	2	6	0	0	0	0	0	8
SW	0	0	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	1	0	0	0	0	0	1
W	0	0	0	0	0	0	1	0	0	0	0	0	1
WNW	0	0	0	0	0	1	1	0	0	0	0	0	2
NW	0	0	0	0	0	0	4	1	0	0	0	0	5
NNW	0	0	0	0	0	0	9	1	0	0	0	0	10
TOTAL	0	0	0	3	10	23	48	9	0	0	0	0	93

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 93
TOTAL HOURS FOR THE PERIOD: 93

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS D

FROM 1/ 1/ 2 0:00 TO 3/31/ 2 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	6	22	58	59	1	0	0	0	0	146
NNE	0	0	0	8	21	25	8	0	0	0	0	0	62
NE	0	0	1	5	13	19	5	0	0	0	0	0	43
ENE	0	0	0	5	0	4	7	0	0	0	0	0	16
E	0	0	4	0	3	3	0	0	0	0	0	0	10
ESE	0	1	3	7	9	9	1	0	0	0	0	0	30
SE	0	2	1	15	30	36	9	0	0	0	0	0	93
SSE	0	0	0	6	4	38	36	9	0	0	0	0	93
S	0	0	0	2	8	33	59	14	0	0	0	0	116
SSW	0	1	0	3	3	15	25	3	0	0	0	0	50
SW	0	0	1	1	3	7	7	0	0	0	0	0	19
WSW	0	0	0	1	5	5	1	0	0	0	0	0	12
W	0	1	1	1	1	7	1	0	0	0	0	0	12
WNW	0	0	1	3	2	12	12	2	0	0	0	0	32
NW	0	0	0	3	8	32	31	5	0	0	0	0	79
NNW	0	0	0	4	7	33	65	9	0	0	0	0	118
TOTAL	0	5	12	70	139	336	326	43	0	0	0	0	931

NUMBER OF CALMS: 1
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 932
TOTAL HOURS FOR THE PERIOD: 932

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS E

FROM 1/ 1/ 2 0:00 TO 3/31/ 2 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	4	12	17	16	2	0	0	0	0	0	51
NNE	0	0	3	16	12	18	6	0	0	0	0	0	55
NE	0	0	2	3	12	12	2	0	0	0	0	0	31
ENE	0	2	0	4	5	3	1	0	0	0	0	0	15
E	0	2	7	9	4	7	1	1	0	0	0	0	31
ESE	0	3	12	11	13	14	5	0	0	0	0	0	58
SE	2	3	6	40	43	52	5	0	0	0	0	0	151
SSE	1	1	3	14	12	25	8	0	0	0	0	0	64
S	0	0	1	11	18	39	10	0	0	0	0	0	79
SSW	0	1	3	6	8	3	0	0	0	0	0	0	21
SW	0	0	1	2	0	0	0	0	0	0	0	0	3
WSW	0	1	3	2	1	1	1	0	0	0	0	0	9
W	1	0	3	0	1	0	0	0	0	0	0	0	5
WNW	0	0	2	5	1	2	0	0	0	0	0	0	10
NW	0	0	3	9	5	9	6	0	0	0	0	0	32
NNW	0	0	2	6	10	13	2	0	0	0	0	0	33
TOTAL	4	13	55	150	162	214	49	1	0	0	0	0	648

NUMBER OF CALMS: 3
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 651
TOTAL HOURS FOR THE PERIOD: 651

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS F

FROM 1/ 1/ 2 0:00 TO 3/31/ 2 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	9	3	0	0	0	0	0	0	0	0	14
NNE	1	3	2	1	0	1	0	0	0	0	0	0	8
NE	1	1	3	2	0	0	0	0	0	0	0	0	7
ENE	1	0	4	4	3	1	0	0	0	0	0	0	13
E	3	1	4	2	2	0	0	0	0	0	0	0	12
ESE	0	4	8	5	1	0	0	0	0	0	0	0	18
SE	1	4	6	9	7	2	0	0	0	0	0	0	29
SSE	0	1	2	4	0	0	0	0	0	0	0	0	7
S	0	1	2	1	1	2	0	0	0	0	0	0	7
SSW	0	0	1	1	0	0	0	0	0	0	0	0	2
SW	0	1	1	0	0	0	0	0	0	0	0	0	2
WSW	1	0	0	0	0	0	0	0	0	0	0	0	1
W	1	3	1	0	0	1	0	0	0	0	0	0	6
WNW	2	1	4	2	0	0	0	0	0	0	0	0	9
NW	2	2	6	3	2	0	0	0	0	0	0	0	15
NNW	1	1	3	1	0	1	0	0	0	0	0	0	7
TOTAL	15	24	56	38	16	8	0	0	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 G

FROM 1/ 1/ 2 0:00 TO 3/31/ 2 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	4	2	4	2	0	0	0	0	0	0	0	0	12
NNE	7	4	3	0	0	0	0	0	0	0	0	0	14
NE	4	4	1	0	0	1	0	0	0	0	0	0	10
ENE	2	9	9	3	1	0	0	0	0	0	0	0	24
E	5	6	8	4	0	0	0	0	0	0	0	0	23
ESE	3	7	4	1	0	0	0	0	0	0	0	0	15
SE	0	0	2	3	0	0	0	0	0	0	0	0	5
SSE	2	1	0	1	0	0	0	0	0	0	0	0	4
S	1	1	0	0	0	0	0	0	0	0	0	0	2
SSW	0	1	0	0	0	0	0	0	0	0	0	0	1
SW	2	0	0	0	0	0	0	0	0	0	0	0	2
WSW	1	1	0	0	0	0	0	0	0	0	0	0	2
W	0	1	0	2	0	0	0	0	0	0	0	0	3
WNW	2	11	4	0	0	0	0	0	0	0	0	0	17
NW	4	6	9	0	0	0	0	0	0	0	0	0	19
NNW	5	7	1	1	0	0	0	0	0	0	0	0	14
TOTAL	42	61	45	17	1	1	0	0	0	0	0	0	167

NUMBER OF CALMS: 4
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 171
TOTAL HOURS FOR THE PERIOD: 171

RIVER BEND STATION
JOINT FREQUENCY TABLE
ALL STABILITY CLASSES

FROM 1/ 1/ 2 0:00 TO 3/31/ 2 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	1	3	45	127	23	2	0	0	0	202
NNE	0	0	0	4	13	69	84	12	1	0	0	0	183
NE	0	1	0	3	4	33	80	13	1	0	0	0	135
ENE	0	0	0	5	7	21	31	16	4	0	0	0	84
E	0	0	3	1	3	27	25	6	10	2	0	0	77
ESE	1	1	1	1	4	31	132	54	12	0	0	0	237
SE	0	1	1	5	4	26	135	29	1	0	0	0	202
SSE	0	0	0	3	5	40	124	41	8	0	0	0	221
S	0	0	0	2	4	42	111	49	6	0	0	0	214
SSW	1	0	1	3	3	25	49	15	1	0	0	0	98
SW	0	0	1	3	3	10	11	3	2	0	0	0	33
WSW	0	0	0	0	4	16	8	0	0	0	0	0	28
W	0	0	0	1	3	13	11	2	0	0	0	0	30
WNW	0	0	1	3	3	17	22	11	6	0	0	0	63
NW	0	1	1	3	5	26	68	37	6	0	0	0	147
NNW	0	1	0	4	3	37	98	50	11	0	0	0	204
TOTAL	2	6	9	42	71	478	1116	361	71	2	0	0	2158

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 2
NUMBER OF VALID HOURS: 2158
TOTAL HOURS FOR THE PERIOD: 2160

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS A

FROM 1/ 1/ 2 0:00 TO 3/31/ 2 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	0	0	0	0	0	4
NNE	0	0	0	0	0	2	3	0	0	0	0	0	5
NE	0	0	0	0	0	1	10	6	1	0	0	0	18
ENE	0	0	0	0	0	0	3	0	0	0	0	0	3
E	0	0	0	0	0	0	1	0	0	0	0	0	1
ESE	0	0	0	0	0	3	11	5	0	0	0	0	19
SE	0	0	0	0	0	1	8	4	0	0	0	0	13
SSE	0	0	0	0	0	1	2	0	0	0	0	0	3
S	0	0	0	0	0	0	1	1	1	0	0	0	3
SSW	0	0	0	0	0	0	1	0	0	0	0	0	1
SW	0	0	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	1	0	0	0	0	0	1
NNW	0	0	0	0	0	0	0	3	1	0	0	0	4
TOTAL	0	0	0	0	0	8	45	19	3	0	0	0	75

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 75
TOTAL HOURS FOR THE PERIOD: 75

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS B

FROM 1/ 1/ 2 0:00 TO 3/31/ 2 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	2	5	1	0	0	0	0	8
NNE	0	0	0	0	0	1	1	3	0	0	0	0	5
NE	0	0	0	0	0	1	6	0	0	0	0	0	7
ENE	0	0	0	0	0	2	0	0	0	0	0	0	2
E	0	0	0	0	0	0	0	0	0	0	0	0	0
ESE	0	0	0	0	0	5	5	0	0	0	0	0	10
SE	0	0	0	0	0	2	6	2	0	0	0	0	10
SSE	0	0	0	0	0	1	2	4	0	0	0	0	7
S	0	0	0	0	0	0	4	4	0	0	0	0	8
SSW	0	0	0	0	0	0	2	1	0	0	0	0	3
SW	0	0	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	1	0	0	0	0	0	1
NW	0	0	0	0	0	0	3	3	1	0	0	0	7
NNW	0	0	0	0	0	0	6	4	1	0	0	0	11
TOTAL	0	0	0	0	0	14	41	22	2	0	0	0	79

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 79
TOTAL HOURS FOR THE PERIOD: 79

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS C

FROM 1/ 1/ 2 0:00 TO 3/31/ 2 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	9	3	0	0	0	0	13
NNE	0	0	0	0	0	7	5	0	1	0	0	0	13
NE	0	0	0	0	1	1	2	0	0	0	0	0	4
ENE	0	0	0	0	0	1	0	0	0	0	0	0	1
E	0	0	0	0	0	1	0	0	0	0	0	0	1
ESE	0	0	0	0	0	2	1	2	0	0	0	0	5
SE	0	0	0	0	0	0	5	1	0	0	0	0	6
SSE	0	0	0	0	0	0	3	6	1	0	0	0	10
S	0	0	0	0	0	1	5	5	1	0	0	0	12
SSW	0	0	0	0	0	1	4	3	0	0	0	0	8
SW	0	0	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	1	0	0	0	0	0	1
W	0	0	0	0	0	0	3	0	0	0	0	0	3
WNW	0	0	0	0	0	0	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	2	3	1	0	0	0	6
NNW	0	0	0	0	0	1	4	4	1	0	0	0	10
TOTAL	0	0	0	0	1	16	44	27	5	0	0	0	93

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 93
TOTAL HOURS FOR THE PERIOD: 93

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS D

FROM 1/ 1/ 2 0:00 TO 3/31/ 2 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	24	73	19	2	0	0	0	118
NNE	0	0	0	1	7	23	39	6	0	0	0	0	76
NE	0	1	0	1	1	9	25	6	0	0	0	0	43
ENE	0	0	0	3	3	3	1	11	2	0	0	0	23
E	0	0	0	0	1	4	0	1	0	0	0	0	6
ESE	0	0	1	1	4	11	30	10	3	0	0	0	60
SE	0	1	0	2	3	11	39	11	1	0	0	0	68
SSE	0	0	0	0	1	15	54	25	7	0	0	0	102
S	0	0	0	0	3	16	43	36	4	0	0	0	102
SSW	0	0	0	0	3	8	26	11	1	0	0	0	49
SW	0	0	1	1	1	2	8	2	2	0	0	0	17
WSW	0	0	0	0	1	11	4	0	0	0	0	0	16
W	0	0	0	0	1	5	5	1	0	0	0	0	12
WNW	0	0	0	2	2	5	14	10	6	0	0	0	39
NW	0	1	0	1	2	11	41	23	4	0	0	0	83
NNW	0	0	0	1	2	16	54	37	8	0	0	0	118
TOTAL	0	3	2	13	35	174	456	209	40	0	0	0	932

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 932
TOTAL HOURS FOR THE PERIOD: 932

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS E

FROM 1/ 1/ 2 0:00 TO 3/31/ 2 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	11	33	0	0	0	0	0	44
NNE	0	0	0	1	1	26	33	3	0	0	0	0	64
NE	0	0	0	1	1	11	19	1	0	0	0	0	33
ENE	0	0	0	0	2	8	5	5	2	0	0	0	22
E	0	0	0	0	0	9	10	3	9	2	0	0	33
ESE	0	1	0	0	0	5	59	31	9	0	0	0	105
SE	0	0	1	1	0	6	57	9	0	0	0	0	74
SSE	0	0	0	1	3	14	55	6	0	0	0	0	79
S	0	0	0	0	1	18	55	3	0	0	0	0	77
SSW	0	0	0	1	0	11	14	0	0	0	0	0	26
SW	0	0	0	1	1	6	1	1	0	0	0	0	10
WSW	0	0	0	0	1	1	2	0	0	0	0	0	4
W	0	0	0	0	2	2	1	1	0	0	0	0	6
WNW	0	0	1	0	1	5	3	1	0	0	0	0	11
NW	0	0	0	1	1	4	13	8	0	0	0	0	27
NNW	0	0	0	2	0	10	22	2	0	0	0	0	36
TOTAL	0	1	2	9	14	147	382	74	20	2	0	0	651

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 651
TOTAL HOURS FOR THE PERIOD: 651

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS F

FROM 1/ 1/ 2 0:00 TO 3/31/ 2 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	3	2	0	0	0	0	0	6
NNE	0	0	0	0	1	8	3	0	0	0	0	0	12
NE	0	0	0	0	1	3	10	0	0	0	0	0	14
ENE	0	0	0	1	1	2	13	0	0	0	0	0	17
E	0	0	1	0	0	6	5	2	1	0	0	0	15
ESE	0	0	0	0	0	2	14	6	0	0	0	0	22
SE	0	0	0	1	0	2	14	2	0	0	0	0	19
SSE	0	0	0	0	1	6	4	0	0	0	0	0	11
S	0	0	0	2	0	4	3	0	0	0	0	0	9
SSW	0	0	1	1	0	3	2	0	0	0	0	0	7
SW	0	0	0	1	0	0	0	0	0	0	0	0	1
WSW	0	0	0	0	0	2	0	0	0	0	0	0	2
W	0	0	0	0	0	2	0	0	0	0	0	0	2
WNW	0	0	0	0	0	3	2	0	0	0	0	0	5
NW	0	0	0	0	1	3	2	0	0	0	0	0	6
NNW	0	0	0	1	0	4	4	0	0	0	0	0	9
TOTAL	0	0	2	7	6	53	78	10	1	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 G

FROM 1/ 1/ 2 0:00 TO 3/31/ 2 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	1	2	4	1	0	0	0	0	0	9
NNE	0	0	0	2	4	2	0	0	0	0	0	0	8
NE	0	0	0	1	0	7	8	0	0	0	0	0	16
ENE	0	0	0	1	1	5	9	0	0	0	0	0	16
E	0	0	2	1	2	7	9	0	0	0	0	0	21
ESE	1	0	0	0	0	3	12	0	0	0	0	0	16
SE	0	0	0	1	1	4	6	0	0	0	0	0	12
SSE	0	0	0	2	0	3	4	0	0	0	0	0	9
S	0	0	0	0	0	3	0	0	0	0	0	0	3
SSW	1	0	0	1	0	2	0	0	0	0	0	0	4
SW	0	0	0	0	1	2	2	0	0	0	0	0	5
WSW	0	0	0	0	2	2	1	0	0	0	0	0	5
W	0	0	0	1	0	4	2	0	0	0	0	0	7
WNW	0	0	0	1	0	4	2	0	0	0	0	0	7
NW	0	0	1	1	1	8	6	0	0	0	0	0	17
NNW	0	1	0	0	1	6	8	0	0	0	0	0	16
TOTAL	2	2	3	13	15	66	70	0	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
ALL STABILITY CLASSES

FROM 4/ 1/ 2 0:00 TO 6/30/ 2 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	15	16	17	32	24	38	33	1	0	0	0	0	176
NNE	5	11	11	47	43	52	7	0	0	0	0	0	176
NE	12	8	3	38	33	24	0	0	0	0	0	0	118
ENE	7	14	9	21	15	10	3	0	0	0	0	0	79
E	11	12	19	33	11	9	0	0	0	0	0	0	95
ESE	11	23	24	29	17	9	0	0	0	0	0	0	113
SE	5	17	46	66	63	50	12	2	0	0	0	0	261
SSE	6	9	24	50	57	77	54	1	0	0	0	0	278
S	2	5	23	36	53	110	84	5	0	0	0	0	318
SSW	8	5	10	16	29	45	38	1	0	0	0	0	152
SW	5	8	7	6	12	17	3	0	0	0	0	0	58
WSW	5	2	4	11	9	1	0	0	0	0	0	0	32
W	3	8	2	9	7	7	0	0	0	0	0	0	36
WNW	9	3	15	4	4	3	0	0	0	0	0	0	38
NW	18	15	12	10	3	5	5	1	0	0	0	0	69
NNW	11	15	15	9	7	9	10	0	0	0	0	0	76
TOTAL	133	171	241	417	387	466	249	11	0	0	0	0	2075

NUMBER OF CALMS: 27
NUMBER OF INVALID HOURS: 82
NUMBER OF VALID HOURS: 2102
TOTAL HOURS FOR THE PERIOD: 2184

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS A

FROM 4/ 1/ 2 0:00 TO 6/30/ 2 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	2	0	0	0	0	0	2
NNE	0	0	0	0	3	6	5	0	0	0	0	0	14
NE	0	0	0	1	0	7	0	0	0	0	0	0	8
ENE	0	0	0	0	1	6	0	0	0	0	0	0	7
E	0	0	0	1	2	5	0	0	0	0	0	0	8
ESE	0	0	0	0	1	4	0	0	0	0	0	0	5
SE	0	0	0	0	1	13	3	0	0	0	0	0	17
SSE	0	0	0	0	0	4	3	0	0	0	0	0	7
S	0	0	0	0	0	1	0	0	0	0	0	0	1
SSW	0	0	0	0	0	1	2	0	0	0	0	0	3
SW	0	0	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0	0	0	0	0	0	0
W	0	0	0	0	1	0	0	0	0	0	0	0	1
WNW	0	0	0	0	0	0	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	1	0	0	0	0	0	1
NNW	0	0	0	0	0	1	0	0	0	0	0	0	1
TOTAL	0	0	0	2	9	48	16	0	0	0	0	0	75

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 75
TOTAL HOURS FOR THE PERIOD: 75

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS B

FROM 4/ 1/ 2 0:00 TO 6/30/ 2 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	8	0	0	0	0	0	11
NNE	0	0	0	0	0	8	0	0	0	0	0	0	8
NE	0	0	0	2	5	5	0	0	0	0	0	0	12
ENE	0	0	0	0	4	2	0	0	0	0	0	0	6
E	0	0	0	1	2	2	0	0	0	0	0	0	5
ESE	0	0	0	0	3	1	0	0	0	0	0	0	4
SE	0	0	0	1	1	9	3	0	0	0	0	0	14
SSE	0	0	0	2	1	9	13	0	0	0	0	0	25
S	0	0	0	0	0	4	15	1	0	0	0	0	20
SSW	0	0	0	0	0	0	2	0	0	0	0	0	2
SW	0	0	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0	0	0	0	0	0	0
NW	0	0	0	0	0	1	1	1	0	0	0	0	3
NNW	0	0	0	0	0	0	4	0	0	0	0	0	4
TOTAL	0	0	0	6	16	44	46	2	0	0	0	0	114

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 114
TOTAL HOURS FOR THE PERIOD: 114

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS C

FROM 4/ 1/ 2 0:00 TO 6/30/ 2 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	5	4	0	0	0	0	0	10
NNE	0	0	0	1	0	4	0	0	0	0	0	0	5
NE	0	0	0	0	5	3	0	0	0	0	0	0	8
ENE	0	0	0	0	0	0	0	0	0	0	0	0	0
E	0	0	0	1	1	0	0	0	0	0	0	0	2
ESE	0	0	0	1	1	1	0	0	0	0	0	0	3
SE	0	0	0	3	7	5	0	0	0	0	0	0	15
SSE	0	0	0	0	1	2	8	0	0	0	0	0	11
S	0	0	0	0	0	3	17	2	0	0	0	0	22
SSW	0	0	0	0	0	2	6	0	0	0	0	0	8
SW	0	0	0	0	0	0	1	0	0	0	0	0	1
WSW	0	0	0	1	0	1	0	0	0	0	0	0	2
W	0	0	0	0	1	2	0	0	0	0	0	0	3
WNW	0	0	0	0	0	0	0	0	0	0	0	0	0
NW	0	0	0	0	0	1	2	0	0	0	0	0	3
NNW	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	7	17	29	38	2	0	0	0	0	93

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 93
TOTAL HOURS FOR THE PERIOD: 93

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS D

FROM 4/ 1/ 2 0:00 TO 6/30/ 2 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	5	9	26	19	1	0	0	0	0	62
NNE	0	1	1	12	22	24	2	0	0	0	0	0	62
NE	0	0	1	14	13	7	0	0	0	0	0	0	35
ENE	0	3	1	7	7	2	3	0	0	0	0	0	23
E	2	1	6	15	4	0	0	0	0	0	0	0	28
ESE	1	3	5	18	10	2	0	0	0	0	0	0	39
SE	0	0	13	27	32	19	5	1	0	0	0	0	97
SSE	0	0	1	11	19	39	25	1	0	0	0	0	96
S	1	1	5	9	19	54	46	2	0	0	0	0	137
SSW	0	0	1	2	21	37	28	0	0	0	0	0	89
SW	0	1	0	2	11	16	2	0	0	0	0	0	32
WSW	0	0	2	9	8	0	0	0	0	0	0	0	19
W	0	2	2	8	4	5	0	0	0	0	0	0	21
WNW	0	0	6	2	4	3	0	0	0	0	0	0	15
NW	0	1	2	6	3	3	1	0	0	0	0	0	16
NNW	0	1	2	2	5	7	6	0	0	0	0	0	23
TOTAL	4	14	50	149	191	244	137	5	0	0	0	0	794

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 794
TOTAL HOURS FOR THE PERIOD: 794

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS E

FROM 4/ 1/ 2 0:00 TO 6/30/ 2 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	5	16	13	4	0	0	0	0	0	0	46
NNE	1	6	7	23	17	10	0	0	0	0	0	0	64
NE	2	4	2	14	9	2	0	0	0	0	0	0	33
ENE	0	7	3	13	2	0	0	0	0	0	0	0	25
E	3	7	9	15	2	2	0	0	0	0	0	0	38
ESE	8	14	13	10	2	1	0	0	0	0	0	0	48
SE	1	9	26	29	20	3	1	1	0	0	0	0	90
SSE	2	6	10	31	32	23	5	0	0	0	0	0	109
S	0	2	10	21	33	48	6	0	0	0	0	0	120
SSW	3	3	8	13	7	5	0	1	0	0	0	0	40
SW	2	3	5	4	1	1	0	0	0	0	0	0	16
WSW	1	1	0	1	1	0	0	0	0	0	0	0	4
W	0	3	0	1	1	0	0	0	0	0	0	0	5
WNW	3	1	5	2	0	0	0	0	0	0	0	0	11
NW	2	2	5	4	0	0	0	0	0	0	0	0	13
NNW	2	1	7	1	2	1	0	0	0	0	0	0	14
TOTAL	33	74	115	198	142	100	12	2	0	0	0	0	676

NUMBER OF CALMS: 5
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 681
TOTAL HOURS FOR THE PERIOD: 681

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS F

FROM 4/ 1/ 2 0:00 TO 6/30/ 2 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	4	3	5	11	1	0	0	0	0	0	0	0	24
NNE	2	2	3	11	1	0	0	0	0	0	0	0	19
NE	5	2	0	7	1	0	0	0	0	0	0	0	15
ENE	5	2	4	1	1	0	0	0	0	0	0	0	13
E	5	3	1	0	0	0	0	0	0	0	0	0	9
ESE	1	4	6	0	0	0	0	0	0	0	0	0	11
SE	4	5	6	4	2	0	0	0	0	0	0	0	21
SSE	3	3	10	5	4	0	0	0	0	0	0	0	25
S	1	2	7	6	1	0	0	0	0	0	0	0	17
SSW	4	1	1	1	1	0	0	0	0	0	0	0	8
SW	1	3	2	0	0	0	0	0	0	0	0	0	6
WSW	2	1	2	0	0	0	0	0	0	0	0	0	5
W	0	2	0	0	0	0	0	0	0	0	0	0	2
WNW	3	1	1	0	0	0	0	0	0	0	0	0	5
NW	7	5	3	0	0	0	0	0	0	0	0	0	15
NNW	3	5	3	1	0	0	0	0	0	0	0	0	12
TOTAL	50	44	54	47	12	0	0	0	0	0	0	0	207

NUMBER OF CALMS: 12
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 4/ 1/ 2 0:00 TO 6/30/ 2 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	8	5	0	0	0	0	0	0	0	0	0	21
NNE	2	2	0	0	0	0	0	0	0	0	0	0	4
NE	5	2	0	0	0	0	0	0	0	0	0	0	7
ENE	2	2	1	0	0	0	0	0	0	0	0	0	5
E	1	1	3	0	0	0	0	0	0	0	0	0	5
ESE	1	2	0	0	0	0	0	0	0	0	0	0	3
SE	0	3	1	2	0	1	0	0	0	0	0	0	7
SSE	1	0	3	1	0	0	0	0	0	0	0	0	5
S	0	0	1	0	0	0	0	0	0	0	0	0	1
SSW	1	1	0	0	0	0	0	0	0	0	0	0	2
SW	2	1	0	0	0	0	0	0	0	0	0	0	3
WSW	2	0	0	0	0	0	0	0	0	0	0	0	2
W	3	1	0	0	0	0	0	0	0	0	0	0	4
WNW	3	1	3	0	0	0	0	0	0	0	0	0	7
NW	9	7	2	0	0	0	0	0	0	0	0	0	18
NNW	6	8	3	5	0	0	0	0	0	0	0	0	22
TOTAL	46	39	22	8	0	1	0	0	0	0	0	0	116

NUMBER OF CALMS: 10
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 126
TOTAL HOURS FOR THE PERIOD: 126

RIVER BEND STATION
JOINT FREQUENCY TABLE
ALL STABILITY CLASSES

FROM 4/ 1/ 2 0:00 TO 6/30/ 2 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	5	6	5	25	54	6	1	0	0	0	102
NNE	1	0	1	8	13	39	71	5	0	0	0	0	138
NE	0	1	1	13	19	56	97	14	0	0	0	0	201
ENE	1	0	3	12	14	57	65	18	2	0	0	0	172
E	0	0	4	12	18	50	37	3	0	0	0	0	124
ESE	0	0	1	9	23	85	143	17	1	1	0	0	280
SE	0	0	4	4	13	73	90	12	7	0	0	0	203
SSE	0	0	4	2	12	72	81	16	1	0	0	0	188
S	1	0	2	7	14	66	168	33	3	0	0	0	294
SSW	0	0	1	6	5	61	64	16	0	0	0	0	153
SW	0	0	1	3	15	30	8	1	0	0	0	0	58
WSW	0	0	1	7	12	17	7	0	0	0	0	0	44
W	1	0	1	6	14	20	4	0	0	0	0	0	46
WNW	1	0	2	2	6	8	4	0	0	0	0	0	23
NW	0	1	2	8	8	9	3	5	0	0	0	0	36
NNW	0	0	0	2	6	10	19	2	0	0	0	0	39
TOTAL	5	2	33	107	197	678	915	148	15	1	0	0	2101

NUMBER OF CALMS: 1
NUMBER OF INVALID HOURS: 82
NUMBER OF VALID HOURS: 2102
TOTAL HOURS FOR THE PERIOD: 2184

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS A

FROM 4/ 1/ 2 0:00 TO 6/30/ 2 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	0	3	2	0	0	0	0	5
NE	0	0	0	0	0	2	6	5	0	0	0	0	13
ENE	0	0	0	0	0	2	7	8	0	0	0	0	17
E	0	0	0	0	0	0	3	1	0	0	0	0	4
ESE	0	0	0	0	0	0	14	3	0	0	0	0	17
SE	0	0	0	0	0	1	4	2	1	0	0	0	8
SSE	0	0	0	0	0	0	0	2	0	0	0	0	2
S	0	0	0	0	0	1	1	0	0	0	0	0	2
SSW	0	0	0	0	0	0	2	0	0	0	0	0	2
SW	0	0	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0	0	0	0	0	0	0
W	0	0	0	0	0	1	0	0	0	0	0	0	1
WNW	0	0	0	0	0	0	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0	1	0	0	0	0	1
NNW	0	0	0	0	0	0	1	0	0	0	0	0	1
TOTAL	0	0	0	0	0	7	43	24	1	0	0	0	75

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 75
TOTAL HOURS FOR THE PERIOD: 75

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS B

FROM 4/ 1/ 2 0:00 TO 6/30/ 2 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	0	3	7	1	0	0	0	0	11
NE	0	0	0	0	0	2	8	2	0	0	0	0	12
ENE	0	0	0	0	0	5	6	1	0	0	0	0	12
E	0	0	0	0	0	0	7	0	0	0	0	0	7
ESE	0	0	0	1	0	2	9	1	0	0	0	0	13
SE	0	0	0	0	1	2	8	1	2	0	0	0	14
SSE	0	0	0	0	0	2	3	6	1	0	0	0	12
S	0	0	0	0	0	0	10	8	0	0	0	0	18
SSW	0	0	0	0	0	0	1	1	0	0	0	0	2
SW	0	0	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	1	0	0	0	0	0	1
NW	0	0	0	0	0	0	0	3	0	0	0	0	3
NNW	0	0	0	0	0	0	1	1	0	0	0	0	2
TOTAL	0	0	0	1	1	16	67	26	3	0	0	0	114

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 114
TOTAL HOURS FOR THE PERIOD: 114

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS C

FROM 4/ 1/ 2 0:00 TO 6/30/ 2 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	0	0	0	0	0	6
NNE	0	0	0	0	1	1	3	0	0	0	0	0	5
NE	0	0	0	0	0	2	4	0	0	0	0	0	6
ENE	0	0	0	0	0	3	4	0	0	0	0	0	7
E	0	0	0	0	1	2	3	0	0	0	0	0	6
ESE	0	0	0	0	1	5	4	0	0	0	0	0	10
SE	0	0	0	0	0	1	5	0	0	0	0	0	6
SSE	0	0	0	0	0	0	5	2	0	0	0	0	7
S	0	0	0	0	0	1	10	7	2	0	0	0	20
SSW	0	0	0	0	0	1	6	3	0	0	0	0	10
SW	0	0	0	0	0	0	1	0	0	0	0	0	1
WSW	0	0	0	0	1	0	0	0	0	0	0	0	1
W	0	0	0	0	0	0	3	0	0	0	0	0	3
WNW	0	0	0	0	0	1	1	0	0	0	0	0	2
NW	0	0	0	0	0	1	1	0	0	0	0	0	2
NNW	0	0	0	0	0	0	1	0	0	0	0	0	1
TOTAL	0	0	0	0	4	19	56	12	2	0	0	0	93

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 93
TOTAL HOURS FOR THE PERIOD: 93

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS D

FROM 4/ 1/ 2 0:00 TO 6/30/ 2 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	2	1	1	6	28	5	1	0	0	0	44
NNE	0	0	0	2	4	14	24	2	0	0	0	0	46
NE	0	0	0	3	9	22	30	3	0	0	0	0	67
ENE	0	0	1	3	8	17	18	4	2	0	0	0	53
E	0	0	1	5	5	15	7	1	0	0	0	0	34
ESE	0	0	1	4	9	39	25	5	1	0	0	0	84
SE	0	0	0	3	2	28	27	6	3	0	0	0	69
SSE	0	0	0	2	5	25	31	6	0	0	0	0	69
S	0	0	0	3	7	25	72	14	1	0	0	0	122
SSW	0	0	1	4	4	26	34	12	0	0	0	0	81
SW	0	0	0	2	9	14	5	1	0	0	0	0	31
WSW	0	0	1	3	6	12	4	0	0	0	0	0	26
W	1	0	0	2	5	13	0	0	0	0	0	0	21
WNW	0	0	0	2	3	2	2	0	0	0	0	0	9
NW	0	0	2	4	4	4	2	1	0	0	0	0	17
NNW	0	0	0	0	3	5	12	1	0	0	0	0	21
TOTAL	1	0	9	43	84	267	321	61	8	0	0	0	794

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 794
TOTAL HOURS FOR THE PERIOD: 794

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS E

FROM 4/ 1/ 2 0:00 TO 6/30/ 2 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	3	2	11	13	0	0	0	0	0	30
NNE	0	0	1	3	4	12	27	0	0	0	0	0	47
NE	0	1	0	9	8	18	25	1	0	0	0	0	62
ENE	0	0	2	5	4	21	22	3	0	0	0	0	57
E	0	0	2	3	4	25	13	0	0	0	0	0	47
ESE	0	0	0	2	7	24	56	7	0	1	0	0	97
SE	0	0	1	0	4	24	28	3	1	0	0	0	61
SSE	0	0	2	0	2	33	37	0	0	0	0	0	74
S	1	0	0	1	4	28	68	4	0	0	0	0	106
SSW	0	0	0	1	0	26	20	0	0	0	0	0	47
SW	0	0	1	1	4	7	2	0	0	0	0	0	15
WSW	0	0	0	3	1	1	3	0	0	0	0	0	8
W	0	0	1	2	3	4	1	0	0	0	0	0	11
WNW	1	0	0	0	1	4	0	0	0	0	0	0	6
NW	0	0	0	3	1	0	0	0	0	0	0	0	4
NNW	0	0	0	2	1	3	3	0	0	0	0	0	9
TOTAL	2	1	11	38	50	241	318	18	1	1	0	0	681

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 681
TOTAL HOURS FOR THE PERIOD: 681

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS F

FROM 4/ 1/ 2 0:00 TO 6/30/ 2 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	0	1	4	0	0	0	0	0	0	6
NNE	0	0	0	0	4	7	7	0	0	0	0	0	18
NE	0	0	1	1	2	4	14	3	0	0	0	0	25
ENE	0	0	0	2	2	7	5	1	0	0	0	0	17
E	0	0	0	2	5	6	4	0	0	0	0	0	17
ESE	0	0	0	0	0	9	28	1	0	0	0	0	38
SE	0	0	3	1	3	14	13	0	0	0	0	0	34
SSE	0	0	1	0	2	9	2	0	0	0	0	0	14
S	0	0	2	2	3	11	5	0	0	0	0	0	23
SSW	0	0	0	1	0	6	1	0	0	0	0	0	8
SW	0	0	0	0	1	5	0	0	0	0	0	0	6
WSW	0	0	0	0	2	1	0	0	0	0	0	0	3
W	0	0	0	0	2	1	0	0	0	0	0	0	3
WNW	0	0	1	0	0	0	0	0	0	0	0	0	1
NW	0	0	0	0	1	1	0	0	0	0	0	0	2
NNW	0	0	0	0	2	1	1	0	0	0	0	0	4
TOTAL	0	0	9	9	30	86	80	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 4/ 1/ 2 0:00 TO 6/30/ 2 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	2	1	3	0	0	0	0	0	0	7
NNE	1	0	0	3	0	2	0	0	0	0	0	0	6
NE	0	0	0	0	0	6	10	0	0	0	0	0	16
ENE	1	0	0	2	0	2	3	1	0	0	0	0	9
E	0	0	1	2	3	2	0	1	0	0	0	0	9
ESE	0	0	0	2	6	6	7	0	0	0	0	0	21
SE	0	0	0	0	3	3	5	0	0	0	0	0	11
SSE	0	0	1	0	3	3	3	0	0	0	0	0	10
S	0	0	0	1	0	0	2	0	0	0	0	0	3
SSW	0	0	0	0	1	2	0	0	0	0	0	0	3
SW	0	0	0	0	1	4	0	0	0	0	0	0	5
WSW	0	0	0	1	2	3	0	0	0	0	0	0	6
W	0	0	0	2	4	1	0	0	0	0	0	0	7
WNW	0	0	1	0	2	1	0	0	0	0	0	0	4
NW	0	1	0	1	2	3	0	0	0	0	0	0	7
NNW	0	0	0	0	0	1	0	0	0	0	0	0	1
TOTAL	2	1	4	16	28	42	30	2	0	0	0	0	125

NUMBER OF CALMS: 1
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 126
TOTAL HOURS FOR THE PERIOD: 126

RIVER BEND STATION
JOINT FREQUENCY TABLE
ALL STABILITY CLASSES

FROM 7/ 1/ 2 0:00 TO 9/30/ 2 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	11	15	25	56	26	18	5	0	0	0	0	0	156
NNE	11	17	22	44	40	19	0	0	0	0	0	0	153
NE	13	16	29	29	38	23	0	0	0	0	0	0	148
ENE	8	16	11	26	17	18	0	0	0	0	0	0	96
E	21	14	11	22	13	6	1	0	0	0	0	0	88
ESE	10	23	21	27	7	15	0	0	0	0	0	0	103
SE	16	19	40	56	50	29	1	0	0	0	0	0	211
SSE	10	12	18	41	33	23	10	0	0	0	0	0	147
S	9	7	19	30	13	39	10	1	0	0	0	0	128
SSW	9	8	18	25	17	16	4	0	0	0	0	0	97
SW	7	10	12	14	23	5	0	0	0	0	0	0	71
WSW	6	7	8	18	11	9	0	0	0	0	0	0	59
W	8	8	4	12	18	9	0	0	0	0	0	0	59
WNW	16	17	14	14	17	17	0	2	0	0	0	0	97
NW	34	19	20	10	14	18	1	0	0	0	0	0	116
NNW	29	17	14	15	12	11	0	0	0	0	0	0	98
TOTAL	218	225	286	439	349	275	32	3	0	0	0	0	1827

NUMBER OF CALMS: 114
NUMBER OF INVALID HOURS: 267
NUMBER OF VALID HOURS: 1941
TOTAL HOURS FOR THE PERIOD: 2208

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS A

FROM 7/ 1/ 2 0:00 TO 9/30/ 2 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	0	0	0	0	0	0	0
NNE	0	0	0	0	3	2	0	0	0	0	0	0	5
NE	0	0	0	0	5	10	0	0	0	0	0	0	15
ENE	0	0	0	1	1	12	0	0	0	0	0	0	14
E	0	0	0	0	5	3	1	0	0	0	0	0	9
ESE	0	0	0	0	0	3	0	0	0	0	0	0	3
SE	0	0	0	1	0	5	1	0	0	0	0	0	7
SSE	0	0	0	0	0	0	0	0	0	0	0	0	0
S	0	0	1	0	0	0	0	0	0	0	0	0	1
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	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	1	2	14	35	2	0	0	0	0	0	54

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 54
TOTAL HOURS FOR THE PERIOD: 54

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS B

FROM 7/ 1/ 2 0:00 TO 9/30/ 2 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	0	0	0	0	0	0	3
NNE	0	0	0	3	1	6	0	0	0	0	0	0	10
NE	0	0	0	3	3	6	0	0	0	0	0	0	12
ENE	0	0	0	0	3	2	0	0	0	0	0	0	5
E	0	0	0	0	2	2	0	0	0	0	0	0	4
ESE	0	0	0	2	0	1	0	0	0	0	0	0	3
SE	0	0	0	0	4	4	0	0	0	0	0	0	8
SSE	0	0	0	0	1	0	3	0	0	0	0	0	4
S	0	0	0	0	0	0	1	0	0	0	0	0	1
SSW	0	0	0	0	1	0	0	0	0	0	0	0	1
SW	0	0	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	1	0	0	0	0	0	0	1
W	0	0	0	0	1	0	0	0	0	0	0	0	1
WNW	0	0	0	0	0	0	0	0	0	0	0	0	0
NW	0	0	0	1	0	0	0	0	0	0	0	0	1
NNW	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	9	16	25	4	0	0	0	0	0	54

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 54
TOTAL HOURS FOR THE PERIOD: 54

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS C

FROM 7/ 1/ 2 0:00 TO 9/30/ 2 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	1	0	0	0	0	0	0	3
NNE	0	0	0	1	5	2	0	0	0	0	0	0	8
NE	0	1	0	4	6	3	0	0	0	0	0	0	14
ENE	0	0	0	1	1	1	0	0	0	0	0	0	3
E	0	0	0	1	1	1	0	0	0	0	0	0	3
ESE	0	0	0	1	2	1	0	0	0	0	0	0	4
SE	0	0	2	2	2	4	0	0	0	0	0	0	10
SSE	0	0	0	0	2	2	0	0	0	0	0	0	4
S	0	0	0	0	0	0	1	0	0	0	0	0	1
SSW	0	0	0	0	0	0	1	0	0	0	0	0	1
SW	0	0	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	1	0	0	0	0	0	0	1
W	0	0	0	0	0	0	0	0	0	0	0	0	0
WNW	0	0	0	0	0	1	0	0	0	0	0	0	1
NW	0	0	0	0	0	1	0	0	0	0	0	0	1
NNW	0	0	0	0	0	1	0	0	0	0	0	0	1
TOTAL	0	1	2	10	21	19	2	0	0	0	0	0	55

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 55
TOTAL HOURS FOR THE PERIOD: 55

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS D

FROM 7/ 1/ 2 0:00 TO 9/30/ 2 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	2	5	13	17	12	4	0	0	0	0	0	53
NNE	0	3	3	17	24	7	0	0	0	0	0	0	54
NE	1	1	9	13	20	3	0	0	0	0	0	0	47
ENE	1	5	3	11	7	2	0	0	0	0	0	0	29
E	3	4	1	12	4	0	0	0	0	0	0	0	24
ESE	2	9	9	17	5	9	0	0	0	0	0	0	51
SE	2	5	16	40	32	15	0	0	0	0	0	0	110
SSE	1	3	4	22	18	18	7	0	0	0	0	0	73
S	1	1	4	9	6	36	8	1	0	0	0	0	66
SSW	1	2	7	11	11	15	3	0	0	0	0	0	50
SW	1	2	4	7	22	4	0	0	0	0	0	0	40
WSW	0	2	3	15	10	7	0	0	0	0	0	0	37
W	1	1	3	11	17	9	0	0	0	0	0	0	42
WNW	2	3	5	13	17	16	0	2	0	0	0	0	58
NW	0	3	4	6	12	16	0	0	0	0	0	0	41
NNW	1	1	1	9	8	9	0	0	0	0	0	0	29
TOTAL	17	47	81	226	230	178	22	3	0	0	0	0	804

NUMBER OF CALMS: 2
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 806
TOTAL HOURS FOR THE PERIOD: 806

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS E

FROM 7/ 1/ 2 0:00 TO 9/30/ 2 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	8	20	5	2	1	0	0	0	0	0	45
NNE	3	11	15	10	5	1	0	0	0	0	0	0	45
NE	2	7	15	7	3	1	0	0	0	0	0	0	35
ENE	5	9	7	13	5	0	0	0	0	0	0	0	39
E	10	7	9	8	1	0	0	0	0	0	0	0	35
ESE	6	8	11	7	0	1	0	0	0	0	0	0	33
SE	9	12	21	12	12	1	0	0	0	0	0	0	67
SSE	6	9	9	16	11	3	0	0	0	0	0	0	54
S	3	4	7	19	7	3	0	0	0	0	0	0	43
SSW	3	4	9	11	3	1	0	0	0	0	0	0	31
SW	4	4	8	6	1	1	0	0	0	0	0	0	24
WSW	2	3	3	2	1	0	0	0	0	0	0	0	11
W	4	3	1	1	0	0	0	0	0	0	0	0	9
WNW	5	10	5	1	0	0	0	0	0	0	0	0	21
NW	7	6	5	2	1	1	1	0	0	0	0	0	23
NNW	3	7	7	4	2	1	0	0	0	0	0	0	24
TOTAL	75	110	140	139	57	16	2	0	0	0	0	0	539

NUMBER OF CALMS: 24
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 563
TOTAL HOURS FOR THE PERIOD: 563

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS F

FROM 7/ 1/ 2 0:00 TO 9/30/ 2 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	5	6	10	20	2	0	0	0	0	0	0	0	43
NNE	6	2	2	12	2	1	0	0	0	0	0	0	25
NE	5	4	4	2	1	0	0	0	0	0	0	0	16
ENE	1	0	1	0	0	1	0	0	0	0	0	0	3
E	7	2	1	1	0	0	0	0	0	0	0	0	11
ESE	1	4	1	0	0	0	0	0	0	0	0	0	6
SE	5	2	0	1	0	0	0	0	0	0	0	0	8
SSE	3	0	4	3	1	0	0	0	0	0	0	0	11
S	2	1	7	2	0	0	0	0	0	0	0	0	12
SSW	4	2	2	3	2	0	0	0	0	0	0	0	13
SW	2	4	0	1	0	0	0	0	0	0	0	0	7
WSW	3	1	2	0	0	0	0	0	0	0	0	0	6
W	3	3	0	0	0	0	0	0	0	0	0	0	6
WNW	4	2	3	0	0	0	0	0	0	0	0	0	9
NW	13	5	5	1	0	0	0	0	0	0	0	0	24
NNW	8	5	5	0	2	0	0	0	0	0	0	0	20
TOTAL	72	43	47	46	10	2	0	0	0	0	0	0	220

NUMBER OF CALMS: 41
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 261
TOTAL HOURS FOR THE PERIOD: 261

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS G

FROM 7/ 1/ 2 0:00 TO 9/30/ 2 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	1	2	3	0	0	0	0	0	0	0	0	9
NNE	2	1	2	1	0	0	0	0	0	0	0	0	6
NE	5	3	1	0	0	0	0	0	0	0	0	0	9
ENE	1	2	0	0	0	0	0	0	0	0	0	0	3
E	1	1	0	0	0	0	0	0	0	0	0	0	2
ESE	1	2	0	0	0	0	0	0	0	0	0	0	3
SE	0	0	1	0	0	0	0	0	0	0	0	0	1
SSE	0	0	1	0	0	0	0	0	0	0	0	0	1
S	3	1	0	0	0	0	0	0	0	0	0	0	4
SSW	1	0	0	0	0	0	0	0	0	0	0	0	1
SW	0	0	0	0	0	0	0	0	0	0	0	0	0
WSW	1	1	0	1	0	0	0	0	0	0	0	0	3
W	0	1	0	0	0	0	0	0	0	0	0	0	1
WNW	5	2	1	0	0	0	0	0	0	0	0	0	8
NW	14	5	6	0	1	0	0	0	0	0	0	0	26
NNW	17	4	1	2	0	0	0	0	0	0	0	0	24
TOTAL	54	24	15	7	1	0	0	0	0	0	0	0	101

NUMBER OF CALMS: 47
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 148
TOTAL HOURS FOR THE PERIOD: 148

RIVER BEND STATION
JOINT FREQUENCY TABLE
ALL STABILITY CLASSES

FROM 7/ 1/ 2 0:00 TO 9/30/ 2 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	4	4	10	31	26	0	1	0	0	0	78
NNE	1	2	10	16	19	48	38	0	0	0	0	0	134
NE	2	3	4	19	32	83	100	0	0	0	0	0	243
ENE	0	2	6	34	25	64	86	19	1	0	0	0	237
E	0	0	6	25	21	30	35	8	1	1	0	0	127
ESE	0	4	5	10	22	89	116	17	1	0	0	0	264
SE	2	1	3	12	25	45	28	3	0	0	0	0	119
SSE	3	2	3	9	18	30	17	1	0	0	0	0	83
S	0	0	4	14	22	44	36	1	0	0	0	0	121
SSW	1	0	6	10	20	36	19	2	0	0	0	0	94
SW	1	0	2	22	22	26	6	0	0	0	0	0	79
WSW	0	0	4	18	21	39	3	0	0	0	0	0	85
W	3	3	4	8	20	44	8	0	1	0	0	0	91
WNW	0	1	3	9	16	29	14	0	1	0	0	0	73
NW	1	4	6	7	12	25	8	1	0	0	0	0	64
NNW	0	0	2	5	12	21	6	0	0	0	0	0	46
TOTAL	15	23	72	222	317	684	546	52	6	1	0	0	1938

NUMBER OF CALMS: 3
NUMBER OF INVALID HOURS: 267
NUMBER OF VALID HOURS: 1941
TOTAL HOURS FOR THE PERIOD: 2208

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS A

FROM 7/ 1/ 2 0:00 TO 9/30/ 2 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	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	0	1	12	0	0	0	0	0	13
ENE	0	0	0	0	0	2	20	6	0	0	0	0	28
E	0	0	0	0	0	0	2	1	0	1	0	0	4
ESE	0	0	0	0	0	1	4	3	0	0	0	0	8
SE	0	0	0	0	0	0	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0	0	0	0	0	0	0
S	0	0	1	0	0	0	0	0	0	0	0	0	1
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	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	1	0	0	4	38	10	0	1	0	0	54

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 54
TOTAL HOURS FOR THE PERIOD: 54

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS B

FROM 7/ 1/ 2 0:00 TO 9/30/ 2 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	1	0	0	0	0	0	2
NNE	0	0	0	0	0	0	3	0	0	0	0	0	3
NE	0	0	0	0	0	9	7	0	0	0	0	0	16
ENE	0	0	0	0	0	1	9	3	0	0	0	0	13
E	0	0	0	0	0	0	3	0	0	0	0	0	3
ESE	0	0	0	0	0	1	7	1	0	0	0	0	9
SE	0	0	0	0	0	0	1	1	0	0	0	0	2
SSE	0	0	0	0	0	0	2	0	0	0	0	0	2
S	0	0	0	0	0	0	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	1	0	0	0	0	0	1
SW	0	0	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	1	0	0	0	0	0	0	1
W	0	0	0	0	0	0	1	0	0	0	0	0	1
WNW	0	0	0	0	1	0	0	0	0	0	0	0	1
NW	0	0	0	0	0	0	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	1	13	35	5	0	0	0	0	54

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 54
TOTAL HOURS FOR THE PERIOD: 54

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS C

FROM 7/ 1/ 2 0:00 TO 9/30/ 2 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	1	0	0	0	0	0	1
NNE	0	0	0	0	0	1	0	0	0	0	0	0	1
NE	0	0	0	0	0	9	7	0	0	0	0	0	16
ENE	0	1	0	0	0	5	7	1	0	0	0	0	14
E	0	0	0	0	0	1	3	1	0	0	0	0	5
ESE	0	0	0	1	1	0	3	1	0	0	0	0	6
SE	0	0	0	0	1	1	2	1	0	0	0	0	5
SSE	0	0	0	0	0	1	0	0	0	0	0	0	1
S	0	0	0	0	0	0	1	0	0	0	0	0	1
SSW	0	0	0	0	0	0	1	0	0	0	0	0	1
SW	0	0	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0	0	0	0	0	0	0
W	0	0	0	0	0	1	0	0	0	0	0	0	1
WNW	0	0	0	0	0	1	1	0	0	0	0	0	2
NW	0	0	0	0	0	0	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	1	0	0	0	0	0	1
TOTAL	0	1	0	1	2	20	27	4	0	0	0	0	55

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 55
TOTAL HOURS FOR THE PERIOD: 55

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS D

FROM 7/ 1/ 2 0:00 TO 9/30/ 2 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	0	4	16	9	0	0	0	0	0	30
NNE	0	1	3	7	9	18	7	0	0	0	0	0	45
NE	0	0	2	7	17	29	26	0	0	0	0	0	81
ENE	0	0	3	14	2	24	27	7	0	0	0	0	77
E	0	0	0	5	5	15	13	5	0	0	0	0	43
ESE	0	0	2	3	9	35	40	9	1	0	0	0	99
SE	0	0	2	6	9	24	9	1	0	0	0	0	51
SSE	0	0	0	2	6	16	13	1	0	0	0	0	38
S	0	0	1	5	8	20	26	1	0	0	0	0	61
SSW	0	0	3	2	6	14	7	2	0	0	0	0	34
SW	0	0	0	10	14	11	3	0	0	0	0	0	38
WSW	0	0	2	9	11	23	2	0	0	0	0	0	47
W	1	1	1	5	18	30	7	0	1	0	0	0	64
WNW	0	1	1	4	8	16	10	0	1	0	0	0	41
NW	0	0	0	4	7	19	5	0	0	0	0	0	35
NNW	0	0	0	2	8	9	3	0	0	0	0	0	22
TOTAL	1	3	21	85	141	319	207	26	3	0	0	0	806

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 806
TOTAL HOURS FOR THE PERIOD: 806

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS E

FROM 7/ 1/ 2 0:00 TO 9/30/ 2 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	3	1	2	4	8	0	1	0	0	0	19
NNE	1	1	3	4	8	17	9	0	0	0	0	0	43
NE	1	0	0	5	11	22	24	0	0	0	0	0	63
ENE	0	1	1	8	11	28	16	1	1	0	0	0	67
E	0	0	2	11	10	12	13	1	1	0	0	0	50
ESE	0	3	2	1	5	36	47	3	0	0	0	0	97
SE	1	1	0	1	9	13	14	0	0	0	0	0	39
SSE	3	0	1	1	7	11	2	0	0	0	0	0	25
S	0	0	2	3	7	17	8	0	0	0	0	0	37
SSW	0	0	1	2	5	17	6	0	0	0	0	0	31
SW	0	0	1	7	5	8	3	0	0	0	0	0	24
WSW	0	0	0	5	4	13	1	0	0	0	0	0	23
W	1	1	1	1	1	5	0	0	0	0	0	0	10
WNW	0	0	0	2	1	3	1	0	0	0	0	0	7
NW	0	2	3	3	2	4	2	1	0	0	0	0	17
NNW	0	0	1	1	1	6	1	0	0	0	0	0	10
TOTAL	7	9	21	56	89	216	155	6	3	0	0	0	562

NUMBER OF CALMS: 1
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 563
TOTAL HOURS FOR THE PERIOD: 563

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS F

FROM 7/ 1/ 2 0:00 TO 9/30/ 2 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	0	2	1	4	3	0	0	0	0	0	11
NNE	0	0	3	5	1	8	17	0	0	0	0	0	34
NE	0	2	0	4	3	7	21	0	0	0	0	0	37
ENE	0	0	1	6	6	4	7	1	0	0	0	0	25
E	0	0	2	6	4	1	1	0	0	0	0	0	14
ESE	0	0	1	3	5	11	13	0	0	0	0	0	33
SE	1	0	1	3	5	7	1	0	0	0	0	0	18
SSE	0	0	0	3	3	1	0	0	0	0	0	0	7
S	0	0	0	4	3	5	1	0	0	0	0	0	13
SSW	0	0	2	3	6	3	4	0	0	0	0	0	18
SW	0	0	1	3	0	5	0	0	0	0	0	0	9
WSW	0	0	2	1	6	2	0	0	0	0	0	0	11
W	0	1	1	0	1	4	0	0	0	0	0	0	7
WNW	0	0	1	2	1	6	2	0	0	0	0	0	12
NW	1	1	1	0	1	1	0	0	0	0	0	0	5
NNW	0	0	0	2	1	2	0	0	0	0	0	0	5
TOTAL	3	4	16	47	47	71	70	1	0	0	0	0	259

NUMBER OF CALMS: 2
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 261
TOTAL HOURS FOR THE PERIOD: 261

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS G

FROM 7/ 1/ 2 0:00 TO 9/30/ 2 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	1	3	6	4	0	0	0	0	0	15
NNE	0	0	1	0	1	4	2	0	0	0	0	0	8
NE	1	1	2	3	1	6	3	0	0	0	0	0	17
ENE	0	0	1	6	6	0	0	0	0	0	0	0	13
E	0	0	2	3	2	1	0	0	0	0	0	0	8
ESE	0	1	0	2	2	5	2	0	0	0	0	0	12
SE	0	0	0	2	1	0	1	0	0	0	0	0	4
SSE	0	2	2	3	2	1	0	0	0	0	0	0	10
S	0	0	0	2	4	2	0	0	0	0	0	0	8
SSW	1	0	0	3	3	2	0	0	0	0	0	0	9
SW	1	0	0	2	3	2	0	0	0	0	0	0	8
WSW	0	0	0	3	0	0	0	0	0	0	0	0	3
W	1	0	1	2	0	4	0	0	0	0	0	0	8
WNW	0	0	1	1	5	3	0	0	0	0	0	0	10
NW	0	1	2	0	2	1	1	0	0	0	0	0	7
NNW	0	0	1	0	2	4	1	0	0	0	0	0	8
TOTAL	4	6	13	33	37	41	14	0	0	0	0	0	148

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 148
TOTAL HOURS FOR THE PERIOD: 148

RIVER BEND STATION
JOINT FREQUENCY TABLE
ALL STABILITY CLASSES

FROM 10/ 1/ 2 0:00 TO 12/31/ 2 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	15	13	13	61	53	78	24	0	0	0	0	0	257
NNE	11	10	8	52	51	47	5	0	0	0	0	0	184
NE	19	20	19	27	46	21	2	0	0	0	0	0	154
ENE	19	23	14	23	15	10	2	0	0	0	0	0	106
E	9	14	18	23	11	2	0	0	0	0	0	0	77
ESE	7	13	19	18	13	9	2	0	0	0	0	0	81
SE	5	7	15	69	57	60	16	1	0	0	0	0	230
SSE	4	9	8	30	19	46	55	5	3	0	0	0	179
S	5	5	8	26	15	41	45	6	0	0	0	0	151
SSW	5	6	9	21	11	12	17	1	0	0	0	0	82
SW	6	7	6	12	9	9	3	0	0	0	0	0	52
WSW	3	11	6	7	6	10	3	0	0	0	0	0	46
W	9	11	9	12	10	7	1	0	0	0	0	0	59
WNW	11	15	13	13	17	21	18	0	0	0	0	0	108
NW	7	26	33	25	23	37	26	0	0	0	0	0	177
NNW	16	17	18	35	23	49	43	2	0	0	0	0	203
TOTAL	151	207	216	454	379	459	262	15	3	0	0	0	2146

NUMBER OF CALMS: 23
NUMBER OF INVALID HOURS: 39
NUMBER OF VALID HOURS: 2169
TOTAL HOURS FOR THE PERIOD: 2208

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS A

FROM 10/ 1/ 2 0:00 TO 12/31/ 2 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	0	2	0	0	0	0	0	0	0	3
NNE	0	0	0	2	1	7	0	0	0	0	0	0	10
NE	0	0	0	0	1	0	0	0	0	0	0	0	1
ENE	1	1	0	0	1	0	0	0	0	0	0	0	3
E	0	0	0	0	4	0	0	0	0	0	0	0	4
ESE	0	0	0	0	2	0	0	0	0	0	0	0	2
SE	1	0	1	2	0	1	0	0	0	0	0	0	5
SSE	0	3	0	1	1	0	1	0	0	0	0	0	6
S	0	0	1	0	0	0	0	1	0	0	0	0	2
SSW	0	0	2	0	0	0	0	0	0	0	0	0	2
SW	0	1	0	0	0	0	1	0	0	0	0	0	2
WSW	0	1	0	0	0	0	0	0	0	0	0	0	1
W	0	0	0	1	0	1	0	0	0	0	0	0	2
WNW	0	0	0	1	0	2	2	0	0	0	0	0	5
NW	0	0	2	1	2	1	0	0	0	0	0	0	6
NNW	0	0	0	2	0	0	0	0	0	0	0	0	2
TOTAL	2	6	7	10	14	12	4	1	0	0	0	0	56

NUMBER OF CALMS: 1
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 57
TOTAL HOURS FOR THE PERIOD: 57

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS B

FROM 10/ 1/ 2 0:00 TO 12/31/ 2 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	4	0	0	2	0	0	0	0	0	7
NNE	0	0	1	3	6	3	0	0	0	0	0	0	13
NE	0	0	3	2	2	3	0	0	0	0	0	0	10
ENE	0	0	1	3	3	0	0	0	0	0	0	0	7
E	0	0	0	3	1	0	0	0	0	0	0	0	4
ESE	0	1	0	1	0	1	0	0	0	0	0	0	3
SE	0	0	0	2	6	5	0	0	0	0	0	0	13
SSE	0	0	1	0	1	1	3	1	0	0	0	0	7
S	0	0	0	0	0	1	0	0	0	0	0	0	1
SSW	1	1	0	2	0	0	0	0	0	0	0	0	4
SW	2	1	1	0	0	0	0	0	0	0	0	0	4
WSW	0	0	0	0	0	1	0	0	0	0	0	0	1
W	0	0	0	1	0	2	0	0	0	0	0	0	3
WNW	0	0	1	2	1	0	3	0	0	0	0	0	7
NW	0	0	1	1	3	3	1	0	0	0	0	0	9
NNW	1	0	0	2	3	2	4	0	0	0	0	0	12
TOTAL	4	3	10	26	26	22	13	1	0	0	0	0	105

NUMBER OF CALMS: 1
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 106
TOTAL HOURS FOR THE PERIOD: 106

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS C

FROM 10/ 1/ 2 0:00 TO 12/31/ 2 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	6	1	0	0	0	0	0	12
NNE	0	0	0	0	4	3	2	0	0	0	0	0	9
NE	0	2	2	0	4	1	0	0	0	0	0	0	9
ENE	0	0	1	2	2	0	0	0	0	0	0	0	5
E	0	0	0	0	1	0	0	0	0	0	0	0	1
ESE	0	0	1	3	2	0	1	0	0	0	0	0	7
SE	0	0	0	3	5	6	1	0	0	0	0	0	15
SSE	0	1	0	0	2	1	2	0	0	0	0	0	6
S	1	0	0	1	0	2	2	0	0	0	0	0	6
SSW	0	0	0	0	1	0	1	0	0	0	0	0	2
SW	1	1	1	0	0	0	0	0	0	0	0	0	3
WSW	0	1	0	0	0	0	0	0	0	0	0	0	1
W	0	2	0	1	0	0	0	0	0	0	0	0	3
WNW	0	0	1	2	5	2	0	0	0	0	0	0	10
NW	1	0	0	2	0	6	1	0	0	0	0	0	10
NNW	1	0	3	3	0	3	5	1	0	0	0	0	16
TOTAL	4	7	9	19	29	30	16	1	0	0	0	0	115

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 115
TOTAL HOURS FOR THE PERIOD: 115

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS D

FROM 10/ 1/ 2 0:00 TO 12/31/ 2 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	2	3	19	27	63	19	0	0	0	0	0	133
NNE	0	2	1	28	25	23	3	0	0	0	0	0	82
NE	0	1	7	12	21	4	2	0	0	0	0	0	47
ENE	0	1	2	12	5	6	2	0	0	0	0	0	28
E	1	3	5	11	5	2	0	0	0	0	0	0	27
ESE	1	1	3	4	6	7	0	0	0	0	0	0	22
SE	0	1	3	20	26	25	7	1	0	0	0	0	83
SSE	0	0	1	12	7	18	37	4	3	0	0	0	82
S	1	0	1	10	7	26	36	5	0	0	0	0	86
SSW	1	1	0	11	8	10	16	1	0	0	0	0	48
SW	0	1	1	5	8	9	2	0	0	0	0	0	26
WSW	0	2	3	6	6	9	3	0	0	0	0	0	29
W	0	4	1	6	10	4	1	0	0	0	0	0	26
WNW	0	3	2	3	7	14	13	0	0	0	0	0	42
NW	0	4	1	8	13	22	23	0	0	0	0	0	71
NNW	1	2	2	11	13	43	33	1	0	0	0	0	106
TOTAL	5	28	36	178	194	285	197	12	3	0	0	0	938

NUMBER OF CALMS: 1
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 939
TOTAL HOURS FOR THE PERIOD: 939

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS E

FROM 10/ 1/ 2 0:00 TO 12/31/ 2 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	2	3	5	31	19	8	2	0	0	0	0	0	70
NNE	2	2	3	18	15	10	0	0	0	0	0	0	50
NE	0	1	0	9	17	12	0	0	0	0	0	0	39
ENE	0	2	2	4	4	4	0	0	0	0	0	0	16
E	0	0	3	6	0	0	0	0	0	0	0	0	9
ESE	2	5	12	7	3	1	1	0	0	0	0	0	31
SE	1	4	3	36	17	23	8	0	0	0	0	0	92
SSE	0	2	3	13	7	26	12	0	0	0	0	0	63
S	0	1	4	12	8	11	7	0	0	0	0	0	43
SSW	2	1	3	8	2	2	0	0	0	0	0	0	18
SW	2	2	1	6	1	0	0	0	0	0	0	0	12
WSW	1	2	3	0	0	0	0	0	0	0	0	0	6
W	2	1	4	1	0	0	0	0	0	0	0	0	8
WNW	1	4	4	3	4	2	0	0	0	0	0	0	18
NW	0	2	4	5	4	5	1	0	0	0	0	0	21
NNW	1	3	3	11	7	1	1	0	0	0	0	0	27
TOTAL	16	35	57	170	108	105	32	0	0	0	0	0	523

NUMBER OF CALMS: 1
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 524
TOTAL HOURS FOR THE PERIOD: 524

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS F

FROM 10/ 1/ 2 0:00 TO 12/31/ 2 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	2	4	2	4	1	0	0	0	0	0	0	0	13
NNE	0	0	1	1	0	0	0	0	0	0	0	0	2
NE	1	3	4	4	1	1	0	0	0	0	0	0	14
ENE	1	3	4	2	0	0	0	0	0	0	0	0	10
E	1	1	4	2	0	0	0	0	0	0	0	0	8
ESE	2	2	1	3	0	0	0	0	0	0	0	0	8
SE	1	2	7	5	3	0	0	0	0	0	0	0	18
SSE	2	1	3	2	1	0	0	0	0	0	0	0	9
S	0	2	2	3	0	1	0	0	0	0	0	0	8
SSW	0	3	3	0	0	0	0	0	0	0	0	0	6
SW	0	0	2	1	0	0	0	0	0	0	0	0	3
WSW	1	4	0	0	0	0	0	0	0	0	0	0	5
W	2	1	3	2	0	0	0	0	0	0	0	0	8
WNW	2	3	4	1	0	1	0	0	0	0	0	0	11
NW	0	0	10	6	1	0	0	0	0	0	0	0	17
NNW	3	5	1	3	0	0	0	0	0	0	0	0	12
TOTAL	18	34	51	39	7	3	0	0	0	0	0	0	152

NUMBER OF CALMS: 2
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 154
TOTAL HOURS FOR THE PERIOD: 154

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS G

FROM 10/ 1/ 2 0:00 TO 12/31/ 2 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	11	4	1	1	1	1	0	0	0	0	0	0	19
NNE	9	6	2	0	0	1	0	0	0	0	0	0	18
NE	18	13	3	0	0	0	0	0	0	0	0	0	34
ENE	17	16	4	0	0	0	0	0	0	0	0	0	37
E	7	10	6	1	0	0	0	0	0	0	0	0	24
ESE	2	4	2	0	0	0	0	0	0	0	0	0	8
SE	2	0	1	1	0	0	0	0	0	0	0	0	4
SSE	2	2	0	2	0	0	0	0	0	0	0	0	6
S	3	2	0	0	0	0	0	0	0	0	0	0	5
SSW	1	0	1	0	0	0	0	0	0	0	0	0	2
SW	1	1	0	0	0	0	0	0	0	0	0	0	2
WSW	1	1	0	1	0	0	0	0	0	0	0	0	3
W	5	3	1	0	0	0	0	0	0	0	0	0	9
WNW	8	5	1	1	0	0	0	0	0	0	0	0	15
NW	6	20	15	2	0	0	0	0	0	0	0	0	43
NNW	9	7	9	3	0	0	0	0	0	0	0	0	28
TOTAL	102	94	46	12	1	2	0	0	0	0	0	0	257

NUMBER OF CALMS: 17
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 274
TOTAL HOURS FOR THE PERIOD: 274

RIVER BEND STATION
JOINT FREQUENCY TABLE
ALL STABILITY CLASSES

FROM 10/ 1/ 2 0:00 TO 12/31/ 2 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	2	2	8	14	58	101	7	0	0	0	0	192
NNE	0	1	0	9	16	76	89	6	0	0	0	0	197
NE	0	1	4	14	20	53	87	7	2	0	0	0	188
ENE	0	2	3	13	17	32	56	19	7	1	0	0	150
E	0	1	4	4	8	19	28	4	2	1	0	0	71
ESE	0	0	3	6	7	31	111	31	7	2	0	0	198
SE	0	2	3	10	4	27	103	18	2	2	0	0	171
SSE	1	2	4	6	11	34	67	31	2	1	0	0	159
S	0	0	0	9	15	43	63	25	7	1	0	0	163
SSW	2	0	2	11	8	27	26	12	2	0	0	0	90
SW	1	1	3	6	14	23	12	4	0	0	0	0	64
WSW	0	1	3	9	4	14	15	1	0	0	0	0	47
W	0	1	4	7	14	26	28	1	2	0	0	0	83
WNW	0	1	3	3	11	30	45	15	5	0	0	0	113
NW	0	0	1	6	9	29	46	18	1	0	0	0	110
NNW	0	0	3	4	10	28	96	27	2	0	0	0	170
TOTAL	4	15	42	125	182	550	973	226	41	8	0	0	2166

NUMBER OF CALMS: 3
NUMBER OF INVALID HOURS: 39
NUMBER OF VALID HOURS: 2169
TOTAL HOURS FOR THE PERIOD: 2208

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS A

FROM 10/ 1/ 2 0:00 TO 12/31/ 2 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	2	0	0	0	0	0	0	2
NNE	0	0	0	0	0	4	4	0	0	0	0	0	8
NE	0	0	1	0	0	1	2	0	0	0	0	0	4
ENE	0	0	0	0	0	2	7	1	0	0	0	0	10
E	0	0	0	0	1	0	0	0	0	0	0	0	1
ESE	0	0	1	0	0	0	1	1	0	0	0	0	3
SE	0	0	0	3	0	2	0	0	0	0	0	0	5
SSE	0	1	0	0	1	0	0	1	0	0	0	0	3
S	0	0	0	1	0	0	0	0	0	0	0	0	1
SSW	0	0	0	2	0	0	0	0	1	0	0	0	3
SW	0	0	1	0	0	0	0	1	0	0	0	0	2
WSW	0	0	0	0	0	0	0	0	0	0	0	0	0
W	0	0	0	1	0	1	2	0	0	0	0	0	4
WNW	0	0	0	0	1	2	3	0	1	0	0	0	7
NW	0	0	0	0	0	1	1	0	0	0	0	0	2
NNW	0	0	0	1	0	0	0	0	0	0	0	0	1
TOTAL	0	1	3	8	3	15	20	4	2	0	0	0	56

NUMBER OF CALMS: 1
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 57
TOTAL HOURS FOR THE PERIOD: 57

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS B

FROM 10/ 1/ 2 0:00 TO 12/31/ 2 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	2	1	0	0	0	0	7
NNE	0	0	0	0	1	3	0	0	0	0	0	0	4
NE	0	0	1	0	2	6	8	1	0	0	0	0	18
ENE	0	0	0	1	0	6	7	2	0	0	0	0	16
E	0	0	0	0	0	1	2	0	0	0	0	0	3
ESE	0	0	0	0	0	0	7	2	0	0	0	0	9
SE	0	0	0	1	0	1	2	0	0	0	0	0	4
SSE	0	0	0	0	0	0	2	2	0	0	0	0	4
S	0	0	0	0	0	0	1	0	1	0	0	0	2
SSW	0	0	0	1	0	0	0	0	0	0	0	0	1
SW	0	0	1	3	2	0	0	0	0	0	0	0	6
WSW	0	0	1	0	0	0	1	0	0	0	0	0	2
W	0	0	0	0	0	2	3	0	0	0	0	0	5
WNW	0	0	0	0	1	2	3	2	0	0	0	0	8
NW	0	0	0	0	1	2	2	1	0	0	0	0	6
NNW	0	0	0	0	1	3	3	2	0	0	0	0	9
TOTAL	0	0	3	6	11	27	43	13	1	0	0	0	104

NUMBER OF CALMS: 2
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 106
TOTAL HOURS FOR THE PERIOD: 106

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS C

FROM 10/ 1/ 2 0:00 TO 12/31/ 2 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	2	1	6	0	0	0	0	0	9
NNE	0	0	0	2	1	1	7	1	0	0	0	0	12
NE	0	0	0	2	2	4	4	1	0	0	0	0	13
ENE	0	0	0	2	0	2	2	0	0	0	0	0	6
E	0	0	0	0	0	1	3	0	0	0	0	0	4
ESE	0	0	0	0	1	2	9	3	0	1	0	0	16
SE	0	0	0	1	0	3	3	1	1	0	0	0	9
SSE	0	0	0	0	0	0	1	0	0	0	0	0	1
S	0	0	0	1	0	0	2	1	0	0	0	0	4
SSW	1	0	0	0	0	0	0	1	0	0	0	0	2
SW	0	0	1	0	1	1	0	0	0	0	0	0	3
WSW	0	0	0	1	1	0	0	0	0	0	0	0	2
W	0	0	1	0	0	1	1	0	0	0	0	0	3
WNW	0	0	0	0	2	3	5	0	0	0	0	0	10
NW	0	0	0	1	2	0	6	0	0	0	0	0	9
NNW	0	0	0	1	3	0	6	1	1	0	0	0	12
TOTAL	1	0	2	11	15	19	55	9	2	1	0	0	115

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 115
TOTAL HOURS FOR THE PERIOD: 115

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS D

FROM 10/ 1/ 2 0:00 TO 12/31/ 2 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	3	6	30	51	4	0	0	0	0	96
NNE	0	0	0	2	13	39	47	4	0	0	0	0	105
NE	0	1	2	8	8	21	30	1	2	0	0	0	73
ENE	0	0	0	7	8	11	22	4	6	1	0	0	59
E	0	0	1	3	2	4	10	2	2	0	0	0	24
ESE	0	0	0	5	4	13	26	16	6	1	0	0	71
SE	0	0	0	1	2	6	21	3	0	2	0	0	35
SSE	0	1	1	3	3	9	25	18	2	1	0	0	63
S	0	0	0	2	6	17	33	22	4	1	0	0	85
SSW	1	0	1	1	5	9	17	10	1	0	0	0	45
SW	0	1	0	1	8	8	9	3	0	0	0	0	30
WSW	0	0	1	3	2	8	12	1	0	0	0	0	27
W	0	0	2	3	9	11	10	1	2	0	0	0	38
WNW	0	0	1	1	0	9	17	13	4	0	0	0	45
NW	0	0	1	1	3	16	25	15	1	0	0	0	62
NNW	0	0	0	0	3	9	45	23	1	0	0	0	81
TOTAL	1	4	11	44	82	220	400	140	31	6	0	0	939

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 939
TOTAL HOURS FOR THE PERIOD: 939

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS E

FROM 10/ 1/ 2 0:00 TO 12/31/ 2 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	3	1	16	26	2	0	0	0	0	50
NNE	0	0	0	3	0	21	24	1	0	0	0	0	49
NE	0	0	0	3	6	14	25	4	0	0	0	0	52
ENE	0	0	0	0	6	4	14	12	1	0	0	0	37
E	0	0	1	0	2	7	6	2	0	1	0	0	19
ESE	0	0	1	0	1	6	40	8	1	0	0	0	57
SE	0	0	1	0	0	4	45	14	1	0	0	0	65
SSE	0	0	1	1	1	8	34	10	0	0	0	0	55
S	0	0	0	2	5	14	16	2	2	0	0	0	41
SSW	0	0	0	3	1	9	4	1	0	0	0	0	18
SW	0	0	0	1	1	8	1	0	0	0	0	0	11
WSW	0	1	1	4	0	2	2	0	0	0	0	0	10
W	0	1	0	1	0	5	1	0	0	0	0	0	8
WNW	0	1	0	1	2	5	11	0	0	0	0	0	20
NW	0	0	0	2	0	2	6	1	0	0	0	0	11
NNW	0	0	0	1	3	2	14	1	0	0	0	0	21
TOTAL	0	4	6	25	29	127	269	58	5	1	0	0	524

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 524
TOTAL HOURS FOR THE PERIOD: 524

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS F

FROM 10/ 1/ 2 0:00 TO 12/31/ 2 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	2	3	4	0	0	0	0	0	9
NNE	0	1	0	0	0	3	3	0	0	0	0	0	7
NE	0	0	0	0	1	2	14	0	0	0	0	0	17
ENE	0	0	2	2	1	6	2	0	0	0	0	0	13
E	0	0	0	0	0	5	4	0	0	0	0	0	9
ESE	0	0	0	0	1	5	14	1	0	0	0	0	21
SE	0	0	1	0	0	6	9	0	0	0	0	0	16
SSE	0	0	0	0	1	1	0	0	0	0	0	0	2
S	0	0	0	0	0	4	6	0	0	0	0	0	10
SSW	0	0	1	0	2	2	2	0	0	0	0	0	7
SW	0	0	0	0	2	3	0	0	0	0	0	0	5
WSW	0	0	0	0	0	3	0	0	0	0	0	0	3
W	0	0	0	0	2	2	4	0	0	0	0	0	8
WNW	0	0	1	0	2	3	2	0	0	0	0	0	8
NW	0	0	0	0	0	2	1	1	0	0	0	0	4
NNW	0	0	0	0	0	2	13	0	0	0	0	0	15
TOTAL	0	1	5	2	14	52	78	2	0	0	0	0	154

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 154
TOTAL HOURS FOR THE PERIOD: 154

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS G

FROM 10/ 1/ 2 0:00 TO 12/31/ 2 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	0	5	12	0	0	0	0	0	19
NNE	0	0	0	2	1	5	4	0	0	0	0	0	12
NE	0	0	0	1	1	5	4	0	0	0	0	0	11
ENE	0	2	1	1	2	1	2	0	0	0	0	0	9
E	0	1	2	1	3	1	3	0	0	0	0	0	11
ESE	0	0	1	1	0	5	14	0	0	0	0	0	21
SE	0	2	1	4	2	5	23	0	0	0	0	0	37
SSE	1	0	2	2	5	16	5	0	0	0	0	0	31
S	0	0	0	3	4	8	5	0	0	0	0	0	20
SSW	0	0	0	4	0	7	3	0	0	0	0	0	14
SW	1	0	0	1	0	3	2	0	0	0	0	0	7
WSW	0	0	0	1	1	1	0	0	0	0	0	0	3
W	0	0	1	2	3	4	7	0	0	0	0	0	17
WNW	0	0	1	1	3	6	4	0	0	0	0	0	15
NW	0	0	0	2	3	6	5	0	0	0	0	0	16
NNW	0	0	3	1	0	12	15	0	0	0	0	0	31
TOTAL	2	5	12	29	28	90	108	0	0	0	0	0	274

NUMBER OF CALMS: 0
NUMBER OF INVALID HOURS: 0
NUMBER OF VALID HOURS: 274
TOTAL HOURS FOR THE PERIOD: 274

Table 14

Effluent and Waste Disposal Annual Report 2002 Year
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	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	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
	2500 SW	CHI/Q - 34.45 D/Q - 3.35	CHI/Q - 4.65 D/Q - 1.40

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 miles radius, hypothetical location in worst sector.
(6) Other on-site receptors.

ATTACHMENT 1

Process Control Program (PCP)

Entergy	NUCLEAR MANAGEMENT MANUAL	QUALITY RELATED INFORMATION USE	RW-105 Revision 1 Page 1 of 6

Title: **Process Control Program**

Reviews	Required
Cross Discipline Review	No
Code Reviews:	
10CFR50.59 Review	Yes
10CFR50.54 Review	No
Environmental Qualification.....	No
On-Site Safety Review Committee Reviews*	No

Procedure Owner: John L. Etheridge / Sr Project Manager
(Print Name / Title)

Approved: John L Etheridge (Procedure Owners Signature) 12/30/02 (Date)

Effective Dates:

ANO	GGNS	RBS	W3	Echelon
1/2/03	N/A	1/2/03	1/2/03	N/A

New Procedure/Revision/Cancellation Basis:

RW-105, "Process Control Program" is modified to

- Change the classification to Quality vs. Non-Quality
- Addition of vendor requirement for placement on QSL when performing services under 10CFR61 & 10CFR71 requirements
- Updated Section 8.0

TABLE OF CONTENTS

1.0 PURPOSE

The Process Control Program establishes the necessary guidance to ensure that solid radioactive waste management activities result in solid waste products meeting the criteria contained in the Code of Federal Regulations, State Regulations and Radioactive Waste Burial Site License Criteria for solid radioactive waste shipping and disposal. The scope of the Process Control Program is to assure that radioactive waste will be handled, shipped, and disposed of in a safe manner in accordance with approved site or vendor procedures, whichever is applicable.

2.0 REFERENCES

2.1 Entergy Nuclear - Southwest

- Entergy Quality Assurance Program Manual
- Title 49, Code of Federal Regulations
- Title 10, Code of Federal Regulations
- Branch Technical Position on Final Waste Classification and Waste Form
- Disposal Site Criteria and License
- Waste Processor Acceptance Criteria

2.2 River Bend Specific References

- RBS Technical Requirements Manual Section 5.8
- RWS-0336, Set-up and Operation of the RDS-1000 Dewatering Unit
- RWS-0310, Operation of the Nuclear Packaging Model WC-1800 Waste Compactor

2.3 Arkansas Nuclear One Specific References

- 1601.5XX series procedures

2.4 Waterford Specific References

- FSAR Chapter 11.4, Solid Waste Management System
- FSAR Chapter 13.4, Review and Audit
- FSAR Chapter 13.2, Training
- FSAR Chapter 13.5, Plant Procedures

3.0 DEFINITIONS

3.1 De-watering - The removal of water or liquid from a waste form, usually by gravity or pumping.

3.2 Compaction - The process of volume reducing solid waste by applying external pressure.

3.3 Incineration – The process of burning a combustible material to reduce its volume and yield an ash residue.

3.4 Solid Dry Waste - Radioactive waste which exist primarily in a non-liquid phase and includes such items as dry materials, metals, resins, filter media and sludges.

3.5 Solid Liquid Waste - Radioactive waste that exist primarily in a liquid form and is contained in other than installed plant systems, to include such items as oil, EHC fluid, and other concentrated liquids.

3.6 Solidification – Conversion of liquid or liquid like materials, including wet solids, into a solid free standing form.

3.7 Stability – Structural stability per 10CFR61.2. This can be provided by the waste form, or by placing the waste in a disposal container or structure that provides stability after disposal.

3.8 Volume Reduction – any process that reduces the volume of waste. This includes but is not limited to, compaction and incineration.

4.0 RESPONSIBILITY

4.1 The Vice President Operations Support (VPOS) is responsible for the implementation of this procedure and must approve any changes or revisions to this procedure.

4.2 Each site Senior Nuclear Executive (SNE) is responsible for ensuring that necessary site staff implements this procedure.

4.3 The Low Level RadWaste (LLRW) Peer Group is responsible for evaluating and recommending changes and revisions to this procedure.

5.0 DETAILS

5.1 Solid Dry Waste Management

> **NOTE**
> If the provisions of the Process Control Program are not satisfied, suspend shipment of the defectively processed or defectively packaged solid waste from the site. Shipment may be accomplished when the waste is processed/packaged in accordance with the Process Control Program.

5.1.1 Solid waste may be packaged and processed either on-site or at an offsite waste processing facility.

5.1.2 Solid waste will meet applicable regulatory requirements, vendor waste acceptance criteria and disposal site acceptance criteria.

5.1.3 Solid waste processing may include, but is not limited to compaction, incineration, bulk processing, dewatering, or any other acceptance technologies available.

5.1.4 River Bend Specific Requirement - Radioactive waste processed at RBS will either be, dewatered in accordance with RWS-0336, Set-up and Operation of the RDS-1000 Dewatering Unit, or compacted in accordance with RWS-0310, Operation of the Nuclear Packing Model WC-1800 Waste Compactor.

5.2 Liquid Waste Management

NOTE
The solidification of liquid wastes will be verified with surveillance activities of an approved Process Control Program.

5.2.1 Solid Liquid waste may be packaged and processed either on-site or at an offsite waste processing facility.

5.2.2 Solid Liquid waste will meet applicable regulatory requirements, vendor waste acceptance criteria and disposal site acceptance criteria.

5.2.3 Solid Liquid waste processing may include, but is not limited to incineration, solidification, or any other acceptance technologies available.

5.3 Quality Assurance

5.3.1 Reviews of solid waste activities performed under the guidance of the Process Control Program are completed through audits and selected monitoring activities.

5.3.2 Certain elements of the Entergy Quality Assurance Program Manual are applied to the Process Control Program.

5.4 Administrative Controls

5.4.1 Information on solid radioactive waste shipped offsite is reported annually to the Nuclear Regulatory Commission.

5.4.2 All changes in the Process Control Program and supporting documentation are included in each site's next annual Radiological Effluent Release Report to the Nuclear Regulatory Commission as required.

5.4.3 All changes that do not affect procedure content are reviewed through the site's Safety Review Committees and up to the site's Vice Presidents.

5.4.4 Each site will maintain applicable state and federal regulations, vendor waste acceptance criteria and disposal site waste acceptance criteria.

5.4.5 Vendors performing radwaste services under 10CFR61 and 10CFR71 requirements will be on the Entergy QSL.

6.0 INTERFACES

6.1 None

7.0 RECORDS

7.1 None

8.0 REQUIREMENTS AND COMMITMENT CROSS REFERENCE

Document	Document Section	Procedure Section	Site Applicability
RBS Technical Requirements	5.5.14	*	RBS
RBS Technical Requirements	5.5.14.1	5.4	RBS
RBS Technical Requirements	5.5.14.2	5.4.3	RBS
RBS Technical Requirements	5.8.2	5.4.3	RBS
WF3 Technical Specifications	1.22	*	WF3
WF3 Technical Specifications	6.9.18	5.4.1	WF3
WF3 Technical Specifications	6.13.2.b	5.4.3	WF3

* Covered by directive as a whole or by various paragraphs of the directive.

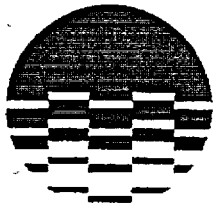
9.0 ATTACHMENTS

9.1 None

ATTACHMENT 2

Offsite Dose Calculation Manual (ODCM)

*G12.1.17



ENTERGY

RIVER BEND STATION
STATION OPERATING MANUAL
*RADIATION SECTION PROCEDURE

*OFFSITE DOSE CALCULATION MANUAL (ODCM)

PROCEDURE NUMBER:	***RSP-0008**
REVISION NUMBER:	***11**
Effective Date:	* SEP 2 4 2002

NOTE : SIGNATURES ARE ON FILE.

*INDEXING INFORMATION

INFORMATION USE

TABLE OF CHANGES

LETTER DESIGNATION TRACKING NUMBER	DETAILED DESCRIPTION OF CHANGES

TABLE OF CONTENTS

1 PURPOSE/OBJECTIVES

1.1 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 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 Requirements of River Bend Station. This manual also contains a description of the Radiological Environmental Monitoring Program that includes sample point descriptions for both onsite and offsite locations and sampling and analysis frequencies.

1.2 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 criteria may be used.

1.3 The description of information that should be included in the Annual Radiological Environmental Operating Report is located in Section 5.6.2 of the Technical Requirements Manual. The description of information that should be included in the Radioactive Effluent Release Report is located in Section 5.6.3 of the Technical Requirements Manual and states as follows:

> Annual Effluent Release Report
>
> Routine Annual Radioactive Effluent Release Report covering the operation of the unit during the previous 12 months of operation shall be submitted as required by Technical Specification 5.6.3
>
> The Annual Radioactive Effluent Release Report shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the facility as outlined in Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light Water-Cooled Nuclear Power Plants," Revision 1, June 1974, with data summarized on a quarterly basis following the format of Appendix B thereof. For solid wastes, the format for Table 3 in Appendix B shall be supplemented with three additional categories: class of solid wastes (as defined by 10 CFR Part 61), type of container (e.g., LSA, Type A, Type B, Large Quantity) and SOLIDIFICATION agent or absorbent (e.g., cement, urea formaldehyde)

The Annual Radioactive Effluent Release Report shall include a summary of hourly meteorological data collected over the previous year. This summary may be either in the form of an hour-by-hour listing on magnetic tape of wind speed, wind direction and atmospheric stability, and precipitation (if measured), or in the form of joint frequency distributions of wind speed, wind direction, and atmospheric stability. This same report shall include an assessment of the radiation doses due to the radioactive liquid and gaseous effluents released from the unit or station during the previous calendar year. The report shall also include an assessment of the radiation doses from radioactive liquid and gaseous effluents to MEMBERS OF THE PUBLIC due to their activities inside the SITE BOUNDARY (USAR section 2.1) during the report period. All assumptions used in making these assessments (i.e., specific activity, exposure time and location) shall be included in these reports. The assessment of radiation doses shall be performed in accordance with the methodology and parameters of the ODCM.

The Annual Radioactive Effluent Release Report shall also include 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) for the previous calendar year to show conformance with 40 CFR Part 190, Environmental Radiation Protection Standards for Nuclear Power Operation. Acceptable methods for calculating the dose contribution from liquid and gaseous effluents are given in NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," Rev. 0, October 1978.

The Annual Radioactive Effluent Release Report shall include list and description of unplanned releases from the site to UNRESTRICTED AREAS of radioactive materials in gaseous and liquid effluents made during the reporting period.

The Annual Radioactive Effluent Release Report shall include any changes made during the reporting period to the PROCESS CONTROL PROGRAM (PCP) and to the ODCM, as well as a listing of new locations for dose calculations and environmental monitoring identified by the land use census pursuant to Requirement 3.12.2.

2 REFERENCES

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

2.1.2. 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

2.1.3. River Bend Environmental Report, OLS

2.1.4. River Bend Environmental Report, CPS

2.1.5. River Bend Station USAR

2.1.6. River Bend Technical Specifications

2.1.7. River Bend Technical Requirements Manual (TRM)

2.1.8. River Bend Station Radiological Environmental Operating Report for 1985

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

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

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

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

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

3 DEFINITIONS

3.1 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.

3.2 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.

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

3.4 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.

3.5 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 adsorbers 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.

4 RESPONSIBILITIES

4.1 The Superintendent – Radiation Protection or designee is responsible for the development and implementation of the "Offsite Dose Calculation Manual [ODCM] Procedure", which involves review of REMP-related ESPs and program changes, as well as coordination of revisions to the ODCM necessitated by results of the REMP and/or annual Land Use Census. The Superintendent – Radiation Protection or designee, reviews the ODCM and Annual Radiological Environmental Operating Report prior to its submission for approval by the General Manager - Plant Operations. The Superintendent – Radiation Protection or designee, coordinates the preparation of other reports for which the ODCM may provide input (e.g., special reports on excessive doses to members of the public in unrestricted areas attributable to RBS effluents). 9/02

4.2 The Manager - Operations is responsible for the development and upkeep of the RBS Technical Requirements and Surveillance Test Procedure Cross Reference matrix that includes applicable STP's.

4.3 The Director - Nuclear Safety Assurance is responsible for identifying proposed changes to the Technical Requirements and other regulatory documents which would alter the Surveillance Test Program requirements. 9/02

4.4 The Manager – Planning & Scheduling Outages is responsible for developing, maintaining, and adjusting a station-wide schedule for performance of Surveillance Test Procedures. 9/02

4.5 The Superintendent - Chemistry has overall responsibility for the development and implementation of the Radiological Environment Monitoring Program (REMP) to include, as a minimum: developing ODCM related procedures, sampling, report generation, and immediate notification to the Superintendent - Radiological Programs of any REMP result which indicates that a reporting level has been exceeded.

4.6 The Supervisor - HP Shift has responsibility for supervising the day to day performance and documentation of Surveillance of the ODCM.

4.7 The HP/Chem Specialist has responsibility for the implementation of surveillances and documentation of the ODCM. This responsibility includes timely notification of the Supervisor - HP Shift of any problem which impacts, or might impact, fulfillment of the Radiological Effluent Technical Requirements and the ODCM.

5 PRECAUTIONS AND LIMITATIONS

5.1 Licensee-initiated changes to the ODCM shall be made per Reference 2.1.6 § 5.5.1. 9/02

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

5.3 A change to the ODCM may cause a deviation from methodologies used in the implementing procedures. Any change to RSP-0008 shall have an independent Review from Chemistry, as a minimum, and also requires Chemistry and Radiation Control to meet and discuss changes to RSP-0008 prior to approval to ensure ODCM methodology compliance.

6 PREREQUISITES

6.1 None

7 LIQUID EFFLUENT METHODOLOGY

7.1 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.

7.2 Compliance with 10CFR20 (Liquids)

7.2.1. Requirements

In accordance with Technical Requirements 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 2, 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} μCi/ml total activity. The concentration of radionuclides in liquid waste is determined by sampling and analysis in accordance with Technical Requirements.

7.2.2. 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.

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, recovery sample 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 3.11.1.1.-1 of the RBS Technical Requirements. Compliance with 10CFR20 limits will be determined with the following equation:

NOTE

f_1 shall be administratively controlled to maintain F_L to ≤ 0.3 for most discharges, as identified. If $\sum \frac{Ci}{ECL_i} \leq 0.3$ or if the calculated $f_1 > 75$ GPM, f_1=75 GPM. For $F_L > 0.3$, other administrative controls should be implemented to ensure discharges shall not exceed 10CFR20 limits.

$$F_L = \frac{f_1}{f_1 + f_2} \sum_{i=1}^{n} \frac{Ci}{(ECL)_i} \qquad \text{7.2.2.1-1}$$

Where: $f_1 \leq \frac{660}{\sum \frac{Ci}{(ECL)_i}} 0.3$

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

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

f_2 = The cooling tower blowdown release rate, in gpm

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

$(ECL)_i$ = Effluent Concentration Limit of nuclide (i) from Appendix A, in μCi/ml

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

2. Simplified Approach

For purposes of simplifying the calculations, the value of 1×10^{-8} μCi/ml (unidentified 10CFR20 ECL value) could be substituted for $(ECL)_i$ 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 1×10^{-8} μCi/ml, the nuclide by nuclide calculation is not required to demonstrate compliance with 10CFR20 ECL limits.

7.3 Determination of Setpoints for Radioactive Liquid Effluent Monitors

7.3.1. Requirements

Technical Requirements 3.3.11.2 requires the radioactive liquid effluent monitor be operable with their high alarm/trip setpoints set to ensure that limits of Technical Requirements 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 2, 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.

1. Liquid Effluent Monitor

   A General Atomics liquid monitor (radwaste effluent RMS-RE107) equipped with a RD-53 detector with sufficient range (10^1 to 10^7 cpm) is provided to ensure compliance with Technical Requirements limits for liquid releases. The RD-53 is an offline gamma scintillation (NaI) detector designed for detecting radioactivity in liquids. The monitor consists of a removable sample canister surrounded by Pb shielding. A well inside the canister holds the detector within the sample fluid

7.3.2. 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.

1. Liquid Radwaste Effluent Monitor (RMS-RE107)

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

   NOTE

   A change to the ODCM may cause a deviation from methodologies used in implementing procedures (i.e., CSP-0110). Any change to RSP-0008 shall have an independent Review from Chemistry, as a minimum, to ensure ODCM methodology compliance.

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

   1. LWS-AOV257 closes

   2. LWS-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:

$$S = \frac{A}{F_L} x g x M \qquad 7.3.2.1\text{-}1$$

Where:

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

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

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

g = "Instrument Correction Factor"; 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 μCi/ml, or μCi/ml per μCi/ml)

M = "Setpoint Adjustment Factor", error associated with monitor accuracy

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 ECL at the point of discharge into the Unrestricted Area.

NOTE

A background determination should be performed prior to each release. Background subtraction may be performed in accordance with the applicable Chemistry procedures.

7.4 Determining the Dose for Radioactive Liquid Effluents

7.4.1. Requirements

Technical Requirements 3.11.1.2 requires the dose or dose commitment to a member of the public from radioactive material released in liquid effluents be determined on a cumulative basis at least every 31 days. Dose or dose commitment shall be limited to:

1. Less than or equal to 1.5 mrem to the total body and to less than or equal to 5 mrem to any organ, during any calendar quarter; and

2. Less than or equal to 3 mrem to the total body and less than or equal to 10 mrem to any organ during any calendar year.

7.4.2. 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 $A_{i\tau}$ for all viable pathways are listed in Attachment 3.

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

$$D_{i\tau} = \frac{A_{i\tau} * \Delta t * Q_i}{DF * D_w} \qquad 7.4.2\text{-}1$$

$$D_{TOTAL\tau} = \sum_{i=1}^{n} D_{i\tau} \qquad 7.4.2\text{-}2$$

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 Attachment 3 are site-related to RBS (mrem/hr per µCi/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 (µCi).

D_W = The near field dilution factor. Site specific value is 136.

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).

7.5 Projecting Dose for Radioactive Liquid Effluents

7.5.1. Requirements

Technical Requirement 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.

7.5.2. Methodology

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

$$L_{PD} = \frac{D_{TOTAL\tau}}{X_D} * 31 + D_{PA} \qquad 7.5.2\text{-}1$$

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

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, $D_{PA} = 0$.

8 GASEOUS EFFLUENT METHODOLOGY

8.1 Introduction

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.

8.2 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 used. Table 3.11.2.1-1 in the Technical Requirements 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. Modeling will be performed in accordance with the methodologies described in Reg. Guide 1.111 Rev. 1.

8.3 Instantaneous Release Rate and Setpoint Determination

8.3.1. Instantaneous Release Rate Determination

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

1. Requirements

Technical Requirements 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:

1. 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

2. 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.

2. Methodology

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:

$$DR_{TB} = \sum_{i=1}^{n} (K_i)(\overline{X/Q})(\dot{Q}_i) \qquad 8.3.1.2.1\text{-}1$$

$$DR_{SKIN} = \sum_{i=1}^{n} (L_i + 1.1M_i)(\overline{X/Q})(\dot{Q}_i) \qquad 8.3.1.2.1\text{-}2$$

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 $\mu Ci/m^3$ Attachment 4

L_i = Skin dose factor due to beta emissions for each identified noble gas radionuclide (i) in mrem/yr per $\mu Ci/m^3$ Attachment 4

M_i = The air dose factor due to gamma emissions for each identified noble gas radionuclide (i) in mrad/yr per $\mu Ci/m^3$ Attachment 4

$\overline{X/Q}$ =The highest calculated annual average relative dispersion factor for any area at or beyond the unrestricted area boundary for all Sectors (sec/m^3). Attachment 9

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

1.1 = Conversion factor for M_i from mrad to mrem

In order to comply with the limits of the TRM, $DR_{TB} \leq 500$ 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 $(\overline{X/Q})$ values utilized in equations 8.3.1.2.1-1 and 8.3.1.2.1-2 are based upon maximum long-term annual average $(\overline{X/Q})$ in the unrestricted area. Attachment 9 lists the maximum $(\overline{X/Q})$ values for the RBS release points at the appropriate receptor locations.

To select the most limiting location, the highest $(\overline{X/Q})$ for each release point is used (from Attachment 9):

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

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

where:

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

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

(Attachment 9 contains the maximum $\left(\overline{X/Q}\right)$ and $\overline{D/Q}$ 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 Requirements 3.11.2.1. An administrative control limits the release rates for each of the three release points to 1/3 the total Technical Requirements doses.

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 8.3.1.1.2.

In the calculation to show compliance with the TRM, only the inhalation pathway is considered, since it is the most limiting pathway.
Inhalation Pathway:

$$DR_{I\&SDP\tau} = \sum_{i=1}^{I} P_i\left(\overline{X/Q}\right)\left(\dot{Q}_i\right) \qquad 8.3.1.2.2\text{-}1$$

where:

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

$\dot{Q}_i$ = Release rate of nuclide (i), (μCi/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). Attachment 9.

P_i = The dose factor for applicable environmental pathway (mrem/yr per $\mu Ci/m^3$). Attachment 15 through Attachment 18.

Values for P_i were calculated for all age groups using the inhalation pathway methodology of NUREG-0133.

8.3.2. Setpoint Determination

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 the TRM 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 Requirements 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.

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 sample. In the event the distribution is unobtainable from measured data, the distribution of radioactive noble gases based on past data or calculated by the BWR-GALE code may be used.

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.

2. Methodology

1. HIGH ALARM Setpoint Determination

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

a Wide Range Gas Monitor (WRGM)

Step 1. Determine Q_{TB} as follows:

$$Q_{TB} = \frac{(500)}{\left(\overline{X/Q}\right)\sum_{i=1}^{n}(K_i)(f_i)} \qquad 8.3.2.2\text{-}1$$

where:

Q_{TB} = maximum acceptable total release rate of all noble gas radionuclides in the gaseous effluent (µCi/sec).

$\left(\overline{X/Q}\right)$ = The highest calculated annual average relative dispersion factor for any area at or beyond the unrestricted area boundary for all Sectors (sec/m^3). Attachment 9

K_i = The total whole body dose factor due to gamma emissions from noble gas radionuclide (i) mrem/yr per µCi/m^3) from Attachment 4.

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

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

Step 2. Determine Q_S as follows:

$$Q_S = \frac{(3000)}{\left(\overline{X/Q}\right)\sum_{i=1}^{n}[(L_i + 1.1M_i)f_i]} \qquad 8.3.2.2\text{-}2$$

where:

Q_S = the maximum acceptable release rate of all gas radionuclides in the gaseous effluent [µCi/sec]

$L_i + 1.1M_i$ = Calculated total skin dose factor due to emission from noble gas radionuclide (i) mrem/yr/$\mu Ci/m^3$ from Attachment 3.

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

$\overline{(X/Q)}$ = The highest calculated annual average relative dispersion factor for any area at or beyond the unrestricted area boundary for all Sectors (sec/m^3), Attachment 9.

3000 = Skin exposure limit of 3000 mrem/year

Step 3. Select the lower of the Q values (Q_{TB} or 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 Q value selected in Step 3 by 0.33. By multiplying the 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.

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

Step 1. Perform Steps 1 through 3 of Section 8.3.2.2.1.a above.

Step 2. Determine C_m (the maximum acceptable total radioactivity concentration of all noble gas radionuclides for all release points in the gaseous effluent [$\mu Ci/cc$]):

$$C_m = \frac{(2.12 \times 10^{-3})\ Q}{F} \qquad 8.3.2.2\text{-}3$$

where:

2.12×10^{-3} = Unit conversion factor to convert $\mu Ci/sec/cfm$ to $\mu Ci/cc$

Q = Lower of the two Q values, Q_{TB} or 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 database 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.

2. ALERT Setpoint Determination (Reference 2.1.6)

This section describes the methodology for determining and adjusting ALERT setpoints for the three release points.

a Wide Range Gas Monitor (WRGM)

Step 1. Determine $Q_{G\text{-}A}$ utilizing one of the following methods:

$$Q_{G\text{-}A} = \frac{(4)(5)}{(\overline{X/Q})\sum_{i=1}^{n} M_i f_i} \qquad 8.3.2.2\text{-}4$$

where:

$Q_{G\text{-}A}$ = The maximum acceptable total release rate of all noble gas radionuclides in the gaseous effluent [µCi/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), Attachment 9

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-m3/µCi-yr, Attachment 4

f_i = The fractional abundance of noble gas radionuclide i

4 = Number of Quarters Per Year

Step 2. Determine Q_{B-A} utilizing one of following methods:

$$Q_{B-A} = \frac{(4)(10)}{(\overline{X/Q})\sum_{i=1}^{n} N_i f_i} \qquad 8.3.2.2\text{-}5$$

Where:

Q_{B-A} = maximum acceptable total release rate of all noble gas radionuclides in the gaseous effluents μCi/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), Attachment 9

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) in Attachment 4

f_i = The fractional abundance of noble gas radionuclide i

4 = Number of Quarters Per Year

Step 3. Select the lower of the Q values obtained in Steps 1 and 2, either Q_{G-A} or Q_{B-A}.

Step 4. Multiply the Q value selected in Step 3 by 0.33. By multiplying the 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 WRGMs RM-80.

Step 5. If the actual ODCM ALERT setpoint determined in Step 4 is less than two times (2.0) the detector background, it is permissible to enter an ALERT setpoint equal to two times (2.0) 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.

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

Step 1. Perform Steps 1 through 3 of Section 8.3.2.2.2.a above.

Step 2. Determine C_m (the maximum acceptable total radioactivity concentration of all noble gas radionuclides for all release points in gaseous effluent [µCi/cc]):

$$C_m = \frac{(2.12 x 10^{-3})Q}{F} \qquad 8.3.2.2\text{-}6$$

Where:

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

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

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 times (2.0) the gas detector background, it is permissible to enter an ALERT setpoint equal to two times (2.0) 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.

8.4 Cumulative Dose Determination for Radioactive Gaseous Effluents

8.4.1. Noble Gases

1. Air Dose

1. Requirements

Technical Requirements 3.11.2.2 states that the air dose due to noble gases released in gaseous effluents to areas at and beyond the site boundary (see Attachment 34) shall be limited to the following:

a 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

b 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.

2. 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 Attachment 4 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:

$$D_{Gamma-Air} = 3.17E-8\sum_{i=1}^{n}(M_i)(\overline{X/Q})(Q_i) \qquad 8.4.1.1.2\text{-}1$$

$$D_{Beta-Air} = 3.17E-8\sum_{i=1}^{n}(N_i)(\overline{X/Q})(Q_i) \qquad 8.4.1.1.2\text{-}2$$

where:

$D_{Gamma-Air}$ = 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/µCi-yr (Attachment 4)

3.17E-8 = Inverse of number of Seconds Per Year in Year/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), Attachment 9

Q_i = The quantity of µCi 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/μCi-yr (Attachment 4), Table C-1

2. Total Body and Skin Dose

1. Requirements

a Technical Requirements 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 mrem to the total body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrem.

b Technical Specification 5.5.4.j requires the limitations on the annual dose or dose commitment to any member of the public due to releases of radioactivity and to radiation from uranium fuel cycle sources, conforming to 40 CFR 190.

Cumulative 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 7.4.2 and 8.4.1.3. Cumulative total body and skin doses from noble gas releases are determined in accordance with Section 8.4.1.2.2.

2. 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 NRC Regulatory Guide 1.109, revision 1, October 1977 and is used to calculate the doses in this section. The dose transfer factors required for the calculations are listed in Attachment 4 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:

$$D_{TotalBody} = (S_F)(F_O)(3.17E-8)\sum_{i=1}^{n}(K_i)(\overline{X/Q})(Q_i) \qquad 8.4.1.2.2\text{-}1$$

$$D_{Skin} = (F_O)(3.17E-8)\sum_{i=1}^{n}(L+1.1M(S_F))_i(\overline{X/Q})(Q_i) \quad 8.4.1.2.2\text{-}2$$

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 emissions from noble gas radionuclide (i) (mrem/yr per µCi/m^3) from Attachment 4, 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) (Attachment 9)

NOTE

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

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

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 Attachment 4, Table C-1

F_O = Occupancy factor determined for the receptor at the given location (default = 1.0)

NOTE

If a time period is less than one full year, determine the fraction of a year and multiply the fraction by 3.17E-8 for use in equations 8.4.1.2.2-1 and -2.

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/yr per µCi/m^3) from Attachment 4, Table C-1

1.1 = Average ratio of tissue to air energy absorption coefficients

S_F = 1.0, attenuation factor accounting for shielding provided by residential structures for maximally exposed individual

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

1. Requirements

a Technical Requirements 3.11.2.3 states that the dose to a Member of the Public from Radioiodines (I-131, I-133), Tritium, and Particulates with T1/2> 8 days in gaseous effluents released 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.

b Technical Requirement 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 mrem to the total body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrem.

2. Methodology

a The following calculational method is provided for determining the organ dose due to releases of radioiodines (I131, I133), tritium 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 the pathways that apply to the receptor. The equations are:

NOTE

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

Inhalation Pathways:

$$D_{I\&SDPr} = (3.17x10^{-8})(F_O)\sum_{i=1}^{n}(P_{ir})(\overline{X/Q})(Q_i) \qquad 8.4.1.3\text{-}1$$

Ground Plane Pathway:

$$D_{I\&SDPr} = (3.17x10^{-8})(F_O)\sum_{i=1}^{n}(R_{ir})(\overline{D/Q})(Q_i) \qquad 8.4.1.3\text{-}2$$

Contaminated Forage/Cow/Milk Pathway:

$$D_{I\&SDPr} = (3.17x10^{-8})(F_O)\sum_{i=1}^{n}(R_{ir})(\overline{D/Q})(Q_i) \qquad 8.4.1.3\text{-}3$$

Contaminated Forage/Goat/Milk Pathway:

$$D_{I\&SDPr} = (3.17x10^{-8})(F_O)\sum_{i=1}^{n}(R_{ir})(\overline{D/Q})(Q_i) \qquad 8.4.1.3\text{-}4$$

Contaminated Forage/Meats:

$$D_{I\&SDPr} = (3.17x10^{-8})(F_O)\sum_{i=1}^{n}(R_{ir})(\overline{D/Q})(Q_i) \qquad 8.4.1.3\text{-}5$$

Fresh Fruits and Vegetables:

$$D_{I\&SDPr} = (3.17x10^{-8})(F_O)\sum_{i=1}^{n}(R_{ir})(\overline{D/Q})(Q_i) \qquad 8.4.1.3\text{-}6$$

Total Dose:

$$D_r = \sum_{x=1}^{n} D_{I\&SDPr} \qquad 8.4.1.3\text{-}7$$

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 $\mu Ci/m^3$

Q_i = The number of μCi 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 Attachment 15 through Attachment 33.) The units are:

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

or

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

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

$\left(\overline{X/Q}\right)$ = The highest calculated annual average relative dispersion factor for an area at or beyond the unrestricted area boundary for all sectors (sec/m^3), Attachment 9.

$3.17X10^{-8}$ = The inverse of the number of seconds per year (years/sec).

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

8.5.1. Requirement

Technical Requirements 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 3.5).

8.5.2. Methodology

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

$$G_{PD} = \frac{\Sigma D_{\tau}}{X_D} * 31 + D_{PA} \qquad 8.5.2\text{-}1$$

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 significantly 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 8.4.1.3).

9 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Attachment 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 Environmental Monitoring Program. Attachment 34 and Attachment 38 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 Requirements Manual. Additional exposure pathways, sample points, analyses, and/or frequencies may be performed as described in Reference 2.1.3 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.

10 40CFR190 CONSIDERATIONS

10.1 Compliance with 40CFR190

Compliance with 40CFR190 as prescribed by Technical Requirements 3.11.4 is to be demonstrated only when one or more of Technical Requirement(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, EOI has 30 days to submit a report in accordance with Requirement 3.11.4.

10.2 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:

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

10.2.2. 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.

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

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

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

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

10.2.6. 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.

NOTE

Estimates for each of the calculations below 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.

9/02

10.3 Calculations of Total Body Dose

10.3.1. 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).

10.3.2. Inhalation Dose

The inhalation dose will be determined at the calculational locations for each age group according to the methods outlined in Section 8 of this manual.

10.3.3. 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.

10.3.4. Total Body Noble Gas Immersion Dose

This dose will be calculated in accordance with Section 8.4.1.2.2 . for the maximally exposed MEMBER OF THE PUBLIC in the limiting sector.

10.3.5. Ground Plane Deposition

10.3.6. Other Uranium Fuel Cycle Sources

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

10.4 Thyroid Dose

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

10.4.1. 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).

10.4.2. 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 8 of this manual.

10.4.3. 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.

10.4.4. 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 2.1.8). This dose for the thyroid will therefore be equal to the dose calculated in Step 10.3.4 above.

10.4.5. Ground Plane Deposition

10.4.6. Other Uranium Fuel Cycle Sources

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

10.5 Organ Dose (other than thyroid and skin)

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

10.5.1. 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).

10.5.2. 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 8 of this manual.

10.5.3. 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.

10.5.4. 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 2.1.8). This dose for an organ will therefore be equal to the dose calculated in Step 10.3.4 above.

10.5.5. Ground Plane Deposition

10.5.6. Other Uranium Fuel Cycle Sources

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

10.6 Skin Dose

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

10.6.1. 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).

10.6.2. 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 8 of this manual.

10.6.3. 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.

10.6.4. Skin Noble Gas Immersion Dose

This dose will be calculated in accordance with Section 8.4.1.2.2 for the maximally exposed MEMBER OF THE PUBLIC in the limiting sector(s).

10.6.5. Ground Plane Deposition

10.6.6. Other Uranium Fuel Cycle Sources

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

11 INTERLABORATORY COMPARISON STUDIES

11.1 Requirement

Technical Requirements 3.12.3 states that analyses shall be performed on radioactive materials, that correspond to samples required by Table 3.12.1-1, supplied as part of an Interlaboratory Comparison Program. 9/02

11.2 Program

11.2.1. 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 an Environmental Radioactivity Laboratory Intercomparison Studies (Crosscheck) Program. This participation will include all of the determinations (sample-radionuclide combinations) that are included in the licensee's Radiological Environmental Monitoring Program. Results of the Interlaboratory Program will be included in the Annual Radiological Environmental Operating Report. 9/02

11.2.2. 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.

11.2.3. Abnormal Results

The RBS laboratory values and the vendor laboratory "known values" should be compared by some evaluation criteria such as the EPA method, where the acceptable result lies between ± three normalized standard deviations from the "known value"; or the NIST traceability method, where the difference between the RBS value and the "known value" should be less than the total propagated uncertainty of the difference. If deviations from such criteria exist, an evaluation will be performed to identify any recommended remedial actions to reduce anomalous errors. Complete documentation on the evaluation will be provided to the NRC upon request. 9/02

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 4 locations:		
		AP1. Behind River Bend Station Activity Center; 0.9 km WNW.	Continuous air sampler with filter collection every two weeks, or as required by dust loading, whichever is more frequent.	Charcoal cartridge: analysis every two weeks for I-131. Particulate sampler: gross beta activity following filter changes every two weeks.
		AQS2. St. Francis Substation on US Hwy. (Bus.) 61 in St. Francisville; 5.8 km NW (Community Location).		
		AGC. Entergy Service Center compound in Zachary; 17 km SE (Control)		
		AN1. RBS site Hwy 965; 0.4 km south of Activity Center; 0.9 km W.		
2.	Direct Radiation	Measurements from 24 locations:		
		INDICATOR STATIONS		
		TA1. River Bend Training Center; 1.7 km N.	Thermoluminescence dosimeters (TLDs); deployment/retrieval quarterly.	mR exposure quarterly.
		TB1. Utility pole near River Bend Station cooling tower yard area; 0.5 km NNE.		
		TC1. Stub pole at Jct. US Hwy. 61 and Old Highway 61; 1.7 km NE.		
		TD1. Stub pole along WF7, 150m S of Jct. WF7 and US Hwy. 61; 1.6 km ENE.		
		TE1. Stub pole along WF7,1 km S of Jct. WF7 and US Hwy. 61; 1.3 km E.		
		TF1. Stub pole along WF7, 1.6 km S of Jct. WF7 and US Hwy. 61; 1.3 km ESE.		
		TG1. Stub pole along WF7, 2 km S of Jct. WF7 and US Hwy. 61; 1.6 km SE.		

9/02

9/02

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
	TH1. Stub pole at power line crossing of WF7 (near Grants Bayou); 1.7 km SSE.		
	TJ1. Stub pole near River Bend Station Gate #23 on Powell Station Road (LA Hwy. 965); 1.5 km S.		
	TK1. Utility pole on Powell Station Road (LA Hwy. 965), 20 m S of River Bend Station River Access Road; 0.9 km SSW.		
	TL1. First utility pole on Powell Station Road (LA Hwy. 965) S of former Illinois Central Gulf RR crossing; 1.0 km SW.		
	TM1. Third utility pole on Powell Station Road (LA Hwy. 965) N of former Illinois Central Gulf RR crossing; 0.9 km WSW.		
	TN1. Utility pole along Powell Station Road (LA Hwy. 965), near garden and AN1 air sampler location; 0.9 km W.		
	TP1. Behind River Bend Station Activity Center at AP1 air sampler location; 0.9 km WNW.		
	TQ1. Across from MA1 on RBS North Access Road; 0.6 km NW.		
	TR1. River Bend Station North Access Road across from Main Plant entrance; 0.8 km NNW.		
	CONTROL/SPECIAL STATIONS TAC. Utility pole at Jct. of US Hwy. 61 and LA Hwy. 421, 7.9 km north of Bains; 15.8 km N. (Control)		
	TQS1. Utility pole front of Pentecostal church (opposite West Feliciana Parish Hospital) near Jct. US Hwy. 61 and Ferdinand Street; 4 km NW (Special)		

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
	TQS2. St. Francis Substation on business US Hwy.61 in St. Francisville; 5.8 km NW (Special).		
	TNS. Utility pole with electrical meter at west bank ferry landing (LA Hwy. 10); 6.0 km W. (Special)		
	TEC. Stub pole at jct. of Hwy. 955 and Midway Road, 4.8 km North of Jct. of Hwys 955 and 964; 16 km E. (Control)		
	TCS. Utility pole at gate to East Louisiana State Hospital in Jackson; 12.3 km NE. (Special)		
	TGS. Entergy Service Center compound in Zachary; 17 km SE (Special).		
	TRS. Stub pole at Jct. of US Hwy. 61 and WF2 near Bains. (West Feliciana High School); 9.2 km NNW. (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. (5km, W)	Quarterly grab.	Quarterly: gamma isotopic analysis; quarterly tritium analysis.
	SWD. Mississippi River about 4 km downstream from plant liquid discharge outfall, near paper mill. (7.75 km, S)		
	GROUNDWATER		
	WU. Upland Terrace Aquifer well upgradient from plant, about 470 m NNE.	Semiannual grab	Gamma isotopic and tritium analysis semiannually.
	WD. Upland Terrace Aquifer well downgradient from plant, about 470 m SW.		

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
	SHORELINE SEDIMENT		
	SEDD. Mississippi River downstream from plant liquid discharge outfall, near paper mill. (7.75 km, S)	Annual grab	Gamma isotopic analysis annually.
4. Ingestion[2]	FISH AND INVERTEBRATES		
	FU. One sample of a commercially and/or recreationally important species from upstream area not influenced by plant discharge. (4 km, WSW)	Annually.	Gamma isotopic analysis on edible portions annually.
	FD. One sample of a commercially and/or recreationally important species from downstream area influenced by plant discharge. (7.75 km, S)		
	FOOD PRODUCTS		
	GN1. One sample of leafy vegetation from onsite garden near site boundary in sector of highest calculated average ground level D/Q, (0.9 km, W)	Quarterly during growing season.	Gamma isotopic and I-131 analyses quarterly.
	GQC. One sample of similar vegetation from LA State Penitentiary at Angola, 32 km NW (Control).		

9/02

NOTES:

1. The upstream sample will be taken at a distance beyond significant 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 8-km radius of the plant, sampling will be performed in accordance with Table 3.12.1-1, Section 4.a of the Technical Requirements Manual.

ECL VALUES

EFFLUENT CONCENTRATION LIMIT (µCi/ml)

NUCLIDE	AIR	WATER
H-3	1E-07	1E-03
BE-7	3E-08	6E-04
C-14	3E-09	3E-05
NA-24	7E-09	5E-05
P-32	5E-10	9E-06
CR-51	3E-08	5E-04
MN-54	1E-09	3E-05
MN-56	2E-08	7E-05
FE-55	3E-09	1E-04
FE-59	5E-10	1E-05
CO-56	3E-10	6E-06
CO-57	9E-10	6E-05
CO-58	1E-09	2E-05
CO-60	5E-11	3E-06
NI-63	1E-09	1E-04
NI-65	2E-08	1E-04
CU-64	3E-08	2E-04
ZN-65	4E-10	5E-06
ZN-69	2E-07	8E-04
ZN-69M	1E-08	6E-05
SE-75	8E-10	7E-06
BR-82	5E-09	4E-05
BR-83	9E-08	9E-04
BR-84	8E-08	4E-04
RB-86	1E-09	7E-06
RB-88	9E-08	4E-04
RB-89	2E-07	9E-04
SR-85	2E-09	4E-05
SR-89	2E-10	8E-06
SR-90	6E-12	5E-07
SR-91	5E-09	2E-05
SR-92	9E-09	4E-05
Y-88	3E-10	1E-05
Y-90	9E-10	7E-06
Y-91M	2E-07	2E-03
Y-91	2E-10	8E-06
Y-92	1E-08	4E-05
Y-93	3E-09	2E-05
ZR-95	4E-10	2E-05
ZR-97	2E-09	9E-06
NB-94	2E-11	1E-05
NB-95	2E-09	3E-05
NB-97	1E-07	3E-04
MO-90	6E-09	3E-05
MO-99	2E-09	2E-05
TC-99M	2E-07	1E-03
TC-101	5E-07	2E-03
RU-103	9E-10	3E-05
RU-105	2E-08	7E-05
RU-106	2E-11	3E-06
AG-110M	1E-10	6E-06
CD-109	7E-11	6E-06
CD-113M	5E-12	5E-07
SN-113	8E-10	3E-05
SN-117M	2E-09	3E-05
SB-122	2E-09	1E-05
SB-124	3E-10	7E-06
SB-125	7E-10	3E-05
SB-126	7E-10	7E-06
SB-127	1E-09	1E-05
TE-127M	4E-10	9E-06
TE-127	2E-08	1E-04
TE-129M	3E-10	7E-06
TE-129	9E-08	4E-04
TE-131M	1E-09	8E-06
TE-131	2E-08	8E-05
TE-132	9E-10	9E-06
I-130	3E-09	2E-05
I-131	2E-10	1E-06
I-132	2E-08	1E-04
I-133	1E-09	7E-06
I-134	6E-08	4E-04
I-135	6E-09	3E-05
CS-134	2E-10	9E-07
CS-135	2E-09	1E-05
CS-136	9E-10	6E-06
CS-137	2E-10	1E-06
CS-138	8E-08	4E-04
BA-133	9E-10	2E-05
BA-139	4E-08	2E-04
BA-140	2E-09	8E-06
BA-141	1E-07	3E-04
BA-142	2E-07	7E-04
LA-140	2E-09	9E-06
LA-142	3E-08	1E-04
CE-139	9E-10	7E-05
CE-141	8E-10	3E-05
CE-143	2E-09	2E-05
CE-144	2E-11	3E-06
PR-143	9E-10	2E-05
PR-144	2E-07	6E-04
ND-147	1E-09	2E-05
EU-152	3E-11	1E-05
W-187	1E-08	3E-05
NP-239	3E-09	2E-05
AR-41	1E-08	0E+00
KR-83M	5E-05	0E+00
KR-85M	1E-07	0E+00
KR-85	7E-07	0E+00
KR-87	2E-08	0E+00
KR-88	9E-09	0E+00
KR-89	1E-09	0E+00
KR-90	1E-09	0E+00
XE-131M	2E-06	0E+00
XE-133M	6E-07	0E+00
XE-133	5E-07	0E+00
XE-135M	4E-08	0E+00
XE-135	7E-08	0E+00
XE-137	1E-09	0E+00
XE-138	2E-08	0E+00
G-APLHA	1E-15	2E-09
G-BETA	1E-12	1E-08
OTHER	0E+00	0E+00
RH-105	8E-09	5E-05
SC-46	3E-10	1E-05
AS-76	2E-09	1E-05

TABLE B-1: LIQUID ENVIRONMENTAL DOSE TRANSFER FACTORS

A_{it} Table B-1
DOSE FACTOR TABLE: A_{it} - Adult, liquid
Units are mrem/hr per µCi/ml

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	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	4.61E+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	9/02
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	9/02
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	9/02
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	
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	

TABLE B-1: LIQUID ENVIRONMENTAL DOSE TRANSFER FACTORS

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
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
TE131M	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

9/02

9/02

TABLE C-1: NOBLE GAS DOSE TRANSFER FACTORS

TABLE C-1

FACTOR FOR EXPOSURE TO A SEMI-INFINITE CLOUD

	DOSE TO PEOPLE +		DOSE OF AIR #	
Nuclide	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 µCi/cu.m.

-- mrad/yr per µCi/cu.m.

(RESERVED)

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-degree 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 Attachment 9.

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)
$\overline{u_{30}}$ =	30-FT AVERAGE WIND SPEED CORRESPONDING TO A GIVEN HOUR OF ONSITE METEOROLOGICAL DATA	(M SEC $^{-1}$)
$\overline{u_{150}}$ =	150-FT AVERAGE WIND SPEED CORRESPONDING T A GIVEN HOUR OF ON-SITE METEOROLOGICAL DATA	
(CHI/Q) =	AVERAGE CONCENTRATION NORMAL-IZED BY SOURCE STRENGTH	(SEC M^{-3})
(CHI/Q_D) =	DEPLETED CHI/Q	(SEC M^{-3})
F_M =	MOMENTUM FLUX	(M4 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)

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

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)
£ =	INDEX FOR A PARTICULAR 22.5-DEGREE SECTOR	(DIMENSIONLESS)
N =	NUMBER OF HOURS ONSITE WIND DATA IN A PARTICULAR 22.5-DEGREE SECTOR	(DIMENSIONLESS)
S =	STABILITY PARAMETER	(SEC^{-2})

E.3 CHI/Q Modeling Technique

Annual average values of relative concentration 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:

$$\left(\frac{CHI}{Q}\right)_{k\bullet} = \frac{2.032}{N}\sum_{j=1}^{n\bullet}\left(\frac{\Omega}{x}\right)_k\left[\frac{E_T}{\bar{u}_{30}\left(\sigma_{z_i}^2 - ch_b^{2/\pi}\right)^{1/2}} + \frac{(1-E_T)\exp^{1/2}\left(\frac{h_e}{\sigma_z}\right)}{\bar{u}_{150}\sigma_z}\right] \qquad \text{E.3-1}$$

Since the River Bend Station site is located in relatively open terrain, the terrain recirculation factor (Ω_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 occurring below the level of a nearby structure, 100 percent downwash (total entrainment) is conservatively assumed ($E_T = 1$). For vent releases occurring 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 $u_e/\bar{u}_{150} \geq 5.0$ (totally elevated)

E_T = 0.30-0.06 when $1.5 < u_e/\bar{u}_{150} \leq 5.0$ (partially entrained)

E_T = 2.58-1.58 when $1.0 \leq u_e/\bar{u}_{150} \leq 1.5$ (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.

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

The effective release height was computed from the following equation:

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

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-degree 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:

$$u_e / \bar{u}_{150} < 1,5$$

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

and,

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

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:

$$h_{pr} = 4F_m/s)^{1/4}$$

and

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

where:

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

and the smallest value was chosen.

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

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

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

was constrained to be less than or equal to $1.732\,\sigma_{z_{i,k}}$

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:

$$\left(\frac{D}{Q}\right)_{i\bullet} = \left(\frac{\Omega}{X}\right)_{k}\left(\frac{2-N}{16}\right)^{-1}\left\{\sum_{j=1}^{n\bullet}\left[n_{\bullet}\left\{\left(\frac{\sigma}{Q}\right)_{Gk}E_T + \left(\frac{1}{n}\sum_{n=1}^{3}[1-(E_T)_i]n_{i\bullet}\left(\frac{\delta}{Q}\right)\right)\right\}\right]\right\} \qquad \text{E.4-1}$$

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 (Attachment 39) 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 FOR RESTRICTED AREA BOUNDARY

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 FOR RESTRICTED AREA BOUNDARY

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

TABLE F-1: ATMOSPHERIC DISPERSION AND DEPOSITION RATES FOR THE MAXIMUM INDIVIDUAL DOSE CALCULATIONS

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 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 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 2.1.8 and 2.1.6

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 miles radius, hypothetical location in worst sector.
(6) Other on-site receptors.

TABLE G-1: DOSE FACTOR CALCULATION PARAMETERS

CODE	DESCRIPTION	VALUE	UNITS	
csf	Harvest stored feed to cow	7.776E+06	seconds	(cfs)
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	(fi)
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/µCi*1*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	l/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)
gfc	Cow's Feed Consumption Rate	5.000E+01	kg/day	(qfc)
gfg	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	1.000E+00	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 miling 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
** NRC Regulatory Guide 1.109 default = 0.7

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
C0-60	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

TABLE G-2: STABLE ELEMENT TRANSFER FACTORS

Nuclide	Milk Cow	Milk Goat	Meat	Veg./Soil
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
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

TABLE G-3: BIOACCUMULATION FACTORS

TABLE G-3

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+03	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

TABLE G-3: BIOACCUMULATION FACTORS

Nuclide	Freshwater Fish	Freshwater Non-Fish	Saltwater Fish	Saltwater Non-Fish
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+03	1.000E+02
TE-127M	4.000E+02	6.100E+03	1.000E+01	1.000E+02
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

TABLE G-4: INDIVIDUAL USAGE FACTORS

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

TABLE H-1: ASSUMPTIONS/PARAMETERS FOR DOSES TO A MEMBER OF THE PUBLIC INSIDE SITE BOUNDARY

TABLE H-1

NOTE

This table contains default location, distance, sector and duration information. Other locations and variables could be used if they are more limiting and will be documented in the Annual Radiological Effluent Report for the applicable year if needed.

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 Driver	North Parking Lot	275	N	125(3)
Employee	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 .5 hr/day.
(5) Liquid pathways dose is not considered due to nature of activities that individuals are engaged in.

TABLE I-1: DOSE FACTOR TABLE: P (I) - ADULT, INHALATION

TABLE I-1
DOSE FACTOR TABLE: P (i) - Adult, Inhalation
Units are mrem/yr per µCi/cu.m.

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	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	8.00E-15	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	1.08E+04	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
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	6.15E+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

TABLE I-1: DOSE FACTOR TABLE: P (I) - ADULT, INHALATION

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
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	6.66E-04	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	2.57E+03	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	2.29E-05	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	1.50E+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: DOSE FACTOR TABLE: P (I) - TEEN, INHALATION

TABLE I-2
DOSE FACTOR TABLE: P (i) - Teen, inhalation,
Units are mrem/yr per µCi/cu.m

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	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+03	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
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

TABLE I-2: DOSE FACTOR TABLE: P (I) - TEEN, INHALATION

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
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: DOSE FACTOR TABLE: P (I) - CHILD, INHALATION

TABLE I-3
DOSE FACTOR TABLE: P (i) - CHILD, inhalation,
Units are mrem/yr per µCi/cu.m

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	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
C0-58	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
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

19/02

TABLE I-3: DOSE FACTOR TABLE: P (I) - CHILD, INHALATION

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
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

TABLE I-4
DOSE FACTOR TABLE: P (i) - Infant, inhalation,
Units are mrem/yr per µCi/cu.m

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	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
C0-58	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
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

TABLE I-4: DOSE FACTOR TABLE: P (I) - INFANT, INHALATION

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
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	2.90E+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-02	1.61E+03	4.28E+03	0.00E+00
ND-147	7.94E+04	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

TABLE I-5
DOSE FACTOR TABLE: R (i) -All , gr. plane,
Units are m^2*mrem/yr per µCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	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
C0-58	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	7.48E+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
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

TABLE I-5: DOSE FACTOR TABLE: R (I) - ALL, GR. PLANE

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
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

1/02

TABLE I-6: DOSE FACTOR TABLE: R (I) - ADULT, COWS MILK

TABLE I-6
DOSE FACTOR TABLE: R (i) -Adult, cows' milk
Units are m^2*mrem/yr per µCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	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
C0-58	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
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

TABLE I-6: DOSE FACTOR TABLE: R (I) - ADULT, COWS MILK

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
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+02	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-29	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-08	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+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	4.52E+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+00	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

9/02

TABLE I-7: DOSE FACTOR TABLE: R (I) - TEEN, COWS MILK

TABLE I-7
DOSE FACTOR TABLE: R (i) - Teen, cows'milk
Units are m^2*mrem/yr per µCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	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
C0-58	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
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

TABLE I-7: DOSE FACTOR TABLE: R (I) - TEEN, COWS MILK

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
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

TABLE I-8
DOSE FACTOR TABLE: R (i) - Child, cows' milk
Units are m^2*mrem/yr per µCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	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+00	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
C0-58	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
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

19/02

TABLE I-8: DOSE FACTOR TABLE R (I) - CHILD, COWS MILK

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
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

19/02

TABLE I-9: DOSE FACTOR TABLE: R (I) - INFANT, COWS MILK

TABLE I-9
DOSE FACTOR TABLE: R (i) - Infant, cows' milk
Units are m^2*mrem/yr per µCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	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
C0-58	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
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

TABLE I-9: DOSE FACTOR TABLE: R (I) - INFANT, COWS MILK

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
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	2.28E+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

TABLE I-10
DOSE FACTOR TABLE: R (I) - Adult, goats' milk
Units are m^2*mrem/yr per µCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	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
C0-58	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
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

TABLE I-10: DOSE FACTOR TABLE: R (I) - ADULT, GOATS MILK

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
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

TABLE I-11
DOSE FACTOR TABLE: R (i) - Teen, goats' milk
Units are m^2*mrem/yr per µCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	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
C0-58	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	7.77E+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	4.77E+09	0.00E+00	1.37E+08	0.00E+00	0.00E+00	0.00E+00	5.69E+08	0.00E+00
SR-90	1.07E+11	0.00E+00	2.65E+10	0.00E+00	0.00E+00	0.00E+00	3.02E+09	0.00E+00
SR-91	1.12E+05	0.00E+00	4.46E+03	0.00E+00	0.00E+00	0.00E+00	5.08E+05	0.00E+00
SR-92	1.90E+00	0.00E+00	8.11E-02	0.00E+00	0.00E+00	0.00E+00	4.85E+01	0.00E+00
Y-90	1.56E+01	0.00E+00	4.21E-01	0.00E+00	0.00E+00	0.00E+00	1.29E+05	0.00E+00
Y-91M	1.38E-20	0.00E+00	5.26E-22	0.00E+00	0.00E+00	0.00E+00	6.50E-19	0.00E+00
Y-91	1.59E+03	0.00E+00	4.28E+01	0.00E+00	0.00E+00	0.00E+00	6.54E+05	0.00E+00
Y-92	1.25E-05	0.00E+00	3.62E-07	0.00E+00	0.00E+00	0.00E+00	3.43E-01	0.00E+00
Y-93	4.96E-02	0.00E+00	1.36E-03	0.00E+00	0.00E+00	0 00E+00	1.52E+03	0.00E+00
ZR-95	1.66E+02	5.22E+01	3.59E+01	0.00E+00	7.67E+01	0.00E+00	1.21E+05	0.00E+00
ZR-97	9.48E-02	1.88E-02	8.64E-03	0.00E+00	2.84E-02	0.00E+00	5.08E+03	0.00E+00
NB-95	1.48E+04	8.20E+03	4.51E+03	0.00E+00	7.95E+03	0.00E+00	3.51E+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	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
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

TABLE I-11: DOSE FACTOR TABLE: R (I) - TEEN, GOATS MILK

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
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	2.75E+04	0.00E+00
LA-142	4.12E-12	1.83E-12	4.56E-13	0.00E+00	0.00E+00	0.00E+00	5.57E-08	0.00E+00
CE-141	9.39E+02	6.27E+02	7.20E+01	0.00E+00	2.95E+02	0.00E+00	1.79E+06	0.00E+00
CE-143	9.18E+00	6.68E+03	7.46E-01	0.00E+00	2.99E+00	0.00E+00	2.01E+05	0.00E+00
CE-144	6.24E+04	2.58E+04	3.35E+03	0.00E+00	1.54E+04	0.00E+00	1.57E+07	0.00E+00
PR-143	3.31E+01	1.32E+01	1.65E+00	0.00E+00	7.68E+00	0.00E+00	1.09E+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	2.10E+01	2.28E+01	1.37E+00	0.00E+00	1.34E+01	0.00E+00	8.24E+04	0.00E+00
W-187	1.43E+03	1.17E+03	4.08E+02	0.00E+00	0.00E+00	0.00E+00	3.15E+05	0.00E+00
NP-239	8.42E-01	7.94E-02	4.41E-02	0.00E+00	2.49E-01	0.00E+00	1.28E+04	0.00E+00

TABLE I-12: DOSE FACTOR TABLE: R (I) - CHILD, GOATS MILK

TABLE I-12
DOSE FACTOR TABLE: R (i) - Child, goats' milk
Units are m^2*mrem/yr per µCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	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
C0-58	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	6.56E-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
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

TABLE I-12: DOSE FACTOR TABLE: R (I) - CHILD, GOATS MILK

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
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	7.59E+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

TABLE I-13
DOSE FACTOR TABLE: R (i) - Infant, goats' milk
Units are m^2*mrem/yr per µCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	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	1.71E+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
C0-58	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
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

TABLE I-13: DOSE FACTOR TABLE: R (I) - INFANT, GOATS MILK

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
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

TABLE I-14
DOSE FACTOR TABLE: R (i) - Adult, meat
Units are m^2*mrem/yr per µCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	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
C0-58	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
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

TABLE I-14: DOSE FACTOR TABLE: R (I) - ADULT, MEAT

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
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

TABLE I-15
DOSE FACTOR TABLE: R (I) - Teen, meat
Units are m^2*mrem/yr per µCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	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
C0-58	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	6.30E-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
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	1.82E+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

TABLE I-15: DOSE FACTOR TABLE: R (I) - TEEN, MEAT

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
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

TABLE I-16
DOSE FACTOR TABLE: R (i) - Child, meat
Units are m^2*mrem/yr per µCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	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
C0-58	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
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

TABLE I-16: DOSE FACTOR TABLE: R (I) - CHILD, MEAT

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
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

TABLE I-17
DOSE FACTOR TABLE: R (i)- Adult, vegetation
Units are m^2*mrem/yr per µCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	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
C0-58	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	4.76M-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
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	3.47E+08	1.24E+08	4.23E+07	8.87E+07	1.41E+09	0.00E+00	1.16E+09	0.00E+00
TE-127	5.61E+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

9/02

TABLE I-17: DOSE FACTOR TABLE: R (I) - ADULT, VEGETATION

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
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

TABLE I-18
DOSE FACTOR TABLE: R (i)- Teen, vegetation
Units are m^2*mrem/yr per µCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	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
C0-58	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-05	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
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

TABLE I-18: DOSE FACTOR TABLE: R (I) - TEEN, VEGETATION

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
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

TABLE I-19
DOSE FACTOR TABLE: R (i)- Child, vegetation
Units are m^2*mrem/yr per µCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	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
C0-58	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	3.77E-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
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

TABLE I-19: DOSE FACTOR TABLE: R (I) - CHILD, VEGETATION

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
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	1.60E+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	2.17E+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

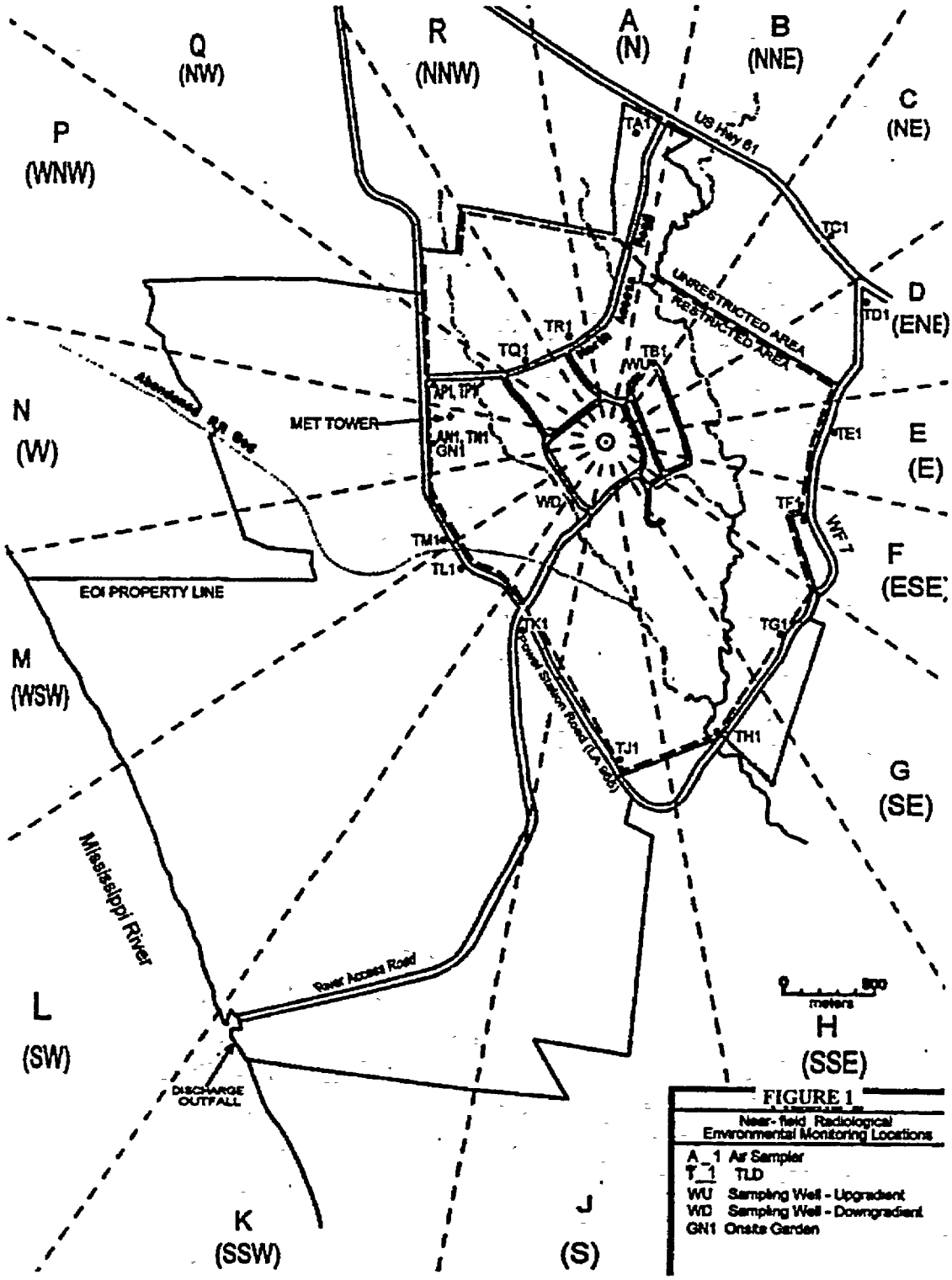


FIGURE 2: SCHEMATIC OF GASEOUS RADWASTE SYSTEM

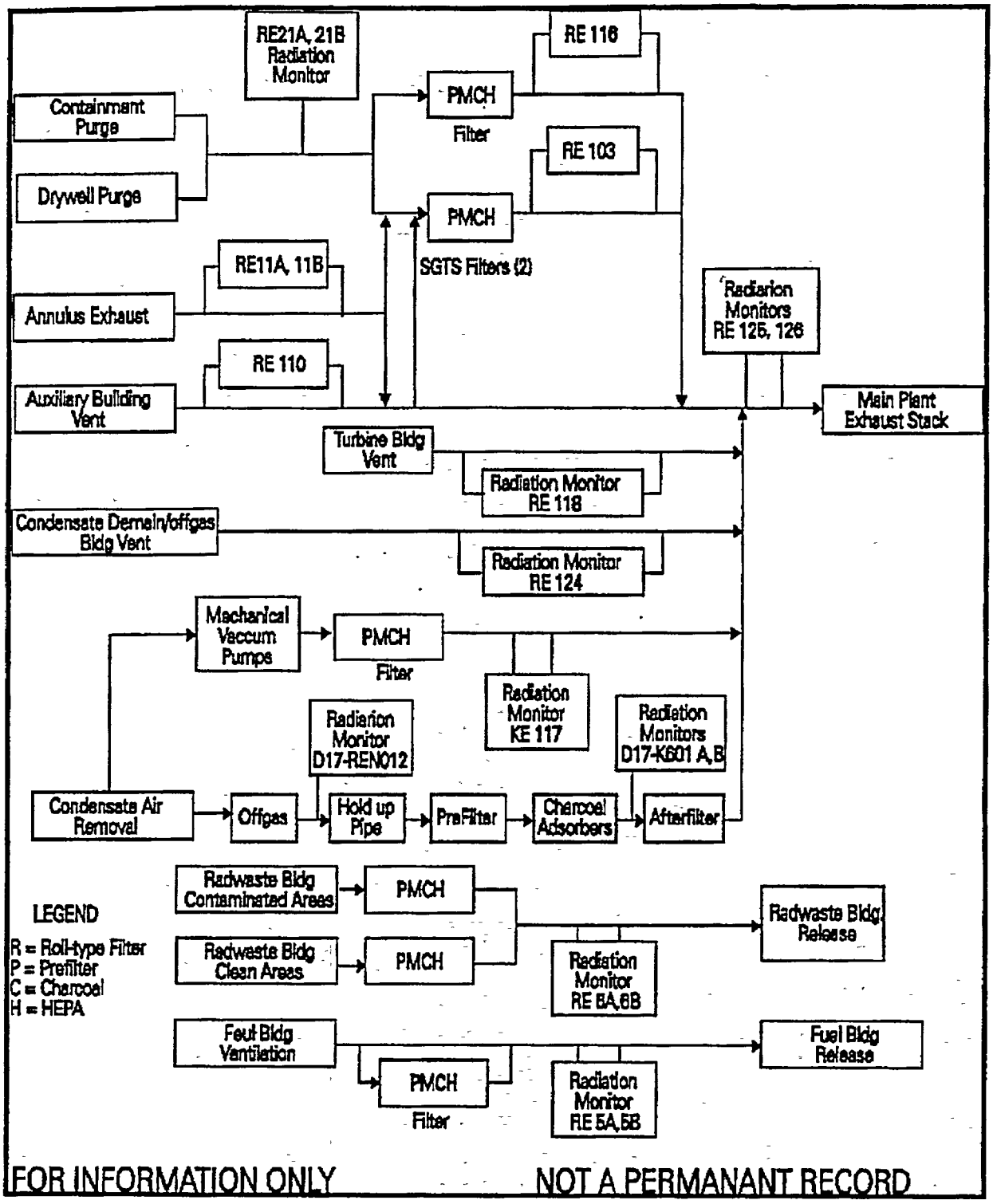


FIGURE 3: EFFLUENT RELEASE POINTS

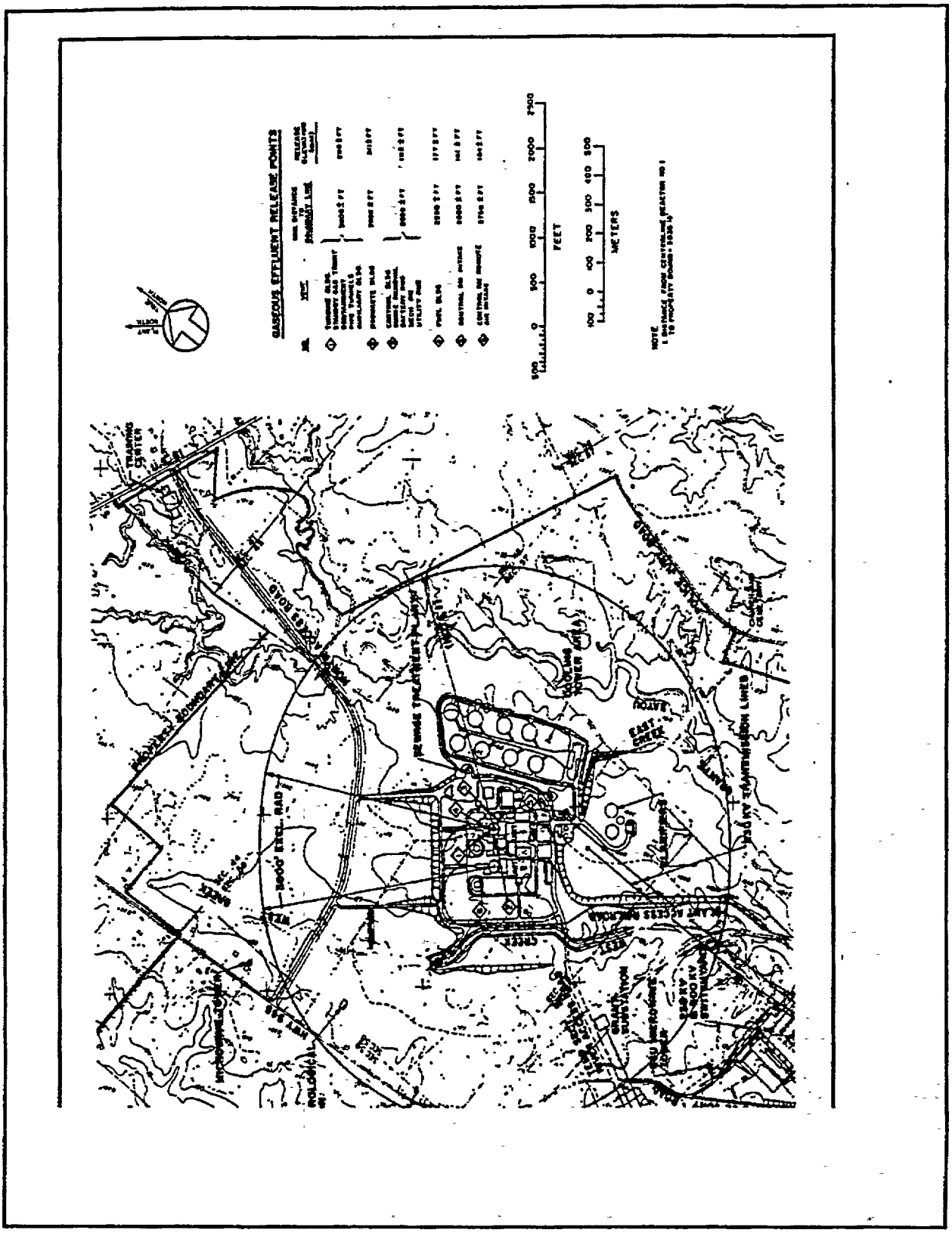


FIGURE 4: SCHEMATIC OF LIQUID RADWASTE SYSTEM

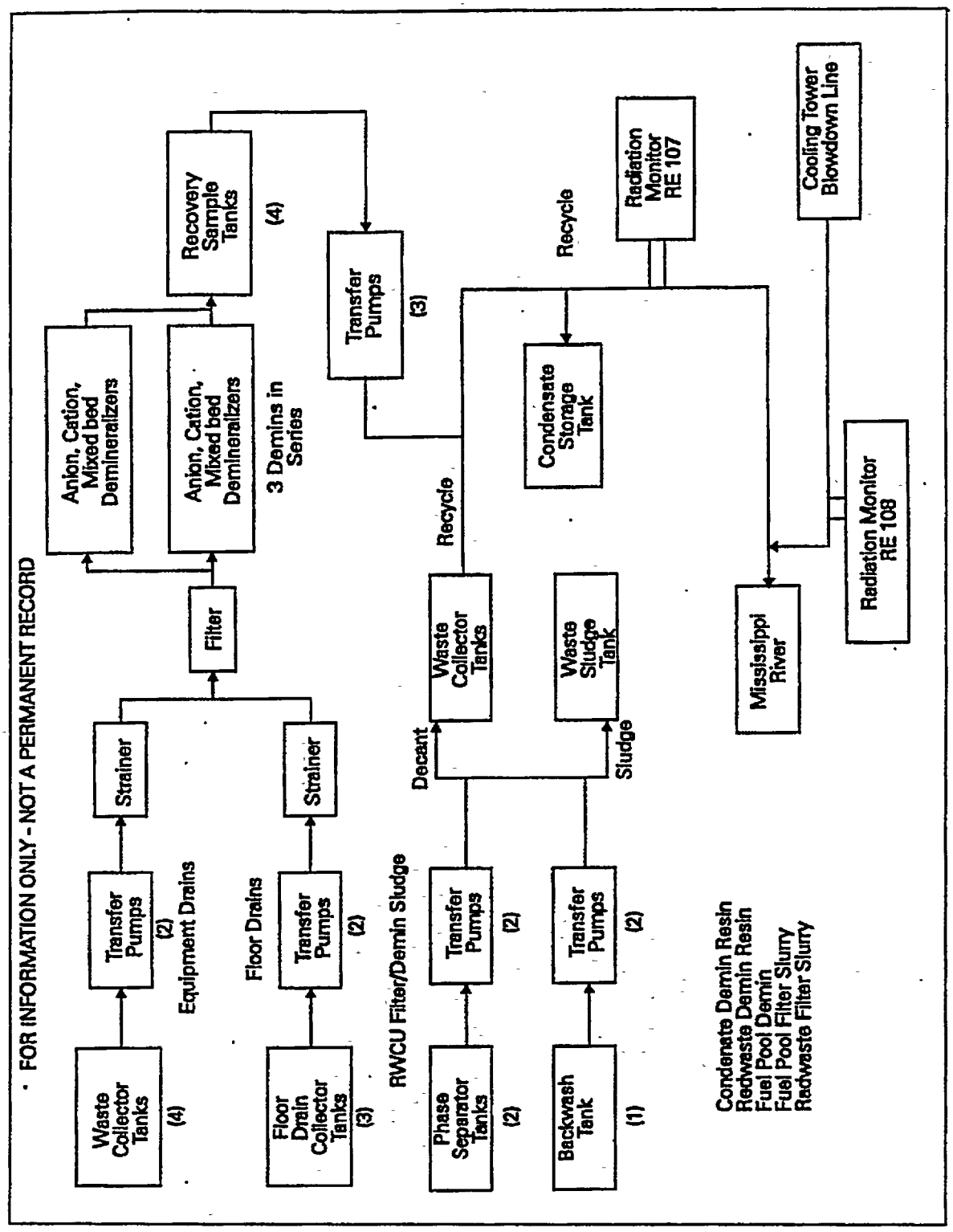


FIGURE 5: FAR-FIELD RADIOLOGICAL ENVIRONMENTAL MONITORING LOCATIONS

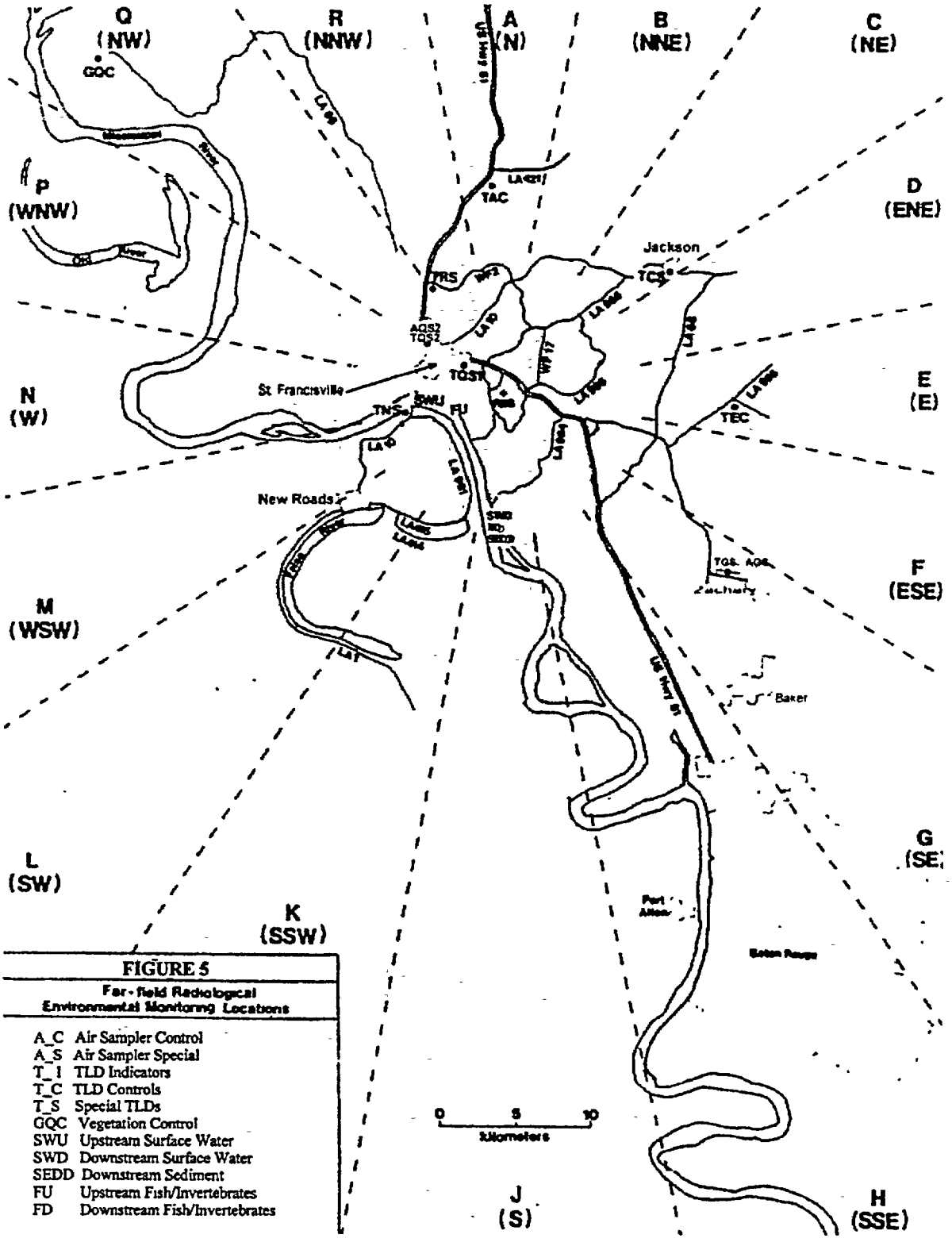


FIGURE 5

Far - field Radiological Environmental Monitoring Locations

A_C	Air Sampler Control
A_S	Air Sampler Special
T_I	TLD Indicators
T_C	TLD Controls
T_S	Special TLDs
GQC	Vegetation Control
SWU	Upstream Surface Water
SWD	Downstream Surface Water
SEDD	Downstream Sediment
FU	Upstream Fish/Invertebrates
FD	Downstream Fish/Invertebrates

FIGURE 6: SCHEMATIC OF THE SOLID WASTE TREATMENT SYSTEM