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RBG-47863

May 1, 2018

Attn: Document Control Desk
U. S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852-2738

Subject: Annual Radioactive Effluent Release Report for 2017
River Bend Station – Unit 1
License No. NPF-47
Docket No. 50-458

RBF1-18-0097

Dear Sir or Madam,

Enclosed is the River Bend Station (RBS) Annual Radioactive Effluent Release Report for 2017 for the period January 1, 2017 through December 31, 2017. This report is submitted in accordance with the RBS Technical Specifications, Section 5.6.3.

Should you have any questions regarding the enclosed, please contact Tim Schenk, at (225) 381-4177.

Sincerely,

A handwritten signature in black ink, appearing to read "T. Schenk".

Tim Schenk
Manager-Regulatory Assurance

Enclosure

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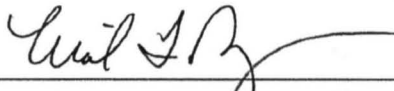
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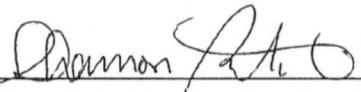
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RIVER BEND STATION
2017 ANNUAL RADIOLOGICAL EFFLUENT RELEASE
REPORT

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Table of Contents

I.	SUPPLEMENTAL INFORMATION	4
II.	GASEOUS EFFLUENT SUMMARY INFORMATION	11
III.	LIQUID EFFLUENT SUMMARY INFORMATION	11
IV.	SOLID WASTE	12
V.	RADIOLOGICAL IMPACT ON MAN (40CFR190).....	12
VI.	METEOROLOGICAL DATA	13
VII.	RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION OPERABILITY	13
VIII.	RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION OPERABILITY	14
IX.	LIQUID HOLD UP TANKS.....	14
X.	RADIOLOGICAL ENVIRONMENTAL MONITORING.....	14
XI.	LAND USE CENSUS.....	14
XII.	OFFSITE DOSE CALCULATION MANUAL (ODCM)	15
XIII.	MAJOR CHANGES TO RADIOACTIVE LIQUID, GASEOUS, AND SOLID WASTE TREATMENT SYSTEMS.....	15
XIV.	PROCESS CONTROL PROGRAM (PCP)	17
XV.	INDUSTRY GROUND WATER PROTECTION INITIATIVE (GPI) – FINAL GUIDANCE DOCUMENT (NEI 07-07) OBJECTIVE ANNUAL REPORTING	17
XVI.	CORRECTIONS TO PREVIOUS REPORTS.....	17
	TABLE 1A GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES.....	18
	TABLE 1B GASEOUS EFFLUENTS - GROUND RELEASES - CONTINUOUS MODE.....	19
	TABLE 1D GASEOUS EFFLUENTS - MIXED MODE RELEASES - CONTINUOUS MODE.....	21
	TABLE 1E SUPPLEMENTAL INFORMATION GASEOUS EFFLUENTS - BATCH MODE	22
	TABLE 1F RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM.....	23
	TABLE 1G 2017 GASEOUS ANNUAL DOSE SUMMARY REPORT	24
	TABLE 2A LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES.....	25
	TABLE 2B LIQUID EFFLUENTS - CONTINUOUS MODE.....	26
	TABLE 2C LIQUID EFFLUENTS - BATCH MODE.....	27
	TABLE 2D EFFLUENT AND WASTE DISPOSAL REPORT SUPPLEMENTAL INFORMATION LIQUID EFFLUENTS - BATCH MODE	29
	TABLE 2E RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM.....	30
	TABLE 2F LIQUID ANNUAL DOSE SUMMARY REPORT	31
	TABLE 4 MEMBERS OF THE PUBLIC ON SITE DOSE	34

TABLE 5 2017 YEAR METEOROLOGICAL DATA - JOINT FREQUENCY TABLES..... 36
**TABLE 6 ATMOSPHERIC DISPERSION AND DEPOSITION RATES FOR THE MAXIMUM
INDIVIDUAL DOSE CALCULATIONS..... 53**
TABLE 7 GROUNDWATER MONITORING WELL SAMPLE RESULTS 54

This is the Annual Radioactive Effluent Release Report for the period of January 1, 2017, through December 31, 2017. This report is submitted in accordance with Technical Specification 5.6.3 of Appendix A to River Bend Station (RBS) License Number NPF-47.

I. SUPPLEMENTAL INFORMATION

A. Regulatory Limits

1. 10CFR50, Appendix I Limits

a) Fission and Activation Gases

In accordance with Technical Requirement (TR) 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:

$$\begin{aligned}
 D_{\text{Gamma-Air}} &= \text{gamma air dose from radioactive noble gases in millirad (mrad)} \\
 &= 3.17\text{E-}8 \sum_{i=1}^n M_i \overline{(X/Q)} Q_i \leq 5 \text{ mrad/qtr} \\
 &\leq 10 \text{ mrad/yr}
 \end{aligned}$$

$$\begin{aligned}
 D_{\text{Beta-Air}} &= \text{beta air dose from radioactive noble gases in millirad (mrad)} \\
 &= 3.17\text{E-}8 \sum_{i=1}^n N_i \overline{(X/Q)} Q_i \leq 10 \text{ mrad/qtr} \\
 &\leq 20 \text{ mrad/yr}
 \end{aligned}$$

b) Radioiodines (I-131 & I-133) and Particulate

In accordance with Technical Requirement 3.11.2.3, the dose to a MEMBER OF THE PUBLIC from radioiodines (I-131 and I-133), tritium (H-3) 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.)

$$\begin{aligned}
 &= 3.17\text{E-}08 (F_0) \sum_{i=1}^n P_{i\tau} (X/Q) Q_i \quad \text{and}
 \end{aligned}$$

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

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

$$\leq 15 \text{ mrem/yr}$$

(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

$$D_{TOTAL} \quad \text{Total Body} \leq 1.5 \text{ mrem/qtr}$$

$$\leq 3 \text{ mrem/yr}$$

$$D_{TOTAL} \quad \text{Any Organ} \leq 5 \text{ mrem/qtr}$$

$$\leq 10 \text{ mrem/yr}$$

(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:

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

≤ 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

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

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

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

(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 radioiodines, 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 Radioiodines (I-131 & I-133), tritium, and 8 day particulate via the inhalation pathway in mrem/yr.

$$DR_{I\&8DP\tau} = \sum_{i=1}^n P_i \overline{(X/Q)} \cdot Q_i \leq 1500 \text{ mrem/yr}$$

(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 ten times 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 concentration.

d. Technical Requirement 3.11.2.5 - Ventilation Exhaust Treatment

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 effluents are limited to ten times 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 using high purity germanium detectors coupled to computerized pulse height analyzers. The sampling and analysis frequencies are described in Table 1F.

Sampling and analysis of these effluent streams provide noble gas radionuclide relative abundance that 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 the stack grab sample and a significant increase in hourly averages was recorded, the nuclide relative abundance of the last sample (or the last similar event), which indicated the presence of activity, was used 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, Iodine-131 and Iodine-133 are continuously sampled from the three release points using 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 1F. Analysis is performed to identify and quantify radionuclides using high purity germanium detectors coupled to computerized pulse height analyzers. Given the nuclide specific activity concentrations, process flow rate, and duration of the sample, 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. Strontium-89 and Strontium-90 (Sr-89 and Sr-90) are quantitatively analyzed by counting by gas flow proportional counting. Gross alpha analysis is performed using a zinc sulfide scintillation counter.

c. Tritium

Tritium grab samples are obtained from the three gaseous release points at the specified frequencies listed in Table 1F using an ice bath condensation collection method. The collected sample is then analyzed using 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.

d. Carbon-14 (C-14)

C-14 release details are discussed in Section V.

e. Nickel-63

No Nickel-63 was quantified in 2017.

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 2E. Analysis for gamma emitting nuclides (including dissolved and entrained noble gases) is performed using a high purity germanium detector coupled to a computerized pulse height analyzer. Tritium concentration is determined using a liquid scintillation counter. Strontium-89 and Strontium-90 are quantitatively analyzed by scintillation techniques (Cherenkov counting). Iron-55 is counted with a liquid scintillation counter after digestion of the iron. Gross alpha analysis is performed using a zinc sulfide scintillation counter. The activity of each nuclide released to the environment is determined from the nuclide specific concentration and total tank volume released.

D. Batch Releases

1. Liquid Effluents

Batch releases and receiving stream flow from River Bend Station during the reporting period of January 1, 2017, through December 31, 2017 are shown in Table 2D.

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

2. Gaseous Effluents

There were no routine batch releases of gaseous effluents from River Bend Station during the reporting period of January 1, 2017, through December 31, 2017.

E. Abnormal Releases

There were no abnormal releases in 2017.

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	$\pm 14.2\%$
Tritium	$\pm 14.2\%$
Dissolved and Entrained Noble Gases	$\pm 14.2\%$
Gross Alpha Radioactivity	$\pm 14.2\%$

2. Gaseous

The maximum error (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	$\pm 37.0\%$
Iodines	$\pm 18.6\%$
Particulate	$\pm 18.6\%$
Tritium	$\pm 18.2\%$

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:

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

where:

E_T = total error

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

II. GASEOUS EFFLUENT SUMMARY INFORMATION

Refer to the Table 1 series for the summation of gaseous releases. 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 1F. Also, any nuclide not appearing in the tables was < LLD for all four quarters.

III. LIQUID EFFLUENT SUMMARY INFORMATION

Refer to the Table 2 series for the summation of liquid releases. 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 2E. Also, any nuclide not appearing in the tables was < LLD for all four quarters.

IV. SOLID WASTE

Refer to Table 3, for Solid Waste and Irradiated Fuel Shipments.

V. RADIOLOGICAL IMPACT ON MAN (40CFR190)

An assessment (see summary below) 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.

Carbon-14 (C-14)

The bounding annual dose from C-14 was calculated using guidance from Regulatory Guide 1.21, Revision 2, NUREG-0016, and the methodology in Regulatory Guide 1.109. The C-14 source term of 11 curies was taken from the site calculation PR(C)-359-3A, Gaseous Releases per NUREG-0016 Revision 1. Carbon-14 does not have dose factors associated with standing on contaminated ground; therefore, no ground plane dose was calculated. There is no milk pathway within five miles of River Bend Station so this pathway is not evaluated. RBS does not take credit for decay in the X/Q. This calculation assumes the inhalation, meat and vegetation pathways are at the site boundary in the sector with the highest X/Q. The dose from liquid effluents is not calculated as the dose contribution from C-14 is considered to be insignificant as indicated in Regulatory Guide 1.21, Revision 2. According to EPRI 1021106, Estimation of Carbon-14 in Nuclear Power Plant Gaseous Effluents, 95% of the carbon released is in the form of carbon dioxide and this contributes the highest dose to man. The ingestion pathway, specifically vegetation, is the most likely route of intake for man. An assumption has been made for gaseous releases that plants obtain all of their C-14 from carbon dioxide.

Dose not including C-14:

Organ	mrem
Total Body	4.75E-01
Thyroid	8.84E-01
Other Organ	5.28E-01
Skin	7.40E-01

Bounding Dose from C-14 only:

Organ	mrem
Total Body	9.39E-01
Skin	0.00E+00
Thyroid	9.39E-01
Other Organ (bone)	4.70E+00

In addition, an assessment of doses was made for members of the public due to their activities inside the site boundary which can be found in Table 4. The maximally exposed member of the public was a member of the hunting club and is conservatively estimated to have been on site for approximately 10.7 days. It should be noted that liquid effluent pathway dose was not considered since this individual would not engage in activities that would allow exposure to this pathway.

VI. METEOROLOGICAL DATA

See Tables 5 and 6 for the cumulative joint frequency distributions and annual average data for continuous releases. The meteorological recovery for 2017 was 95.5%.

VII. RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION OPERABILITY

Section TR 3.3.11.2 of the River Bend Technical Requirements Manual (TRM) addresses "Radioactive Liquid Effluent Monitoring Instrumentation" requirements and actions to be taken. CWS-FE113 is identified TRM Table 3.3.11.2-1 as a Cooling Tower Blowdown Line Radioactive Liquid Effluent Monitoring instrument monitoring flow rate. Action B.2 of TR 3.3.11.2 addresses restoring inoperable channels to an operable status with a completion time of 30 days, and is applicable for instrument CWS-FE113. If the 30-day time frame is exceeded, Action E.1 requires a suspension of the radioactive effluent release and Action E.2 requires an explanation as to why the inoperability was not corrected in a timely manner in the next Annual Radioactive Effluent Release Report. During the period from January 1, 2017, through December 31, 2017, RBS complied with this requirement and restored this equipment to operable status within the required time, except as noted in the following paragraph:

On January 2, 2017, at 0115, a cooling tower blowdown water low-flow alarm per instrument CWS-FE113 was received in the Auxiliary Control Room. This alarm was received concurrent with an electrical grid transient due to a lightning strike in the vicinity of the plant. No operator actions or activities were occurring that would have affected blowdown flow. Indicated flow on CWS-FE113 lowered

to zero (0) indicated flow and the chart recorder indicator was not moving. Operators verified blowdown flow with another instrument (CWS-FR112) which indicated approximately 2600 gpm. Beginning on January 2, 2017, multiple troubleshooting activities on CWS-FE113 were performed with no success in restoring the instrument.

At the time Action E.1 and Action E.2 became active, River Bend Station had entered a refueling outage and the Circulating Water System (CWS) had been secured. No further discharges occurred until CWS-FE113 was repaired. Repair efforts for CWS-FE113 required a new transmitter and a new transient protector to be installed. The installation of this equipment was tested and the equipment restored to operable at 2341 on 2/5/2017.

VIII. 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 January 1, 2017, through December 31, 2017, restored to operable status within the required time.

IX. 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 January 1, 2017, through December 31, 2017 was less than or equal to the 10 curie limit as required by Technical Specification 5.5.8.b.

X. RADIOLOGICAL ENVIRONMENTAL MONITORING

There were no changes to the Radiological Environmental Monitoring Program during the reporting period January 1, 2017, through December 31, 2017.

XI. LAND USE CENSUS

A Land Use Census was not conducted in 2017. The Land Use Census is performed every two years in accordance with procedure ESP-8-051, as required by the Technical Requirements Manual (TRM) (TR 3.12.2). The results of the Land Use Census are included in the Annual Radiological Environmental Operating Report pursuant to Technical Specification 5.6.2.

XII. OFFSITE DOSE CALCULATION MANUAL (ODCM)

The ODCM was revised in 2017. Changes are summarized below and a copy of the ODCM, with change bars and dates, is included with this report.

- Whole Procedure - General formatting and margin corrections were performed throughout the procedure.
- Step 4.1 - Added (RPM) and added punctuation.
- Step 4.4 - Updated title to Senior Manager – Production
- Step 7.1 - Corrected punctuation.
- Step 7.3.2.1 - Notes moved so as to precede the equation.
- Step 7.3.3.2 - Reverted to Revision 13 wording. Removed Step 7.3.3.3. This removes the method of using a "dummy" isotope used due to software limitations.
- Section 8.4 - Section and step numbers corrected.
- Step 8.4.1.1.1 - "AND" moved and emphasis added between sub-steps 1 and 2.
- Step 8.4.3.1.1 - "AND" moved and emphasis added between sub-steps a and b.
- Section 10.3.4 - Referenced step updated.
- Step 10.6.4 - Referenced step updated.
- Attachment 2 - Reformatted and updated table. Replaced asterisks from Rev. 13 due to change in Section 7.3.3.
- Attachment 3 - Additional dose factors added.
- Attachment 11 (Table G-2) - Additional stable element transfer factors added.
- Attachment 12 (Table G-3) - Additional bioaccumulation factors added.
- Attachments 15-33 (Tables I-1 through I-19) - Additional dose factors added.

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

Engineering performed a review of the Asset Suite database to evaluate non-administrative design changes completed or partially completed during 2017 involving the subject systems (i.e. changes classified as evaluations or nuclear changes). These design changes were then reviewed to determine if there have been any major changes to the subject systems. The review was based on a major change being defined as a modification which affected the method of processing or the effluent from the system. Also, to be a "major change" the change must have affected the Updated Safety Analysis Report (USAR).

The Engineering Changes (EC's) to liquid, solid or gaseous radwaste systems implemented during this time period were:

EC 68894 Update Engineering Standard EN-IC-S-004-R to Reflect New Model Number for Recorder LWS-CR583B and D.

Recorders LWS-CR583B and LWS-CR583D monitor Radwaste Demineralizer

effluent conductivity in the Auxiliary Control Room on panel LWS-PNL187. This change evaluated a new replacement recorder for LWS-CR583B and D as the scaling required by the recorder unit calibration could not be accommodated with the replacement model originally identified. The replacement recorders meet the same design requirements and perform the same function as the original recorders. There is no impact to the method of liquid waste processing or system effluent as a result of this change.

EC 70244 Equivalent Replacement Valve for N64-SOVF34B.

N64-SOVF034A (B), Cooler Condenser A (B) Drain Valve, is provided as the isolation valve for the associated drain line. N64-SOVF034A/B isolates the cooler condenser drain path when Offgas System isolation occurs due to high radiation levels. The replacement valve for N64-SOVF034B meets the original design requirements and performs the same function as the original valve. There is no impact to the method of gaseous waste processing or system effluent as a result of this change.

EC 63999 Replace OFG-H2B Heater

There are two offgas dryer trains. Each gas dryer system is composed of the following major equipment: Dryer Vessel, Chiller, Motor-Driven Blower, and Heater Assembly. The heater assembly heats the air blown through a dryer vessel during its desiccant regeneration cycle. This EC provides a replacement heater housing and element for OFG-H2B as the original housing part is obsolete and requires replacement to accommodate the larger dimensions of the updated replacement elements. The heater and elements and housing perform the same function and meet the same design requirements as the original heater. There is no impact to the method of gaseous waste processing or system effluent as a result of this change.

EC 60373 Add Drain Connections to OFG-006-088-4 and OFG-006-084-4.

This EC adds 3/4" drain connections to the Offgas Desiccant Dryer, N64-DRYD030B and D 6" outlet piping to allow for draining and inspection. These drain connections are not equipped with an isolation valve and must be capped when the dryers are in service. These connections do not change the operational characteristics of the dryers and do not have a permanent interface with any other systems or components. There is no impact to the method of gaseous waste processing or system effluent as a result of this change.

EC 60370 Add Removable Spool Piece to OFG-002-232-4

This EC added a removable spool piece to the dryer drain line of Offgas Desiccant Dryer Skid D. This spool piece is provided to facilitate cleaning of N64-DRY30D, one of the four desiccant dryer vessels. There are 2 Offgas Dryer trains, with two dryer vessels on each train. The vessels are filled with desiccant to reduce the dew point of the process stream to -90 deg. F. The spool piece is installed when the

dryer vessel is in service. This spool piece does not change the operational characteristics of the dryers. There is no impact to the method of gaseous waste processing or system effluent as a result of this change.

EC 58276 OFG-FN3B Blower Replacement, Existing Blower is Obsolete

The Offgas Dryer Train Motor Driven Blower functions to blow heated air through a standby Desiccant Dryer vessel to regenerate the desiccant. This EC provides a replacement to the original blower due to the original being obsolete. The new design blower meets the design requirements of the original blower and operates in the same manner. There is no impact to the method of gaseous waste processing or system effluent as a result of this change.

No EC was identified as being completed during this time period that modified any radioactive waste system major component such that the processing method or effluent was changed. Also no changes were identified affecting the method of processing solid, liquid or gaseous waste or the isotopic composition or the quantity of liquid, solid, or gaseous waste as described in the USAR.

In conclusion, no design changes were completed during the specified time period that constituted a major change to either the liquid, solid or gaseous radwaste treatment systems.

XIV. PROCESS CONTROL PROGRAM (PCP)

There were no changes to the Process Control Program (PCP) in 2017.

XV. INDUSTRY GROUND WATER PROTECTION INITIATIVE (GPI) – FINAL GUIDANCE DOCUMENT (NEI 07-07) OBJECTIVE ANNUAL REPORTING

Ground water samples were taken in support of the GPI. These samples are not part of the Radiological Environmental Monitoring Program. The sample results for 2017 are located in Table 7.

River Bend Station made no NEI 07-07 voluntary notifications in 2017.

XVI. CORRECTIONS TO PREVIOUS REPORTS

- The cover letters for the 2015 and 2016 Annual Radiological Effluent Release Reports (ARERR) reference submitting the report in accordance with RBS TRM, Section 5.6.2. The correct section for this report is RBS TRM, Section 5.6.3.
- The 2015 ARERR, pages 61 – 72 of Table 7 indicates 2014 for the year. The correct year is 2015.

TABLE 1A

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES						
REPORT FOR 2017	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR

Fission and Activation Gases						
1. Total Release	Ci	1.19E+02	6.64E+01	2.59E+02	3.88E+02	8.33E+02
2. Avg. Release Rate	uCi/sec	1.53E+01	8.44E+00	3.26E+01	4.89E+01	2.64E+01
3. % Applicable Limit % (1)		1.10E+00	4.34E-01	2.03E+00	5.76E+00	4.66E+00
Iodine-131						
1. Total Release	Ci	1.70e-03	1.89E-03	2.59E-03	4.76E-03	1.09E-02
2. Avg. Release Rate	uCi/sec	2.19E-04	2.40E-04	3.26E-04	5.99E-04	3.46E-04
3. % Applicable Limit % (2)		7.40E-01	8.93E-01	1.12E+00	2.10E+00	2.43E+00
Particulates Half Life >= 8 days						
1. Total Release	Ci	1.30E-04	1.98E-04	2.45E-03	5.84E-03	8.62E-03
2. Avg. Release Rate	uCi/sec	1.67E-05	2.52E-05	3.08E-04	7.34E-04	2.73E-04
3. % Applicable Limit % (2)		3.18E-03	8.52E-03	8.57E-02	7.92E-02	8.83E-02
Tritium						
1. Total Release	Ci	2.68E+00	2.27E+00	1.61E+00	1.66E+00	8.23E+00
2. Avg. Release Rate	uCi/sec	3.45E-01	2.89E-01	2.03E-01	2.09E-01	2.61E-01
3. % Applicable Limit % (2)		5.07E-02	2.56E-02	1.84E-02	2.04E-02	5.75E-02
Carbon-14						
1. Total Release	Ci	2.71E+00	2.74E+00	2.77E+00	2.77E+00	1.10E+01
2. Avg. Release Rate	uCi/sec	3.49E-01	3.48E-01	3.48E-01	3.48E-01	3.49E-01
3. % Applicable Limit % (2)		1.55E+01	1.56E+01	1.58E+01	1.58E+01	3.13E+01

- 1) Either the gamma air dose limit of 5 mrad/qtr or beta air dose limit of 10 mrad/qtr (T.R. 3.11.2.2.a), whichever is most limiting.
- 2) The % of applicable limit is determined by comparing the dose contribution to the critical organ limits of TRM 3.11.2.3.

TABLE 1B
GASEOUS EFFLUENTS - GROUND RELEASES - CONTINUOUS MODE

REPORT FOR 2017	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
Fission and Activation Gases						
Xe-131m	Ci	1.20E+01	0.00E+00	0.00E+00	0.00E+00	1.20E+01
Xe-133m	Ci	8.38E-02	0.00E+00	0.00E+00	0.00E+00	8.38E-02
Xe-133	Ci	4.53E-02	0.00E+00	1.11E+00	0.00E+00	1.15E+00
Xe-135m	Ci	9.16E-01	5.79E-01	3.13E+00	7.08E+00	1.17E+01
Xe-135	Ci	5.23E-01	3.31E-01	3.69E+00	4.21E+00	8.75E+00
Total For Period	Ci	1.36E+01	9.10E-01	7.92E+00	1.13E+01	3.37E+01
Iodines						
I-131	Ci	1.67E-05	9.32E-05	1.70E-05	7.24E-05	1.99E-04
I-133	Ci	2.67E-06	8.70E-06	0.00E+00	3.48E-05	4.62E-05
Total For Period	Ci	1.93E-05	1.02E-04	1.70E-05	1.07E-04	2.45E-04
Particulates Half Life >= 8 days						
Co-60	Ci	3.11E-07	0.00E+00	4.34E-06	2.54E-06	7.19E-06
Sn-113	Ci	0.00E+00	2.13E-08	0.00E+00	0.00E+00	2.13E-08
Sb-125	Ci	1.92E-07	0.00E+00	0.00E+00	0.00E+00	1.92E-07
Total For Period	Ci	5.03E-07	2.13E-08	4.34E-06	2.54E-06	7.40E-06
Tritium						
H-3	Ci	5.95E-01	2.22E-01	1.61E-01	1.89E-01	1.17E+00
Total For Period	Ci	5.95E-01	2.22E-01	1.61E-01	1.89E-01	1.17E+00

TABLE 1C
GASEOUS EFFLUENTS - GROUND RELEASES - BATCH MODE

REPORT FOR 2017	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
-----	-----	-----	-----	-----	-----	-----
Fission and Activation Gases						
XE-133	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-135	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
XE-135M	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		-----	-----	-----	-----	-----
Totals for Period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Iodines						
I-131	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I-133	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		-----	-----	-----	-----	-----
Totals for Period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Particulates Half Life >= 8 days						
BA-140	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CO-60	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MN-54	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-89	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SR-90	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tritium						
H-3	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		-----	-----	-----	-----	-----
Totals for Period	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE 1D

GASEOUS EFFLUENTS - MIXED MODE RELEASES - CONTINUOUS MODE

REPORT FOR 2017	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
Fission and Activation Gases						
Ar-41	Ci	0.00E+00	0.00E+00	3.33E+00	8.03E+00	1.14E+01
Kr-85m	Ci	2.02E+00	9.84E-01	2.68E+01	1.26E+02	1.55E+02
Kr-87	Ci	1.67E+00	1.29E-01	0.00E+00	3.61E+00	5.40E+00
Kr-88	Ci	3.62E+00	3.64E+00	2.25E+01	1.10E+02	1.40E+02
Xe-133m	Ci	0.00E+00	5.57E-01	4.92E+00	0.00E+00	5.48E+00
Xe-133	Ci	1.44E+00	1.28E+01	1.07E+02	6.50E+01	1.86E+02
Xe-135m	Ci	8.70E+00	1.44E+01	3.17E+01	1.64E+01	7.12E+01
Xe-135	Ci	3.35E+01	3.30E+01	4.38E+01	1.46E+01	1.25E+02
Xe-137	Ci	2.77E+01	0.00E+00	0.00E+00	0.00E+00	2.77E+01
Xe-138	Ci	2.65E+01	0.00E+00	1.13E+01	3.39E+01	7.16E+01
Total For Period	Ci	1.05E+02	6.55E+01	2.51E+02	3.77E+02	7.99E+02
Iodines						
I-131	Ci	1.68E-03	1.78E-03	2.57E-03	4.69E-03	1.07E-02
I-133	Ci	8.23E-03	5.17E-03	1.27E-02	3.66E-02	6.27E-02
Total For Period	Ci	9.91E-03	6.95E-03	1.53E-02	4.13E-02	7.34E-02
Particulates Half Life >= 8 days						
Mn-54	Ci	0.00E+00	1.93E-06	1.01E-05	0.00E+00	1.20E-05
Co-58	Ci	0.00E+00	0.00E+00	9.15E-05	6.90E-05	1.60E-04
Co-60	Ci	1.81E-05	5.18E-05	4.72E-04	4.50E-04	9.92E-04
Zn-65	Ci	0.00E+00	0.00E+00	8.48E-05	4.98E-05	1.35E-04
Sr-89	Ci	1.02E-05	4.70E-05	3.28E-06	1.76E-03	1.82E-03
Sr-90	Ci	0.00E+00	0.00E+00	0.00E+00	3.40E-05	3.40E-05
Ag-110m	Ci	0.00E+00	0.00E+00	1.36E-05	9.06E-06	2.27E-05
Cs-134	Ci	0.00E+00	0.00E+00	3.04E-05	1.73E-05	4.77E-05
Cs-136	Ci	0.00E+00	0.00E+00	6.52E-06	0.00E+00	6.52E-06
Cs-137	Ci	6.88E-07	0.00E+00	4.23E-05	2.85E-05	7.15E-05
Ba-140	Ci	1.01E-04	9.75E-05	1.69E-03	3.41E-03	5.30E-03
Ce-141	Ci	0.00E+00	0.00E+00	2.90E-06	5.68E-06	8.59E-06
Total For Period	Ci	1.30E-04	1.98E-04	2.45E-03	5.84E-03	8.61E-03
Tritium						
H-3	Ci	2.09E+00	2.05E+00	1.45E+00	1.47E+00	7.06E+00
Carbon-14						
C-14	Ci	2.71E+00	2.74E+00	2.77E+00	2.77E+00	1.10E+01

TABLE 1E
SUPPLEMENTAL INFORMATION
GASEOUS EFFLUENTS - BATCH MODE

REPORT FOR 2017	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
Number of releases		0	0	0	0	0
Total release time	minutes	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Maximum release time	minutes	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Average release time	minutes	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Minimum release time	minutes	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

TABLE 1F
RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

Gaseous Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) uCi/ml
A. Main Plant Exhaust Duct	M Grab Sample	M	Principal Gamma Emitters	1.00E-04
			H-3	1.00E-06
B. Fuel Building Ventilation Exhaust Duct	M Grab Sample	M	Principal Gamma Emitters	1.00E-04
			H-3	1.00E-06
C. Radwaste Building Ventilation Exhaust Duct	M Grab Sample	M	Principal Gamma Emitters	1.00E-04
D. All Release Types as listed in A, B, & C above	Continuous	W Charcoal Sample	I-131	1.00E-12
			I-133	1.00E-10
	Continuous	W Particulate Sample	Principal Gamma Emitters (I-131, Others)	1.00E-11
	Continuous	M Composite Particulate Sample	Gross Alpha	1.00E-11
	Continuous	Q Composite Particulate Sample	Sr-89, Sr-90	1.00E-11
	Continuous	Noble Gas Monitor	Noble Gases Gross Beta or Gamma	1.00E-06

W = At least once per 7 days

M = At least once per 31 days

Q = At least once per 92 days

TABLE 1G

2017 GASEOUS ANNUAL DOSE SUMMARY REPORT

=== I&P DOSE LIMIT ANALYSIS =====

Period-Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Q1 - T.Spec Any Organ	CHILD	THYROID	6.67E-02	7.50E+00	8.90E-01
Q2 - T.Spec Any Organ	CHILD	THYROID	7.40E-02	7.50E+00	9.87E-01
Q3 - T.Spec Any Organ	CHILD	THYROID	1.03E-01	7.50E+00	1.37E+00
Q4 - T.Spec Any Organ	CHILD	THYROID	1.97E-01	7.50E+00	2.63E+00
Yr - T.Spec Any Organ	CHILD	THYROID	4.41E-01	1.50E+01	2.94E+00

Carbon-14 (Bounding calculation)=====

Q1 - T.Spec Any Organ	CHILD	BONE	1.16E+00	7.50E+00	1.55E+01
Q2 - T.Spec Any Organ	CHILD	BONE	1.17E+00	7.50E+00	1.56E+01
Q3 - T.Spec Any Organ	CHILD	BONE	1.18E+00	7.50E+00	1.58E+01
Q4 - T.Spec Any Organ	CHILD	BONE	1.18E+00	7.50E+00	1.58E+01
Yr - T.Spec Any Organ	CHILD	BONE	4.70E+00	1.50E+01	3.13E+01

=== NG DOSE LIMIT ANALYSIS =====

Period-Limit	Dose (mrad)	Limit (mrad)	% of Limit
Q1 - T.Spec Gamma	5.50E-02	5.00E+00	1.10E+00
Q1 - T.Spec Beta	8.36E-02	1.00E+01	8.36E-01
Q2 - T.Spec Gamma	2.17E-02	5.00E+00	4.34E-01
Q2 - T.Spec Beta	1.43E-02	1.00E+01	1.43E-01
Q3 - T.Spec Gamma	1.02E-01	5.00E+00	2.03E+00
Q3 - T.Spec Beta	6.23E-02	1.00E+01	6.23E-01
Q4 - T.Spec Gamma	2.88E-01	5.00E+00	5.76E+00
Q4 - T.Spec Beta	1.16E-01	1.00E+01	1.16E+00
Yr - T.Spec Gamma	4.66E-01	1.00E+01	4.66E+00
Yr - T.Spec Beta	2.76E-01	2.00E+01	1.38E+00

TABLE 2A

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

REPORT FOR 2017	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
Fission and Activation Products						
1. Total Release	Ci	2.85E-03	3.47E-03	6.66E-03	2.85E-03	1.58E-02
2. Avg. Diluted Conc.	uCi/ml	3.12E-09	2.50E-09	4.72E-09	2.04E-09	3.09E-09
3. % Applicable Limit % (1)		3.32E-03	6.01E-03	1.73E-02	1.26E-02	2.17E-02
Tritium						
1. Total Release	Ci	1.01E+01	1.09E+01	2.81E+01	1.70E+01	6.61E+01
2. Avg. Diluted Conc.	uCi/ml	1.11E-05	7.84E-06	1.99E-05	1.21E-05	1.29E-05
3. % Applicable Limit % (1)		2.05E-04	7.83E-04	1.72E-03	1.53E-03	2.14E-03
Dissolved and Entrained Gases						
1. Total Release	Ci	1.34E-02	7.36E-02	1.50E-01	1.16E-01	3.54E-01
2. Avg. Diluted Conc.	uCi/ml	1.47E-08	5.29E-08	1.06E-07	8.29E-08	6.93E-08
3. % Applicable Limit % (2)		7.33E-03	2.65E-02	5.32E-02	4.14E-02	3.46E-02
Gross Alpha Radioactivity						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Volume of liquid waste	liters	1.52E+06	7.62E+06	7.37E+06	9.31E+06	2.58E+07
Volume of dil. water	liters	9.14E+08	1.39E+09	1.41E+09	1.40E+09	5.11E+09

(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 and entrained noble gases in liquid effluent.

TABLE 2B
LIQUID EFFLUENTS - CONTINUOUS MODE

REPORT FOR 2017	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
-----	-----	-----	-----	-----	-----	-----
Fission and Activation Gases						
** No Nuclide Activities **	
Tritium						
** No Nuclide Activities **	
Dissolved and Entrained Gases						
** No Nuclide Activities **	
Gross Alpha Radioactivity						
** No Nuclide Activities **	

TABLE 2C
LIQUID EFFLUENTS - BATCH MODE

REPORT FOR 2017	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
Fission and Activation Products						
Na-24	Ci	0.00E+00	9.18E-04	0.00E+00	5.31E-04	1.45E-03
Cr-51	Ci	5.62E-05	1.19E-05	1.98E-05	0.00E+00	8.79E-05
Mn-54	Ci	1.59E-04	8.15E-05	2.59E-04	1.16E-04	6.15E-04
Co-58	Ci	3.17E-05	8.75E-07	7.98E-06	1.07E-06	4.17E-05
Co-60	Ci	2.18E-03	1.10E-03	4.49E-03	1.45E-03	9.22E-03
Ni-65	Ci	0.00E+00	0.00E+00	1.05E-05	0.00E+00	1.05E-05
Zn-65	Ci	9.83E-05	4.88E-05	7.57E-05	6.77E-06	2.30E-04
Br-82	Ci	0.00E+00	0.00E+00	6.78E-06	2.79E-06	9.57E-06
Y-92	Ci	3.39E-05	0.00E+00	1.07E-04	4.59E-06	1.45E-04
Zr-97	Ci	0.00E+00	0.00E+00	1.16E-06	0.00E+00	1.16E-06
Nb-95	Ci	1.16E-06	0.00E+00	0.00E+00	1.22E-06	2.38E-06
Mo-99	Ci	0.00E+00	1.14E-04	1.58E-05	8.86E-06	1.39E-04
Tc-99m	Ci	0.00E+00	3.63E-05	0.00E+00	2.28E-05	5.91E-05
Ru-105	Ci	0.00E+00	0.00E+00	6.30E-06	0.00E+00	6.30E-06
Ag-110m	Ci	0.00E+00	0.00E+00	5.89E-06	0.00E+00	5.89E-06
Rh-105	Ci	2.18E-05	0.00E+00	0.00E+00	0.00E+00	2.18E-05
Sn-113	Ci	0.00E+00	1.68E-06	0.00E+00	0.00E+00	1.68E-06
Sb-122	Ci	0.00E+00	0.00E+00	0.00E+00	1.57E-06	1.57E-06
Sb-124	Ci	5.18E-06	2.07E-06	1.60E-04	0.00E+00	1.67E-04
Sb-125	Ci	0.00E+00	9.77E-06	2.76E-04	4.75E-06	2.91E-04
Sb-126	Ci	0.00E+00	0.00E+00	0.00E+00	7.50E-06	7.50E-06
I-131	Ci	5.38E-06	1.18E-06	2.52E-05	5.54E-05	8.71E-05
I-132	Ci	0.00E+00	9.46E-07	0.00E+00	0.00E+00	9.46E-07
I-133	Ci	0.00E+00	0.00E+00	1.60E-06	1.17E-05	1.33E-05
I-135	Ci	0.00E+00	0.00E+00	4.88E-06	0.00E+00	4.88E-06
Cs-134	Ci	0.00E+00	0.00E+00	7.74E-06	1.24E-06	8.98E-06
Cs-136	Ci	0.00E+00	0.00E+00	1.14E-06	0.00E+00	1.14E-06
Cs-137	Ci	0.00E+00	4.94E-06	2.24E-05	2.29E-06	2.96E-05
Cs-138	Ci	0.00E+00	0.00E+00	0.00E+00	3.76E-05	3.76E-05
Ba-141	Ci	0.00E+00	1.09E-03	6.87E-05	7.76E-05	1.24E-03
Ba-142	Ci	1.58E-04	0.00E+00	6.71E-04	2.67E-05	8.55E-04
La-140	Ci	1.45E-05	4.62E-05	3.99E-04	3.32E-04	7.91E-04
Ce-141	Ci	5.99E-05	0.00E+00	1.09E-05	4.45E-05	1.15E-04
Ce-143	Ci	0.00E+00	0.00E+00	1.36E-06	0.00E+00	1.36E-06
Ce-144	Ci	1.34E-05	0.00E+00	0.00E+00	9.73E-05	1.11E-04
W-187	Ci	9.63E-06	0.00E+00	0.00E+00	0.00E+00	9.63E-06
Total For Period	Ci	2.85E-03	3.47E-03	6.66E-03	2.85E-03	1.58E-02
Tritium						
H-3	Ci	1.01E+01	1.09E+01	2.81E+01	1.70E+01	6.61E+01
Total For Period	Ci	1.01E+01	1.09E+01	2.81E+01	1.70E+01	6.61E+01

TABLE 2C

LIQUID EFFLUENTS - BATCH MODE

REPORT FOR 2017	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
Dissolved and Entrained Gases						
Kr-87	Ci	0.00E+00	0.00E+0	0.00E+00	1.34E-0	1.34E-05
Kr-88	Ci	0.00E+00	6.47E-05	2.14E-04	1.61E-04	4.40E-04
Kr-89	Ci	0.00E+00	0.00E+00	0.00E+00	8.63E-04	8.63E-04
Xe-131m	Ci	0.00E+00	4.98E-05	5.89E-04	0.00E+00	6.39E-04
Xe-133m	Ci	2.96E-04	9.28E-04	3.09E-03	2.68E-03	7.00E-03
Xe-133	Ci	6.00E-03	2.76E-02	8.38E-02	6.71E-02	1.84E-01
Xe-135	Ci	7.14E-03	4.50E-02	6.27E-02	4.56E-02	1.60E-01
Xe-138	Ci	0.00E+00	0.00E+00	7.71E-05	0.00E+00	7.71E-05
Total For Period	Ci	1.34E-02	7.36E-02	1.50E-01	1.16E-01	3.54E-01

TABLE 2D
EFFLUENT AND WASTE DISPOSAL REPORT
SUPPLEMENTAL INFORMATION
LIQUID EFFLUENTS - BATCH MODE

REPORT FOR 2017	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
-----	-----	-----	-----	-----	-----	-----
Number of releases		27	63	113	94	297
Total release time	minutes	8.10E+03	4.37E+04	3.78E+04	5.53E+04	1.45E+05
Maximum release time	minutes	3.73E+02	1.66E+03	1.44E+03	1.76E+03	1.76E+03
Average release time	minutes	3.00E+02	6.94E+02	3.35E+02	5.88E+02	4.88E+02
Minimum release time	minutes	1.00E+01	1.25E+02	1.53E+02	6.70E+01	1.00E+01
		<u>QTR 1</u>	<u>QTR 2</u>	<u>QTR 3</u>	<u>QTR 4</u>	
Average Mississippi River stream flow during periods of release of effluent into a flowing stream.	ft ³ /sec	503,906	856,444	409,494	290,487	

TABLE 2E
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: <u>except</u> for Ce-144	5.00E-07
				5.00E-06
			I-131	1.00E-06
	P One Batch/M	M	Dissolved and Entrained Gases (Gamma Emitters)	1.00E-05
	P Each Batch	M Composite	H-3	1.00E-05
			Gross Alpha	1.00E-07
	P Each Batch	Q Composite	Sr-89, Sr-90	5.00E-08
			Fe-55	1.00E-06

P = Prior to each radioactive release

M = At least once per 31 days

Q = At least once per 92 days

TABLE 2F
LIQUID ANNUAL DOSE SUMMARY REPORT

Report for: 2017

Release ID: All Liquid Release Points

Liquid Receptor

=== SITE DOSE LIMIT ANALYSIS =====

Period - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
Qtr 1 - T.Spec Any Organ	ADULT	GILLI	1.69E-04	5.00E+00	3.38E-03
Qtr 1 - T.Spec Total Body	ADULT	TBODY	2.14E-05	1.50E+00	1.42E-03
Qtr 2 - T.Spec Any Organ	ADULT	GILLI	3.12E-04	5.00E+00	6.25E-03
Qtr 2 - T.Spec Total Body	ADULT	TBODY	5.37E-05	1.50E+00	3.58E-03
Qtr 3 - T.Spec Any Organ	ADULT	GILLI	8.93E-04	5.00E+00	1.79E-02
Qtr 3 - T.Spec Total Body	ADULT	TBODY	1.44E-04	1.50E+00	9.59E-03
Qtr 4 - T.Spec Any Organ	ADULT	GILLI	6.51E-04	5.00E+00	1.30E-02
Qtr 4 - T.Spec Total Body	ADULT	TBODY	6.82E-05	1.50E+00	4.55E-03
2017 - T.Spec Any Organ	ADULT	GILLI	2.23E-03	1.00E+01	2.23E-02
2017 - T.Spec Total Body	ADULT	TBODY	3.17E-04	3.00E+00	1.06E-02

TABLE 3
Effluent and Waste Disposal Annual Report 2017 Year
Solid Waste and Irradiated Fuel Shipments
Reporting Period from 01/01/17 to 12/31/17

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

1. <u>Type of Waste</u>	<u>Units</u>	<u>12 Month Period</u>	<u>Waste Class</u>	<u>Estimated Error %</u>
Spent Resins, Filter	m3	1.33E+02	A	± 25%
Sludges, Evaporator Bottoms, Etc.	Ci	1.86E+02	A	
	M3	0.00E+00	B	
	Ci	0.00E+00	B	
	m3	0.00E+00	C	
	Ci	0.00E+00	C	
<hr/>				
Dry Compressible Wastes,	m3	1.28E+03	A	± 25%
Contaminated Equipment Etc.	Ci	1.10E+01	A	
<hr/>				
Irradiated Components,	m3	0.00E+00	C	
Control Rods, Etc.	Ci	0.00E+00	C	
<hr/>				
Other	m3	1.91E+02	A	± 25%
(Water, EHC, Waste Oil, etc.)	Ci	3.84E+00	A	

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.

**Effluent and Waste Disposal Annual Report 2017 Year
Solid Waste and Irradiated Fuel Shipments
Reporting Period from 01/01/17 to 12/31/17**

Table 3 (continued)

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.

2. Estimates of Major Nuclides by Waste Stream

Resins, Filters, Evaporator Bottoms, Etc. (Min 1%)			Dry Compressible Wastes, Contaminated Equipment, Etc. (Min 1%)			Other Water, EHC, Waste Oil, Etc. (Min 1%)			Irradiated Components (Min 1%)		
Isotope %Abundance Curies			Isotope %Abundance Curies			Isotope %Abundance Curies			Isotope %Abundance Curies		
C-14	8.58	1.56E+01	MN-54	4.45	4.91E-01	H-3	73.75	2.83E+00	N/A	N/A	N/A
MN-54	3.89	7.06E+00	FE-55	40.09	4.43E+00	FE-55	30.89	1.19E-02			
FE-55	18.16	3.30E+01	CO-58	1.8	1.99E-01	CO-60	24.54	9.41E-01			
CO-60	56.34	1.02E+02	CO-60	48.51	5.36E+00						
Ni-63	2.66	4.84E+00	ZN-65	1.81	2.00E-01						
ZN-65	3.96	7.19E+00									
CS-134	1.0	1.82E+00									
CS-137	2.92	5.30E+00									

Determined by Measurement & Correlation.
Packaged in Strong, Tight Liners.
No Solidification Agent or Absorbent Used.

3. Solid Waste Disposition

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
9	Truck	Energy Solutions, LLC (Clive) - Clive, UT
60	Truck	Energy Solutions (Bear Creek) - Oak Ridge, TN

B. Irradiated Fuel Shipments Disposition

No Irradiated Fuel Shipment for 2017

<u>Number of Shipments</u>	<u>Mode of Transportation</u>	<u>Destination</u>
N/A	N/A	N/A

TABLE 4
MEMBERS OF THE PUBLIC ON SITE DOSE
ASSUMPTIONS/PARAMETERS

MEMBER OF THE PUBLIC	LOCATION	DISTANCE ⁽¹⁾ METERS	SECTOR	DURATION (HR/YEAR) ⁽²⁾
People Entering Site Without Consent	Alligator Bayou	2500	SW	40
National Guard	Activity Center	994	WNW	0 ⁽³⁾
Workers staying onsite	Activity Center Trailer City	994	WNW	597 ⁽⁴⁾
Deer Hunters	Activity Center	994	WNW	256 ⁽⁵⁾

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

(2) Liquid dose pathway is not considered due to the nature of activities that individuals are engaged in.

(3) National Guard/State Police are being evaluated, if applicable, for dose while stationed on site as members of the public. The adult age group is the only age group considered in this category. No National Guard in 2017.

(4) Workers are permitted to stay long term at the Activity Center Trailer Park during refueling outages. There was a refueling outage in 2017 and the estimated duration is 597 hours. The adult age group is the only age group considered for this activity.

(5) Employees are allowed to deer hunt on company property. Since the hunters are spread out all over the site, those workers are conservatively evaluated at the activity center using occupancy information provided by the Bow Club.

**MEMBERS OF THE PUBLIC ON SITE DOSE
FROM GASEOUS RELEASES 2017**

<u>Location</u>	<u>Critical Organ Dose Annual (mrem)</u>	<u>Total Body Dose Annual (mrem)</u>	<u>Skin Dose Annual (mrem)</u>	<u>Annual Duration Factor</u>
Alligator Bayou	3.05E-05	6.18E-06	5.60E-06	4.57E-03
Deer Hunters	1.38E-03	4.80E-04	4.62E-04	2.92E-02
Workers Staying On-site	3.22E-03	1.12E-03	1.08e-03	6.82E-02

TABLE 5
2017 YEAR METEOROLOGICAL DATA - JOINT FREQUENCY TABLES

RIVER BEND STATION
JOINT FREQUENCY TABLE
ALL STABILITY CLASSES

FROM 1/01/17 0:00 TO 12/31/17 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	104	44	69	125	115	158	42	0	0	0	0	0	657
NNE	80	40	66	159	139	91	14	0	0	0	0	0	589
NE	89	49	85	153	125	111	8	0	0	0	0	0	620
ENE	57	62	82	109	47	54	6	0	0	0	0	0	417
E	83	82	82	89	42	26	0	0	0	0	0	0	404
ESE	52	62	93	110	71	24	0	0	0	0	0	0	412
SE	30	77	141	257	189	213	37	0	0	0	0	0	944
SSE	24	55	90	216	195	267	150	9	0	0	0	0	1006
S	10	28	77	145	121	187	94	0	0	0	0	0	662
SSW	15	27	54	103	60	103	43	0	0	0	0	0	405
SW	9	33	33	73	47	67	24	0	0	0	0	0	286
WSW	18	38	24	45	54	67	5	0	0	0	0	0	251
W	40	59	27	50	74	51	10	0	0	0	0	0	311
WNW	70	54	36	59	39	36	16	2	0	0	0	0	312
NW	109	62	31	48	35	78	64	1	0	0	0	0	428
NNW	119	74	44	62	63	84	55	0	0	0	0	0	501
TOTAL	909	846	1034	1803	1416	1617	568	12	0	0	0	0	8205

NUMBER OF CALMS: 163

NUMBER OF INVALID HOURS: 392

NUMBER OF VALID HOURS: 8368

TOTAL HOURS FOR THE PERIOD: 8760

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS A

FROM 1/01/17 0:00 TO 12/31/17 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	0	0	0	2	19	31	11	0	0	0	0	0	63
NNE	0	0	0	14	41	36	6	0	0	0	0	0	97
NE	0	0	3	24	43	32	6	0	0	0	0	0	108
ENE	0	1	3	11	20	25	5	0	0	0	0	0	65
E	0	0	1	15	21	13	0	0	0	0	0	0	50
ESE	0	1	1	16	29	16	0	0	0	0	0	0	63
SE	0	0	7	28	58	89	14	0	0	0	0	0	196
SSE	0	0	2	10	25	60	57	2	0	0	0	0	156
S	0	0	1	11	18	76	43	0	0	0	0	0	149
SSW	0	0	1	3	10	34	11	0	0	0	0	0	59
SW	0	0	0	5	13	20	10	0	0	0	0	0	48
WSW	0	0	0	6	15	42	2	0	0	0	0	0	65
W	0	0	0	4	20	29	5	0	0	0	0	0	58
WNW	0	0	0	4	6	14	6	2	0	0	0	0	32
NW	0	0	0	1	6	17	18	1	0	0	0	0	43
NNW	0	0	1	2	9	22	29	0	0	0	0	0	63
TOTAL	0	2	20	156	353	556	223	5	0	0	0	0	1315

NUMBER OF CALMS: 1

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 1316

TOTAL HOURS FOR THE PERIOD: 1316

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS B

FROM 1/01/17 0:00 TO 12/31/17 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	0	0	0	1	6	9	4	0	0	0	0	0	20
NNE	0	0	0	4	3	3	0	0	0	0	0	0	10
NE	0	1	2	4	5	3	1	0	0	0	0	0	16
ENE	0	0	0	6	0	1	0	0	0	0	0	0	7
E	0	0	0	1	2	0	0	0	0	0	0	0	3
ESE	0	0	2	4	2	0	0	0	0	0	0	0	8
SE	0	0	0	6	12	11	0	0	0	0	0	0	29
SSE	0	0	1	3	15	10	7	0	0	0	0	0	36
S	0	0	0	2	6	17	6	0	0	0	0	0	31
SSW	0	0	0	5	8	15	6	0	0	0	0	0	34
SW	0	0	0	6	7	10	2	0	0	0	0	0	25
WSW	0	0	0	7	9	10	0	0	0	0	0	0	26
W	0	0	0	5	15	13	1	0	0	0	0	0	34
WNW	0	0	0	3	6	5	4	0	0	0	0	0	18
NW	0	0	0	6	6	3	11	0	0	0	0	0	26
NNW	0	0	1	3	6	9	2	0	0	0	0	0	21
TOTAL	0	1	6	66	108	119	44	0	0	0	0	0	344

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 344

TOTAL HOURS FOR THE PERIOD: 344

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS C

FROM 1/01/17 0:00 TO 12/31/17 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	7	14	16	4	0	0	0	0	0	41
NNE	0	0	1	9	16	9	1	0	0	0	0	0	36
NE	0	1	1	5	4	10	0	0	0	0	0	0	21
ENE	0	0	1	10	3	1	0	0	0	0	0	0	15
E	0	2	6	12	3	3	0	0	0	0	0	0	26
ESE	0	0	1	6	4	0	0	0	0	0	0	0	11
SE	0	0	2	16	9	13	2	0	0	0	0	0	42
SSE	0	1	3	9	10	23	14	1	0	0	0	0	61
S	0	0	2	12	14	20	16	0	0	0	0	0	64
SSW	0	0	0	7	12	18	9	0	0	0	0	0	46
SW	0	0	0	9	12	12	2	0	0	0	0	0	35
WSW	0	0	0	6	20	7	1	0	0	0	0	0	34
W	0	0	1	13	20	4	1	0	0	0	0	0	39
WNW	0	0	3	7	13	6	0	0	0	0	0	0	29
NW	0	0	0	4	7	11	8	0	0	0	0	0	30
NNW	0	0	1	11	17	14	8	0	0	0	0	0	51
TOTAL	0	4	22	143	178	167	66	1	0	0	0	0	581

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 581

TOTAL HOURS FOR THE PERIOD: 581

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS D

FROM 1/01/17 0:00 TO 12/31/17 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	13	39	55	87	18	0	0	0	0	0	214
NNE	1	0	14	32	44	32	7	0	0	0	0	0	130
NE	1	2	17	27	29	38	0	0	0	0	0	0	114
ENE	1	5	14	19	5	8	0	0	0	0	0	0	52
E	1	5	16	25	7	3	0	0	0	0	0	0	57
ESE	2	7	24	28	17	3	0	0	0	0	0	0	81
SE	2	6	17	61	41	56	13	0	0	0	0	0	196
SSE	3	5	17	46	49	85	52	6	0	0	0	0	263
S	2	1	16	32	32	36	26	0	0	0	0	0	145
SSW	0	4	8	31	12	21	15	0	0	0	0	0	91
SW	1	3	6	31	9	16	7	0	0	0	0	0	73
WSW	1	3	9	12	8	4	2	0	0	0	0	0	39
W	1	2	2	14	14	5	2	0	0	0	0	0	40
WNW	1	3	4	17	8	7	6	0	0	0	0	0	46
NW	1	1	9	16	13	31	19	0	0	0	0	0	90
NNW	1	0	7	16	18	29	10	0	0	0	0	0	81
TOTAL	19	49	193	446	361	461	177	6	0	0	0	0	1712

NUMBER OF CALMS: 1

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 1713

TOTAL HOURS FOR THE PERIOD: 1713

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS E

FROM 1/01/17 0:00 TO 12/31/17 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	12	5	20	53	21	15	5	0	0	0	0	0	131
NNE	9	16	34	90	34	11	0	0	0	0	0	0	194
NE	9	22	44	80	42	27	1	0	0	0	0	0	225
ENE	11	28	45	51	19	19	1	0	0	0	0	0	174
E	21	23	36	34	9	7	0	0	0	0	0	0	130
ESE	21	32	50	53	19	5	0	0	0	0	0	0	180
SE	10	48	77	131	67	42	7	0	0	0	0	0	382
SSE	10	24	52	124	91	86	20	0	0	0	0	0	407
S	3	16	45	75	51	38	3	0	0	0	0	0	231
SSW	7	17	39	47	18	15	2	0	0	0	0	0	145
SW	4	17	14	19	5	9	3	0	0	0	0	0	71
WSW	5	10	6	12	2	4	0	0	0	0	0	0	39
W	11	21	15	13	5	0	1	0	0	0	0	0	66
WNW	7	15	14	23	5	4	0	0	0	0	0	0	68
NW	5	17	10	15	3	16	8	0	0	0	0	0	74
NNW	5	17	15	23	13	9	6	0	0	0	0	0	88
TOTAL	150	328	516	843	404	307	57	0	0	0	0	0	2605

NUMBER OF CALMS: 17

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 2622

TOTAL HOURS FOR THE PERIOD: 2622

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS F

FROM 1/01/17 0:00 TO 12/31/17 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	18	13	27	16	0	0	0	0	0	0	0	0	74
NNE	17	13	14	9	1	0	0	0	0	0	0	0	54
NE	26	12	15	13	2	0	0	0	0	0	0	0	68
ENE	11	15	14	11	0	0	0	0	0	0	0	0	51
E	28	16	12	1	0	0	0	0	0	0	0	0	57
ESE	20	15	13	2	0	0	0	0	0	0	0	0	50
SE	16	13	36	14	2	2	1	0	0	0	0	0	84
SSE	8	19	13	23	5	3	0	0	0	0	0	0	71
S	4	8	11	13	0	0	0	0	0	0	0	0	36
SSW	4	5	6	10	0	0	0	0	0	0	0	0	25
SW	2	11	12	2	1	0	0	0	0	0	0	0	28
WSW	7	9	7	2	0	0	0	0	0	0	0	0	25
W	19	28	6	1	0	0	0	0	0	0	0	0	54
WNW	24	21	12	5	0	0	0	0	0	0	0	0	62
NW	35	18	10	6	0	0	0	0	0	0	0	0	69
NNW	21	17	9	5	0	1	0	0	0	0	0	0	53
TOTAL	260	233	217	133	11	6	1	0	0	0	0	0	861

NUMBER OF CALMS: 27

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 888

TOTAL HOURS FOR THE PERIOD: 888

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS G

FROM 1/01/17 0:00 TO 12/31/17 23:00

PRIMARY SENSORS - 30 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	74	24	9	7	0	0	0	0	0	0	0	0	114
NNE	53	11	3	1	0	0	0	0	0	0	0	0	68
NE	53	11	3	0	0	1	0	0	0	0	0	0	68
ENE	34	13	5	1	0	0	0	0	0	0	0	0	53
E	33	36	11	1	0	0	0	0	0	0	0	0	81
ESE	9	7	2	1	0	0	0	0	0	0	0	0	19
SE	2	10	2	1	0	0	0	0	0	0	0	0	15
SSE	3	6	2	1	0	0	0	0	0	0	0	0	12
S	1	3	2	0	0	0	0	0	0	0	0	0	6
SSW	4	1	0	0	0	0	0	0	0	0	0	0	5
SW	2	2	1	1	0	0	0	0	0	0	0	0	6
WSW	5	16	2	0	0	0	0	0	0	0	0	0	23
W	9	8	3	0	0	0	0	0	0	0	0	0	20
WNW	38	15	3	0	1	0	0	0	0	0	0	0	57
NW	68	26	2	0	0	0	0	0	0	0	0	0	96
NNW	92	40	10	2	0	0	0	0	0	0	0	0	144
TOTAL	480	229	60	16	1	1	0	0	0	0	0	0	787

NUMBER OF CALMS: 117

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 904

TOTAL HOURS FOR THE PERIOD: 904

RIVER BEND STATION
JOINT FREQUENCY TABLE
All STABILITY CLASSES

FROM 1/01/17 0:00 TO 12/31/17 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	3	6	13	48	145	197	12	0	0	0	0	424
NNE	2	0	13	22	74	210	263	10	0	0	0	0	594
NE	2	0	9	33	65	167	335	15	2	0	0	0	628
ENE	4	2	13	48	82	198	263	58	18	0	0	0	686
E	0	8	9	57	95	167	157	26	3	0	0	0	522
ESE	1	5	7	47	55	306	504	67	4	0	0	0	996
SE	0	5	15	39	49	209	284	59	9	0	0	0	669
SSE	0	4	7	37	59	179	278	76	15	0	0	0	655
S	4	3	8	54	97	232	303	42	9	0	0	0	752
SSW	1	1	7	40	55	207	175	31	2	0	0	0	519
SW	2	2	10	32	76	145	94	13	0	0	0	0	374
WSW	1	3	8	37	62	170	68	10	0	0	0	0	359
W	2	2	6	31	70	161	57	8	1	0	0	0	338
WNW	2	3	5	24	29	84	74	21	11	0	0	0	253
NW	0	2	8	26	29	79	109	33	5	0	0	0	291
NNW	0	2	4	16	25	97	121	19	2	0	0	0	286
TOTAL	21	45	135	556	970	2756	3282	500	81	0	0	0	8346

NUMBER OF CALMS: 3

NUMBER OF INVALID HOURS: 411

NUMBER OF VALID HOURS: 8349

TOTAL HOURS FOR THE PERIOD: 8760

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS A

FROM 1/01/17 0:00 TO 12/31/17 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	0	0	0	0	1	20	36	1	0	0	0	0	58
NNE	0	0	0	2	7	23	34	3	0	0	0	0	69
NE	0	0	0	1	7	52	58	3	2	0	0	0	123
ENE	0	0	0	3	11	31	59	5	3	0	0	0	112
E	0	0	0	3	5	25	29	4	1	0	0	0	67
ESE	0	0	1	7	9	56	82	26	0	0	0	0	181
SE	0	0	2	3	4	34	48	6	0	0	0	0	97
SSE	0	0	0	2	4	17	60	25	7	0	0	0	115
S	0	0	0	2	6	30	78	16	0	0	0	0	132
SSW	0	0	0	0	4	19	31	4	0	0	0	0	58
SW	0	0	0	0	10	15	24	2	0	0	0	0	51
WSW	0	0	0	3	4	37	24	1	0	0	0	0	69
W	0	0	0	2	3	35	21	3	1	0	0	0	65
WNW	0	0	0	0	1	7	7	8	2	0	0	0	25
NW	0	0	1	0	0	9	18	10	2	0	0	0	40
NNW	0	0	0	1	1	6	31	10	1	0	0	0	50
TOTAL	0	0	4	29	77	416	640	127	19	0	0	0	1312

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 1312

TOTAL HOURS FOR THE PERIOD: 1312

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS B

FROM 1/01/17 0:00 TO 12/31/17 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22- .50	.51- .75	.76- 1.0	1.1- 1.5	1.6- 2.0	2.1- 3.0	3.1- 5.0	5.1- 7.0	7.1- 10.0	10.1- 13.0	13.1- 18.0	>18	TOT.
N	0	0	0	1	1	5	7	1	0	0	0	0	15
NNE	0	0	2	0	4	5	3	0	0	0	0	0	14
NE	0	0	0	0	3	3	6	1	0	0	0	0	13
ENE	0	0	0	1	2	6	4	1	0	0	0	0	14
E	0	0	0	1	3	2	4	0	0	0	0	0	10
ESE	0	0	0	2	1	10	7	1	0	0	0	0	21
SE	0	0	0	0	3	7	9	1	0	0	0	0	20
SSE	0	0	0	0	3	8	9	2	1	0	0	0	23
S	0	0	0	1	4	6	17	1	1	0	0	0	30
SSW	0	0	0	2	5	16	9	4	0	0	0	0	36
SW	0	0	0	3	4	8	6	0	0	0	0	0	21
WSW	0	0	1	2	5	16	8	1	0	0	0	0	33
W	0	0	0	4	7	21	5	0	0	0	0	0	37
WNW	0	0	0	1	4	7	4	4	1	0	0	0	21
NW	0	0	0	1	2	5	6	2	1	0	0	0	17
NNW	0	0	0	1	0	9	9	0	0	0	0	0	19
TOTAL	0	0	3	20	51	134	113	19	4	0	0	0	344

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 344

TOTAL HOURS FOR THE PERIOD: 344

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS C

FROM 1/01/17 0:00 TO 12/31/17 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22- .50	.51- .75	.76- 1.0	1.1- 1.5	1.6- 2.0	2.1- 3.0	3.1- 5.0	5.1- 7.0	7.1- 10.0	10.1- 13.0	13.1- 18.0	>18	TOT.
N	0	0	0	1	6	14	11	0	0	0	0	0	32
NNE	0	0	0	3	9	16	11	0	0	0	0	0	39
NE	0	0	0	3	0	8	11	1	0	0	0	0	23
ENE	0	0	1	5	6	11	10	2	0	0	0	0	35
E	0	0	0	3	8	2	8	2	0	0	0	0	23
ESE	0	0	0	2	1	13	14	4	0	0	0	0	34
SE	0	0	0	4	4	4	15	3	0	0	0	0	30
SSE	0	0	0	2	4	3	21	8	1	0	0	0	39
S	0	0	1	6	10	14	24	4	2	0	0	0	61
SSW	0	0	0	1	3	11	23	7	1	0	0	0	46
SW	0	0	0	2	12	8	9	0	0	0	0	0	31
WSW	0	0	0	3	9	28	4	2	0	0	0	0	46
W	0	0	1	3	12	23	3	1	0	0	0	0	43
WNW	0	0	1	4	5	6	7	0	0	0	0	0	23
NW	0	0	0	2	5	4	13	5	0	0	0	0	29
NNW	0	0	0	4	7	16	17	2	0	0	0	0	46
TOTAL	0	0	4	48	101	181	201	41	4	0	0	0	580

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 580

TOTAL HOURS FOR THE PERIOD: 580

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS D

FROM 1/01/17 0:00 TO 12/31/17 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND DIR	.22- .50	.51- .75	.76- 1.0	1.1- 1.5	1.6- 2.0	2.1- 3.0	3.1- 5.0	5.1- 7.0	7.1- 10.0	10.1- 13.0	13.1- 18.0	>18	TOT.
N	0	1	2	5	13	45	77	8	0	0	0	0	151
NNE	0	0	7	6	22	53	72	7	0	0	0	0	167
NE	0	0	4	9	13	19	50	3	0	0	0	0	98
ENE	1	1	3	11	15	41	47	12	3	0	0	0	134
E	0	2	3	12	13	22	26	4	1	0	0	0	83
ESE	1	2	0	13	7	40	88	19	0	0	0	0	170
SE	0	2	5	8	7	28	42	33	7	0	0	0	132
SSE	0	1	2	6	10	28	70	33	6	0	0	0	156
S	0	1	3	12	20	42	51	20	4	0	0	0	153
SSW	0	0	2	7	12	21	38	12	1	0	0	0	93
SW	0	0	0	8	14	20	19	7	0	0	0	0	68
WSW	1	0	3	14	12	19	8	6	0	0	0	0	63
W	0	0	2	6	13	10	12	1	0	0	0	0	44
WNW	0	0	1	5	4	6	18	6	7	0	0	0	47
NW	0	1	3	8	7	14	29	10	2	0	0	0	74
NNW	0	0	1	1	6	23	31	3	1	0	0	0	66
TOTAL	3	11	41	131	188	431	678	184	32	0	0	0	1699

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 1699

TOTAL HOURS FOR THE PERIOD: 1699

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS E

FROM 1/01/17 0:00 TO 12/31/17 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	0	0	3	2	13	43	36	2	0	0	0	0	99
NNE	1	0	1	5	16	54	104	0	0	0	0	0	181
NE	0	0	1	11	25	53	141	5	0	0	0	0	236
ENE	0	0	7	18	27	64	94	38	12	0	0	0	260
E	0	5	1	17	27	62	64	15	1	0	0	0	192
ESE	0	2	4	13	23	119	223	16	4	0	0	0	404
SE	0	2	4	14	21	66	104	15	2	0	0	0	228
SSE	0	2	4	10	14	65	105	8	0	0	0	0	208
S	2	1	3	19	26	96	122	1	2	0	0	0	272
SSW	0	1	4	14	13	89	65	4	0	0	0	0	190
SW	1	2	6	4	13	28	26	4	0	0	0	0	84
WSW	0	3	3	5	8	23	5	0	0	0	0	0	47
W	0	1	2	7	11	24	11	3	0	0	0	0	59
WNW	0	1	0	6	3	20	12	3	1	0	0	0	46
NW	0	1	2	6	5	15	25	6	0	0	0	0	60
NNW	0	1	3	3	5	19	20	4	0	0	0	0	55
TOTAL	4	22	48	154	250	840	1157	124	22	0	0	0	2621

NUMBER OF CALMS: 1

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 2622

TOTAL HOURS FOR THE PERIOD: 2622

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS F

FROM 1/01/17 0:00 TO 12/31/17 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	2	5	4	15	0	0	0	0	0	27
NNE	0	0	0	2	7	26	24	0	0	0	0	0	59
NE	2	0	2	5	8	13	38	1	0	0	0	0	69
ENE	2	0	1	8	10	21	31	0	0	0	0	0	73
E	0	1	2	11	21	30	15	1	0	0	0	0	81
ESE	0	0	1	3	3	37	61	1	0	0	0	0	106
SE	0	1	1	8	4	36	40	1	0	0	0	0	91
SSE	0	0	1	8	14	34	9	0	0	0	0	0	66
S	2	1	0	8	15	19	9	0	0	0	0	0	54
SSW	1	0	1	3	11	16	8	0	0	0	0	0	40
SW	1	0	2	6	16	20	10	0	0	0	0	0	55
WSW	0	0	0	6	11	18	7	0	0	0	0	0	42
W	1	1	1	5	13	17	1	0	0	0	0	0	39
WNW	1	0	2	4	6	14	14	0	0	0	0	0	41
NW	0	0	2	3	4	11	10	0	0	0	0	0	30
NNW	0	0	0	3	1	6	5	0	0	0	0	0	15
TOTAL	10	5	16	85	149	322	297	4	0	0	0	0	888

NUMBER OF CALMS: 0

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 888

TOTAL HOURS FOR THE PERIOD: 888

RIVER BEND STATION
JOINT FREQUENCY TABLE
STABILITY CLASS G

FROM 1/01/17 0:00 TO 12/31/17 23:00

PRIMARY SENSORS - 150 FOOT

WIND SPEED (METERS/SECOND)

WIND	.22-	.51-	.76-	1.1-	1.6-	2.1-	3.1-	5.1-	7.1-	10.1-	13.1-	>18	TOT.
DIR	.50	.75	1.0	1.5	2.0	3.0	5.0	7.0	10.0	13.0	18.0		
N	0	1	1	2	9	14	15	0	0	0	0	0	42
NNE	1	0	3	4	9	33	15	0	0	0	0	0	65
NE	0	0	2	4	9	19	31	1	0	0	0	0	66
ENE	1	1	1	2	11	24	18	0	0	0	0	0	58
E	0	0	3	10	18	24	11	0	0	0	0	0	66
ESE	0	1	1	7	11	31	29	0	0	0	0	0	80
SE	0	0	3	2	6	34	26	0	0	0	0	0	71
SSE	0	1	0	9	10	24	4	0	0	0	0	0	48
S	0	0	1	6	16	25	2	0	0	0	0	0	50
SSW	0	0	0	13	7	35	1	0	0	0	0	0	56
SW	0	0	2	9	7	46	0	0	0	0	0	0	64
WSW	0	0	1	4	13	29	12	0	0	0	0	0	59
W	1	0	0	4	11	31	4	0	0	0	0	0	51
WNW	1	2	1	4	6	24	12	0	0	0	0	0	50
NW	0	0	0	6	6	21	8	0	0	0	0	0	41
NNW	0	1	0	3	5	18	8	0	0	0	0	0	35
TOTAL	4	7	19	89	154	432	196	1	0	0	0	0	902

NUMBER OF CALMS: 2

NUMBER OF INVALID HOURS: 0

NUMBER OF VALID HOURS: 904

TOTAL HOURS FOR THE PERIOD: 904

**TABLE 6
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 - 18.0
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	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/m³
- (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 onsite receptors
- (7) Revisions to X/Q and D/Q can be performed using NUREG/CR-2919, XOQDOQ, Computer Program for the Meteorological Evaluation of Routine Effluent Releases at Nuclear Power Stations

TABLE 7
GROUNDWATER MONITORING WELL SAMPLE RESULTS

Station ID	Date	Units	H-3	Station ID	Date	Units	H-3	Station ID	Date	Units	H-3
MW-04	05/17/2017	pCi/L	< 690	MW-134	09/06/2017	pCi/L	< 590	MW-165	03/15/2017	pCi/L	< 520
MW-05	03/15/2017	pCi/L	< 580	MW-134	11/30/2017	pCi/L	< 630	MW-165	05/17/2017	pCi/L	< 700
MW-05	05/17/2017	pCi/L	< 710	MW-137	03/14/2017	pCi/L	21000	MW-165	09/06/2017	pCi/L	< 570
MW-05	09/06/2017	pCi/L	< 580	MW-137-DUP	03/14/2017	pCi/L	19000	MW-165	11/29/2017	pCi/L	< 640
MW-06	05/18/2017	pCi/L	< 660	MW-137	05/16/2017	pCi/L	14000	MW-165-DUP	11/29/2017	pCi/L	< 600
MW-08	03/15/2017	pCi/L	< 570	MW-137	09/06/2017	pCi/L	26000	MW-167	03/16/2017	pCi/L	< 520
MW-08	05/17/2017	pCi/L	< 710	MW-137	11/29/2017	pCi/L	30000	MW-167	05/17/2017	pCi/L	< 740
MW-08	09/06/2017	pCi/L	< 510	MW-137-DUP	11/29/2017	pCi/L	25000	MW-167	09/06/2017	pCi/L	< 580
MW-100	03/15/2017	pCi/L	< 520	MW-139	03/14/2017	pCi/L	1300	MW-167	11/30/2017	pCi/L	< 630
MW-100	05/17/2017	pCi/L	< 730	MW-139	05/16/2017	pCi/L	1100	MW-169	03/14/2017	pCi/L	< 600
MW-100	09/07/2017	pCi/L	< 570	MW-139	09/05/2017	pCi/L	920	MW-169	05/16/2017	pCi/L	< 660
MW-100	11/30/2017	pCi/L	< 630	MW-139	11/29/2017	pCi/L	790	MW-169	09/05/2017	pCi/L	< 620
MW-103	03/14/2017	pCi/L	< 600	MW-14	03/16/2017	pCi/L	< 590	MW-169	11/28/2017	pCi/L	< 640
MW-103	05/16/2017	pCi/L	< 670	MW-14	05/17/2017	pCi/L	< 710	MW-170	03/15/2017	pCi/L	< 710
MW-103-DUP	05/16/2017	pCi/L	< 670	MW-14	09/07/2017	pCi/L	< 510	MW-170	05/18/2017	pCi/L	< 660
MW-103	09/06/2017	pCi/L	< 590	MW-14	11/30/2017	pCi/L	< 640	MW-170	09/07/2017	pCi/L	< 570
MW-103	11/29/2017	pCi/L	< 630	MW-141	03/14/2017	pCi/L	2000	MW-170	11/30/2017	pCi/L	< 510
MW-104	03/15/2017	pCi/L	< 580	MW-141	05/16/2017	pCi/L	2200	MW-172	03/15/2017	pCi/L	< 570
MW-104	05/17/2017	pCi/L	< 710	MW-141	09/05/2017	pCi/L	1800	MW-172	05/17/2017	pCi/L	< 690
MW-104-DUP	05/17/2017	pCi/L	< 700	MW-141	11/29/2017	pCi/L	2300	MW-172	09/06/2017	pCi/L	< 580
MW-104	09/07/2017	pCi/L	< 520	MW-142	03/14/2017	pCi/L	< 600	MW-172	11/29/2017	pCi/L	< 640
MW-104	11/30/2017	pCi/L	< 630	MW-142	05/16/2017	pCi/L	< 690	MW-174	03/16/2017	pCi/L	< 520
MW-106	03/16/2017	pCi/L	< 570	MW-142	09/05/2017	pCi/L	< 580	MW-174-DUP	03/16/2017	pCi/L	< 530
MW-106	05/17/2017	pCi/L	< 700	MW-142	11/28/2017	pCi/L	< 610	MW-174	05/17/2017	pCi/L	< 710
MW-106	09/07/2017	pCi/L	< 580	MW-144	03/14/2017	pCi/L	950	MW-174	09/07/2017	pCi/L	< 580
MW-106-DUP	09/07/2017	pCi/L	< 570	MW-144	05/16/2017	pCi/L	< 660	MW-174	11/30/2017	pCi/L	< 590
MW-106	11/30/2017	pCi/L	< 620	MW-144	09/05/2017	pCi/L	< 630	MW-178	03/15/2017	pCi/L	38000
MW-107	11/30/2017	pCi/L	< 620	MW-144	11/28/2017	pCi/L	3200	MW-178	05/17/2017	pCi/L	29000
MW-108	03/15/2017	pCi/L	< 520	MW-146	03/14/2017	pCi/L	140000	MW-178	09/06/2017	pCi/L	13000
MW-108	05/17/2017	pCi/L	< 700	MW-146	05/16/2017	pCi/L	130000	MW-178	11/29/2017	pCi/L	6500
MW-108	09/07/2017	pCi/L	< 570	MW-146	09/05/2017	pCi/L	160000	MW-179	03/15/2017	pCi/L	280000
MW-108	11/30/2017	pCi/L	< 650	MW-146	11/28/2017	pCi/L	190000	MW-179	05/17/2017	pCi/L	240000
MW-110	03/14/2017	pCi/L	57000	MW-147	03/14/2017	pCi/L	200000	MW-179	09/06/2017	pCi/L	280000
MW-110	05/17/2017	pCi/L	52000	MW-147	05/16/2017	pCi/L	140000	MW-179	11/29/2017	pCi/L	280000
MW-110	09/06/2017	pCi/L	55000	MW-147-DUP	05/16/2017	pCi/L	150000	MW-18	05/18/2017	pCi/L	< 690
MW-110	11/30/2017	pCi/L	56000	MW-147	09/05/2017	pCi/L	190000	MW-180	03/16/2017	pCi/L	< 570

Station ID	Date	Units	H-3
MW-111	05/17/2017	pCi/L	< 670
MW-111	11/30/2017	pCi/L	< 600
MW-112	03/15/2017	pCi/L	11000
MW-112	05/17/2017	pCi/L	8100
MW-112	09/06/2017	pCi/L	6600
MW-112	11/30/2017	pCi/L	6600
MW-114	03/14/2017	pCi/L	2900
MW-114	05/16/2017	pCi/L	2800
MW-114	09/06/2017	pCi/L	2600
MW-114	11/29/2017	pCi/L	2200
MW-116	03/14/2017	pCi/L	8100
MW-116	05/16/2017	pCi/L	2800
MW-116	09/06/2017	pCi/L	7700
MW-116-DUP	09/06/2017	pCi/L	8000
MW-116	11/28/2017	pCi/L	11000
MW-116-DUP	11/28/2017	pCi/L	11000
MW-118	03/15/2017	pCi/L	2900
MW-118	05/16/2017	pCi/L	3200
MW-118	09/05/2017	pCi/L	3600
MW-118	11/29/2017	pCi/L	3400
MW-120	03/15/2017	pCi/L	< 520
MW-120-DUP	03/15/2017	pCi/L	< 520
MW-120	05/17/2017	pCi/L	< 670
MW-120-DUP	05/17/2017	pCi/L	< 680
MW-120	09/07/2017	pCi/L	< 520
MW-120	11/30/2017	pCi/L	< 600
MW-122R	03/15/2017	pCi/L	< 580
MW-122R	05/17/2017	pCi/L	< 680
MW-122R	09/06/2017	pCi/L	< 600
MW-122R	11/30/2017	pCi/L	< 640
MW-122R-DUP	11/30/2017	pCi/L	< 630
MW-126	03/15/2017	pCi/L	< 520
MW-126	05/17/2017	pCi/L	< 690
MW-126	09/06/2017	pCi/L	< 580
MW-126	11/29/2017	pCi/L	< 630
MW-126-DUP	11/29/2017	pCi/L	< 610
MW-128	03/15/2017	pCi/L	< 530

Station ID	Date	Units	H-3
MW-147	11/28/2017	pCi/L	23000
MW-148	03/14/2017	pCi/L	< 580
MW-148-DUP	03/14/2017	pCi/L	< 580
MW-148	05/16/2017	pCi/L	< 710
MW-148-DUP	05/16/2017	pCi/L	< 710
MW-148	09/05/2017	pCi/L	< 560
MW-148	11/28/2017	pCi/L	< 630
MW-151	03/15/2017	pCi/L	< 530
MW-151	05/17/2017	pCi/L	< 700
MW-151	09/06/2017	pCi/L	< 600
MW-151	11/29/2017	pCi/L	< 630
MW-153	03/14/2017	pCi/L	1100
MW-153	05/17/2017	pCi/L	1500
MW-153	09/05/2017	pCi/L	860
MW-153	11/29/2017	pCi/L	1300
MW-155	03/14/2017	pCi/L	130000
MW-155	05/16/2017	pCi/L	160000
MW-155	09/05/2017	pCi/L	220000
MW-155-DUP	09/05/2017	pCi/L	180000
MW-155	11/29/2017	pCi/L	170000
MW-155-DUP	11/29/2017	pCi/L	150000
MW-156	03/14/2017	pCi/L	2000
MW-156	05/16/2017	pCi/L	1900
MW-156	09/05/2017	pCi/L	1800
MW-156	11/28/2017	pCi/L	1900
MW-157	03/14/2017	pCi/L	130000
MW-157	05/16/2017	pCi/L	120000
MW-157-DUP	05/16/2017	pCi/L	120000
MW-157	09/05/2017	pCi/L	120000
MW-157	11/29/2017	pCi/L	130000
MW-158	03/14/2017	pCi/L	950000
MW-158-DUP	03/14/2017	pCi/L	980000
MW-158	05/16/2017	pCi/L	900000
MW-158	09/05/2017	pCi/L	740000
MW-158	11/28/2017	pCi/L	610000
MW-159	03/15/2017	pCi/L	5900
MW-159	05/16/2017	pCi/L	5400

Station ID	Date	Units	H-3
MW-180	05/17/2017	pCi/L	< 700
MW-180	09/06/2017	pCi/L	< 580
MW-180	11/30/2017	pCi/L	< 620
MW-182	03/15/2017	pCi/L	< 570
MW-182	05/17/2017	pCi/L	< 710
MW-182	09/06/2017	pCi/L	< 620
MW-182	11/30/2017	pCi/L	< 620
MW-185	03/15/2017	pCi/L	< 520
MW-185-DUP	03/15/2017	pCi/L	< 520
MW-185	05/16/2017	pCi/L	< 710
MW-185	09/06/2017	pCi/L	< 580
MW-185-DUP	09/06/2017	pCi/L	< 590
MW-185	11/29/2017	pCi/L	< 600
MW-185-DUP	11/29/2017	pCi/L	< 580
MW-186	03/15/2017	pCi/L	< 590
MW-186	05/17/2017	pCi/L	< 700
MW-186	09/06/2017	pCi/L	< 520
MW-186	11/29/2017	pCi/L	< 640
MW-187	03/15/2017	pCi/L	< 570
MW-187	05/17/2017	pCi/L	< 710
MW-187	09/06/2017	pCi/L	< 590
MW-187	11/29/2017	pCi/L	< 630
MW-188	03/16/2017	pCi/L	< 530
MW-188	05/17/2017	pCi/L	< 710
MW-188	09/06/2017	pCi/L	< 520
MW-188	11/30/2017	pCi/L	< 600
MW-20	11/30/2017	pCi/L	< 640
MW-5	11/30/2017	pCi/L	< 620
MW-6	11/30/2017	pCi/L	< 590
MW-8	11/30/2017	pCi/L	< 640
PZ-01	03/14/2017	pCi/L	29000
PZ-01	05/16/2017	pCi/L	32000
PZ-01	09/05/2017	pCi/L	53000
PZ-01	11/29/2017	pCi/L	49000
PZ-02	05/17/2017	pCi/L	< 700
PZ-03	03/15/2017	pCi/L	< 520
PZ-03	05/16/2017	pCi/L	< 690

Station ID	Date	Units	H-3
MW-128	05/17/2017	pCi/L	< 700
MW-128	09/06/2017	pCi/L	< 580
MW-128	11/29/2017	pCi/L	< 630
MW-130	03/15/2017	pCi/L	< 530
MW-130	05/17/2017	pCi/L	< 720
MW-130	09/06/2017	pCi/L	< 580
MW-130	11/30/2017	pCi/L	< 640
MW-131	03/15/2017	pCi/L	< 530
MW-131	05/17/2017	pCi/L	< 720
MW-131	09/06/2017	pCi/L	< 590
MW-131	11/30/2017	pCi/L	< 630
MW-132	03/16/2017	pCi/L	< 720
MW-132	05/17/2017	pCi/L	< 720
MW-132	09/06/2017	pCi/L	< 590
MW-132	11/30/2017	pCi/L	< 620
MW-134	03/16/2017	pCi/L	< 520
MW-134	05/17/2017	pCi/L	< 700

Station ID	Date	Units	H-3
MW-159	09/05/2017	pCi/L	8600
MW-159-DUP	09/05/2017	pCi/L	8100
MW-159	11/28/2017	pCi/L	3700
MW-161	03/15/2017	pCi/L	1200
MW-161	05/17/2017	pCi/L	2400
MW-161	09/06/2017	pCi/L	2900
MW-161	11/30/2017	pCi/L	2600
MW-162	03/14/2017	pCi/L	< 520
MW-162	05/16/2017	pCi/L	< 700
MW-162	09/05/2017	pCi/L	< 600
MW-162	11/28/2017	pCi/L	< 630
MW-164	03/15/2017	pCi/L	< 510
MW-164	05/17/2017	pCi/L	< 700
MW-164-DUP	05/17/2017	pCi/L	< 700
MW-164	09/06/2017	pCi/L	< 520
MW-164-DUP	09/06/2017	pCi/L	< 510
MW-164	11/29/2017	pCi/L	< 600

Station ID	Date	Units	H-3
PZ-03	09/06/2017	pCi/L	< 570
PZ-03	11/29/2017	pCi/L	< 630
SW-101	03/16/2017	pCi/L	< 580
SW-101	05/17/2017	pCi/L	< 670
SW-101	09/07/2017	pCi/L	< 580
SW-101	11/30/2017	pCi/L	< 630
SW-102	03/16/2017	pCi/L	< 580
SW-102	05/17/2017	pCi/L	< 660
SW-102	09/07/2017	pCi/L	< 610
SW-103	03/16/2017	pCi/L	< 520
SW-103	05/17/2017	pCi/L	< 710
SW-103	09/07/2017	pCi/L	< 600
SW-103	11/30/2017	pCi/L	< 630
SW-104	03/16/2017	pCi/L	< 530
SW-104	05/18/2017	pCi/L	< 680
SW-104	09/07/2017	pCi/L	< 580
SW-104	11/30/2017	pCi/L	< 640
T-14	05/18/2017	pCi/L	< 680

Station ID	Sample Date	Units	FE-55	NI-63	SR-89	SR-90	CM-242	CM-243/244	PU-238
MW-158	3/14/2017	pCi/L	< 6.3E+01	< 1.6E+01	< 4.1E+00	< 1.5E+00	< 1.2E-01	< 2.0E-01	< 1.7E-01
MW-158-DUP	3/14/2017	pCi/L	< 6.2E+01	< 1.6E+01	< 5.7E+00	< 1.9E+00	< 1.3E-01	< 1.1E-01	< 3.3E-02

Station ID	Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-04	05/17/2017	pCi/L	< 4.4E+00	< 5.0E+00	< 1.1E+01	< 5.5E+00	< 1.0E+01	< 4.6E+00	< 9.5E+00	< 1.4E+01	< 5.4E+00	< 4.3E+00	< 3.4E+01	< 7.7E+00
MW-05	03/15/2017	pCi/L	< 3.6E+00	< 4.8E+00	< 9.6E+00	< 7.1E+00	< 9.3E+00	< 5.0E+00	< 9.7E+00	< 1.4E+01	< 5.7E+00	< 3.9E+00	< 3.3E+01	< 1.1E+01
MW-05	05/17/2017	pCi/L	< 4.0E+00	< 4.0E+00	< 9.1E+00	< 3.9E+00	< 7.7E+00	< 4.0E+00	< 7.6E+00	< 1.2E+01	< 4.3E+00	< 3.8E+00	< 2.5E+01	< 7.9E+00
MW-05	09/06/2017	pCi/L	< 2.2E+00	< 2.8E+00	< 6.4E+00	< 2.6E+00	< 5.2E+00	< 2.8E+00	< 5.4E+00	< 1.3E+01	< 2.6E+00	< 2.6E+00	< 2.5E+01	< 8.6E+00
MW-05	11/30/2017	pCi/L	< 5.4E+00	< 8.7E+00	< 1.7E+01	< 4.8E+00	< 1.4E+01	< 6.6E+00	< 1.3E+01	< 1.5E+01	< 8.1E+00	< 6.1E+00	< 3.6E+01	< 9.5E+00
MW-06	05/18/2017	pCi/L	< 5.9E+00	< 6.4E+00	< 1.2E+01	< 5.4E+00	< 1.1E+01	< 6.1E+00	< 9.0E+00	< 1.4E+01	< 5.7E+00	< 5.3E+00	< 3.4E+01	< 1.3E+01
MW-06	11/30/2017	pCi/L	< 5.0E+00	< 7.5E+00	< 1.6E+01	< 7.5E+00	< 1.5E+01	< 6.8E+00	< 1.4E+01	< 1.2E+01	< 7.3E+00	< 6.4E+00	< 3.3E+01	< 1.1E+01
MW-08	03/15/2017	pCi/L	< 4.2E+00	< 5.1E+00	< 1.2E+01	< 4.5E+00	< 9.4E+00	< 4.7E+00	< 7.9E+00	< 1.4E+01	< 4.8E+00	< 5.5E+00	< 3.3E+01	< 1.1E+01
MW-08	05/17/2017	pCi/L	< 4.1E+00	< 4.5E+00	< 9.4E+00	< 3.5E+00	< 8.2E+00	< 4.4E+00	< 8.2E+00	< 1.4E+01	< 4.3E+00	< 4.6E+00	< 3.2E+01	< 9.5E+00
MW-08	09/06/2017	pCi/L	< 2.8E+00	< 3.0E+00	< 6.2E+00	< 2.6E+00	< 5.1E+00	< 3.1E+00	< 5.5E+00	< 1.4E+01	< 2.8E+00	< 2.8E+00	< 2.5E+01	< 7.5E+00
MW-08	11/30/2017	pCi/L	< 4.3E+00	< 5.4E+00	< 1.2E+01	< 6.7E+00	< 1.3E+01	< 6.9E+00	< 1.0E+01	< 1.1E+01	< 6.7E+00	< 6.0E+00	< 2.8E+01	< 8.2E+00
MW-100	03/15/2017	pCi/L	< 5.4E+00	< 6.2E+00	< 1.4E+01	< 5.2E+00	< 1.3E+01	< 4.9E+00	< 1.0E+01	< 1.4E+01	< 5.1E+00	< 6.6E+00	< 3.6E+01	< 1.5E+01
MW-100	05/17/2017	pCi/L	< 3.9E+00	< 4.2E+00	< 9.1E+00	< 4.5E+00	< 7.6E+00	< 4.3E+00	< 6.7E+00	< 1.3E+01	< 3.8E+00	< 3.7E+00	< 3.0E+01	< 8.4E+00
MW-100	09/07/2017	pCi/L	< 2.2E+00	< 2.6E+00	< 5.8E+00	< 2.3E+00	< 4.7E+00	< 2.8E+00	< 4.5E+00	< 1.0E+01	< 2.6E+00	< 2.5E+00	< 2.2E+01	< 5.7E+00
MW-100	11/30/2017	pCi/L	< 6.7E+00	< 5.5E+00	< 1.5E+01	< 4.8E+00	< 1.2E+01	< 6.7E+00	< 1.1E+01	< 1.3E+01	< 6.9E+00	< 5.4E+00	< 2.4E+01	< 1.2E+01
MW-103	03/14/2017	pCi/L	< 4.1E+00	< 3.7E+00	< 1.0E+01	< 4.2E+00	< 7.7E+00	< 4.5E+00	< 6.9E+00	< 1.2E+01	< 3.9E+00	< 3.6E+00	< 2.6E+01	< 6.8E+00
MW-103	05/16/2017	pCi/L	< 2.9E+00	< 3.3E+00	< 8.9E+00	< 3.4E+00	< 5.5E+00	< 3.6E+00	< 5.7E+00	< 1.4E+01	< 2.8E+00	< 3.5E+00	< 2.9E+01	< 1.2E+01
MW-103	09/06/2017	pCi/L	< 3.5E+00	< 3.6E+00	< 7.5E+00	< 3.4E+00	< 7.9E+00	< 3.9E+00	< 6.8E+00	< 1.1E+01	< 3.7E+00	< 3.6E+00	< 2.4E+01	< 7.3E+00
MW-103	11/29/2017	pCi/L	< 2.1E+00	< 2.7E+00	< 6.1E+00	< 2.4E+00	< 4.6E+00	< 3.0E+00	< 4.7E+00	< 1.5E+01	< 2.3E+00	< 2.5E+00	< 2.6E+01	< 7.5E+00
MW-103-DUP	05/16/2017	pCi/L	< 3.1E+00	< 3.7E+00	< 8.4E+00	< 3.6E+00	< 7.1E+00	< 3.1E+00	< 6.7E+00	< 1.4E+01	< 3.4E+00	< 3.2E+00	< 3.1E+01	< 7.4E+00
MW-104	03/15/2017	pCi/L	< 6.4E+00	< 6.7E+00	< 1.6E+01	< 7.5E+00	< 1.7E+01	< 8.3E+00	< 1.1E+01	< 1.5E+01	< 6.7E+00	< 7.0E+00	< 3.7E+01	< 1.2E+01
MW-104	05/17/2017	pCi/L	< 3.8E+00	< 3.8E+00	< 7.9E+00	< 3.5E+00	< 7.8E+00	< 4.1E+00	< 7.5E+00	< 1.5E+01	< 4.0E+00	< 4.0E+00	< 2.9E+01	< 7.4E+00
MW-104	09/07/2017	pCi/L	< 2.6E+00	< 2.7E+00	< 5.3E+00	< 2.5E+00	< 5.1E+00	< 3.3E+00	< 5.1E+00	< 1.3E+01	< 2.7E+00	< 2.7E+00	< 2.3E+01	< 7.2E+00
MW-104	11/30/2017	pCi/L	< 8.5E+00	< 8.1E+00	< 1.8E+01	< 4.6E+00	< 1.9E+01	< 1.0E+01	< 1.3E+01	< 1.4E+01	< 7.2E+00	< 8.6E+00	< 4.4E+01	< 1.5E+01
MW-104-DUP	05/17/2017	pCi/L	< 7.3E+00	< 7.4E+00	< 1.3E+01	< 7.2E+00	< 1.6E+01	< 7.2E+00	< 1.3E+01	< 1.9E+01	< 8.1E+00	< 7.9E+00	< 4.4E+01	< 1.3E+01
MW-106	03/16/2017	pCi/L	< 4.0E+00	< 4.2E+00	< 1.1E+01	< 6.2E+00	< 1.0E+01	< 5.7E+00	< 9.5E+00	< 1.2E+01	< 5.0E+00	< 5.7E+00	< 3.1E+01	< 1.0E+01
MW-106	05/17/2017	pCi/L	< 4.9E+00	< 5.1E+00	< 9.3E+00	< 4.7E+00	< 8.2E+00	< 4.0E+00	< 8.5E+00	< 1.5E+01	< 4.5E+00	< 4.7E+00	< 3.6E+01	< 8.7E+00
MW-106	09/07/2017	pCi/L	< 3.1E+00	< 3.7E+00	< 7.9E+00	< 4.1E+00	< 6.9E+00	< 3.9E+00	< 6.3E+00	< 1.4E+01	< 3.3E+00	< 3.4E+00	< 2.9E+01	< 8.6E+00
MW-106	11/30/2017	pCi/L	< 6.4E+00	< 6.6E+00	< 1.2E+01	< 8.2E+00	< 1.6E+01	< 7.2E+00	< 1.3E+01	< 1.5E+01	< 7.4E+00	< 7.5E+00	< 3.5E+01	< 8.8E+00
MW-106-DUP	09/07/2017	pCi/L	< 2.7E+00	< 3.1E+00	< 6.5E+00	< 3.0E+00	< 5.8E+00	< 3.2E+00	< 5.7E+00	< 1.3E+01	< 3.2E+00	< 2.8E+00	< 2.5E+01	< 8.3E+00
MW-107	11/30/2017	pCi/L	< 5.1E+00	< 4.1E+00	< 1.4E+01	< 4.9E+00	< 9.0E+00	< 5.8E+00	< 6.9E+00	< 1.0E+01	< 5.5E+00	< 4.6E+00	< 2.3E+01	< 6.7E+00
MW-108	03/15/2017	pCi/L	< 5.0E+00	< 6.3E+00	< 1.2E+01	< 5.1E+00	< 1.1E+01	< 5.8E+00	< 9.9E+00	< 1.4E+01	< 6.0E+00	< 5.1E+00	< 3.1E+01	< 1.1E+01
MW-108	05/17/2017	pCi/L	< 3.6E+00	< 3.9E+00	< 8.5E+00	< 4.1E+00	< 7.8E+00	< 4.0E+00	< 8.0E+00	< 1.4E+01	< 4.3E+00	< 3.8E+00	< 3.0E+01	< 8.8E+00
MW-108	09/07/2017	pCi/L	< 3.3E+00	< 3.7E+00	< 7.5E+00	< 3.2E+00	< 6.3E+00	< 3.8E+00	< 6.3E+00	< 1.4E+01	< 3.6E+00	< 3.7E+00	< 2.9E+01	< 9.3E+00
MW-108	11/30/2017	pCi/L	< 6.1E+00	< 6.4E+00	< 1.6E+01	< 9.7E+00	< 1.2E+01	< 8.5E+00	< 1.5E+01	< 1.5E+01	< 7.3E+00	< 6.8E+00	< 3.8E+01	< 1.4E+01
MW-110	03/14/2017	pCi/L	< 4.9E+00	< 4.4E+00	< 1.2E+01	< 4.4E+00	< 1.0E+01	< 5.3E+00	< 9.1E+00	< 1.5E+01	< 5.6E+00	< 5.2E+00	< 3.8E+01	< 1.3E+01

Station ID	Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-110	05/17/2017	pCi/L	< 2.7E+00	< 2.6E+00	< 7.2E+00	< 2.5E+00	< 5.8E+00	< 3.2E+00	< 5.7E+00	< 1.1E+01	< 3.2E+00	< 3.0E+00	< 2.2E+01	< 7.6E+00
MW-110	09/06/2017	pCi/L	< 3.8E+00	< 3.5E+00	< 8.4E+00	< 3.4E+00	< 8.2E+00	< 4.3E+00	< 7.1E+00	< 1.1E+01	< 3.9E+00	< 4.2E+00	< 2.6E+01	< 9.5E+00
MW-110	11/30/2017	pCi/L	< 2.7E+00	< 2.9E+00	< 6.1E+00	< 2.4E+00	< 5.2E+00	< 3.1E+00	< 5.3E+00	< 1.4E+01	< 2.9E+00	< 2.8E+00	< 2.7E+01	< 7.8E+00
MW-111	05/17/2017	pCi/L	< 3.6E+00	< 4.0E+00	< 9.3E+00	< 4.1E+00	< 7.7E+00	< 4.1E+00	< 8.7E+00	< 1.3E+01	< 4.2E+00	< 4.5E+00	< 2.9E+01	< 8.9E+00
MW-111	11/30/2017	pCi/L	< 4.3E+00	< 7.3E+00	< 1.4E+01	< 7.4E+00	< 1.3E+01	< 5.9E+00	< 1.1E+01	< 1.1E+01	< 5.5E+00	< 7.7E+00	< 2.8E+01	< 1.4E+01
MW-112	03/15/2017	pCi/L	< 3.4E+00	< 4.1E+00	< 8.0E+00	< 3.8E+00	< 8.2E+00	< 3.9E+00	< 7.2E+00	< 1.3E+01	< 4.2E+00	< 3.9E+00	< 2.6E+01	< 8.7E+00
MW-112	05/17/2017	pCi/L	< 2.8E+00	< 3.1E+00	< 6.2E+00	< 2.8E+00	< 7.3E+00	< 3.4E+00	< 6.8E+00	< 1.3E+01	< 3.0E+00	< 2.7E+00	< 2.5E+01	< 6.1E+00
MW-112	09/06/2017	pCi/L	< 4.0E+00	< 3.3E+00	< 7.8E+00	< 3.7E+00	< 7.1E+00	< 3.9E+00	< 6.9E+00	< 9.7E+00	< 3.5E+00	< 3.6E+00	< 2.4E+01	< 7.8E+00
MW-112	11/30/2017	pCi/L	< 2.1E+00	< 2.1E+00	< 5.5E+00	< 2.1E+00	< 4.1E+00	< 2.5E+00	< 4.2E+00	< 1.1E+01	< 2.2E+00	< 2.2E+00	< 1.9E+01	< 6.8E+00
MW-114	03/14/2017	pCi/L	< 2.9E+00	< 3.3E+00	< 6.9E+00	< 3.4E+00	< 5.3E+00	< 3.4E+00	< 5.3E+00	< 1.1E+01	< 3.3E+00	< 3.2E+00	< 2.4E+01	< 8.5E+00
MW-114	05/16/2017	pCi/L	< 2.9E+00	< 3.1E+00	< 8.1E+00	< 3.3E+00	< 5.7E+00	< 2.9E+00	< 5.3E+00	< 1.3E+01	< 3.2E+00	< 3.4E+00	< 2.4E+01	< 5.4E+00
MW-114	09/06/2017	pCi/L	< 3.3E+00	< 3.3E+00	< 8.0E+00	< 3.6E+00	< 6.6E+00	< 4.0E+00	< 6.5E+00	< 1.1E+01	< 4.2E+00	< 3.5E+00	< 2.6E+01	< 7.6E+00
MW-114	11/29/2017	pCi/L	< 1.9E+00	< 2.1E+00	< 5.1E+00	< 2.3E+00	< 3.9E+00	< 2.4E+00	< 4.1E+00	< 1.2E+01	< 2.2E+00	< 2.1E+00	< 2.1E+01	< 6.6E+00
MW-116	03/14/2017	pCi/L	< 4.5E+00	< 3.7E+00	< 9.6E+00	< 4.9E+00	< 9.8E+00	< 5.7E+00	< 9.1E+00	< 1.5E+01	< 5.3E+00	< 5.2E+00	< 3.3E+01	< 1.2E+01
MW-116	05/16/2017	pCi/L	< 3.1E+00	< 3.3E+00	< 6.4E+00	< 2.9E+00	< 5.3E+00	< 3.4E+00	< 5.9E+00	< 1.5E+01	< 3.2E+00	< 3.2E+00	< 2.7E+01	< 6.8E+00
MW-116	09/06/2017	pCi/L	< 3.9E+00	< 3.6E+00	< 8.4E+00	< 3.3E+00	< 8.2E+00	< 4.0E+00	< 6.9E+00	< 1.0E+01	< 3.9E+00	< 3.8E+00	< 2.4E+01	< 9.6E+00
MW-116	11/28/2017	pCi/L	< 1.6E+00	< 2.0E+00	< 4.3E+00	< 1.7E+00	< 3.6E+00	< 1.9E+00	< 3.3E+00	< 1.1E+01	< 1.9E+00	< 1.7E+00	< 1.9E+01	< 6.3E+00
MW-116-DUP	09/06/2017	pCi/L	< 3.8E+00	< 4.1E+00	< 8.1E+00	< 3.9E+00	< 8.7E+00	< 4.3E+00	< 7.1E+00	< 1.0E+01	< 4.6E+00	< 3.5E+00	< 2.6E+01	< 9.1E+00
MW-116-DUP	11/28/2017	pCi/L	< 2.1E+00	< 2.2E+00	< 4.9E+00	< 1.7E+00	< 4.2E+00	< 2.5E+00	< 4.2E+00	< 1.5E+01	< 2.3E+00	< 2.2E+00	< 2.4E+01	< 6.1E+00
MW-118	03/15/2017	pCi/L	< 4.0E+00	< 3.6E+00	< 9.3E+00	< 3.4E+00	< 8.0E+00	< 4.5E+00	< 7.3E+00	< 1.3E+01	< 4.6E+00	< 3.9E+00	< 2.6E+01	< 6.9E+00
MW-118	05/16/2017	pCi/L	< 3.4E+00	< 3.7E+00	< 7.3E+00	< 3.6E+00	< 6.0E+00	< 4.3E+00	< 6.9E+00	< 1.3E+01	< 3.5E+00	< 3.3E+00	< 2.8E+01	< 7.2E+00
MW-118	09/05/2017	pCi/L	< 3.1E+00	< 4.2E+00	< 9.3E+00	< 4.5E+00	< 7.4E+00	< 3.5E+00	< 6.9E+00	< 1.2E+01	< 3.9E+00	< 4.1E+00	< 2.7E+01	< 1.1E+01
MW-118	11/29/2017	pCi/L	< 2.6E+00	< 3.1E+00	< 7.9E+00	< 2.9E+00	< 6.4E+00	< 3.5E+00	< 5.8E+00	< 1.4E+01	< 3.3E+00	< 3.1E+00	< 2.6E+01	< 8.5E+00
MW-120	03/15/2017	pCi/L	< 4.3E+00	< 4.2E+00	< 8.8E+00	< 3.8E+00	< 8.0E+00	< 4.4E+00	< 7.5E+00	< 1.1E+01	< 3.9E+00	< 4.3E+00	< 2.3E+01	< 8.7E+00
MW-120	05/17/2017	pCi/L	< 4.9E+00	< 4.4E+00	< 8.5E+00	< 5.0E+00	< 8.3E+00	< 4.4E+00	< 7.9E+00	< 1.3E+01	< 4.6E+00	< 4.3E+00	< 3.0E+01	< 9.7E+00
MW-120	09/07/2017	pCi/L	< 3.1E+00	< 3.5E+00	< 8.4E+00	< 3.3E+00	< 6.7E+00	< 3.7E+00	< 6.5E+00	< 1.5E+01	< 3.1E+00	< 3.1E+00	< 2.9E+01	< 8.6E+00
MW-120	11/30/2017	pCi/L	< 6.7E+00	< 6.8E+00	< 1.7E+01	< 6.8E+00	< 1.6E+01	< 7.4E+00	< 1.3E+01	< 1.5E+01	< 6.6E+00	< 7.2E+00	< 3.8E+01	< 1.2E+01
MW-120-DUP	03/15/2017	pCi/L	< 3.6E+00	< 4.0E+00	< 7.8E+00	< 3.1E+00	< 8.3E+00	< 3.9E+00	< 7.1E+00	< 1.1E+01	< 3.9E+00	< 3.7E+00	< 2.4E+01	< 7.7E+00
MW-120-DUP	05/17/2017	pCi/L	< 3.7E+00	< 4.1E+00	< 8.2E+00	< 3.5E+00	< 6.5E+00	< 4.1E+00	< 7.1E+00	< 1.2E+01	< 4.1E+00	< 3.5E+00	< 2.7E+01	< 8.4E+00
MW-122R	03/15/2017	pCi/L	< 5.5E+00	< 5.0E+00	< 9.3E+00	< 6.7E+00	< 7.3E+00	< 6.5E+00	< 9.2E+00	< 1.0E+01	< 5.1E+00	< 5.5E+00	< 2.9E+01	< 7.1E+00
MW-122R	05/17/2017	pCi/L	< 4.0E+00	< 4.4E+00	< 1.0E+01	< 4.8E+00	< 9.6E+00	< 4.7E+00	< 8.4E+00	< 1.5E+01	< 4.3E+00	< 5.0E+00	< 2.9E+01	< 1.1E+01
MW-122R	09/06/2017	pCi/L	< 3.4E+00	< 3.6E+00	< 8.6E+00	< 3.5E+00	< 6.5E+00	< 3.9E+00	< 6.2E+00	< 1.2E+01	< 4.0E+00	< 3.9E+00	< 2.7E+01	< 6.8E+00
MW-122R	11/30/2017	pCi/L	< 7.7E+00	< 5.5E+00	< 1.6E+01	< 8.2E+00	< 9.7E+00	< 8.8E+00	< 1.4E+01	< 1.4E+01	< 7.2E+00	< 7.3E+00	< 4.0E+01	< 1.2E+01
MW-122R-DUP	11/30/2017	pCi/L	< 7.3E+00	< 6.9E+00	< 1.4E+01	< 7.3E+00	< 1.5E+01	< 8.2E+00	< 1.4E+01	< 1.4E+01	< 6.2E+00	< 8.1E+00	< 3.5E+01	< 5.7E+00
MW-126	03/15/2017	pCi/L	< 4.9E+00	< 4.7E+00	< 1.0E+01	< 3.8E+00	< 8.4E+00	< 5.3E+00	< 8.3E+00	< 1.3E+01	< 5.0E+00	< 4.7E+00	< 2.8E+01	< 8.4E+00
MW-126	05/17/2017	pCi/L	< 3.2E+00	< 4.0E+00	< 8.3E+00	< 4.4E+00	< 8.3E+00	< 3.7E+00	< 7.5E+00	< 1.2E+01	< 3.7E+00	< 4.5E+00	< 2.2E+01	< 9.2E+00
MW-126	09/06/2017	pCi/L	< 3.4E+00	< 3.7E+00	< 8.0E+00	< 3.1E+00	< 7.4E+00	< 3.6E+00	< 6.5E+00	< 1.2E+01	< 3.8E+00	< 3.5E+00	< 2.4E+01	< 8.2E+00

Station ID	Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-126	11/29/2017	pCi/L	< 3.3E+00	< 4.0E+00	< 7.0E+00	< 3.5E+00	< 7.7E+00	< 4.9E+00	< 7.5E+00	< 1.3E+01	< 4.2E+00	< 3.6E+00	< 2.8E+01	< 7.1E+00
MW-126-DUP	11/29/2017	pCi/L	< 3.8E+00	< 4.0E+00	< 8.0E+00	< 3.7E+00	< 8.2E+00	< 4.3E+00	< 7.7E+00	< 1.2E+01	< 4.2E+00	< 4.0E+00	< 2.6E+01	< 7.1E+00
MW-128	03/15/2017	pCi/L	< 4.1E+00	< 4.3E+00	< 8.7E+00	< 4.0E+00	< 8.8E+00	< 4.9E+00	< 7.7E+00	< 1.2E+01	< 4.7E+00	< 4.3E+00	< 2.7E+01	< 7.4E+00
MW-128	05/17/2017	pCi/L	< 5.1E+00	< 5.3E+00	< 1.2E+01	< 4.8E+00	< 8.8E+00	< 4.8E+00	< 8.2E+00	< 1.4E+01	< 5.3E+00	< 5.3E+00	< 3.2E+01	< 1.1E+01
MW-128	09/06/2017	pCi/L	< 2.7E+00	< 3.0E+00	< 6.6E+00	< 2.9E+00	< 5.5E+00	< 3.0E+00	< 5.2E+00	< 1.5E+01	< 2.9E+00	< 2.9E+00	< 2.6E+01	< 7.2E+00
MW-128	11/29/2017	pCi/L	< 3.9E+00	< 4.9E+00	< 9.1E+00	< 5.0E+00	< 8.2E+00	< 5.3E+00	< 9.3E+00	< 1.4E+01	< 4.7E+00	< 4.7E+00	< 2.9E+01	< 1.3E+01
MW-130	03/15/2017	pCi/L	< 5.0E+00	< 5.2E+00	< 1.1E+01	< 5.1E+00	< 1.1E+01	< 5.4E+00	< 8.9E+00	< 1.5E+01	< 6.5E+00	< 5.9E+00	< 3.5E+01	< 1.2E+01
MW-130	05/17/2017	pCi/L	< 4.5E+00	< 4.6E+00	< 9.7E+00	< 4.1E+00	< 8.7E+00	< 4.7E+00	< 7.3E+00	< 1.4E+01	< 4.4E+00	< 4.6E+00	< 3.1E+01	< 1.2E+01
MW-130	09/06/2017	pCi/L	< 3.1E+00	< 4.0E+00	< 8.5E+00	< 3.7E+00	< 7.6E+00	< 4.7E+00	< 7.1E+00	< 1.3E+01	< 3.9E+00	< 3.7E+00	< 3.0E+01	< 9.7E+00
MW-130	11/30/2017	pCi/L	< 7.3E+00	< 9.2E+00	< 1.8E+01	< 8.8E+00	< 1.6E+01	< 7.7E+00	< 1.3E+01	< 1.5E+01	< 8.0E+00	< 7.1E+00	< 4.2E+01	< 1.0E+01
MW-131	03/15/2017	pCi/L	< 4.4E+00	< 4.7E+00	< 9.9E+00	< 4.5E+00	< 9.3E+00	< 4.9E+00	< 8.5E+00	< 1.2E+01	< 5.0E+00	< 4.8E+00	< 2.9E+01	< 9.0E+00
MW-131	05/17/2017	pCi/L	< 4.8E+00	< 4.9E+00	< 1.2E+01	< 4.1E+00	< 1.0E+01	< 4.3E+00	< 8.4E+00	< 1.5E+01	< 4.6E+00	< 4.7E+00	< 2.9E+01	< 1.1E+01
MW-131	09/06/2017	pCi/L	< 4.4E+00	< 4.6E+00	< 1.1E+01	< 3.4E+00	< 8.3E+00	< 4.5E+00	< 8.2E+00	< 1.5E+01	< 4.8E+00	< 3.5E+00	< 3.3E+01	< 1.1E+01
MW-131	11/30/2017	pCi/L	< 5.5E+00	< 6.7E+00	< 1.4E+01	< 6.5E+00	< 1.3E+01	< 7.2E+00	< 1.1E+01	< 1.4E+01	< 6.3E+00	< 7.1E+00	< 3.4E+01	< 1.2E+01
MW-132	03/16/2017	pCi/L	< 5.1E+00	< 5.1E+00	< 1.3E+01	< 5.8E+00	< 9.9E+00	< 6.7E+00	< 9.9E+00	< 1.3E+01	< 5.7E+00	< 6.1E+00	< 3.3E+01	< 1.1E+01
MW-132	05/17/2017	pCi/L	< 3.9E+00	< 4.1E+00	< 9.9E+00	< 3.2E+00	< 7.1E+00	< 4.6E+00	< 7.9E+00	< 1.4E+01	< 4.4E+00	< 4.1E+00	< 2.7E+01	< 7.4E+00
MW-132	09/06/2017	pCi/L	< 2.7E+00	< 3.3E+00	< 6.9E+00	< 3.0E+00	< 5.7E+00	< 3.1E+00	< 5.7E+00	< 1.2E+01	< 3.2E+00	< 3.0E+00	< 2.4E+01	< 7.4E+00
MW-132	11/30/2017	pCi/L	< 5.7E+00	< 6.2E+00	< 1.3E+01	< 5.7E+00	< 1.3E+01	< 6.6E+00	< 1.1E+01	< 1.4E+01	< 8.3E+00	< 7.2E+00	< 3.8E+01	< 6.7E+00
MW-134	03/16/2017	pCi/L	< 5.3E+00	< 6.0E+00	< 1.2E+01	< 6.6E+00	< 1.2E+01	< 6.3E+00	< 8.7E+00	< 1.3E+01	< 5.5E+00	< 5.9E+00	< 2.9E+01	< 1.3E+01
MW-134	05/17/2017	pCi/L	< 4.9E+00	< 5.0E+00	< 1.3E+01	< 5.8E+00	< 1.0E+01	< 6.2E+00	< 8.6E+00	< 1.4E+01	< 5.6E+00	< 4.7E+00	< 3.5E+01	< 1.4E+01
MW-134	09/06/2017	pCi/L	< 2.8E+00	< 3.3E+00	< 7.6E+00	< 2.8E+00	< 6.3E+00	< 3.6E+00	< 5.3E+00	< 1.3E+01	< 2.9E+00	< 3.0E+00	< 2.7E+01	< 7.5E+00
MW-134	11/30/2017	pCi/L	< 9.2E+00	< 7.1E+00	< 1.0E+01	< 6.0E+00	< 1.6E+01	< 9.3E+00	< 1.4E+01	< 1.3E+01	< 9.2E+00	< 7.1E+00	< 3.8E+01	< 9.2E+00
MW-137	03/14/2017	pCi/L	< 4.4E+00	< 5.1E+00	< 9.1E+00	< 3.9E+00	< 7.7E+00	< 4.1E+00	< 7.8E+00	< 1.4E+01	< 4.6E+00	< 4.3E+00	< 2.9E+01	< 8.4E+00
MW-137	05/16/2017	pCi/L	< 3.7E+00	< 3.9E+00	< 8.7E+00	< 3.5E+00	< 6.8E+00	< 3.9E+00	< 6.7E+00	< 1.5E+01	< 3.7E+00	< 3.8E+00	< 3.0E+01	< 9.3E+00
MW-137	09/06/2017	pCi/L	< 2.8E+00	< 2.8E+00	< 6.4E+00	< 2.5E+00	< 5.9E+00	< 3.1E+00	< 5.0E+00	< 1.0E+01	< 2.8E+00	< 2.9E+00	< 2.0E+01	< 4.7E+00
MW-137	11/29/2017	pCi/L	< 2.0E+00	< 2.3E+00	< 5.0E+00	< 2.4E+00	< 4.0E+00	< 2.4E+00	< 4.4E+00	< 1.3E+01	< 2.1E+00	< 2.0E+00	< 2.2E+01	< 7.0E+00
MW-137-DUP	03/14/2017	pCi/L	< 4.6E+00	< 5.2E+00	< 1.1E+01	< 5.1E+00	< 9.2E+00	< 6.2E+00	< 9.2E+00	< 1.4E+01	< 4.8E+00	< 4.9E+00	< 3.6E+01	< 7.6E+00
MW-137-DUP	11/29/2017	pCi/L	< 3.1E+00	< 3.3E+00	< 7.0E+00	< 3.0E+00	< 5.9E+00	< 3.4E+00	< 5.8E+00	< 1.5E+01	< 3.4E+00	< 3.0E+00	< 2.6E+01	< 8.6E+00
MW-139	03/14/2017	pCi/L	< 5.3E+00	< 5.7E+00	< 1.2E+01	< 4.8E+00	< 1.3E+01	< 5.7E+00	< 1.1E+01	< 1.5E+01	< 5.2E+00	< 3.9E+00	< 3.1E+01	< 1.5E+01
MW-139	05/16/2017	pCi/L	< 2.4E+00	< 3.2E+00	< 6.6E+00	< 3.0E+00	< 7.5E+00	< 4.1E+00	< 5.3E+00	< 1.3E+01	< 4.1E+00	< 3.7E+00	< 2.7E+01	< 6.5E+00
MW-139	09/05/2017	pCi/L	< 4.2E+00	< 4.3E+00	< 9.6E+00	< 4.0E+00	< 1.0E+01	< 4.4E+00	< 8.8E+00	< 1.4E+01	< 4.4E+00	< 4.5E+00	< 2.8E+01	< 1.0E+01
MW-139	11/29/2017	pCi/L	< 2.5E+00	< 2.6E+00	< 5.8E+00	< 2.3E+00	< 4.9E+00	< 3.0E+00	< 4.9E+00	< 1.5E+01	< 2.8E+00	< 2.5E+00	< 2.5E+01	< 8.2E+00
MW-14	03/16/2017	pCi/L	< 6.4E+00	< 6.1E+00	< 1.2E+01	< 6.1E+00	< 1.1E+01	< 7.1E+00	< 1.2E+01	< 1.2E+01	< 7.8E+00	< 6.8E+00	< 3.5E+01	< 1.3E+01
MW-14	05/17/2017	pCi/L	< 3.7E+00	< 3.6E+00	< 9.2E+00	< 4.1E+00	< 6.9E+00	< 4.4E+00	< 8.0E+00	< 1.4E+01	< 3.8E+00	< 4.1E+00	< 2.7E+01	< 1.1E+01
MW-14	09/07/2017	pCi/L	< 2.8E+00	< 2.9E+00	< 6.8E+00	< 2.7E+00	< 5.4E+00	< 3.1E+00	< 5.5E+00	< 1.5E+01	< 3.1E+00	< 3.0E+00	< 2.7E+01	< 7.8E+00
MW-14	11/30/2017	pCi/L	< 6.5E+00	< 6.9E+00	< 1.2E+01	< 7.1E+00	< 1.4E+01	< 5.2E+00	< 1.2E+01	< 1.3E+01	< 6.0E+00	< 6.5E+00	< 3.3E+01	< 1.1E+01
MW-141	03/14/2017	pCi/L	< 3.4E+00	< 3.3E+00	< 7.8E+00	< 3.4E+00	< 6.5E+00	< 3.8E+00	< 5.3E+00	< 1.1E+01	< 3.3E+00	< 3.4E+00	< 2.4E+01	< 7.5E+00

Station ID	Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-141	05/16/2017	pCi/L	< 3.3E+00	< 3.7E+00	< 7.5E+00	< 3.7E+00	< 6.1E+00	< 3.3E+00	< 6.0E+00	< 1.4E+01	< 3.4E+00	< 3.4E+00	< 2.8E+01	< 9.2E+00
MW-141	09/05/2017	pCi/L	< 3.0E+00	< 3.6E+00	< 7.7E+00	< 3.3E+00	< 6.6E+00	< 3.4E+00	< 6.0E+00	< 1.2E+01	< 3.9E+00	< 3.1E+00	< 2.5E+01	< 7.7E+00
MW-141	11/29/2017	pCi/L	< 2.5E+00	< 2.6E+00	< 6.0E+00	< 2.3E+00	< 5.0E+00	< 3.1E+00	< 5.1E+00	< 1.5E+01	< 2.9E+00	< 2.8E+00	< 2.7E+01	< 7.7E+00
MW-142	03/14/2017	pCi/L	< 2.6E+00	< 2.7E+00	< 6.0E+00	< 3.2E+00	< 5.3E+00	< 3.2E+00	< 4.6E+00	< 8.2E+00	< 2.6E+00	< 2.7E+00	< 1.6E+01	< 6.5E+00
MW-142	05/16/2017	pCi/L	< 3.9E+00	< 3.5E+00	< 7.0E+00	< 3.5E+00	< 7.6E+00	< 4.1E+00	< 6.3E+00	< 1.2E+01	< 3.9E+00	< 3.7E+00	< 2.4E+01	< 8.8E+00
MW-142	09/05/2017	pCi/L	< 3.4E+00	< 3.4E+00	< 8.6E+00	< 3.2E+00	< 6.2E+00	< 3.9E+00	< 6.0E+00	< 1.5E+01	< 3.8E+00	< 3.5E+00	< 2.7E+01	< 8.0E+00
MW-142	11/28/2017	pCi/L	< 5.2E+00	< 5.2E+00	< 1.2E+01	< 5.3E+00	< 9.7E+00	< 5.6E+00	< 8.4E+00	< 1.4E+01	< 4.8E+00	< 5.1E+00	< 2.9E+01	< 1.0E+01
MW-144	03/14/2017	pCi/L	< 2.6E+00	< 2.6E+00	< 6.4E+00	< 2.4E+00	< 5.5E+00	< 3.2E+00	< 5.0E+00	< 8.9E+00	< 2.7E+00	< 2.7E+00	< 2.1E+01	< 6.2E+00
MW-144	05/16/2017	pCi/L	< 2.9E+00	< 2.6E+00	< 6.8E+00	< 2.2E+00	< 5.9E+00	< 2.9E+00	< 4.8E+00	< 1.1E+01	< 2.6E+00	< 3.0E+00	< 2.6E+01	< 5.2E+00
MW-144	09/05/2017	pCi/L	< 3.9E+00	< 3.8E+00	< 9.3E+00	< 3.9E+00	< 7.2E+00	< 4.2E+00	< 7.4E+00	< 1.2E+01	< 4.1E+00	< 3.7E+00	< 2.6E+01	< 7.2E+00
MW-144	11/28/2017	pCi/L	< 2.6E+00	< 2.9E+00	< 6.8E+00	< 2.7E+00	< 5.7E+00	< 3.2E+00	< 5.3E+00	< 1.4E+01	< 2.9E+00	< 2.9E+00	< 2.5E+01	< 8.6E+00
MW-146	03/14/2017	pCi/L	< 4.5E+00	< 4.7E+00	< 1.1E+01	< 4.2E+00	< 1.0E+01	< 5.1E+00	< 7.1E+00	< 1.4E+01	< 4.6E+00	< 4.6E+00	< 3.0E+01	< 9.7E+00
MW-146	05/16/2017	pCi/L	< 2.8E+00	< 3.5E+00	< 7.3E+00	< 3.0E+00	< 4.9E+00	< 3.4E+00	< 5.0E+00	< 1.3E+01	< 3.4E+00	< 3.5E+00	< 2.5E+01	< 9.0E+00
MW-146	09/05/2017	pCi/L	< 4.6E+00	< 4.2E+00	< 9.3E+00	< 3.7E+00	< 9.4E+00	< 4.9E+00	< 8.6E+00	< 1.4E+01	< 4.3E+00	< 4.0E+00	< 3.1E+01	< 1.0E+01
MW-146	11/28/2017	pCi/L	< 2.4E+00	< 2.4E+00	< 6.0E+00	< 2.6E+00	< 5.5E+00	< 3.1E+00	< 5.0E+00	< 1.5E+01	< 2.7E+00	< 2.6E+00	< 2.8E+01	< 8.4E+00
MW-147	03/14/2017	pCi/L	< 4.2E+00	< 3.7E+00	< 9.2E+00	< 3.9E+00	< 8.9E+00	< 4.8E+00	< 6.6E+00	< 1.3E+01	< 3.7E+00	< 3.6E+00	< 2.5E+01	< 6.4E+00
MW-147	05/16/2017	pCi/L	< 2.7E+00	< 3.1E+00	< 7.0E+00	< 3.0E+00	< 5.6E+00	< 3.6E+00	< 5.7E+00	< 1.3E+01	< 3.3E+00	< 3.0E+00	< 2.6E+01	< 6.9E+00
MW-147	09/05/2017	pCi/L	< 3.3E+00	< 3.8E+00	< 7.1E+00	< 3.9E+00	< 6.0E+00	< 3.5E+00	< 6.5E+00	< 1.1E+01	< 3.5E+00	< 3.4E+00	< 2.4E+01	< 8.7E+00
MW-147	11/28/2017	pCi/L	< 2.4E+00	< 2.6E+00	< 5.9E+00	< 2.8E+00	< 4.9E+00	< 2.9E+00	< 5.0E+00	< 1.5E+01	< 2.4E+00	< 2.8E+00	< 2.4E+01	< 9.7E+00
MW-147-DUP	05/16/2017	pCi/L	< 4.3E+00	< 4.4E+00	< 8.3E+00	< 3.8E+00	< 8.9E+00	< 4.6E+00	< 7.9E+00	< 1.3E+01	< 4.3E+00	< 4.1E+00	< 2.8E+01	< 9.8E+00
MW-148	03/14/2017	pCi/L	< 7.6E+00	< 5.2E+00	< 1.5E+01	< 7.3E+00	< 1.3E+01	< 8.0E+00	< 1.1E+01	< 1.5E+01	< 6.9E+00	< 7.8E+00	< 3.8E+01	< 1.0E+01
MW-148	05/16/2017	pCi/L	< 3.6E+00	< 4.4E+00	< 9.7E+00	< 5.2E+00	< 7.5E+00	< 4.6E+00	< 7.9E+00	< 1.4E+01	< 4.4E+00	< 3.8E+00	< 3.2E+01	< 1.2E+01
MW-148	09/05/2017	pCi/L	< 3.4E+00	< 3.4E+00	< 8.4E+00	< 3.7E+00	< 7.2E+00	< 4.0E+00	< 6.8E+00	< 1.4E+01	< 4.0E+00	< 3.7E+00	< 2.7E+01	< 9.9E+00
MW-148	11/28/2017	pCi/L	< 5.8E+00	< 6.4E+00	< 1.3E+01	< 4.3E+00	< 1.3E+01	< 6.3E+00	< 8.8E+00	< 1.3E+01	< 7.5E+00	< 6.3E+00	< 3.4E+01	< 1.1E+01
MW-148-DUP	03/14/2017	pCi/L	< 5.9E+00	< 5.5E+00	< 1.3E+01	< 4.7E+00	< 1.1E+01	< 6.7E+00	< 1.1E+01	< 1.5E+01	< 5.3E+00	< 6.3E+00	< 3.2E+01	< 8.0E+00
MW-148-DUP	05/16/2017	pCi/L	< 3.4E+00	< 3.6E+00	< 1.1E+01	< 2.8E+00	< 7.2E+00	< 3.9E+00	< 7.4E+00	< 1.5E+01	< 4.3E+00	< 4.0E+00	< 2.9E+01	< 1.2E+01
MW-151	03/15/2017	pCi/L	< 5.6E+00	< 5.4E+00	< 8.9E+00	< 5.0E+00	< 1.0E+01	< 5.6E+00	< 8.4E+00	< 1.4E+01	< 5.3E+00	< 5.2E+00	< 3.0E+01	< 1.1E+01
MW-151	05/17/2017	pCi/L	< 3.7E+00	< 4.5E+00	< 9.1E+00	< 3.7E+00	< 8.4E+00	< 4.0E+00	< 7.2E+00	< 1.2E+01	< 4.1E+00	< 3.6E+00	< 3.0E+01	< 8.9E+00
MW-151	09/06/2017	pCi/L	< 3.5E+00	< 3.6E+00	< 8.1E+00	< 3.5E+00	< 7.2E+00	< 4.1E+00	< 6.6E+00	< 1.2E+01	< 3.9E+00	< 3.4E+00	< 2.7E+01	< 8.6E+00
MW-151	11/29/2017	pCi/L	< 8.5E+00	< 8.1E+00	< 1.5E+01	< 6.2E+00	< 1.5E+01	< 6.3E+00	< 1.3E+01	< 1.5E+01	< 8.3E+00	< 6.9E+00	< 3.6E+01	< 1.5E+01
MW-153	03/14/2017	pCi/L	< 2.6E+00	< 2.9E+00	< 6.3E+00	< 2.7E+00	< 5.5E+00	< 3.2E+00	< 5.6E+00	< 8.6E+00	< 3.2E+00	< 2.8E+00	< 1.9E+01	< 7.6E+00
MW-153	05/17/2017	pCi/L	< 3.9E+00	< 4.6E+00	< 8.5E+00	< 3.8E+00	< 6.9E+00	< 4.5E+00	< 7.2E+00	< 1.4E+01	< 4.2E+00	< 4.1E+00	< 3.1E+01	< 7.3E+00
MW-153	09/05/2017	pCi/L	< 3.5E+00	< 3.1E+00	< 7.4E+00	< 3.0E+00	< 6.7E+00	< 3.7E+00	< 6.6E+00	< 1.2E+01	< 3.4E+00	< 3.1E+00	< 2.6E+01	< 8.0E+00
MW-153	11/29/2017	pCi/L	< 3.0E+00	< 3.1E+00	< 7.4E+00	< 3.2E+00	< 6.4E+00	< 3.5E+00	< 6.1E+00	< 1.4E+01	< 3.7E+00	< 3.1E+00	< 2.7E+01	< 9.0E+00
MW-155	03/14/2017	pCi/L	< 3.6E+00	< 4.2E+00	< 8.4E+00	< 3.8E+00	< 7.4E+00	< 4.2E+00	< 6.6E+00	< 1.2E+01	< 4.0E+00	< 3.6E+00	< 2.6E+01	< 8.6E+00
MW-155	05/16/2017	pCi/L	< 3.5E+00	< 3.4E+00	< 6.8E+00	< 3.4E+00	< 6.4E+00	< 3.8E+00	< 7.3E+00	< 1.4E+01	< 3.7E+00	< 3.6E+00	< 3.0E+01	< 6.5E+00
MW-155	09/05/2017	pCi/L	< 3.6E+00	< 4.0E+00	< 9.1E+00	< 3.7E+00	< 7.8E+00	< 4.0E+00	< 7.3E+00	< 1.3E+01	< 3.9E+00	< 4.0E+00	< 2.8E+01	< 8.1E+00

Station ID	Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-155	11/29/2017	pCi/L	< 2.7E+00	< 2.9E+00	< 6.7E+00	< 2.2E+00	< 5.4E+00	< 2.9E+00	< 5.3E+00	< 1.5E+01	< 2.7E+00	< 2.5E+00	< 2.5E+01	< 8.0E+00
MW-155-DUP	09/05/2017	pCi/L	< 3.9E+00	< 4.0E+00	< 8.5E+00	< 3.6E+00	< 8.3E+00	< 4.5E+00	< 7.5E+00	< 1.4E+01	< 4.3E+00	< 4.0E+00	< 3.0E+01	< 7.6E+00
MW-155-DUP	11/29/2017	pCi/L	< 2.3E+00	< 2.7E+00	< 5.7E+00	< 2.2E+00	< 4.8E+00	< 2.7E+00	< 5.1E+00	< 1.3E+01	< 2.6E+00	< 2.4E+00	< 2.5E+01	< 7.3E+00
MW-156	03/14/2017	pCi/L	< 4.1E+00	< 5.2E+00	< 1.1E+01	< 4.8E+00	< 7.0E+00	< 4.9E+00	< 8.2E+00	< 1.5E+01	< 5.6E+00	< 4.1E+00	< 3.0E+01	< 8.8E+00
MW-156	05/16/2017	pCi/L	< 3.7E+00	< 3.7E+00	< 9.8E+00	< 3.8E+00	< 8.9E+00	< 4.7E+00	< 7.6E+00	< 1.5E+01	< 4.2E+00	< 3.5E+00	< 2.5E+01	< 1.1E+01
MW-156	09/05/2017	pCi/L	< 3.1E+00	< 3.4E+00	< 7.2E+00	< 2.8E+00	< 6.6E+00	< 3.7E+00	< 5.9E+00	< 1.0E+01	< 3.5E+00	< 3.2E+00	< 2.4E+01	< 6.6E+00
MW-156	11/28/2017	pCi/L	< 2.3E+00	< 2.9E+00	< 6.2E+00	< 2.9E+00	< 5.9E+00	< 2.9E+00	< 4.8E+00	< 1.5E+01	< 2.7E+00	< 2.6E+00	< 2.6E+01	< 8.6E+00
MW-157	03/14/2017	pCi/L	< 3.6E+00	< 3.8E+00	< 9.9E+00	< 5.1E+00	< 9.5E+00	< 4.5E+00	< 9.1E+00	< 1.3E+01	< 5.5E+00	< 5.0E+00	< 2.7E+01	< 1.0E+01
MW-157	05/16/2017	pCi/L	< 3.6E+00	< 3.8E+00	< 5.8E+00	< 4.0E+00	< 7.9E+00	< 3.7E+00	< 7.0E+00	< 1.4E+01	< 3.1E+00	< 2.7E+00	< 2.6E+01	< 8.3E+00
MW-157	09/05/2017	pCi/L	< 3.4E+00	< 4.5E+00	< 9.1E+00	< 4.3E+00	< 8.5E+00	< 4.2E+00	< 7.8E+00	< 1.2E+01	< 3.7E+00	< 3.6E+00	< 2.7E+01	< 8.0E+00
MW-157	11/29/2017	pCi/L	< 2.3E+00	< 2.7E+00	< 6.2E+00	< 2.5E+00	< 4.8E+00	< 2.7E+00	< 5.0E+00	< 1.3E+01	< 2.5E+00	< 2.5E+00	< 2.4E+01	< 7.4E+00
MW-157-DUP	05/16/2017	pCi/L	< 3.4E+00	< 4.4E+00	< 8.0E+00	< 3.4E+00	< 6.5E+00	< 3.6E+00	< 6.6E+00	< 1.4E+01	< 3.9E+00	< 3.1E+00	< 2.4E+01	< 7.8E+00
MW-158	03/14/2017	pCi/L	< 2.0E+00	< 2.3E+00	< 4.9E+00	< 2.4E+00	< 4.8E+00	< 2.4E+00	< 4.0E+00	< 7.7E+00	< 2.3E+00	< 2.2E+00	< 1.7E+01	< 5.2E+00
MW-158	05/16/2017	pCi/L	< 3.3E+00	< 2.8E+00	< 7.4E+00	< 2.9E+00	< 7.3E+00	< 3.3E+00	< 6.2E+00	< 1.5E+01	< 3.3E+00	< 3.2E+00	< 2.7E+01	< 9.1E+00
MW-158	09/05/2017	pCi/L	< 4.1E+00	< 4.1E+00	< 7.4E+00	< 4.3E+00	< 8.0E+00	< 4.2E+00	< 8.1E+00	< 1.5E+01	< 4.8E+00	< 3.8E+00	< 3.4E+01	< 1.2E+01
MW-158	11/28/2017	pCi/L	< 2.1E+00	< 2.3E+00	< 5.5E+00	< 2.3E+00	< 4.4E+00	< 2.5E+00	< 4.8E+00	< 1.4E+01	< 2.3E+00	< 2.3E+00	< 2.3E+01	< 7.5E+00
MW-158-DUP	03/14/2017	pCi/L	< 2.5E+00	< 2.9E+00	< 5.9E+00	< 2.5E+00	< 5.3E+00	< 3.2E+00	< 4.8E+00	< 9.5E+00	< 2.8E+00	< 2.7E+00	< 2.0E+01	< 6.7E+00
MW-159	03/15/2017	pCi/L	< 5.2E+00	< 3.8E+00	< 1.0E+01	< 4.7E+00	< 7.8E+00	< 5.6E+00	< 8.7E+00	< 1.5E+01	< 4.5E+00	< 4.1E+00	< 2.7E+01	< 8.7E+00
MW-159	05/16/2017	pCi/L	< 3.3E+00	< 3.6E+00	< 8.2E+00	< 3.0E+00	< 6.8E+00	< 3.7E+00	< 6.5E+00	< 1.4E+01	< 3.1E+00	< 3.1E+00	< 2.7E+01	< 8.6E+00
MW-159	09/05/2017	pCi/L	< 3.1E+00	< 3.6E+00	< 7.9E+00	< 3.2E+00	< 7.0E+00	< 3.7E+00	< 5.3E+00	< 1.1E+01	< 3.7E+00	< 2.9E+00	< 2.2E+01	< 6.7E+00
MW-159	11/28/2017	pCi/L	< 2.7E+00	< 2.8E+00	< 6.1E+00	< 2.5E+00	< 5.0E+00	< 3.1E+00	< 4.8E+00	< 1.5E+01	< 2.6E+00	< 2.5E+00	< 2.8E+01	< 7.7E+00
MW-159-DUP	09/05/2017	pCi/L	< 3.2E+00	< 3.1E+00	< 7.4E+00	< 3.1E+00	< 6.7E+00	< 3.7E+00	< 6.0E+00	< 1.1E+01	< 3.6E+00	< 3.5E+00	< 2.5E+01	< 7.1E+00
MW-161	03/15/2017	pCi/L	< 3.5E+00	< 3.7E+00	< 8.0E+00	< 3.5E+00	< 7.3E+00	< 4.0E+00	< 6.6E+00	< 1.1E+01	< 4.0E+00	< 3.5E+00	< 2.5E+01	< 7.6E+00
MW-161	05/17/2017	pCi/L	< 2.8E+00	< 2.9E+00	< 6.1E+00	< 3.0E+00	< 5.4E+00	< 3.3E+00	< 4.2E+00	< 1.1E+01	< 3.0E+00	< 3.1E+00	< 2.2E+01	< 6.4E+00
MW-161	09/06/2017	pCi/L	< 3.3E+00	< 3.4E+00	< 7.8E+00	< 3.1E+00	< 6.6E+00	< 3.5E+00	< 6.2E+00	< 9.2E+00	< 3.8E+00	< 3.3E+00	< 2.2E+01	< 6.0E+00
MW-161	11/30/2017	pCi/L	< 3.0E+00	< 3.1E+00	< 6.6E+00	< 3.1E+00	< 6.9E+00	< 3.7E+00	< 5.9E+00	< 1.5E+01	< 3.4E+00	< 3.0E+00	< 2.6E+01	< 9.4E+00
MW-162	03/14/2017	pCi/L	< 3.2E+00	< 3.3E+00	< 7.5E+00	< 3.3E+00	< 6.5E+00	< 3.7E+00	< 6.1E+00	< 1.0E+01	< 3.8E+00	< 3.3E+00	< 2.3E+01	< 6.7E+00
MW-162	05/16/2017	pCi/L	< 3.5E+00	< 4.1E+00	< 1.1E+01	< 4.1E+00	< 7.8E+00	< 4.6E+00	< 8.1E+00	< 1.4E+01	< 4.9E+00	< 3.9E+00	< 3.0E+01	< 8.3E+00
MW-162	09/05/2017	pCi/L	< 2.7E+00	< 3.3E+00	< 6.5E+00	< 2.7E+00	< 6.2E+00	< 3.1E+00	< 5.9E+00	< 1.1E+01	< 3.0E+00	< 3.0E+00	< 2.4E+01	< 7.4E+00
MW-162	11/28/2017	pCi/L	< 4.4E+00	< 4.5E+00	< 1.2E+01	< 3.9E+00	< 8.5E+00	< 4.1E+00	< 8.3E+00	< 1.4E+01	< 5.3E+00	< 5.1E+00	< 2.7E+01	< 8.5E+00
MW-164	03/15/2017	pCi/L	< 5.5E+00	< 5.8E+00	< 1.3E+01	< 5.4E+00	< 1.1E+01	< 5.8E+00	< 9.8E+00	< 1.3E+01	< 6.4E+00	< 5.6E+00	< 3.3E+01	< 1.2E+01
MW-164	05/17/2017	pCi/L	< 4.1E+00	< 5.1E+00	< 8.1E+00	< 4.1E+00	< 7.8E+00	< 5.1E+00	< 7.1E+00	< 1.4E+01	< 4.5E+00	< 4.6E+00	< 3.0E+01	< 1.0E+01
MW-164	09/06/2017	pCi/L	< 2.7E+00	< 3.0E+00	< 6.8E+00	< 2.7E+00	< 5.9E+00	< 3.3E+00	< 5.4E+00	< 1.5E+01	< 2.9E+00	< 2.9E+00	< 2.8E+01	< 8.7E+00
MW-164	11/29/2017	pCi/L	< 5.3E+00	< 6.1E+00	< 1.5E+01	< 5.3E+00	< 1.5E+01	< 7.2E+00	< 1.1E+01	< 1.2E+01	< 7.1E+00	< 7.8E+00	< 3.6E+01	< 1.2E+01
MW-164-DUP	05/17/2017	pCi/L	< 4.1E+00	< 4.1E+00	< 8.1E+00	< 3.7E+00	< 8.0E+00	< 4.3E+00	< 8.1E+00	< 1.3E+01	< 4.0E+00	< 4.0E+00	< 2.8E+01	< 1.1E+01
MW-164-DUP	09/06/2017	pCi/L	< 3.1E+00	< 3.1E+00	< 6.6E+00	< 3.0E+00	< 6.3E+00	< 3.3E+00	< 5.4E+00	< 1.5E+01	< 3.2E+00	< 2.8E+00	< 2.6E+01	< 9.1E+00
MW-165	03/15/2017	pCi/L	< 5.4E+00	< 5.7E+00	< 1.3E+01	< 5.7E+00	< 1.0E+01	< 6.7E+00	< 1.2E+01	< 1.4E+01	< 6.7E+00	< 5.9E+00	< 3.2E+01	< 1.0E+01

Station ID	Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-165	05/17/2017	pCi/L	< 4.7E+00	< 5.0E+00	< 1.2E+01	< 6.4E+00	< 8.5E+00	< 5.3E+00	< 8.5E+00	< 1.5E+01	< 5.5E+00	< 4.1E+00	< 3.6E+01	< 1.0E+01
MW-165	09/06/2017	pCi/L	< 3.7E+00	< 3.9E+00	< 8.2E+00	< 3.6E+00	< 8.0E+00	< 3.9E+00	< 7.3E+00	< 1.5E+01	< 4.3E+00	< 3.7E+00	< 2.8E+01	< 9.5E+00
MW-165	11/29/2017	pCi/L	< 6.2E+00	< 8.9E+00	< 1.7E+01	< 7.7E+00	< 1.8E+01	< 8.3E+00	< 1.1E+01	< 1.5E+01	< 7.7E+00	< 8.5E+00	< 4.2E+01	< 1.1E+01
MW-165-DUP	11/29/2017	pCi/L	< 6.3E+00	< 9.1E+00	< 1.7E+01	< 6.3E+00	< 1.2E+01	< 8.3E+00	< 1.3E+01	< 1.5E+01	< 8.4E+00	< 7.9E+00	< 4.2E+01	< 1.3E+01
MW-167	03/16/2017	pCi/L	< 4.3E+00	< 5.0E+00	< 1.1E+01	< 4.6E+00	< 9.3E+00	< 4.4E+00	< 7.5E+00	< 9.5E+00	< 4.6E+00	< 6.1E+00	< 2.9E+01	< 7.6E+00
MW-167	05/17/2017	pCi/L	< 4.3E+00	< 4.7E+00	< 1.1E+01	< 4.3E+00	< 9.8E+00	< 4.8E+00	< 8.5E+00	< 1.4E+01	< 4.4E+00	< 4.4E+00	< 2.8E+01	< 9.3E+00
MW-167	09/06/2017	pCi/L	< 2.7E+00	< 3.1E+00	< 6.7E+00	< 3.1E+00	< 5.5E+00	< 2.8E+00	< 5.4E+00	< 1.4E+01	< 2.9E+00	< 2.9E+00	< 2.7E+01	< 7.0E+00
MW-167	11/30/2017	pCi/L	< 7.0E+00	< 6.6E+00	< 1.3E+01	< 7.1E+00	< 1.1E+01	< 7.2E+00	< 1.3E+01	< 1.3E+01	< 6.4E+00	< 6.1E+00	< 3.5E+01	< 9.0E+00
MW-169	03/14/2017	pCi/L	< 3.0E+00	< 3.5E+00	< 7.2E+00	< 3.1E+00	< 5.8E+00	< 3.5E+00	< 6.2E+00	< 1.1E+01	< 3.7E+00	< 3.4E+00	< 2.2E+01	< 6.6E+00
MW-169	05/16/2017	pCi/L	< 2.7E+00	< 2.8E+00	< 6.7E+00	< 2.7E+00	< 5.2E+00	< 3.0E+00	< 5.3E+00	< 9.3E+00	< 3.0E+00	< 2.7E+00	< 1.9E+01	< 6.2E+00
MW-169	09/05/2017	pCi/L	< 3.5E+00	< 3.8E+00	< 7.7E+00	< 3.5E+00	< 6.6E+00	< 4.1E+00	< 6.4E+00	< 1.2E+01	< 3.9E+00	< 3.6E+00	< 2.6E+01	< 9.5E+00
MW-169	11/28/2017	pCi/L	< 2.1E+00	< 2.4E+00	< 5.4E+00	< 2.1E+00	< 4.7E+00	< 2.5E+00	< 4.3E+00	< 1.4E+01	< 2.3E+00	< 2.1E+00	< 2.3E+01	< 7.7E+00
MW-170	03/15/2017	pCi/L	< 4.7E+00	< 5.2E+00	< 1.2E+01	< 5.2E+00	< 9.4E+00	< 5.1E+00	< 1.0E+01	< 1.4E+01	< 4.7E+00	< 5.4E+00	< 3.4E+01	< 9.7E+00
MW-170	05/18/2017	pCi/L	< 4.6E+00	< 5.2E+00	< 1.2E+01	< 4.9E+00	< 9.4E+00	< 4.5E+00	< 9.8E+00	< 1.5E+01	< 4.9E+00	< 4.5E+00	< 3.0E+01	< 8.7E+00
MW-170	09/07/2017	pCi/L	< 3.1E+00	< 3.1E+00	< 7.4E+00	< 3.2E+00	< 6.4E+00	< 3.4E+00	< 5.8E+00	< 1.4E+01	< 3.6E+00	< 2.9E+00	< 2.5E+01	< 8.2E+00
MW-170	11/30/2017	pCi/L	< 6.2E+00	< 5.7E+00	< 1.4E+01	< 7.6E+00	< 7.7E+00	< 6.4E+00	< 1.1E+01	< 1.2E+01	< 6.0E+00	< 6.2E+00	< 3.4E+01	< 1.4E+01
MW-172	03/15/2017	pCi/L	< 3.7E+00	< 5.0E+00	< 8.8E+00	< 4.7E+00	< 8.2E+00	< 4.6E+00	< 9.0E+00	< 1.2E+01	< 5.1E+00	< 4.5E+00	< 2.8E+01	< 1.1E+01
MW-172	05/17/2017	pCi/L	< 4.8E+00	< 4.7E+00	< 1.0E+01	< 5.1E+00	< 7.7E+00	< 4.9E+00	< 7.5E+00	< 1.5E+01	< 6.1E+00	< 4.5E+00	< 2.9E+01	< 8.3E+00
MW-172	09/06/2017	pCi/L	< 4.0E+00	< 4.2E+00	< 1.1E+01	< 5.0E+00	< 8.6E+00	< 5.1E+00	< 8.8E+00	< 1.5E+01	< 4.9E+00	< 4.6E+00	< 3.1E+01	< 9.2E+00
MW-172	11/29/2017	pCi/L	< 4.9E+00	< 6.2E+00	< 1.2E+01	< 7.0E+00	< 1.1E+01	< 5.8E+00	< 8.6E+00	< 1.2E+01	< 5.9E+00	< 5.2E+00	< 3.2E+01	< 1.3E+01
MW-174	03/16/2017	pCi/L	< 4.2E+00	< 5.0E+00	< 1.1E+01	< 6.3E+00	< 1.1E+01	< 5.0E+00	< 1.0E+01	< 1.1E+01	< 5.3E+00	< 5.3E+00	< 3.0E+01	< 9.3E+00
MW-174	05/17/2017	pCi/L	< 5.4E+00	< 5.3E+00	< 1.1E+01	< 4.5E+00	< 9.1E+00	< 5.3E+00	< 9.2E+00	< 1.5E+01	< 5.0E+00	< 5.5E+00	< 3.0E+01	< 8.7E+00
MW-174	09/07/2017	pCi/L	< 2.5E+00	< 2.8E+00	< 6.3E+00	< 2.5E+00	< 4.8E+00	< 2.9E+00	< 4.8E+00	< 1.2E+01	< 2.9E+00	< 2.6E+00	< 2.3E+01	< 6.6E+00
MW-174	11/30/2017	pCi/L	< 8.0E+00	< 8.3E+00	< 1.6E+01	< 7.2E+00	< 1.3E+01	< 8.6E+00	< 1.3E+01	< 1.5E+01	< 9.1E+00	< 9.0E+00	< 3.6E+01	< 1.0E+01
MW-174-DUP	03/16/2017	pCi/L	< 6.0E+00	< 5.0E+00	< 1.4E+01	< 5.4E+00	< 1.2E+01	< 7.2E+00	< 1.1E+01	< 1.5E+01	< 6.2E+00	< 6.9E+00	< 3.7E+01	< 1.1E+01
MW-178	03/15/2017	pCi/L	< 5.6E+00	< 5.2E+00	< 1.2E+01	< 5.1E+00	< 1.1E+01	< 5.6E+00	< 9.7E+00	< 1.5E+01	< 5.6E+00	< 6.1E+00	< 3.7E+01	< 1.3E+01
MW-178	05/17/2017	pCi/L	< 3.6E+00	< 3.8E+00	< 8.6E+00	< 3.6E+00	< 6.0E+00	< 4.1E+00	< 6.8E+00	< 1.3E+01	< 4.4E+00	< 4.0E+00	< 2.7E+01	< 1.1E+01
MW-178	09/06/2017	pCi/L	< 2.8E+00	< 2.8E+00	< 5.9E+00	< 3.2E+00	< 5.7E+00	< 3.2E+00	< 5.5E+00	< 8.8E+00	< 3.0E+00	< 2.8E+00	< 1.9E+01	< 5.3E+00
MW-178	11/29/2017	pCi/L	< 1.9E+00	< 2.3E+00	< 5.4E+00	< 2.1E+00	< 4.4E+00	< 2.3E+00	< 4.2E+00	< 1.2E+01	< 2.2E+00	< 2.0E+00	< 2.1E+01	< 6.5E+00
MW-179	03/15/2017	pCi/L	< 4.3E+00	< 4.9E+00	< 8.6E+00	< 4.6E+00	< 8.5E+00	< 5.2E+00	< 8.2E+00	< 1.3E+01	< 5.1E+00	< 4.8E+00	< 2.9E+01	< 1.0E+01
MW-179	05/17/2017	pCi/L	< 3.8E+00	< 4.5E+00	< 7.7E+00	< 4.3E+00	< 6.2E+00	< 4.0E+00	< 8.9E+00	< 1.4E+01	< 4.6E+00	< 3.9E+00	< 3.1E+01	< 1.1E+01
MW-179	09/06/2017	pCi/L	< 4.1E+00	< 4.4E+00	< 8.4E+00	< 3.8E+00	< 8.1E+00	< 4.2E+00	< 7.2E+00	< 1.2E+01	< 4.3E+00	< 4.1E+00	< 2.7E+01	< 7.9E+00
MW-179	11/29/2017	pCi/L	< 2.0E+00	< 2.3E+00	< 5.4E+00	< 2.0E+00	< 3.9E+00	< 2.4E+00	< 4.1E+00	< 1.3E+01	< 2.3E+00	< 2.1E+00	< 2.3E+01	< 6.7E+00
MW-18	05/18/2017	pCi/L	< 4.4E+00	< 4.5E+00	< 8.8E+00	< 4.1E+00	< 9.4E+00	< 5.0E+00	< 8.6E+00	< 1.4E+01	< 4.8E+00	< 4.8E+00	< 3.1E+01	< 7.4E+00
MW-180	03/16/2017	pCi/L	< 6.2E+00	< 7.2E+00	< 1.3E+01	< 6.1E+00	< 1.5E+01	< 7.0E+00	< 1.2E+01	< 1.2E+01	< 6.9E+00	< 6.7E+00	< 3.0E+01	< 7.9E+00
MW-180	05/17/2017	pCi/L	< 4.1E+00	< 4.3E+00	< 1.0E+01	< 4.0E+00	< 7.5E+00	< 4.8E+00	< 7.9E+00	< 1.2E+01	< 4.8E+00	< 4.3E+00	< 2.9E+01	< 1.0E+01
MW-180	09/06/2017	pCi/L	< 3.5E+00	< 3.7E+00	< 8.2E+00	< 2.8E+00	< 6.1E+00	< 3.7E+00	< 5.9E+00	< 1.1E+01	< 3.5E+00	< 3.6E+00	< 2.4E+01	< 7.2E+00

Station ID	Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
MW-180	11/30/2017	pCi/L	< 6.4E+00	< 6.4E+00	< 1.6E+01	< 6.8E+00	< 1.3E+01	< 7.0E+00	< 1.3E+01	< 1.4E+01	< 7.1E+00	< 7.4E+00	< 3.6E+01	< 1.3E+01
MW-182	03/15/2017	pCi/L	< 5.6E+00	< 5.3E+00	< 1.3E+01	< 5.7E+00	< 8.7E+00	< 6.5E+00	< 9.7E+00	< 1.5E+01	< 6.6E+00	< 5.6E+00	< 3.2E+01	< 9.2E+00
MW-182	05/17/2017	pCi/L	< 5.4E+00	< 5.9E+00	< 1.2E+01	< 5.5E+00	< 9.2E+00	< 5.4E+00	< 9.6E+00	< 1.4E+01	< 6.0E+00	< 5.6E+00	< 3.4E+01	< 1.3E+01
MW-182	09/06/2017	pCi/L	< 3.0E+00	< 3.7E+00	< 8.1E+00	< 2.9E+00	< 6.1E+00	< 4.0E+00	< 7.4E+00	< 1.3E+01	< 3.7E+00	< 3.7E+00	< 2.5E+01	< 8.9E+00
MW-182	11/30/2017	pCi/L	< 4.8E+00	< 4.4E+00	< 1.0E+01	< 4.4E+00	< 1.0E+01	< 4.8E+00	< 7.4E+00	< 1.2E+01	< 4.5E+00	< 5.1E+00	< 2.7E+01	< 8.4E+00
MW-185	03/15/2017	pCi/L	< 4.0E+00	< 5.2E+00	< 1.0E+01	< 5.5E+00	< 1.1E+01	< 4.2E+00	< 7.7E+00	< 1.2E+01	< 5.6E+00	< 4.5E+00	< 2.9E+01	< 7.7E+00
MW-185	05/16/2017	pCi/L	< 3.9E+00	< 4.3E+00	< 1.0E+01	< 4.6E+00	< 8.0E+00	< 4.8E+00	< 7.5E+00	< 1.5E+01	< 4.3E+00	< 4.3E+00	< 3.0E+01	< 1.0E+01
MW-185	09/06/2017	pCi/L	< 3.3E+00	< 3.5E+00	< 8.0E+00	< 3.5E+00	< 7.4E+00	< 3.8E+00	< 6.7E+00	< 1.3E+01	< 4.0E+00	< 3.8E+00	< 2.6E+01	< 8.0E+00
MW-185	11/29/2017	pCi/L	< 9.1E+00	< 8.6E+00	< 1.6E+01	< 8.0E+00	< 1.5E+01	< 9.5E+00	< 1.3E+01	< 1.4E+01	< 8.1E+00	< 7.8E+00	< 4.2E+01	< 1.5E+01
MW-185-DUP	03/15/2017	pCi/L	< 6.2E+00	< 6.2E+00	< 1.4E+01	< 5.1E+00	< 7.8E+00	< 5.9E+00	< 1.0E+01	< 1.5E+01	< 6.1E+00	< 6.1E+00	< 3.0E+01	< 1.0E+01
MW-185-DUP	09/06/2017	pCi/L	< 3.8E+00	< 3.8E+00	< 9.8E+00	< 4.4E+00	< 7.9E+00	< 4.3E+00	< 7.0E+00	< 1.4E+01	< 3.4E+00	< 4.5E+00	< 2.8E+01	< 8.7E+00
MW-185-DUP	11/29/2017	pCi/L	< 5.1E+00	< 7.2E+00	< 1.7E+01	< 9.4E+00	< 1.3E+01	< 7.5E+00	< 1.2E+01	< 1.4E+01	< 8.0E+00	< 8.6E+00	< 3.8E+01	< 9.4E+00
MW-186	03/15/2017	pCi/L	< 4.2E+00	< 5.5E+00	< 1.2E+01	< 5.7E+00	< 1.1E+01	< 5.8E+00	< 9.8E+00	< 1.4E+01	< 6.0E+00	< 5.7E+00	< 3.1E+01	< 1.1E+01
MW-186	05/17/2017	pCi/L	< 4.9E+00	< 5.3E+00	< 1.3E+01	< 6.2E+00	< 1.1E+01	< 6.0E+00	< 9.8E+00	< 1.5E+01	< 5.7E+00	< 5.0E+00	< 3.9E+01	< 1.1E+01
MW-186	09/06/2017	pCi/L	< 2.4E+00	< 3.1E+00	< 6.3E+00	< 2.4E+00	< 5.3E+00	< 3.1E+00	< 4.9E+00	< 1.3E+01	< 2.6E+00	< 2.6E+00	< 2.3E+01	< 7.9E+00
MW-186	11/29/2017	pCi/L	< 4.8E+00	< 5.4E+00	< 9.6E+00	< 4.4E+00	< 1.1E+01	< 6.1E+00	< 8.2E+00	< 1.3E+01	< 4.8E+00	< 5.3E+00	< 3.3E+01	< 9.5E+00
MW-187	03/15/2017	pCi/L	< 5.9E+00	< 5.9E+00	< 1.7E+01	< 5.2E+00	< 1.4E+01	< 6.8E+00	< 1.2E+01	< 1.4E+01	< 6.7E+00	< 6.3E+00	< 4.2E+01	< 1.3E+01
MW-187	05/17/2017	pCi/L	< 4.5E+00	< 4.8E+00	< 1.2E+01	< 5.1E+00	< 7.6E+00	< 4.3E+00	< 7.6E+00	< 1.4E+01	< 4.9E+00	< 4.7E+00	< 3.0E+01	< 1.0E+01
MW-187	09/06/2017	pCi/L	< 3.8E+00	< 4.3E+00	< 9.1E+00	< 4.2E+00	< 7.7E+00	< 4.2E+00	< 7.2E+00	< 1.2E+01	< 4.4E+00	< 4.2E+00	< 2.7E+01	< 9.4E+00
MW-187	11/29/2017	pCi/L	< 6.1E+00	< 5.1E+00	< 1.0E+01	< 4.3E+00	< 1.1E+01	< 5.1E+00	< 1.0E+01	< 1.5E+01	< 6.1E+00	< 5.6E+00	< 3.3E+01	< 9.5E+00
MW-188	03/16/2017	pCi/L	< 5.9E+00	< 6.7E+00	< 1.1E+01	< 6.3E+00	< 1.1E+01	< 5.3E+00	< 9.6E+00	< 1.4E+01	< 5.3E+00	< 6.3E+00	< 4.0E+01	< 1.2E+01
MW-188	05/17/2017	pCi/L	< 4.1E+00	< 3.8E+00	< 1.0E+01	< 4.7E+00	< 1.0E+01	< 4.9E+00	< 9.0E+00	< 1.5E+01	< 4.0E+00	< 4.7E+00	< 3.1E+01	< 1.0E+01
MW-188	09/06/2017	pCi/L	< 2.7E+00	< 3.1E+00	< 7.2E+00	< 2.9E+00	< 5.7E+00	< 3.4E+00	< 5.2E+00	< 1.5E+01	< 3.0E+00	< 2.8E+00	< 2.6E+01	< 8.1E+00
MW-188	11/30/2017	pCi/L	< 8.1E+00	< 8.1E+00	< 1.6E+01	< 7.0E+00	< 1.2E+01	< 8.2E+00	< 1.5E+01	< 1.5E+01	< 8.8E+00	< 7.7E+00	< 3.8E+01	< 1.5E+01
MW-20	11/30/2017	pCi/L	< 6.4E+00	< 6.6E+00	< 1.4E+01	< 6.3E+00	< 1.6E+01	< 6.3E+00	< 1.4E+01	< 1.5E+01	< 7.6E+00	< 6.7E+00	< 3.3E+01	< 1.1E+01
PZ-01	03/14/2017	pCi/L	< 3.6E+00	< 4.8E+00	< 1.1E+01	< 4.1E+00	< 8.8E+00	< 5.6E+00	< 9.6E+00	< 1.2E+01	< 4.3E+00	< 5.5E+00	< 2.8E+01	< 1.0E+01
PZ-01	05/16/2017	pCi/L	< 3.4E+00	< 3.4E+00	< 7.9E+00	< 3.8E+00	< 7.4E+00	< 4.0E+00	< 6.3E+00	< 1.4E+01	< 3.4E+00	< 3.9E+00	< 2.7E+01	< 8.4E+00
PZ-01	09/05/2017	pCi/L	< 3.2E+00	< 3.8E+00	< 9.0E+00	< 3.5E+00	< 6.5E+00	< 4.0E+00	< 6.7E+00	< 1.1E+01	< 3.7E+00	< 3.6E+00	< 2.8E+01	< 8.4E+00
PZ-01	11/29/2017	pCi/L	< 2.1E+00	< 2.3E+00	< 5.9E+00	< 2.1E+00	< 4.4E+00	< 2.5E+00	< 4.0E+00	< 1.3E+01	< 2.3E+00	< 2.1E+00	< 2.2E+01	< 7.4E+00
PZ-02	05/17/2017	pCi/L	< 3.5E+00	< 4.3E+00	< 9.4E+00	< 4.0E+00	< 1.0E+01	< 5.1E+00	< 8.9E+00	< 1.3E+01	< 4.6E+00	< 4.4E+00	< 2.6E+01	< 9.0E+00
PZ-03	03/15/2017	pCi/L	< 6.6E+00	< 5.0E+00	< 1.2E+01	< 5.4E+00	< 8.7E+00	< 5.5E+00	< 9.9E+00	< 1.3E+01	< 5.5E+00	< 4.4E+00	< 3.3E+01	< 1.1E+01
PZ-03	05/16/2017	pCi/L	< 3.3E+00	< 4.4E+00	< 8.9E+00	< 4.0E+00	< 8.0E+00	< 3.6E+00	< 8.7E+00	< 1.4E+01	< 4.5E+00	< 4.4E+00	< 2.8E+01	< 9.8E+00
PZ-03	09/06/2017	pCi/L	< 3.4E+00	< 4.0E+00	< 9.2E+00	< 3.8E+00	< 7.7E+00	< 4.7E+00	< 6.8E+00	< 1.3E+01	< 4.2E+00	< 4.6E+00	< 2.6E+01	< 8.3E+00
PZ-03	11/29/2017	pCi/L	< 4.9E+00	< 5.8E+00	< 1.4E+01	< 6.1E+00	< 1.1E+01	< 7.4E+00	< 1.1E+01	< 1.4E+01	< 6.6E+00	< 5.5E+00	< 3.4E+01	< 1.3E+01
SW-101	03/16/2017	pCi/L	< 5.7E+00	< 5.9E+00	< 1.6E+01	< 6.2E+00	< 1.4E+01	< 6.6E+00	< 1.2E+01	< 1.5E+01	< 7.8E+00	< 8.3E+00	< 4.4E+01	< 1.1E+01
SW-101	05/17/2017	pCi/L	< 3.9E+00	< 4.4E+00	< 9.1E+00	< 4.2E+00	< 8.0E+00	< 4.6E+00	< 7.5E+00	< 1.3E+01	< 4.7E+00	< 4.4E+00	< 2.8E+01	< 8.6E+00
SW-101	09/07/2017	pCi/L	< 3.6E+00	< 3.8E+00	< 7.7E+00	< 3.1E+00	< 7.9E+00	< 3.9E+00	< 6.5E+00	< 1.0E+01	< 3.7E+00	< 3.7E+00	< 2.5E+01	< 8.0E+00

Station ID	Date	Units	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
SW-101	11/30/2017	pCi/L	< 3.6E+00	< 4.3E+00	< 8.2E+00	< 3.3E+00	< 8.7E+00	< 4.6E+00	< 7.3E+00	< 1.1E+01	< 4.7E+00	< 4.3E+00	< 2.6E+01	< 7.9E+00
SW-102	03/16/2017	pCi/L	< 7.4E+00	< 6.6E+00	< 1.5E+01	< 6.6E+00	< 1.6E+01	< 7.4E+00	< 1.2E+01	< 1.4E+01	< 7.4E+00	< 7.9E+00	< 3.9E+01	< 9.2E+00
SW-102	05/17/2017	pCi/L	< 2.6E+00	< 3.0E+00	< 6.6E+00	< 2.9E+00	< 6.0E+00	< 3.2E+00	< 5.1E+00	< 8.9E+00	< 3.1E+00	< 3.0E+00	< 1.9E+01	< 5.8E+00
SW-102	09/07/2017	pCi/L	< 4.1E+00	< 5.0E+00	< 9.8E+00	< 5.0E+00	< 1.0E+01	< 4.7E+00	< 7.5E+00	< 1.5E+01	< 5.4E+00	< 5.0E+00	< 3.8E+01	< 1.2E+01
SW-103	03/16/2017	pCi/L	< 5.3E+00	< 5.6E+00	< 1.2E+01	< 6.0E+00	< 1.1E+01	< 5.9E+00	< 9.7E+00	< 1.5E+01	< 6.0E+00	< 5.5E+00	< 4.0E+01	< 1.3E+01
SW-103	05/17/2017	pCi/L	< 3.7E+00	< 4.3E+00	< 8.6E+00	< 4.4E+00	< 7.7E+00	< 5.0E+00	< 8.0E+00	< 1.3E+01	< 4.8E+00	< 4.3E+00	< 2.7E+01	< 9.6E+00
SW-103	09/07/2017	pCi/L	< 3.7E+00	< 4.6E+00	< 7.2E+00	< 4.2E+00	< 7.0E+00	< 4.4E+00	< 6.3E+00	< 1.1E+01	< 3.6E+00	< 3.6E+00	< 2.4E+01	< 8.5E+00
SW-103	11/30/2017	pCi/L	< 3.8E+00	< 4.1E+00	< 9.0E+00	< 4.1E+00	< 8.5E+00	< 5.1E+00	< 7.7E+00	< 9.6E+00	< 4.6E+00	< 4.4E+00	< 2.5E+01	< 7.5E+00
SW-104	03/16/2017	pCi/L	< 4.8E+00	< 5.1E+00	< 1.2E+01	< 4.9E+00	< 1.1E+01	< 5.4E+00	< 9.3E+00	< 1.5E+01	< 5.7E+00	< 5.4E+00	< 3.1E+01	< 8.3E+00
SW-104	05/18/2017	pCi/L	< 4.8E+00	< 4.4E+00	< 1.1E+01	< 5.5E+00	< 9.0E+00	< 5.9E+00	< 7.5E+00	< 1.3E+01	< 5.6E+00	< 4.7E+00	< 2.9E+01	< 8.3E+00
SW-104	09/07/2017	pCi/L	< 3.1E+00	< 3.1E+00	< 5.7E+00	< 3.5E+00	< 5.9E+00	< 3.4E+00	< 5.9E+00	< 9.7E+00	< 3.5E+00	< 3.2E+00	< 2.1E+01	< 8.1E+00
SW-104	11/30/2017	pCi/L	< 4.2E+00	< 4.8E+00	< 1.2E+01	< 4.3E+00	< 8.6E+00	< 4.9E+00	< 7.9E+00	< 1.0E+01	< 6.5E+00	< 5.7E+00	< 3.1E+01	< 1.3E+01
T-14	05/18/2017	pCi/L	< 4.8E+00	< 4.6E+00	< 1.1E+01	< 4.7E+00	< 9.6E+00	< 4.4E+00	< 8.7E+00	< 1.2E+01	< 5.3E+00	< 4.9E+00	< 3.4E+01	< 8.9E+00

TABLE OF CHANGES

LETTER DESIGNATION TRACKING NUMBER	DETAILED DESCRIPTION OF CHANGES

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE NO.</u>
1 PURPOSE/OBJECTIVES.....	5
2 REFERENCES	7
3 DEFINITIONS.....	8
4 RESPONSIBILITIES.....	9
5 PRECAUTIONS AND LIMITATIONS	10
6 PREREQUISITES	10
7 LIQUID EFFLUENT METHODOLOGY	10
7.1 River Bend Site Description.....	10
7.2 Compliance with 10 CFR 20 (Liquids).....	11
7.3 Determination of Setpoints for Radioactive Liquid Effluent Monitors.....	13
7.4 Determining the Dose for Radioactive Liquid Effluents	16
7.5 Projecting Dose for Radioactive Liquid Effluents.....	17
8 GASEOUS EFFLUENT METHODOLOGY	19
8.1 Introduction	19
8.2 Data Requirements for Gaseous Effluents	19
8.3 Instantaneous Release Rate and Setpoint Determination.....	19
8.4 Cumulative Dose Determination for Radioactive Gaseous Effluents.....	29
8.5 Dose Projection – Determination of Need to Operate Ventilation Exhaust Treatment System	36
9 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM	38
10 40CFR190 CONSIDERATIONS	38
10.1 Compliance with 40CFR190	38
10.2 Calculations Evaluating Conformance with 40CFR190	38
10.3 Calculations of Total Body Dose.....	39
10.4 Thyroid Doses.....	40
10.5 Organ Dose (other than thyroid and skin).....	41
10.6 Skin Dose	41
11 INTERLABORATORY COMPARISON STUDIES.....	42
11.1 Requirement	42
11.2 Program	43

INFORMATION USE

ATTACHMENT 1 - TABLE 4.1 - RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM.....44

ATTACHMENT 2 - ECL VALUES49

ATTACHMENT 3 - TABLE B-1: LIQUID ENVIRONMENTAL DOSE TRANSFER FACTORS50

ATTACHMENT 4 - TABLE C-1: NOBLE GAS DOSE TRANSFER FACTORS53

ATTACHMENT 5 - (RESERVED)54

ATTACHMENT 6 - X/Q AND D/Q VALUES FOR RESTRICTED AREA BOUNDARY.....55

ATTACHMENT 7 - TABLE E-1: ANNUAL AVERAGE CHI/Q VALUES FOR RESTRICTED AREA BOUNDARY59

ATTACHMENT 8 - TABLE E-2: ANNUAL AVERAGE D/Q VALUES FOR RESTRICTED AREA BOUNDARY60

ATTACHMENT 9 - TABLE F-1: ATMOSPHERIC DISPERSION AND DEPOSITION RATES FOR THE MAXIMUM INDIVIDUAL DOSE CALCULATIONS61

ATTACHMENT 10 - TABLE G-1: DOSE FACTOR CALCULATION PARAMETERS.....62

ATTACHMENT 11 - TABLE G-2: STABLE ELEMENT TRANSFER FACTORS63

ATTACHMENT 12 - TABLE G-3: BIOACCUMULATION FACTORS67

ATTACHMENT 13 - TABLE G-4: INDIVIDUAL USAGE FACTORS.....71

ATTACHMENT 14 - TABLE H-1: ASSUMPTIONS/PARAMETERS FOR DOSES TO A MEMBER OF THE PUBLIC INSDE SITE BOUNDARY72

ATTACHMENT 15 - TABLE I-1: DOSE FACTOR TABLE: P (I) - ADULT, INHALATION73

ATTACHMENT 16 - TABLE I-2: DOSE FACTOR TABLE: P (I) - TEEN, INHALATION76

ATTACHMENT 17 - TABLE I-3: DOSE FACTOR TABLE: P (I) - CHILD, INHALATION79

ATTACHMENT 18 - TABLE I-4: DOSE FACTOR TABLE: P (I) - INFANT, INHALATION82

ATTACHMENT 19 - TABLE I-5: DOSE FACTOR TABLE: R (I) - ALL, GR. PLANE.....85

ATTACHMENT 20 - TABLE I-6: DOSE FACTOR TABLE: R(I) - ADULT, COW MILK88

ATTACHMENT 21 - TABLE I-7: DOSE FACTOR TABLE: R(I) - TEEN, COW MILK91

ATTACHMENT 22 - TABLE I-8: DOSE FACTOR TABLE: R (I) - CHILD, COW MILK94

ATTACHMENT 23 - TABLE I-9: DOSE FACTOR TABLE: R (I) - INFANT, COW MILK97

INFORMATION USE

ATTACHMENT 24 - TABLE I-10: DOSE FACTOR TABLE: R (I) - ADULT, GOAT MILK 100

ATTACHMENT 25 - TABLE I-11: DOSE FACTOR TABLE: R (I) - TEEN, GOAT MILK 103

ATTACHMENT 26 - TABLE I-12: DOSE FACTOR TABLE: R(I) - CHILD, GOAT MILK 106

ATTACHMENT 27 - TABLE I-13: DOSE FACTOR TABLE: R (I) - INFANT, GOAT MILK 109

ATTACHMENT 28 - TABLE I-14: DOSE FACTOR TABLE: R (I) - ADULT, MEAT 112

ATTACHMENT 29 - TABLE I-15: DOSE FACTOR TABLE: R (I) - TEEN, MEAT 115

ATTACHMENT 30 - TABLE I-16: DOSE FACTOR TABLE: R (I) - CHILD, MEAT 118

ATTACHMENT 31 - TABLE I-17: DOSE FACTOR TABLE: R (I) - ADULT, VEGETATION..... 121

ATTACHMENT 32 - TABLE I-18: DOSE FACTOR TABLE: R (I) - TEEN, VEGETATION..... 124

ATTACHMENT 33 - TABLE I-19: DOSE FACTOR TABLE: R (I) - CHILD, VEGETATION..... 127

ATTACHMENT 34 - FIGURE 1: RESTRICTED AREA AND NEAR-FIELD ENVIRONMENTAL MONITORING LOCATIONS 130

ATTACHMENT 35 - FIGURE 2: SCHEMATIC OF GASEOUS RADWASTE SYSTEM 131

ATTACHMENT 36 - FIGURE 3: EFFLUENT RELEASE POINTS..... 132

ATTACHMENT 37 - FIGURE 4: SCHEMATIC OF LIQUID RADWASTE SYSTEM 133

ATTACHMENT 38 - FIGURE 5: FAR-FIELD RADIOLOGICAL ENVIRONMENTAL MONITORING LOCATIONS..... 134

ATTACHMENT 39 - FIGURE 6: SCHEMATIC OF THE SOLID WASTE TREATMENT SYSTEM..... 135

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 accurate. 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.

INFORMATION USE

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 NUREG 0133; Guidance Manual for Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants; October, 1978
- 2.2 REG. GUIDE 1.109, Rev. 1, October, 1977; Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Compliance with 10 CFR Part 50, Appendix I
- 2.3 River Bend Environmental Report, OLS
- 2.4 River Bend Environmental Report, CPS
- 2.5 River Bend Station USAR
- 2.6 River Bend Technical Specifications
- 2.7 River Bend Technical Requirements Manual
- 2.8 River Bend Station Radiological Environmental Operating Report for 1985
- 2.9 REG. GUIDE 1.111; Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water - Cooled Reactors
- 2.10 U.S. Code of Federal Regulations; 10CFR20
- 2.11 U.S. Code Of Federal Regulations, 10CFR50
- 2.12 U.S. Code of Federal Regulations, 40CFR190

INFORMATION USE

- 2.13 NUREG 0543, Methods for Demonstrating LWR Compliance with the EPA Uranium Fuel Cycle Standard (40 CFR Part 190)
- 2.14 NUREG/CR-2919, XOQDOQ: Computer Program for the Meteorological Evaluation of Routine Effluent Releases at Nuclear Power Stations
- 2.15 NUREG/CR-3332, ORNL 5968, USNRC Radiological Assessment, A Textbook on Environmental Dose Analysis (1983)

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 Radiation Protection Manager (RPM), 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 Radiation Protection Manager, or designee, reviews the ODCM and Annual Radiological Environmental Operating Report prior to its submission for approval by the General Manager – Plant Operations. The Radiation Protection Manager, 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.)
- 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.
- 4.4 The Senior Manager – Production is responsible for developing, maintaining, and adjusting a station-wide schedule for performance of Surveillance Test Procedures.
- 4.5 The Manager – 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 Radiation Protection Manager of any REMP result which indicates that a reporting level has been exceeded.
- 4.6 The Senior Environmental Specialist has responsibility for supervising the day to day performance and documentation of Surveillances of the ODCM.
- 4.7 The Environmental Specialist has responsibility for the implementation of surveillances and documentation of the ODCM. This responsibility includes timely notification of the Manager – Chemistry of any problem which impacts, or might impact, fulfillment of the Radiological Effluent Technical Requirements and the ODCM.

03/17

03/17

5 **PRECAUTIONS AND LIMITATIONS**

- 5.1 Licensee-initiated changes to the ODCM shall be made per Reference 2.6 § 5.5.1.
- 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 Protection 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.

| 03/17

INFORMATION USE

7.2 Compliance with 10 CFR 20 (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 ten times 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} $\mu\text{Ci/ml}$ 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 TLCO 3.11.1.1 limits will be determined with the following equation:

NOTE

f₁ shall be administratively controlled to maintain F_L to ≤ 0.3 for most discharges, as identified. If $\sum \frac{C_i}{10ECL_i} \leq 0.3$ or if the calculated f₁ > 75 GPM, f₁=75 GPM. For F_L > 0.3, other administrative controls should be implemented to ensure discharges shall not exceed Technical Requirement limits.

$$F_L = \frac{f_1}{f_1 + f_2} \sum_{i=1}^n \frac{C_i}{(10ECL)_i} \quad 7.2.2.1-1$$

$$\text{Where: } f_1 \leq \frac{660}{\sum \frac{C_i}{(10ECL)_i} - 0.3}$$

F_L = The fraction of Technical Requirement limits resulting from the release source being discharged

f₁ = The undiluted release rate at monitor location, in gpm

f₂ = The cooling tower blowdown release rate, in gpm

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

(10ECL)_i = Ten times the Effluent Concentration Limit of nuclide (i) from Attachment 2, in μCi/ml

As long as F_L is less than 1.0, the concentration of the tank is within compliance with TLCO 3.11.1.1 limits.

2. Simplified Approach

For purposes of simplifying the calculations, the value of 1×10^{-8} $\mu\text{Ci/ml}$ (unidentified 10CFR20 ECL value) could be substituted for $(\text{ECL})_i$ 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 ($C\text{-Total} \times f_1/(f_1 + f_2)$) is less than 1×10^{-8} $\mu\text{Ci/ml}$, 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 ten times 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 (101 to 107 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 TLCO 3.11.1.1 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

INFORMATION USE

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

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 10 ECL at the point of discharge into the Unrestricted Area.

03/17

NOTE

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

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

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

Where:

S = the radiation monitor setpoint (cpm or $\mu\text{Ci/ml}$)

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

F_L = the fraction of TLCO 3.11.1.1 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 $\mu\text{Ci/ml}$, or $\mu\text{Ci/ml}$ per $\mu\text{Ci/ml}$)

M = Setpoint Adjustment Factor - error associated with monitor accuracy

INFORMATION USE

7.3.3. Zero and Very Low Gamma Activity

1. For batches with no gamma activity, the requirements of TR 3.11.1.1 are automatically met for those isotopes. However, with no gamma activity or very low gamma activity, the monitor set point is based primarily on beta emitters, which RMS-RE107 does not respond to and the ODCM set point calculation in equation 7.3.2.1-1 will not work.
2. A default gamma concentration based on LLD values for the isotopes in TR Table 3.11.1.1 and listed in Attachment 2 will be administratively determined and controlled. For this approach, the g Factor should initially be set to 1.0 and adjusted as necessary to allow liquid discharges. This methodology also assumes that H-3 will not exceed 100 times the ECL fraction and that other beta emitters will not exceed 10 times the ECL fraction. The discharges using this method will still meet the 10CFR20 limits.

03/17

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.

INFORMATION USE

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.

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

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

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 $\mu\text{Ci/ml}$).

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

INFORMATION USE

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 calculation methodology shall be performed at least once per 31 day period:

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

Where:

$D_{TOTAL\tau}$ = 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.

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/yr to the total body and less than or equal to 3000 mrem/yr 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/yr 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:

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

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

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 $\mu\text{Ci}/\text{m}^3$ Attachment 4

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

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

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):

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

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

where:

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

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

(Attachment 9 contains the maximum $(\overline{X/Q})$ 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:

$$DR_{I\&8DP\tau} = \sum_{i=1}^i P_i (\overline{X/Q}) (\dot{Q}_i) \quad 8.3.1.2.2-1$$

where:

$DR_{I\&8DP\tau}$ = 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), ($\mu\text{Ci}/\text{sec}$).

$(\overline{X/Q})$ = 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 $\mu\text{Ci}/\text{m}^3$). 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:

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

where:

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

$(\overline{X/Q})$ = 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

K_i = The total whole body dose factor due to gamma emissions from noble gas radionuclide (i) mrem/yr per $\mu\text{Ci}/\text{m}^3$ 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:

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

where:

INFORMATION USE

Q_s = the maximum acceptable release rate of all gas radionuclides in the gaseous effluent [$\mu\text{Ci}/\text{sec}$]

$L_i + 1.1M_i$ = Calculated total skin dose factor due to emission from noble gas radionuclide (i) $\text{mrem}/\text{yr}/\mu\text{Ci}/\text{m}^3$ from Attachment 4.

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 [$\mu\text{Ci}/\text{cc}$]):

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

where:

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

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 2.6)

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 QG-A utilizing one of the following methods:

$$Q_{G-A} = \frac{(4)(5)}{\left(\frac{X}{Q}\right) \sum_{i=1}^n M_i f_i} \quad 8.3.2.2-4$$

where:

Q_{G-A} = The maximum acceptable total release rate of all noble gas radionuclides in the gaseous effluent [$\mu\text{Ci}/\text{sec}$]

$(\overline{X/Q})$ = 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 mrad/quarter gamma air dose limit at the unrestricted area boundary

M_i = The gamma air dose factor for radioactive noble gas nuclide (i) in $\text{mrad}\cdot\text{m}^3/\mu\text{Ci}\cdot\text{yr}$, Attachment 4.

f_i = The fractional abundance of noble gas radionuclide i

4 = Number of Quarters Per Year

Step 2. Determine QB-A utilizing one of following methods:

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

Where:

Q_{B-A} = maximum acceptable total release rate of all noble gas radionuclides in the gaseous effluents ($\mu\text{Ci}/\text{sec}$)

$(\overline{X/Q})$ = 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 [$\mu\text{Ci/cc}$]):

$$C_m = \frac{(2.12 \times 10^{-3})Q}{F} \quad 8.3.2.2-6$$

Where:

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

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

03/17

8.4.1. Noble Gases – 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:

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

AND

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

03/17

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:

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

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

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-m³/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/m³), Attachment 9.

Q_i = The quantity of μCi of nuclide (i) released during the period of interest

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

N_i = The beta air dose factor for radioactive noble gas nuclide (i) in mrad-m³/μCi-yr (Attachment 4), Table C-1

8.4.2. Total Body and Skin Dose

1. Requirements

1. 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.
2. 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 8.4.3. Cumulative total body and skin doses from noble gas releases are determined in accordance with Section 8.4.2.2.

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:

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

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

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 $\mu\text{Ci}/\text{m}^3$) 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-site 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 $\mu\text{Ci}/\text{m}^3$) from Attachment 4, Table C-1

1.1 = Average ratio of tissue to air energy absorption coefficients

S_F = attenuation factor accounting for shielding provided by residential structures for maximally exposed individual (default = 1.0)

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

1. Requirements

1. 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 $T_{1/2} > 8$ days in gaseous effluents released to areas at and beyond the site boundary shall be limited to the following:

a During any calendar quarter: less than or equal to 7.5 mrem to any organ;

AND

b 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.

03/17

2. 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

1. 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 $(\overline{D/Q})$, must be used for cow milk, goat milk, meat and vegetation pathway calculation.

Inhalation Pathways:

$$D_{I\&8DP\tau} = (3.17 \times 10^{-8}) (F_o) \sum_{i=1}^n (P_{ir}) (\overline{X/Q}) (Q_i) \quad 8.4.1.3-1$$

Ground Plane Pathway:

$$D_{I\&8DP\tau} = (3.17 \times 10^{-8}) (F_o) \sum_{i=1}^n (R_{ir}) (\overline{D/Q}) (Q_i) \quad 8.4.1.3-2$$

Contaminated Forage/Cow/Milk Pathway:

$$D_{I\&8DP\tau} = (3.17 \times 10^{-8}) (F_o) \sum_{i=1}^n (R_{ir}) (\overline{D/Q}) (Q_i) \quad 8.4.1.3-3$$

Contaminated Forage/Goat/Milk Pathway:

$$D_{I\&8DP\tau} = (3.17 \times 10^{-8}) (F_O) \sum_{i=1}^n (R_{i\tau}) (\overline{D/Q}) (Q_i) \quad 8.4.1.3-4$$

Contaminated Forage/Meats:

$$D_{I\&8DP\tau} = (3.17 \times 10^{-8}) (F_O) \sum_{i=1}^n (R_{i\tau}) (\overline{D/Q}) (Q_i) \quad 8.4.1.3-5$$

Fresh Fruits and Vegetables:

$$D_{I\&8DP\tau} = (3.17 \times 10^{-8}) (F_O) \sum_{i=1}^n (R_{i\tau}) (\overline{D/Q}) (Q_i) \quad 8.4.1.3-6$$

Total Dose:

$$D_{\tau} = \sum_{z=1}^n D_{I\&8DP\tau} \quad 8.4.1.3-7$$

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 $\mu\text{Ci}/\text{m}^3$

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

R_{it} = 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/m³ was used for calculation. (See Attachment 15 through Attachment 33) The units are:

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

or

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

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

$(\overline{X/Q})$ = The highest calculated annual average relative dispersion factor for an area at or beyond the unrestricted area boundary for all sectors (sec/m³), Attachment 9.

3.17×10^{-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:

$$G_{PD} = \frac{\sum D_r}{X_D} * 31 + D_{PA} \quad 8.5.2-1$$

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

$D\tau$ = 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 8.4.3).

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 2.3 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.

INFORMATION USE

- 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.

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.

INFORMATION USE

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 for the maximally exposed MEMBER OF THE PUBLIC in the limiting sector.

03/17

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 Doses

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

INFORMATION USE

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 2.8). 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:

INFORMATION USE

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 8.4.2.2 for the maximally exposed MEMBER OF THE PUBLIC in the limiting sector(s).

03/17

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.

INFORMATION USE

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.

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 \pm 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.

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	<p>Samples from 6 locations:</p> <p>AP1. RBS site; 0.9 km WNW.</p> <p>AQS2. St. Francis Substation on US Hwy. (Bus.) 61 in St. Francisville; 5.8 km NW (Community Location).</p> <p>AGC. Entergy Service Center compound in Zachary; 17 km SE (Control)</p> <p>AN1. RBS site Hwy 965; 0.4 km south of Activity Center; 0.9 km W.</p>	<p>Continuous air sampler with filter collection every two weeks, or as required by dust loading, whichever is more frequent.</p>	<p>Charcoal cartridge: analysis every two weeks for I-131. Particulate sampler: gross beta activity following filter changes every two weeks.</p>
2. Direct Radiation	<p>Measurements from 24 locations:</p> <p>INDICATOR STATIONS</p> <p>TA1. River Bend Training Center; 1.7 km N.</p> <p>TB1. Utility pole near River Bend Station cooling tower yard area; 0.5 km NNE.</p> <p>TC1. Stub pole at Jct. US Hwy. 61 and Old Highway 61; 1.7 km NE.</p> <p>TD1. Stub pole along WF7, 150m S of Jct. WF7 and US Hwy. 61; 1.6 km ENE.</p> <p>TE1. Stub pole along WF7, 1 km S of Jct. WF7 and US Hwy. 61; 1.3 km E.</p>	<p>Thermoluminescence dosimeters (TLDs); deployment/retrieval quarterly.</p>	<p>mR exposure quarterly.</p>

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
	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.		
	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.		

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
	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 Commerce Street; 4 km NW (Special)		
	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 Greenbrair 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)		

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
4. Ingestion ⁽²⁾	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.		
	SHORELINE SEDIMENT		
	SEDD. Mississippi River downstream from plant liquid discharge outfall, near paper mill. (7.75 km, S)	Annual grab	Gamma isotopic analysis annually.
	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)		

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
FOOD PRODUCTS			
	GN1. One sample of leafy vegetation. 0.9 km. W. (Special)	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).		

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 (uCi/ml)			Effluent Concentration Limit (uCi/ml)			Effluent Concentration Limit (uCi/ml)		
Nuclide	Air	Water	Nuclide	Air	Water	Nuclide	Air	Water
H-3	1.00E-07	1.00E-03	RH-105	8.00E-09	5.00E-05	AR-41	1.00E-08	0.00E+00
BE-7	3.00E-08	6.00E-04	RU-103	9.00E-10	3.00E-05	KR-83M	5.00E-05	0.00E+00
C-14	3.00E-09	3.00E-05	RU-105	2.00E-08	7.00E-05	KR-85M	1.00E-07	0.00E+00
NA-24	7.00E-09	5.00E-05	RU-106	2.00E-11	3.00E-06	KR-85	7.00E-07	0.00E+00
P-32	5.00E-10	9.00E-06	AG-110M	1.00E-10	6.00E-06	KR-87	2.00E-08	0.00E+00
SC-46	3.00E-10	1.00E-05	CD-109	7.00E-11	6.00E-06	KR-88	9.00E-09	0.00E+00
CR-51	3.00E-08	5.00E-04	CD-113M	5.00E-12	5.00E-07	KR-89	1.00E-09	0.00E+00
MN-54*	1.00E-09	3.00E-05	SN-113	8.00E-10	3.00E-05	KR-90	1.00E-09	0.00E+00
MN-56	2.00E-08	7.00E-05	SN-117M	2.00E-09	3.00E-05	XE-131M	2.00E-06	0.00E+00
FE-55	3.00E-09	1.00E-04	SB-122	2.00E-09	1.00E-05	XE-133M	6.00E-07	0.00E+00
FE-59*	5.00E-10	1.00E-05	SB-124	3.00E-10	7.00E-06	XE-133	5.00E-07	0.00E+00
CO-56	3.00E-10	6.00E-06	SB-125	7.00E-10	3.00E-05	XE-135M	4.00E-08	0.00E+00
CO-57	9.00E-10	6.00E-05	SB-126	7.00E-10	7.00E-06	XE-135	7.00E-08	0.00E+00
CO-58*	1.00E-09	2.00E-05	SB-127	1.00E-09	1.00E-05	XE-137	1.00E-09	0.00E+00
CO-60*	5.00E-11	3.00E-06	TE-127M	4.00E-10	9.00E-06	XE-138	2.00E-08	0.00E+00
NI-63	1.00E-09	1.00E-04	TE-127	2.00E-08	1.00E-04	G-APLHA	1.00E-15	2.00E-09
NI-65	2.00E-08	1.00E-04	TE-129M	3.00E-10	7.00E-06	G-BETA	1.00E-12	1.00E-08
CU-64	3.00E-08	2.00E-04	TE-129	9.00E-08	4.00E-04	OTHER	0.00E+00	0.00E+00
ZN-65	4.00E-10	5.00E-06	TE-131M	1.00E-09	8.00E-06			
ZN-69	2.00E-07	8.00E-04	TE-131	2.00E-08	8.00E-05			
ZN-69M	1.00E-08	6.00E-05	TE-132	9.00E-10	9.00E-06			
SE-75	8.00E-10	7.00E-06	I-130	3.00E-09	2.00E-05			
AS-76	2.00E-09	1.00E-05	I-131*	2.00E-10	1.00E-06			
BR-82	5.00E-09	4.00E-05	I-132	2.00E-08	1.00E-04			
BR-83	9.00E-08	9.00E-04	I-133	1.00E-09	7.00E-06			
BR-84	8.00E-08	4.00E-04	I-134	6.00E-08	4.00E-04			
RB-86	1.00E-09	7.00E-06	I-135	6.00E-09	3.00E-05			
RB-88	9.00E-08	4.00E-04	CS-134*	2.00E-10	9.00E-07			
RB-89	2.00E-07	9.00E-04	CS-135	2.00E-09	1.00E-05			
SR-85	2.00E-09	4.00E-05	CS-136	9.00E-10	6.00E-06			
SR-89	2.00E-10	8.00E-06	CS-137*	2.00E-10	1.00E-06			
SR-90	6.00E-12	5.00E-07	CS-138	8.00E-08	4.00E-04			
SR-91	5.00E-09	2.00E-05	BA-133	9.00E-10	2.00E-05			
SR-92	9.00E-09	4.00E-05	BA-139	4.00E-08	2.00E-04			
Y-88	3.00E-10	1.00E-05	BA-140	2.00E-09	8.00E-06			
Y-90	9.00E-10	7.00E-06	BA-141	1.00E-07	3.00E-04			
Y-91M	2.00E-07	2.00E-03	BA-142	2.00E-07	7.00E-04			
Y-91	2.00E-10	8.00E-06	LA-140	2.00E-09	9.00E-06			
Y-92	1.00E-08	4.00E-05	LA-142	3.00E-08	1.00E-04			
Y-93	3.00E-09	2.00E-05	CE-139	9.00E-10	7.00E-05			
ZR-95	4.00E-10	2.00E-05	CE-141*	8.00E-10	3.00E-05			
ZR-97	2.00E-09	9.00E-06	CE-143	2.00E-09	2.00E-05			
NB-94	2.00E-11	1.00E-05	CE-144*	2.00E-11	3.00E-06			
NB-95	2.00E-09	3.00E-05	PR-143	9.00E-10	2.00E-05			
NB-97	1.00E-07	3.00E-04	PR-144	2.00E-07	6.00E-04			
MO-90	6.00E-09	3.00E-05	ND-147	1.00E-09	2.00E-05			
MO-99*	2.00E-09	2.00E-05	EU-152	3.00E-11	1.00E-05			
TC-99M	2.00E-07	1.00E-03	W-187	1.00E-08	3.00E-05			
TC-101	5.00E-07	2.00E-03	NP-239	3.00E-09	2.00E-05			

05/11

* - Isotopes used for no gamma activity tanks based on TR Table 3.11.1.1-1

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	9.21E+03	9.21E+03	9.21E+03	9.21E+03	9.21E+03	9.21E+03	0.00E+00
NA-22	6.16E+03	6.16E+03	6.16E+03	6.16E+03	6.16E+03	6.16E+03	6.16E+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
CA-41	5.26E+04	0.00E+00	5.69E+03	0.00E+00	0.00E+00	0.00E+00	5.23E+01	0.00E+00
SC-46	3.17E+00	6.16E+00	1.79E+00	0.00E+00	5.75E+00	0.00E+00	3.00E+04	0.00E+00
CR-51	0.00E+00	0.00E+00	4.31E+00	2.58E+00	9.50E-01	5.72E+00	1.08E+03	0.00E+00
MN-54	0.00E+00	2.39E+05	4.56E+04	0.00E+00	7.12E+04	0.00E+00	7.33E+05	0.00E+00
FE-55	5.68E+03	3.93E+03	9.15E+02	0.00E+00	0.00E+00	2.19E+03	2.25E+03	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
CO-57	0.00E+00	4.10E+01	6.81E+01	0.00E+00	0.00E+00	0.00E+00	1.04E+03	0.00E+00
CO-58	0.00E+00	1.74E+02	3.91E+02	0.00E+00	0.00E+00	0.00E+00	3.53E+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-60	0.00E+00	5.01E+02	1.10E+03	0.00E+00	0.00E+00	0.00E+00	9.41E+03	0.00E+00
NI-59	2.90E+03	9.94E+02	4.84E+02	0.00E+00	0.00E+00	0.00E+00	2.05E+02	0.00E+00
NI-63	3.86E+04	2.67E+03	1.29E+03	0.00E+00	0.00E+00	0.00E+00	5.58E+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
NI-65	1.57E+02	2.04E+01	9.29E+00	0.00E+00	0.00E+00	0.00E+00	5.16E+02	0.00E+00
ZN-65	5.08E+04	1.62E+05	7.31E+04	0.00E+00	1.08E+05	0.00E+00	1.02E+05	0.00E+00
ZN-69M	1.79E+03	4.28E+03	3.92E+02	0.00E+00	2.59E+03	0.00E+00	2.62E+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
SE-79	0.00E+00	1.33E+03	2.22E+02	0.00E+00	2.30E+03	0.00E+00	2.71E+02	0.00E+00
BR-82	0.00E+00	0.00E+00	2.70E+03	0.00E+00	0.00E+00	0.00E+00	3.10E+03	0.00E+00
BR-83	0.00E+00	0.00E+00	4.80E+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	5.27E+04	0.00E+00	0.00E+00	0.00E+00	2.23E+04	0.00E+00
RB-87	0.00E+00	6.60E+04	2.30E+04	0.00E+00	0.00E+00	0.00E+00	3.09E+03	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	6.37E+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
Y-90	6.07E+00	0.00E+00	1.63E-01	0.00E+00	0.00E+00	0.00E+00	6.43E+04	0.00E+00
SR-91	7.31E+02	0.00E+00	2.95E+01	0.00E+00	0.00E+00	0.00E+00	3.48E+03	0.00E+00
Y-91M	5.73E-02	0.00E+00	2.22E-03	0.00E+00	0.00E+00	0.00E+00	1.68E-01	0.00E+00
Y-91	8.89E+01	0.00E+00	2.38E+00	0.00E+00	0.00E+00	0.00E+00	4.89E+04	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-92	5.33E-01	0.00E+00	1.56E-02	0.00E+00	0.00E+00	0.00E+00	9.33E+03	0.00E+00
Y-93	1.69E+00	0.00E+00	4.67E-02	0.00E+00	0.00E+00	0.00E+00	5.36E+04	0.00E+00
NB-93M	1.84E+03	5.99E+02	1.48E+02	0.00E+00	6.89E+02	0.00E+00	2.76E+05	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	3.76E+00	9.50E-01	3.47E-01	0.00E+00	1.11E+00	0.00E+00	3.51E+03	0.00E+00
ZR-93	4.91E-01	2.75E-02	1.28E-02	0.00E+00	1.04E-01	0.00E+00	2.85E+01	0.00E+00
ZR-95	3.57E-01	1.14E-01	7.75E-02	0.00E+00	1.80E-01	0.00E+00	3.63E+02	0.00E+00
ZR-97	1.97E-02	3.98E-03	1.82E-03	0.00E+00	6.01E-03	0.00E+00	1.23E+03	0.00E+00
MO-93	0.00E+00	2.23E+02	6.03E+00	0.00E+00	6.32E+01	0.00E+00	3.62E+01	0.00E+00
MO-99	0.00E+00	1.28E+02	2.43E+01	0.00E+00	2.90E+02	0.00E+00	2.97E+02	0.00E+00
TC-99	4.85E+00	7.22E+00	1.95E+00	0.00E+00	9.08E+01	6.13E-01	2.36E+02	0.00E+00
TC-99M	9.59E-03	2.71E-02	3.45E-01	0.00E+00	4.11E-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	3.88E+01	0.00E+00	1.84E+03	0.00E+00
RU-106	5.37E+02	0.00E+00	6.79E+01	0.00E+00	1.04E+03	0.00E+00	3.47E+04	0.00E+00

03/17

TABLE B-1: LIQUID ENVIRONMENTAL DOSE TRANSFER FACTORS

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
RH-105	2.36E+01	1.73E+01	1.14E+01	0.00E+00	7.34E+01	0.00E+00	2.75E+03	0.00E+00
PD-107	0.00E+00	2.87E+01	1.83E+00	0.00E+00	2.58E+02	0.00E+00	1.78E+02	0.00E+00
PD-109	0.00E+00	3.46E+01	7.79E+00	0.00E+00	1.97E+02	0.00E+00	3.83E+03	0.00E+00
AG-110M	7.12E+01	6.59E+01	3.91E+01	0.00E+00	1.29E+02	0.00E+00	2.69E+04	0.00E+00
AG-111	2.59E+01	1.08E+01	5.38E+00	0.00E+00	3.49E+01	0.00E+00	1.98E+04	0.00E+00
CD-113M	0.00E+00	5.15E+03	1.65E+02	0.00E+00	5.67E+03	0.00E+00	4.15E+04	0.00E+00
CD-115M	0.00E+00	2.98E+03	9.52E+01	0.00E+00	2.37E+03	0.00E+00	1.25E+05	0.00E+00
SN-123	2.41E+05	4.00E+03	5.89E+03	3.40E+03	0.00E+00	0.00E+00	4.91E+05	0.00E+00
SN-125	6.47E+04	1.30E+03	2.93E+03	1.08E+03	0.00E+00	0.00E+00	8.07E+05	0.00E+00
SN-126	6.56E+05	1.30E+04	1.86E+04	3.82E+03	0.00E+00	0.00E+00	1.89E+05	0.00E+00
SB-124	2.27E+01	4.29E-01	9.00E+00	5.51E-02	0.00E+00	1.77E+01	6.45E+02	0.00E+00
SB-125	1.45E+01	1.62E-01	3.45E+00	1.48E-02	0.00E+00	1.12E+01	1.60E+02	0.00E+00
SB-126	9.32E+00	1.90E-01	3.36E+00	5.71E-02	0.00E+00	5.72E+00	7.62E+02	0.00E+00
SB-127	2.09E+00	4.58E-02	8.03E-01	2.51E-02	0.00E+00	1.24E+00	4.78E+02	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	1.07E+04	3.66E+03	7.68E+03	1.22E+05	0.00E+00	1.01E+05	0.00E+00
TE-127	4.88E+02	1.75E+02	1.06E+02	3.62E+02	1.99E+03	0.00E+00	3.85E+04	0.00E+00
TE-129M	5.11E+04	1.91E+04	8.08E+03	1.75E+04	2.13E+05	0.00E+00	2.57E+05	0.00E+00
TE-129	1.39E+02	5.24E+01	3.40E+01	1.07E+02	5.86E+02	0.00E+00	1.05E+02	0.00E+00
TE-133M	2.05E+02	1.20E+02	1.15E+02	1.74E+02	1.19E+03	0.00E+00	4.11E+01	0.00E+00
TE-134	1.44E+02	9.41E+01	5.77E+01	1.26E+02	9.10E+02	0.00E+00	1.59E-01	0.00E+00
I-129	1.27E+02	1.09E+02	3.57E+02	2.81E+05	2.34E+02	0.00E+00	1.72E+01	0.00E+00
I-130	2.93E+01	8.66E+01	3.42E+01	7.34E+03	1.35E+02	0.00E+00	7.45E+01	0.00E+00
I-131	1.61E+02	2.31E+02	1.32E+02	7.57E+04	3.96E+02	0.00E+00	6.09E+01	0.00E+00
TE-131M	7.68E+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	3.65E+01	2.76E+01	7.19E+01	3.83E+02	0.00E+00	1.24E+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
TE-132	1.12E+04	7.24E+03	6.79E+03	7.99E+03	6.97E+04	0.00E+00	3.42E+05	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
CS-134M	1.14E+02	2.40E+02	1.23E+02	0.00E+00	1.30E+02	2.05E+01	8.48E+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
I-134	4.11E+00	1.12E+01	4.00E+00	1.94E+02	1.78E+01	0.00E+00	9.74E-03	0.00E+00
I-135	1.72E+01	4.50E+01	1.66E+01	2.97E+03	7.22E+01	0.00E+00	5.08E+01	0.00E+00
CS-135	1.05E+05	9.66E+04	4.29E+04	0.00E+00	3.65E+04	1.09E+04	2.26E+03	0.00E+00
CS-136	3.49E+04	1.38E+05	9.93E+04	0.00E+00	7.67E+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	4.24E+01	2.49E-03	0.00E+00
CS-139	1.83E+02	2.73E+02	9.93E+01	0.00E+00	2.18E+02	1.99E+01	5.90E-21	0.00E+00
BA-139	1.20E+01	8.55E-03	3.51E-01	0.00E+00	7.99E-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
LA-140	1.58E+00	7.95E-01	2.10E-01	0.00E+00	0.00E+00	0.00E+00	5.83E+04	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
LA-141	2.01E-01	6.24E-02	1.02E-02	0.00E+00	0.00E+00	0.00E+00	7.44E+03	0.00E+00
CE-141	5.36E+00	3.63E+00	4.12E-01	0.00E+00	1.69E+00	0.00E+00	1.39E+04	0.00E+00
BA-142	2.64E+00	2.71E-03	1.66E-01	0.00E+00	2.29E-03	1.53E-03	3.71E-18	0.00E+00
LA-142	8.07E-02	3.67E-02	9.15E-03	0.00E+00	0.00E+00	0.00E+00	2.68E+02	0.00E+00
CE-143	9.46E-01	6.99E+02	7.74E-02	0.00E+00	3.08E-01	0.00E+00	2.61E+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
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-144	1.90E-02	7.88E-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
PM-147	4.76E+01	4.47E+00	1.81E+00	0.00E+00	8.45E+00	0.00E+00	5.63E+03	0.00E+00
PM-148M	1.94E+01	5.01E+00	3.83E+00	0.00E+00	7.57E+00	0.00E+00	4.25E+04	0.00E+00
PM-148	4.52E+00	7.51E-01	3.78E-01	0.00E+00	1.42E+00	0.00E+00	5.90E+04	0.00E+00
PM-149	9.59E-01	1.36E-01	5.54E-02	0.00E+00	2.56E-01	0.00E+00	2.54E+04	0.00E+00
PM-151	4.40E-01	7.38E-02	3.73E-02	0.00E+00	1.32E-01	0.00E+00	2.03E+04	0.00E+00
SM-151	4.35E+01	7.51E+00	1.80E+00	0.00E+00	8.39E+00	0.00E+00	3.31E+03	0.00E+00
SM-153	5.41E-01	4.51E-01	3.29E-02	0.00E+00	1.46E-01	0.00E+00	1.61E+04	0.00E+00
EU-152	1.23E+02	2.80E+01	2.46E+01	0.00E+00	1.73E+02	0.00E+00	1.61E+04	0.00E+00
EU-154	3.88E+02	4.77E+01	3.39E+01	0.00E+00	2.28E+02	0.00E+00	3.46E+04	0.00E+00

03/17

TABLE B-1: LIQUID ENVIRONMENTAL DOSE TRANSFER FACTORS

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
EU-155	5.42E+01	7.69E+00	4.96E+00	0.00E+00	3.55E+01	0.00E+00	6.05E+03	0.00E+00
EU-156	8.64E+00	6.69E+00	1.08E+00	0.00E+00	4.47E+00	0.00E+00	4.58E+04	0.00E+00
TB-160	2.96E+01	0.00E+00	3.70E+00	0.00E+00	1.22E+01	0.00E+00	2.73E+04	0.00E+00
HO-166M	1.70E+02	5.32E+01	4.04E+01	0.00E+00	7.95E+01	0.00E+00	1.61E+04	0.00E+00
W-181	2.86E+01	9.31E+00	9.97E-01	0.00E+00	0.00E+00	0.00E+00	1.06E+03	0.00E+00
W-185	1.17E+03	3.89E+02	4.09E+01	0.00E+00	0.00E+00	0.00E+00	4.50E+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	6.05E+03	0.00E+00
U-232	1.61E+05	0.00E+00	1.15E+04	0.00E+00	1.75E+04	0.00E+00	2.65E+03	0.00E+00
U-233	3.40E+04	0.00E+00	2.06E+03	0.00E+00	7.93E+03	0.00E+00	2.45E+03	0.00E+00
U-234	3.26E+04	0.00E+00	2.02E+03	0.00E+00	7.77E+03	0.00E+00	2.40E+03	0.00E+00
U-235	3.13E+04	0.00E+00	1.90E+03	0.00E+00	7.30E+03	0.00E+00	3.05E+03	0.00E+00
U-236	3.13E+04	0.00E+00	1.94E+03	0.00E+00	7.46E+03	0.00E+00	2.25E+03	0.00E+00
U-237	2.16E+00	0.00E+00	5.74E-01	0.00E+00	8.86E+00	0.00E+00	7.57E+02	0.00E+00
U-238	2.99E+04	0.00E+00	1.77E+03	0.00E+00	6.83E+03	0.00E+00	2.15E+03	0.00E+00
NP-237	3.18E+05	2.26E+04	1.40E+04	0.00E+00	1.04E+05	0.00E+00	2.00E+04	0.00E+00
NP-238	3.46E+00	9.31E-02	5.37E-02	0.00E+00	3.15E-01	0.00E+00	8.65E+03	0.00E+00
PU-238	4.12E+04	5.22E+03	1.12E+03	0.00E+00	4.79E+03	0.00E+00	4.78E+03	0.00E+00
PU-239	4.75E+04	5.70E+03	1.25E+03	0.00E+00	5.31E+03	0.00E+00	4.36E+03	0.00E+00
PU-240	4.74E+04	5.70E+03	1.25E+03	0.00E+00	5.30E+03	0.00E+00	4.44E+03	0.00E+00
PU-241	1.03E+03	4.88E+01	2.17E+01	0.00E+00	1.00E+02	0.00E+00	9.17E+01	0.00E+00
PU-242	4.40E+04	5.49E+03	1.20E+03	0.00E+00	5.11E+03	0.00E+00	4.28E+03	0.00E+00
PU-244	5.13E+04	6.29E+03	1.38E+03	0.00E+00	5.86E+03	0.00E+00	6.37E+03	0.00E+00
AM-241	4.76E+05	4.45E+05	3.41E+04	0.00E+00	2.57E+05	0.00E+00	4.68E+04	0.00E+00
AM-242M	4.80E+05	4.18E+05	3.42E+04	0.00E+00	2.55E+05	0.00E+00	5.89E+04	0.00E+00
AM-243	4.76E+05	4.35E+05	3.34E+04	0.00E+00	2.52E+05	0.00E+00	5.49E+04	0.00E+00
CM-242	1.30E+04	1.38E+04	8.64E+02	0.00E+00	3.92E+03	0.00E+00	5.00E+04	0.00E+00
CM-243	3.78E+05	3.46E+05	2.37E+04	0.00E+00	1.10E+05	0.00E+00	4.93E+04	0.00E+00
CM-244	2.88E+05	2.69E+05	1.81E+04	0.00E+00	8.45E+04	0.00E+00	4.76E+04	0.00E+00
CM-245	5.92E+05	5.15E+05	3.63E+04	0.00E+00	1.70E+05	0.00E+00	4.44E+04	0.00E+00
CM-246	5.87E+05	5.15E+05	3.63E+04	0.00E+00	1.69E+05	0.00E+00	4.36E+04	0.00E+00
CM-247	5.72E+05	5.07E+05	3.58E+04	0.00E+00	1.67E+05	0.00E+00	5.73E+04	0.00E+00
CM-248	4.76E+06	4.18E+06	2.95E+05	0.00E+00	1.37E+06	0.00E+00	9.27E+05	0.00E+00
CF-252	1.65E+05	0.00E+00	3.97E+03	0.00E+00	0.00E+00	0.00E+00	1.82E+05	0.00E+00

W/S

TABLE C-1: NOBLE GAS DOSE TRANSFER FACTORS

TABLE C-1
FACTORS FOR EXPOSURE TO A SEMI-INFINITE CLOUD

Nuclide	DOSE TO PEOPLE +			DOSE OF AIR #	
	Gamma-Body K (i)	Beta-Skin L (i)	Skin L(i)+ (1.1)M(i)	Gamma M (i)	Beta N (i)
AR-41	8.840E+03	2.690E+03	1.29E+04	9.300E+03	3.280E+03
KR-83M	7.560E-02	0.000E+00	2.12E+01	1.930E+01	2.880E+02
KR-85	1.610E+01	1.340E+03	1.36E+03	1.720E+01	1.950E+03
KR-85M	1.170E+03	1.460E+03	2.81E+03	1.230E+03	1.970E+03
KR-87	5.920E+03	9.730E+03	1.65E+04	6.170E+03	1.030E+04
KR-88	1.470E+04	2.370E+03	1.91E+04	1.520E+04	2.930E+03
KR-89	1.660E+04	1.010E+04	2.91E+04	1.730E+04	1.060E+04
KR-90	1.560E+04	7.290E+03	2.52E+04	1.630E+04	7.830E+03
XE-131M	9.150E+01	4.760E+02	6.48E+02	1.560E+02	1.110E+03
XE-133	2.940E+02	3.060E+02	6.94E+02	3.530E+02	1.050E+03
XE-133M	2.510E+02	9.940E+02	1.35E+03	3.270E+02	1.480E+03
XE-135	1.810E+03	1.860E+03	3.97E+03	1.920E+03	2.460E+03
XE-135M	3.120E+03	7.110E+02	4.41E+03	3.360E+03	7.390E+02
XE-137	1.420E+03	1.220E+04	1.39E+04	1.510E+03	1.270E+04
XE-138	8.830E+03	4.130E+03	1.43E+04	9.210E+03	4.750E+03

+ -- mrem/yr per $\mu\text{Ci}/\text{cu.m.}$ # -- mrad/yr per $\mu\text{Ci}/\text{cu.m.}$

(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)
u_{30} =	30-FT AVERAGE WIND SPEED CORRESPONDING TO A GIVEN HOUR OF ONSITE METEOROLOGICAL DATA	(M SEC ⁻¹)
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	(M ⁴ SEC ⁻³)
H_B =	MAXIMUM ADJACENT BUILDING HEIGHT	(M)
H_R =	RELEASE HEIGHT	(M)
H_E =	EFFECTIVE RELEASE HEIGHT	(M)
H_{PR} =	NONBUOYANT PLUME RISE	(M)
H_T =	TOPOGRAPHIC HEIGHT OF RECEPTOR ABOVE PLANT GRADE	(M)
D =	STACK OR VENT DIAMETER	(M)
U_E =	EFFLUX VELOCITY	(M SEC ⁻¹)
N =	TOTAL NUMBER OF VALID HOURS OF ONSITE WIND DATA IN ALL SECTORS FOR APPLICABLE AVERAGING PERIOD	(DIMENSIONLESS)
δ/Q =	RELATIVE DEPOSITION RATE NORMALIZED BY SOURCE STRENGTH	(M ⁻¹)
D/Q =	RELATIVE DEPOSITION PER UNIT AREA NORMALIZED BY SOURCE STRENGTH	(M ⁻²)
G =	GROUND RELEASE (SUBSCRIPT)	(DIMENSIONLESS)

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)
L =	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 =	<u>STABILITY PARAMETER</u>	(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:

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

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)

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

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

The effective release height was computed from the following equation:

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

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:

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

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

when:

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

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

and,

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

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

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

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

where:

$$F_m = \frac{(u_e)^2 d^2}{4} \text{ and the smallest value was chosen.}$$

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

$$(\sigma_{z,i,k}^2 + 0.5h_b / \pi)^{1/2} \text{ was constrained to be less than or equal to } 1.732\sigma_{z,i,k}$$

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:

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

For the conditionally elevated release points, Figures 6 through 9 of Regulatory Guide 1.111, Rev. 1 were used to calculate the (δ/Q)_G and (δ/Q)_i values, while for the ground level release points, Figure 6 was utilized to calculate the (δ/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 $\times 10^{-7}$ (sec/m³)
FOR RESTRICTED AREA BOUNDARY

<u>Sector</u>	<u>Mixed Mode Releases (Continuous)</u>	<u>Ground Level Releases Exhaust (Continuous)</u>
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 $\times 10^{-9}$ (m⁻²)
FOR RESTRICTED AREA BOUNDARY

<u>Sector</u>	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 2.8 and 2.6.

Notes:

- (1) All CHI/Q = 10^{-7} sec/m³
- (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.
- (7) Revisions to CHI/Q and D/Q can be performed using Reference 2.14.

TABLE G-1: DOSE FACTOR CALCULATION PARAMETERS

CODE	DESCRIPTION	VALUE	UNITS
csf	Harvest stored feed to cow	7.776E+06 seconds	(csf)
dw	Drinking Water Dilution Factor	2.480E+04 none	(dw)
esf	Stored feed exp. to deposition	5.184E+06 seconds	(esf)
fg	Fraction Stored Veg. Intake	7.600E-01 none	(fg)
fi	Fraction Vegetation Irrigated	1.000E-01 none	(fi)
fl	Fraction Leafy Veg. Intake	1.000E+00 none	(fl)
fpc	Fraction Year Cow On Pasture	1.000E+00 none	(fpc)
fpg	Fraction Year Goat On Pasture	1.000E+00 none	(fpg)
fsc	Fraction Cow Feed-Pasture Grass	1.000E+00 none	(fsc)
fsg	Fraction Goat Feed-Pasture Grass	1.000E+00 none	(fsg)
gsf	Harvest stored feed to goat	7.776E+06 seconds	(gsf)
h	Absolute Humidity	1.290E+01 gm/m3	(h)
kc	Water to sediment xfer coeff.	7.220E-02 L/kg hr	(kc)
ksf	Liq conv fact pCi*ml*yr/ μ Ci*I*hr	1.142E+05	(ksf)
lv	Water content of Leafy Veg	9.200E-01 L/kg	(lv)
lw	Surface Weather Decay Constant	5.730E-07 1/seconds	(lw)
lwr	Iodine Surface Wx Decay Constant	5.730E-07 1/seconds	(lwr)
mtv	Mass density of sediment	4.000E+01 kg/m2	(mtv)
p	Effective surface density, soil	2.400E+02 kg/m2	(p)
p14	Fractional equilibrium ratio	1.000E+00 none	(p14)
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 milking to receptor	1.728E+05 seconds	(tmc)
ts	Time, slaughter to consumer	1.728E+06 seconds	(ts)
tw	Drinking Water Transit Time	0.000E+00 seconds	(tw)
yiv	Irrigated Veg. Areal Density	2.000E+00 kg/m2	(yiv)
yp	Pasture Grass Areal Density	7.000E-01 kg/m2	(yp)
ys	Stored Feed Areal Density	2.000E+00 kg/m2	(ys)
ysv	Stored Vegetable Areal Density	2.000E+00 kg/m2	(ysv)
yv	Vegetation Areal Density	2.000E+00 kg/m2	(yv)

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

** 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	1.0E-02	1.7E-01	1.2E-02	4.8E+00
C-14	1.2E-02	1.0E-01	3.1E-02	5.5E+00
NA-22	4.0E-02	4.0E-02	3.0E-02	5.2E-02
NA-24	4.0E-02	4.0E-02	3.0E-02	5.2E-02
P-32	2.5E-02	2.5E-01	4.6E-02	1.1E+00
CA-41	8.0E-03	4.7E-01	4.0E-03	3.6E-02
SC-46	5.0E-06	5.0E-06	1.6E-02	1.1E-03
CR-51	2.2E-03	2.2E-03	2.4E-03	2.5E-04
MN-54	2.5E-04	2.5E-04	8.0E-04	2.9E-02
FE-55	1.2E-03	1.3E-04	4.0E-02	6.6E-04
MN-56	2.5E-04	2.5E-04	8.0E-04	2.9E-02
CO-57	1.0E-03	1.0E-03	1.3E-02	9.4E-03
CO-58	1.0E-03	1.0E-03	1.3E-02	9.4E-03
FE-59	1.2E-03	1.3E-04	4.0E-02	6.6E-04
CO-60	1.0E-03	1.0E-03	1.3E-02	9.4E-03
NI-59	6.7E-03	6.7E-03	5.3E-03	1.9E-02
NI-63	6.7E-03	6.7E-03	5.3E-03	1.9E-02
CU-64	1.4E-02	1.3E-02	8.3E-03	1.2E-01
NI-65	6.7E-03	6.7E-03	5.3E-03	1.9E-02
ZN-65	3.9E-02	3.9E-02	3.0E-02	4.0E-01
ZN-69M	3.9E-02	3.9E-02	3.0E-02	4.0E-01
ZN-69	3.9E-02	3.9E-02	3.0E-02	4.0E-01
SE-79	4.5E-02	4.5E-02	1.5E-02	1.3E+00
BR-82	5.0E-02	5.0E-02	2.6E-02	7.6E-01
BR-83	5.0E-02	5.0E-02	2.6E-02	7.6E-01
BR-84	5.0E-02	5.0E-02	2.6E-02	7.6E-01
BR-85	5.0E-02	5.0E-02	2.6E-02	7.6E-01
RB-86	3.0E-02	3.0E-02	3.1E-02	1.3E-01
RB-87	3.0E-02	3.0E-02	3.1E-02	1.3E-01
RB-88	3.0E-02	3.0E-02	3.1E-02	1.3E-01
RB-89	3.0E-02	3.0E-02	3.1E-02	1.3E-01
SR-89	8.0E-04	1.4E-02	6.0E-04	1.7E-02
SR-90	8.0E-04	1.4E-02	6.0E-04	1.7E-02
Y-90	1.0E-05	1.0E-05	4.6E-03	2.6E-03
SR-91	8.0E-04	1.4E-02	6.0E-04	1.7E-02
Y-91M	1.0E-05	1.0E-05	4.6E-03	2.6E-03
Y-91	1.0E-05	1.0E-05	4.6E-03	2.6E-03
SR-92	8.0E-04	1.4E-02	6.0E-04	1.7E-02
Y-92	1.0E-05	1.0E-05	4.6E-03	2.6E-03
Y-93	1.0E-05	1.0E-05	4.6E-03	2.6E-03
NB-93M	2.5E-03	2.5E-03	2.8E-01	9.4E-03
NB-95	2.5E-03	2.5E-03	2.8E-01	9.4E-03
NB-97	2.5E-03	2.5E-03	2.8E-01	9.4E-03
ZR-93	5.0E-06	5.0E-06	3.4E-02	1.7E-04
ZR-95	5.0E-06	5.0E-06	3.4E-02	1.7E-04
ZR-97	5.0E-06	5.0E-06	3.4E-02	1.7E-04
MO-93	7.5E-03	7.5E-03	8.0E-03	1.2E-01

03/17

TABLE G-2: STABLE ELEMENT TRANSFER FACTORS

Nuclide	Milk Cow	Milk Goat	Meat	Veg./Soil
MO-99	7.5E-03	7.5E-03	8.0E-03	1.2E-01
TC-99	2.5E-02	2.5E-02	4.0E-01	2.5E-01
TC-99M	2.5E-02	2.5E-02	4.0E-01	2.5E-01
TC-101	2.5E-02	2.5E-02	4.0E-01	2.5E-01
RU-103	1.0E-06	1.0E-06	4.0E-01	5.0E-02
RU-105	1.0E-06	1.0E-06	4.0E-01	5.0E-02
RU-106	1.0E-06	1.0E-06	4.0E-01	5.0E-02
RH-105	1.0E-02	1.0E-02	1.5E-03	1.3E+01
PD-107	1.0E-02	1.0E-02	4.0E-03	5.0E+00
PD-109	1.0E-02	1.0E-02	4.0E-03	5.0E+00
AG-110M	5.0E-02	5.0E-02	1.7E-02	1.5E-01
AG-111	5.0E-02	5.0E-02	1.7E-02	1.5E-01
CD-113M	1.2E-04	1.2E-04	5.3E-04	3.0E-01
CD-115M	1.2E-04	1.2E-04	5.3E-04	3.0E-01
SN-123	2.5E-03	2.5E-03	8.0E-02	2.5E-03
SN-125	2.5E-03	2.5E-03	8.0E-02	2.5E-03
SN-126	2.5E-03	2.5E-03	8.0E-02	2.5E-03
SB-124	1.5E-03	1.5E-03	4.0E-03	1.1E-02
SB-125	1.5E-03	1.5E-03	4.0E-03	1.1E-02
SB-126	1.5E-03	1.5E-03	4.0E-03	1.1E-02
SB-127	1.5E-03	1.5E-03	4.0E-03	1.1E-02
TE-125M	1.0E-03	1.0E-03	7.7E-02	1.3E+00
TE-127M	1.0E-03	1.0E-03	7.7E-02	1.3E+00
TE-127	1.0E-03	1.0E-03	7.7E-02	1.3E+00
TE-129M	1.0E-03	1.0E-03	7.7E-02	1.3E+00
TE-129	1.0E-03	1.0E-03	7.7E-02	1.3E+00
TE-133M	1.0E-03	1.0E-03	7.7E-02	1.3E+00
TE-134	1.0E-03	1.0E-03	7.7E-02	1.3E+00
I-129	6.0E-03	6.0E-02	2.9E-03	2.0E-02
I-130	6.0E-03	6.0E-02	2.9E-03	2.0E-02
I-131	6.0E-03	6.0E-02	2.9E-03	2.0E-02
TE-131M	1.0E-03	1.0E-03	7.7E-02	1.3E+00
TE-131	1.0E-03	1.0E-03	7.7E-02	1.3E+00
I-132	6.0E-03	6.0E-02	2.9E-03	2.0E-02
TE-132	1.0E-03	1.0E-03	7.7E-02	1.3E+00
I-133	6.0E-03	6.0E-02	2.9E-03	2.0E-02
CS-134M	1.2E-02	3.0E-01	4.0E-03	1.0E-02
CS-134	1.2E-02	3.0E-01	4.0E-03	1.0E-02
I-134	6.0E-03	6.0E-02	2.9E-03	2.0E-02
I-135	6.0E-03	6.0E-02	2.9E-03	2.0E-02
CS-135	1.2E-02	3.0E-01	4.0E-03	1.0E-02
CS-136	1.2E-02	3.0E-01	4.0E-03	1.0E-02
CS-137	1.2E-02	3.0E-01	4.0E-03	1.0E-02
CS-138	1.2E-02	3.0E-01	4.0E-03	1.0E-02
CS-139	1.2E-02	3.0E-01	4.0E-03	1.0E-02
BA-139	4.0E-04	4.0E-04	3.2E-03	5.0E-03
BA-140	4.0E-04	4.0E-04	3.2E-03	5.0E-03
LA-140	5.0E-06	5.0E-06	2.0E-04	2.5E-03

03/17

TABLE G-2: STABLE ELEMENT TRANSFER FACTORS

Nuclide	Milk Cow	Milk Goat	Meat	Veg./Soil
BA-141	4.0E-04	4.0E-04	3.2E-03	5.0E-03
LA-141	5.0E-06	5.0E-06	2.0E-04	2.5E-03
CE-141	1.0E-04	1.0E-04	1.2E-03	2.5E-03
BA-142	4.0E-04	4.0E-04	3.2E-03	5.0E-03
LA-142	5.0E-06	5.0E-06	2.0E-04	2.5E-03
CE-143	1.0E-04	1.0E-04	1.2E-03	2.5E-03
PR-143	5.0E-06	5.0E-06	4.7E-03	2.5E-03
CE-144	1.0E-04	1.0E-04	1.2E-03	2.5E-03
PR-144	5.0E-06	5.0E-06	4.7E-03	2.5E-03
ND-147	5.0E-06	5.0E-06	3.3E-03	2.4E-03
PM-147	5.0E-06	5.0E-06	4.8E-03	2.5E-03
PM-148M	5.0E-06	5.0E-06	4.8E-03	2.5E-03
PM-148	5.0E-06	5.0E-06	4.8E-03	2.5E-03
PM-149	5.0E-06	5.0E-06	4.8E-03	2.5E-03
PM-151	5.0E-06	5.0E-06	4.8E-03	2.5E-03
SM-151	5.0E-06	5.0E-06	5.0E-03	2.5E-03
SM-153	5.0E-06	5.0E-06	5.0E-03	2.5E-03
EU-152	5.0E-06	5.0E-06	4.8E-03	2.5E-03
EU-154	5.0E-06	5.0E-06	4.8E-03	2.5E-03
EU-155	5.0E-06	5.0E-06	4.8E-03	2.5E-03
EU-156	5.0E-06	5.0E-06	4.8E-03	2.5E-03
TB-160	5.0E-06	5.0E-06	4.4E-03	2.6E-03
HO-166M	5.0E-06	5.0E-06	4.4E-03	2.6E-03
W-181	5.0E-04	5.0E-04	1.3E-03	1.8E-02
W-185	5.0E-04	5.0E-04	1.3E-03	1.8E-02
W-187	5.0E-04	5.0E-04	1.3E-03	1.8E-02
NP-239	5.0E-06	5.0E-06	2.0E-04	2.5E-03
U-232	5.0E-04	5.0E-04	3.4E-04	2.5E-03
U-233	5.0E-04	5.0E-04	3.4E-04	2.5E-03
U-234	5.0E-04	5.0E-04	3.4E-04	2.5E-03
U-235	5.0E-04	5.0E-04	3.4E-04	2.5E-03
U-236	5.0E-04	5.0E-04	3.4E-04	2.5E-03
U-237	5.0E-04	5.0E-04	3.4E-04	2.5E-03
U-238	5.0E-04	5.0E-04	3.4E-04	2.5E-03
NP-237	5.0E-06	5.0E-06	2.0E-04	2.5E-03
NP-238	5.0E-06	5.0E-06	2.0E-04	2.5E-03
PU-238	2.0E-06	2.0E-06	1.4E-05	2.5E-04
PU-239	2.0E-06	2.0E-06	1.4E-05	2.5E-04
PU-240	2.0E-06	2.0E-06	1.4E-05	2.5E-04
PU-241	2.0E-06	2.0E-06	1.4E-05	2.5E-04
PU-242	2.0E-06	2.0E-06	1.4E-05	2.5E-04
PU-244	2.0E-06	2.0E-06	1.4E-05	2.5E-04
AM-241	5.0E-06	5.0E-06	2.0E-04	2.5E-04
AM-242M	5.0E-06	5.0E-06	2.0E-04	2.5E-04
AM-243	5.0E-06	5.0E-06	2.0E-04	2.5E-04
CM-242	5.0E-06	5.0E-06	2.0E-04	2.5E-03
CM-243	5.0E-06	5.0E-06	2.0E-04	2.5E-03
CM-244	5.0E-06	5.0E-06	2.0E-04	2.5E-03

07/17

TABLE G-2: STABLE ELEMENT TRANSFER FACTORS

Nuclide	Milk Cow	Milk Goat	Meat	Veg./Soil
CM-245	5.0E-06	5.0E-06	2.0E-04	2.5E-03
CM-246	5.0E-06	5.0E-06	2.0E-04	2.5E-03
CM-247	5.0E-06	5.0E-06	2.0E-04	2.5E-03
CM-248	5.0E-06	5.0E-06	2.0E-04	2.5E-03
CF-252	5.0E-06	5.0E-06	2.0E-04	2.5E-03

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07/17

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

TABLE G-3: BIOACCUMULATION FACTORS

Nuclide	Freshwater Fish	Freshwater Non-Fish	Saltwater Fish	Saltwater Non-Fish
H-3	9.0E-01	9.0E-01	9.0E-01	9.3E-01
C-14	4.6E+03	9.1E+03	1.8E+03	1.4E+03
NA-22	1.0E+02	2.0E+02	6.7E-02	1.9E-01
NA-24	1.0E+02	2.0E+02	6.7E-02	1.9E-01
P-32	1.0E+05	2.0E+04	2.9E+04	3.0E+04
CA-41	4.0E+01	3.3E+02	5.0E-01	1.3E+01
SC-46	2.0E+00	1.0E+03	2.0E+00	1.0E+04
CR-51	2.0E+02	2.0E+03	4.0E+02	2.0E+03
MN-54	4.0E+02	9.0E+04	5.5E+02	4.0E+02
FE-55	1.0E+02	3.2E+03	3.0E+03	2.0E+04
MN-56	4.0E+02	9.0E+04	5.5E+02	4.0E+02
CO-57	5.0E+01	2.0E+02	1.0E+02	1.0E+03
CO-58	5.0E+01	2.0E+02	1.0E+02	1.0E+03
FE-59	1.0E+02	3.2E+03	3.0E+03	2.0E+04
CO-60	5.0E+01	2.0E+02	1.0E+02	1.0E+03
NI-59	1.0E+02	1.0E+02	1.0E+02	2.5E+02
NI-63	1.0E+02	1.0E+02	1.0E+02	2.5E+02
CU-64	5.0E+01	4.0E+02	6.7E+02	1.7E+03
NI-65	1.0E+02	1.0E+02	1.0E+02	2.5E+02
ZN-65	2.0E+03	1.0E+04	2.0E+03	5.0E+04
ZN-69M	2.0E+03	1.0E+04	2.0E+03	5.0E+04
ZN-69	2.0E+03	1.0E+04	2.0E+03	5.0E+04
SE-79	1.7E+02	1.7E+02	4.0E+03	1.0E+03
BR-82	4.2E+02	3.3E+02	1.5E-02	3.1E+00
BR-83	4.2E+02	3.3E+02	1.5E-02	3.1E+00
BR-84	4.2E+02	3.3E+02	1.5E-02	3.1E+00
BR-85	4.2E+02	3.3E+02	1.5E-02	3.1E+00
RB-86	2.0E+03	1.0E+03	8.3E+00	1.7E+01
RB-87	2.0E+03	1.0E+03	8.3E+00	1.7E+01
RB-88	2.0E+03	1.0E+03	8.3E+00	1.7E+01
RB-89	2.0E+03	1.0E+03	8.3E+00	1.7E+01
SR-89	3.0E+01	1.0E+02	2.0E+00	2.0E+01
SR-90	3.0E+01	1.0E+02	2.0E+00	2.0E+01
Y-90	2.5E+01	1.0E+03	2.5E+01	1.0E+03
SR-91	3.0E+01	1.0E+02	2.0E+00	2.0E+01
Y-91M	2.5E+01	1.0E+03	2.5E+01	1.0E+03
Y-91	2.5E+01	1.0E+03	2.5E+01	1.0E+03
SR-92	3.0E+01	1.0E+02	2.0E+00	2.0E+01
Y-92	2.5E+01	1.0E+03	2.5E+01	1.0E+03
Y-93	2.5E+01	1.0E+03	2.5E+01	1.0E+03
NB-93M	3.0E+04	1.0E+02	3.0E+04	1.0E+02
NB-95	3.0E+04	1.0E+02	3.0E+04	1.0E+02
NB-97	3.0E+04	1.0E+02	3.0E+04	1.0E+02
ZR-93	3.3E+00	6.7E+00	2.0E+02	8.0E+01
ZR-95	3.3E+00	6.7E+00	2.0E+02	8.0E+01
ZR-97	3.3E+00	6.7E+00	2.0E+02	8.0E+01

03/17

TABLE G-3: BIOACCUMULATION FACTORS

Nuclide	Freshwater Fish	Freshwater Non-Fish	Saltwater Fish	Saltwater Non-Fish
MO-93	1.0E+01	1.0E+01	1.0E+01	1.0E+01
MO-99	1.0E+01	1.0E+01	1.0E+01	1.0E+01
TC-99	1.5E+01	5.0E+00	1.0E+01	5.0E+01
TC-99M	1.5E+01	5.0E+00	1.0E+01	5.0E+01
TC-101	1.5E+01	5.0E+00	1.0E+01	5.0E+01
RU-103	1.0E+01	3.0E+02	3.0E+00	1.0E+03
RU-105	1.0E+01	3.0E+02	3.0E+00	1.0E+03
RU-106	1.0E+01	3.0E+02	3.0E+00	1.0E+03
RH-105	1.0E+01	3.0E+02	1.0E+01	2.0E+03
PD-107	1.0E+01	3.0E+02	1.0E+01	2.0E+03
PD-109	1.0E+01	3.0E+02	1.0E+01	2.0E+03
AG-110M	2.3E+00	7.7E+02	3.3E+03	3.3E+03
AG-111	2.3E+00	7.7E+02	3.3E+03	3.3E+03
CD-113M	2.0E+02	2.0E+03	3.0E+03	2.5E+05
CD-115M	2.0E+02	2.0E+03	3.0E+03	2.5E+05
SN-123	3.0E+03	1.0E+03	3.0E+03	1.0E+03
SN-125	3.0E+03	1.0E+03	3.0E+03	1.0E+03
SN-126	3.0E+03	1.0E+03	3.0E+03	1.0E+03
SB-124	1.0E+00	1.0E+01	4.0E+01	5.0E+00
SB-125	1.0E+00	1.0E+01	4.0E+01	5.0E+00
SB-126	1.0E+00	1.0E+01	4.0E+01	5.0E+00
SB-127	1.0E+00	1.0E+01	4.0E+01	5.0E+00
TE-125M	4.0E+02	6.1E+03	1.0E+01	1.0E+02
TE-127M	4.0E+02	6.1E+03	1.0E+01	1.0E+02
TE-127	4.0E+02	6.1E+03	1.0E+01	1.0E+02
TE-129M	4.0E+02	6.1E+03	1.0E+01	1.0E+02
TE-129	4.0E+02	6.1E+03	1.0E+01	1.0E+02
TE-133M	4.0E+02	6.1E+03	1.0E+01	1.0E+02
TE-134	4.0E+02	6.1E+03	1.0E+01	1.0E+02
I-129	1.5E+01	5.0E+00	1.0E+01	5.0E+01
I-130	1.5E+01	5.0E+00	1.0E+01	5.0E+01
I-131	1.5E+01	5.0E+00	1.0E+01	5.0E+01
TE-131M	4.0E+02	6.1E+03	1.0E+01	1.0E+02
TE-131	4.0E+02	6.1E+03	1.0E+01	1.0E+02
I-132	1.5E+01	5.0E+00	1.0E+01	5.0E+01
TE-132	4.0E+02	6.1E+03	1.0E+01	1.0E+02
I-133	1.5E+01	5.0E+00	1.0E+01	5.0E+01
CS-134M	2.0E+03	1.0E+03	4.0E+01	2.5E+01
CS-134	2.0E+03	1.0E+03	4.0E+01	2.5E+01
I-134	1.5E+01	5.0E+00	1.0E+01	5.0E+01
I-135	1.5E+01	5.0E+00	1.0E+01	5.0E+01
CS-135	2.0E+03	1.0E+03	4.0E+01	2.5E+01
CS-136	2.0E+03	1.0E+03	4.0E+01	2.5E+01
CS-137	2.0E+03	1.0E+03	4.0E+01	2.5E+01
CS-138	2.0E+03	1.0E+03	4.0E+01	2.5E+01
CS-139	2.0E+03	1.0E+03	4.0E+01	2.5E+01
BA-139	4.0E+00	2.0E+02	1.0E+01	1.0E+02

03/17

TABLE G-3: BIOACCUMULATION FACTORS

Nuclide	Freshwater Fish	Freshwater Non-Fish	Saltwater Fish	Saltwater Non-Fish
BA-140	4.0E+00	2.0E+02	1.0E+01	1.0E+02
LA-140	2.5E+01	1.0E+03	2.5E+01	1.0E+03
BA-141	4.0E+00	2.0E+02	1.0E+01	1.0E+02
LA-141	2.5E+01	1.0E+03	2.5E+01	1.0E+03
CE-141	1.0E+00	1.0E+03	1.0E+01	6.0E+02
BA-142	4.0E+00	2.0E+02	1.0E+01	1.0E+02
LA-142	2.5E+01	1.0E+03	2.5E+01	1.0E+03
CE-143	1.0E+00	1.0E+03	1.0E+01	6.0E+02
PR-143	2.5E+01	1.0E+03	2.5E+01	1.0E+03
CE-144	1.0E+00	1.0E+03	1.0E+01	6.0E+02
PR-144	2.5E+01	1.0E+03	2.5E+01	1.0E+03
ND-147	2.5E+01	1.0E+03	2.5E+01	1.0E+03
PM-147	2.5E+01	1.0E+03	2.5E+01	1.0E+03
PM-148M	2.5E+01	1.0E+03	2.5E+01	1.0E+03
PM-148	2.5E+01	1.0E+03	2.5E+01	1.0E+03
PM-149	2.5E+01	1.0E+03	2.5E+01	1.0E+03
PM-151	2.5E+01	1.0E+03	2.5E+01	1.0E+03
SM-151	2.5E+01	1.0E+03	2.5E+01	1.0E+03
SM-153	2.5E+01	1.0E+03	2.5E+01	1.0E+03
EU-152	2.5E+01	1.0E+03	2.5E+01	1.0E+03
EU-154	2.5E+01	1.0E+03	2.5E+01	1.0E+03
EU-155	2.5E+01	1.0E+03	2.5E+01	1.0E+03
EU-156	2.5E+01	1.0E+03	2.5E+01	1.0E+03
TB-160	2.5E+01	1.0E+03	2.5E+01	1.0E+03
HO-166M	2.5E+01	1.0E+03	2.5E+01	1.0E+03
W-181	1.2E+03	1.0E+01	3.0E+01	3.0E+01
W-185	1.2E+03	1.0E+01	3.0E+01	3.0E+01
W-187	1.2E+03	1.0E+01	3.0E+01	3.0E+01
NP-239	1.0E+01	4.0E+02	1.0E+01	1.0E+01
U-232	2.0E+00	6.0E+01	1.0E+01	1.0E+01
U-233	2.0E+00	6.0E+01	1.0E+01	1.0E+01
U-234	2.0E+00	6.0E+01	1.0E+01	1.0E+01
U-235	2.0E+00	6.0E+01	1.0E+01	1.0E+01
U-236	2.0E+00	6.0E+01	1.0E+01	1.0E+01
U-237	2.0E+00	6.0E+01	1.0E+01	1.0E+01
U-238	2.0E+00	6.0E+01	1.0E+01	1.0E+01
NP-237	1.0E+01	4.0E+02	1.0E+01	1.0E+01
NP-238	1.0E+01	4.0E+02	1.0E+01	1.0E+01
PU-238	3.5E+00	1.0E+02	3.0E+00	2.0E+02
PU-239	3.5E+00	1.0E+02	3.0E+00	2.0E+02
PU-240	3.5E+00	1.0E+02	3.0E+00	2.0E+02
PU-241	3.5E+00	1.0E+02	3.0E+00	2.0E+02
PU-242	3.5E+00	1.0E+02	3.0E+00	2.0E+02
PU-244	3.5E+00	1.0E+02	3.0E+00	2.0E+02
AM-241	2.5E+01	1.0E+03	2.5E+01	1.0E+03
AM-242M	2.5E+01	1.0E+03	2.5E+01	1.0E+03
AM-243	2.5E+01	1.0E+03	2.5E+01	1.0E+03

07/17

TABLE G-3: BIOACCUMULATION FACTORS

Nuclide	Freshwater Fish	Freshwater Non-Fish	Saltwater Fish	Saltwater Non-Fish
CM-242	2.5E+01	1.0E+03	2.5E+01	1.0E+03
CM-243	2.5E+01	1.0E+03	2.5E+01	1.0E+03
CM-244	2.5E+01	1.0E+03	2.5E+01	1.0E+03
CM-245	2.5E+01	1.0E+03	2.5E+01	1.0E+03
CM-246	2.5E+01	1.0E+03	2.5E+01	1.0E+03
CM-247	2.5E+01	1.0E+03	2.5E+01	1.0E+03
CM-248	2.5E+01	1.0E+03	2.5E+01	1.0E+03
CF-252	2.5E+01	1.0E+03	2.5E+01	1.0E+03

03/17

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	0.0E+00	1.7E+00	3.8E+00	5.0E+00	kg/year
Drinking Water	3.3E+02	5.1E+02	5.1E+02	7.3E+02	liters/year
Milk	3.3E+02	3.3E+02	4.0E+02	3.1E+02	liters/year
Shoreline Rec.	0.0E+00	1.4E+01	6.7E+01	1.2E+01	hours/year
Fresh Fish	0.0E+00	6.9E+00	1.6E+01	2.1E+01	kg/year
Fresh Leafy Veg.	0.0E+00	2.6E+01	4.2E+01	6.4E+01	kg/year
Stored Veg.	0.0E+00	5.2E+02	6.3E+02	5.2E+02	kg/year
Irrigated Veg.	0.0E+00	2.6E+01	4.2E+01	6.4E+01	kg/year
Breathing	1.4E+03	3.7E+03	8.0E+03	8.0E+03	m ³ /year
Meat	0.0E+00	4.1E+01	6.5E+01	1.1E+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.
- (6) Evaluate the dose, if applicable, to the National Guard/State Police while stationed on site as a member of the public.

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-22	1.04E+05	1.04E+05	1.04E+05	1.04E+05	1.04E+05	1.04E+05	1.04E+05	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
CA-41	3.06E+05	0.00E+00	3.30E+04	0.00E+00	0.00E+00	3.06E+04	2.29E+03	0.00E+00
SC-46	4.41E+05	8.56E+05	2.49E+05	0.00E+00	7.99E+05	0.00E+00	2.58E+05	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
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
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
CO-57	0.00E+00	6.92E+02	6.71E+02	0.00E+00	0.00E+00	3.70E+05	3.14E+04	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
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-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-59	3.25E+04	1.17E+04	5.42E+03	0.00E+00	0.00E+00	6.56E+04	4.89E+03	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
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
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
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-69M	8.16E+00	1.96E+01	1.79E+00	0.00E+00	1.18E+01	1.90E+04	1.37E+05	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
SE-79	0.00E+00	3.06E+03	4.87E+02	0.00E+00	4.55E+03	3.58E+05	2.66E+04	0.00E+00
BR-82	0.00E+00	0.00E+00	1.35E+04	0.00E+00	0.00E+00	0.00E+00	1.04E+04	0.00E+00
BR-83	0.00E+00	0.00E+00	2.41E+02	0.00E+00	0.00E+00	0.00E+00	2.32E+02	0.00E+00
BR-84	0.00E+00	0.00E+00	3.13E+02	0.00E+00	0.00E+00	0.00E+00	1.64E-03	0.00E+00
BR-85	0.00E+00	0.00E+00	1.28E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	1.35E+05	5.90E+04	0.00E+00	0.00E+00	0.00E+00	1.66E+04	0.00E+00
RB-87	0.00E+00	7.89E+04	2.57E+04	0.00E+00	0.00E+00	0.00E+00	2.30E+03	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+06	0.00E+00	6.10E+06	0.00E+00	0.00E+00	9.60E+06	7.22E+05	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
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
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
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-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
NB-93M	2.48E+05	8.08E+04	1.99E+04	0.00E+00	9.28E+04	2.49E+05	1.90E+04	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	2.22E-01	5.62E-02	2.05E-02	0.00E+00	6.54E-02	2.40E+03	2.42E+02	0.00E+00
ZR-93	4.18E+05	2.34E+04	1.10E+04	0.00E+00	8.88E+04	1.70E+05	1.21E+04	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
MO-93	0.00E+00	9.36E+03	2.54E+02	0.00E+00	2.84E+03	4.09E+05	3.03E+04	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-99	2.50E+02	3.71E+02	1.00E+02	0.00E+00	4.68E+03	8.08E+05	6.03E+04	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

1/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
RH-105	7.39E+00	5.38E+00	3.54E+00	0.00E+00	2.29E+01	1.93E+04	8.72E+04	0.00E+00
PD-107	0.00E+00	6.62E+02	4.70E+01	0.00E+00	5.26E+03	7.58E+04	5.65E+03	0.00E+00
PD-109	0.00E+00	3.70E+00	9.28E-01	0.00E+00	1.88E+01	1.48E+04	1.22E+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
AG-111	3.40E+02	1.42E+02	7.10E+01	0.00E+00	4.59E+02	1.86E+05	2.23E+05	0.00E+00
CD-113M	0.00E+00	1.23E+06	3.98E+04	0.00E+00	1.37E+06	1.66E+06	1.27E+05	0.00E+00
CD-115M	0.00E+00	1.97E+05	6.36E+03	0.00E+00	1.58E+05	1.41E+06	3.84E+05	0.00E+00
SN-123	2.42E+05	5.34E+03	7.86E+03	4.54E+03	0.00E+00	2.30E+06	3.14E+05	0.00E+00
SN-125	9.28E+03	2.50E+02	5.62E+02	2.07E+02	0.00E+00	5.90E+05	5.45E+05	0.00E+00
SN-126	1.26E+06	3.34E+04	4.80E+04	9.84E+03	0.00E+00	9.36E+06	1.27E+05	0.00E+00
SB-124	3.12E+04	5.89E+02	1.24E+04	7.55E+01	0.00E+00	2.48E+06	4.06E+05	0.00E+00
SB-125	5.34E+04	5.95E+02	1.26E+04	5.40E+01	0.00E+00	1.74E+06	1.01E+05	0.00E+00
SB-126	3.60E+03	7.30E+01	1.30E+03	2.20E+01	0.00E+00	7.66E+05	4.81E+05	0.00E+00
SB-127	2.64E+02	5.78E+00	1.02E+02	3.18E+00	0.00E+00	1.64E+05	3.02E+05	0.00E+00
TE-125M	3.42E+03	1.58E+03	4.67E+02	1.05E+03	1.24E+04	3.14E+05	7.06E+04	0.00E+00
TE-127M	1.26E+04	5.77E+03	1.57E+03	3.29E+03	4.58E+04	9.60E+05	1.50E+05	0.00E+00
TE-127	1.40E+00	6.42E-01	3.10E-01	1.06E+00	5.10E+00	6.51E+03	5.74E+04	0.00E+00
TE-129M	9.76E+03	4.67E+03	1.58E+03	3.44E+03	3.66E+04	1.16E+06	3.83E+05	0.00E+00
TE-129	4.98E-02	2.39E-02	1.24E-02	3.90E-02	1.87E-01	1.94E+03	1.57E+02	0.00E+00
TE-133M	5.79E-02	4.32E-02	3.34E-02	5.02E-02	2.99E-01	4.41E+03	6.12E+01	0.00E+00
TE-134	3.07E-02	2.58E-02	1.26E-02	2.75E-02	1.74E-01	3.47E+03	2.38E-01	0.00E+00
I-129	1.98E+04	1.69E+04	5.53E+04	4.43E+07	3.62E+04	0.00E+00	1.78E+03	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
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
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
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-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
CS-134M	1.27E+02	2.56E+02	1.38E+02	0.00E+00	1.46E+02	2.34E+01	6.34E+01	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
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-135	1.17E+05	1.03E+05	4.79E+04	0.00E+00	4.09E+04	1.26E+04	1.69E+03	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
CS-139	2.05E+02	2.90E+02	1.11E+02	0.00E+00	2.44E+02	2.27E+01	4.39E-21	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
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
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
LA-141	4.27E+00	1.33E+00	2.17E-01	0.00E+00	0.00E+00	1.08E+04	5.85E+04	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
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-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-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
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
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-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
PM-147	6.70E+05	6.30E+04	2.55E+04	0.00E+00	1.19E+05	5.28E+05	4.43E+04	0.00E+00
PM-148M	7.86E+04	2.03E+04	1.55E+04	0.00E+00	3.08E+04	1.71E+06	3.34E+05	0.00E+00
PM-148	3.07E+03	5.10E+02	2.56E+02	0.00E+00	9.60E+02	3.13E+05	4.64E+05	0.00E+00
PM-149	2.75E+02	3.90E+01	1.59E+01	0.00E+00	7.35E+01	5.77E+04	2.00E+05	0.00E+00
PM-151	6.80E+01	1.14E+01	5.77E+00	0.00E+00	2.04E+01	3.15E+04	1.60E+05	0.00E+00
SM-151	6.87E+05	1.18E+05	2.84E+04	0.00E+00	1.33E+05	3.56E+05	2.60E+04	0.00E+00
SM-153	1.36E+02	1.14E+02	8.32E+00	0.00E+00	3.67E+01	3.31E+04	1.26E+05	0.00E+00
EU-152	1.90E+06	4.33E+05	3.81E+05	0.00E+00	2.68E+06	2.74E+06	1.27E+05	0.00E+00
EU-154	5.92E+06	7.28E+05	5.18E+05	0.00E+00	3.49E+06	4.67E+06	2.72E+05	0.00E+00

03/11

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
EU-155	8.08E+05	1.14E+05	7.37E+04	0.00E+00	5.27E+05	7.57E+05	4.76E+04	0.00E+00
EU-156	1.54E+04	1.18E+04	1.92E+03	0.00E+00	7.96E+03	6.85E+05	3.60E+05	0.00E+00
TB-160	1.77E+05	0.00E+00	2.20E+04	0.00E+00	7.28E+04	1.54E+06	2.14E+05	0.00E+00
HO-166M	2.70E+06	8.40E+05	6.40E+05	0.00E+00	1.26E+06	3.15E+06	1.27E+05	0.00E+00
W-181	4.98E+01	1.62E+01	1.74E+00	0.00E+00	0.00E+00	1.37E+04	2.02E+03	0.00E+00
W-185	1.56E+03	5.18E+02	5.45E+01	0.00E+00	0.00E+00	4.46E+05	8.56E+04	0.00E+00
W-187	8.48E+00	7.08E+00	2.48E+00	0.00E+00	0.00E+00	2.90E+04	1.55E+05	0.00E+00
NP-239	2.30E+02	2.03E+02	1.24E+01	0.00E+00	7.00E+01	3.76E+04	1.19E+05	0.00E+00
U-232	4.11E+08	0.00E+00	2.93E+07	0.00E+00	4.45E+07	1.78E+09	3.37E+05	0.00E+00
U-233	8.72E+07	0.00E+00	5.28E+06	0.00E+00	2.03E+07	4.26E+08	3.11E+05	0.00E+00
U-234	8.32E+07	0.00E+00	5.17E+06	0.00E+00	1.99E+07	4.18E+08	3.05E+05	0.00E+00
U-235	8.00E+07	0.00E+00	4.86E+06	0.00E+00	1.87E+07	3.92E+08	3.87E+05	0.00E+00
U-236	8.00E+07	0.00E+00	4.96E+06	0.00E+00	1.91E+07	4.00E+08	2.86E+05	0.00E+00
U-237	2.94E+02	0.00E+00	7.82E+01	0.00E+00	1.21E+03	8.16E+04	9.60E+04	0.00E+00
U-238	7.66E+07	0.00E+00	4.54E+06	0.00E+00	1.74E+07	3.66E+08	2.73E+05	0.00E+00
NP-237	1.25E+10	8.00E+09	5.50E+08	0.00E+00	4.08E+09	4.18E+08	3.94E+05	0.00E+00
NP-238	2.37E+03	5.76E+02	3.69E+01	0.00E+00	2.18E+02	8.16E+04	1.70E+05	0.00E+00
PU-238	1.14E+10	7.77E+09	5.52E+08	0.00E+00	2.37E+09	1.46E+09	3.62E+05	0.00E+00
PU-239	1.33E+10	8.56E+09	6.20E+08	0.00E+00	2.64E+09	1.38E+09	3.30E+05	0.00E+00
PU-240	1.32E+10	8.56E+09	6.18E+08	0.00E+00	2.63E+09	1.38E+09	3.37E+05	0.00E+00
PU-241	2.74E+08	6.95E+07	1.03E+07	0.00E+00	4.74E+07	1.22E+06	6.92E+03	0.00E+00
PU-242	1.22E+10	8.24E+09	5.97E+08	0.00E+00	2.54E+09	1.32E+09	3.24E+05	0.00E+00
PU-244	1.43E+10	9.44E+09	6.83E+08	0.00E+00	2.91E+09	1.51E+09	4.82E+05	0.00E+00
AM-241	1.34E+10	9.04E+09	5.37E+08	0.00E+00	4.03E+09	4.85E+08	3.68E+05	0.00E+00
AM-242M	1.36E+10	8.48E+09	5.38E+08	0.00E+00	4.01E+09	1.95E+08	4.63E+05	0.00E+00
AM-243	1.34E+10	8.80E+09	5.26E+08	0.00E+00	3.96E+09	4.60E+08	4.32E+05	0.00E+00
CM-242	1.78E+08	1.42E+08	7.87E+06	0.00E+00	3.58E+07	3.14E+08	3.93E+05	0.00E+00
CM-243	8.80E+09	6.09E+09	3.69E+08	0.00E+00	1.72E+09	5.05E+08	3.87E+05	0.00E+00
CM-244	6.70E+09	4.70E+09	2.81E+08	0.00E+00	1.31E+09	4.85E+08	3.74E+05	0.00E+00
CM-245	1.39E+10	9.12E+09	5.71E+08	0.00E+00	2.66E+09	4.68E+08	3.49E+05	0.00E+00
CM-246	1.38E+10	9.12E+09	5.70E+08	0.00E+00	2.66E+09	4.77E+08	3.43E+05	0.00E+00
CM-247	1.34E+10	8.96E+09	5.62E+08	0.00E+00	2.62E+09	4.68E+08	4.50E+05	0.00E+00
CM-248	1.12E+09	7.41E+10	4.63E+09	0.00E+00	2.16E+10	3.86E+09	7.27E+06	0.00E+00
CF-252	4.34E+09	0.00E+00	1.86E+08	0.00E+00	0.00E+00	1.59E+09	1.42E+06	0.00E+00

03/17

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-22	1.41E+05	1.41E+05	1.41E+05	1.41E+05	1.41E+05	1.41E+05	1.41E+05	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
CA-41	3.24E+05	0.00E+00	3.50E+04	0.00E+00	0.00E+00	8.08E+08	2.42E+03	0.00E+00
SC-46	5.79E+05	1.13E+06	3.34E+05	0.00E+00	1.08E+06	0.00E+00	2.38E+05	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
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
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
CO-57	0.00E+00	9.44E+02	9.20E+02	0.00E+00	0.00E+00	5.86E+05	3.14E+04	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
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-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-59	4.35E+04	1.62E+04	7.39E+03	0.00E+00	0.00E+00	1.13E+05	5.18E+03	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
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
NI-65	2.18E+00	2.93E-01	1.27E-01	0.00E+00	0.00E+00	9.36E+03	3.67E+04	0.00E+00
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-69M	1.15E+01	2.71E+01	2.49E+00	0.00E+00	1.65E+01	3.14E+04	1.71E+05	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
SE-79	0.00E+00	4.34E+03	6.97E+02	0.00E+00	6.50E+03	6.17E+05	2.82E+04	0.00E+00
BR-82	0.00E+00	0.00E+00	1.82E+04	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-87	0.00E+00	1.12E+05	3.66E+04	0.00E+00	0.00E+00	0.00E+00	2.44E+03	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
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
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
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
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-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
NB-93M	3.31E+05	1.09E+05	2.73E+04	0.00E+00	1.27E+05	4.29E+05	2.02E+04	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	3.14E-01	7.78E-02	2.84E-02	0.00E+00	9.12E-02	3.93E+03	2.17E+03	0.00E+00
ZR-93	5.46E+05	2.70E+04	1.47E+04	0.00E+00	9.28E+04	2.94E+05	1.28E+04	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
MO-93	0.00E+00	1.33E+04	3.62E+02	0.00E+00	4.05E+03	7.05E+05	3.19E+04	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-99	3.58E+02	5.26E+02	1.43E+02	0.00E+00	6.68E+03	1.39E+06	6.39E+04	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

03/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
RH-105	1.06E+01	7.58E+00	4.99E+00	0.00E+00	3.23E+01	3.27E+04	9.84E+04	0.00E+00
PD-107	0.00E+00	9.36E+02	6.71E+01	0.00E+00	7.51E+03	1.30E+05	5.99E+03	0.00E+00
PD-109	0.00E+00	5.25E+00	1.33E+00	0.00E+00	2.69E+01	2.55E+04	1.57E+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
AG-111	4.86E+02	2.02E+02	1.01E+02	0.00E+00	6.54E+02	3.20E+05	2.40E+05	0.00E+00
CD-113M	0.00E+00	1.74E+06	5.68E+04	0.00E+00	1.94E+06	2.87E+06	1.34E+05	0.00E+00
CD-115M	0.00E+00	2.78E+05	9.12E+03	0.00E+00	2.26E+05	2.42E+06	4.08E+05	0.00E+00
SN-123	3.45E+05	7.55E+03	1.12E+04	6.04E+03	0.00E+00	3.97E+06	3.33E+05	0.00E+00
SN-125	1.33E+04	3.54E+02	7.99E+02	2.76E+02	0.00E+00	1.01E+06	5.83E+05	0.00E+00
SN-126	1.74E+06	4.31E+04	6.59E+04	1.14E+04	0.00E+00	1.38E+07	1.34E+05	0.00E+00
SB-124	4.30E+04	7.94E+02	1.68E+04	9.76E+01	0.00E+00	3.85E+06	3.98E+05	0.00E+00
SB-125	7.38E+04	8.08E+02	1.72E+04	7.04E+01	0.00E+00	2.74E+06	9.92E+04	0.00E+00
SB-126	4.95E+03	1.02E+02	1.78E+03	2.80E+01	0.00E+00	1.24E+06	4.81E+05	0.00E+00
SB-127	3.71E+02	7.94E+00	1.40E+02	4.17E+00	0.00E+00	2.65E+05	3.15E+05	0.00E+00
TE-125M	4.88E+03	2.24E+03	6.67E+02	1.40E+03	0.00E+00	5.36E+05	7.50E+04	0.00E+00
TE-127M	1.80E+04	8.16E+03	2.18E+03	4.38E+03	6.54E+04	1.66E+06	1.59E+05	0.00E+00
TE-127	2.01E+00	9.12E-01	4.42E-01	1.42E+00	7.28E+00	1.12E+04	8.08E+04	0.00E+00
TE-129M	1.39E+04	6.58E+03	2.25E+03	4.58E+03	5.19E+04	1.98E+06	4.05E+05	0.00E+00
TE-129	7.10E-02	3.38E-02	1.76E-02	5.18E-02	2.66E-01	3.30E+03	1.62E+03	0.00E+00
TE-133M	8.08E-02	5.86E-02	4.57E-02	6.54E-02	4.06E-01	6.97E+03	9.84E+02	0.00E+00
TE-134	4.25E-02	3.48E-02	2.91E-02	3.57E-02	2.33E-01	5.40E+03	1.10E+01	0.00E+00
I-129	2.82E+04	2.35E+04	3.92E+04	2.93E+07	4.21E+04	0.00E+00	1.83E+03	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
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
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
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-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
CS-134M	1.76E+02	3.48E+02	1.88E+02	0.00E+00	2.03E+02	3.65E+01	1.62E+02	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
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-135	1.66E+05	1.46E+05	3.58E+04	0.00E+00	5.84E+04	2.16E+04	1.78E+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
CS-139	2.92E+02	4.10E+02	1.58E+02	0.00E+00	3.47E+02	3.89E+01	1.33E-13	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
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
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
LA-141	6.10E+00	1.88E+00	3.10E-01	0.00E+00	0.00E+00	1.85E+04	1.23E+05	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
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-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-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
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
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-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
PM-147	9.20E+05	8.80E+04	3.60E+04	0.00E+00	1.68E+05	9.12E+05	4.70E+04	0.00E+00
PM-148M	1.06E+05	2.68E+04	2.10E+04	0.00E+00	4.06E+04	2.56E+06	3.28E+05	0.00E+00
PM-148	4.35E+03	7.10E+02	3.58E+02	0.00E+00	1.28E+03	5.22E+05	4.91E+05	0.00E+00
PM-149	3.93E+02	5.51E+01	2.27E+01	0.00E+00	1.05E+02	9.92E+04	2.23E+05	0.00E+00
PM-151	9.60E+01	1.59E+01	8.08E+00	0.00E+00	2.86E+01	5.25E+04	1.82E+05	0.00E+00
SM-151	8.56E+05	1.68E+05	3.89E+04	0.00E+00	1.82E+05	6.14E+05	2.82E+04	0.00E+00
SM-153	1.94E+02	1.61E+02	1.18E+01	0.00E+00	5.25E+01	5.69E+04	1.42E+05	0.00E+00
EU-152	2.37E+06	5.75E+05	5.04E+05	0.00E+00	2.67E+06	4.01E+06	1.08E+05	0.00E+00
EU-154	7.54E+06	9.84E+05	6.88E+05	0.00E+00	4.35E+06	7.30E+06	2.67E+05	0.00E+00

03/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
EU-155	1.60E+06	1.57E+05	9.68E+04	0.00E+00	6.12E+05	1.21E+07	4.78E+05	0.00E+00
EU-156	2.16E+04	1.62E+04	2.64E+03	0.00E+00	1.09E+04	1.10E+06	3.65E+05	0.00E+00
TB-160	2.43E+05	0.00E+00	3.03E+04	0.00E+00	9.60E+04	2.38E+06	2.08E+05	0.00E+00
HO-166M	3.52E+06	1.09E+06	7.90E+05	0.00E+00	1.60E+06	4.99E+06	1.34E+05	0.00E+00
W-181	7.12E+01	2.30E+01	2.41E+00	0.00E+00	0.00E+00	2.36E+04	2.15E+03	0.00E+00
W-185	2.22E+03	7.34E+02	7.78E+01	0.00E+00	0.00E+00	7.68E+05	9.12E+04	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	2.88E+02	1.77E+01	0.00E+00	1.00E+02	6.49E+04	1.32E+05	0.00E+00
U-232	5.85E+08	0.00E+00	4.18E+07	0.00E+00	6.35E+07	3.07E+09	3.57E+05	0.00E+00
U-233	1.24E+08	0.00E+00	7.54E+06	0.00E+00	2.90E+07	7.34E+08	3.30E+05	0.00E+00
U-234	1.18E+08	0.00E+00	7.38E+06	0.00E+00	2.84E+07	7.19E+08	3.23E+05	0.00E+00
U-235	1.14E+08	0.00E+00	6.94E+06	0.00E+00	2.67E+07	6.75E+08	4.10E+05	0.00E+00
U-236	1.14E+08	0.00E+00	7.09E+06	0.00E+00	2.73E+07	6.90E+08	3.03E+05	0.00E+00
U-237	4.20E+02	0.00E+00	1.12E+02	0.00E+00	1.73E+03	1.41E+05	1.03E+05	0.00E+00
U-238	1.09E+08	0.00E+00	6.48E+06	0.00E+00	2.50E+07	6.31E+08	2.90E+05	0.00E+00
NP-237	1.31E+10	8.48E+09	5.77E+08	0.00E+00	4.28E+09	7.19E+08	4.18E+05	0.00E+00
NP-238	3.38E+03	8.16E+02	5.27E+01	0.00E+00	3.10E+02	1.40E+05	1.90E+05	0.00E+00
PU-238	1.20E+10	8.24E+09	5.78E+08	0.00E+00	2.48E+09	2.50E+09	3.83E+05	0.00E+00
PU-239	1.38E+10	8.96E+09	6.44E+08	0.00E+00	2.75E+09	2.34E+09	3.50E+05	0.00E+00
PU-240	1.38E+10	8.96E+09	6.43E+08	0.00E+00	2.74E+09	2.34E+09	3.57E+05	0.00E+00
PU-241	2.99E+08	7.65E+07	1.12E+07	0.00E+00	5.18E+07	2.08E+06	7.34E+03	0.00E+00
PU-242	1.28E+10	8.64E+09	6.20E+08	0.00E+00	2.65E+09	2.26E+09	3.43E+05	0.00E+00
PU-244	1.50E+10	9.92E+09	7.10E+08	0.00E+00	3.03E+09	2.58E+09	5.11E+05	0.00E+00
AM-241	1.42E+10	9.60E+09	5.68E+08	0.00E+00	4.26E+09	8.40E+08	3.90E+05	0.00E+00
AM-242M	1.43E+10	9.04E+09	5.72E+08	0.00E+00	4.24E+09	3.37E+08	4.91E+05	0.00E+00
AM-243	1.42E+10	9.36E+09	5.56E+08	0.00E+00	4.17E+09	7.93E+08	4.58E+05	0.00E+00
CM-242	2.54E+08	2.01E+08	1.13E+07	0.00E+00	5.12E+07	5.41E+08	4.17E+05	0.00E+00
CM-243	9.52E+09	6.64E+09	4.00E+08	0.00E+00	1.87E+09	8.72E+08	4.10E+05	0.00E+00
CM-244	7.35E+09	5.22E+09	3.10E+08	0.00E+00	1.45E+09	8.40E+08	3.97E+05	0.00E+00
CM-245	1.46E+10	9.76E+09	6.02E+08	0.00E+00	2.82E+09	8.08E+08	3.70E+05	0.00E+00
CM-246	1.45E+10	9.76E+09	6.02E+08	0.00E+00	2.81E+09	8.24E+08	3.63E+05	0.00E+00
CM-247	1.42E+10	9.52E+09	5.93E+08	0.00E+00	2.77E+09	8.08E+08	4.78E+05	0.00E+00
CM-248	1.18E+09	7.86E+10	4.89E+09	0.00E+00	2.28E+10	6.66E+09	7.70E+06	0.00E+00
CF-252	5.73E+09	0.00E+00	2.46E+08	0.00E+00	0.00E+00	2.74E+09	1.51E+06	0.00E+00

03/17

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-22	1.63E+05	1.63E+05	1.63E+05	1.63E+05	1.63E+05	1.63E+05	1.63E+05	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
CA-41	2.61E+05	0.00E+00	2.85E+04	0.00E+00	0.00E+00	2.67E+08	1.09E+03	0.00E+00
SC-46	7.29E+05	9.99E+05	3.85E+05	0.00E+00	8.84E+05	0.00E+00	9.07E+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
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
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
CO-57	0.00E+00	9.03E+02	1.07E+03	0.00E+00	0.00E+00	5.07E+05	1.32E+04	0.00E+00
CO-58	0.00E+00	1.77E+03	3.16E+03	0.00E+00	0.00E+00	1.11E+06	3.44E+04	0.00E+00
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-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-59	6.14E+04	1.73E+04	1.05E+04	0.00E+00	0.00E+00	1.01E+05	2.33E+03	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
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
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
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-69M	1.58E+01	2.69E+01	3.18E+00	0.00E+00	1.56E+01	2.72E+04	1.00E+05	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
SE-79	0.00E+00	4.55E+03	9.62E+02	0.00E+00	6.33E+03	5.51E+05	1.27E+04	0.00E+00
BR-82	0.00E+00	0.00E+00	2.09E+04	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-87	0.00E+00	1.17E+05	5.07E+04	0.00E+00	0.00E+00	0.00E+00	1.10E+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
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
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
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
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-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
NB-93M	4.70E+05	1.17E+05	3.85E+04	0.00E+00	1.27E+05	3.85E+05	9.07E+03	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	4.29E-01	7.70E-02	3.60E-02	0.00E+00	8.55E-02	3.42E+03	2.78E+04	0.00E+00
ZR-93	7.66E+05	2.89E+04	2.05E+04	0.00E+00	1.11E+05	2.63E+05	5.44E+03	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	3.89E+01	1.13E+05	3.51E+05	0.00E+00
MO-93	0.00E+00	1.39E+04	5.00E+02	0.00E+00	3.92E+03	6.29E+05	1.40E+04	0.00E+00
MO-99	0.00E+00	1.72E+02	4.26E+01	0.00E+00	3.92E+02	1.35E+05	1.27E+05	0.00E+00
TC-99	4.96E+02	5.51E+02	1.98E+02	0.00E+00	6.48E+03	1.25E+06	2.87E+04	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

07/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
RH-105	1.45E+01	7.77E+00	6.62E+00	0.00E+00	3.10E+01	2.89E+04	4.92E+04	0.00E+00
PD-107	0.00E+00	9.81E+02	9.29E+01	0.00E+00	7.29E+03	1.17E+05	2.69E+03	0.00E+00
PD-109	0.00E+00	5.48E+00	1.83E+00	0.00E+00	2.61E+01	2.28E+04	9.58E+04	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
AG-111	6.70E+02	2.10E+02	1.39E+02	0.00E+00	6.33E+02	2.86E+05	1.10E+05	0.00E+00
CD-113M	0.00E+00	1.82E+06	7.84E+04	0.00E+00	1.90E+06	2.57E+06	6.03E+04	0.00E+00
CD-115M	0.00E+00	2.92E+05	1.25E+04	0.00E+00	2.19E+05	2.17E+06	1.84E+05	0.00E+00
SN-123	4.77E+05	7.92E+03	1.55E+04	8.40E+03	0.00E+00	3.55E+06	1.50E+05	0.00E+00
SN-125	1.83E+04	3.68E+02	1.09E+03	3.81E+02	0.00E+00	8.99E+05	2.65E+05	0.00E+00
SN-126	2.31E+06	3.85E+04	8.73E+04	1.05E+04	0.00E+00	1.12E+07	6.03E+04	0.00E+00
SB-124	5.74E+04	7.40E+02	2.00E+04	1.26E+02	0.00E+00	3.24E+06	1.64E+05	0.00E+00
SB-125	9.84E+04	7.59E+02	2.07E+04	9.10E+01	0.00E+00	2.32E+06	4.03E+04	0.00E+00
SB-126	6.36E+03	9.69E+01	2.28E+03	3.70E+01	0.00E+00	1.06E+06	2.10E+05	0.00E+00
SB-127	5.03E+02	7.73E+00	1.74E+02	5.59E+00	0.00E+00	2.28E+05	1.41E+05	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	6.11E-01	1.96E+00	7.07E+00	1.00E+04	5.62E+04	0.00E+00
TE-129M	1.92E+04	6.85E+03	3.04E+03	6.33E+03	5.03E+04	1.76E+06	1.82E+05	0.00E+00
TE-129	9.77E-02	3.50E-02	2.38E-02	7.14E-02	2.57E-01	2.93E+03	2.55E+04	0.00E+00
TE-133M	1.08E-01	5.59E-02	5.55E-02	8.58E-02	3.74E-01	5.92E+03	1.76E+04	0.00E+00
TE-134	5.66E-02	3.26E-02	3.48E-02	4.59E-02	2.11E-01	4.55E+03	1.80E+03	0.00E+00
I-129	3.89E+04	2.37E+04	2.11E+04	1.58E+07	4.00E+04	0.00E+00	7.96E+02	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
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
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
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-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
CS-134M	2.34E+02	3.30E+02	2.26E+02	0.00E+00	1.83E+02	3.09E+01	2.93E+02	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
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-135	2.31E+05	1.53E+05	1.65E+04	0.00E+00	5.66E+04	1.93E+04	8.03E+02	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
CS-139	4.03E+02	4.26E+02	2.15E+02	0.00E+00	3.36E+02	3.46E+01	2.68E-02	0.00E+00
BA-139	1.84E+00	9.84E-04	5.37E-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
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
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
LA-141	8.44E+00	1.96E+00	4.26E-01	0.00E+00	0.00E+00	1.66E+04	1.62E+05	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
BA-142	5.00E-02	3.60E-05	2.79E-03	0.00E+00	2.91E-05	1.64E+03	2.74E+00	0.00E+00
LA-142	1.30E+00	4.11E-01	1.29E-01	0.00E+00	0.00E+00	8.70E+03	7.59E+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
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
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-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
PM-147	1.30E+06	9.32E+04	5.03E+04	0.00E+00	1.65E+05	8.14E+05	2.11E+04	0.00E+00
PM-148M	1.22E+05	2.42E+04	2.42E+04	0.00E+00	3.60E+04	2.12E+06	1.32E+05	0.00E+00
PM-148	5.96E+03	7.18E+02	4.63E+02	0.00E+00	1.22E+03	4.59E+05	2.22E+05	0.00E+00
PM-149	5.44E+02	5.77E+01	3.13E+01	0.00E+00	1.02E+02	8.88E+04	1.08E+05	0.00E+00
PM-151	1.32E+02	1.60E+01	1.04E+01	0.00E+00	2.72E+01	4.59E+04	9.25E+04	0.00E+00
SM-151	1.16E+06	1.76E+05	5.51E+04	0.00E+00	1.81E+05	5.48E+05	1.27E+04	0.00E+00
SM-153	2.68E+02	1.67E+02	1.61E+01	0.00E+00	5.07E+01	5.07E+04	6.92E+04	0.00E+00
EU-152	2.75E+06	5.07E+05	5.96E+05	0.00E+00	2.12E+06	3.33E+06	4.22E+04	0.00E+00
EU-154	1.01E+07	9.21E+05	8.40E+05	0.00E+00	4.03E+06	6.14E+06	1.10E+05	0.00E+00

03/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
EU-155	2.07E+06	1.50E+05	1.18E+05	0.00E+00	5.59E+05	1.03E+06	1.99E+05	0.00E+00
EU-156	2.92E+04	1.57E+04	3.24E+03	0.00E+00	1.01E+04	9.40E+05	1.57E+05	0.00E+00
TB-160	2.88E+05	0.00E+00	3.58E+04	0.00E+00	8.58E+04	1.98E+06	8.44E+04	0.00E+00
HO-166M	4.96E+06	1.04E+06	8.77E+05	0.00E+00	1.48E+06	4.18E+06	6.03E+04	0.00E+00
W-181	9.84E+01	2.41E+01	3.33E+00	0.00E+00	0.00E+00	2.11E+04	9.66E+02	0.00E+00
W-185	3.07E+03	7.70E+02	1.08E+02	0.00E+00	0.00E+00	6.88E+05	4.11E+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	3.01E+02	2.35E+01	0.00E+00	9.73E+01	5.81E+04	6.40E+04	0.00E+00
U-232	8.10E+08	0.00E+00	5.77E+07	0.00E+00	6.18E+07	2.75E+09	1.60E+05	0.00E+00
U-233	1.72E+08	0.00E+00	1.04E+07	0.00E+00	2.82E+07	6.55E+08	1.48E+05	0.00E+00
U-234	1.65E+08	0.00E+00	1.02E+07	0.00E+00	2.76E+07	6.44E+08	1.45E+05	0.00E+00
U-235	1.58E+08	0.00E+00	9.58E+06	0.00E+00	2.59E+07	6.03E+08	1.84E+05	0.00E+00
U-236	1.58E+08	0.00E+00	9.81E+06	0.00E+00	2.65E+07	6.18E+08	1.36E+05	0.00E+00
U-237	5.81E+02	0.00E+00	1.54E+02	0.00E+00	1.68E+03	1.26E+05	4.77E+04	0.00E+00
U-238	1.51E+08	0.00E+00	8.95E+06	0.00E+00	2.42E+07	5.66E+08	1.30E+05	0.00E+00
NP-237	1.01E+10	5.99E+09	4.40E+08	0.00E+00	2.74E+09	6.44E+08	1.87E+05	0.00E+00
NP-238	4.66E+03	8.51E+02	7.29E+01	0.00E+00	3.02E+02	1.25E+05	9.25E+04	0.00E+00
PU-238	9.44E+09	5.92E+09	4.48E+08	0.00E+00	1.65E+09	2.25E+09	1.72E+05	0.00E+00
PU-239	1.03E+10	6.22E+09	4.74E+08	0.00E+00	1.77E+09	2.12E+09	1.57E+05	0.00E+00
PU-240	1.03E+10	6.22E+09	4.70E+08	0.00E+00	1.76E+09	2.11E+09	1.60E+05	0.00E+00
PU-241	2.94E+08	6.48E+07	1.08E+07	0.00E+00	4.07E+07	1.87E+06	3.29E+03	0.00E+00
PU-242	9.58E+09	5.99E+09	4.55E+08	0.00E+00	1.70E+09	2.04E+09	1.54E+05	0.00E+00
PU-244	1.12E+10	6.85E+09	5.22E+08	0.00E+00	1.95E+09	2.33E+09	2.29E+05	0.00E+00
AM-241	1.10E+10	6.81E+09	4.59E+08	0.00E+00	2.82E+09	7.47E+08	1.75E+05	0.00E+00
AM-242M	1.14E+10	6.51E+09	4.70E+08	0.00E+00	2.85E+09	3.01E+08	2.21E+05	0.00E+00
AM-243	1.09E+10	6.59E+09	4.44E+08	0.00E+00	2.75E+09	7.10E+08	2.05E+05	0.00E+00
CM-242	3.51E+08	2.10E+08	1.55E+07	0.00E+00	4.96E+07	4.85E+08	1.87E+05	0.00E+00
CM-243	8.58E+09	5.25E+09	3.68E+08	0.00E+00	1.38E+09	7.77E+08	1.84E+05	0.00E+00
CM-244	7.18E+09	4.37E+09	3.07E+08	0.00E+00	1.13E+09	7.47E+08	1.78E+05	0.00E+00
CM-245	1.13E+10	6.81E+09	4.74E+08	0.00E+00	1.86E+09	7.22E+08	1.66E+05	0.00E+00
CM-246	1.12E+10	6.81E+09	4.74E+08	0.00E+00	1.86E+09	7.36E+08	1.63E+05	0.00E+00
CM-247	1.09E+10	6.73E+09	4.66E+08	0.00E+00	1.83E+09	7.22E+08	2.15E+05	0.00E+00
CM-248	9.07E+08	5.55E+08	3.85E+09	0.00E+00	1.51E+10	5.96E+09	3.46E+06	0.00E+00
CF-252	8.07E+09	0.00E+00	3.45E+08	0.00E+00	0.00E+00	2.45E+09	6.81E+05	0.00E+00

07/17

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 $\mu\text{Ci}/\text{cu.m}$.

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-22	1.03E+05	1.03E+05	1.03E+05	1.03E+05	1.03E+05	1.03E+05	1.03E+05	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
CA-41	1.05E+05	0.00E+00	1.14E+04	0.00E+00	0.00E+00	9.72E+07	4.14E+02	0.00E+00
SC-46	5.25E+05	7.57E+05	2.37E+05	0.00E+00	4.98E+05	0.00E+00	3.07E+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
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
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
CO-57	0.00E+00	6.51E+02	6.41E+02	0.00E+00	0.00E+00	3.79E+05	4.86E+03	0.00E+00
CO-58	0.00E+00	1.22E+03	1.82E+03	0.00E+00	0.00E+00	7.77E+05	1.11E+04	0.00E+00
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-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-59	2.53E+04	7.62E+03	4.34E+03	0.00E+00	0.00E+00	7.67E+04	8.88E+02	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
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
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
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-69M	1.26E+01	2.58E+01	2.34E+00	0.00E+00	1.04E+01	2.67E+04	4.09E+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
SE-79	0.00E+00	3.15E+03	5.88E+02	0.00E+00	3.46E+03	4.19E+05	4.84E+03	0.00E+00
BR-82	0.00E+00	0.00E+00	1.33E+04	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-87	0.00E+00	9.95E+04	3.70E+04	0.00E+00	0.00E+00	0.00E+00	4.19E+02	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+02	0.00E+00	2.59E+06	0.00E+00	0.00E+00	1.12E+07	1.31E+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
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
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
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-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
NB-93M	1.93E+05	5.03E+04	1.61E+04	0.00E+00	5.15E+04	2.93E+05	3.46E+03	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	3.42E-01	7.29E-02	2.63E-02	0.00E+00	5.70E-02	3.32E+03	2.69E+04	0.00E+00
ZR-93	3.14E+05	1.33E+04	8.65E+03	0.00E+00	4.47E+04	1.92E+05	2.07E+03	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
MO-93	0.00E+00	9.04E+03	3.11E+02	0.00E+00	2.16E+03	4.76E+05	5.26E+03	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-99	2.93E+02	3.75E+02	1.24E+02	0.00E+00	3.49E+03	9.48E+05	1.09E+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

03/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
RH-105	1.16E+01	7.57E+00	5.08E+00	0.00E+00	2.10E+01	2.91E+04	1.92E+04	0.00E+00
PD-107	0.00E+00	6.89E+02	5.75E+01	0.00E+00	3.85E+03	8.88E+04	1.03E+03	0.00E+00
PD-109	0.00E+00	5.49E+00	1.47E+00	0.00E+00	1.79E+01	2.35E+04	3.99E+04	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
AG-111	5.25E+02	2.03E+02	1.09E+02	0.00E+00	4.27E+02	2.88E+05	4.23E+04	0.00E+00
CD-113M	0.00E+00	9.34E+05	3.70E+04	0.00E+00	8.12E+05	1.96E+06	2.31E+04	0.00E+00
CD-115M	0.00E+00	2.42E+05	8.67E+03	0.00E+00	1.32E+05	2.06E+06	7.03E+04	0.00E+00
SN-123	2.93E+05	5.89E+03	1.02E+04	5.98E+03	0.00E+00	3.11E+06	5.71E+04	0.00E+00
SN-125	1.41E+04	3.51E+02	8.40E+02	3.46E+02	0.00E+00	9.00E+05	1.02E+05	0.00E+00
SN-126	1.16E+06	2.02E+04	4.93E+04	5.38E+03	0.00E+00	6.90E+06	2.31E+04	0.00E+00
SB-124	3.79E+04	5.56E+02	1.20E+04	1.01E+02	0.00E+00	2.65E+06	5.91E+04	0.00E+00
SB-125	5.17E+04	4.77E+02	1.09E+04	6.23E+01	0.00E+00	1.64E+06	1.47E+04	0.00E+00
SB-126	4.31E+03	8.41E+01	1.55E+03	3.29E+01	0.00E+00	9.63E+05	7.46E+04	0.00E+00
SB-127	3.95E+02	7.06E+00	1.23E+02	5.04E+00	0.00E+00	2.16E+05	5.29E+04	0.00E+00
TE-125M	4.76E+03	1.99E+03	6.58E+02	1.62E+03	0.00E+00	4.47E+05	1.29E+04	0.00E+00
TE-127M	1.67E+04	6.90E+03	2.07E+03	4.87E+03	3.75E+04	1.31E+06	2.73E+04	0.00E+00
TE-127	2.23E+00	9.53E-01	4.89E-01	1.85E+00	4.86E+00	1.03E+04	2.44E+04	0.00E+00
TE-129M	1.41E+04	6.09E+03	2.23E+03	5.47E+03	3.18E+04	1.68E+06	6.90E+04	0.00E+00
TE-129	7.88E-02	3.47E-02	1.88E-02	6.75E-02	1.75E-01	3.00E+03	2.63E+04	0.00E+00
TE-133M	8.58E-02	5.03E-02	3.84E-02	7.73E-02	2.41E-01	5.49E+03	2.23E+04	0.00E+00
TE-134	4.45E-02	2.86E-02	2.35E-02	4.07E-02	1.34E-01	4.10E+03	3.54E+03	0.00E+00
I-129	3.02E+04	2.23E+04	1.62E+04	1.46E+07	2.63E+04	0.00E+00	2.97E+02	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
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
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
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-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
CS-134M	1.85E+02	2.94E+02	1.55E+02	0.00E+00	1.19E+02	2.80E+01	1.62E+02	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
I-134	9.21E+02	1.88E+03	6.65E+02	4.45E+04	2.09E+03	0.00E+00	1.29E+03	0.00E+00
I-135	3.86E+03	7.60E+03	2.77E+03	6.96E+05	8.47E+03	0.00E+00	1.83E+03	0.00E+00
CS-135	1.40E+05	1.21E+05	6.62E+03	0.00E+00	3.61E+04	1.41E+04	3.05E+02	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
CS-139	3.25E+02	4.24E+02	1.71E+02	0.00E+00	2.31E+02	3.54E+01	1.86E+01	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
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
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
LA-141	6.79E+00	1.96E+00	3.43E-01	0.00E+00	0.00E+00	1.71E+04	8.34E+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
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-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-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
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
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-144	4.79E-02	1.85E-02	2.41E-03	0.00E+00	6.72E-03	1.61E+03	4.28E+03	0.00E+00
ND-147	7.94E+03	8.13E+03	5.00E+02	0.00E+00	3.15E+03	3.22E+05	3.12E+04	0.00E+00
PM-147	5.47E+05	4.30E+04	2.18E+04	0.00E+00	6.90E+04	6.37E+05	8.05E+03	0.00E+00
PM-148M	7.00E+04	1.74E+04	1.39E+04	0.00E+00	2.03E+04	1.71E+06	4.72E+04	0.00E+00
PM-148	4.68E+03	6.75E+02	3.42E+02	0.00E+00	8.06E+02	4.48E+05	8.46E+04	0.00E+00
PM-149	4.34E+02	5.71E+01	2.49E+01	0.00E+00	6.94E+01	9.10E+04	4.21E+04	0.00E+00
PM-151	1.05E+02	1.54E+01	7.77E+00	0.00E+00	1.82E+01	4.55E+04	3.61E+04	0.00E+00
SM-151	4.73E+05	9.03E+04	2.28E+04	0.00E+00	7.34E+04	4.17E+05	4.84E+03	0.00E+00
SM-153	2.14E+02	1.65E+02	1.27E+01	0.00E+00	3.46E+01	5.18E+04	2.70E+04	0.00E+00
EU-152	1.10E+06	2.48E+05	2.41E+05	0.00E+00	8.32E+05	2.07E+06	1.38E+04	0.00E+00
EU-154	4.14E+06	4.84E+05	3.43E+05	0.00E+00	1.60E+06	4.27E+06	3.98E+04	0.00E+00

07/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
EU-155	8.36E+05	8.01E+04	4.84E+04	0.00E+00	2.21E+05	7.28E+05	7.27E+04	0.00E+00
EU-156	2.18E+04	1.34E+04	2.16E+03	0.00E+00	6.27E+03	8.57E+05	5.80E+04	0.00E+00
TB-160	1.57E+05	0.00E+00	1.96E+04	0.00E+00	4.48E+04	1.55E+06	3.00E+04	0.00E+00
HO-166M	2.03E+06	4.30E+05	3.51E+05	0.00E+00	5.91E+05	2.87E+06	2.31E+04	0.00E+00
W-181	6.80E+01	2.04E+01	2.34E+00	0.00E+00	0.00E+00	1.86E+04	3.68E+02	0.00E+00
W-185	2.20E+03	6.76E+02	7.81E+01	0.00E+00	0.00E+00	6.27E+05	1.57E+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	2.98E+02	1.88E+01	0.00E+00	6.62E+01	5.95E+04	2.49E+04	0.00E+00
U-232	3.60E+08	0.00E+00	2.98E+07	0.00E+00	3.36E+07	2.09E+09	6.10E+04	0.00E+00
U-233	7.62E+07	0.00E+00	5.36E+06	0.00E+00	1.53E+07	4.98E+08	5.64E+04	0.00E+00
U-234	7.31E+07	0.00E+00	5.25E+06	0.00E+00	1.50E+07	4.89E+08	5.53E+04	0.00E+00
U-235	7.01E+07	0.00E+00	4.93E+06	0.00E+00	1.41E+07	4.59E+08	7.03E+04	0.00E+00
U-236	7.01E+07	0.00E+00	5.04E+06	0.00E+00	1.44E+07	4.69E+08	5.19E+04	0.00E+00
U-237	4.55E+02	0.00E+00	1.21E+02	0.00E+00	1.13E+03	1.28E+05	1.83E+04	0.00E+00
U-238	6.71E+07	0.00E+00	4.61E+06	0.00E+00	1.32E+07	4.28E+08	4.96E+04	0.00E+00
NP-237	4.03E+09	2.39E+09	1.76E+08	0.00E+00	1.08E+09	4.89E+08	7.14E+04	0.00E+00
NP-238	3.74E+03	8.47E+02	5.82E+01	0.00E+00	2.06E+02	1.29E+05	3.61E+04	0.00E+00
PU-238	3.77E+09	2.35E+09	1.78E+08	0.00E+00	6.50E+08	1.26E+09	6.57E+04	0.00E+00
PU-239	4.10E+09	2.46E+09	1.88E+08	0.00E+00	6.93E+08	1.19E+09	5.99E+04	0.00E+00
PU-240	4.10E+09	2.45E+09	1.88E+08	0.00E+00	6.92E+08	1.19E+09	6.10E+04	0.00E+00
PU-241	1.18E+08	2.59E+07	4.35E+06	0.00E+00	1.61E+07	1.07E+06	1.26E+03	0.00E+00
PU-242	3.81E+09	2.37E+09	1.81E+08	0.00E+00	6.68E+08	1.14E+09	5.88E+04	0.00E+00
PU-244	4.44E+09	2.72E+09	2.07E+08	0.00E+00	7.64E+08	1.31E+09	8.76E+04	0.00E+00
AM-241	4.41E+09	2.73E+09	1.83E+08	0.00E+00	1.11E+09	5.68E+08	6.69E+04	0.00E+00
AM-242M	4.55E+09	2.60E+09	1.89E+08	0.00E+00	1.12E+09	2.30E+08	8.41E+04	0.00E+00
AM-243	4.34E+09	2.63E+09	1.78E+08	0.00E+00	1.08E+09	5.39E+08	7.84E+04	0.00E+00
CM-242	1.79E+08	1.21E+08	7.98E+06	0.00E+00	2.37E+07	4.16E+08	7.14E+04	0.00E+00
CM-243	3.46E+09	2.13E+09	1.48E+08	0.00E+00	5.47E+08	5.94E+08	7.03E+04	0.00E+00
CM-244	2.90E+09	1.78E+09	1.24E+08	0.00E+00	4.49E+08	5.71E+08	6.80E+04	0.00E+00
CM-245	4.51E+09	2.74E+09	1.90E+08	0.00E+00	7.32E+08	5.49E+08	6.34E+04	0.00E+00
CM-246	4.48E+09	2.74E+09	1.90E+08	0.00E+00	7.32E+08	5.59E+08	6.23E+04	0.00E+00
CM-247	4.35E+09	2.70E+09	1.86E+08	0.00E+00	7.21E+08	5.49E+08	8.19E+04	0.00E+00
CM-248	3.61E+08	2.23E+08	1.54E+09	0.00E+00	5.94E+09	4.52E+09	1.32E+06	0.00E+00
CF-252	3.32E+09	0.00E+00	1.41E+08	0.00E+00	0.00E+00	1.92E+09	2.59E+05	0.00E+00

OKM

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

Table I-5
DOSE FACTOR TABLE: R (i) – All, Gr. Plane
Units are m²*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-22	1.14E+10	1.14E+10	1.14E+10	1.14E+10	1.14E+10	1.14E+10	1.14E+10	1.28E+10
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
CA-41	9.90E+09	9.90E+09	9.90E+09	9.90E+09	9.90E+09	9.90E+09	9.90E+09	1.16E+10
SC-46	8.33E+08	8.33E+08	8.33E+08	8.33E+08	8.33E+08	8.33E+08	8.33E+08	9.61E+08
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	1.63E+09
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
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
CO-57	1.88E+08	1.88E+08	1.88E+08	1.88E+08	1.88E+08	1.88E+08	1.88E+08	2.07E+08
CO-58	3.79E+08	3.79E+08	3.79E+08	3.79E+08	3.79E+08	3.79E+08	3.79E+08	4.44E+08
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-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-59	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-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
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
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
ZN-65	7.47E+08	7.47E+08	7.47E+08	7.47E+08	7.47E+08	7.47E+08	7.47E+08	8.59E+08
ZN-69M	1.27E+06	1.27E+06	1.27E+06	1.27E+06	1.27E+06	1.27E+06	1.27E+06	1.49E+06
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
SE-79	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	2.14E+07	2.14E+07	2.14E+07	2.14E+07	2.14E+07	2.14E+07	2.14E+07	2.47E+07
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-87	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-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-90	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	4.49E+03	4.49E+03	4.49E+03	4.49E+03	4.49E+03	4.49E+03	4.49E+03	5.31E+03
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
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
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-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
NB-93M	1.70E+06	1.70E+06	1.70E+06	1.70E+06	1.70E+06	1.70E+06	1.70E+06	2.08E+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	1.76E+05	1.76E+05	1.76E+05	1.76E+05	1.76E+05	1.76E+05	1.76E+05	2.07E+05
ZR-93	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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
MO-93	6.64E+07	6.64E+07	6.64E+07	6.64E+07	6.64E+07	6.64E+07	6.64E+07	2.70E+09
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-99	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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

07/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
RH-105	7.43E+05	7.43E+05	7.43E+05	7.43E+05	7.43E+05	7.43E+05	7.43E+05	8.67E+05
PD-107	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PD-109	1.50E+04	1.50E+04	1.50E+04	1.50E+04	1.50E+04	1.50E+04	1.50E+04	1.71E+04
AG-110M	3.44E+09	3.44E+09	3.44E+09	3.44E+09	3.44E+09	3.44E+09	3.44E+09	4.01E+09
AG-111	1.03E+06	1.03E+06	1.03E+06	1.03E+06	1.03E+06	1.03E+06	1.03E+06	1.20E+06
CD-113M	4.68E+06	4.68E+06	4.68E+06	4.68E+06	4.68E+06	4.68E+06	4.68E+06	5.29E+06
CD-115M	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SN-123	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.38E+09
SN-125	4.20E+06	4.20E+06	4.20E+06	4.20E+06	4.20E+06	4.20E+06	4.20E+06	4.86E+06
SN-126	2.61E+10	2.61E+10	2.61E+10	2.61E+10	2.61E+10	2.61E+10	2.61E+10	2.90E+10
SB-124	5.98E+08	5.98E+08	5.98E+08	5.98E+08	5.98E+08	5.98E+08	5.98E+08	6.90E+08
SB-125	2.34E+09	2.34E+09	2.34E+09	2.34E+09	2.34E+09	2.34E+09	2.34E+09	2.64E+09
SB-126	8.44E+07	8.44E+07	8.44E+07	8.44E+07	8.44E+07	8.44E+07	8.44E+07	9.48E+07
SB-127	1.68E+07	1.68E+07	1.68E+07	1.68E+07	1.68E+07	1.68E+07	1.68E+07	1.94E+07
TE-125M	1.55E+06	1.55E+06	1.55E+06	1.55E+06	1.55E+06	1.55E+06	1.55E+06	2.13E+06
TE-127M	9.16E+04	9.16E+04	9.16E+04	9.16E+04	9.16E+04	9.16E+04	9.16E+04	1.08E+05
TE-127	2.98E+03	2.98E+03	2.98E+03	2.98E+03	2.98E+03	2.98E+03	2.98E+03	3.28E+03
TE-129M	1.98E+07	1.98E+07	1.98E+07	1.98E+07	1.98E+07	1.98E+07	1.98E+07	2.31E+07
TE-129	2.62E+04	2.62E+04	2.62E+04	2.62E+04	2.62E+04	2.62E+04	2.62E+04	3.10E+04
TE-133M	4.41E+05	4.41E+05	4.41E+05	4.41E+05	4.41E+05	4.41E+05	4.41E+05	5.00E+05
TE-134	2.22E+04	2.22E+04	2.22E+04	2.22E+04	2.22E+04	2.22E+04	2.22E+04	2.66E+04
I-129	1.31E+09	1.31E+09	1.31E+09	1.31E+09	1.31E+09	1.31E+09	1.31E+09	2.18E+09
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
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
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
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-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
CS-134M	5.73E+04	5.73E+04	5.73E+04	5.73E+04	5.73E+04	5.73E+04	5.73E+04	6.74E+04
CS-134	6.86E+09	6.86E+09	6.86E+09	6.86E+09	6.86E+09	6.86E+09	6.86E+09	8.01E+09
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-135	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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
CS-139	3.14E+04	3.14E+04	3.14E+04	3.14E+04	3.14E+04	3.14E+04	3.14E+04	3.59E+04
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
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
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
LA-141	3.14E+04	3.14E+04	3.14E+04	3.14E+04	3.14E+04	3.14E+04	3.14E+04	3.51E+04
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
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-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-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
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
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-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
PM-147	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PM-148M	4.45E+08	4.45E+08	4.45E+08	4.45E+08	4.45E+08	4.45E+08	4.45E+08	2.58E+09
PM-148	1.89E+07	1.89E+07	1.89E+07	1.89E+07	1.89E+07	1.89E+07	1.89E+07	2.18E+07
PM-149	4.23E+04	4.23E+04	4.23E+04	4.23E+04	4.23E+04	4.23E+04	4.23E+04	4.90E+04
PM-151	1.99E+06	1.99E+06	1.99E+06	1.99E+06	1.99E+06	1.99E+06	1.99E+06	2.08E+06
SM-151	1.32E+08	1.32E+08	1.32E+08	1.32E+08	1.32E+08	1.32E+08	1.32E+08	5.76E+08
SM-153	4.02E+05	4.02E+05	4.02E+05	4.02E+05	4.02E+05	4.02E+05	4.02E+05	4.46E+05
EU-152	1.50E+10	1.50E+10	1.50E+10	1.50E+10	1.50E+10	1.50E+10	1.50E+10	1.73E+10
EU-154	1.33E+10	1.33E+10	1.33E+10	1.33E+10	1.33E+10	1.33E+10	1.33E+10	1.53E+10

07/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
EU-155	4.63E+08	4.63E+08	4.63E+08	4.63E+08	4.63E+08	4.63E+08	4.63E+08	5.26E+08
EU-156	8.82E+07	8.82E+07	8.82E+07	8.82E+07	8.82E+07	8.82E+07	8.82E+07	1.01E+08
TB-160	4.75E+08	4.75E+08	4.75E+08	4.75E+08	4.75E+08	4.75E+08	4.75E+08	5.53E+08
HO-166M	2.57E+10	2.57E+10	2.57E+10	2.57E+10	2.57E+10	2.57E+10	2.57E+10	2.89E+10
W-181	1.94E+05	1.94E+05	1.94E+05	1.94E+05	1.94E+05	1.94E+05	1.94E+05	2.59E+05
W-185	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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
U-232	7.00E+06	7.00E+06	7.00E+06	7.00E+06	7.00E+06	7.00E+06	7.00E+06	7.27E+07
U-233	6.68E+09	6.68E+09	6.68E+09	6.68E+09	6.68E+09	6.68E+09	6.68E+09	8.13E+09
U-234	1.83E+06	1.83E+06	1.83E+06	1.83E+06	1.83E+06	1.83E+06	1.83E+06	4.62E+08
U-235	9.29E+09	9.29E+09	9.29E+09	9.29E+09	9.29E+09	9.29E+09	9.29E+09	1.16E+10
U-236	6.10E+04	6.10E+04	6.10E+04	6.10E+04	6.10E+04	6.10E+04	6.10E+04	5.22E+07
U-237	5.16E+06	5.16E+06	5.16E+06	5.16E+06	5.16E+06	5.16E+06	5.16E+06	6.71E+06
U-238	3.19E+08	3.19E+08	3.19E+08	3.19E+08	3.19E+08	3.19E+08	3.19E+08	4.35E+08
NP-237	4.06E+09	4.06E+09	4.06E+09	4.06E+09	4.06E+09	4.06E+09	4.06E+09	4.64E+09
NP-238	4.53E+06	4.53E+06	4.53E+06	4.53E+06	4.53E+06	4.53E+06	4.53E+06	5.18E+06
PU-238	3.56E+06	3.56E+06	3.56E+06	3.56E+06	3.56E+06	3.56E+06	3.56E+06	4.93E+07
PU-239	2.29E+06	2.29E+06	2.29E+06	2.29E+06	2.29E+06	2.29E+06	2.29E+06	2.23E+07
PU-240	3.77E+06	3.77E+06	3.77E+06	3.77E+06	3.77E+06	3.77E+06	3.77E+06	5.22E+07
PU-241	9.51E+06	9.51E+06	9.51E+06	9.51E+06	9.51E+06	9.51E+06	9.51E+06	1.41E+07
PU-242	3.19E+06	3.19E+06	3.19E+06	3.19E+06	3.19E+06	3.19E+06	3.19E+06	4.64E+07
PU-244	2.60E+09	2.60E+09	2.60E+09	2.60E+09	2.60E+09	2.60E+09	2.60E+09	2.79E+09
AM-241	5.16E+08	5.16E+08	5.16E+08	5.16E+08	5.16E+08	5.16E+08	5.16E+08	7.46E+08
AM-242M	7.29E+07	7.29E+07	7.29E+07	7.29E+07	7.29E+07	7.29E+07	7.29E+07	5.05E+08
AM-243	3.77E+09	3.77E+09	3.77E+09	3.77E+09	3.77E+09	3.77E+09	3.77E+09	4.35E+09
CM-242	6.86E+05	6.86E+05	6.86E+05	6.86E+05	6.86E+05	6.86E+05	6.86E+05	2.87E+06
CM-243	5.59E+09	5.59E+09	5.59E+09	5.59E+09	5.59E+09	5.59E+09	5.59E+09	7.05E+09
CM-244	6.40E+06	6.40E+06	6.40E+06	6.40E+06	6.40E+06	6.40E+06	6.40E+06	3.98E+07
CM-245	2.76E+09	2.76E+09	2.76E+09	2.76E+09	2.76E+09	2.76E+09	2.76E+09	3.48E+09
CM-246	2.90E+06	2.90E+06	2.90E+06	2.90E+06	2.90E+06	2.90E+06	2.90E+06	4.35E+07
CM-247	6.39E+09	6.39E+09	6.39E+09	6.39E+09	6.39E+09	6.39E+09	6.39E+09	7.55E+09
CM-248	1.52E+10	1.52E+10	1.52E+10	1.52E+10	1.52E+10	1.52E+10	1.52E+10	1.98E+10
CF-252	4.77E+10	4.77E+10	4.77E+10	4.77E+10	4.77E+10	4.77E+10	4.77E+10	5.20E+10

07/17

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

Table I-6
DOSE FACTOR TABLE: R (i) – Adult, Cow Milk
Units are m²*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-22	5.29E+09	5.29E+09	5.29E+09	5.29E+09	5.29E+09	5.29E+09	5.29E+09	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	1.71E+10	1.06E+09	6.61E+08	0.00E+00	0.00E+00	0.00E+00	1.92E+09	0.00E+00
CA-41	1.14E+10	0.00E+00	1.24E+09	0.00E+00	0.00E+00	0.00E+00	1.14E+07	0.00E+00
SC-46	1.79E+02	3.48E+02	1.01E+02	0.00E+00	3.25E+02	0.00E+00	1.70E+06	0.00E+00
CR-51	0.00E+00	0.00E+00	2.86E+04	1.71E+04	6.30E+03	3.79E+04	7.19E+06	0.00E+00
MN-54	0.00E+00	8.41E+06	1.61E+06	0.00E+00	2.50E+06	0.00E+00	2.58E+07	0.00E+00
FE-55	2.51E+07	1.74E+07	4.05E+06	0.00E+00	0.00E+00	9.68E+06	9.95E+06	0.00E+00
MN-56	0.00E+00	4.15E-03	7.36E-04	0.00E+00	5.27E-03	0.00E+00	1.32E-01	0.00E+00
CO-57	0.00E+00	1.28E+06	2.13E+06	0.00E+00	0.00E+00	0.00E+00	3.25E+07	0.00E+00
CO-58	0.00E+00	4.71E+06	1.06E+07	0.00E+00	0.00E+00	0.00E+00	9.55E+07	0.00E+00
FE-59	2.97E+07	6.98E+07	2.68E+07	0.00E+00	0.00E+00	1.95E+07	2.33E+08	0.00E+00
CO-60	0.00E+00	1.64E+07	3.62E+07	0.00E+00	0.00E+00	0.00E+00	3.08E+08	0.00E+00
NI-59	5.05E+08	1.73E+08	8.44E+07	0.00E+00	0.00E+00	0.00E+00	3.57E+07	0.00E+00
NI-63	6.73E+09	4.66E+08	2.26E+08	0.00E+00	0.00E+00	0.00E+00	9.73E+07	0.00E+00
CU-64	0.00E+00	2.38E+04	1.12E+04	0.00E+00	6.01E+04	0.00E+00	2.03E+06	0.00E+00
NI-65	3.70E-01	4.81E-02	2.19E-02	0.00E+00	0.00E+00	0.00E+00	1.22E+00	0.00E+00
ZN-65	1.37E+09	4.37E+09	1.97E+09	0.00E+00	2.92E+09	0.00E+00	2.75E+09	0.00E+00
ZN-69M	1.79E+05	4.29E+05	3.93E+04	0.00E+00	2.60E+05	0.00E+00	2.62E+07	0.00E+00
ZN-69	2.09E-12	4.00E-12	2.78E-13	0.00E+00	2.60E-12	0.00E+00	6.01E-13	0.00E+00
SE-79	0.00E+00	9.15E+08	1.53E+08	0.00E+00	1.58E+09	0.00E+00	1.87E+08	0.00E+00
BR-82	0.00E+00	0.00E+00	3.23E+07	0.00E+00	0.00E+00	0.00E+00	3.70E+07	0.00E+00
BR-83	0.00E+00	0.00E+00	9.72E-02	0.00E+00	0.00E+00	0.00E+00	1.40E-01	0.00E+00
BR-84	0.00E+00	0.00E+00	1.61E-23	0.00E+00	0.00E+00	0.00E+00	1.26E-28	0.00E+00
BR-85	0.00E+00	0.00E+00	1.95E-301	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	2.59E+09	1.21E+09	0.00E+00	0.00E+00	0.00E+00	5.12E+08	0.00E+00
RB-87	0.00E+00	2.85E+09	9.92E+08	0.00E+00	0.00E+00	0.00E+00	1.34E+08	0.00E+00
RB-88	0.00E+00	2.14E-45	1.13E-45	0.00E+00	0.00E+00	0.00E+00	2.96E-56	0.00E+00
RB-89	0.00E+00	4.33E-53	3.05E-53	0.00E+00	0.00E+00	0.00E+00	2.52E-66	0.00E+00
SR-89	1.45E+09	0.00E+00	4.16E+07	0.00E+00	0.00E+00	0.00E+00	2.33E+08	0.00E+00
SR-90	4.68E+10	0.00E+00	1.15E+10	0.00E+00	0.00E+00	0.00E+00	1.35E+09	0.00E+00
Y-90	7.08E+01	0.00E+00	1.90E+00	0.00E+00	0.00E+00	0.00E+00	7.51E+05	0.00E+00
SR-91	2.89E+04	0.00E+00	1.17E+03	0.00E+00	0.00E+00	0.00E+00	1.38E+05	0.00E+00
Y-91M	5.98E-20	0.00E+00	2.32E-21	0.00E+00	0.00E+00	0.00E+00	1.76E-19	0.00E+00
Y-91	8.59E+03	0.00E+00	2.30E+02	0.00E+00	0.00E+00	0.00E+00	4.73E+06	0.00E+00
SR-92	4.88E-01	0.00E+00	2.11E-02	0.00E+00	0.00E+00	0.00E+00	9.68E+00	0.00E+00
Y-92	5.58E-05	0.00E+00	1.63E-06	0.00E+00	0.00E+00	0.00E+00	9.77E-01	0.00E+00
Y-93	2.23E-01	0.00E+00	6.17E-03	0.00E+00	0.00E+00	0.00E+00	7.08E+03	0.00E+00
NB-93M	4.91E+05	1.60E+05	3.95E+04	0.00E+00	1.84E+05	0.00E+00	7.40E+07	0.00E+00
NB-95	8.26E+04	4.59E+04	2.47E+04	0.00E+00	4.54E+04	0.00E+00	2.79E+08	0.00E+00
NB-97	3.29E-12	8.32E-13	3.04E-13	0.00E+00	9.71E-13	0.00E+00	3.07E-09	0.00E+00
ZR-93	1.62E+03	9.04E+01	4.21E+01	0.00E+00	3.43E+02	0.00E+00	9.39E+04	0.00E+00
ZR-95	9.43E+02	3.03E+02	2.05E+02	0.00E+00	4.75E+02	0.00E+00	9.59E+05	0.00E+00
ZR-97	4.33E-01	8.74E-02	4.00E-02	0.00E+00	1.32E-01	0.00E+00	2.71E+04	0.00E+00
MO-93	0.00E+00	4.35E+08	1.18E+07	0.00E+00	1.23E+08	0.00E+00	7.07E+07	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-99	2.42E+07	3.59E+07	9.70E+06	0.00E+00	4.52E+08	3.05E+06	1.17E+09	0.00E+00
TC-99M	3.32E+00	9.38E+00	1.20E+02	0.00E+00	1.43E+02	4.60E+00	5.55E+03	0.00E+00
TC-101	2.59E-60	3.74E-60	3.66E-59	0.00E+00	6.73E-59	1.91E-60	1.12E-71	0.00E+00
RU-103	1.02E+03	0.00E+00	4.39E+02	0.00E+00	3.89E+03	0.00E+00	1.19E+05	0.00E+00
RU-105	8.57E-04	0.00E+00	3.38E-04	0.00E+00	1.11E-02	0.00E+00	5.24E-01	0.00E+00
RU-106	2.04E+04	0.00E+00	2.58E+03	0.00E+00	3.94E+04	0.00E+00	1.32E+06	0.00E+00

03/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
RH-105	3.47E+05	2.54E+05	1.67E+05	0.00E+00	1.08E+06	0.00E+00	4.04E+07	0.00E+00
PD-107	0.00E+00	1.14E+07	7.27E+05	0.00E+00	1.02E+08	0.00E+00	7.04E+07	0.00E+00
PD-109	0.00E+00	4.43E+04	9.98E+03	0.00E+00	2.53E+05	0.00E+00	4.90E+06	0.00E+00
AG-110M	5.82E+07	5.39E+07	3.20E+07	0.00E+00	1.06E+08	0.00E+00	2.20E+10	0.00E+00
AG-111	6.48E+06	2.71E+06	1.35E+06	0.00E+00	8.74E+06	0.00E+00	4.97E+09	0.00E+00
CD-113M	0.00E+00	2.94E+06	9.43E+04	0.00E+00	3.24E+06	0.00E+00	2.37E+07	0.00E+00
CD-115M	0.00E+00	1.26E+06	4.02E+04	0.00E+00	9.99E+05	0.00E+00	5.30E+07	0.00E+00
SN-123	5.36E+08	8.88E+06	1.31E+07	7.55E+06	0.00E+00	0.00E+00	1.09E+09	0.00E+00
SN-125	5.68E+07	1.15E+06	2.58E+06	9.48E+05	0.00E+00	0.00E+00	7.10E+08	0.00E+00
SN-126	1.63E+09	3.23E+07	4.64E+07	9.51E+06	0.00E+00	0.00E+00	4.70E+08	0.00E+00
SB-124	2.57E+07	4.86E+05	1.02E+07	6.24E+04	0.00E+00	2.00E+07	7.31E+08	0.00E+00
SB-125	2.04E+07	2.28E+05	4.86E+06	2.08E+04	0.00E+00	1.58E+07	2.25E+08	0.00E+00
SB-126	5.60E+06	1.14E+05	2.02E+06	3.43E+04	0.00E+00	3.43E+06	4.58E+08	0.00E+00
SB-127	4.50E+05	9.85E+03	1.73E+05	5.41E+03	0.00E+00	2.67E+05	1.03E+08	0.00E+00
TE-125M	1.63E+07	5.90E+06	2.18E+06	4.90E+06	6.63E+07	0.00E+00	6.50E+07	0.00E+00
TE-127M	4.58E+07	1.64E+07	5.58E+06	1.17E+07	1.86E+08	0.00E+00	1.54E+08	0.00E+00
TE-127	6.53E+02	2.34E+02	1.41E+02	4.84E+02	2.66E+03	0.00E+00	5.15E+04	0.00E+00
TE-129M	6.02E+07	2.25E+07	9.53E+06	2.07E+07	2.51E+08	0.00E+00	3.03E+08	0.00E+00
TE-129	2.82E-10	1.06E-10	6.88E-11	2.17E-10	1.19E-09	0.00E+00	2.13E-10	0.00E+00
TE-133M	2.10E-13	1.23E-13	1.18E-13	1.78E-13	1.22E-12	0.00E+00	4.22E-14	0.00E+00
TE-134	8.90E-19	5.83E-19	3.57E-19	7.78E-19	5.63E-18	0.00E+00	9.87E-22	0.00E+00
I-129	7.58E+08	6.52E+08	2.14E+09	1.68E+12	1.40E+09	0.00E+00	1.03E+08	0.00E+00
I-130	4.20E+05	1.24E+06	4.89E+05	1.05E+08	1.93E+06	0.00E+00	1.07E+06	0.00E+00
I-131	2.96E+08	4.23E+08	2.43E+08	1.39E+11	7.26E+08	0.00E+00	1.12E+08	0.00E+00
TE-131M	3.61E+05	1.77E+05	1.47E+05	2.80E+05	1.79E+06	0.00E+00	1.75E+07	0.00E+00
TE-131	3.60E-33	1.51E-33	1.14E-33	2.96E-33	1.58E-32	0.00E+00	5.10E-34	0.00E+00
I-132	1.64E-01	4.39E-01	1.54E-01	1.54E+01	7.00E-01	0.00E+00	8.25E-02	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-133	3.87E+06	6.73E+06	2.05E+06	9.89E+08	1.17E+07	0.00E+00	6.05E+06	0.00E+00
CS-134M	1.74E-01	3.65E-01	1.87E-01	0.00E+00	1.98E-01	3.12E-02	1.29E-01	0.00E+00
CS-134	5.65E+09	1.35E+10	1.10E+10	0.00E+00	4.35E+09	1.45E+09	2.35E+08	0.00E+00
I-134	2.02E-12	5.48E-12	1.96E-12	9.49E-11	8.71E-12	0.00E+00	4.77E-15	0.00E+00
I-135	1.28E+04	3.36E+04	1.24E+04	2.22E+06	5.39E+04	0.00E+00	3.80E+04	0.00E+00
CS-135	1.81E+09	1.67E+09	7.41E+08	0.00E+00	6.32E+08	1.89E+08	3.90E+07	0.00E+00
CS-136	2.63E+08	1.04E+09	7.48E+08	0.00E+00	5.78E+08	7.93E+07	1.18E+08	0.00E+00
CS-137	7.38E+09	1.01E+10	6.61E+09	0.00E+00	3.43E+09	1.14E+09	1.95E+08	0.00E+00
CS-138	9.04E-24	1.79E-23	8.85E-24	0.00E+00	1.31E-23	1.30E-24	7.62E-29	0.00E+00
CS-139	6.78E-90	1.01E-89	3.68E-90	0.00E+00	8.09E-90	7.36E-91	2.19E-112	0.00E+00
BA-139	4.42E-08	3.15E-11	1.29E-09	0.00E+00	2.94E-11	1.79E-11	7.84E-08	0.00E+00
BA-140	2.69E+07	3.38E+04	1.76E+06	0.00E+00	1.15E+04	1.93E+04	5.53E+07	0.00E+00
LA-140	4.51E+00	2.27E+00	6.01E-01	0.00E+00	0.00E+00	0.00E+00	1.67E+05	0.00E+00
BA-141	4.09E-46	3.09E-49	1.38E-47	0.00E+00	2.88E-49	1.76E-49	1.93E-55	0.00E+00
LA-141	3.04E-05	9.44E-06	1.55E-06	0.00E+00	0.00E+00	0.00E+00	1.13E+00	0.00E+00
CE-141	4.84E+03	3.28E+03	3.72E+02	0.00E+00	1.52E+03	0.00E+00	1.25E+07	0.00E+00
BA-142	2.66E-80	2.73E-83	1.67E-81	0.00E+00	2.31E-83	1.55E-83	3.74E-98	0.00E+00
LA-142	1.86E-11	8.45E-12	2.10E-12	0.00E+00	0.00E+00	0.00E+00	6.17E-08	0.00E+00
CE-143	4.16E+01	3.07E+04	3.40E+00	0.00E+00	1.35E+01	0.00E+00	1.15E+06	0.00E+00
PR-143	1.58E+02	6.33E+01	7.83E+00	0.00E+00	3.66E+01	0.00E+00	6.92E+05	0.00E+00
CE-144	3.58E+05	1.50E+05	1.92E+04	0.00E+00	8.87E+04	0.00E+00	1.21E+08	0.00E+00
PR-144	5.87E-54	2.44E-54	2.98E-55	0.00E+00	1.37E-54	0.00E+00	8.44E-61	0.00E+00
ND-147	9.42E+01	1.09E+02	6.51E+00	0.00E+00	6.36E+01	0.00E+00	5.22E+05	0.00E+00
PM-147	2.87E+03	2.70E+02	1.09E+02	0.00E+00	5.10E+02	0.00E+00	3.40E+05	0.00E+00
PM-148M	8.57E+02	2.22E+02	1.70E+02	0.00E+00	3.35E+02	0.00E+00	1.88E+06	0.00E+00
PM-148	5.93E+01	9.84E+00	4.96E+00	0.00E+00	1.86E+01	0.00E+00	7.74E+05	0.00E+00
PM-149	4.28E+00	6.05E-01	2.47E-01	0.00E+00	1.14E+00	0.00E+00	1.13E+05	0.00E+00
PM-151	6.50E-01	1.09E-01	5.51E-02	0.00E+00	1.95E-01	0.00E+00	3.00E+04	0.00E+00
SM-151	2.67E+03	4.60E+02	1.10E+02	0.00E+00	5.14E+02	0.00E+00	2.03E+05	0.00E+00
SM-153	1.98E+00	1.65E+00	1.21E-01	0.00E+00	5.34E-01	0.00E+00	5.89E+04	0.00E+00
EU-152	7.51E+03	1.71E+03	1.50E+03	0.00E+00	1.06E+04	0.00E+00	9.86E+05	0.00E+00
EU-154	2.37E+04	2.91E+03	2.07E+03	0.00E+00	1.39E+04	0.00E+00	2.11E+06	0.00E+00

07/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
EU-155	3.30E+03	4.67E+02	3.02E+02	0.00E+00	2.16E+03	0.00E+00	3.68E+05	0.00E+00
EU-156	2.51E+02	1.95E+02	3.14E+01	0.00E+00	1.30E+02	0.00E+00	1.33E+06	0.00E+00
TB-160	1.49E+03	0.00E+00	1.86E+02	0.00E+00	6.16E+02	0.00E+00	1.38E+06	0.00E+00
HO-166M	1.04E+04	3.26E+03	2.47E+03	0.00E+00	4.87E+03	0.00E+00	9.89E+05	0.00E+00
W-181	3.39E+04	1.11E+04	1.18E+03	0.00E+00	0.00E+00	0.00E+00	1.26E+06	0.00E+00
W-185	1.29E+06	4.32E+05	4.54E+04	0.00E+00	0.00E+00	0.00E+00	4.99E+07	0.00E+00
W-187	6.51E+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
U-232	1.60E+10	0.00E+00	1.14E+09	0.00E+00	1.73E+09	0.00E+00	2.62E+08	0.00E+00
U-233	3.37E+09	0.00E+00	2.04E+08	0.00E+00	7.84E+08	0.00E+00	2.42E+08	0.00E+00
U-234	3.23E+09	0.00E+00	2.00E+08	0.00E+00	7.69E+08	0.00E+00	2.37E+08	0.00E+00
U-235	3.10E+09	0.00E+00	1.88E+08	0.00E+00	7.23E+08	0.00E+00	3.02E+08	0.00E+00
U-236	3.10E+09	0.00E+00	1.92E+08	0.00E+00	7.38E+08	0.00E+00	2.23E+08	0.00E+00
U-237	5.65E+04	0.00E+00	1.50E+04	0.00E+00	2.32E+05	0.00E+00	1.99E+07	0.00E+00
U-238	2.96E+09	0.00E+00	1.75E+08	0.00E+00	6.76E+08	0.00E+00	2.13E+08	0.00E+00
NP-237	4.87E+07	3.46E+06	2.14E+06	0.00E+00	1.59E+07	0.00E+00	3.07E+06	0.00E+00
NP-238	3.61E+01	9.72E-01	5.61E-01	0.00E+00	3.29E+00	0.00E+00	9.04E+04	0.00E+00
PU-238	9.73E+06	1.23E+06	2.64E+05	0.00E+00	1.13E+06	0.00E+00	1.13E+06	0.00E+00
PU-239	1.12E+07	1.35E+06	2.95E+05	0.00E+00	1.25E+06	0.00E+00	1.03E+06	0.00E+00
PU-240	1.12E+07	1.34E+06	2.95E+05	0.00E+00	1.25E+06	0.00E+00	1.05E+06	0.00E+00
PU-241	2.42E+05	1.15E+04	5.12E+03	0.00E+00	2.36E+04	0.00E+00	2.16E+04	0.00E+00
PU-242	1.04E+07	1.30E+06	2.84E+05	0.00E+00	1.21E+06	0.00E+00	1.01E+06	0.00E+00
PU-244	1.21E+07	1.49E+06	3.26E+05	0.00E+00	1.38E+06	0.00E+00	1.50E+06	0.00E+00
AM-241	2.92E+07	2.72E+07	2.09E+06	0.00E+00	1.57E+07	0.00E+00	2.87E+06	0.00E+00
AM-242M	2.94E+07	2.56E+07	2.10E+06	0.00E+00	1.56E+07	0.00E+00	3.61E+06	0.00E+00
AM-243	2.91E+07	2.67E+07	2.05E+06	0.00E+00	1.54E+07	0.00E+00	3.36E+06	0.00E+00
CM-242	7.27E+05	7.73E+05	4.83E+04	0.00E+00	2.19E+05	0.00E+00	2.79E+06	0.00E+00
CM-243	2.31E+07	2.12E+07	1.45E+06	0.00E+00	6.75E+06	0.00E+00	3.01E+06	0.00E+00
CM-244	1.76E+07	1.65E+07	1.11E+06	0.00E+00	5.17E+06	0.00E+00	2.91E+06	0.00E+00
CM-245	3.62E+07	3.16E+07	2.23E+06	0.00E+00	1.04E+07	0.00E+00	2.72E+06	0.00E+00
CM-246	3.59E+07	3.15E+07	2.22E+06	0.00E+00	1.04E+07	0.00E+00	2.67E+06	0.00E+00
CM-247	3.50E+07	3.11E+07	2.19E+06	0.00E+00	1.02E+07	0.00E+00	3.51E+06	0.00E+00
CM-248	2.91E+08	2.56E+08	1.80E+07	0.00E+00	8.42E+07	0.00E+00	5.68E+07	0.00E+00
CF-252	9.93E+06	0.00E+00	2.39E+05	0.00E+00	0.00E+00	0.00E+00	1.10E+07	0.00E+00

03/17

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

Table I-7
DOSE FACTOR TABLE: R (i) – Teen, Cow Milk
Units are m²*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-22	9.19E+09	9.19E+09	9.19E+09	9.19E+09	9.19E+09	9.19E+09	9.19E+09	0.00E+00
NA-24	4.26E+06	4.26E+06	4.26E+06	4.26E+06	4.26E+06	4.26E+06	4.26E+06	0.00E+00
P-32	3.15E+10	1.95E+09	1.22E+09	0.00E+00	0.00E+00	0.00E+00	2.65E+09	0.00E+00
CA-41	1.57E+10	0.00E+00	1.70E+09	0.00E+00	0.00E+00	0.00E+00	1.56E+07	0.00E+00
SC-46	3.04E+02	5.93E+02	1.76E+02	0.00E+00	5.67E+02	0.00E+00	2.02E+06	0.00E+00
CR-51	0.00E+00	0.00E+00	4.99E+04	2.77E+04	1.09E+04	7.13E+04	8.39E+06	0.00E+00
MN-54	0.00E+00	1.40E+07	2.78E+06	0.00E+00	4.18E+06	0.00E+00	2.87E+07	0.00E+00
FE-55	4.45E+07	3.16E+07	7.36E+06	0.00E+00	0.00E+00	2.00E+07	1.37E+07	0.00E+00
MN-56	0.00E+00	7.36E-03	1.31E-03	0.00E+00	9.31E-03	0.00E+00	4.84E-01	0.00E+00
CO-57	0.00E+00	2.25E+06	3.76E+06	0.00E+00	0.00E+00	0.00E+00	4.19E+07	0.00E+00
CO-58	0.00E+00	7.94E+06	1.83E+07	0.00E+00	0.00E+00	0.00E+00	1.09E+08	0.00E+00
FE-59	5.18E+07	1.21E+08	4.67E+07	0.00E+00	0.00E+00	3.81E+07	2.86E+08	0.00E+00
CO-60	0.00E+00	2.78E+07	6.26E+07	0.00E+00	0.00E+00	0.00E+00	3.62E+08	0.00E+00
NI-59	8.82E+08	3.11E+08	1.50E+08	0.00E+00	0.00E+00	0.00E+00	4.88E+07	0.00E+00
NI-63	1.18E+10	8.35E+08	4.01E+08	0.00E+00	0.00E+00	0.00E+00	1.33E+08	0.00E+00
CU-64	0.00E+00	4.25E+04	2.00E+04	0.00E+00	1.07E+05	0.00E+00	3.29E+06	0.00E+00
NI-65	6.77E-01	8.65E-02	3.94E-02	0.00E+00	0.00E+00	0.00E+00	4.69E+00	0.00E+00
ZN-65	2.11E+09	7.32E+09	3.41E+09	0.00E+00	4.68E+09	0.00E+00	3.10E+09	0.00E+00
ZN-69M	3.26E+05	7.69E+05	7.05E+04	0.00E+00	4.67E+05	0.00E+00	4.22E+07	0.00E+00
ZN-69	3.85E-12	7.34E-12	5.13E-13	0.00E+00	4.79E-12	0.00E+00	1.35E-11	0.00E+00
SE-79	0.00E+00	1.67E+09	2.81E+08	0.00E+00	2.92E+09	0.00E+00	2.56E+08	0.00E+00
BR-82	0.00E+00	0.00E+00	5.61E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	1.79E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	2.88E-23	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	0.00E+00	0.00E+00	3.59E-301	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	4.73E+09	2.22E+09	0.00E+00	0.00E+00	0.00E+00	7.00E+08	0.00E+00
RB-87	0.00E+00	5.24E+09	1.83E+09	0.00E+00	0.00E+00	0.00E+00	1.83E+08	0.00E+00
RB-88	0.00E+00	3.89E-45	2.07E-45	0.00E+00	0.00E+00	0.00E+00	3.33E-52	0.00E+00
RB-89	0.00E+00	7.66E-53	5.42E-53	0.00E+00	0.00E+00	0.00E+00	1.17E-61	0.00E+00
SR-89	2.67E+09	0.00E+00	7.66E+07	0.00E+00	0.00E+00	0.00E+00	3.19E+08	0.00E+00
SR-90	6.61E+10	0.00E+00	1.63E+10	0.00E+00	0.00E+00	0.00E+00	1.86E+09	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
SR-91	5.31E+04	0.00E+00	2.11E+03	0.00E+00	0.00E+00	0.00E+00	2.41E+05	0.00E+00
Y-91M	1.10E-19	0.00E+00	4.19E-21	0.00E+00	0.00E+00	0.00E+00	5.17E-18	0.00E+00
Y-91	1.58E+04	0.00E+00	4.24E+02	0.00E+00	0.00E+00	0.00E+00	6.48E+06	0.00E+00
SR-92	8.94E-01	0.00E+00	3.81E-02	0.00E+00	0.00E+00	0.00E+00	2.28E+01	0.00E+00
Y-92	1.03E-04	0.00E+00	2.98E-06	0.00E+00	0.00E+00	0.00E+00	2.83E+00	0.00E+00
Y-93	4.12E-01	0.00E+00	1.13E-02	0.00E+00	0.00E+00	0.00E+00	1.26E+04	0.00E+00
NB-93M	8.55E+05	2.81E+05	7.04E+04	0.00E+00	3.28E+05	0.00E+00	1.01E+08	0.00E+00
NB-95	1.41E+05	7.81E+04	4.30E+04	0.00E+00	7.57E+04	0.00E+00	3.34E+08	0.00E+00
NB-97	5.99E-12	1.49E-12	5.43E-13	0.00E+00	1.74E-12	0.00E+00	3.55E-08	0.00E+00
ZR-93	2.76E+03	1.36E+02	7.43E+01	0.00E+00	4.81E+02	0.00E+00	1.29E+05	0.00E+00
ZR-95	1.65E+03	5.20E+02	3.58E+02	0.00E+00	7.65E+02	0.00E+00	1.20E+06	0.00E+00
ZR-97	7.88E-01	1.56E-01	7.19E-02	0.00E+00	2.37E-01	0.00E+00	4.22E+04	0.00E+00
MO-93	0.00E+00	7.93E+08	2.17E+07	0.00E+00	2.27E+08	0.00E+00	9.65E+07	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-99	4.46E+07	6.56E+07	1.79E+07	0.00E+00	8.33E+08	6.78E+06	1.61E+09	0.00E+00
TC-99M	5.76E+00	1.61E+01	2.08E+02	0.00E+00	2.39E+02	8.92E+00	1.05E+04	0.00E+00
TC-101	4.74E-60	6.74E-60	6.62E-59	0.00E+00	1.22E-58	4.11E-60	1.15E-66	0.00E+00
RU-103	1.81E+03	0.00E+00	7.74E+02	0.00E+00	6.38E+03	0.00E+00	1.51E+05	0.00E+00
RU-105	1.56E-03	0.00E+00	6.07E-04	0.00E+00	1.97E-02	0.00E+00	1.26E+00	0.00E+00
RU-106	3.75E+04	0.00E+00	4.73E+03	0.00E+00	7.24E+04	0.00E+00	1.80E+06	0.00E+00

02/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
RH-105	6.40E+05	4.63E+05	3.04E+05	0.00E+00	1.97E+06	0.00E+00	5.89E+07	0.00E+00
PD-107	0.00E+00	2.07E+07	1.34E+06	0.00E+00	1.87E+08	0.00E+00	9.63E+07	0.00E+00
PD-109	0.00E+00	8.10E+04	1.84E+04	0.00E+00	4.68E+05	0.00E+00	8.17E+06	0.00E+00
AG-110M	9.63E+07	9.11E+07	5.54E+07	0.00E+00	1.74E+08	0.00E+00	2.56E+10	0.00E+00
AG-111	1.19E+07	4.95E+06	2.49E+06	0.00E+00	1.61E+07	0.00E+00	6.91E+09	0.00E+00
CD-113M	0.00E+00	5.38E+06	1.73E+05	0.00E+00	5.95E+06	0.00E+00	3.23E+07	0.00E+00
CD-115M	0.00E+00	2.30E+06	7.41E+04	0.00E+00	1.84E+06	0.00E+00	7.27E+07	0.00E+00
SN-123	9.88E+08	1.62E+07	2.40E+07	1.30E+07	0.00E+00	0.00E+00	1.49E+09	0.00E+00
SN-125	1.05E+08	2.09E+06	4.73E+06	1.64E+06	0.00E+00	0.00E+00	9.86E+08	0.00E+00
SN-126	2.89E+09	5.39E+07	8.23E+07	1.42E+07	0.00E+00	0.00E+00	6.43E+08	0.00E+00
SB-124	4.59E+07	8.46E+05	1.79E+07	1.04E+05	0.00E+00	4.01E+07	9.25E+08	0.00E+00
SB-125	3.65E+07	3.99E+05	8.55E+06	3.49E+04	0.00E+00	3.21E+07	2.84E+08	0.00E+00
SB-126	9.99E+06	2.04E+05	3.59E+06	5.65E+04	0.00E+00	7.16E+06	5.91E+08	0.00E+00
SB-127	8.17E+05	1.75E+04	3.08E+05	9.18E+03	0.00E+00	5.56E+05	1.39E+08	0.00E+00
TE-125M	3.00E+07	1.08E+07	4.02E+06	8.39E+06	0.00E+00	0.00E+00	8.86E+07	0.00E+00
TE-127M	8.44E+07	2.99E+07	1.00E+07	2.01E+07	3.42E+08	0.00E+00	2.10E+08	0.00E+00
TE-127	1.21E+03	4.29E+02	2.60E+02	8.35E+02	4.90E+03	0.00E+00	9.34E+04	0.00E+00
TE-129M	1.10E+08	4.09E+07	1.74E+07	3.55E+07	4.61E+08	0.00E+00	4.13E+08	0.00E+00
TE-129	5.20E-10	1.94E-10	1.26E-10	3.71E-10	2.18E-09	0.00E+00	2.84E-09	0.00E+00
TE-133M	3.79E-13	2.15E-13	2.09E-13	3.00E-13	2.13E-12	0.00E+00	8.70E-13	0.00E+00
TE-134	1.59E-18	1.02E-18	1.06E-18	1.30E-18	9.72E-18	0.00E+00	5.89E-20	0.00E+00
I-129	1.39E+09	1.17E+09	1.96E+09	1.43E+12	2.10E+09	0.00E+00	1.37E+08	0.00E+00
I-130	7.38E+05	2.14E+06	8.53E+05	1.74E+08	3.29E+06	0.00E+00	1.64E+06	0.00E+00
I-131	5.37E+08	7.52E+08	4.04E+08	2.19E+11	1.29E+09	0.00E+00	1.49E+08	0.00E+00
TE-131M	6.57E+05	3.15E+05	2.63E+05	4.74E+05	3.29E+06	0.00E+00	2.53E+07	0.00E+00
TE-131	6.58E-33	2.71E-33	2.06E-33	5.07E-33	2.88E-32	0.00E+00	5.40E-34	0.00E+00
I-132	2.91E-01	7.62E-01	2.74E-01	2.57E+01	1.20E+00	0.00E+00	3.32E-01	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-133	7.07E+06	1.20E+07	3.66E+06	1.67E+09	2.10E+07	0.00E+00	9.07E+06	0.00E+00
CS-134M	3.09E-01	6.41E-01	3.29E-01	0.00E+00	3.57E-01	6.26E-02	4.26E-01	0.00E+00
CS-134	9.82E+09	2.31E+10	1.07E+10	0.00E+00	7.34E+09	2.80E+09	2.87E+08	0.00E+00
I-134	3.58E-12	9.50E-12	3.41E-12	1.58E-10	1.50E-11	0.00E+00	1.25E-13	0.00E+00
I-135	2.28E+04	5.87E+04	2.18E+04	3.78E+06	9.27E+04	0.00E+00	6.51E+04	0.00E+00
CS-135	3.33E+09	3.05E+09	7.13E+08	0.00E+00	1.16E+09	4.21E+08	5.34E+07	0.00E+00
CS-136	4.48E+08	1.76E+09	1.18E+09	0.00E+00	9.60E+08	1.51E+08	1.42E+08	0.00E+00
CS-137	1.34E+10	1.78E+10	6.20E+09	0.00E+00	6.06E+09	2.35E+09	2.53E+08	0.00E+00
CS-138	1.64E-23	3.15E-23	1.57E-23	0.00E+00	2.33E-23	2.71E-24	1.43E-26	0.00E+00
CS-139	1.25E-89	1.84E-89	6.75E-90	0.00E+00	1.49E-89	1.63E-90	8.54E-105	0.00E+00
BA-139	8.17E-08	5.75E-11	2.38E-09	0.00E+00	5.42E-11	3.96E-11	7.29E-07	0.00E+00
BA-140	4.85E+07	5.95E+04	3.13E+06	0.00E+00	2.02E+04	4.00E+04	7.48E+07	0.00E+00
LA-140	8.10E+00	3.98E+00	1.06E+00	0.00E+00	0.00E+00	0.00E+00	2.29E+05	0.00E+00
BA-141	7.52E-46	5.62E-49	2.51E-47	0.00E+00	5.21E-49	3.85E-49	1.60E-51	0.00E+00
LA-141	5.60E-05	1.72E-05	2.84E-06	0.00E+00	0.00E+00	0.00E+00	3.05E+00	0.00E+00
CE-141	8.88E+03	5.93E+03	6.81E+02	0.00E+00	2.79E+03	0.00E+00	1.70E+07	0.00E+00
BA-142	4.81E-80	4.81E-83	2.96E-81	0.00E+00	4.07E-83	3.20E-83	1.48E-91	0.00E+00
LA-142	3.35E-11	1.49E-11	3.71E-12	0.00E+00	0.00E+00	0.00E+00	4.53E-07	0.00E+00
CE-143	7.64E+01	5.56E+04	6.21E+00	0.00E+00	2.49E+01	0.00E+00	1.67E+06	0.00E+00
PR-143	2.90E+02	1.16E+02	1.44E+01	0.00E+00	6.73E+01	0.00E+00	9.54E+05	0.00E+00
CE-144	6.58E+05	2.72E+05	3.54E+04	0.00E+00	1.63E+05	0.00E+00	1.66E+08	0.00E+00
PR-144	1.08E-53	4.43E-54	5.48E-55	0.00E+00	2.54E-54	0.00E+00	1.19E-56	0.00E+00
ND-147	1.81E+02	1.97E+02	1.18E+01	0.00E+00	1.16E+02	0.00E+00	7.11E+05	0.00E+00
PM-147	5.15E+03	4.89E+02	1.99E+02	0.00E+00	9.32E+02	0.00E+00	4.65E+05	0.00E+00
PM-148M	1.49E+03	3.78E+02	2.96E+02	0.00E+00	5.73E+02	0.00E+00	2.38E+06	0.00E+00
PM-148	1.09E+02	1.77E+01	8.92E+00	0.00E+00	3.20E+01	0.00E+00	1.06E+06	0.00E+00
PM-149	7.88E+00	1.11E+00	4.54E-01	0.00E+00	2.11E+00	0.00E+00	1.63E+05	0.00E+00
PM-151	1.19E+00	1.96E-01	9.92E-02	0.00E+00	3.52E-01	0.00E+00	4.40E+04	0.00E+00
SM-151	4.35E+03	8.37E+02	1.96E+02	0.00E+00	9.17E+02	0.00E+00	2.84E+05	0.00E+00
SM-153	3.64E+00	3.01E+00	2.22E-01	0.00E+00	9.84E-01	0.00E+00	8.50E+04	0.00E+00
EU-152	1.22E+04	2.93E+03	2.58E+03	0.00E+00	1.36E+04	0.00E+00	1.08E+06	0.00E+00
EU-154	3.93E+04	5.06E+03	3.57E+03	0.00E+00	2.26E+04	0.00E+00	2.67E+06	0.00E+00

03/11

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
EU-155	8.60E+03	8.31E+02	5.14E+02	0.00E+00	3.25E+03	0.00E+00	4.76E+06	0.00E+00
EU-156	4.55E+02	3.41E+02	5.57E+01	0.00E+00	2.29E+02	0.00E+00	1.74E+06	0.00E+00
TB-160	2.65E+03	0.00E+00	3.31E+02	0.00E+00	1.05E+03	0.00E+00	1.72E+06	0.00E+00
HO-166M	1.78E+04	5.48E+03	3.97E+03	0.00E+00	8.03E+03	0.00E+00	1.35E+06	0.00E+00
W-181	6.27E+04	2.02E+04	2.12E+03	0.00E+00	0.00E+00	0.00E+00	1.72E+06	0.00E+00
W-185	2.39E+06	7.88E+05	8.33E+04	0.00E+00	0.00E+00	0.00E+00	6.81E+07	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	2.07E+00	0.00E+00	1.06E+05	0.00E+00
U-232	2.94E+10	0.00E+00	2.10E+09	0.00E+00	3.18E+09	0.00E+00	3.58E+08	0.00E+00
U-233	6.18E+09	0.00E+00	3.76E+08	0.00E+00	1.45E+09	0.00E+00	3.32E+08	0.00E+00
U-234	5.93E+09	0.00E+00	3.68E+08	0.00E+00	1.42E+09	0.00E+00	3.25E+08	0.00E+00
U-235	5.68E+09	0.00E+00	3.46E+08	0.00E+00	1.33E+09	0.00E+00	4.13E+08	0.00E+00
U-236	5.68E+09	0.00E+00	3.54E+08	0.00E+00	1.36E+09	0.00E+00	3.05E+08	0.00E+00
U-237	1.04E+05	0.00E+00	2.77E+04	0.00E+00	4.28E+05	0.00E+00	2.76E+07	0.00E+00
U-238	5.44E+09	0.00E+00	3.24E+08	0.00E+00	1.25E+09	0.00E+00	2.91E+08	0.00E+00
NP-237	6.63E+07	4.76E+06	2.92E+06	0.00E+00	2.16E+07	0.00E+00	4.19E+06	0.00E+00
NP-238	6.63E+01	1.77E+00	1.03E+00	0.00E+00	6.09E+00	0.00E+00	1.30E+05	0.00E+00
PU-238	1.34E+07	1.71E+06	3.63E+05	0.00E+00	1.55E+06	0.00E+00	1.54E+06	0.00E+00
PU-239	1.53E+07	1.85E+06	4.01E+05	0.00E+00	1.71E+06	0.00E+00	1.41E+06	0.00E+00
PU-240	1.52E+07	1.85E+06	4.01E+05	0.00E+00	1.71E+06	0.00E+00	1.43E+06	0.00E+00
PU-241	3.48E+05	1.67E+04	7.34E+03	0.00E+00	3.40E+04	0.00E+00	2.94E+04	0.00E+00
PU-242	1.41E+07	1.78E+06	3.87E+05	0.00E+00	1.65E+06	0.00E+00	1.38E+06	0.00E+00
PU-244	1.65E+07	2.03E+06	4.43E+05	0.00E+00	1.88E+06	0.00E+00	2.05E+06	0.00E+00
AM-241	3.98E+07	3.75E+07	2.87E+06	0.00E+00	2.15E+07	0.00E+00	3.92E+06	0.00E+00
AM-242M	4.02E+07	3.54E+07	2.89E+06	0.00E+00	2.14E+07	0.00E+00	4.94E+06	0.00E+00
AM-243	3.97E+07	3.66E+07	2.80E+06	0.00E+00	2.10E+07	0.00E+00	4.60E+06	0.00E+00
CM-242	1.34E+06	1.41E+06	8.88E+04	0.00E+00	4.05E+05	0.00E+00	3.82E+06	0.00E+00
CM-243	3.24E+07	3.00E+07	2.04E+06	0.00E+00	9.51E+06	0.00E+00	4.12E+06	0.00E+00
CM-244	2.51E+07	2.37E+07	1.59E+06	0.00E+00	7.41E+06	0.00E+00	3.98E+06	0.00E+00
CM-245	4.94E+07	4.34E+07	3.04E+06	0.00E+00	1.42E+07	0.00E+00	3.72E+06	0.00E+00
CM-246	4.90E+07	4.34E+07	3.04E+06	0.00E+00	1.42E+07	0.00E+00	3.65E+06	0.00E+00
CM-247	4.77E+07	4.27E+07	2.99E+06	0.00E+00	1.40E+07	0.00E+00	4.80E+06	0.00E+00
CM-248	3.96E+08	3.52E+08	2.47E+07	0.00E+00	1.15E+08	0.00E+00	7.73E+07	0.00E+00
CF-252	1.70E+07	0.00E+00	4.11E+05	0.00E+00	0.00E+00	0.00E+00	1.50E+07	0.00E+00

07/17

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

Table I-8
DOSE FACTOR TABLE: R (i) – Child, Cow Milk
Units are m²*mrem/yr per μCi/sec

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
H-3	0.00E+00	9.74E+02	9.74E+02	9.74E+02	9.74E+02	9.74E+02	9.74E+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-22	1.90E+10	1.90E+10	1.90E+10	1.90E+10	1.90E+10	1.90E+10	1.90E+10	0.00E+00
NA-24	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	8.85E+06	0.00E+00
P-32	7.78E+10	3.64E+09	3.00E+09	0.00E+00	0.00E+00	0.00E+00	2.15E+09	0.00E+00
CA-41	2.28E+10	0.00E+00	2.49E+09	0.00E+00	0.00E+00	0.00E+00	1.25E+07	0.00E+00
SC-46	6.83E+02	9.36E+02	3.61E+02	0.00E+00	8.29E+02	0.00E+00	1.37E+06	0.00E+00
CR-51	0.00E+00	0.00E+00	1.02E+05	5.65E+04	1.54E+04	1.03E+05	5.40E+06	0.00E+00
MN-54	0.00E+00	2.10E+07	5.59E+06	0.00E+00	5.88E+06	0.00E+00	1.76E+07	0.00E+00
FE-55	1.12E+08	5.93E+07	1.84E+07	0.00E+00	0.00E+00	3.35E+07	1.10E+07	0.00E+00
MN-56	0.00E+00	1.28E-02	2.90E-03	0.00E+00	1.55E-02	0.00E+00	1.86E+00	0.00E+00
CO-57	0.00E+00	3.84E+06	7.77E+06	0.00E+00	0.00E+00	0.00E+00	3.14E+07	0.00E+00
CO-58	0.00E+00	1.21E+07	3.71E+07	0.00E+00	0.00E+00	0.00E+00	7.07E+07	0.00E+00
FE-59	1.20E+08	1.95E+08	9.69E+07	0.00E+00	0.00E+00	5.64E+07	2.03E+08	0.00E+00
CO-60	0.00E+00	4.32E+07	1.27E+08	0.00E+00	0.00E+00	0.00E+00	2.39E+08	0.00E+00
NI-59	2.22E+09	5.90E+08	3.76E+08	0.00E+00	0.00E+00	0.00E+00	3.91E+07	0.00E+00
NI-63	2.96E+10	1.59E+09	1.01E+09	0.00E+00	0.00E+00	0.00E+00	1.07E+08	0.00E+00
CU-64	0.00E+00	7.46E+04	4.51E+04	0.00E+00	1.80E+05	0.00E+00	3.50E+06	0.00E+00
NI-65	1.66E+00	1.56E-01	9.10E-02	0.00E+00	0.00E+00	0.00E+00	1.91E+01	0.00E+00
ZN-65	4.13E+09	1.10E+10	6.85E+09	0.00E+00	6.94E+09	0.00E+00	1.93E+09	0.00E+00
ZN-69M	7.96E+05	1.36E+06	1.60E+05	0.00E+00	7.88E+05	0.00E+00	4.41E+07	0.00E+00
ZN-69	9.47E-12	1.37E-11	1.26E-12	0.00E+00	8.30E-12	0.00E+00	8.62E-10	0.00E+00
SE-79	0.00E+00	3.12E+09	6.92E+08	0.00E+00	5.07E+09	0.00E+00	2.05E+08	0.00E+00
BR-82	0.00E+00	0.00E+00	1.15E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	4.40E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	6.51E-23	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	0.00E+00	0.00E+00	8.85E-301	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	8.77E+09	5.39E+09	0.00E+00	0.00E+00	0.00E+00	5.64E+08	0.00E+00
RB-87	0.00E+00	9.75E+09	4.52E+09	0.00E+00	0.00E+00	0.00E+00	1.46E+08	0.00E+00
RB-88	0.00E+00	7.15E-45	4.97E-45	0.00E+00	0.00E+00	0.00E+00	3.51E-46	0.00E+00
RB-89	0.00E+00	1.34E-52	1.20E-52	0.00E+00	0.00E+00	0.00E+00	1.17E-54	0.00E+00
SR-89	6.62E+09	0.00E+00	1.89E+08	0.00E+00	0.00E+00	0.00E+00	2.56E+08	0.00E+00
SR-90	1.12E+11	0.00E+00	2.83E+10	0.00E+00	0.00E+00	0.00E+00	1.51E+09	0.00E+00
Y-90	3.22E+02	0.00E+00	8.62E+00	0.00E+00	0.00E+00	0.00E+00	9.17E+05	0.00E+00
SR-91	1.30E+05	0.00E+00	4.92E+03	0.00E+00	0.00E+00	0.00E+00	2.88E+05	0.00E+00
Y-91M	2.68E-19	0.00E+00	9.74E-21	0.00E+00	0.00E+00	0.00E+00	5.24E-16	0.00E+00
Y-91	3.90E+04	0.00E+00	1.04E+03	0.00E+00	0.00E+00	0.00E+00	5.20E+06	0.00E+00
SR-92	2.18E+00	0.00E+00	8.75E-02	0.00E+00	0.00E+00	0.00E+00	4.13E+01	0.00E+00
Y-92	2.53E-04	0.00E+00	7.24E-06	0.00E+00	0.00E+00	0.00E+00	1.73E+00	0.00E+00
Y-93	1.01E+00	0.00E+00	2.78E-02	0.00E+00	0.00E+00	0.00E+00	1.51E+04	0.00E+00
NB-93M	2.15E+06	5.37E+05	1.77E+05	0.00E+00	5.80E+05	0.00E+00	8.10E+07	0.00E+00
NB-95	3.18E+05	1.24E+05	8.84E+04	0.00E+00	1.16E+05	0.00E+00	2.29E+08	0.00E+00
NB-97	1.46E-11	2.63E-12	1.23E-12	0.00E+00	2.92E-12	0.00E+00	8.12E-07	0.00E+00
ZR-93	6.87E+03	2.57E+02	1.83E+02	0.00E+00	9.96E+02	0.00E+00	9.75E+04	0.00E+00
ZR-95	3.83E+03	8.42E+02	7.50E+02	0.00E+00	1.21E+03	0.00E+00	8.79E+05	0.00E+00
ZR-97	1.92E+00	2.77E-01	1.64E-01	0.00E+00	3.98E-01	0.00E+00	4.20E+04	0.00E+00
MO-93	0.00E+00	1.49E+09	5.34E+07	0.00E+00	3.92E+08	0.00E+00	7.53E+07	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-99	1.10E+08	1.23E+08	4.40E+07	0.00E+00	1.44E+09	1.08E+07	1.29E+09	0.00E+00
TC-99M	1.32E+01	2.59E+01	4.29E+02	0.00E+00	3.76E+02	1.32E+01	1.47E+04	0.00E+00
TC-101	1.16E-59	1.22E-59	1.54E-58	0.00E+00	2.08E-58	6.43E-60	3.87E-59	0.00E+00
RU-103	4.28E+03	0.00E+00	1.65E+03	0.00E+00	1.08E+04	0.00E+00	1.11E+05	0.00E+00
RU-105	3.82E-03	0.00E+00	1.39E-03	0.00E+00	3.36E-02	0.00E+00	2.49E+00	0.00E+00
RU-106	9.24E+04	0.00E+00	1.15E+04	0.00E+00	1.25E+05	0.00E+00	1.44E+06	0.00E+00

03/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
RH-105	1.57E+06	8.43E+05	7.21E+05	0.00E+00	3.36E+06	0.00E+00	5.22E+07	0.00E+00
PD-107	0.00E+00	3.88E+07	3.30E+06	0.00E+00	3.25E+08	0.00E+00	7.71E+07	0.00E+00
PD-109	0.00E+00	1.51E+05	4.53E+04	0.00E+00	8.10E+05	0.00E+00	8.92E+06	0.00E+00
AG-110M	2.09E+08	1.41E+08	1.13E+08	0.00E+00	2.63E+08	0.00E+00	1.68E+10	0.00E+00
AG-111	2.94E+07	9.21E+06	6.08E+06	0.00E+00	2.78E+07	0.00E+00	5.64E+09	0.00E+00
CD-113M	0.00E+00	1.00E+07	4.27E+05	0.00E+00	1.03E+07	0.00E+00	2.59E+07	0.00E+00
CD-115M	0.00E+00	4.29E+06	1.83E+05	0.00E+00	3.19E+06	0.00E+00	5.83E+07	0.00E+00
SN-123	2.44E+09	3.03E+07	5.95E+07	3.21E+07	0.00E+00	0.00E+00	1.20E+09	0.00E+00
SN-125	2.58E+08	3.89E+06	1.15E+07	4.03E+06	0.00E+00	0.00E+00	7.99E+08	0.00E+00
SN-126	6.85E+09	8.54E+07	1.95E+08	2.34E+07	0.00E+00	0.00E+00	5.14E+08	0.00E+00
SB-124	1.09E+08	1.41E+06	3.81E+07	2.40E+05	0.00E+00	6.03E+07	6.79E+08	0.00E+00
SB-125	8.70E+07	6.71E+05	1.82E+07	8.06E+04	0.00E+00	4.85E+07	2.08E+08	0.00E+00
SB-126	2.28E+07	3.49E+05	8.19E+06	1.34E+05	0.00E+00	1.09E+07	4.60E+08	0.00E+00
SB-127	1.97E+06	3.04E+04	6.83E+05	2.19E+04	0.00E+00	8.54E+05	1.11E+08	0.00E+00
TE-125M	7.38E+07	2.00E+07	9.84E+06	2.07E+07	0.00E+00	0.00E+00	7.12E+07	0.00E+00
TE-127M	2.08E+08	5.60E+07	2.47E+07	4.97E+07	5.93E+08	0.00E+00	1.68E+08	0.00E+00
TE-127	2.98E+03	8.02E+02	6.38E+02	2.06E+03	8.47E+03	0.00E+00	1.16E+05	0.00E+00
TE-129M	2.71E+08	7.58E+07	4.21E+07	8.75E+07	7.97E+08	0.00E+00	3.31E+08	0.00E+00
TE-129	1.28E-09	3.58E-10	3.04E-10	9.15E-10	3.75E-09	0.00E+00	7.98E-08	0.00E+00
TE-133M	9.07E-13	3.67E-13	4.54E-13	7.03E-13	3.48E-12	0.00E+00	2.80E-11	0.00E+00
TE-134	3.77E-18	1.70E-18	2.26E-18	2.98E-18	1.57E-17	0.00E+00	1.72E-17	0.00E+00
I-129	3.43E+09	2.11E+09	1.88E+09	1.38E+12	3.55E+09	0.00E+00	1.06E+08	0.00E+00
I-130	1.73E+06	3.49E+06	1.80E+06	3.84E+08	5.22E+06	0.00E+00	1.63E+06	0.00E+00
I-131	1.30E+09	1.31E+09	7.45E+08	4.33E+11	2.15E+09	0.00E+00	1.17E+08	0.00E+00
TE-131M	1.60E+06	5.53E+05	5.89E+05	1.14E+06	5.35E+06	0.00E+00	2.24E+07	0.00E+00
TE-131	1.62E-32	4.93E-33	4.81E-33	1.24E-32	4.89E-32	0.00E+00	8.49E-32	0.00E+00
I-132	6.89E-01	1.27E+00	5.82E-01	5.87E+01	1.94E+00	0.00E+00	1.49E+00	0.00E+00
TE-132	1.02E+07	4.53E+06	5.48E+06	6.60E+06	4.21E+07	0.00E+00	4.57E+07	0.00E+00
I-133	1.72E+07	2.12E+07	8.03E+06	3.94E+09	3.54E+07	0.00E+00	8.56E+06	0.00E+00
CS-134M	7.32E-01	1.08E+00	7.08E-01	0.00E+00	5.72E-01	9.46E-02	1.37E+00	0.00E+00
CS-134	2.26E+10	3.72E+10	7.84E+09	0.00E+00	1.15E+10	4.13E+09	2.00E+08	0.00E+00
I-134	8.48E-12	1.58E-11	7.25E-12	3.62E-10	2.41E-11	0.00E+00	1.04E-11	0.00E+00
I-135	5.40E+04	9.72E+04	4.60E+04	8.61E+06	1.49E+05	0.00E+00	7.40E+04	0.00E+00
CS-135	8.19E+09	5.71E+09	5.85E+08	0.00E+00	2.01E+09	6.72E+08	4.27E+07	0.00E+00
CS-136	1.01E+09	2.78E+09	1.80E+09	0.00E+00	1.48E+09	2.21E+08	9.77E+07	0.00E+00
CS-137	3.22E+10	3.09E+10	4.55E+09	0.00E+00	1.01E+10	3.62E+09	1.93E+08	0.00E+00
CS-138	3.98E-23	5.53E-23	3.51E-23	0.00E+00	3.89E-23	4.19E-24	2.55E-23	0.00E+00
CS-139	3.07E-89	3.41E-89	1.64E-89	0.00E+00	2.56E-89	2.58E-90	3.07E-93	0.00E+00
BA-139	2.01E-07	1.07E-10	5.82E-09	0.00E+00	9.36E-11	6.30E-11	1.16E-05	0.00E+00
BA-140	1.17E+08	1.03E+05	6.84E+06	0.00E+00	3.34E+04	6.12E+04	5.93E+07	0.00E+00
LA-140	1.94E+01	6.78E+00	2.29E+00	0.00E+00	0.00E+00	0.00E+00	1.89E+05	0.00E+00
BA-141	1.85E-45	1.04E-48	6.02E-47	0.00E+00	8.96E-49	6.09E-48	1.05E-45	0.00E+00
LA-141	1.38E-04	3.22E-05	6.99E-06	0.00E+00	0.00E+00	0.00E+00	7.16E+00	0.00E+00
CE-141	2.19E+04	1.09E+04	1.62E+03	0.00E+00	4.78E+03	0.00E+00	1.36E+07	0.00E+00
BA-142	1.16E-79	8.35E-83	6.48E-81	0.00E+00	6.76E-83	4.91E-83	1.51E-81	0.00E+00
LA-142	8.10E-11	2.58E-11	8.08E-12	0.00E+00	0.00E+00	0.00E+00	5.11E-06	0.00E+00
CE-143	1.87E+02	1.02E+05	1.47E+01	0.00E+00	4.26E+01	0.00E+00	1.49E+06	0.00E+00
PR-143	7.18E+02	2.16E+02	3.56E+01	0.00E+00	1.17E+02	0.00E+00	7.75E+05	0.00E+00
CE-144	1.62E+06	5.09E+05	8.66E+04	0.00E+00	2.82E+05	0.00E+00	1.33E+08	0.00E+00
PR-144	2.68E-53	8.28E-54	1.35E-54	0.00E+00	4.38E-54	0.00E+00	1.78E-50	0.00E+00
ND-147	4.45E+02	3.60E+02	2.79E+01	0.00E+00	1.98E+02	0.00E+00	5.70E+05	0.00E+00
PM-147	1.29E+04	9.19E+02	4.94E+02	0.00E+00	1.62E+03	0.00E+00	3.72E+05	0.00E+00
PM-148M	3.06E+03	6.09E+02	6.09E+02	0.00E+00	9.03E+02	0.00E+00	1.72E+06	0.00E+00
PM-148	2.66E+02	3.20E+01	2.07E+01	0.00E+00	5.43E+01	0.00E+00	8.54E+05	0.00E+00
PM-149	1.94E+01	2.07E+00	1.12E+00	0.00E+00	3.66E+00	0.00E+00	1.41E+05	0.00E+00
PM-151	2.90E+00	3.52E-01	2.29E-01	0.00E+00	5.97E-01	0.00E+00	4.00E+04	0.00E+00
SM-151	1.05E+04	1.57E+03	4.93E+02	0.00E+00	1.62E+03	0.00E+00	2.27E+05	0.00E+00
SM-153	8.98E+00	5.58E+00	5.39E-01	0.00E+00	1.70E+00	0.00E+00	7.43E+04	0.00E+00
EU-152	2.52E+04	4.59E+03	5.45E+03	0.00E+00	1.94E+04	0.00E+00	7.55E+05	0.00E+00
EU-154	9.42E+04	8.47E+03	7.74E+03	0.00E+00	3.72E+04	0.00E+00	1.97E+06	0.00E+00

03/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
EU-155	1.97E+04	1.42E+03	1.11E+03	0.00E+00	5.30E+03	0.00E+00	3.54E+06	0.00E+00
EU-156	1.10E+03	5.88E+02	1.22E+02	0.00E+00	3.79E+02	0.00E+00	1.33E+06	0.00E+00
TB-160	5.61E+03	0.00E+00	6.96E+02	0.00E+00	1.67E+03	0.00E+00	1.24E+06	0.00E+00
HO-166M	4.44E+04	9.30E+03	7.86E+03	0.00E+00	1.32E+04	0.00E+00	1.08E+06	0.00E+00
W-181	1.54E+05	3.79E+04	5.21E+03	0.00E+00	0.00E+00	0.00E+00	1.38E+06	0.00E+00
W-185	5.89E+06	1.47E+06	2.06E+05	0.00E+00	0.00E+00	0.00E+00	5.48E+07	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	1.72E+01	1.24E+00	8.71E-01	0.00E+00	3.58E+00	0.00E+00	9.17E+04	0.00E+00
U-232	7.24E+10	0.00E+00	5.18E+09	0.00E+00	5.51E+09	0.00E+00	2.87E+08	0.00E+00
U-233	1.53E+10	0.00E+00	9.26E+08	0.00E+00	2.51E+09	0.00E+00	2.65E+08	0.00E+00
U-234	1.47E+10	0.00E+00	9.09E+08	0.00E+00	2.46E+09	0.00E+00	2.60E+08	0.00E+00
U-235	1.41E+10	0.00E+00	8.52E+08	0.00E+00	2.31E+09	0.00E+00	3.30E+08	0.00E+00
U-236	1.41E+10	0.00E+00	8.72E+08	0.00E+00	2.36E+09	0.00E+00	2.44E+08	0.00E+00
U-237	2.57E+05	0.00E+00	6.83E+04	0.00E+00	7.42E+05	0.00E+00	2.27E+07	0.00E+00
U-238	1.35E+10	0.00E+00	7.98E+08	0.00E+00	2.16E+09	0.00E+00	2.33E+08	0.00E+00
NP-237	9.17E+07	6.05E+06	4.03E+06	0.00E+00	2.49E+07	0.00E+00	3.36E+06	0.00E+00
NP-238	1.64E+02	3.31E+00	2.55E+00	0.00E+00	1.05E+01	0.00E+00	1.13E+05	0.00E+00
PU-238	1.96E+07	2.27E+06	5.20E+05	0.00E+00	1.89E+06	0.00E+00	1.23E+06	0.00E+00
PU-239	2.12E+07	2.27E+06	5.45E+05	0.00E+00	2.01E+06	0.00E+00	1.13E+06	0.00E+00
PU-240	2.11E+07	2.35E+06	5.45E+05	0.00E+00	2.01E+06	0.00E+00	1.15E+06	0.00E+00
PU-241	6.35E+05	2.59E+04	1.32E+04	0.00E+00	4.86E+04	0.00E+00	2.36E+04	0.00E+00
PU-242	1.96E+07	2.27E+06	5.25E+05	0.00E+00	1.93E+06	0.00E+00	1.10E+06	0.00E+00
PU-244	2.29E+07	2.60E+07	6.01E+05	0.00E+00	2.22E+06	0.00E+00	1.65E+06	0.00E+00
AM-241	5.59E+07	4.81E+07	4.20E+06	0.00E+00	2.56E+07	0.00E+00	3.14E+06	0.00E+00
AM-242M	5.76E+07	4.61E+07	4.28E+06	0.00E+00	2.59E+07	0.00E+00	3.95E+06	0.00E+00
AM-243	5.51E+07	4.65E+07	4.04E+06	0.00E+00	2.49E+07	0.00E+00	3.68E+06	0.00E+00
CM-242	3.30E+06	2.63E+06	2.19E+05	0.00E+00	7.02E+05	0.00E+00	3.07E+06	0.00E+00
CM-243	5.26E+07	4.27E+07	3.38E+06	0.00E+00	1.27E+07	0.00E+00	3.30E+06	0.00E+00
CM-244	4.43E+07	3.59E+07	2.84E+06	0.00E+00	1.04E+07	0.00E+00	3.19E+06	0.00E+00
CM-245	6.87E+07	5.51E+07	4.32E+06	0.00E+00	1.69E+07	0.00E+00	2.98E+06	0.00E+00
CM-246	6.79E+07	5.51E+07	4.32E+06	0.00E+00	1.69E+07	0.00E+00	2.92E+06	0.00E+00
CM-247	6.62E+07	5.43E+07	4.24E+06	0.00E+00	1.66E+07	0.00E+00	3.85E+06	0.00E+00
CM-248	5.51E+08	4.48E+08	3.50E+07	0.00E+00	1.37E+08	0.00E+00	6.21E+07	0.00E+00
CF-252	4.25E+07	0.00E+00	1.03E+06	0.00E+00	0.00E+00	0.00E+00	1.20E+07	0.00E+00

07/17

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

Table I-9
DOSE FACTOR TABLE: R (i) – Infant, Cow Milk
Units are m²*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-22	3.18E+10	3.18E+10	3.18E+10	3.18E+10	3.18E+10	3.18E+10	3.18E+10	0.00E+00
NA-24	1.54E+07	1.54E+07	1.54E+07	1.54E+07	1.54E+07	1.54E+07	1.54E+07	0.00E+00
P-32	1.60E+11	9.43E+09	6.21E+09	0.00E+00	0.00E+00	0.00E+00	2.17E+09	0.00E+00
CA-41	2.46E+10	0.00E+00	2.69E+09	0.00E+00	0.00E+00	0.00E+00	1.26E+07	0.00E+00
SC-46	1.30E+03	1.88E+03	5.86E+02	0.00E+00	1.23E+03	0.00E+00	1.22E+06	0.00E+00
CR-51	0.00E+00	0.00E+00	1.61E+05	1.05E+05	2.30E+04	2.05E+05	4.70E+06	0.00E+00
MN-54	0.00E+00	3.90E+07	8.84E+06	0.00E+00	8.64E+06	0.00E+00	1.43E+07	0.00E+00
FE-55	1.35E+08	8.73E+07	2.33E+07	0.00E+00	0.00E+00	4.27E+07	1.11E+07	0.00E+00
MN-56	0.00E+00	3.14E-02	5.42E-03	0.00E+00	2.70E-02	0.00E+00	2.85E+00	0.00E+00
CO-57	0.00E+00	8.95E+06	1.46E+07	0.00E+00	0.00E+00	0.00E+00	3.05E+07	0.00E+00
CO-58	0.00E+00	2.42E+07	6.05E+07	0.00E+00	0.00E+00	0.00E+00	6.04E+07	0.00E+00
FE-59	2.24E+08	3.92E+08	1.54E+08	0.00E+00	0.00E+00	1.16E+08	1.87E+08	0.00E+00
CO-60	0.00E+00	8.82E+07	2.08E+08	0.00E+00	0.00E+00	0.00E+00	2.10E+08	0.00E+00
NI-59	2.61E+09	7.99E+08	4.50E+08	0.00E+00	0.00E+00	0.00E+00	3.95E+07	0.00E+00
NI-63	3.49E+10	2.16E+09	1.21E+09	0.00E+00	0.00E+00	0.00E+00	1.07E+08	0.00E+00
CU-64	0.00E+00	1.86E+05	8.59E+04	0.00E+00	3.14E+05	0.00E+00	3.81E+06	0.00E+00
NI-65	3.50E+00	3.97E-01	1.80E-01	0.00E+00	0.00E+00	0.00E+00	3.02E+01	0.00E+00
ZN-65	5.55E+09	1.90E+10	8.78E+09	0.00E+00	9.23E+09	0.00E+00	1.61E+10	0.00E+00
ZN-69M	1.68E+06	3.43E+06	3.13E+05	0.00E+00	1.39E+06	0.00E+00	4.75E+07	0.00E+00
ZN-69	2.02E-11	3.63E-11	2.70E-12	0.00E+00	1.51E-11	0.00E+00	2.96E-09	0.00E+00
SE-79	0.00E+00	7.77E+09	1.44E+09	0.00E+00	9.00E+09	0.00E+00	2.07E+08	0.00E+00
BR-82	0.00E+00	0.00E+00	1.93E+08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	9.34E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	1.26E-22	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	0.00E+00	0.00E+00	1.88E-300	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	2.23E+10	1.10E+10	0.00E+00	0.00E+00	0.00E+00	5.69E+08	0.00E+00
RB-87	0.00E+00	2.19E+10	8.69E+09	0.00E+00	0.00E+00	0.00E+00	1.48E+08	0.00E+00
RB-88	0.00E+00	1.87E-44	1.03E-44	0.00E+00	0.00E+00	0.00E+00	1.83E-44	0.00E+00
RB-89	0.00E+00	3.29E-52	2.26E-52	0.00E+00	0.00E+00	0.00E+00	1.12E-52	0.00E+00
SR-89	1.26E+10	0.00E+00	3.61E+08	0.00E+00	0.00E+00	0.00E+00	2.59E+08	0.00E+00
SR-90	1.22E+11	0.00E+00	3.10E+10	0.00E+00	0.00E+00	0.00E+00	1.52E+09	0.00E+00
Y-90	6.81E+02	0.00E+00	1.83E+01	0.00E+00	0.00E+00	0.00E+00	9.41E+05	0.00E+00
SR-91	2.72E+05	0.00E+00	9.83E+03	0.00E+00	0.00E+00	0.00E+00	3.21E+05	0.00E+00
Y-91M	5.67E-19	0.00E+00	1.93E-20	0.00E+00	0.00E+00	0.00E+00	1.89E-15	0.00E+00
Y-91	7.33E+04	0.00E+00	1.95E+03	0.00E+00	0.00E+00	0.00E+00	5.25E+06	0.00E+00
SR-92	4.64E+00	0.00E+00	1.72E-01	0.00E+00	0.00E+00	0.00E+00	5.00E+01	0.00E+00
Y-92	5.38E-04	0.00E+00	1.51E-05	0.00E+00	0.00E+00	0.00E+00	1.03E+01	0.00E+00
Y-93	2.16E+00	0.00E+00	5.87E-02	0.00E+00	0.00E+00	0.00E+00	1.70E+04	0.00E+00
NB-93M	2.52E+06	6.83E+05	2.13E+05	0.00E+00	6.67E+05	0.00E+00	8.16E+07	0.00E+00
NB-95	5.93E+05	2.44E+05	1.41E+05	0.00E+00	1.75E+05	0.00E+00	2.06E+08	0.00E+00
NB-97	3.08E-11	6.57E-12	2.37E-12	0.00E+00	5.13E-12	0.00E+00	2.07E-06	0.00E+00
ZR-93	7.94E+03	3.78E+02	2.28E+02	0.00E+00	1.11E+03	0.00E+00	9.83E+04	0.00E+00
ZR-95	6.80E+03	1.66E+03	1.18E+03	0.00E+00	1.79E+03	0.00E+00	8.26E+05	0.00E+00
ZR-97	4.06E+00	6.97E-01	3.18E-01	0.00E+00	7.03E-01	0.00E+00	4.45E+04	0.00E+00
MO-93	0.00E+00	3.49E+09	1.12E+08	0.00E+00	6.97E+08	0.00E+00	7.47E+07	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-99	2.22E+08	3.00E+08	9.36E+07	0.00E+00	2.53E+09	2.92E+07	1.30E+09	0.00E+00
TC-99M	2.75E+01	5.67E+01	7.30E+02	0.00E+00	6.10E+02	2.96E+01	1.65E+04	0.00E+00
TC-101	2.47E-59	3.11E-59	3.07E-58	0.00E+00	3.69E-58	1.69E-59	5.28E-57	0.00E+00
RU-103	8.67E+03	0.00E+00	2.90E+03	0.00E+00	1.80E+04	0.00E+00	1.05E+05	0.00E+00
RU-105	8.05E-03	0.00E+00	2.71E-03	0.00E+00	5.92E-02	0.00E+00	3.20E+00	0.00E+00
RU-106	1.90E+05	0.00E+00	2.38E+04	0.00E+00	2.25E+05	0.00E+00	1.44E+06	0.00E+00

03/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
RH-105	3.33E+06	2.18E+06	1.46E+06	0.00E+00	6.05E+06	0.00E+00	5.41E+07	0.00E+00
PD-107	0.00E+00	9.79E+07	6.95E+06	0.00E+00	5.59E+08	0.00E+00	7.78E+07	0.00E+00
PD-109	0.00E+00	3.99E+05	9.64E+04	0.00E+00	1.47E+06	0.00E+00	9.80E+06	0.00E+00
AG-110M	3.86E+08	2.82E+08	1.86E+08	0.00E+00	4.03E+08	0.00E+00	1.46E+10	0.00E+00
AG-111	6.17E+07	2.40E+07	1.27E+07	0.00E+00	5.01E+07	0.00E+00	5.72E+09	0.00E+00
CD-113M	0.00E+00	1.74E+07	6.42E+05	0.00E+00	1.32E+07	0.00E+00	2.62E+07	0.00E+00
CD-115M	0.00E+00	1.03E+07	3.59E+05	0.00E+00	5.40E+06	0.00E+00	5.89E+07	0.00E+00
SN-123	4.57E+09	7.14E+07	1.19E+08	7.18E+07	0.00E+00	0.00E+00	1.21E+09	0.00E+00
SN-125	5.38E+08	1.00E+07	2.39E+07	9.88E+06	0.00E+00	0.00E+00	8.06E+08	0.00E+00
SN-126	1.14E+10	1.49E+08	3.70E+08	3.93E+07	0.00E+00	0.00E+00	5.18E+08	0.00E+00
SB-124	2.09E+08	3.08E+06	6.49E+07	5.56E+05	0.00E+00	1.31E+08	6.46E+08	0.00E+00
SB-125	1.50E+08	1.45E+06	3.08E+07	1.87E+05	0.00E+00	8.66E+07	1.99E+08	0.00E+00
SB-126	4.18E+07	8.19E+05	1.51E+07	3.21E+05	0.00E+00	2.63E+07	4.33E+08	0.00E+00
SB-127	4.14E+06	7.39E+04	1.28E+06	5.27E+04	0.00E+00	2.13E+06	1.10E+08	0.00E+00
TE-125M	1.51E+08	5.04E+07	2.04E+07	5.07E+07	0.00E+00	0.00E+00	7.18E+07	0.00E+00
TE-127M	4.21E+08	1.40E+08	5.10E+07	1.22E+08	1.04E+09	0.00E+00	1.70E+08	0.00E+00
TE-127	6.32E+03	2.12E+03	1.36E+03	5.14E+03	1.54E+04	0.00E+00	1.33E+05	0.00E+00
TE-129M	5.57E+08	1.91E+08	8.58E+07	2.14E+08	1.39E+09	0.00E+00	3.33E+08	0.00E+00
TE-129	2.72E-09	9.37E-10	6.35E-10	2.28E-09	6.77E-09	0.00E+00	2.17E-07	0.00E+00
TE-133M	1.90E-12	8.68E-13	8.29E-13	1.67E-12	5.92E-12	0.00E+00	9.36E-11	0.00E+00
TE-134	7.81E-18	3.92E-18	4.04E-18	6.99E-18	2.64E-17	0.00E+00	8.95E-17	0.00E+00
I-129	7.06E+09	5.23E+09	3.83E+09	3.36E+12	6.20E+09	0.00E+00	1.05E+08	0.00E+00
I-130	3.55E+06	7.81E+06	3.13E+06	8.75E+08	8.58E+06	0.00E+00	1.67E+06	0.00E+00
I-131	2.72E+09	3.20E+09	1.41E+09	1.05E+12	3.74E+09	0.00E+00	1.14E+08	0.00E+00
TE-131M	3.38E+06	1.36E+06	1.12E+06	2.75E+06	9.35E+06	0.00E+00	2.29E+07	0.00E+00
TE-131	3.43E-32	1.27E-32	9.62E-33	3.06E-32	8.76E-32	0.00E+00	1.38E-30	0.00E+00
I-132	1.43E+00	2.90E+00	1.03E+00	1.36E+02	3.24E+00	0.00E+00	2.35E+00	0.00E+00
TE-132	2.11E+07	1.04E+07	9.75E+06	1.54E+07	6.53E+07	0.00E+00	3.87E+07	0.00E+00
I-133	3.63E+07	5.28E+07	1.55E+07	9.60E+09	6.21E+07	0.00E+00	8.93E+06	0.00E+00
CS-134M	1.53E+00	2.54E+00	1.28E+00	0.00E+00	9.81E-01	2.26E-01	2.01E+00	0.00E+00
CS-134	3.65E+10	6.80E+10	6.87E+09	0.00E+00	1.75E+10	7.18E+09	1.85E+08	0.00E+00
I-134	1.76E-11	3.60E-11	1.28E-11	8.40E-10	4.03E-11	0.00E+00	3.73E-11	0.00E+00
I-135	1.12E+05	2.23E+05	8.14E+04	2.00E+07	2.49E+05	0.00E+00	8.08E+04	0.00E+00
CS-135	1.31E+10	1.19E+10	6.22E+08	0.00E+00	3.40E+09	1.29E+09	4.31E+07	0.00E+00
CS-136	1.98E+09	5.81E+09	2.17E+09	0.00E+00	2.32E+09	4.74E+08	8.82E+07	0.00E+00
CS-137	5.15E+10	6.02E+10	4.27E+09	0.00E+00	1.62E+10	6.55E+09	1.88E+08	0.00E+00
CS-138	8.39E-23	1.36E-22	6.61E-23	0.00E+00	6.80E-23	1.06E-23	2.18E-22	0.00E+00
CS-139	6.56E-89	8.97E-89	3.43E-89	0.00E+00	4.64E-89	6.98E-90	5.63E-90	0.00E+00
BA-139	4.27E-07	2.83E-10	1.24E-08	0.00E+00	1.70E-10	1.72E-10	2.71E-05	0.00E+00
BA-140	2.41E+08	2.41E+05	1.24E+07	0.00E+00	5.72E+04	1.48E+05	5.92E+07	0.00E+00
LA-140	4.05E+01	1.60E+01	4.11E+00	0.00E+00	0.00E+00	0.00E+00	1.88E+05	0.00E+00
BA-141	3.93E-45	2.69E-48	1.24E-46	0.00E+00	1.62E-48	1.64E-48	4.80E-44	0.00E+00
LA-141	2.93E-04	8.51E-05	1.48E-05	0.00E+00	0.00E+00	0.00E+00	9.76E+00	0.00E+00
CE-141	4.34E+04	2.64E+04	3.11E+03	0.00E+00	8.15E+03	0.00E+00	1.37E+07	0.00E+00
BA-142	2.44E-79	2.03E-82	1.20E-80	0.00E+00	1.17E-82	1.23E-82	1.01E-78	0.00E+00
LA-142	1.70E-10	6.24E-11	1.49E-11	0.00E+00	0.00E+00	0.00E+00	1.06E-05	0.00E+00
CE-143	3.97E+02	2.63E+05	3.00E+01	0.00E+00	7.67E+01	0.00E+00	1.54E+06	0.00E+00
PR-143	1.49E+03	5.55E+02	7.36E+01	0.00E+00	2.06E+02	0.00E+00	7.84E+05	0.00E+00
CE-144	2.33E+06	9.52E+05	1.30E+05	0.00E+00	3.85E+05	0.00E+00	1.33E+08	0.00E+00
PR-144	5.69E-53	2.20E-53	2.86E-54	0.00E+00	7.97E-54	0.00E+00	1.02E-48	0.00E+00
ND-147	8.81E+02	9.05E+02	5.55E+01	0.00E+00	3.49E+02	0.00E+00	5.74E+05	0.00E+00
PM-147	1.57E+04	1.32E+03	6.44E+02	0.00E+00	1.98E+03	0.00E+00	3.75E+05	0.00E+00
PM-148M	4.90E+03	1.24E+03	9.74E+02	0.00E+00	1.43E+03	0.00E+00	1.62E+06	0.00E+00
PM-148	5.57E+02	8.04E+01	4.05E+01	0.00E+00	9.60E+01	0.00E+00	8.58E+05	0.00E+00
PM-149	4.13E+01	5.42E+00	2.37E+00	0.00E+00	6.59E+00	0.00E+00	1.46E+05	0.00E+00
PM-151	6.13E+00	8.94E-01	4.52E-01	0.00E+00	1.06E+00	0.00E+00	4.14E+04	0.00E+00
SM-151	1.19E+04	2.74E+03	5.92E+02	0.00E+00	1.86E+03	0.00E+00	2.29E+05	0.00E+00
SM-153	1.90E+01	1.47E+01	1.13E+00	0.00E+00	3.07E+00	0.00E+00	7.67E+04	0.00E+00
EU-152	2.76E+04	7.34E+03	6.19E+03	0.00E+00	2.06E+04	0.00E+00	6.52E+05	0.00E+00
EU-154	1.08E+05	1.50E+04	9.01E+03	0.00E+00	4.07E+04	0.00E+00	1.88E+06	0.00E+00

03/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
EU-155	2.21E+04	2.55E+03	1.32E+03	0.00E+00	5.71E+03	0.00E+00	3.41E+06	0.00E+00
EU-156	2.23E+03	1.38E+03	2.19E+02	0.00E+00	6.37E+02	0.00E+00	1.30E+06	0.00E+00
TB-160	8.76E+03	0.00E+00	1.10E+03	0.00E+00	2.49E+03	0.00E+00	1.17E+06	0.00E+00
HO-166M	5.14E+04	1.11E+04	8.76E+03	0.00E+00	1.47E+04	0.00E+00	1.09E+06	0.00E+00
W-181	3.23E+05	9.91E+04	1.11E+04	0.00E+00	0.00E+00	0.00E+00	1.39E+06	0.00E+00
W-185	1.23E+07	3.85E+06	4.39E+05	0.00E+00	0.00E+00	0.00E+00	5.51E+07	0.00E+00
W-187	6.08E+04	4.23E+04	1.46E+04	0.00E+00	0.00E+00	0.00E+00	2.48E+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
U-232	9.95E+10	0.00E+00	8.88E+09	0.00E+00	9.74E+09	0.00E+00	2.89E+08	0.00E+00
U-233	2.09E+10	0.00E+00	1.59E+09	0.00E+00	4.44E+09	0.00E+00	2.68E+08	0.00E+00
U-234	2.01E+10	0.00E+00	1.56E+09	0.00E+00	4.36E+09	0.00E+00	2.62E+08	0.00E+00
U-235	1.92E+10	0.00E+00	1.46E+09	0.00E+00	4.08E+09	0.00E+00	3.33E+08	0.00E+00
U-236	1.92E+10	0.00E+00	1.50E+09	0.00E+00	4.15E+09	0.00E+00	2.46E+08	0.00E+00
U-237	5.39E+05	0.00E+00	1.44E+05	0.00E+00	1.34E+06	0.00E+00	2.30E+07	0.00E+00
U-238	1.84E+10	0.00E+00	1.37E+09	0.00E+00	3.82E+09	0.00E+00	2.35E+08	0.00E+00
NP-237	9.87E+07	6.54E+06	4.32E+06	0.00E+00	2.61E+07	0.00E+00	3.39E+06	0.00E+00
NP-238	3.48E+02	8.75E+00	5.39E+00	0.00E+00	1.91E+01	0.00E+00	1.17E+05	0.00E+00
PU-238	2.11E+07	2.47E+06	5.59E+05	0.00E+00	1.99E+06	0.00E+00	1.25E+06	0.00E+00
PU-239	2.27E+07	2.55E+06	5.82E+05	0.00E+00	2.11E+06	0.00E+00	1.14E+06	0.00E+00
PU-240	2.27E+07	2.55E+06	5.82E+05	0.00E+00	2.11E+06	0.00E+00	1.16E+06	0.00E+00
PU-241	6.97E+05	2.89E+04	1.45E+04	0.00E+00	5.20E+04	0.00E+00	2.38E+04	0.00E+00
PU-242	2.11E+07	2.45E+06	5.61E+05	0.00E+00	2.02E+06	0.00E+00	1.11E+06	0.00E+00
PU-244	2.45E+07	2.81E+06	6.43E+05	0.00E+00	2.32E+06	0.00E+00	1.66E+06	0.00E+00
AM-241	6.01E+07	5.22E+07	4.48E+06	0.00E+00	2.69E+07	0.00E+00	3.17E+06	0.00E+00
AM-242M	6.21E+07	5.02E+07	4.65E+06	0.00E+00	2.73E+07	0.00E+00	3.99E+06	0.00E+00
AM-243	5.92E+07	5.06E+07	4.36E+06	0.00E+00	2.62E+07	0.00E+00	3.71E+06	0.00E+00
CM-242	5.15E+06	4.77E+06	3.42E+05	0.00E+00	9.84E+05	0.00E+00	3.09E+06	0.00E+00
CM-243	5.75E+07	4.72E+07	3.69E+06	0.00E+00	1.34E+07	0.00E+00	3.33E+06	0.00E+00
CM-244	4.84E+07	3.98E+07	3.12E+06	0.00E+00	1.11E+07	0.00E+00	3.22E+06	0.00E+00
CM-245	7.36E+07	5.96E+07	4.65E+06	0.00E+00	1.78E+07	0.00E+00	3.00E+06	0.00E+00
CM-246	7.28E+07	5.96E+07	4.65E+06	0.00E+00	1.77E+07	0.00E+00	2.95E+06	0.00E+00
CM-247	7.12E+07	5.88E+07	4.57E+06	0.00E+00	1.74E+07	0.00E+00	3.88E+06	0.00E+00
CM-248	5.88E+08	4.85E+08	3.77E+07	0.00E+00	1.44E+08	0.00E+00	6.25E+07	0.00E+00
CF-252	4.94E+07	0.00E+00	1.19E+06	0.00E+00	0.00E+00	0.00E+00	1.21E+07	0.00E+00

07/17

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

Table I-10
DOSE FACTOR TABLE: R (i) – Adult, Goat Milk
Units are m²*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-22	6.35E+08	6.35E+08	6.35E+08	6.35E+08	6.35E+08	6.35E+08	6.35E+08	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	2.05E+10	1.28E+09	7.93E+08	0.00E+00	0.00E+00	0.00E+00	2.31E+09	0.00E+00
CA-41	8.06E+10	0.00E+00	8.72E+09	0.00E+00	0.00E+00	0.00E+00	8.02E+07	0.00E+00
SC-46	2.15E+01	4.18E+01	1.22E+01	0.00E+00	3.90E+01	0.00E+00	2.04E+05	0.00E+00
CR-51	0.00E+00	0.00E+00	3.43E+03	2.05E+03	7.55E+02	4.55E+03	8.62E+05	0.00E+00
MN-54	0.00E+00	1.01E+06	1.93E+05	0.00E+00	3.00E+05	0.00E+00	3.09E+06	0.00E+00
FE-55	3.26E+05	2.26E+05	5.26E+04	0.00E+00	0.00E+00	1.26E+05	1.29E+05	0.00E+00
MN-56	0.00E+00	4.98E-04	8.84E-05	0.00E+00	6.32E-04	0.00E+00	1.59E-02	0.00E+00
CO-57	0.00E+00	1.54E+05	2.55E+05	0.00E+00	0.00E+00	0.00E+00	3.90E+06	0.00E+00
CO-58	0.00E+00	5.66E+05	1.27E+06	0.00E+00	0.00E+00	0.00E+00	1.15E+07	0.00E+00
FE-59	3.86E+05	9.07E+05	3.48E+05	0.00E+00	0.00E+00	2.54E+05	3.02E+06	0.00E+00
CO-60	0.00E+00	1.97E+06	4.34E+06	0.00E+00	0.00E+00	0.00E+00	3.70E+07	0.00E+00
NI-59	6.06E+07	2.08E+07	1.01E+07	0.00E+00	0.00E+00	0.00E+00	4.29E+06	0.00E+00
NI-63	8.07E+08	5.60E+07	2.71E+07	0.00E+00	0.00E+00	0.00E+00	1.17E+07	0.00E+00
CU-64	0.00E+00	2.66E+03	1.25E+03	0.00E+00	6.70E+03	0.00E+00	2.26E+05	0.00E+00
NI-65	4.44E-02	5.77E-03	2.63E-03	0.00E+00	0.00E+00	0.00E+00	1.46E-01	0.00E+00
ZN-65	1.65E+08	5.24E+08	2.37E+08	0.00E+00	3.50E+08	0.00E+00	3.30E+08	0.00E+00
ZN-69M	2.15E+04	5.15E+04	4.71E+03	0.00E+00	3.12E+04	0.00E+00	3.15E+06	0.00E+00
ZN-69	2.51E-13	4.80E-13	3.34E-14	0.00E+00	3.12E-13	0.00E+00	7.21E-14	0.00E+00
SE-79	0.00E+00	1.10E+08	1.83E+07	0.00E+00	1.90E+08	0.00E+00	2.25E+07	0.00E+00
BR-82	0.00E+00	0.00E+00	3.88E+06	0.00E+00	0.00E+00	0.00E+00	4.44E+06	0.00E+00
BR-83	0.00E+00	0.00E+00	1.17E-02	0.00E+00	0.00E+00	0.00E+00	1.68E-02	0.00E+00
BR-84	0.00E+00	0.00E+00	1.93E-24	0.00E+00	0.00E+00	0.00E+00	1.52E-29	0.00E+00
BR-85	0.00E+00	0.00E+00	2.34E-302	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	3.11E+08	1.45E+08	0.00E+00	0.00E+00	0.00E+00	6.14E+07	0.00E+00
RB-87	0.00E+00	3.42E+08	1.19E+08	0.00E+00	0.00E+00	0.00E+00	1.60E+07	0.00E+00
RB-88	0.00E+00	2.57E-46	1.36E-46	0.00E+00	0.00E+00	0.00E+00	3.55E-57	0.00E+00
RB-89	0.00E+00	5.20E-54	3.65E-54	0.00E+00	0.00E+00	0.00E+00	3.02E-67	0.00E+00
SR-89	3.05E+09	0.00E+00	8.75E+07	0.00E+00	0.00E+00	0.00E+00	4.89E+08	0.00E+00
SR-90	9.83E+10	0.00E+00	2.41E+10	0.00E+00	0.00E+00	0.00E+00	2.84E+09	0.00E+00
Y-90	8.50E+00	0.00E+00	2.28E-01	0.00E+00	0.00E+00	0.00E+00	9.01E+04	0.00E+00
SR-91	6.07E+04	0.00E+00	2.45E+03	0.00E+00	0.00E+00	0.00E+00	2.89E+05	0.00E+00
Y-91M	7.18E-21	0.00E+00	2.78E-22	0.00E+00	0.00E+00	0.00E+00	2.11E-20	0.00E+00
Y-91	1.03E+03	0.00E+00	2.76E+01	0.00E+00	0.00E+00	0.00E+00	5.67E+05	0.00E+00
SR-92	1.03E+00	0.00E+00	4.44E-02	0.00E+00	0.00E+00	0.00E+00	2.03E+01	0.00E+00
Y-92	6.69E-06	0.00E+00	1.96E-07	0.00E+00	0.00E+00	0.00E+00	1.17E-01	0.00E+00
Y-93	2.68E-02	0.00E+00	7.40E-04	0.00E+00	0.00E+00	0.00E+00	8.50E+02	0.00E+00
NB-93M	5.90E+04	1.92E+04	4.74E+03	0.00E+00	2.21E+04	0.00E+00	8.88E+06	0.00E+00
NB-95	9.91E+03	5.51E+03	2.96E+03	0.00E+00	5.45E+03	0.00E+00	3.34E+07	0.00E+00
NB-97	3.95E-13	9.98E-14	3.65E-14	0.00E+00	1.16E-13	0.00E+00	3.68E-10	0.00E+00
ZR-93	1.94E+02	1.09E+01	5.05E+00	0.00E+00	4.11E+01	0.00E+00	1.13E+04	0.00E+00
ZR-95	1.13E+02	3.63E+01	2.46E+01	0.00E+00	5.70E+01	0.00E+00	1.15E+05	0.00E+00
ZR-97	5.20E-02	1.05E-02	4.80E-03	0.00E+00	1.58E-02	0.00E+00	3.25E+03	0.00E+00
MO-93	0.00E+00	5.22E+07	1.41E+06	0.00E+00	1.48E+07	0.00E+00	8.49E+06	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-99	2.90E+06	4.31E+06	1.16E+06	0.00E+00	5.43E+07	3.66E+05	1.41E+08	0.00E+00
TC-99M	3.98E-01	1.13E+00	1.43E+01	0.00E+00	1.71E+01	5.52E-01	6.66E+02	0.00E+00
TC-101	3.11E-61	4.48E-61	4.40E-60	0.00E+00	8.07E-60	2.29E-61	1.35E-72	0.00E+00
RU-103	1.22E+02	0.00E+00	5.26E+01	0.00E+00	4.66E+02	0.00E+00	1.43E+04	0.00E+00
RU-105	1.03E-04	0.00E+00	4.06E-05	0.00E+00	1.33E-03	0.00E+00	6.29E-02	0.00E+00
RU-106	2.45E+03	0.00E+00	3.10E+02	0.00E+00	4.73E+03	0.00E+00	1.58E+05	0.00E+00

03/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
RH-105	4.17E+04	3.05E+04	2.01E+04	0.00E+00	1.29E+05	0.00E+00	4.85E+06	0.00E+00
PD-107	0.00E+00	1.36E+06	8.72E+04	0.00E+00	1.22E+07	0.00E+00	8.45E+06	0.00E+00
PD-109	0.00E+00	5.31E+03	1.20E+03	0.00E+00	3.03E+04	0.00E+00	5.88E+05	0.00E+00
AG-110M	6.99E+06	6.46E+06	3.84E+06	0.00E+00	1.27E+07	0.00E+00	2.64E+09	0.00E+00
AG-111	7.78E+05	3.25E+05	1.62E+05	0.00E+00	1.05E+06	0.00E+00	5.97E+08	0.00E+00
CD-113M	0.00E+00	3.53E+05	1.13E+04	0.00E+00	3.88E+05	0.00E+00	2.84E+06	0.00E+00
CD-115M	0.00E+00	1.51E+05	4.82E+03	0.00E+00	1.20E+05	0.00E+00	6.36E+06	0.00E+00
SN-123	6.44E+07	1.07E+06	1.57E+06	9.06E+05	0.00E+00	0.00E+00	1.31E+08	0.00E+00
SN-125	6.82E+06	1.38E+05	3.09E+05	1.14E+05	0.00E+00	0.00E+00	8.51E+07	0.00E+00
SN-126	1.96E+08	3.87E+06	5.56E+06	1.14E+06	0.00E+00	0.00E+00	5.63E+07	0.00E+00
SB-124	3.09E+06	5.83E+04	1.22E+06	7.49E+03	0.00E+00	2.40E+06	8.77E+07	0.00E+00
SB-125	2.45E+06	2.74E+04	5.84E+05	2.49E+03	0.00E+00	1.89E+06	2.70E+07	0.00E+00
SB-126	6.72E+05	1.37E+04	2.42E+05	4.11E+03	0.00E+00	4.12E+05	5.49E+07	0.00E+00
SB-127	5.40E+04	1.18E+03	2.07E+04	6.49E+02	0.00E+00	3.20E+04	1.23E+07	0.00E+00
TE-125M	1.95E+06	7.08E+05	2.62E+05	5.88E+05	7.95E+06	0.00E+00	7.80E+06	0.00E+00
TE-127M	5.49E+06	1.96E+06	6.69E+05	1.40E+06	2.23E+07	0.00E+00	1.84E+07	0.00E+00
TE-127	7.83E+01	2.81E+01	1.70E+01	5.80E+01	3.19E+02	0.00E+00	6.18E+03	0.00E+00
TE-129M	7.22E+06	2.69E+06	1.14E+06	2.48E+06	3.02E+07	0.00E+00	3.64E+07	0.00E+00
TE-129	3.39E-11	1.27E-11	8.25E-12	2.60E-11	1.42E-10	0.00E+00	2.56E-11	0.00E+00
TE-133M	2.53E-14	1.48E-14	1.42E-14	2.14E-14	1.46E-13	0.00E+00	5.06E-15	0.00E+00
TE-134	1.07E-19	6.99E-20	4.29E-20	9.33E-20	6.76E-19	0.00E+00	1.18E-22	0.00E+00
I-129	9.10E+08	7.82E+08	2.56E+09	2.01E+12	1.68E+09	0.00E+00	1.24E+08	0.00E+00
I-130	5.04E+05	1.49E+06	5.87E+05	1.26E+08	2.32E+06	0.00E+00	1.28E+06	0.00E+00
I-131	3.55E+08	5.08E+08	2.91E+08	1.67E+11	8.71E+08	0.00E+00	1.34E+08	0.00E+00
TE-131M	4.33E+04	2.12E+04	1.77E+04	3.36E+04	1.15E+05	0.00E+00	2.10E+06	0.00E+00
TE-131	4.32E-34	1.81E-34	1.37E-34	3.56E-34	1.89E-33	0.00E+00	6.12E-35	0.00E+00
I-132	1.97E-01	5.27E-01	1.84E-01	1.84E+01	8.40E-01	0.00E+00	9.90E-02	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-133	4.64E+06	8.08E+06	2.46E+06	1.19E+09	1.41E+07	0.00E+00	7.26E+06	0.00E+00
CS-134M	5.21E-01	1.10E+00	5.60E-01	0.00E+00	5.94E-01	9.37E-02	3.86E-01	0.00E+00
CS-134	1.70E+10	4.04E+10	3.30E+10	0.00E+00	1.31E+10	4.34E+09	7.06E+08	0.00E+00
I-134	2.42E-12	6.57E-12	2.35E-12	1.14E-10	1.05E-11	0.00E+00	5.73E-15	0.00E+00
I-135	1.54E+04	4.03E+04	1.49E+04	2.66E+06	6.47E+04	0.00E+00	4.56E+04	0.00E+00
CS-135	5.43E+09	5.01E+09	2.22E+09	0.00E+00	1.89E+09	5.68E+08	1.17E+08	0.00E+00
CS-136	7.90E+08	3.12E+09	2.24E+09	0.00E+00	1.73E+09	2.38E+08	3.54E+08	0.00E+00
CS-137	2.21E+10	3.03E+10	1.98E+10	0.00E+00	1.03E+10	3.42E+09	5.86E+08	0.00E+00
CS-138	2.71E-23	5.36E-23	2.65E-23	0.00E+00	3.94E-23	3.89E-24	2.29E-28	0.00E+00
CS-139	2.03E-89	3.03E-89	1.10E-89	0.00E+00	2.43E-89	2.21E-90	6.56E-112	0.00E+00
BA-139	5.30E-09	3.78E-12	1.55E-10	0.00E+00	3.53E-12	2.14E-12	9.40E-09	0.00E+00
BA-140	3.23E+06	4.05E+03	2.11E+05	0.00E+00	1.38E+03	2.32E+03	6.64E+06	0.00E+00
LA-140	5.41E-01	2.73E-01	7.21E-02	0.00E+00	0.00E+00	0.00E+00	2.00E+04	0.00E+00
BA-141	4.91E-47	3.71E-50	1.66E-48	0.00E+00	3.45E-50	2.11E-50	2.32E-56	0.00E+00
LA-141	3.65E-06	1.13E-06	1.85E-07	0.00E+00	0.00E+00	0.00E+00	1.35E-01	0.00E+00
CE-141	5.81E+02	3.93E+02	4.46E+01	0.00E+00	1.83E+02	0.00E+00	1.50E+06	0.00E+00
BA-142	3.19E-81	3.28E-84	2.01E-82	0.00E+00	2.77E-84	1.86E-84	4.49E-99	0.00E+00
LA-142	2.23E-12	1.01E-12	2.53E-13	0.00E+00	0.00E+00	0.00E+00	7.40E-09	0.00E+00
CE-143	4.99E+00	3.69E+03	4.08E-01	0.00E+00	1.62E+00	0.00E+00	1.38E+05	0.00E+00
PR-143	1.89E+01	7.60E+00	9.39E-01	0.00E+00	4.39E+00	0.00E+00	8.30E+04	0.00E+00
CE-144	4.29E+04	1.79E+04	2.30E+03	0.00E+00	1.06E+04	0.00E+00	1.45E+07	0.00E+00
PR-144	7.04E-55	2.92E-55	3.58E-56	0.00E+00	1.65E-55	0.00E+00	1.01E-61	0.00E+00
ND-147	1.13E+01	1.31E+01	7.81E-01	0.00E+00	7.63E+00	0.00E+00	6.27E+04	0.00E+00
PM-147	3.44E+02	3.24E+01	1.31E+01	0.00E+00	6.12E+01	0.00E+00	4.08E+04	0.00E+00
PM-148M	1.03E+02	2.66E+01	2.04E+01	0.00E+00	4.02E+01	0.00E+00	2.26E+05	0.00E+00
PM-148	7.12E+00	1.18E+00	5.95E-01	0.00E+00	2.23E+00	0.00E+00	9.28E+04	0.00E+00
PM-149	5.13E-01	7.26E-02	2.97E-02	0.00E+00	1.37E-01	0.00E+00	1.36E+04	0.00E+00
PM-151	7.80E-02	1.31E-02	6.61E-03	0.00E+00	2.34E-02	0.00E+00	3.60E+03	0.00E+00
SM-151	3.20E+02	5.52E+01	1.32E+01	0.00E+00	6.16E+01	0.00E+00	2.43E+04	0.00E+00
SM-153	2.38E-01	1.98E-01	1.45E-02	0.00E+00	6.41E-02	0.00E+00	7.07E+03	0.00E+00
EU-152	9.01E+02	2.05E+02	1.80E+02	0.00E+00	1.27E+03	0.00E+00	1.18E+05	0.00E+00
EU-154	2.84E+03	3.49E+02	2.48E+02	0.00E+00	1.67E+03	0.00E+00	2.53E+05	0.00E+00

03/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
EU-155	3.95E+02	5.61E+01	3.62E+01	0.00E+00	2.59E+02	0.00E+00	4.41E+04	0.00E+00
EU-156	3.02E+01	2.33E+01	3.77E+00	0.00E+00	1.56E+01	0.00E+00	1.60E+05	0.00E+00
TB-160	1.79E+02	0.00E+00	2.23E+01	0.00E+00	7.39E+01	0.00E+00	1.65E+05	0.00E+00
HO-166M	1.25E+03	3.91E+02	2.97E+02	0.00E+00	5.84E+02	0.00E+00	1.19E+05	0.00E+00
W-181	4.07E+03	1.33E+03	1.42E+02	0.00E+00	0.00E+00	0.00E+00	1.51E+05	0.00E+00
W-185	1.55E+05	5.18E+04	5.45E+03	0.00E+00	0.00E+00	0.00E+00	5.99E+06	0.00E+00
W-187	7.82E+02	6.53E+02	2.28E+02	0.00E+00	0.00E+00	0.00E+00	2.14E+05	0.00E+00
NP-239	4.41E-01	4.33E-02	2.39E-02	0.00E+00	1.35E-01	0.00E+00	8.89E+03	0.00E+00
U-232	1.91E+09	0.00E+00	1.37E+08	0.00E+00	2.07E+08	0.00E+00	3.14E+07	0.00E+00
U-233	4.04E+08	0.00E+00	2.45E+07	0.00E+00	9.41E+07	0.00E+00	2.91E+07	0.00E+00
U-234	3.88E+08	0.00E+00	2.40E+07	0.00E+00	9.23E+07	0.00E+00	2.85E+07	0.00E+00
U-235	3.71E+08	0.00E+00	2.25E+07	0.00E+00	8.67E+07	0.00E+00	3.62E+07	0.00E+00
U-236	3.71E+08	0.00E+00	2.30E+07	0.00E+00	8.86E+07	0.00E+00	2.67E+07	0.00E+00
U-237	6.78E+03	0.00E+00	1.81E+03	0.00E+00	2.79E+04	0.00E+00	2.38E+06	0.00E+00
U-238	3.56E+08	0.00E+00	2.11E+07	0.00E+00	8.12E+07	0.00E+00	2.55E+07	0.00E+00
NP-237	5.84E+06	4.15E+05	2.57E+05	0.00E+00	1.91E+06	0.00E+00	3.68E+05	0.00E+00
NP-238	4.33E+00	1.17E-01	6.73E-02	0.00E+00	3.95E-01	0.00E+00	1.08E+04	0.00E+00
PU-238	1.17E+06	1.48E+05	3.17E+04	0.00E+00	1.36E+05	0.00E+00	1.35E+05	0.00E+00
PU-239	1.34E+06	1.62E+05	3.54E+04	0.00E+00	1.50E+05	0.00E+00	1.24E+05	0.00E+00
PU-240	1.34E+06	1.61E+05	3.54E+04	0.00E+00	1.50E+05	0.00E+00	1.26E+05	0.00E+00
PU-241	2.90E+04	1.38E+03	6.14E+02	0.00E+00	2.83E+03	0.00E+00	2.59E+03	0.00E+00
PU-242	1.25E+06	1.56E+05	3.41E+04	0.00E+00	1.45E+05	0.00E+00	1.21E+05	0.00E+00
PU-244	1.45E+06	1.78E+05	3.91E+04	0.00E+00	1.66E+05	0.00E+00	1.80E+05	0.00E+00
AM-241	3.50E+06	3.27E+06	2.51E+05	0.00E+00	1.89E+06	0.00E+00	3.44E+05	0.00E+00
AM-242M	3.53E+06	3.07E+06	2.52E+05	0.00E+00	1.88E+06	0.00E+00	4.33E+05	0.00E+00
AM-243	3.50E+06	3.20E+06	2.46E+05	0.00E+00	1.85E+06	0.00E+00	4.03E+05	0.00E+00
CM-242	8.72E+04	9.27E+04	5.80E+03	0.00E+00	2.63E+04	0.00E+00	3.35E+05	0.00E+00
CM-243	2.77E+06	2.54E+06	1.74E+05	0.00E+00	8.10E+05	0.00E+00	3.62E+05	0.00E+00
CM-244	2.11E+06	1.98E+06	1.33E+05	0.00E+00	6.20E+05	0.00E+00	3.49E+05	0.00E+00
CM-245	4.35E+06	3.79E+06	2.67E+05	0.00E+00	1.25E+06	0.00E+00	3.26E+05	0.00E+00
CM-246	4.31E+06	3.78E+06	2.67E+05	0.00E+00	1.24E+06	0.00E+00	3.20E+05	0.00E+00
CM-247	4.21E+06	3.73E+06	2.63E+05	0.00E+00	1.22E+06	0.00E+00	4.22E+05	0.00E+00
CM-248	3.50E+07	3.07E+07	2.17E+06	0.00E+00	1.01E+07	0.00E+00	6.82E+06	0.00E+00
CF-252	1.19E+06	0.00E+00	2.87E+04	0.00E+00	0.00E+00	0.00E+00	1.31E+06	0.00E+00

03/17

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

Table I-11
DOSE FACTOR TABLE: R (i) – Teen, Goat Milk
Units are m²*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-22	1.10E+09	1.10E+09	1.10E+09	1.10E+09	1.10E+09	1.10E+09	1.10E+09	0.00E+00
NA-24	5.11E+05	5.11E+05	5.11E+05	5.11E+05	5.11E+05	5.11E+05	5.11E+05	0.00E+00
P-32	3.78E+10	2.34E+09	1.47E+09	0.00E+00	0.00E+00	0.00E+00	3.18E+09	0.00E+00
CA-41	1.11E+11	0.00E+00	1.20E+10	0.00E+00	0.00E+00	0.00E+00	1.10E+08	0.00E+00
SC-46	3.65E+01	7.11E+01	2.11E+01	0.00E+00	6.81E+01	0.00E+00	2.42E+05	0.00E+00
CR-51	0.00E+00	0.00E+00	5.99E+03	3.33E+03	1.31E+03	8.55E+03	1.01E+06	0.00E+00
MN-54	0.00E+00	1.68E+06	3.34E+05	0.00E+00	5.02E+05	0.00E+00	3.45E+06	0.00E+00
FE-55	5.79E+05	4.11E+05	9.57E+04	0.00E+00	0.00E+00	2.60E+05	1.78E+05	0.00E+00
MN-56	0.00E+00	8.83E-04	1.57E-04	0.00E+00	1.12E-03	0.00E+00	5.81E-02	0.00E+00
CO-57	0.00E+00	2.69E+05	4.52E+05	0.00E+00	0.00E+00	0.00E+00	5.03E+06	0.00E+00
CO-58	0.00E+00	9.52E+05	2.19E+06	0.00E+00	0.00E+00	0.00E+00	1.31E+07	0.00E+00
FE-59	6.74E+05	1.57E+06	6.07E+05	0.00E+00	0.00E+00	4.96E+05	3.72E+06	0.00E+00
CO-60	0.00E+00	3.34E+06	7.52E+06	0.00E+00	0.00E+00	0.00E+00	4.35E+07	0.00E+00
NI-59	1.06E+08	3.74E+07	1.80E+07	0.00E+00	0.00E+00	0.00E+00	5.86E+06	0.00E+00
NI-63	1.42E+09	1.00E+08	4.81E+07	0.00E+00	0.00E+00	0.00E+00	1.59E+07	0.00E+00
CU-64	0.00E+00	4.73E+03	2.23E+03	0.00E+00	1.20E+04	0.00E+00	3.67E+05	0.00E+00
NI-65	8.12E-02	1.04E-02	4.73E-03	0.00E+00	0.00E+00	0.00E+00	5.63E-01	0.00E+00
ZN-65	2.53E+08	8.78E+08	4.10E+08	0.00E+00	5.62E+08	0.00E+00	3.72E+08	0.00E+00
ZN-69M	3.91E+04	9.22E+04	8.46E+03	0.00E+00	5.61E+04	0.00E+00	5.07E+06	0.00E+00
ZN-69	4.62E-13	8.80E-13	6.16E-14	0.00E+00	5.75E-13	0.00E+00	1.62E-12	0.00E+00
SE-79	0.00E+00	2.01E+08	3.38E+07	0.00E+00	3.50E+08	0.00E+00	3.07E+07	0.00E+00
BR-82	0.00E+00	0.00E+00	6.73E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	2.15E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	3.45E-24	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	0.00E+00	0.00E+00	4.30E-302	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	5.67E+08	2.67E+08	0.00E+00	0.00E+00	0.00E+00	8.40E+07	0.00E+00
RB-87	0.00E+00	6.28E+08	2.19E+08	0.00E+00	0.00E+00	0.00E+00	2.19E+07	0.00E+00
RB-88	0.00E+00	4.66E-46	2.49E-46	0.00E+00	0.00E+00	0.00E+00	4.00E-53	0.00E+00
RB-89	0.00E+00	9.20E-54	6.50E-54	0.00E+00	0.00E+00	0.00E+00	1.41E-62	0.00E+00
SR-89	5.62E+09	0.00E+00	1.61E+08	0.00E+00	0.00E+00	0.00E+00	6.69E+08	0.00E+00
SR-90	1.39E+11	0.00E+00	3.43E+10	0.00E+00	0.00E+00	0.00E+00	3.90E+09	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
SR-91	1.12E+05	0.00E+00	4.44E+03	0.00E+00	0.00E+00	0.00E+00	5.06E+05	0.00E+00
Y-91M	1.31E-20	0.00E+00	5.02E-22	0.00E+00	0.00E+00	0.00E+00	6.21E-19	0.00E+00
Y-91	1.90E+03	0.00E+00	5.08E+01	0.00E+00	0.00E+00	0.00E+00	7.77E+05	0.00E+00
SR-92	1.88E+00	0.00E+00	8.00E-02	0.00E+00	0.00E+00	0.00E+00	4.78E+01	0.00E+00
Y-92	1.24E-05	0.00E+00	3.58E-07	0.00E+00	0.00E+00	0.00E+00	3.39E-01	0.00E+00
Y-93	4.94E-02	0.00E+00	1.36E-03	0.00E+00	0.00E+00	0.00E+00	1.51E+03	0.00E+00
NB-93M	1.03E+05	3.37E+04	8.44E+03	0.00E+00	3.94E+04	0.00E+00	1.21E+07	0.00E+00
NB-95	1.69E+04	9.37E+03	5.16E+03	0.00E+00	9.08E+03	0.00E+00	4.01E+07	0.00E+00
NB-97	7.19E-13	1.79E-13	6.52E-14	0.00E+00	2.09E-13	0.00E+00	4.26E-09	0.00E+00
ZR-93	3.31E+02	1.63E+01	8.92E+00	0.00E+00	5.77E+01	0.00E+00	1.54E+04	0.00E+00
ZR-95	1.98E+02	6.25E+01	4.30E+01	0.00E+00	9.18E+01	0.00E+00	1.44E+05	0.00E+00
ZR-97	9.46E-02	1.87E-02	8.62E-03	0.00E+00	2.84E-02	0.00E+00	5.07E+03	0.00E+00
MO-93	0.00E+00	9.51E+07	2.60E+06	0.00E+00	2.73E+07	0.00E+00	1.16E+07	0.00E+00
MO-99	0.00E+00	5.37E+06	1.02E+06	0.00E+00	1.23E+07	0.00E+00	9.61E+06	0.00E+00
TC-99	5.36E+06	7.87E+06	2.15E+06	0.00E+00	9.99E+07	8.14E+05	1.93E+08	0.00E+00
TC-99M	6.91E-01	1.93E+00	2.50E+01	0.00E+00	2.87E+01	1.07E+00	1.27E+03	0.00E+00
TC-101	5.69E-61	8.09E-61	7.95E-60	0.00E+00	1.46E-59	4.93E-61	1.38E-67	0.00E+00
RU-103	2.17E+02	0.00E+00	9.29E+01	0.00E+00	7.66E+02	0.00E+00	1.81E+04	0.00E+00
RU-105	1.88E-04	0.00E+00	7.29E-05	0.00E+00	2.37E-03	0.00E+00	1.52E-01	0.00E+00
RU-106	4.50E+03	0.00E+00	5.67E+02	0.00E+00	8.68E+03	0.00E+00	2.16E+05	0.00E+00

03/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
RH-105	7.68E+04	5.55E+04	3.64E+04	0.00E+00	2.36E+05	0.00E+00	7.06E+06	0.00E+00
PD-107	0.00E+00	2.49E+06	1.60E+05	0.00E+00	2.25E+07	0.00E+00	1.16E+07	0.00E+00
PD-109	0.00E+00	9.72E+03	2.21E+03	0.00E+00	5.62E+04	0.00E+00	9.80E+05	0.00E+00
AG-110M	1.16E+07	1.09E+07	6.65E+06	0.00E+00	2.08E+07	0.00E+00	3.07E+09	0.00E+00
AG-111	1.43E+06	5.94E+05	2.99E+05	0.00E+00	1.93E+06	0.00E+00	8.29E+08	0.00E+00
CD-113M	0.00E+00	6.46E+05	2.08E+04	0.00E+00	7.14E+05	0.00E+00	3.88E+06	0.00E+00
CD-115M	0.00E+00	2.75E+05	8.89E+03	0.00E+00	2.20E+05	0.00E+00	8.72E+06	0.00E+00
SN-123	1.19E+08	1.95E+06	2.88E+06	1.56E+06	0.00E+00	0.00E+00	1.79E+08	0.00E+00
SN-125	1.26E+07	2.50E+05	5.67E+05	1.96E+05	0.00E+00	0.00E+00	1.18E+08	0.00E+00
SN-126	3.47E+08	6.46E+06	9.87E+06	1.70E+06	0.00E+00	0.00E+00	7.72E+07	0.00E+00
SB-124	5.51E+06	1.01E+05	2.15E+06	1.25E+04	0.00E+00	4.81E+06	1.11E+08	0.00E+00
SB-125	4.38E+06	4.79E+04	1.03E+06	4.19E+03	0.00E+00	3.85E+06	3.41E+07	0.00E+00
SB-126	1.20E+06	2.45E+04	4.30E+05	6.78E+03	0.00E+00	8.59E+05	7.09E+07	0.00E+00
SB-127	9.80E+04	2.09E+03	3.70E+04	1.10E+03	0.00E+00	6.67E+04	1.66E+07	0.00E+00
TE-125M	3.60E+06	1.30E+06	4.82E+05	1.01E+06	0.00E+00	0.00E+00	1.06E+07	0.00E+00
TE-127M	1.01E+07	3.59E+06	1.20E+06	2.41E+06	4.10E+07	0.00E+00	2.52E+07	0.00E+00
TE-127	1.45E+02	5.15E+01	3.12E+01	1.00E+02	5.88E+02	0.00E+00	1.12E+04	0.00E+00
TE-129M	1.32E+07	4.90E+06	2.09E+06	4.26E+06	5.53E+07	0.00E+00	4.96E+07	0.00E+00
TE-129	6.24E-11	2.33E-11	1.52E-11	4.46E-11	2.62E-10	0.00E+00	3.41E-10	0.00E+00
TE-133M	4.54E-14	2.58E-14	2.51E-14	3.60E-14	2.55E-13	0.00E+00	1.04E-13	0.00E+00
TE-134	1.90E-19	1.22E-19	1.28E-19	1.56E-19	1.17E-18	0.00E+00	7.06E-21	0.00E+00
I-129	1.67E+09	1.41E+09	2.35E+09	1.71E+12	2.52E+09	0.00E+00	1.64E+08	0.00E+00
I-130	8.86E+05	2.56E+06	1.02E+06	2.09E+08	3.95E+06	0.00E+00	1.97E+06	0.00E+00
I-131	6.45E+08	9.03E+08	4.85E+08	2.63E+11	1.55E+09	0.00E+00	1.79E+08	0.00E+00
TE-131M	7.88E+04	3.78E+04	3.15E+04	5.69E+04	3.94E+05	0.00E+00	3.03E+06	0.00E+00
TE-131	7.90E-34	3.26E-34	2.47E-34	6.09E-34	3.45E-33	0.00E+00	6.49E-35	0.00E+00
I-132	3.50E-01	9.15E-01	3.28E-01	3.08E+01	1.44E+00	0.00E+00	3.98E-01	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-133	8.48E+06	1.44E+07	4.39E+06	2.01E+09	2.52E+07	0.00E+00	1.09E+07	0.00E+00
CS-134M	9.28E-01	1.92E+00	9.88E-01	0.00E+00	1.07E+00	1.88E-01	1.28E+00	0.00E+00
CS-134	2.94E+10	6.93E+10	3.22E+10	0.00E+00	2.20E+10	8.41E+09	8.62E+08	0.00E+00
I-134	4.30E-12	1.14E-11	4.09E-12	1.90E-10	1.80E-11	0.00E+00	1.50E-13	0.00E+00
I-135	2.74E+04	7.04E+04	2.61E+04	4.53E+06	1.11E+05	0.00E+00	7.81E+04	0.00E+00
CS-135	9.98E+09	9.15E+09	2.14E+09	0.00E+00	3.49E+09	1.26E+09	1.60E+08	0.00E+00
CS-136	1.34E+09	5.29E+09	3.55E+09	0.00E+00	2.88E+09	4.54E+08	4.26E+08	0.00E+00
CS-137	4.02E+10	5.34E+10	1.86E+10	0.00E+00	1.82E+10	7.06E+09	7.60E+08	0.00E+00
CS-138	4.92E-23	9.45E-23	4.72E-23	0.00E+00	6.98E-23	8.12E-24	4.29E-26	0.00E+00
CS-139	3.75E-89	5.52E-89	2.02E-89	0.00E+00	4.46E-89	4.88E-90	2.56E-104	0.00E+00
BA-139	9.81E-09	6.90E-12	2.86E-10	0.00E+00	6.50E-12	4.75E-12	8.75E-08	0.00E+00
BA-140	5.82E+06	7.13E+03	3.75E+05	0.00E+00	2.42E+03	4.80E+03	8.98E+06	0.00E+00
LA-140	9.72E-01	4.78E-01	1.27E-01	0.00E+00	0.00E+00	0.00E+00	2.74E+04	0.00E+00
BA-141	9.03E-47	6.74E-50	3.01E-48	0.00E+00	6.26E-50	4.62E-50	1.92E-52	0.00E+00
LA-141	6.72E-06	2.07E-06	3.41E-07	0.00E+00	0.00E+00	0.00E+00	3.66E-01	0.00E+00
CE-141	1.07E+03	7.12E+02	8.17E+01	0.00E+00	3.35E+02	0.00E+00	2.04E+06	0.00E+00
BA-142	5.78E-81	5.78E-84	3.55E-82	0.00E+00	4.89E-84	3.84E-84	1.77E-92	0.00E+00
LA-142	4.02E-12	1.79E-12	4.45E-13	0.00E+00	0.00E+00	0.00E+00	5.44E-08	0.00E+00
CE-143	9.17E+00	6.67E+03	7.45E-01	0.00E+00	2.99E+00	0.00E+00	2.00E+05	0.00E+00
PR-143	3.48E+01	1.39E+01	1.73E+00	0.00E+00	8.08E+00	0.00E+00	1.15E+05	0.00E+00
CE-144	7.90E+04	3.27E+04	4.24E+03	0.00E+00	1.95E+04	0.00E+00	1.99E+07	0.00E+00
PR-144	1.30E-54	5.31E-55	6.58E-56	0.00E+00	3.05E-55	0.00E+00	1.43E-57	0.00E+00
ND-147	2.17E+01	2.36E+01	1.42E+00	0.00E+00	1.39E+01	0.00E+00	8.53E+04	0.00E+00
PM-147	6.18E+02	5.87E+01	2.39E+01	0.00E+00	1.12E+02	0.00E+00	5.58E+04	0.00E+00
PM-148M	1.79E+02	4.54E+01	3.55E+01	0.00E+00	6.87E+01	0.00E+00	2.86E+05	0.00E+00
PM-148	1.31E+01	2.13E+00	1.07E+00	0.00E+00	3.84E+00	0.00E+00	1.27E+05	0.00E+00
PM-149	9.46E-01	1.33E-01	5.45E-02	0.00E+00	2.53E-01	0.00E+00	1.96E+04	0.00E+00
PM-151	1.42E-01	2.35E-02	1.19E-02	0.00E+00	4.23E-02	0.00E+00	5.28E+03	0.00E+00
SM-151	5.22E+02	1.00E+02	2.36E+01	0.00E+00	1.10E+02	0.00E+00	3.41E+04	0.00E+00
SM-153	4.36E-01	3.61E-01	2.66E-02	0.00E+00	1.18E-01	0.00E+00	1.02E+04	0.00E+00
EU-152	1.46E+03	3.52E+02	3.10E+02	0.00E+00	1.63E+03	0.00E+00	1.29E+05	0.00E+00
EU-154	4.71E+03	6.07E+02	4.28E+02	0.00E+00	2.72E+03	0.00E+00	3.21E+05	0.00E+00

03/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
EU-155	1.03E+03	9.97E+01	6.17E+01	0.00E+00	3.90E+02	0.00E+00	5.71E+05	0.00E+00
EU-156	5.46E+01	4.09E+01	6.68E+00	0.00E+00	2.75E+01	0.00E+00	2.09E+05	0.00E+00
TB-160	3.18E+02	0.00E+00	3.97E+01	0.00E+00	1.26E+02	0.00E+00	2.06E+05	0.00E+00
HO-166M	2.14E+03	6.58E+02	4.76E+02	0.00E+00	9.63E+02	0.00E+00	1.62E+05	0.00E+00
W-181	7.53E+03	2.43E+03	2.54E+02	0.00E+00	0.00E+00	0.00E+00	2.07E+05	0.00E+00
W-185	2.87E+05	9.46E+04	1.00E+04	0.00E+00	0.00E+00	0.00E+00	8.17E+06	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	8.41E-01	7.93E-02	4.41E-02	0.00E+00	2.49E-01	0.00E+00	1.28E+04	0.00E+00
U-232	3.52E+09	0.00E+00	2.52E+08	0.00E+00	3.82E+08	0.00E+00	4.30E+07	0.00E+00
U-233	7.42E+08	0.00E+00	4.51E+07	0.00E+00	1.74E+08	0.00E+00	3.98E+07	0.00E+00
U-234	7.12E+08	0.00E+00	4.42E+07	0.00E+00	1.71E+08	0.00E+00	3.90E+07	0.00E+00
U-235	6.82E+08	0.00E+00	4.15E+07	0.00E+00	1.60E+08	0.00E+00	4.95E+07	0.00E+00
U-236	6.82E+08	0.00E+00	4.24E+07	0.00E+00	1.63E+08	0.00E+00	3.66E+07	0.00E+00
U-237	1.25E+04	0.00E+00	3.33E+03	0.00E+00	5.13E+04	0.00E+00	3.31E+06	0.00E+00
U-238	6.52E+08	0.00E+00	3.88E+07	0.00E+00	1.50E+08	0.00E+00	3.49E+07	0.00E+00
NP-237	7.96E+06	5.71E+05	3.50E+05	0.00E+00	2.59E+06	0.00E+00	5.03E+05	0.00E+00
NP-238	7.96E+00	2.13E-01	1.24E-01	0.00E+00	7.30E-01	0.00E+00	1.56E+04	0.00E+00
PU-238	1.60E+06	2.05E+05	4.35E+04	0.00E+00	1.87E+05	0.00E+00	1.85E+05	0.00E+00
PU-239	1.83E+06	2.22E+05	4.81E+04	0.00E+00	2.05E+05	0.00E+00	1.69E+05	0.00E+00
PU-240	1.83E+06	2.22E+05	4.81E+04	0.00E+00	2.05E+05	0.00E+00	1.72E+05	0.00E+00
PU-241	4.18E+04	2.00E+03	8.81E+02	0.00E+00	4.08E+03	0.00E+00	3.53E+03	0.00E+00
PU-242	1.70E+06	2.14E+05	4.64E+04	0.00E+00	1.97E+05	0.00E+00	1.66E+05	0.00E+00
PU-244	1.98E+06	2.44E+05	5.31E+04	0.00E+00	2.26E+05	0.00E+00	2.47E+05	0.00E+00
AM-241	4.77E+06	4.51E+06	3.44E+05	0.00E+00	2.58E+06	0.00E+00	4.71E+05	0.00E+00
AM-242M	4.83E+06	4.25E+06	3.47E+05	0.00E+00	2.57E+06	0.00E+00	5.92E+05	0.00E+00
AM-243	4.76E+06	4.40E+06	3.36E+05	0.00E+00	2.53E+06	0.00E+00	5.52E+05	0.00E+00
CM-242	1.61E+05	1.69E+05	1.07E+04	0.00E+00	4.86E+04	0.00E+00	4.59E+05	0.00E+00
CM-243	3.88E+06	3.60E+06	2.44E+05	0.00E+00	1.14E+06	0.00E+00	4.95E+05	0.00E+00
CM-244	3.01E+06	2.85E+06	1.90E+05	0.00E+00	8.89E+05	0.00E+00	4.78E+05	0.00E+00
CM-245	5.92E+06	5.21E+06	3.65E+05	0.00E+00	1.71E+06	0.00E+00	4.46E+05	0.00E+00
CM-246	5.88E+06	5.21E+06	3.64E+05	0.00E+00	1.70E+06	0.00E+00	4.39E+05	0.00E+00
CM-247	5.73E+06	5.13E+06	3.59E+05	0.00E+00	1.68E+06	0.00E+00	5.76E+05	0.00E+00
CM-248	4.76E+07	4.22E+07	2.96E+06	0.00E+00	1.38E+07	0.00E+00	9.27E+06	0.00E+00
CF-252	2.04E+06	0.00E+00	4.93E+04	0.00E+00	0.00E+00	0.00E+00	1.80E+06	0.00E+00

07/11

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

Table I-12
DOSE FACTOR TABLE: R (i) – Child, Goat Milk
Units are m²*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-22	2.29E+09	2.29E+09	2.29E+09	2.29E+09	2.29E+09	2.29E+09	2.29E+09	0.00E+00
NA-24	1.06E+06	1.06E+06	1.06E+06	1.06E+06	1.06E+06	1.06E+06	1.06E+06	0.00E+00
P-32	9.33E+10	4.37E+09	3.60E+09	0.00E+00	0.00E+00	0.00E+00	2.58E+09	0.00E+00
CA-41	1.61E+11	0.00E+00	1.76E+10	0.00E+00	0.00E+00	0.00E+00	8.82E+07	0.00E+00
SC-46	8.20E+01	1.12E+02	4.33E+01	0.00E+00	9.94E+01	0.00E+00	1.64E+05	0.00E+00
CR-51	0.00E+00	0.00E+00	1.22E+04	6.78E+03	1.85E+03	1.24E+04	6.48E+05	0.00E+00
MN-54	0.00E+00	2.52E+06	6.70E+05	0.00E+00	7.06E+05	0.00E+00	2.11E+06	0.00E+00
FE-55	1.45E+06	7.71E+05	2.39E+05	0.00E+00	0.00E+00	4.36E+05	1.43E+05	0.00E+00
MN-56	0.00E+00	1.54E-03	3.48E-04	0.00E+00	1.86E-03	0.00E+00	2.23E-01	0.00E+00
CO-57	0.00E+00	4.60E+05	9.32E+05	0.00E+00	0.00E+00	0.00E+00	3.77E+06	0.00E+00
CO-58	0.00E+00	1.45E+06	4.45E+06	0.00E+00	0.00E+00	0.00E+00	8.49E+06	0.00E+00
FE-59	1.56E+06	2.53E+06	1.26E+06	0.00E+00	0.00E+00	7.33E+05	2.63E+06	0.00E+00
CO-60	0.00E+00	5.18E+06	1.53E+07	0.00E+00	0.00E+00	0.00E+00	2.87E+07	0.00E+00
NI-59	2.66E+08	7.08E+07	4.51E+07	0.00E+00	0.00E+00	0.00E+00	4.70E+06	0.00E+00
NI-63	3.56E+09	1.90E+08	1.21E+08	0.00E+00	0.00E+00	0.00E+00	1.28E+07	0.00E+00
CU-64	0.00E+00	8.32E+03	5.02E+03	0.00E+00	2.01E+04	0.00E+00	3.90E+05	0.00E+00
NI-65	1.99E-01	1.87E-02	1.09E-02	0.00E+00	0.00E+00	0.00E+00	2.29E+00	0.00E+00
ZN-65	4.96E+08	1.32E+09	8.22E+08	0.00E+00	8.33E+08	0.00E+00	2.32E+08	0.00E+00
ZN-69M	9.55E+04	1.63E+05	1.92E+04	0.00E+00	9.45E+04	0.00E+00	5.30E+06	0.00E+00
ZN-69	1.14E-12	1.64E-12	1.52E-13	0.00E+00	9.96E-13	0.00E+00	1.03E-10	0.00E+00
SE-79	0.00E+00	3.75E+08	8.31E+07	0.00E+00	6.09E+08	0.00E+00	2.46E+07	0.00E+00
BR-82	0.00E+00	0.00E+00	1.38E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	5.28E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	7.81E-24	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	0.00E+00	0.00E+00	1.06E-301	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	1.05E+09	6.47E+08	0.00E+00	0.00E+00	0.00E+00	6.77E+07	0.00E+00
RB-87	0.00E+00	1.17E+09	5.42E+08	0.00E+00	0.00E+00	0.00E+00	1.75E+07	0.00E+00
RB-88	0.00E+00	8.58E-46	5.96E-46	0.00E+00	0.00E+00	0.00E+00	4.21E-47	0.00E+00
RB-89	0.00E+00	1.61E-53	1.43E-53	0.00E+00	0.00E+00	0.00E+00	1.41E-55	0.00E+00
SR-89	1.39E+10	0.00E+00	3.97E+08	0.00E+00	0.00E+00	0.00E+00	5.38E+08	0.00E+00
SR-90	2.35E+11	0.00E+00	5.95E+10	0.00E+00	0.00E+00	0.00E+00	3.16E+09	0.00E+00
Y-90	3.87E+01	0.00E+00	1.03E+00	0.00E+00	0.00E+00	0.00E+00	1.10E+05	0.00E+00
SR-91	2.74E+05	0.00E+00	1.03E+04	0.00E+00	0.00E+00	0.00E+00	6.04E+05	0.00E+00
Y-91M	3.21E-20	0.00E+00	1.17E-21	0.00E+00	0.00E+00	0.00E+00	6.29E-17	0.00E+00
Y-91	4.68E+03	0.00E+00	1.25E+02	0.00E+00	0.00E+00	0.00E+00	6.24E+05	0.00E+00
SR-92	4.58E+00	0.00E+00	1.84E-01	0.00E+00	0.00E+00	0.00E+00	8.68E+01	0.00E+00
Y-92	3.04E-05	0.00E+00	8.69E-07	0.00E+00	0.00E+00	0.00E+00	8.77E-01	0.00E+00
Y-93	1.21E-01	0.00E+00	3.33E-03	0.00E+00	0.00E+00	0.00E+00	1.81E+03	0.00E+00
NB-93M	2.58E+05	6.45E+04	2.12E+04	0.00E+00	6.96E+04	0.00E+00	9.72E+06	0.00E+00
NB-95	3.81E+04	1.49E+04	1.06E+04	0.00E+00	1.40E+04	0.00E+00	2.75E+07	0.00E+00
NB-97	1.75E-12	3.16E-13	1.47E-13	0.00E+00	3.50E-13	0.00E+00	9.74E-08	0.00E+00
ZR-93	8.24E+02	3.09E+01	2.20E+01	0.00E+00	1.19E+02	0.00E+00	1.17E+04	0.00E+00
ZR-95	4.60E+02	1.01E+02	9.00E+01	0.00E+00	1.45E+02	0.00E+00	1.05E+05	0.00E+00
ZR-97	2.30E-01	3.33E-02	1.96E-02	0.00E+00	4.78E-02	0.00E+00	5.04E+03	0.00E+00
MO-93	0.00E+00	1.78E+08	6.40E+06	0.00E+00	4.70E+07	0.00E+00	9.03E+06	0.00E+00
MO-99	0.00E+00	9.76E+06	2.42E+06	0.00E+00	2.09E+07	0.00E+00	8.08E+06	0.00E+00
TC-99	1.32E+07	1.47E+07	5.28E+06	0.00E+00	1.73E+08	1.30E+06	1.54E+08	0.00E+00
TC-99M	1.59E+00	3.11E+00	5.15E+01	0.00E+00	4.52E+01	1.58E+00	1.77E+03	0.00E+00
TC-101	1.40E-60	1.46E-60	1.85E-59	0.00E+00	2.49E-59	7.72E-61	4.64E-60	0.00E+00
RU-103	5.14E+02	0.00E+00	1.98E+02	0.00E+00	1.29E+03	0.00E+00	1.33E+04	0.00E+00
RU-105	4.58E-04	0.00E+00	1.66E-04	0.00E+00	4.03E-03	0.00E+00	2.99E-01	0.00E+00
RU-106	1.11E+04	0.00E+00	1.38E+03	0.00E+00	1.50E+04	0.00E+00	1.72E+05	0.00E+00

03/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
RH-105	1.88E+05	1.01E+05	8.65E+04	0.00E+00	4.03E+05	0.00E+00	6.27E+06	0.00E+00
PD-107	0.00E+00	4.66E+06	3.96E+05	0.00E+00	3.90E+07	0.00E+00	9.25E+06	0.00E+00
PD-109	0.00E+00	1.81E+04	5.43E+03	0.00E+00	9.71E+04	0.00E+00	1.07E+06	0.00E+00
AG-110M	2.51E+07	1.69E+07	1.35E+07	0.00E+00	3.15E+07	0.00E+00	2.01E+09	0.00E+00
AG-111	3.53E+06	1.11E+06	7.29E+05	0.00E+00	3.33E+06	0.00E+00	6.77E+08	0.00E+00
CD-113M	0.00E+00	1.20E+06	5.13E+04	0.00E+00	1.24E+06	0.00E+00	3.11E+06	0.00E+00
CD-115M	0.00E+00	5.15E+05	2.19E+04	0.00E+00	3.83E+05	0.00E+00	7.00E+06	0.00E+00
SN-123	2.93E+08	3.64E+06	7.14E+06	3.86E+06	0.00E+00	0.00E+00	1.44E+08	0.00E+00
SN-125	3.09E+07	4.66E+05	1.39E+06	4.84E+05	0.00E+00	0.00E+00	9.59E+07	0.00E+00
SN-126	8.22E+08	1.02E+07	2.33E+07	2.81E+06	0.00E+00	0.00E+00	6.17E+07	0.00E+00
SB-124	1.30E+07	1.69E+05	4.57E+06	2.88E+04	0.00E+00	7.23E+06	8.15E+07	0.00E+00
SB-125	1.04E+07	8.05E+04	2.19E+06	9.67E+03	0.00E+00	5.82E+06	2.49E+07	0.00E+00
SB-126	2.74E+06	4.19E+04	9.83E+05	1.60E+04	0.00E+00	1.31E+06	5.52E+07	0.00E+00
SB-127	2.36E+05	3.65E+03	8.20E+04	2.63E+03	0.00E+00	1.02E+05	1.33E+07	0.00E+00
TE-125M	8.85E+06	2.40E+06	1.18E+06	2.48E+06	0.00E+00	0.00E+00	8.54E+06	0.00E+00
TE-127M	2.50E+07	6.72E+06	2.96E+06	5.97E+06	7.12E+07	0.00E+00	2.02E+07	0.00E+00
TE-127	3.57E+02	9.63E+01	7.66E+01	2.47E+02	1.02E+03	0.00E+00	1.40E+04	0.00E+00
TE-129M	3.26E+07	9.09E+06	5.06E+06	1.05E+07	9.56E+07	0.00E+00	3.97E+07	0.00E+00
TE-129	1.54E-10	4.30E-11	3.65E-11	1.10E-10	4.50E-10	0.00E+00	9.58E-09	0.00E+00
TE-133M	1.09E-13	4.40E-14	5.45E-14	8.44E-14	4.18E-13	0.00E+00	3.36E-12	0.00E+00
TE-134	4.53E-19	2.04E-19	2.72E-19	3.58E-19	1.89E-18	0.00E+00	2.07E-18	0.00E+00
I-129	4.12E+09	2.53E+09	2.26E+09	1.65E+12	4.27E+09	0.00E+00	1.27E+08	0.00E+00
I-130	2.07E+06	4.19E+06	2.16E+06	4.61E+08	6.26E+06	0.00E+00	1.96E+06	0.00E+00
I-131	1.56E+09	1.57E+09	8.94E+08	5.20E+11	2.58E+09	0.00E+00	1.40E+08	0.00E+00
TE-131M	1.92E+05	6.64E+04	7.06E+04	1.36E+05	6.42E+05	0.00E+00	2.69E+06	0.00E+00
TE-131	1.94E-33	5.91E-34	5.77E-34	1.48E-33	5.86E-33	0.00E+00	1.02E-32	0.00E+00
I-132	8.27E-01	1.52E+00	6.99E-01	7.05E+01	2.33E+00	0.00E+00	1.79E+00	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-133	2.06E+07	2.55E+07	9.64E+06	4.73E+09	4.25E+07	0.00E+00	1.03E+07	0.00E+00
CS-134M	2.20E+00	3.25E+00	2.12E+00	0.00E+00	1.72E+00	2.84E-01	4.11E+00	0.00E+00
CS-134	6.79E+10	1.11E+11	2.35E+10	0.00E+00	3.45E+10	1.24E+10	6.01E+08	0.00E+00
I-134	1.02E-11	1.89E-11	8.70E-12	4.35E-10	2.89E-11	0.00E+00	1.25E-11	0.00E+00
I-135	6.48E+04	1.17E+05	5.52E+04	1.03E+07	1.79E+05	0.00E+00	8.88E+04	0.00E+00
CS-135	2.46E+10	1.71E+10	1.76E+09	0.00E+00	6.04E+09	2.02E+09	1.28E+08	0.00E+00
CS-136	3.03E+09	8.34E+09	5.40E+09	0.00E+00	4.44E+09	6.63E+08	2.93E+08	0.00E+00
CS-137	9.67E+10	9.26E+10	1.37E+10	0.00E+00	3.02E+10	1.09E+10	5.80E+08	0.00E+00
CS-138	1.19E-22	1.66E-22	1.05E-22	0.00E+00	1.17E-22	1.26E-23	7.64E-23	0.00E+00
CS-139	9.21E-89	1.02E-88	4.91E-89	0.00E+00	7.68E-89	7.75E-90	9.21E-93	0.00E+00
BA-139	2.41E-08	1.29E-11	6.98E-10	0.00E+00	1.12E-11	7.57E-12	1.39E-06	0.00E+00
BA-140	1.41E+07	1.23E+04	8.20E+05	0.00E+00	4.01E+03	7.34E+03	7.12E+06	0.00E+00
LA-140	2.33E+00	8.14E-01	2.74E-01	0.00E+00	0.00E+00	0.00E+00	2.27E+04	0.00E+00
BA-141	2.22E-46	1.24E-49	7.23E-48	0.00E+00	1.08E-49	7.31E-49	1.27E-46	0.00E+00
LA-141	1.66E-05	3.86E-06	8.38E-07	0.00E+00	0.00E+00	0.00E+00	8.59E-01	0.00E+00
CE-141	2.62E+03	1.31E+03	1.94E+02	0.00E+00	5.74E+02	0.00E+00	1.63E+06	0.00E+00
BA-142	1.39E-80	1.00E-83	7.78E-82	0.00E+00	8.11E-84	5.90E-84	1.82E-82	0.00E+00
LA-142	9.72E-12	3.10E-12	9.70E-13	0.00E+00	0.00E+00	0.00E+00	6.14E-07	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
PR-143	8.62E+01	2.59E+01	4.28E+00	0.00E+00	1.40E+01	0.00E+00	9.30E+04	0.00E+00
CE-144	1.95E+05	6.11E+04	1.04E+04	0.00E+00	3.38E+04	0.00E+00	1.59E+07	0.00E+00
PR-144	3.21E-54	9.94E-55	1.62E-55	0.00E+00	5.26E-55	0.00E+00	2.14E-51	0.00E+00
ND-147	5.33E+01	4.32E+01	3.35E+00	0.00E+00	2.37E+01	0.00E+00	6.85E+04	0.00E+00
PM-147	1.54E+03	1.10E+02	5.93E+01	0.00E+00	1.95E+02	0.00E+00	4.46E+04	0.00E+00
PM-148M	3.67E+02	7.31E+01	7.31E+01	0.00E+00	1.08E+02	0.00E+00	2.06E+05	0.00E+00
PM-148	3.19E+01	3.84E+00	2.48E+00	0.00E+00	6.52E+00	0.00E+00	1.03E+05	0.00E+00
PM-149	2.33E+00	2.48E-01	1.34E-01	0.00E+00	4.39E-01	0.00E+00	1.69E+04	0.00E+00
PM-151	3.48E-01	4.23E-02	2.75E-02	0.00E+00	7.17E-02	0.00E+00	4.80E+03	0.00E+00
SM-151	1.26E+03	1.88E+02	5.92E+01	0.00E+00	1.94E+02	0.00E+00	2.73E+04	0.00E+00
SM-153	1.08E+00	6.70E-01	6.46E-02	0.00E+00	2.04E-01	0.00E+00	8.91E+03	0.00E+00
EU-152	3.03E+03	5.51E+02	6.55E+02	0.00E+00	2.33E+03	0.00E+00	9.05E+04	0.00E+00
EU-154	1.13E+04	1.02E+03	9.29E+02	0.00E+00	4.47E+03	0.00E+00	2.36E+05	0.00E+00

07/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
EU-155	2.36E+03	1.70E+02	1.33E+02	0.00E+00	6.36E+02	0.00E+00	4.25E+05	0.00E+00
EU-156	1.32E+02	7.06E+01	1.46E+01	0.00E+00	4.55E+01	0.00E+00	1.60E+05	0.00E+00
TB-160	6.73E+02	0.00E+00	8.36E+01	0.00E+00	2.00E+02	0.00E+00	1.49E+05	0.00E+00
HO-166M	5.33E+03	1.12E+03	9.43E+02	0.00E+00	1.59E+03	0.00E+00	1.30E+05	0.00E+00
W-181	1.85E+04	4.55E+03	6.25E+02	0.00E+00	0.00E+00	0.00E+00	1.66E+05	0.00E+00
W-185	7.07E+05	1.76E+05	2.47E+04	0.00E+00	0.00E+00	0.00E+00	6.58E+06	0.00E+00
W-187	3.47E+03	2.05E+03	9.21E+02	0.00E+00	0.00E+00	0.00E+00	2.88E+05	0.00E+00
NP-239	2.07E+00	1.49E-01	1.04E-01	0.00E+00	4.30E-01	0.00E+00	1.10E+04	0.00E+00
U-232	8.68E+09	0.00E+00	6.22E+08	0.00E+00	6.61E+08	0.00E+00	3.44E+07	0.00E+00
U-233	1.84E+09	0.00E+00	1.11E+08	0.00E+00	3.01E+08	0.00E+00	3.18E+07	0.00E+00
U-234	1.76E+09	0.00E+00	1.09E+08	0.00E+00	2.95E+08	0.00E+00	3.12E+07	0.00E+00
U-235	1.69E+09	0.00E+00	1.02E+08	0.00E+00	2.77E+08	0.00E+00	3.96E+07	0.00E+00
U-236	1.69E+09	0.00E+00	1.05E+08	0.00E+00	2.83E+08	0.00E+00	2.92E+07	0.00E+00
U-237	3.09E+04	0.00E+00	8.20E+03	0.00E+00	8.90E+04	0.00E+00	2.72E+06	0.00E+00
U-238	1.61E+09	0.00E+00	9.58E+07	0.00E+00	2.59E+08	0.00E+00	2.79E+07	0.00E+00
NP-237	1.10E+07	7.26E+05	4.83E+05	0.00E+00	2.99E+06	0.00E+00	4.03E+05	0.00E+00
NP-238	1.96E+01	3.97E-01	3.06E-01	0.00E+00	1.27E+00	0.00E+00	1.36E+04	0.00E+00
PU-238	2.35E+06	2.72E+05	6.24E+04	0.00E+00	2.27E+05	0.00E+00	1.48E+05	0.00E+00
PU-239	2.55E+06	2.72E+05	6.54E+04	0.00E+00	2.41E+05	0.00E+00	1.35E+05	0.00E+00
PU-240	2.53E+06	2.82E+05	6.54E+04	0.00E+00	2.41E+05	0.00E+00	1.38E+05	0.00E+00
PU-241	7.62E+04	3.11E+03	1.58E+03	0.00E+00	5.83E+03	0.00E+00	2.84E+03	0.00E+00
PU-242	2.35E+06	2.72E+05	6.30E+04	0.00E+00	2.31E+05	0.00E+00	1.32E+05	0.00E+00
PU-244	2.74E+06	3.12E+06	7.21E+04	0.00E+00	2.67E+05	0.00E+00	1.97E+05	0.00E+00
AM-241	6.71E+06	5.78E+06	5.03E+05	0.00E+00	3.08E+06	0.00E+00	3.77E+05	0.00E+00
AM-242M	6.91E+06	5.53E+06	5.13E+05	0.00E+00	3.11E+06	0.00E+00	4.74E+05	0.00E+00
AM-243	6.61E+06	5.58E+06	4.85E+05	0.00E+00	2.99E+06	0.00E+00	4.42E+05	0.00E+00
CM-242	3.96E+05	3.16E+05	2.63E+04	0.00E+00	8.43E+04	0.00E+00	3.68E+05	0.00E+00
CM-243	6.31E+06	5.13E+06	4.06E+05	0.00E+00	1.52E+06	0.00E+00	3.96E+05	0.00E+00
CM-244	5.32E+06	4.30E+06	3.41E+05	0.00E+00	1.25E+06	0.00E+00	3.83E+05	0.00E+00
CM-245	8.24E+06	6.61E+06	5.18E+05	0.00E+00	2.03E+06	0.00E+00	3.57E+05	0.00E+00
CM-246	8.15E+06	6.61E+06	5.18E+05	0.00E+00	2.02E+06	0.00E+00	3.51E+05	0.00E+00
CM-247	7.95E+06	6.52E+06	5.08E+05	0.00E+00	1.99E+06	0.00E+00	4.62E+05	0.00E+00
CM-248	6.61E+07	5.38E+07	4.21E+06	0.00E+00	1.64E+07	0.00E+00	7.45E+06	0.00E+00
CF-252	5.10E+06	0.00E+00	1.23E+05	0.00E+00	0.00E+00	0.00E+00	1.44E+06	0.00E+00

07/17

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

Table I-13
DOSE FACTOR TABLE: R (i) – Infant, Goat Milk
Units are m²*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-22	3.82E+09	3.82E+09	3.82E+09	3.82E+09	3.82E+09	3.82E+09	3.82E+09	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	1.92E+11	1.13E+10	7.46E+09	0.00E+00	0.00E+00	0.00E+00	2.60E+09	0.00E+00
CA-41	1.74E+11	0.00E+00	1.89E+10	0.00E+00	0.00E+00	0.00E+00	8.86E+07	0.00E+00
SC-46	1.56E+02	2.25E+02	7.03E+01	0.00E+00	1.48E+02	0.00E+00	1.47E+05	0.00E+00
CR-51	0.00E+00	0.00E+00	1.94E+04	1.26E+04	2.76E+03	2.46E+04	5.64E+05	0.00E+00
MN-54	0.00E+00	4.68E+06	1.06E+06	0.00E+00	1.04E+06	0.00E+00	1.72E+06	0.00E+00
FE-55	1.76E+06	1.13E+06	3.03E+05	0.00E+00	0.00E+00	5.55E+05	1.44E+05	0.00E+00
MN-56	0.00E+00	3.77E-03	6.50E-04	0.00E+00	3.24E-03	0.00E+00	3.43E-01	0.00E+00
CO-57	0.00E+00	1.07E+06	1.75E+06	0.00E+00	0.00E+00	0.00E+00	3.66E+06	0.00E+00
CO-58	0.00E+00	2.91E+06	7.26E+06	0.00E+00	0.00E+00	0.00E+00	7.25E+06	0.00E+00
FE-59	2.92E+06	5.10E+06	2.01E+06	0.00E+00	0.00E+00	1.51E+06	2.43E+06	0.00E+00
CO-60	0.00E+00	1.06E+07	2.50E+07	0.00E+00	0.00E+00	0.00E+00	2.52E+07	0.00E+00
NI-59	3.13E+08	9.59E+07	5.40E+07	0.00E+00	0.00E+00	0.00E+00	4.74E+06	0.00E+00
NI-63	4.19E+09	2.59E+08	1.45E+08	0.00E+00	0.00E+00	0.00E+00	1.29E+07	0.00E+00
CU-64	0.00E+00	2.07E+04	9.57E+03	0.00E+00	3.50E+04	0.00E+00	4.24E+05	0.00E+00
NI-65	4.21E-01	4.76E-02	2.17E-02	0.00E+00	0.00E+00	0.00E+00	3.62E+00	0.00E+00
ZN-65	6.66E+08	2.28E+09	1.05E+09	0.00E+00	1.11E+09	0.00E+00	1.93E+09	0.00E+00
ZN-69M	2.02E+05	4.11E+05	3.75E+04	0.00E+00	1.67E+05	0.00E+00	5.70E+06	0.00E+00
ZN-69	2.42E-12	4.36E-12	3.24E-13	0.00E+00	1.81E-12	0.00E+00	3.55E-10	0.00E+00
SE-79	0.00E+00	9.33E+08	1.73E+08	0.00E+00	1.08E+09	0.00E+00	2.48E+07	0.00E+00
BR-82	0.00E+00	0.00E+00	2.32E+07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	1.12E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	1.51E-23	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-85	0.00E+00	0.00E+00	2.26E-301	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	2.67E+09	1.32E+09	0.00E+00	0.00E+00	0.00E+00	6.83E+07	0.00E+00
RB-87	0.00E+00	2.63E+09	1.04E+09	0.00E+00	0.00E+00	0.00E+00	1.77E+07	0.00E+00
RB-88	0.00E+00	2.25E-45	1.23E-45	0.00E+00	0.00E+00	0.00E+00	2.19E-45	0.00E+00
RB-89	0.00E+00	3.95E-53	2.72E-53	0.00E+00	0.00E+00	0.00E+00	1.34E-53	0.00E+00
SR-89	2.64E+10	0.00E+00	7.58E+08	0.00E+00	0.00E+00	0.00E+00	5.43E+08	0.00E+00
SR-90	2.55E+11	0.00E+00	6.50E+10	0.00E+00	0.00E+00	0.00E+00	3.19E+09	0.00E+00
Y-90	8.17E+01	0.00E+00	2.19E+00	0.00E+00	0.00E+00	0.00E+00	1.13E+05	0.00E+00
SR-91	5.70E+05	0.00E+00	2.06E+04	0.00E+00	0.00E+00	0.00E+00	6.75E+05	0.00E+00
Y-91M	6.81E-20	0.00E+00	2.32E-21	0.00E+00	0.00E+00	0.00E+00	2.27E-16	0.00E+00
Y-91	8.79E+03	0.00E+00	2.34E+02	0.00E+00	0.00E+00	0.00E+00	6.30E+05	0.00E+00
SR-92	9.75E+00	0.00E+00	3.62E-01	0.00E+00	0.00E+00	0.00E+00	1.05E+02	0.00E+00
Y-92	6.45E-05	0.00E+00	1.81E-06	0.00E+00	0.00E+00	0.00E+00	1.23E+00	0.00E+00
Y-93	2.59E-01	0.00E+00	7.05E-03	0.00E+00	0.00E+00	0.00E+00	2.04E+03	0.00E+00
NB-93M	3.03E+05	8.20E+04	2.56E+04	0.00E+00	8.00E+04	0.00E+00	9.80E+06	0.00E+00
NB-95	7.12E+04	2.93E+04	1.70E+04	0.00E+00	2.10E+04	0.00E+00	2.48E+07	0.00E+00
NB-97	3.70E-12	7.88E-13	2.84E-13	0.00E+00	6.16E-13	0.00E+00	2.49E-07	0.00E+00
ZR-93	9.53E+02	4.54E+01	2.73E+01	0.00E+00	1.34E+02	0.00E+00	1.18E+04	0.00E+00
ZR-95	8.17E+02	1.99E+02	1.41E+02	0.00E+00	2.14E+02	0.00E+00	9.91E+04	0.00E+00
ZR-97	4.87E-01	8.37E-02	3.82E-02	0.00E+00	8.43E-02	0.00E+00	5.34E+03	0.00E+00
MO-93	0.00E+00	4.18E+08	1.35E+07	0.00E+00	8.37E+07	0.00E+00	8.96E+06	0.00E+00
MO-99	0.00E+00	2.50E+07	4.87E+06	0.00E+00	3.73E+07	0.00E+00	8.22E+06	0.00E+00
TC-99	2.67E+07	3.60E+07	1.12E+07	0.00E+00	3.04E+08	3.50E+06	1.56E+08	0.00E+00
TC-99M	3.30E+00	6.80E+00	8.76E+01	0.00E+00	7.32E+01	3.56E+00	1.98E+03	0.00E+00
TC-101	2.96E-60	3.73E-60	3.69E-59	0.00E+00	4.43E-59	2.03E-60	6.34E-58	0.00E+00
RU-103	1.04E+03	0.00E+00	3.48E+02	0.00E+00	2.17E+03	0.00E+00	1.27E+04	0.00E+00
RU-105	9.66E-04	0.00E+00	3.25E-04	0.00E+00	7.11E-03	0.00E+00	3.84E-01	0.00E+00
RU-106	2.28E+04	0.00E+00	2.85E+03	0.00E+00	2.70E+04	0.00E+00	1.73E+05	0.00E+00

11/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
RH-105	3.99E+05	2.61E+05	1.76E+05	0.00E+00	7.26E+05	0.00E+00	6.49E+06	0.00E+00
PD-107	0.00E+00	1.17E+07	8.34E+05	0.00E+00	6.70E+07	0.00E+00	9.34E+06	0.00E+00
PD-109	0.00E+00	4.79E+04	1.16E+04	0.00E+00	1.76E+05	0.00E+00	1.18E+06	0.00E+00
AG-110M	4.63E+07	3.38E+07	2.24E+07	0.00E+00	4.83E+07	0.00E+00	1.75E+09	0.00E+00
AG-111	7.41E+06	2.88E+06	1.52E+06	0.00E+00	6.01E+06	0.00E+00	6.87E+08	0.00E+00
CD-113M	0.00E+00	2.09E+06	7.70E+04	0.00E+00	1.58E+06	0.00E+00	3.14E+06	0.00E+00
CD-115M	0.00E+00	1.24E+06	4.31E+04	0.00E+00	6.48E+05	0.00E+00	7.07E+06	0.00E+00
SN-123	5.49E+08	8.57E+06	1.43E+07	8.61E+06	0.00E+00	0.00E+00	1.45E+08	0.00E+00
SN-125	6.46E+07	1.20E+06	2.87E+06	1.19E+06	0.00E+00	0.00E+00	9.67E+07	0.00E+00
SN-126	1.36E+09	1.79E+07	4.44E+07	4.71E+06	0.00E+00	0.00E+00	6.22E+07	0.00E+00
SB-124	2.51E+07	3.70E+05	7.78E+06	6.67E+04	0.00E+00	1.57E+07	7.75E+07	0.00E+00
SB-125	1.79E+07	1.74E+05	3.69E+06	2.25E+04	0.00E+00	1.04E+07	2.39E+07	0.00E+00
SB-126	5.01E+06	9.83E+04	1.81E+06	3.85E+04	0.00E+00	3.15E+06	5.19E+07	0.00E+00
SB-127	4.97E+05	8.86E+03	1.54E+05	6.33E+03	0.00E+00	2.56E+05	1.32E+07	0.00E+00
TE-125M	1.81E+07	6.05E+06	2.45E+06	6.09E+06	0.00E+00	0.00E+00	8.62E+06	0.00E+00
TE-127M	5.05E+07	1.68E+07	6.12E+06	1.46E+07	1.24E+08	0.00E+00	2.04E+07	0.00E+00
TE-127	7.58E+02	2.54E+02	1.63E+02	6.17E+02	1.85E+03	0.00E+00	1.59E+04	0.00E+00
TE-129M	6.69E+07	2.29E+07	1.03E+07	2.57E+07	1.67E+08	0.00E+00	3.99E+07	0.00E+00
TE-129	3.26E-10	1.12E-10	7.62E-11	2.73E-10	8.12E-10	0.00E+00	2.61E-08	0.00E+00
TE-133M	2.28E-13	1.04E-13	9.95E-14	2.01E-13	7.10E-13	0.00E+00	1.12E-11	0.00E+00
TE-134	9.37E-19	4.70E-19	4.84E-19	8.39E-19	3.17E-18	0.00E+00	1.07E-17	0.00E+00
I-129	8.47E+09	6.28E+09	4.59E+09	4.03E+12	7.43E+09	0.00E+00	1.26E+08	0.00E+00
I-130	4.26E+06	9.37E+06	3.76E+06	1.05E+09	1.03E+07	0.00E+00	2.01E+06	0.00E+00
I-131	3.26E+09	3.85E+09	1.69E+09	1.26E+12	4.49E+09	0.00E+00	1.37E+08	0.00E+00
TE-131M	4.05E+05	1.63E+05	1.35E+05	3.31E+05	1.12E+06	0.00E+00	2.75E+06	0.00E+00
TE-131	4.11E-33	1.52E-33	1.15E-33	3.67E-33	1.05E-32	0.00E+00	1.66E-31	0.00E+00
I-132	1.72E+00	3.48E+00	1.24E+00	1.63E+02	3.89E+00	0.00E+00	2.82E+00	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-133	4.35E+07	6.34E+07	1.86E+07	1.15E+10	7.45E+07	0.00E+00	1.07E+07	0.00E+00
CS-134M	4.58E+00	7.63E+00	3.85E+00	0.00E+00	2.94E+00	6.77E-01	6.04E+00	0.00E+00
CS-134	1.09E+11	2.04E+11	2.06E+10	0.00E+00	5.25E+10	2.15E+10	5.54E+08	0.00E+00
I-134	2.11E-11	4.33E-11	1.54E-11	1.01E-09	4.84E-11	0.00E+00	4.47E-11	0.00E+00
I-135	1.35E+05	2.68E+05	9.77E+04	2.40E+07	2.99E+05	0.00E+00	9.70E+04	0.00E+00
CS-135	3.94E+10	3.58E+10	1.87E+09	0.00E+00	1.02E+10	3.88E+09	1.29E+08	0.00E+00
CS-136	5.93E+09	1.74E+10	6.51E+09	0.00E+00	6.95E+09	1.42E+09	2.65E+08	0.00E+00
CS-137	1.54E+11	1.81E+11	1.28E+10	0.00E+00	4.85E+10	1.96E+10	5.65E+08	0.00E+00
CS-138	2.52E-22	4.09E-22	1.98E-22	0.00E+00	2.04E-22	3.19E-23	6.54E-22	0.00E+00
CS-139	1.97E-88	2.69E-88	1.03E-88	0.00E+00	1.39E-88	2.10E-89	1.69E-89	0.00E+00
BA-139	5.13E-08	3.40E-11	1.48E-09	0.00E+00	2.04E-11	2.06E-11	3.25E-06	0.00E+00
BA-140	2.89E+07	2.89E+04	1.49E+06	0.00E+00	6.87E+03	1.78E+04	7.10E+06	0.00E+00
LA-140	4.86E+00	1.92E+00	4.93E-01	0.00E+00	0.00E+00	0.00E+00	2.25E+04	0.00E+00
BA-141	4.72E-46	3.23E-49	1.49E-47	0.00E+00	1.94E-49	1.97E-49	5.76E-45	0.00E+00
LA-141	3.52E-05	1.02E-05	1.78E-06	0.00E+00	0.00E+00	0.00E+00	1.17E+00	0.00E+00
CE-141	5.20E+03	3.17E+03	3.74E+02	0.00E+00	9.79E+02	0.00E+00	1.64E+06	0.00E+00
BA-142	2.93E-80	2.44E-83	1.44E-81	0.00E+00	1.40E-83	1.48E-83	1.21E-79	0.00E+00
LA-142	2.04E-11	7.49E-12	1.79E-12	0.00E+00	0.00E+00	0.00E+00	1.27E-06	0.00E+00
CE-143	4.76E+01	3.16E+04	3.60E+00	0.00E+00	9.20E+00	0.00E+00	1.84E+05	0.00E+00
PR-143	1.78E+02	6.67E+01	8.84E+00	0.00E+00	2.48E+01	0.00E+00	9.41E+04	0.00E+00
CE-144	2.79E+05	1.14E+05	1.56E+04	0.00E+00	4.62E+04	0.00E+00	1.60E+07	0.00E+00
PR-144	6.82E-54	2.64E-54	3.44E-55	0.00E+00	9.56E-55	0.00E+00	1.23E-49	0.00E+00
ND-147	1.06E+02	1.09E+02	6.65E+00	0.00E+00	4.19E+01	0.00E+00	6.88E+04	0.00E+00
PM-147	1.89E+03	1.59E+02	7.72E+01	0.00E+00	2.37E+02	0.00E+00	4.50E+04	0.00E+00
PM-148M	5.88E+02	1.49E+02	1.17E+02	0.00E+00	1.71E+02	0.00E+00	1.94E+05	0.00E+00
PM-148	6.68E+01	9.65E+00	4.86E+00	0.00E+00	1.15E+01	0.00E+00	1.03E+05	0.00E+00
PM-149	4.96E+00	6.51E-01	2.84E-01	0.00E+00	7.91E-01	0.00E+00	1.75E+04	0.00E+00
PM-151	7.36E-01	1.07E-01	5.43E-02	0.00E+00	1.27E-01	0.00E+00	4.96E+03	0.00E+00
SM-151	1.43E+03	3.29E+02	7.11E+01	0.00E+00	2.24E+02	0.00E+00	2.75E+04	0.00E+00
SM-153	2.28E+00	1.76E+00	1.35E-01	0.00E+00	3.69E-01	0.00E+00	9.21E+03	0.00E+00
EU-152	3.32E+03	8.81E+02	7.43E+02	0.00E+00	2.47E+03	0.00E+00	7.82E+04	0.00E+00
EU-154	1.30E+04	1.80E+03	1.08E+03	0.00E+00	4.89E+03	0.00E+00	2.25E+05	0.00E+00

07/11

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
EU-155	2.65E+03	3.06E+02	1.58E+02	0.00E+00	6.85E+02	0.00E+00	4.10E+05	0.00E+00
EU-156	2.67E+02	1.66E+02	2.63E+01	0.00E+00	7.64E+01	0.00E+00	1.56E+05	0.00E+00
TB-160	1.05E+03	0.00E+00	1.31E+02	0.00E+00	2.99E+02	0.00E+00	1.40E+05	0.00E+00
HO-166M	6.17E+03	1.33E+03	1.05E+03	0.00E+00	1.76E+03	0.00E+00	1.31E+05	0.00E+00
W-181	3.87E+04	1.19E+04	1.33E+03	0.00E+00	0.00E+00	0.00E+00	1.67E+05	0.00E+00
W-185	1.48E+06	4.62E+05	5.27E+04	0.00E+00	0.00E+00	0.00E+00	6.62E+06	0.00E+00
W-187	7.30E+03	5.07E+03	1.75E+03	0.00E+00	0.00E+00	0.00E+00	2.98E+05	0.00E+00
NP-239	4.38E+00	3.91E-01	2.21E-01	0.00E+00	7.81E-01	0.00E+00	1.13E+04	0.00E+00
U-232	1.19E+10	0.00E+00	1.07E+09	0.00E+00	1.17E+09	0.00E+00	3.47E+07	0.00E+00
U-233	2.51E+09	0.00E+00	1.91E+08	0.00E+00	5.33E+08	0.00E+00	3.21E+07	0.00E+00
U-234	2.41E+09	0.00E+00	1.88E+08	0.00E+00	5.23E+08	0.00E+00	3.14E+07	0.00E+00
U-235	2.31E+09	0.00E+00	1.76E+08	0.00E+00	4.90E+08	0.00E+00	4.00E+07	0.00E+00
U-236	2.31E+09	0.00E+00	1.80E+08	0.00E+00	4.99E+08	0.00E+00	2.95E+07	0.00E+00
U-237	6.47E+04	0.00E+00	1.73E+04	0.00E+00	1.61E+05	0.00E+00	2.76E+06	0.00E+00
U-238	2.21E+09	0.00E+00	1.64E+08	0.00E+00	4.58E+08	0.00E+00	2.82E+07	0.00E+00
NP-237	1.18E+07	7.85E+05	5.18E+05	0.00E+00	3.13E+06	0.00E+00	4.06E+05	0.00E+00
NP-238	4.17E+01	1.05E+00	6.46E-01	0.00E+00	2.29E+00	0.00E+00	1.40E+04	0.00E+00
PU-238	2.53E+06	2.96E+05	6.71E+04	0.00E+00	2.39E+05	0.00E+00	1.49E+05	0.00E+00
PU-239	2.72E+06	3.06E+05	6.99E+04	0.00E+00	2.53E+05	0.00E+00	1.36E+05	0.00E+00
PU-240	2.72E+06	3.06E+05	6.99E+04	0.00E+00	2.53E+05	0.00E+00	1.39E+05	0.00E+00
PU-241	8.37E+04	3.47E+03	1.74E+03	0.00E+00	6.24E+03	0.00E+00	2.85E+03	0.00E+00
PU-242	2.53E+06	2.94E+05	6.73E+04	0.00E+00	2.43E+05	0.00E+00	1.34E+05	0.00E+00
PU-244	2.94E+06	3.38E+05	7.72E+04	0.00E+00	2.78E+05	0.00E+00	1.99E+05	0.00E+00
AM-241	7.21E+06	6.27E+06	5.38E+05	0.00E+00	3.23E+06	0.00E+00	3.80E+05	0.00E+00
AM-242M	7.45E+06	6.02E+06	5.58E+05	0.00E+00	3.28E+06	0.00E+00	4.78E+05	0.00E+00
AM-243	7.11E+06	6.07E+06	5.23E+05	0.00E+00	3.14E+06	0.00E+00	4.46E+05	0.00E+00
CM-242	6.18E+05	5.73E+05	4.10E+04	0.00E+00	1.18E+05	0.00E+00	3.71E+05	0.00E+00
CM-243	6.90E+06	5.67E+06	4.43E+05	0.00E+00	1.61E+06	0.00E+00	3.99E+05	0.00E+00
CM-244	5.81E+06	4.78E+06	3.74E+05	0.00E+00	1.33E+06	0.00E+00	3.86E+05	0.00E+00
CM-245	8.84E+06	7.16E+06	5.58E+05	0.00E+00	2.13E+06	0.00E+00	3.60E+05	0.00E+00
CM-246	8.74E+06	7.16E+06	5.58E+05	0.00E+00	2.13E+06	0.00E+00	3.54E+05	0.00E+00
CM-247	8.54E+06	7.06E+06	5.48E+05	0.00E+00	2.09E+06	0.00E+00	4.66E+05	0.00E+00
CM-248	7.06E+07	5.82E+07	4.52E+06	0.00E+00	1.73E+07	0.00E+00	7.50E+06	0.00E+00
CF-252	5.93E+06	0.00E+00	1.43E+05	0.00E+00	0.00E+00	0.00E+00	1.45E+06	0.00E+00

03/17

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

Table I-14
DOSE FACTOR TABLE: R (i) – Adult, Meat
Units are m²*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-22	1.39E+09	1.39E+09	1.39E+09	1.39E+09	1.39E+09	1.39E+09	1.39E+09	0.00E+00
NA-24	1.36E-03	1.36E-03	1.36E-03	1.36E-03	1.36E-03	1.36E-03	1.36E-03	0.00E+00
P-32	4.66E+09	2.90E+08	1.80E+08	0.00E+00	0.00E+00	0.00E+00	5.24E+08	0.00E+00
CA-41	2.03E+09	0.00E+00	2.19E+08	0.00E+00	0.00E+00	0.00E+00	2.02E+06	0.00E+00
SC-46	1.76E+05	3.41E+05	9.91E+04	0.00E+00	3.18E+05	0.00E+00	1.66E+09	0.00E+00
CR-51	0.00E+00	0.00E+00	7.05E+03	4.21E+03	1.55E+03	9.35E+03	1.77E+06	0.00E+00
MN-54	0.00E+00	9.18E+06	1.75E+06	0.00E+00	2.73E+06	0.00E+00	2.81E+07	0.00E+00
FE-55	2.93E+08	2.03E+08	4.72E+07	0.00E+00	0.00E+00	1.13E+08	1.16E+08	0.00E+00
MN-56	0.00E+00	1.52E-53	2.69E-54	0.00E+00	1.92E-53	0.00E+00	4.84E-52	0.00E+00
CO-57	0.00E+00	5.64E+06	9.37E+06	0.00E+00	0.00E+00	0.00E+00	1.43E+08	0.00E+00
CO-58	0.00E+00	1.82E+07	4.09E+07	0.00E+00	0.00E+00	0.00E+00	3.69E+08	0.00E+00
FE-59	2.66E+08	6.24E+08	2.39E+08	0.00E+00	0.00E+00	1.74E+08	2.08E+09	0.00E+00
CO-60	0.00E+00	7.52E+07	1.66E+08	0.00E+00	0.00E+00	0.00E+00	1.41E+09	0.00E+00
NI-59	1.42E+08	4.87E+07	2.37E+07	0.00E+00	0.00E+00	0.00E+00	1.00E+07	0.00E+00
NI-63	1.89E+09	1.31E+08	6.33E+07	0.00E+00	0.00E+00	0.00E+00	2.73E+07	0.00E+00
CU-64	0.00E+00	2.81E-07	1.32E-07	0.00E+00	7.10E-07	0.00E+00	2.40E-05	0.00E+00
NI-65	2.25E-53	2.92E-54	1.33E-54	0.00E+00	0.00E+00	0.00E+00	7.40E-53	0.00E+00
ZN-65	3.56E+08	1.13E+09	5.12E+08	0.00E+00	7.57E+08	0.00E+00	7.13E+08	0.00E+00
ZN-69M	1.68E-05	4.02E-05	3.68E-06	0.00E+00	2.43E-05	0.00E+00	2.45E-03	0.00E+00
ZN-69	1.81E-153	3.46E-153	2.41E-154	0.00E+00	2.25E-153	0.00E+00	5.20E-154	0.00E+00
SE-79	0.00E+00	1.08E+08	1.81E+07	0.00E+00	1.87E+08	0.00E+00	2.21E+07	0.00E+00
BR-82	0.00E+00	0.00E+00	1.22E+03	0.00E+00	0.00E+00	0.00E+00	1.40E+03	0.00E+00
BR-83	0.00E+00	0.00E+00	6.00E-57	0.00E+00	0.00E+00	0.00E+00	8.65E-57	0.00E+00
BR-84	0.00E+00	0.00E+00	6.62E-270	0.00E+00	0.00E+00	0.00E+00	5.19E-275	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	4.87E+08	2.27E+08	0.00E+00	0.00E+00	0.00E+00	9.60E+07	0.00E+00
RB-87	0.00E+00	1.05E+09	3.64E+08	0.00E+00	0.00E+00	0.00E+00	4.90E+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	3.02E+08	0.00E+00	8.66E+06	0.00E+00	0.00E+00	0.00E+00	4.84E+07	0.00E+00
SR-90	1.24E+10	0.00E+00	3.05E+09	0.00E+00	0.00E+00	0.00E+00	3.59E+08	0.00E+00
Y-90	1.08E+02	0.00E+00	2.89E+00	0.00E+00	0.00E+00	0.00E+00	1.14E+06	0.00E+00
SR-91	1.52E-10	0.00E+00	6.14E-12	0.00E+00	0.00E+00	0.00E+00	7.23E-10	0.00E+00
Y-91M	6.98E-175	0.00E+00	2.70E-176	0.00E+00	0.00E+00	0.00E+00	2.05E-174	0.00E+00
Y-91	1.13E+06	0.00E+00	3.03E+04	0.00E+00	0.00E+00	0.00E+00	6.23E+08	0.00E+00
SR-92	1.18E-49	0.00E+00	5.10E-51	0.00E+00	0.00E+00	0.00E+00	2.33E-48	0.00E+00
Y-92	1.52E-39	0.00E+00	4.43E-41	0.00E+00	0.00E+00	0.00E+00	2.66E-35	0.00E+00
Y-93	4.69E-12	0.00E+00	1.30E-13	0.00E+00	0.00E+00	0.00E+00	1.49E-07	0.00E+00
NB-93M	1.95E+07	6.36E+06	1.57E+06	0.00E+00	7.31E+06	0.00E+00	2.93E+09	0.00E+00
NB-95	2.30E+06	1.28E+06	6.87E+05	0.00E+00	1.26E+06	0.00E+00	7.76E+09	0.00E+00
NB-97	5.90E-119	1.49E-119	5.45E-120	0.00E+00	1.74E-119	0.00E+00	5.50E-116	0.00E+00
ZR-93	3.90E+06	2.18E+05	1.02E+05	0.00E+00	8.27E+05	0.00E+00	2.27E+08	0.00E+00
ZR-95	1.87E+06	6.01E+05	4.07E+05	0.00E+00	9.42E+05	0.00E+00	1.90E+09	0.00E+00
ZR-97	2.07E-05	4.17E-06	1.91E-06	0.00E+00	6.30E-06	0.00E+00	1.29E+00	0.00E+00
MO-93	0.00E+00	1.65E+08	4.45E+06	0.00E+00	4.67E+07	0.00E+00	2.68E+07	0.00E+00
MO-99	0.00E+00	1.00E+05	1.90E+04	0.00E+00	2.26E+05	0.00E+00	2.32E+05	0.00E+00
TC-99	1.37E+08	2.04E+08	5.51E+07	0.00E+00	2.57E+09	1.73E+07	6.67E+09	0.00E+00
TC-99M	4.45E-21	1.26E-20	1.60E-19	0.00E+00	1.91E-19	6.16E-21	7.44E-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	1.05E+08	0.00E+00	4.53E+07	0.00E+00	4.01E+08	0.00E+00	1.23E+10	0.00E+00
RU-105	5.78E-28	0.00E+00	2.28E-28	0.00E+00	7.46E-27	0.00E+00	3.53E-25	0.00E+00
RU-106	2.80E+09	0.00E+00	3.54E+08	0.00E+00	5.40E+09	0.00E+00	1.81E+11	0.00E+00

03/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
RH-105	3.84E+00	2.81E+00	1.85E+00	0.00E+00	1.19E+01	0.00E+00	4.48E+02	0.00E+00
PD-107	0.00E+00	1.61E+06	1.03E+05	0.00E+00	1.45E+07	0.00E+00	9.99E+06	0.00E+00
PD-109	0.00E+00	1.32E-06	2.97E-07	0.00E+00	7.53E-06	0.00E+00	1.46E-04	0.00E+00
AG-110M	6.68E+06	6.18E+06	3.67E+06	0.00E+00	1.22E+07	0.00E+00	2.52E+09	0.00E+00
AG-111	1.47E+05	6.13E+04	3.05E+04	0.00E+00	1.98E+05	0.00E+00	1.12E+08	0.00E+00
CD-113M	0.00E+00	4.60E+06	1.47E+05	0.00E+00	5.06E+06	0.00E+00	3.70E+07	0.00E+00
CD-115M	0.00E+00	1.49E+06	4.76E+04	0.00E+00	1.18E+06	0.00E+00	6.27E+07	0.00E+00
SN-123	5.53E+09	9.16E+07	1.35E+08	7.79E+07	0.00E+00	0.00E+00	1.13E+10	0.00E+00
SN-125	1.77E+08	3.56E+06	8.01E+06	2.95E+06	0.00E+00	0.00E+00	2.21E+09	0.00E+00
SN-126	1.85E+10	3.66E+08	5.27E+08	1.08E+08	0.00E+00	0.00E+00	5.33E+09	0.00E+00
SB-124	1.98E+07	3.74E+05	7.84E+06	4.80E+04	0.00E+00	1.54E+07	5.62E+08	0.00E+00
SB-125	1.91E+07	2.13E+05	4.55E+06	1.94E+04	0.00E+00	1.47E+07	2.10E+08	0.00E+00
SB-126	1.93E+06	3.94E+04	6.98E+05	1.18E+04	0.00E+00	1.19E+06	1.58E+08	0.00E+00
SB-127	1.66E+04	3.63E+02	6.37E+03	1.99E+02	0.00E+00	9.84E+03	3.80E+06	0.00E+00
TE-125M	3.59E+08	1.30E+08	4.81E+07	1.08E+08	1.46E+09	0.00E+00	1.43E+09	0.00E+00
TE-127M	1.12E+09	3.99E+08	1.36E+08	2.85E+08	4.53E+09	0.00E+00	3.74E+09	0.00E+00
TE-127	2.12E-10	7.62E-11	4.59E-11	1.57E-10	8.64E-10	0.00E+00	1.67E-08	0.00E+00
TE-129M	1.13E+09	4.23E+08	1.79E+08	3.90E+08	4.73E+09	0.00E+00	5.71E+09	0.00E+00
TE-129	4.47E-121	1.68E-121	1.09E-121	3.43E-121	1.88E-120	0.00E+00	3.37E-121	0.00E+00
TE-133M	5.67E-153	3.32E-153	3.19E-153	3.19E-153	3.28E-152	0.00E+00	1.14E-153	0.00E+00
TE-134	3.18E-204	2.08E-204	1.28E-204	2.78E-204	2.01E-203	0.00E+00	3.53E-207	0.00E+00
I-129	1.30E+08	1.12E+08	3.66E+08	2.88E+11	2.40E+08	0.00E+00	1.77E+07	0.00E+00
I-130	2.11E-06	6.22E-06	2.45E-06	5.27E-04	9.71E-06	0.00E+00	5.35E-06	0.00E+00
I-131	1.07E+07	1.54E+07	8.80E+06	5.03E+09	2.63E+07	0.00E+00	4.05E+06	0.00E+00
TE-131M	4.51E+02	2.21E+02	1.84E+02	3.49E+02	2.23E+03	0.00E+00	2.19E+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
I-132	6.97E-59	1.86E-58	6.52E-59	6.52E-57	2.97E-58	0.00E+00	3.50E-59	0.00E+00
TE-132	1.42E+06	9.18E+05	8.62E+05	1.01E+06	8.84E+06	0.00E+00	4.34E+07	0.00E+00
I-133	3.65E-01	6.35E-01	1.94E-01	9.34E+01	1.11E+00	0.00E+00	5.71E-01	0.00E+00
CS-134M	2.62E-47	5.50E-47	2.81E-47	0.00E+00	2.98E-47	4.70E-48	1.94E-47	0.00E+00
CS-134	6.58E+08	1.56E+09	1.28E+09	0.00E+00	5.06E+08	1.68E+08	2.74E+07	0.00E+00
I-134	1.06E-161	2.89E-161	1.03E-161	5.01E-160	4.60E-161	0.00E+00	2.52E-164	0.00E+00
I-135	4.43E-17	1.16E-16	4.28E-17	7.64E-15	1.86E-16	0.00E+00	1.31E-16	0.00E+00
CS-135	2.14E+08	1.97E+08	8.76E+07	0.00E+00	7.47E+07	2.24E+07	4.62E+06	0.00E+00
CS-136	1.21E+07	4.76E+07	3.43E+07	0.00E+00	2.65E+07	3.63E+06	5.41E+06	0.00E+00
CS-137	8.72E+08	1.19E+09	7.81E+08	0.00E+00	4.05E+08	1.35E+08	2.31E+07	0.00E+00
CS-138	2.68E-267	5.30E-267	2.63E-267	0.00E+00	3.90E-267	3.85E-268	2.26E-272	0.00E+00
CS-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-139	1.24E-101	8.86E-105	3.64E-103	0.00E+00	8.28E-105	5.02E-105	2.20E-101	0.00E+00
BA-140	2.87E+07	3.61E+04	1.88E+06	0.00E+00	1.23E+04	2.07E+04	5.92E+07	0.00E+00
LA-140	3.71E-02	1.87E-02	4.94E-03	0.00E+00	0.00E+00	0.00E+00	1.37E+03	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
LA-141	3.90E-37	1.21E-37	1.98E-38	0.00E+00	0.00E+00	0.00E+00	1.44E-32	0.00E+00
CE-141	1.40E+04	9.50E+03	1.08E+03	0.00E+00	4.41E+03	0.00E+00	3.63E+07	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-142	3.45E-92	1.57E-92	3.90E-93	0.00E+00	0.00E+00	0.00E+00	1.14E-88	0.00E+00
CE-143	2.01E-02	1.48E+01	1.64E-03	0.00E+00	6.53E-03	0.00E+00	5.55E+02	0.00E+00
PR-143	2.10E+04	8.41E+03	1.04E+03	0.00E+00	4.85E+03	0.00E+00	9.18E+07	0.00E+00
CE-144	1.46E+06	6.09E+05	7.83E+04	0.00E+00	3.61E+05	0.00E+00	4.93E+08	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	7.07E+03	8.17E+03	4.89E+02	0.00E+00	4.78E+03	0.00E+00	3.92E+07	0.00E+00
PM-147	9.64E+05	9.07E+04	3.67E+04	0.00E+00	1.71E+05	0.00E+00	1.14E+08	0.00E+00
PM-148M	2.16E+05	5.58E+04	4.27E+04	0.00E+00	8.43E+04	0.00E+00	4.73E+08	0.00E+00
PM-148	1.97E+03	3.28E+02	1.65E+02	0.00E+00	6.19E+02	0.00E+00	2.57E+07	0.00E+00
PM-149	5.14E+00	7.27E-01	2.97E-01	0.00E+00	1.37E+00	0.00E+00	1.36E+05	0.00E+00
PM-151	5.76E-03	9.67E-04	4.89E-04	0.00E+00	1.73E-03	0.00E+00	2.66E+02	0.00E+00
SM-151	9.45E+05	1.63E+05	3.90E+04	0.00E+00	1.82E+05	0.00E+00	7.19E+07	0.00E+00
SM-153	1.15E+00	9.55E-01	6.97E-02	0.00E+00	3.09E-01	0.00E+00	3.41E+04	0.00E+00
EU-152	2.55E+06	5.81E+05	5.11E+05	0.00E+00	3.60E+06	0.00E+00	3.35E+08	0.00E+00
EU-154	8.03E+06	9.87E+05	7.02E+05	0.00E+00	4.72E+06	0.00E+00	7.15E+08	0.00E+00

07/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
EU-155	1.11E+06	1.58E+05	1.02E+05	0.00E+00	7.30E+05	0.00E+00	1.24E+08	0.00E+00
EU-156	3.76E+04	2.91E+04	4.70E+03	0.00E+00	1.94E+04	0.00E+00	1.99E+08	0.00E+00
TB-160	3.92E+05	0.00E+00	4.89E+04	0.00E+00	1.62E+05	0.00E+00	3.61E+08	0.00E+00
HO-166M	3.26E+06	1.02E+06	7.72E+05	0.00E+00	1.52E+06	0.00E+00	3.09E+08	0.00E+00
W-181	2.82E+04	9.20E+03	9.86E+02	0.00E+00	0.00E+00	0.00E+00	1.05E+06	0.00E+00
W-185	1.01E+06	3.37E+05	3.55E+04	0.00E+00	0.00E+00	0.00E+00	3.90E+07	0.00E+00
W-187	2.07E-02	1.73E-02	6.04E-03	0.00E+00	0.00E+00	0.00E+00	5.66E+00	0.00E+00
NP-239	2.59E-01	2.55E-02	1.40E-02	0.00E+00	7.95E-02	0.00E+00	5.23E+03	0.00E+00
U-232	3.85E+09	0.00E+00	2.75E+08	0.00E+00	4.16E+08	0.00E+00	6.32E+07	0.00E+00
U-233	8.12E+08	0.00E+00	4.92E+07	0.00E+00	1.89E+08	0.00E+00	5.85E+07	0.00E+00
U-234	7.80E+08	0.00E+00	4.82E+07	0.00E+00	1.86E+08	0.00E+00	5.73E+07	0.00E+00
U-235	7.47E+08	0.00E+00	4.53E+07	0.00E+00	1.74E+08	0.00E+00	7.28E+07	0.00E+00
U-236	7.47E+08	0.00E+00	4.62E+07	0.00E+00	1.78E+08	0.00E+00	5.37E+07	0.00E+00
U-237	2.14E+03	0.00E+00	5.70E+02	0.00E+00	8.81E+03	0.00E+00	7.53E+05	0.00E+00
U-238	7.15E+08	0.00E+00	4.23E+07	0.00E+00	1.63E+08	0.00E+00	5.13E+07	0.00E+00
NP-237	6.91E+08	4.91E+07	3.04E+07	0.00E+00	2.26E+08	0.00E+00	4.36E+07	0.00E+00
NP-238	1.40E+00	3.78E-02	2.18E-02	0.00E+00	1.28E-01	0.00E+00	3.51E+03	0.00E+00
PU-238	2.42E+07	3.06E+06	6.56E+05	0.00E+00	2.81E+06	0.00E+00	2.80E+06	0.00E+00
PU-239	2.78E+07	3.34E+06	7.33E+05	0.00E+00	3.11E+06	0.00E+00	2.56E+06	0.00E+00
PU-240	2.78E+07	3.34E+06	7.33E+05	0.00E+00	3.11E+06	0.00E+00	2.60E+06	0.00E+00
PU-241	6.00E+05	2.85E+04	1.27E+04	0.00E+00	5.84E+04	0.00E+00	5.35E+04	0.00E+00
PU-242	2.58E+07	3.22E+06	7.06E+05	0.00E+00	3.00E+06	0.00E+00	2.51E+06	0.00E+00
PU-244	3.01E+07	3.69E+06	8.10E+05	0.00E+00	3.44E+06	0.00E+00	3.74E+06	0.00E+00
AM-241	4.14E+08	3.87E+08	2.97E+07	0.00E+00	2.23E+08	0.00E+00	4.07E+07	0.00E+00
AM-242M	4.17E+08	3.63E+08	2.98E+07	0.00E+00	2.22E+08	0.00E+00	5.12E+07	0.00E+00
AM-243	4.14E+08	3.78E+08	2.91E+07	0.00E+00	2.19E+08	0.00E+00	4.77E+07	0.00E+00
CM-242	9.56E+06	1.02E+07	6.36E+05	0.00E+00	2.89E+06	0.00E+00	3.67E+07	0.00E+00
CM-243	3.28E+08	3.00E+08	2.05E+07	0.00E+00	9.57E+07	0.00E+00	4.27E+07	0.00E+00
CM-244	2.49E+08	2.33E+08	1.57E+07	0.00E+00	7.32E+07	0.00E+00	4.12E+07	0.00E+00
CM-245	5.14E+08	4.48E+08	3.16E+07	0.00E+00	1.48E+08	0.00E+00	3.86E+07	0.00E+00
CM-246	5.10E+08	4.48E+08	3.15E+07	0.00E+00	1.47E+08	0.00E+00	3.79E+07	0.00E+00
CM-247	4.97E+08	4.41E+08	3.11E+07	0.00E+00	1.45E+08	0.00E+00	4.99E+07	0.00E+00
CM-248	4.14E+09	3.64E+09	2.56E+08	0.00E+00	1.20E+09	0.00E+00	8.06E+08	0.00E+00
CF-252	1.39E+08	0.00E+00	3.35E+06	0.00E+00	0.00E+00	0.00E+00	1.53E+08	0.00E+00

03/17

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

Table I-15
DOSE FACTOR TABLE: R (i) – Teen, Meat
Units are m²*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-22	1.10E+09	1.10E+09	1.10E+09	1.10E+09	1.10E+09	1.10E+09	1.10E+09	0.00E+00
NA-24	1.08E-03	1.08E-03	1.08E-03	1.08E-03	1.08E-03	1.08E-03	1.08E-03	0.00E+00
P-32	3.93E+09	2.44E+08	1.53E+08	0.00E+00	0.00E+00	0.00E+00	3.31E+08	0.00E+00
CA-41	1.28E+09	0.00E+00	1.38E+08	0.00E+00	0.00E+00	0.00E+00	1.26E+06	0.00E+00
SC-46	1.36E+05	2.65E+05	7.87E+04	0.00E+00	2.54E+05	0.00E+00	9.04E+08	0.00E+00
CR-51	0.00E+00	0.00E+00	5.64E+03	3.13E+03	1.24E+03	8.05E+03	9.47E+05	0.00E+00
MN-54	0.00E+00	7.00E+06	1.39E+06	0.00E+00	2.09E+06	0.00E+00	1.44E+07	0.00E+00
FE-55	2.38E+08	1.69E+08	3.94E+07	0.00E+00	0.00E+00	1.07E+08	7.31E+07	0.00E+00
MN-56	0.00E+00	1.23E-53	2.19E-54	0.00E+00	1.56E-53	0.00E+00	8.10E-52	0.00E+00
CO-57	0.00E+00	4.53E+06	7.59E+06	0.00E+00	0.00E+00	0.00E+00	8.45E+07	0.00E+00
CO-58	0.00E+00	1.41E+07	3.24E+07	0.00E+00	0.00E+00	0.00E+00	1.94E+08	0.00E+00
FE-59	2.12E+08	4.95E+08	1.91E+08	0.00E+00	0.00E+00	1.56E+08	1.17E+09	0.00E+00
CO-60	0.00E+00	5.83E+07	1.31E+08	0.00E+00	0.00E+00	0.00E+00	7.60E+08	0.00E+00
NI-59	1.13E+08	4.00E+07	1.92E+07	0.00E+00	0.00E+00	0.00E+00	6.28E+06	0.00E+00
NI-63	1.52E+09	1.07E+08	5.15E+07	0.00E+00	0.00E+00	0.00E+00	1.71E+07	0.00E+00
CU-64	0.00E+00	2.30E-07	1.08E-07	0.00E+00	5.81E-07	0.00E+00	1.78E-05	0.00E+00
NI-65	1.88E-53	2.41E-54	1.10E-54	0.00E+00	0.00E+00	0.00E+00	1.30E-52	0.00E+00
ZN-65	2.50E+08	8.69E+08	4.05E+08	0.00E+00	5.56E+08	0.00E+00	3.68E+08	0.00E+00
ZN-69M	1.40E-05	3.30E-05	3.02E-06	0.00E+00	2.00E-05	0.00E+00	1.81E-03	0.00E+00
ZN-69	1.53E-153	2.91E-153	2.04E-154	0.00E+00	1.90E-153	0.00E+00	5.36E-153	0.00E+00
SE-79	0.00E+00	9.07E+07	1.52E+07	0.00E+00	1.58E+08	0.00E+00	1.39E+07	0.00E+00
BR-82	0.00E+00	0.00E+00	9.72E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	5.07E-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	5.42E-270	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	4.07E+08	1.91E+08	0.00E+00	0.00E+00	0.00E+00	6.02E+07	0.00E+00
RB-87	0.00E+00	8.79E+08	3.07E+08	0.00E+00	0.00E+00	0.00E+00	3.07E+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	2.55E+08	0.00E+00	7.29E+06	0.00E+00	0.00E+00	0.00E+00	3.03E+07	0.00E+00
SR-90	8.05E+09	0.00E+00	1.99E+09	0.00E+00	0.00E+00	0.00E+00	2.26E+08	0.00E+00
Y-90	9.06E+01	0.00E+00	2.44E+00	0.00E+00	0.00E+00	0.00E+00	7.47E+05	0.00E+00
SR-91	1.28E-10	0.00E+00	5.08E-12	0.00E+00	0.00E+00	0.00E+00	5.79E-10	0.00E+00
Y-91M	5.85E-175	0.00E+00	2.24E-176	0.00E+00	0.00E+00	0.00E+00	2.76E-173	0.00E+00
Y-91	9.54E+05	0.00E+00	2.56E+04	0.00E+00	0.00E+00	0.00E+00	3.91E+08	0.00E+00
SR-92	9.88E-50	0.00E+00	4.21E-51	0.00E+00	0.00E+00	0.00E+00	2.52E-48	0.00E+00
Y-92	1.28E-39	0.00E+00	3.71E-41	0.00E+00	0.00E+00	0.00E+00	3.52E-35	0.00E+00
Y-93	3.96E-12	0.00E+00	1.09E-13	0.00E+00	0.00E+00	0.00E+00	1.21E-07	0.00E+00
NB-93M	1.55E+07	5.10E+06	1.28E+06	0.00E+00	5.96E+06	0.00E+00	1.84E+09	0.00E+00
NB-95	1.79E+06	9.95E+05	5.48E+05	0.00E+00	9.65E+05	0.00E+00	4.26E+09	0.00E+00
NB-97	4.92E-119	1.22E-119	4.46E-120	0.00E+00	1.43E-119	0.00E+00	2.92E-115	0.00E+00
ZR-93	3.05E+06	1.50E+05	8.21E+04	0.00E+00	5.32E+05	0.00E+00	1.42E+08	0.00E+00
ZR-95	1.50E+06	4.73E+05	3.25E+05	0.00E+00	6.95E+05	0.00E+00	1.09E+09	0.00E+00
ZR-97	1.72E-05	3.41E-06	1.57E-06	0.00E+00	5.17E-06	0.00E+00	9.23E-01	0.00E+00
MO-93	0.00E+00	1.37E+08	3.76E+06	0.00E+00	3.94E+07	0.00E+00	1.67E+07	0.00E+00
MO-99	0.00E+00	8.27E+04	1.58E+04	0.00E+00	1.89E+05	0.00E+00	1.48E+05	0.00E+00
TC-99	1.16E+08	1.70E+08	4.65E+07	0.00E+00	2.17E+09	1.76E+07	4.17E+09	0.00E+00
TC-99M	3.53E-21	9.86E-21	1.28E-19	0.00E+00	1.47E-19	5.47E-21	6.47E-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	8.57E+07	0.00E+00	3.66E+07	0.00E+00	3.02E+08	0.00E+00	7.16E+09	0.00E+00
RU-105	4.83E-28	0.00E+00	1.87E-28	0.00E+00	6.09E-27	0.00E+00	3.90E-25	0.00E+00
RU-106	2.36E+09	0.00E+00	2.97E+08	0.00E+00	4.55E+09	0.00E+00	1.13E+11	0.00E+00

07/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
RH-105	3.25E+00	2.35E+00	1.54E+00	0.00E+00	9.96E+00	0.00E+00	2.98E+02	0.00E+00
PD-107	0.00E+00	1.35E+06	8.69E+04	0.00E+00	1.22E+07	0.00E+00	6.26E+06	0.00E+00
PD-109	0.00E+00	1.11E-06	2.51E-07	0.00E+00	6.39E-06	0.00E+00	1.11E-04	0.00E+00
AG-110M	5.06E+06	4.79E+06	2.91E+06	0.00E+00	9.13E+06	0.00E+00	1.34E+09	0.00E+00
AG-111	1.24E+05	5.13E+04	2.58E+04	0.00E+00	1.67E+05	0.00E+00	7.15E+07	0.00E+00
CD-113M	0.00E+00	3.85E+06	1.24E+05	0.00E+00	4.26E+06	0.00E+00	2.31E+07	0.00E+00
CD-115M	0.00E+00	1.25E+06	4.02E+04	0.00E+00	9.96E+05	0.00E+00	3.94E+07	0.00E+00
SN-123	4.66E+09	7.66E+07	1.13E+08	6.14E+07	0.00E+00	0.00E+00	7.05E+09	0.00E+00
SN-125	1.49E+08	2.97E+06	6.73E+06	2.33E+06	0.00E+00	0.00E+00	1.40E+09	0.00E+00
SN-126	1.50E+10	2.80E+08	4.28E+08	7.38E+07	0.00E+00	0.00E+00	3.34E+09	0.00E+00
SB-124	1.62E+07	2.98E+05	6.31E+06	3.67E+04	0.00E+00	1.41E+07	3.26E+08	0.00E+00
SB-125	1.56E+07	1.71E+05	3.66E+06	1.49E+04	0.00E+00	1.37E+07	1.22E+08	0.00E+00
SB-126	1.58E+06	3.23E+04	5.68E+05	8.94E+03	0.00E+00	1.13E+06	9.35E+07	0.00E+00
SB-127	1.38E+04	2.95E+02	5.21E+03	1.55E+02	0.00E+00	9.39E+03	2.34E+06	0.00E+00
TE-125M	3.03E+08	1.09E+08	4.05E+07	8.47E+07	0.00E+00	0.00E+00	8.94E+08	0.00E+00
TE-127M	9.41E+08	3.34E+08	1.12E+08	2.24E+08	3.82E+09	0.00E+00	2.35E+09	0.00E+00
TE-127	1.80E-10	6.38E-11	3.88E-11	1.24E-10	7.29E-10	0.00E+00	1.39E-08	0.00E+00
TE-129M	9.50E+08	3.53E+08	1.50E+08	3.07E+08	3.97E+09	0.00E+00	3.57E+09	0.00E+00
TE-129	3.76E-121	1.40E-121	9.16E-122	2.69E-121	1.58E-120	0.00E+00	2.06E-120	0.00E+00
TE-133M	4.67E-153	2.66E-153	2.58E-153	3.71E-153	2.63E-152	0.00E+00	1.07E-152	0.00E+00
TE-134	2.59E-204	1.67E-204	1.74E-204	2.13E-204	1.59E-203	0.00E+00	9.63E-206	0.00E+00
I-129	1.10E+08	9.21E+07	1.54E+08	1.12E+11	1.65E+08	0.00E+00	1.07E+07	0.00E+00
I-130	1.70E-06	4.91E-06	1.96E-06	4.00E-04	7.56E-06	0.00E+00	3.77E-06	0.00E+00
I-131	8.92E+06	1.25E+07	6.71E+06	3.65E+09	2.15E+07	0.00E+00	2.47E+06	0.00E+00
TE-131M	3.76E+02	1.80E+02	1.50E+02	2.71E+02	1.88E+03	0.00E+00	1.45E+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
I-132	5.66E-59	1.48E-58	5.31E-59	4.99E-57	2.33E-58	0.00E+00	6.45E-59	0.00E+00
TE-132	1.16E+06	7.36E+05	6.92E+05	7.76E+05	7.06E+06	0.00E+00	2.33E+07	0.00E+00
I-133	3.05E-01	5.18E-01	1.58E-01	7.23E+01	9.09E-01	0.00E+00	3.92E-01	0.00E+00
CS-134M	2.13E-47	4.42E-47	2.27E-47	0.00E+00	2.46E-47	4.32E-48	2.94E-47	0.00E+00
CS-134	5.23E+08	1.23E+09	5.71E+08	0.00E+00	3.91E+08	1.49E+08	1.53E+07	0.00E+00
I-134	8.66E-162	2.30E-161	8.24E-162	3.83E-160	3.62E-161	0.00E+00	3.02E-163	0.00E+00
I-135	3.60E-17	9.27E-17	3.44E-17	5.96E-15	1.46E-16	0.00E+00	1.03E-16	0.00E+00
CS-135	1.80E+08	1.65E+08	3.86E+07	0.00E+00	6.31E+07	2.28E+07	2.89E+06	0.00E+00
CS-136	9.40E+06	3.70E+07	2.48E+07	0.00E+00	2.01E+07	3.17E+06	2.98E+06	0.00E+00
CS-137	7.24E+08	9.63E+08	3.36E+08	0.00E+00	3.28E+08	1.27E+08	1.37E+07	0.00E+00
CS-138	2.23E-267	4.28E-267	2.14E-267	0.00E+00	3.16E-267	3.68E-268	1.94E-270	0.00E+00
CS-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-139	1.05E-101	7.41E-105	3.07E-103	0.00E+00	6.98E-105	5.10E-105	9.39E-101	0.00E+00
BA-140	2.38E+07	2.91E+04	1.53E+06	0.00E+00	9.87E+03	1.96E+04	3.66E+07	0.00E+00
LA-140	3.05E-02	1.50E-02	3.99E-03	0.00E+00	0.00E+00	0.00E+00	8.61E+02	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
LA-141	3.29E-37	1.01E-37	1.67E-38	0.00E+00	0.00E+00	0.00E+00	1.79E-32	0.00E+00
CE-141	1.18E+04	7.87E+03	9.04E+02	0.00E+00	3.71E+03	0.00E+00	2.25E+07	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-142	2.85E-92	1.26E-92	3.15E-93	0.00E+00	0.00E+00	0.00E+00	3.85E-88	0.00E+00
CE-143	1.69E-02	1.23E+01	1.37E-03	0.00E+00	5.51E-03	0.00E+00	3.69E+02	0.00E+00
PR-143	1.76E+04	7.04E+03	8.78E+02	0.00E+00	4.09E+03	0.00E+00	5.80E+07	0.00E+00
CE-144	1.23E+06	5.08E+05	6.60E+04	0.00E+00	3.04E+05	0.00E+00	3.09E+08	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	6.23E+03	6.77E+03	4.06E+02	0.00E+00	3.98E+03	0.00E+00	2.44E+07	0.00E+00
PM-147	7.93E+05	7.53E+04	3.07E+04	0.00E+00	1.44E+05	0.00E+00	7.16E+07	0.00E+00
PM-148M	1.72E+05	4.36E+04	3.41E+04	0.00E+00	6.60E+04	0.00E+00	2.74E+08	0.00E+00
PM-148	1.66E+03	2.70E+02	1.36E+02	0.00E+00	4.88E+02	0.00E+00	1.61E+07	0.00E+00
PM-149	4.33E+00	6.09E-01	2.50E-01	0.00E+00	1.16E+00	0.00E+00	8.97E+04	0.00E+00
PM-151	4.82E-03	7.96E-04	4.03E-04	0.00E+00	1.43E-03	0.00E+00	1.79E+02	0.00E+00
SM-151	7.07E+05	1.36E+05	3.19E+04	0.00E+00	1.49E+05	0.00E+00	4.61E+07	0.00E+00
SM-153	9.63E-01	7.97E-01	5.87E-02	0.00E+00	2.61E-01	0.00E+00	2.25E+04	0.00E+00
EU-152	1.90E+06	4.56E+05	4.02E+05	0.00E+00	2.12E+06	0.00E+00	1.68E+08	0.00E+00
EU-154	6.10E+06	7.87E+05	5.54E+05	0.00E+00	3.52E+06	0.00E+00	4.16E+08	0.00E+00

07/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
EU-155	1.33E+06	1.29E+05	7.97E+04	0.00E+00	5.03E+05	0.00E+00	7.38E+08	0.00E+00
EU-156	3.12E+04	2.34E+04	3.81E+03	0.00E+00	1.57E+04	0.00E+00	1.19E+08	0.00E+00
TB-160	3.19E+05	0.00E+00	3.98E+04	0.00E+00	1.26E+05	0.00E+00	2.07E+08	0.00E+00
HO-166M	2.55E+06	7.84E+05	5.68E+05	0.00E+00	1.15E+06	0.00E+00	1.93E+08	0.00E+00
W-181	2.39E+04	7.71E+03	8.06E+02	0.00E+00	0.00E+00	0.00E+00	6.57E+05	0.00E+00
W-185	8.55E+05	2.82E+05	2.98E+04	0.00E+00	0.00E+00	0.00E+00	2.44E+07	0.00E+00
W-187	1.73E-02	1.41E-02	4.95E-03	0.00E+00	0.00E+00	0.00E+00	3.82E+00	0.00E+00
NP-239	2.26E-01	2.14E-02	1.19E-02	0.00E+00	6.70E-02	0.00E+00	3.44E+03	0.00E+00
U-232	3.24E+09	0.00E+00	2.32E+08	0.00E+00	3.51E+08	0.00E+00	3.96E+07	0.00E+00
U-233	6.83E+08	0.00E+00	4.15E+07	0.00E+00	1.60E+08	0.00E+00	3.66E+07	0.00E+00
U-234	6.56E+08	0.00E+00	4.07E+07	0.00E+00	1.57E+08	0.00E+00	3.59E+07	0.00E+00
U-235	6.28E+08	0.00E+00	3.82E+07	0.00E+00	1.47E+08	0.00E+00	4.56E+07	0.00E+00
U-236	6.28E+08	0.00E+00	3.91E+07	0.00E+00	1.50E+08	0.00E+00	3.37E+07	0.00E+00
U-237	1.81E+03	0.00E+00	4.82E+02	0.00E+00	7.43E+03	0.00E+00	4.79E+05	0.00E+00
U-238	6.01E+08	0.00E+00	3.58E+07	0.00E+00	1.38E+08	0.00E+00	3.21E+07	0.00E+00
NP-237	4.31E+08	3.10E+07	1.90E+07	0.00E+00	1.40E+08	0.00E+00	2.73E+07	0.00E+00
NP-238	1.18E+00	3.16E-02	1.84E-02	0.00E+00	1.08E-01	0.00E+00	2.32E+03	0.00E+00
PU-238	1.52E+07	1.94E+06	4.13E+05	0.00E+00	1.77E+06	0.00E+00	1.75E+06	0.00E+00
PU-239	1.74E+07	2.11E+06	4.56E+05	0.00E+00	1.94E+06	0.00E+00	1.60E+06	0.00E+00
PU-240	1.73E+07	2.10E+06	4.56E+05	0.00E+00	1.94E+06	0.00E+00	1.63E+06	0.00E+00
PU-241	3.95E+05	1.90E+04	8.33E+03	0.00E+00	3.86E+04	0.00E+00	3.34E+04	0.00E+00
PU-242	1.61E+07	2.03E+06	4.40E+05	0.00E+00	1.87E+06	0.00E+00	1.57E+06	0.00E+00
PU-244	1.88E+07	2.31E+06	5.04E+05	0.00E+00	2.14E+06	0.00E+00	2.34E+06	0.00E+00
AM-241	2.59E+08	2.44E+08	1.86E+07	0.00E+00	1.40E+08	0.00E+00	2.55E+07	0.00E+00
AM-242M	2.61E+08	2.30E+08	1.88E+07	0.00E+00	1.39E+08	0.00E+00	3.21E+07	0.00E+00
AM-243	2.58E+08	2.38E+08	1.82E+07	0.00E+00	1.37E+08	0.00E+00	2.99E+07	0.00E+00
CM-242	8.06E+06	8.50E+06	5.35E+05	0.00E+00	2.44E+06	0.00E+00	2.30E+07	0.00E+00
CM-243	2.10E+08	1.95E+08	1.32E+07	0.00E+00	6.17E+07	0.00E+00	2.68E+07	0.00E+00
CM-244	1.63E+08	1.54E+08	1.03E+07	0.00E+00	4.81E+07	0.00E+00	2.58E+07	0.00E+00
CM-245	3.21E+08	2.82E+08	1.98E+07	0.00E+00	9.24E+07	0.00E+00	2.42E+07	0.00E+00
CM-246	3.18E+08	2.82E+08	1.97E+07	0.00E+00	9.20E+07	0.00E+00	2.38E+07	0.00E+00
CM-247	3.10E+08	2.78E+08	1.94E+07	0.00E+00	9.08E+07	0.00E+00	3.12E+07	0.00E+00
CM-248	2.58E+09	2.29E+09	1.60E+08	0.00E+00	7.49E+08	0.00E+00	5.02E+08	0.00E+00
CF-252	1.09E+08	0.00E+00	2.64E+06	0.00E+00	0.00E+00	0.00E+00	9.60E+07	0.00E+00

07/17

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

Table I-16
DOSE FACTOR TABLE: R (i) – Child, Meat
Units are m²*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-22	1.75E+09	1.75E+09	1.75E+09	1.75E+09	1.75E+09	1.75E+09	1.75E+09	0.00E+00
NA-24	1.72E-03	1.72E-03	1.72E-03	1.72E-03	1.72E-03	1.72E-03	1.72E-03	0.00E+00
P-32	7.42E+09	3.47E+08	2.86E+08	0.00E+00	0.00E+00	0.00E+00	2.05E+08	0.00E+00
CA-41	1.42E+09	0.00E+00	1.55E+08	0.00E+00	0.00E+00	0.00E+00	7.77E+05	0.00E+00
SC-46	2.34E+05	3.21E+05	1.24E+05	0.00E+00	2.84E+05	0.00E+00	4.66E+08	0.00E+00
CR-51	0.00E+00	0.00E+00	8.79E+03	4.88E+03	1.33E+03	8.91E+03	6.69E+05	0.00E+00
MN-54	0.00E+00	8.01E+06	2.13E+06	0.00E+00	2.25E+06	0.00E+00	6.72E+06	0.00E+00
FE-55	4.57E+08	2.42E+08	7.51E+07	0.00E+00	0.00E+00	1.37E+08	4.49E+07	0.00E+00
MN-56	0.00E+00	1.64E-53	3.70E-54	0.00E+00	1.98E-53	0.00E+00	2.38E-51	0.00E+00
CO-57	0.00E+00	5.92E+06	1.20E+07	0.00E+00	0.00E+00	0.00E+00	4.85E+07	0.00E+00
CO-58	0.00E+00	1.64E+07	5.02E+07	0.00E+00	0.00E+00	0.00E+00	9.58E+07	0.00E+00
FE-59	3.76E+08	6.09E+08	3.03E+08	0.00E+00	0.00E+00	1.77E+08	6.34E+08	0.00E+00
CO-60	0.00E+00	6.93E+07	2.04E+08	0.00E+00	0.00E+00	0.00E+00	3.84E+08	0.00E+00
NI-59	2.18E+08	5.80E+07	3.69E+07	0.00E+00	0.00E+00	0.00E+00	3.85E+06	0.00E+00
NI-63	2.91E+09	1.56E+08	9.91E+07	0.00E+00	0.00E+00	0.00E+00	1.05E+07	0.00E+00
CU-64	0.00E+00	3.09E-07	1.86E-07	0.00E+00	7.46E-07	0.00E+00	1.45E-05	0.00E+00
NI-65	3.52E-53	3.31E-54	1.93E-54	0.00E+00	0.00E+00	0.00E+00	4.06E-52	0.00E+00
ZN-65	3.75E+08	1.00E+09	6.22E+08	0.00E+00	6.30E+08	0.00E+00	1.76E+08	0.00E+00
ZN-69M	2.61E-05	4.45E-05	5.25E-06	0.00E+00	2.58E-05	0.00E+00	1.45E-03	0.00E+00
ZN-69	2.87E-153	4.15E-153	3.83E-154	0.00E+00	2.52E-153	0.00E+00	2.61E-151	0.00E+00
SE-79	0.00E+00	1.29E+08	2.87E+07	0.00E+00	2.10E+08	0.00E+00	8.48E+06	0.00E+00
BR-82	0.00E+00	0.00E+00	1.52E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-83	0.00E+00	0.00E+00	9.52E-57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BR-84	0.00E+00	0.00E+00	9.37E-270	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	5.77E+08	3.55E+08	0.00E+00	0.00E+00	0.00E+00	3.71E+07	0.00E+00
RB-87	0.00E+00	1.25E+09	5.80E+08	0.00E+00	0.00E+00	0.00E+00	1.88E+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	4.82E+08	0.00E+00	1.38E+07	0.00E+00	0.00E+00	0.00E+00	1.87E+07	0.00E+00
SR-90	1.04E+10	0.00E+00	2.64E+09	0.00E+00	0.00E+00	0.00E+00	1.40E+08	0.00E+00
Y-90	1.71E+02	0.00E+00	4.59E+00	0.00E+00	0.00E+00	0.00E+00	4.88E+05	0.00E+00
SR-91	2.40E-10	0.00E+00	9.05E-12	0.00E+00	0.00E+00	0.00E+00	5.29E-10	0.00E+00
Y-91M	1.09E-174	0.00E+00	3.98E-176	0.00E+00	0.00E+00	0.00E+00	2.14E-171	0.00E+00
Y-91	1.80E+06	0.00E+00	4.82E+04	0.00E+00	0.00E+00	0.00E+00	2.40E+08	0.00E+00
SR-92	1.84E-49	0.00E+00	7.39E-51	0.00E+00	0.00E+00	0.00E+00	3.49E-48	0.00E+00
Y-92	2.41E-39	0.00E+00	6.89E-41	0.00E+00	0.00E+00	0.00E+00	6.96E-35	0.00E+00
Y-93	7.44E-12	0.00E+00	2.04E-13	0.00E+00	0.00E+00	0.00E+00	1.11E-07	0.00E+00
NB-93M	2.99E+07	7.46E+06	2.45E+06	0.00E+00	8.06E+06	0.00E+00	1.12E+09	0.00E+00
NB-95	3.10E+06	1.21E+06	8.62E+05	0.00E+00	1.13E+06	0.00E+00	2.23E+09	0.00E+00
NB-97	9.14E-119	1.65E-119	7.71E-120	0.00E+00	1.83E-119	0.00E+00	5.10E-114	0.00E+00
ZR-93	5.80E+06	2.17E+05	1.55E+05	0.00E+00	8.41E+05	0.00E+00	8.24E+07	0.00E+00
ZR-95	2.66E+06	5.85E+05	5.21E+05	0.00E+00	8.38E+05	0.00E+00	6.11E+08	0.00E+00
ZR-97	3.21E-05	4.63E-06	2.73E-06	0.00E+00	6.65E-06	0.00E+00	7.02E-01	0.00E+00
MO-93	0.00E+00	1.97E+08	7.07E+06	0.00E+00	5.19E+07	0.00E+00	9.98E+06	0.00E+00
MO-99	0.00E+00	1.15E+05	2.84E+04	0.00E+00	2.46E+05	0.00E+00	9.51E+04	0.00E+00
TC-99	2.19E+08	2.44E+08	8.75E+07	0.00E+00	2.87E+09	2.15E+07	2.56E+09	0.00E+00
TC-99M	6.20E-21	1.22E-20	2.01E-19	0.00E+00	1.77E-19	6.17E-21	6.91E-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	1.55E+08	0.00E+00	5.96E+07	0.00E+00	3.90E+08	0.00E+00	4.01E+09	0.00E+00
RU-105	9.02E-28	0.00E+00	3.27E-28	0.00E+00	7.93E-27	0.00E+00	5.88E-25	0.00E+00
RU-106	4.44E+09	0.00E+00	5.54E+08	0.00E+00	5.99E+09	0.00E+00	6.90E+10	0.00E+00

03/11

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
RH-105	6.08E+00	3.27E+00	2.79E+00	0.00E+00	1.30E+01	0.00E+00	2.02E+02	0.00E+00
PD-107	0.00E+00	1.93E+06	1.64E+05	0.00E+00	1.62E+07	0.00E+00	3.83E+06	0.00E+00
PD-109	0.00E+00	1.58E-06	4.72E-07	0.00E+00	8.45E-06	0.00E+00	9.31E-05	0.00E+00
AG-110M	8.39E+06	5.67E+06	4.53E+06	0.00E+00	1.06E+07	0.00E+00	6.74E+08	0.00E+00
AG-111	2.33E+05	7.29E+04	4.81E+04	0.00E+00	2.20E+05	0.00E+00	4.46E+07	0.00E+00
CD-113M	0.00E+00	5.50E+06	2.34E+05	0.00E+00	5.66E+06	0.00E+00	1.42E+07	0.00E+00
CD-115M	0.00E+00	1.78E+06	7.58E+04	0.00E+00	1.32E+06	0.00E+00	2.42E+07	0.00E+00
SN-123	8.81E+09	1.09E+08	2.15E+08	1.16E+08	0.00E+00	0.00E+00	4.32E+09	0.00E+00
SN-125	2.81E+08	4.23E+06	1.26E+07	4.39E+06	0.00E+00	0.00E+00	8.69E+08	0.00E+00
SN-126	2.72E+10	3.39E+08	7.74E+08	9.32E+07	0.00E+00	0.00E+00	2.04E+09	0.00E+00
SB-124	2.92E+07	3.79E+05	1.02E+07	6.45E+04	0.00E+00	1.62E+07	1.83E+08	0.00E+00
SB-125	2.85E+07	2.20E+05	5.97E+06	2.64E+04	0.00E+00	1.59E+07	6.80E+07	0.00E+00
SB-126	2.76E+06	4.22E+04	9.91E+05	1.62E+04	0.00E+00	1.32E+06	5.56E+07	0.00E+00
SB-127	2.54E+04	3.93E+02	8.82E+03	2.83E+02	0.00E+00	1.10E+04	1.43E+06	0.00E+00
TE-125M	5.69E+08	1.54E+08	7.59E+07	1.60E+08	0.00E+00	0.00E+00	5.49E+08	0.00E+00
TE-127M	1.77E+09	4.78E+08	2.11E+08	4.24E+08	5.06E+09	0.00E+00	1.44E+09	0.00E+00
TE-127	3.39E-10	9.13E-11	7.26E-11	2.34E-10	9.63E-10	0.00E+00	1.32E-08	0.00E+00
TE-129M	1.79E+09	5.00E+08	2.78E+08	5.77E+08	5.26E+09	0.00E+00	2.18E+09	0.00E+00
TE-129	7.10E-121	1.98E-121	1.69E-121	5.07E-121	2.08E-120	0.00E+00	4.42E-119	0.00E+00
TE-133M	8.56E-153	3.46E-153	4.29E-153	6.64E-153	3.29E-152	0.00E+00	2.64E-151	0.00E+00
TE-134	4.72E-204	2.12E-204	2.83E-204	3.73E-204	1.97E-203	0.00E+00	2.16E-203	0.00E+00
I-129	2.06E+08	1.26E+08	1.13E+08	8.27E+10	2.13E+08	0.00E+00	6.36E+06	0.00E+00
I-130	3.04E-06	6.13E-06	3.16E-06	6.76E-04	9.17E-06	0.00E+00	2.87E-06	0.00E+00
I-131	1.65E+07	1.66E+07	9.46E+06	5.50E+09	2.73E+07	0.00E+00	1.48E+06	0.00E+00
TE-131M	7.00E+02	2.42E+02	2.58E+02	4.98E+02	2.34E+03	0.00E+00	9.82E+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
I-132	1.02E-58	1.88E-58	8.65E-59	8.72E-57	2.88E-58	0.00E+00	2.21E-58	0.00E+00
TE-132	2.12E+06	9.38E+05	1.13E+06	1.37E+06	8.71E+06	0.00E+00	9.45E+06	0.00E+00
I-133	5.67E-01	7.02E-01	2.66E-01	1.30E+02	1.17E+00	0.00E+00	2.83E-01	0.00E+00
CS-134M	3.86E-47	5.72E-47	3.73E-47	0.00E+00	3.02E-47	4.99E-48	7.23E-47	0.00E+00
CS-134	9.22E+08	1.51E+09	3.19E+08	0.00E+00	4.69E+08	1.68E+08	8.16E+06	0.00E+00
I-134	1.57E-161	2.91E-161	1.34E-161	6.70E-160	4.45E-161	0.00E+00	1.93E-161	0.00E+00
I-135	6.52E-17	1.17E-16	5.55E-17	1.04E-14	1.80E-16	0.00E+00	8.94E-17	0.00E+00
CS-135	3.39E+08	2.36E+08	2.42E+07	0.00E+00	8.34E+07	2.78E+07	1.77E+06	0.00E+00
CS-136	1.62E+07	4.46E+07	2.88E+07	0.00E+00	2.37E+07	3.54E+06	1.57E+06	0.00E+00
CS-137	1.33E+09	1.28E+09	1.88E+08	0.00E+00	4.16E+08	1.50E+08	7.99E+06	0.00E+00
CS-138	4.13E-267	5.75E-267	3.64E-267	0.00E+00	4.04E-267	4.35E-268	2.65E-267	0.00E+00
CS-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-139	1.98E-101	1.06E-104	5.73E-103	0.00E+00	9.22E-105	6.21E-105	1.14E-99	0.00E+00
BA-140	4.38E+07	3.84E+04	2.56E+06	0.00E+00	1.25E+04	2.29E+04	2.22E+07	0.00E+00
LA-140	5.59E-02	1.95E-02	6.58E-03	0.00E+00	0.00E+00	0.00E+00	5.44E+02	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
LA-141	6.19E-37	1.44E-37	3.13E-38	0.00E+00	0.00E+00	0.00E+00	3.21E-32	0.00E+00
CE-141	2.22E+04	1.11E+04	1.64E+03	0.00E+00	4.86E+03	0.00E+00	1.38E+07	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-142	5.26E-92	1.68E-92	5.25E-93	0.00E+00	0.00E+00	0.00E+00	3.32E-87	0.00E+00
CE-143	3.17E-02	1.72E+01	2.49E-03	0.00E+00	7.21E-03	0.00E+00	2.52E+02	0.00E+00
PR-143	3.34E+04	1.00E+04	1.66E+03	0.00E+00	5.43E+03	0.00E+00	3.60E+07	0.00E+00
CE-144	2.32E+06	7.26E+05	1.24E+05	0.00E+00	4.02E+05	0.00E+00	1.89E+08	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	1.17E+04	9.47E+03	7.33E+02	0.00E+00	5.19E+03	0.00E+00	1.50E+07	0.00E+00
PM-147	1.52E+06	1.08E+05	5.81E+04	0.00E+00	1.91E+05	0.00E+00	4.38E+07	0.00E+00
PM-148M	2.70E+05	5.37E+04	5.37E+04	0.00E+00	7.96E+04	0.00E+00	1.51E+08	0.00E+00
PM-148	3.10E+03	3.72E+02	2.41E+02	0.00E+00	6.33E+02	0.00E+00	9.95E+06	0.00E+00
PM-149	8.18E+00	8.69E-01	4.71E-01	0.00E+00	1.54E+00	0.00E+00	5.93E+04	0.00E+00
PM-151	9.00E-03	1.09E-03	7.12E-04	0.00E+00	1.86E-03	0.00E+00	1.24E+02	0.00E+00
SM-151	1.31E+06	1.95E+05	6.13E+04	0.00E+00	2.01E+05	0.00E+00	2.82E+07	0.00E+00
SM-153	1.82E+00	1.13E+00	1.09E-01	0.00E+00	3.44E-01	0.00E+00	1.50E+04	0.00E+00
EU-152	3.00E+06	5.46E+05	6.49E+05	0.00E+00	2.31E+06	0.00E+00	8.98E+07	0.00E+00
EU-154	1.12E+07	1.01E+06	9.19E+05	0.00E+00	4.42E+06	0.00E+00	2.34E+08	0.00E+00

07/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
EU-155	2.33E+06	1.68E+05	1.31E+05	0.00E+00	6.28E+05	0.00E+00	4.20E+08	0.00E+00
EU-156	5.75E+04	3.08E+04	6.38E+03	0.00E+00	1.99E+04	0.00E+00	6.99E+07	0.00E+00
TB-160	5.16E+05	0.00E+00	6.41E+04	0.00E+00	1.54E+05	0.00E+00	1.14E+08	0.00E+00
HO-166M	4.86E+06	1.02E+06	8.59E+05	0.00E+00	1.45E+06	0.00E+00	1.18E+08	0.00E+00
W-181	4.49E+04	1.10E+04	1.52E+03	0.00E+00	0.00E+00	0.00E+00	4.02E+05	0.00E+00
W-185	1.61E+06	4.02E+05	5.63E+04	0.00E+00	0.00E+00	0.00E+00	1.50E+07	0.00E+00
W-187	3.21E-02	1.90E-02	8.53E-03	0.00E+00	0.00E+00	0.00E+00	2.67E+00	0.00E+00
NP-239	4.26E-01	3.06E-02	2.15E-02	0.00E+00	8.85E-02	0.00E+00	2.26E+03	0.00E+00
U-232	6.11E+09	0.00E+00	4.37E+08	0.00E+00	4.65E+08	0.00E+00	2.42E+07	0.00E+00
U-233	1.29E+09	0.00E+00	7.82E+07	0.00E+00	2.12E+08	0.00E+00	2.24E+07	0.00E+00
U-234	1.24E+09	0.00E+00	7.68E+07	0.00E+00	2.08E+08	0.00E+00	2.20E+07	0.00E+00
U-235	1.19E+09	0.00E+00	7.19E+07	0.00E+00	1.95E+08	0.00E+00	2.79E+07	0.00E+00
U-236	1.19E+09	0.00E+00	7.37E+07	0.00E+00	1.99E+08	0.00E+00	2.06E+07	0.00E+00
U-237	3.41E+03	0.00E+00	9.07E+02	0.00E+00	9.85E+03	0.00E+00	3.01E+05	0.00E+00
U-238	1.14E+09	0.00E+00	6.74E+07	0.00E+00	1.82E+08	0.00E+00	1.97E+07	0.00E+00
NP-237	4.56E+08	3.01E+07	2.00E+07	0.00E+00	1.24E+08	0.00E+00	1.67E+07	0.00E+00
NP-238	2.23E+00	4.50E-02	3.47E-02	0.00E+00	1.44E-01	0.00E+00	1.54E+03	0.00E+00
PU-238	1.70E+07	1.97E+06	4.52E+05	0.00E+00	1.64E+06	0.00E+00	1.07E+06	0.00E+00
PU-239	1.85E+07	1.97E+06	4.74E+05	0.00E+00	1.75E+06	0.00E+00	9.80E+05	0.00E+00
PU-240	1.83E+07	2.05E+06	4.74E+05	0.00E+00	1.75E+06	0.00E+00	9.99E+05	0.00E+00
PU-241	5.51E+05	2.25E+04	1.14E+04	0.00E+00	4.21E+04	0.00E+00	2.05E+04	0.00E+00
PU-242	1.70E+07	1.97E+06	4.57E+05	0.00E+00	1.67E+06	0.00E+00	9.60E+05	0.00E+00
PU-244	1.99E+07	2.26E+07	5.22E+05	0.00E+00	1.93E+06	0.00E+00	1.43E+06	0.00E+00
AM-241	2.78E+08	2.39E+08	2.08E+07	0.00E+00	1.27E+08	0.00E+00	1.56E+07	0.00E+00
AM-242M	2.86E+08	2.29E+08	2.13E+07	0.00E+00	1.29E+08	0.00E+00	1.96E+07	0.00E+00
AM-243	2.74E+08	2.31E+08	2.01E+07	0.00E+00	1.24E+08	0.00E+00	1.83E+07	0.00E+00
CM-242	1.52E+07	1.21E+07	1.01E+06	0.00E+00	3.23E+06	0.00E+00	1.41E+07	0.00E+00
CM-243	2.61E+08	2.12E+08	1.68E+07	0.00E+00	6.28E+07	0.00E+00	1.64E+07	0.00E+00
CM-244	2.20E+08	1.78E+08	1.41E+07	0.00E+00	5.17E+07	0.00E+00	1.58E+07	0.00E+00
CM-245	3.41E+08	2.74E+08	2.15E+07	0.00E+00	8.40E+07	0.00E+00	1.48E+07	0.00E+00
CM-246	3.37E+08	2.74E+08	2.15E+07	0.00E+00	8.38E+07	0.00E+00	1.45E+07	0.00E+00
CM-247	3.29E+08	2.70E+08	2.11E+07	0.00E+00	8.26E+07	0.00E+00	1.91E+07	0.00E+00
CM-248	2.74E+09	2.23E+09	1.74E+08	0.00E+00	6.81E+08	0.00E+00	3.09E+08	0.00E+00
CF-252	2.09E+08	0.00E+00	5.05E+06	0.00E+00	0.00E+00	0.00E+00	5.88E+07	0.00E+00

07/17

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

Table I-17
DOSE FACTOR TABLE: R (i) – Adult, Vegetation
Units are m²*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-22	1.32E+09	1.32E+09	1.32E+09	1.32E+09	1.32E+09	1.32E+09	1.32E+09	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	8.73E+07	5.43E+07	0.00E+00	0.00E+00	0.00E+00	1.58E+08	0.00E+00
CA-41	1.48E+10	0.00E+00	1.60E+09	0.00E+00	0.00E+00	0.00E+00	1.47E+07	0.00E+00
SC-46	2.51E+05	4.87E+05	1.41E+05	0.00E+00	4.54E+05	0.00E+00	2.37E+09	0.00E+00
CR-51	0.00E+00	0.00E+00	4.64E+04	2.78E+04	1.02E+04	6.16E+04	1.17E+07	0.00E+00
MN-54	0.00E+00	3.13E+08	5.97E+07	0.00E+00	9.31E+07	0.00E+00	9.59E+08	0.00E+00
FE-55	2.10E+08	1.45E+08	3.38E+07	0.00E+00	0.00E+00	8.08E+07	8.31E+07	0.00E+00
MN-56	0.00E+00	1.54E+01	2.74E+00	0.00E+00	1.96E+01	0.00E+00	4.93E+02	0.00E+00
CO-57	0.00E+00	1.17E+07	1.95E+07	0.00E+00	0.00E+00	0.00E+00	2.97E+08	0.00E+00
CO-58	0.00E+00	3.07E+07	6.89E+07	0.00E+00	0.00E+00	0.00E+00	6.23E+08	0.00E+00
FE-59	1.26E+08	2.96E+08	1.14E+08	0.00E+00	0.00E+00	8.28E+07	9.88E+08	0.00E+00
CO-60	0.00E+00	1.67E+08	3.69E+08	0.00E+00	0.00E+00	0.00E+00	3.14E+09	0.00E+00
NI-59	7.82E+08	2.68E+08	1.31E+08	0.00E+00	0.00E+00	0.00E+00	5.53E+07	0.00E+00
NI-63	1.04E+10	7.21E+08	3.49E+08	0.00E+00	0.00E+00	0.00E+00	1.50E+08	0.00E+00
CU-64	0.00E+00	9.15E+03	4.29E+03	0.00E+00	2.31E+04	0.00E+00	7.79E+05	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
ZN-65	3.17E+08	1.01E+09	4.56E+08	0.00E+00	6.75E+08	0.00E+00	6.36E+08	0.00E+00
ZN-69M	2.23E+04	5.35E+04	4.89E+03	0.00E+00	3.24E+04	0.00E+00	3.26E+06	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
SE-79	0.00E+00	2.11E+08	3.52E+07	0.00E+00	3.65E+08	0.00E+00	4.31E+07	0.00E+00
BR-82	0.00E+00	0.00E+00	1.50E+06	0.00E+00	0.00E+00	0.00E+00	1.72E+06	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	2.07E-151	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	4.33E+07	0.00E+00
RB-87	0.00E+00	9.86E+08	3.43E+08	0.00E+00	0.00E+00	0.00E+00	4.62E+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	1.67E-39	0.00E+00
SR-89	9.97E+09	0.00E+00	2.86E+08	0.00E+00	0.00E+00	0.00E+00	1.60E+09	0.00E+00
SR-90	6.05E+11	0.00E+00	1.48E+11	0.00E+00	0.00E+00	0.00E+00	1.75E+10	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
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
Y-91M	4.76E-09	0.00E+00	1.84E-10	0.00E+00	0.00E+00	0.00E+00	1.40E-08	0.00E+00
Y-91	5.11E+06	0.00E+00	1.37E+05	0.00E+00	0.00E+00	0.00E+00	2.81E+09	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-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
NB-93M	2.02E+06	6.61E+05	1.63E+05	0.00E+00	7.60E+05	0.00E+00	3.05E+08	0.00E+00
NB-95	1.42E+05	7.92E+04	4.26E+04	0.00E+00	7.83E+04	0.00E+00	4.81E+08	0.00E+00
NB-97	2.02E-06	5.11E-07	1.87E-07	0.00E+00	5.96E-07	0.00E+00	1.88E-03	0.00E+00
ZR-93	3.35E+06	1.88E+05	8.74E+04	0.00E+00	7.11E+05	0.00E+00	1.95E+08	0.00E+00
ZR-95	1.17E+06	3.77E+05	2.55E+05	0.00E+00	5.91E+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
MO-93	0.00E+00	6.02E+08	1.63E+07	0.00E+00	1.71E+08	0.00E+00	9.78E+07	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-99	1.00E+07	1.49E+07	4.02E+06	0.00E+00	1.88E+08	1.27E+06	4.87E+08	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	2.57E-42	0.00E+00
RU-103	4.77E+06	0.00E+00	2.06E+06	0.00E+00	1.82E+07	0.00E+00	5.57E+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	1.93E+08	0.00E+00	2.44E+07	0.00E+00	3.72E+08	0.00E+00	1.25E+10	0.00E+00

09/11

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
RH-105	8.04E+04	5.88E+04	3.87E+04	0.00E+00	2.50E+05	0.00E+00	9.37E+06	0.00E+00
PD-107	0.00E+00	1.18E+07	7.53E+05	0.00E+00	1.06E+08	0.00E+00	7.30E+07	0.00E+00
PD-109	0.00E+00	2.21E+04	4.98E+03	0.00E+00	1.26E+05	0.00E+00	2.45E+06	0.00E+00
AG-110M	1.05E+07	9.75E+06	5.79E+06	0.00E+00	1.92E+07	0.00E+00	3.98E+09	0.00E+00
AG-111	2.11E+05	8.82E+04	4.39E+04	0.00E+00	2.85E+05	0.00E+00	1.62E+08	0.00E+00
CD-113M	0.00E+00	2.52E+08	8.09E+06	0.00E+00	2.78E+08	0.00E+00	2.03E+09	0.00E+00
CD-115M	0.00E+00	5.34E+07	1.70E+06	0.00E+00	4.24E+07	0.00E+00	2.25E+09	0.00E+00
SN-123	1.71E+09	2.84E+07	4.18E+07	2.41E+07	0.00E+00	0.00E+00	3.49E+09	0.00E+00
SN-125	3.85E+07	7.75E+05	1.74E+06	6.42E+05	0.00E+00	0.00E+00	4.80E+08	0.00E+00
SN-126	6.77E+09	1.34E+08	1.92E+08	3.94E+07	0.00E+00	0.00E+00	1.95E+09	0.00E+00
SB-124	1.04E+08	1.96E+06	4.11E+07	2.51E+05	0.00E+00	8.07E+07	2.94E+09	0.00E+00
SB-125	1.37E+08	1.53E+06	3.25E+07	1.39E+05	0.00E+00	1.05E+08	1.50E+09	0.00E+00
SB-126	7.01E+06	1.43E+05	2.53E+06	4.29E+04	0.00E+00	4.30E+06	5.73E+08	0.00E+00
SB-127	5.19E+05	1.14E+04	1.99E+05	6.24E+03	0.00E+00	3.08E+05	1.19E+08	0.00E+00
TE-125M	9.66E+07	3.50E+07	1.29E+07	2.90E+07	3.93E+08	0.00E+00	3.86E+08	0.00E+00
TE-127M	3.49E+08	1.25E+08	4.26E+07	8.92E+07	1.42E+09	0.00E+00	1.17E+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	9.38E+07	3.98E+07	8.63E+07	1.05E+09	0.00E+00	1.27E+09	0.00E+00
TE-129	7.13E-04	2.68E-04	1.74E-04	5.48E-04	3.00E-03	0.00E+00	5.38E-04	0.00E+00
TE-133M	2.12E-05	1.24E-05	1.19E-05	1.79E-05	1.22E-04	0.00E+00	4.24E-06	0.00E+00
TE-134	3.19E-08	2.09E-08	1.28E-08	2.79E-08	2.02E-07	0.00E+00	3.54E-11	0.00E+00
I-129	1.31E+09	1.13E+09	3.69E+09	2.90E+12	2.42E+09	0.00E+00	1.78E+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	6.62E+07	3.78E+10	1.98E+08	0.00E+00	3.05E+07	0.00E+00
TE-131M	9.10E+05	4.45E+05	3.71E+05	7.05E+05	4.51E+06	0.00E+00	4.42E+07	0.00E+00
TE-131	1.25E-15	5.21E-16	3.94E-16	1.03E-15	5.47E-15	0.00E+00	1.77E-16	0.00E+00
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
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-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
CS-134M	6.57E+00	1.38E+01	7.06E+00	0.00E+00	7.49E+00	1.18E+00	4.87E+00	0.00E+00
CS-134	4.67E+09	1.11E+10	9.08E+09	0.00E+00	3.59E+09	1.19E+09	1.94E+08	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-135	1.56E+09	1.44E+09	6.40E+08	0.00E+00	5.46E+08	1.63E+08	3.37E+07	0.00E+00
CS-136	4.27E+07	1.68E+08	1.21E+08	0.00E+00	9.37E+07	1.28E+07	1.91E+07	0.00E+00
CS-137	6.36E+09	8.70E+09	5.70E+09	0.00E+00	2.95E+09	9.81E+08	1.68E+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
CS-139	1.36E-44	2.03E-44	7.39E-45	0.00E+00	1.62E-44	1.48E-45	4.39E-67	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	8.42E+06	0.00E+00	5.49E+04	9.24E+04	2.65E+08	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
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
LA-141	6.06E-01	1.88E-01	3.08E-02	0.00E+00	0.00E+00	0.00E+00	2.24E+04	0.00E+00
CE-141	1.97E+05	1.33E+05	1.51E+04	0.00E+00	6.19E+04	0.00E+00	5.10E+08	0.00E+00
BA-142	3.88E-39	3.99E-42	2.44E-40	0.00E+00	3.37E-42	2.26E-42	5.46E-57	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-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
PR-143	6.26E+04	2.51E+04	3.10E+03	0.00E+00	1.45E+04	0.00E+00	2.74E+08	0.00E+00
CE-144	3.29E+07	1.38E+07	1.77E+06	0.00E+00	8.16E+06	0.00E+00	1.11E+10	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
PM-147	5.74E+06	5.39E+05	2.18E+05	0.00E+00	1.02E+06	0.00E+00	6.80E+08	0.00E+00
PM-148M	8.30E+05	2.15E+05	1.64E+05	0.00E+00	3.24E+05	0.00E+00	1.82E+09	0.00E+00
PM-148	1.96E+04	3.25E+03	1.64E+03	0.00E+00	6.14E+03	0.00E+00	2.55E+08	0.00E+00
PM-149	1.69E+03	2.39E+02	9.78E+01	0.00E+00	4.52E+02	0.00E+00	4.49E+07	0.00E+00
PM-151	3.38E+02	5.67E+01	2.86E+01	0.00E+00	1.01E+02	0.00E+00	1.56E+07	0.00E+00
SM-151	5.52E+06	9.52E+05	2.28E+05	0.00E+00	1.06E+06	0.00E+00	4.20E+08	0.00E+00
SM-153	8.18E+02	6.82E+02	4.98E+01	0.00E+00	2.20E+02	0.00E+00	2.43E+07	0.00E+00
EU-152	1.55E+07	3.52E+06	3.09E+06	0.00E+00	2.18E+07	0.00E+00	2.03E+09	0.00E+00
EU-154	4.85E+07	5.97E+06	4.25E+06	0.00E+00	2.86E+07	0.00E+00	4.32E+09	0.00E+00

09/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
EU-155	6.71E+06	9.51E+05	6.14E+05	0.00E+00	4.39E+06	0.00E+00	7.48E+08	0.00E+00
EU-156	1.08E+05	8.35E+04	1.35E+04	0.00E+00	5.58E+04	0.00E+00	5.72E+08	0.00E+00
TB-160	1.96E+06	0.00E+00	2.45E+05	0.00E+00	8.11E+05	0.00E+00	1.81E+09	0.00E+00
HO-166M	2.16E+07	6.76E+06	5.13E+06	0.00E+00	1.01E+07	0.00E+00	2.05E+09	0.00E+00
W-181	5.33E+05	1.74E+05	1.86E+04	0.00E+00	0.00E+00	0.00E+00	1.98E+07	0.00E+00
W-185	1.73E+07	5.77E+06	6.07E+05	0.00E+00	0.00E+00	0.00E+00	6.67E+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
U-232	3.30E+11	0.00E+00	2.36E+10	0.00E+00	3.58E+10	0.00E+00	5.42E+09	0.00E+00
U-233	6.98E+10	0.00E+00	4.23E+09	0.00E+00	1.63E+10	0.00E+00	5.02E+09	0.00E+00
U-234	6.70E+10	0.00E+00	4.14E+09	0.00E+00	1.59E+10	0.00E+00	4.92E+09	0.00E+00
U-235	6.42E+10	0.00E+00	3.89E+09	0.00E+00	1.50E+10	0.00E+00	6.26E+09	0.00E+00
U-236	6.42E+10	0.00E+00	3.97E+09	0.00E+00	1.53E+10	0.00E+00	4.62E+09	0.00E+00
U-237	1.84E+05	0.00E+00	4.89E+04	0.00E+00	7.55E+05	0.00E+00	6.45E+07	0.00E+00
U-238	6.15E+10	0.00E+00	3.64E+09	0.00E+00	1.40E+10	0.00E+00	4.41E+09	0.00E+00
NP-237	1.01E+11	7.18E+09	4.44E+09	0.00E+00	3.30E+10	0.00E+00	6.36E+09	0.00E+00
NP-238	1.45E+04	3.90E+02	2.25E+02	0.00E+00	1.32E+03	0.00E+00	3.63E+07	0.00E+00
PU-238	5.04E+10	6.39E+09	1.37E+09	0.00E+00	5.86E+09	0.00E+00	5.84E+09	0.00E+00
PU-239	5.81E+10	6.98E+09	1.53E+09	0.00E+00	6.50E+09	0.00E+00	5.34E+09	0.00E+00
PU-240	5.80E+10	6.97E+09	1.53E+09	0.00E+00	6.49E+09	0.00E+00	5.43E+09	0.00E+00
PU-241	1.25E+09	5.91E+07	2.64E+07	0.00E+00	1.21E+08	0.00E+00	1.11E+08	0.00E+00
PU-242	5.39E+10	6.72E+09	1.47E+09	0.00E+00	6.26E+09	0.00E+00	5.23E+09	0.00E+00
PU-244	6.28E+10	7.70E+09	1.69E+09	0.00E+00	7.17E+09	0.00E+00	7.80E+09	0.00E+00
AM-241	6.05E+10	5.65E+10	4.33E+09	0.00E+00	3.26E+10	0.00E+00	5.94E+09	0.00E+00
AM-242M	6.09E+10	5.31E+10	4.35E+09	0.00E+00	3.24E+10	0.00E+00	7.48E+09	0.00E+00
AM-243	6.04E+10	5.53E+10	4.25E+09	0.00E+00	3.20E+10	0.00E+00	6.97E+09	0.00E+00
CM-242	1.23E+09	1.30E+09	8.15E+07	0.00E+00	3.70E+08	0.00E+00	4.71E+09	0.00E+00
CM-243	4.78E+10	4.38E+10	2.99E+09	0.00E+00	1.40E+10	0.00E+00	6.23E+09	0.00E+00
CM-244	3.63E+10	3.40E+10	2.28E+09	0.00E+00	1.07E+10	0.00E+00	6.01E+09	0.00E+00
CM-245	7.52E+10	6.55E+10	4.62E+09	0.00E+00	2.16E+10	0.00E+00	5.64E+09	0.00E+00
CM-246	7.45E+10	6.54E+10	4.61E+09	0.00E+00	2.15E+10	0.00E+00	5.54E+09	0.00E+00
CM-247	7.27E+10	6.44E+10	4.54E+09	0.00E+00	2.12E+10	0.00E+00	7.28E+09	0.00E+00
CM-248	6.04E+11	5.31E+11	3.74E+10	0.00E+00	1.75E+11	0.00E+00	1.18E+11	0.00E+00
CF-252	1.99E+10	0.00E+00	4.79E+08	0.00E+00	0.00E+00	0.00E+00	2.19E+10	0.00E+00

02/17

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

Table I-18
DOSE FACTOR TABLE: R (i) – Teen, Vegetation
Units are m²*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-22	2.01E+09	2.01E+09	2.01E+09	2.01E+09	2.01E+09	2.01E+09	2.01E+09	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	9.97E+07	6.24E+07	0.00E+00	0.00E+00	0.00E+00	1.35E+08	0.00E+00
CA-41	1.79E+10	0.00E+00	1.94E+09	0.00E+00	0.00E+00	0.00E+00	1.77E+07	0.00E+00
SC-46	3.61E+05	7.03E+05	2.08E+05	0.00E+00	6.73E+05	0.00E+00	2.39E+09	0.00E+00
CR-51	0.00E+00	0.00E+00	6.17E+04	3.43E+04	1.35E+04	8.81E+04	1.04E+07	0.00E+00
MN-54	0.00E+00	4.54E+08	9.01E+07	0.00E+00	1.36E+08	0.00E+00	9.32E+08	0.00E+00
FE-55	3.26E+08	2.31E+08	5.39E+07	0.00E+00	0.00E+00	1.47E+08	1.00E+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
CO-57	0.00E+00	1.79E+07	3.00E+07	0.00E+00	0.00E+00	0.00E+00	3.33E+08	0.00E+00
CO-58	0.00E+00	4.36E+07	1.00E+08	0.00E+00	0.00E+00	0.00E+00	6.01E+08	0.00E+00
FE-59	1.79E+08	4.19E+08	1.62E+08	0.00E+00	0.00E+00	1.32E+08	9.90E+08	0.00E+00
CO-60	0.00E+00	2.49E+08	5.60E+08	0.00E+00	0.00E+00	0.00E+00	3.24E+09	0.00E+00
NI-59	1.20E+09	4.24E+08	2.04E+08	0.00E+00	0.00E+00	0.00E+00	6.64E+07	0.00E+00
NI-63	1.61E+10	1.13E+09	5.45E+08	0.00E+00	0.00E+00	0.00E+00	1.81E+08	0.00E+00
CU-64	0.00E+00	8.29E+03	3.90E+03	0.00E+00	2.10E+04	0.00E+00	6.43E+05	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
ZN-65	4.24E+08	1.47E+09	6.87E+08	0.00E+00	9.42E+08	0.00E+00	6.23E+08	0.00E+00
ZN-69M	2.06E+04	4.87E+04	4.46E+03	0.00E+00	2.96E+04	0.00E+00	2.68E+06	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
SE-79	0.00E+00	3.39E+08	5.70E+07	0.00E+00	5.91E+08	0.00E+00	5.18E+07	0.00E+00
BR-82	0.00E+00	0.00E+00	1.32E+06	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	1.94E-151	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	2.74E+08	1.29E+08	0.00E+00	0.00E+00	0.00E+00	4.05E+07	0.00E+00
RB-87	0.00E+00	1.59E+09	5.55E+08	0.00E+00	0.00E+00	0.00E+00	5.55E+07	0.00E+00
RB-88	0.00E+00	2.44E-22	1.30E-22	0.00E+00	0.00E+00	0.00E+00	2.09E-29	0.00E+00
RB-89	0.00E+00	2.59E-26	1.83E-26	0.00E+00	0.00E+00	0.00E+00	3.98E-35	0.00E+00
SR-89	1.51E+10	0.00E+00	4.34E+08	0.00E+00	0.00E+00	0.00E+00	1.80E+09	0.00E+00
SR-90	7.51E+11	0.00E+00	1.85E+11	0.00E+00	0.00E+00	0.00E+00	2.11E+10	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
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
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	7.84E+06	0.00E+00	2.10E+05	0.00E+00	0.00E+00	0.00E+00	3.21E+09	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-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
NB-93M	3.10E+06	1.02E+06	2.55E+05	0.00E+00	1.19E+06	0.00E+00	3.66E+08	0.00E+00
NB-95	1.92E+05	1.07E+05	5.87E+04	0.00E+00	1.03E+05	0.00E+00	4.56E+08	0.00E+00
NB-97	1.87E-06	4.65E-07	1.70E-07	0.00E+00	5.43E-07	0.00E+00	1.11E-02	0.00E+00
ZR-93	5.03E+06	2.48E+05	1.35E+05	0.00E+00	8.77E+05	0.00E+00	2.34E+08	0.00E+00
ZR-95	1.72E+06	5.43E+05	3.73E+05	0.00E+00	7.98E+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
MO-93	0.00E+00	9.63E+08	2.64E+07	0.00E+00	2.76E+08	0.00E+00	1.17E+08	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-99	1.63E+07	2.39E+07	6.52E+06	0.00E+00	3.04E+08	2.47E+06	5.85E+08	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	6.82E+06	0.00E+00	2.92E+06	0.00E+00	2.40E+07	0.00E+00	5.70E+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	3.10E+08	0.00E+00	3.90E+07	0.00E+00	5.97E+08	0.00E+00	1.48E+10	0.00E+00

03/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
RH-105	7.54E+04	5.45E+04	3.58E+04	0.00E+00	2.32E+05	0.00E+00	6.93E+06	0.00E+00
PD-107	0.00E+00	1.89E+07	1.22E+06	0.00E+00	1.71E+08	0.00E+00	8.78E+07	0.00E+00
PD-109	0.00E+00	2.06E+04	4.67E+03	0.00E+00	1.19E+05	0.00E+00	2.07E+06	0.00E+00
AG-110M	1.52E+07	1.43E+07	8.72E+06	0.00E+00	2.74E+07	0.00E+00	4.03E+09	0.00E+00
AG-111	2.02E+05	8.37E+04	4.21E+04	0.00E+00	2.72E+05	0.00E+00	1.17E+08	0.00E+00
CD-113M	0.00E+00	4.06E+08	1.30E+07	0.00E+00	4.49E+08	0.00E+00	2.44E+09	0.00E+00
CD-115M	0.00E+00	7.94E+07	2.56E+06	0.00E+00	6.35E+07	0.00E+00	2.51E+09	0.00E+00
SN-123	2.72E+09	4.46E+07	6.61E+07	3.58E+07	0.00E+00	0.00E+00	4.11E+09	0.00E+00
SN-125	3.85E+07	7.68E+05	1.74E+06	6.02E+05	0.00E+00	0.00E+00	3.63E+08	0.00E+00
SN-126	1.05E+10	1.96E+08	3.00E+08	5.17E+07	0.00E+00	0.00E+00	2.34E+09	0.00E+00
SB-124	1.54E+08	2.84E+06	6.02E+07	3.50E+05	0.00E+00	1.35E+08	3.11E+09	0.00E+00
SB-125	2.14E+08	2.34E+06	5.01E+07	2.05E+05	0.00E+00	1.88E+08	1.67E+09	0.00E+00
SB-126	7.36E+06	1.50E+05	2.64E+06	4.16E+04	0.00E+00	5.28E+06	4.36E+08	0.00E+00
SB-127	4.79E+05	1.02E+04	1.81E+05	5.39E+03	0.00E+00	3.26E+05	8.14E+07	0.00E+00
TE-125M	1.48E+08	5.34E+07	1.98E+07	4.14E+07	0.00E+00	0.00E+00	4.37E+08	0.00E+00
TE-127M	5.51E+08	1.96E+08	6.56E+07	1.31E+08	2.24E+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	3.62E+08	1.34E+08	5.73E+07	1.17E+08	1.51E+09	0.00E+00	1.36E+09	0.00E+00
TE-129	6.68E-04	2.49E-04	1.63E-04	4.77E-04	2.80E-03	0.00E+00	3.65E-03	0.00E+00
TE-133M	1.94E-05	1.10E-05	1.07E-05	1.54E-05	1.09E-04	0.00E+00	4.45E-05	0.00E+00
TE-134	2.89E-08	1.85E-08	1.94E-08	2.37E-08	1.77E-07	0.00E+00	1.07E-09	0.00E+00
I-129	2.12E+09	1.78E+09	2.97E+09	2.17E+12	3.19E+09	0.00E+00	2.08E+08	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	7.68E+07	1.08E+08	5.78E+07	3.14E+10	1.85E+08	0.00E+00	2.13E+07	0.00E+00
TE-131M	8.42E+05	4.04E+05	3.37E+05	6.07E+05	4.21E+06	0.00E+00	3.24E+07	0.00E+00
TE-131	1.16E-15	4.78E-16	3.62E-16	8.93E-16	5.07E-15	0.00E+00	9.52E-17	0.00E+00
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
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-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
CS-134M	5.95E+00	1.23E+01	6.33E+00	0.00E+00	6.86E+00	1.20E+00	8.20E+00	0.00E+00
CS-134	7.10E+09	1.67E+10	7.75E+09	0.00E+00	5.31E+09	2.03E+09	2.08E+08	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-135	2.53E+09	2.32E+09	5.42E+08	0.00E+00	8.84E+08	3.20E+08	4.05E+07	0.00E+00
CS-136	4.37E+07	1.72E+08	1.16E+08	0.00E+00	9.37E+07	1.48E+07	1.38E+07	0.00E+00
CS-137	1.01E+10	1.35E+10	4.69E+09	0.00E+00	4.59E+09	1.78E+09	1.92E+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
CS-139	1.28E-44	1.88E-44	6.89E-45	0.00E+00	1.52E-44	1.66E-45	8.72E-60	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	8.90E+06	0.00E+00	5.74E+04	1.14E+05	2.13E+08	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
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
LA-141	5.67E-01	1.74E-01	2.88E-02	0.00E+00	0.00E+00	0.00E+00	3.09E+04	0.00E+00
CE-141	2.83E+05	1.89E+05	2.17E+04	0.00E+00	8.89E+04	0.00E+00	5.40E+08	0.00E+00
BA-142	3.57E-39	3.57E-42	2.20E-40	0.00E+00	3.02E-42	2.38E-42	1.10E-50	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-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
PR-143	7.00E+04	2.80E+04	3.49E+03	0.00E+00	1.62E+04	0.00E+00	2.30E+08	0.00E+00
CE-144	5.27E+07	2.18E+07	2.83E+06	0.00E+00	1.30E+07	0.00E+00	1.33E+10	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	3.94E+04	2.36E+03	0.00E+00	2.31E+04	0.00E+00	1.42E+08	0.00E+00
PM-147	9.04E+06	8.57E+05	3.49E+05	0.00E+00	1.64E+06	0.00E+00	8.15E+08	0.00E+00
PM-148M	1.17E+06	2.96E+05	2.32E+05	0.00E+00	4.48E+05	0.00E+00	1.86E+09	0.00E+00
PM-148	1.83E+04	2.98E+03	1.50E+03	0.00E+00	5.39E+03	0.00E+00	1.78E+08	0.00E+00
PM-149	1.59E+03	2.23E+02	9.14E+01	0.00E+00	4.25E+02	0.00E+00	3.28E+07	0.00E+00
PM-151	3.14E+02	5.18E+01	2.62E+01	0.00E+00	9.32E+01	0.00E+00	1.16E+07	0.00E+00
SM-151	7.92E+06	1.52E+06	3.58E+05	0.00E+00	1.67E+06	0.00E+00	5.17E+08	0.00E+00
SM-153	7.64E+02	6.33E+02	4.65E+01	0.00E+00	2.07E+02	0.00E+00	1.79E+07	0.00E+00
EU-152	2.20E+07	5.31E+06	4.68E+06	0.00E+00	2.46E+07	0.00E+00	1.95E+09	0.00E+00
EU-154	7.07E+07	9.12E+06	6.43E+06	0.00E+00	4.08E+07	0.00E+00	4.82E+09	0.00E+00

07/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
EU-155	1.54E+07	1.48E+06	9.18E+05	0.00E+00	5.80E+06	0.00E+00	8.50E+09	0.00E+00
EU-156	1.24E+05	9.31E+04	1.52E+04	0.00E+00	6.26E+04	0.00E+00	4.76E+08	0.00E+00
TB-160	2.94E+06	0.00E+00	3.67E+05	0.00E+00	1.16E+06	0.00E+00	1.91E+09	0.00E+00
HO-166M	3.24E+07	1.00E+07	7.23E+06	0.00E+00	1.46E+07	0.00E+00	2.46E+09	0.00E+00
W-181	8.47E+05	2.73E+05	2.86E+04	0.00E+00	0.00E+00	0.00E+00	2.33E+07	0.00E+00
W-185	2.70E+07	8.90E+06	9.42E+05	0.00E+00	0.00E+00	0.00E+00	7.69E+08	0.00E+00
W-187	3.53E+04	2.87E+04	1.01E+04	0.00E+00	0.00E+00	0.00E+00	7.78E+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
U-232	5.34E+11	0.00E+00	3.82E+10	0.00E+00	5.79E+10	0.00E+00	6.52E+09	0.00E+00
U-233	1.13E+11	0.00E+00	6.85E+09	0.00E+00	2.64E+10	0.00E+00	6.04E+09	0.00E+00
U-234	1.08E+11	0.00E+00	6.72E+09	0.00E+00	2.59E+10	0.00E+00	5.92E+09	0.00E+00
U-235	1.04E+11	0.00E+00	6.31E+09	0.00E+00	2.43E+10	0.00E+00	7.53E+09	0.00E+00
U-236	1.04E+11	0.00E+00	6.44E+09	0.00E+00	2.48E+10	0.00E+00	5.55E+09	0.00E+00
U-237	1.74E+05	0.00E+00	4.64E+04	0.00E+00	7.16E+05	0.00E+00	4.62E+07	0.00E+00
U-238	9.91E+10	0.00E+00	5.90E+09	0.00E+00	2.27E+10	0.00E+00	5.30E+09	0.00E+00
NP-237	1.21E+11	8.68E+09	5.32E+09	0.00E+00	3.94E+10	0.00E+00	7.64E+09	0.00E+00
NP-238	1.35E+04	3.62E+02	2.11E+02	0.00E+00	1.24E+03	0.00E+00	2.66E+07	0.00E+00
PU-238	6.08E+10	7.79E+09	1.65E+09	0.00E+00	7.08E+09	0.00E+00	7.01E+09	0.00E+00
PU-239	6.95E+10	8.44E+09	1.83E+09	0.00E+00	7.79E+09	0.00E+00	6.42E+09	0.00E+00
PU-240	6.94E+10	8.43E+09	1.83E+09	0.00E+00	7.78E+09	0.00E+00	6.53E+09	0.00E+00
PU-241	1.57E+09	7.56E+07	3.32E+07	0.00E+00	1.54E+08	0.00E+00	1.33E+08	0.00E+00
PU-242	6.44E+10	8.13E+09	1.76E+09	0.00E+00	7.50E+09	0.00E+00	6.29E+09	0.00E+00
PU-244	7.53E+10	9.27E+09	2.02E+09	0.00E+00	8.59E+09	0.00E+00	9.36E+09	0.00E+00
AM-241	7.25E+10	6.84E+10	5.22E+09	0.00E+00	3.92E+10	0.00E+00	7.15E+09	0.00E+00
AM-242M	7.33E+10	6.46E+10	5.27E+09	0.00E+00	3.90E+10	0.00E+00	8.99E+09	0.00E+00
AM-243	7.23E+10	6.68E+10	5.11E+09	0.00E+00	3.84E+10	0.00E+00	8.39E+09	0.00E+00
CM-242	1.95E+09	2.06E+09	1.29E+08	0.00E+00	5.90E+08	0.00E+00	5.58E+09	0.00E+00
CM-243	5.88E+10	5.45E+10	3.70E+09	0.00E+00	1.73E+10	0.00E+00	7.49E+09	0.00E+00
CM-244	4.54E+10	4.30E+10	2.88E+09	0.00E+00	1.34E+10	0.00E+00	7.21E+09	0.00E+00
CM-245	9.00E+10	7.92E+10	5.54E+09	0.00E+00	2.59E+10	0.00E+00	6.78E+09	0.00E+00
CM-246	8.93E+10	7.91E+10	5.54E+09	0.00E+00	2.58E+10	0.00E+00	6.66E+09	0.00E+00
CM-247	8.70E+10	7.79E+10	5.45E+09	0.00E+00	2.54E+10	0.00E+00	8.75E+09	0.00E+00
CM-248	7.23E+11	6.42E+11	4.50E+10	0.00E+00	2.10E+11	0.00E+00	1.41E+11	0.00E+00
CF-252	2.99E+10	0.00E+00	7.21E+08	0.00E+00	0.00E+00	0.00E+00	2.63E+10	0.00E+00

07/17

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

Table I-19
DOSE FACTOR TABLE: R (i) – Child, Vegetation
Units are m²*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-22	4.09E+09	4.09E+09	4.09E+09	4.09E+09	4.09E+09	4.09E+09	4.09E+09	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	3.37E+09	1.58E+08	1.30E+08	0.00E+00	0.00E+00	0.00E+00	9.31E+07	0.00E+00
CA-41	2.55E+10	0.00E+00	2.79E+09	0.00E+00	0.00E+00	0.00E+00	1.40E+07	0.00E+00
SC-46	7.85E+05	1.08E+06	4.14E+05	0.00E+00	9.53E+05	0.00E+00	1.57E+09	0.00E+00
CR-51	0.00E+00	0.00E+00	1.17E+05	6.50E+04	1.78E+04	1.19E+05	6.21E+06	0.00E+00
MN-54	0.00E+00	6.65E+08	1.77E+08	0.00E+00	1.86E+08	0.00E+00	5.58E+08	0.00E+00
FE-55	8.01E+08	4.25E+08	1.32E+08	0.00E+00	0.00E+00	2.40E+08	7.87E+07	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
CO-57	0.00E+00	2.99E+07	6.04E+07	0.00E+00	0.00E+00	0.00E+00	2.45E+08	0.00E+00
CO-58	0.00E+00	6.44E+07	1.97E+08	0.00E+00	0.00E+00	0.00E+00	3.76E+08	0.00E+00
FE-59	3.98E+08	6.43E+08	3.20E+08	0.00E+00	0.00E+00	1.86E+08	6.70E+08	0.00E+00
CO-60	0.00E+00	3.78E+08	1.12E+09	0.00E+00	0.00E+00	0.00E+00	2.10E+09	0.00E+00
NI-59	2.96E+09	7.87E+08	5.01E+08	0.00E+00	0.00E+00	0.00E+00	5.22E+07	0.00E+00
NI-63	3.95E+10	2.11E+09	1.34E+09	0.00E+00	0.00E+00	0.00E+00	1.42E+08	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
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
ZN-65	8.13E+08	2.16E+09	1.35E+09	0.00E+00	1.36E+09	0.00E+00	3.80E+08	0.00E+00
ZN-69M	3.78E+04	6.44E+04	7.61E+03	0.00E+00	3.74E+04	0.00E+00	2.10E+06	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
SE-79	0.00E+00	6.20E+08	1.37E+08	0.00E+00	1.01E+09	0.00E+00	4.06E+07	0.00E+00
BR-82	0.00E+00	0.00E+00	2.03E+06	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	3.59E-151	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RB-86	0.00E+00	4.52E+08	2.78E+08	0.00E+00	0.00E+00	0.00E+00	2.91E+07	0.00E+00
RB-87	0.00E+00	2.90E+09	1.35E+09	0.00E+00	0.00E+00	0.00E+00	4.35E+07	0.00E+00
RB-88	0.00E+00	3.37E-22	2.34E-22	0.00E+00	0.00E+00	0.00E+00	1.65E-23	0.00E+00
RB-89	0.00E+00	3.42E-26	3.04E-26	0.00E+00	0.00E+00	0.00E+00	2.98E-28	0.00E+00
SR-89	3.60E+10	0.00E+00	1.03E+09	0.00E+00	0.00E+00	0.00E+00	1.39E+09	0.00E+00
SR-90	1.24E+12	0.00E+00	3.15E+11	0.00E+00	0.00E+00	0.00E+00	1.67E+10	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
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
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	4.99E+05	0.00E+00	0.00E+00	0.00E+00	2.48E+09	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-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
NB-93M	7.64E+06	1.91E+06	6.27E+05	0.00E+00	2.06E+06	0.00E+00	2.87E+08	0.00E+00
NB-95	4.10E+05	1.60E+05	1.14E+05	0.00E+00	1.50E+05	0.00E+00	2.96E+08	0.00E+00
NB-97	3.41E-06	6.16E-07	2.88E-07	0.00E+00	6.84E-07	0.00E+00	1.90E-01	0.00E+00
ZR-93	1.23E+07	4.59E+05	3.27E+05	0.00E+00	1.78E+06	0.00E+00	1.74E+08	0.00E+00
ZR-95	3.86E+06	8.48E+05	7.55E+05	0.00E+00	1.21E+06	0.00E+00	8.85E+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
MO-93	0.00E+00	1.77E+09	6.36E+07	0.00E+00	4.67E+08	0.00E+00	8.97E+07	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-99	3.93E+07	4.38E+07	1.57E+07	0.00E+00	5.16E+08	3.87E+06	4.59E+08	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	5.90E+06	0.00E+00	3.86E+07	0.00E+00	3.97E+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	7.45E+08	0.00E+00	9.30E+07	0.00E+00	1.01E+09	0.00E+00	1.16E+10	0.00E+00

03/17

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
RH-105	1.39E+05	7.45E+04	6.37E+04	0.00E+00	2.97E+05	0.00E+00	4.62E+06	0.00E+00
PD-107	0.00E+00	3.47E+07	2.95E+06	0.00E+00	2.90E+08	0.00E+00	6.89E+07	0.00E+00
PD-109	0.00E+00	2.88E+04	8.62E+03	0.00E+00	1.54E+05	0.00E+00	1.70E+06	0.00E+00
AG-110M	3.21E+07	2.17E+07	1.73E+07	0.00E+00	4.04E+07	0.00E+00	2.58E+09	0.00E+00
AG-111	3.79E+05	1.19E+05	7.83E+04	0.00E+00	3.58E+05	0.00E+00	7.26E+07	0.00E+00
CD-113M	0.00E+00	7.42E+08	3.16E+07	0.00E+00	7.64E+08	0.00E+00	1.91E+09	0.00E+00
CD-115M	0.00E+00	1.42E+08	6.04E+06	0.00E+00	1.05E+08	0.00E+00	1.93E+09	0.00E+00
SN-123	6.54E+09	8.12E+07	1.59E+08	8.61E+07	0.00E+00	0.00E+00	3.21E+09	0.00E+00
SN-125	7.45E+07	1.12E+06	3.34E+06	1.17E+06	0.00E+00	0.00E+00	2.31E+08	0.00E+00
SN-126	2.45E+10	3.05E+08	6.95E+08	8.38E+07	0.00E+00	0.00E+00	1.84E+09	0.00E+00
SB-124	3.52E+08	4.56E+06	1.23E+08	7.77E+05	0.00E+00	1.95E+08	2.20E+09	0.00E+00
SB-125	5.00E+08	3.85E+06	1.05E+08	4.63E+05	0.00E+00	2.78E+08	1.19E+09	0.00E+00
SB-126	1.39E+07	2.12E+05	4.98E+06	8.13E+04	0.00E+00	6.62E+06	2.79E+08	0.00E+00
SB-127	8.67E+05	1.34E+04	3.01E+05	9.65E+03	0.00E+00	3.76E+05	4.88E+07	0.00E+00
TE-125M	3.51E+08	9.50E+07	4.67E+07	9.84E+07	0.00E+00	0.00E+00	3.38E+08	0.00E+00
TE-127M	1.32E+09	3.56E+08	1.57E+08	3.16E+08	3.77E+09	0.00E+00	1.07E+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	8.41E+08	2.35E+08	1.31E+08	2.71E+08	2.47E+09	0.00E+00	1.03E+09	0.00E+00
TE-129	1.24E-03	3.45E-04	2.94E-04	8.82E-04	3.62E-03	0.00E+00	7.70E-02	0.00E+00
TE-133M	3.48E-05	1.41E-05	1.74E-05	2.70E-05	1.34E-04	0.00E+00	1.07E-03	0.00E+00
TE-134	5.16E-08	2.32E-08	3.10E-08	4.08E-08	2.15E-07	0.00E+00	2.36E-07	0.00E+00
I-129	5.11E+09	3.14E+09	2.80E+09	2.05E+12	5.29E+09	0.00E+00	1.58E+08	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	8.17E+07	4.75E+10	2.36E+08	0.00E+00	1.28E+07	0.00E+00
TE-131M	1.54E+06	5.32E+05	5.66E+05	1.09E+06	5.15E+06	0.00E+00	2.16E+07	0.00E+00
TE-131	2.14E-15	6.51E-16	6.35E-16	1.63E-15	6.46E-15	0.00E+00	1.12E-14	0.00E+00
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
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-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
CS-134M	1.06E+01	1.57E+01	1.02E+01	0.00E+00	8.26E+00	1.37E+00	1.98E+01	0.00E+00
CS-134	1.60E+10	2.63E+10	5.55E+09	0.00E+00	8.15E+09	2.93E+09	1.42E+08	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-135	6.10E+09	4.25E+09	4.36E+08	0.00E+00	1.50E+09	5.01E+08	3.18E+07	0.00E+00
CS-136	8.24E+07	2.27E+08	1.47E+08	0.00E+00	1.21E+08	1.80E+07	7.96E+06	0.00E+00
CS-137	2.39E+10	2.29E+10	3.38E+09	0.00E+00	7.46E+09	2.68E+09	1.43E+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
CS-139	2.35E-44	2.61E-44	1.26E-44	0.00E+00	1.96E-44	1.98E-45	2.35E-48	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	2.77E+08	2.42E+05	1.61E+07	0.00E+00	7.89E+04	1.44E+05	1.40E+08	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
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
LA-141	1.05E+00	2.44E-01	5.31E-02	0.00E+00	0.00E+00	0.00E+00	5.44E+04	0.00E+00
CE-141	6.56E+05	3.27E+05	4.86E+04	0.00E+00	1.43E+05	0.00E+00	4.08E+08	0.00E+00
BA-142	6.46E-39	4.65E-42	3.61E-40	0.00E+00	3.76E-42	2.74E-42	8.43E-41	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-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
PR-143	1.46E+05	4.37E+04	7.22E+03	0.00E+00	2.37E+04	0.00E+00	1.57E+08	0.00E+00
CE-144	1.27E+08	3.98E+07	6.78E+06	0.00E+00	2.21E+07	0.00E+00	1.04E+10	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	7.15E+04	5.79E+04	4.48E+03	0.00E+00	3.18E+04	0.00E+00	9.17E+07	0.00E+00
PM-147	2.21E+07	1.58E+06	8.49E+05	0.00E+00	2.79E+06	0.00E+00	6.39E+08	0.00E+00
PM-148M	2.28E+06	4.54E+05	4.54E+05	0.00E+00	6.74E+05	0.00E+00	1.28E+09	0.00E+00
PM-148	3.36E+04	4.04E+03	2.62E+03	0.00E+00	6.87E+03	0.00E+00	1.08E+08	0.00E+00
PM-149	2.94E+03	3.12E+02	1.69E+02	0.00E+00	5.52E+02	0.00E+00	2.13E+07	0.00E+00
PM-151	5.75E+02	6.99E+01	4.55E+01	0.00E+00	1.19E+02	0.00E+00	7.93E+06	0.00E+00
SM-151	1.88E+07	2.80E+06	8.81E+05	0.00E+00	2.89E+06	0.00E+00	4.06E+08	0.00E+00
SM-153	1.42E+03	8.80E+02	8.49E+01	0.00E+00	2.68E+02	0.00E+00	1.17E+07	0.00E+00
EU-152	4.47E+07	8.15E+06	9.67E+06	0.00E+00	3.44E+07	0.00E+00	1.34E+09	0.00E+00
EU-154	1.66E+08	1.50E+07	1.37E+07	0.00E+00	6.57E+07	0.00E+00	3.48E+09	0.00E+00

03/11

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

Nuclide	Bone	Liver	Tbody	Thyroid	Kidney	Lung	GI Tract	Skin
EU-155	3.44E+07	2.48E+06	1.94E+06	0.00E+00	9.28E+06	0.00E+00	6.20E+09	0.00E+00
EU-156	2.58E+05	1.38E+05	2.86E+04	0.00E+00	8.89E+04	0.00E+00	3.13E+08	0.00E+00
TB-160	6.02E+06	0.00E+00	7.47E+05	0.00E+00	1.79E+06	0.00E+00	1.34E+09	0.00E+00
HO-166M	7.94E+07	1.66E+07	1.40E+07	0.00E+00	2.37E+07	0.00E+00	1.93E+09	0.00E+00
W-181	2.03E+06	4.98E+05	6.85E+04	0.00E+00	0.00E+00	0.00E+00	1.81E+07	0.00E+00
W-185	6.44E+07	1.61E+07	2.25E+06	0.00E+00	0.00E+00	0.00E+00	5.99E+08	0.00E+00
W-187	6.41E+04	3.80E+04	1.70E+04	0.00E+00	0.00E+00	0.00E+00	5.34E+06	0.00E+00
NP-239	2.56E+03	1.84E+02	1.29E+02	0.00E+00	5.31E+02	0.00E+00	1.36E+07	0.00E+00
U-232	1.29E+12	0.00E+00	9.24E+10	0.00E+00	9.83E+10	0.00E+00	5.12E+09	0.00E+00
U-233	2.73E+11	0.00E+00	1.65E+10	0.00E+00	4.48E+10	0.00E+00	4.74E+09	0.00E+00
U-234	2.62E+11	0.00E+00	1.62E+10	0.00E+00	4.40E+10	0.00E+00	4.65E+09	0.00E+00
U-235	2.51E+11	0.00E+00	1.52E+10	0.00E+00	4.12E+10	0.00E+00	5.90E+09	0.00E+00
U-236	2.51E+11	0.00E+00	1.56E+10	0.00E+00	4.21E+10	0.00E+00	4.35E+09	0.00E+00
U-237	3.26E+05	0.00E+00	8.65E+04	0.00E+00	9.39E+05	0.00E+00	2.87E+07	0.00E+00
U-238	2.40E+11	0.00E+00	1.43E+10	0.00E+00	3.85E+10	0.00E+00	4.16E+09	0.00E+00
NP-237	1.64E+11	1.08E+10	7.20E+09	0.00E+00	4.45E+10	0.00E+00	6.00E+09	0.00E+00
NP-238	2.50E+04	5.07E+02	3.90E+02	0.00E+00	1.62E+03	0.00E+00	1.74E+07	0.00E+00
PU-238	8.73E+10	1.01E+10	2.32E+09	0.00E+00	8.44E+09	0.00E+00	5.50E+09	0.00E+00
PU-239	9.48E+10	1.01E+10	2.43E+09	0.00E+00	8.97E+09	0.00E+00	5.04E+09	0.00E+00
PU-240	9.41E+10	1.05E+10	2.43E+09	0.00E+00	8.97E+09	0.00E+00	5.13E+09	0.00E+00
PU-241	2.82E+09	1.15E+08	5.85E+07	0.00E+00	2.15E+08	0.00E+00	1.05E+08	0.00E+00
PU-242	8.75E+10	1.01E+10	2.34E+09	0.00E+00	8.60E+09	0.00E+00	4.93E+09	0.00E+00
PU-244	1.02E+11	1.16E+11	2.68E+09	0.00E+00	9.92E+09	0.00E+00	7.35E+09	0.00E+00
AM-241	9.99E+10	8.60E+10	7.50E+09	0.00E+00	4.58E+10	0.00E+00	5.61E+09	0.00E+00
AM-242M	1.03E+11	8.23E+10	7.64E+09	0.00E+00	4.63E+10	0.00E+00	7.06E+09	0.00E+00
AM-243	9.85E+10	8.31E+10	7.23E+09	0.00E+00	4.45E+10	0.00E+00	6.58E+09	0.00E+00
CM-242	4.69E+09	3.74E+09	3.12E+08	0.00E+00	9.99E+08	0.00E+00	4.36E+09	0.00E+00
CM-243	9.36E+10	7.61E+10	6.03E+09	0.00E+00	2.25E+10	0.00E+00	5.87E+09	0.00E+00
CM-244	7.88E+10	6.37E+10	5.05E+09	0.00E+00	1.85E+10	0.00E+00	5.67E+09	0.00E+00
CM-245	1.23E+11	9.85E+10	7.72E+09	0.00E+00	3.02E+10	0.00E+00	5.32E+09	0.00E+00
CM-246	1.21E+11	9.85E+10	7.72E+09	0.00E+00	3.01E+10	0.00E+00	5.23E+09	0.00E+00
CM-247	1.18E+11	9.70E+10	7.57E+09	0.00E+00	2.97E+10	0.00E+00	6.87E+09	0.00E+00
CM-248	9.85E+11	8.01E+11	6.26E+10	0.00E+00	2.45E+11	0.00E+00	1.11E+11	0.00E+00
CF-252	7.31E+10	0.00E+00	1.77E+09	0.00E+00	0.00E+00	0.00E+00	2.06E+10	0.00E+00

07/17

FIGURE 1: RESTRICTED AREA AND NEAR-FIELD ENVIRONMENTAL MONITORING

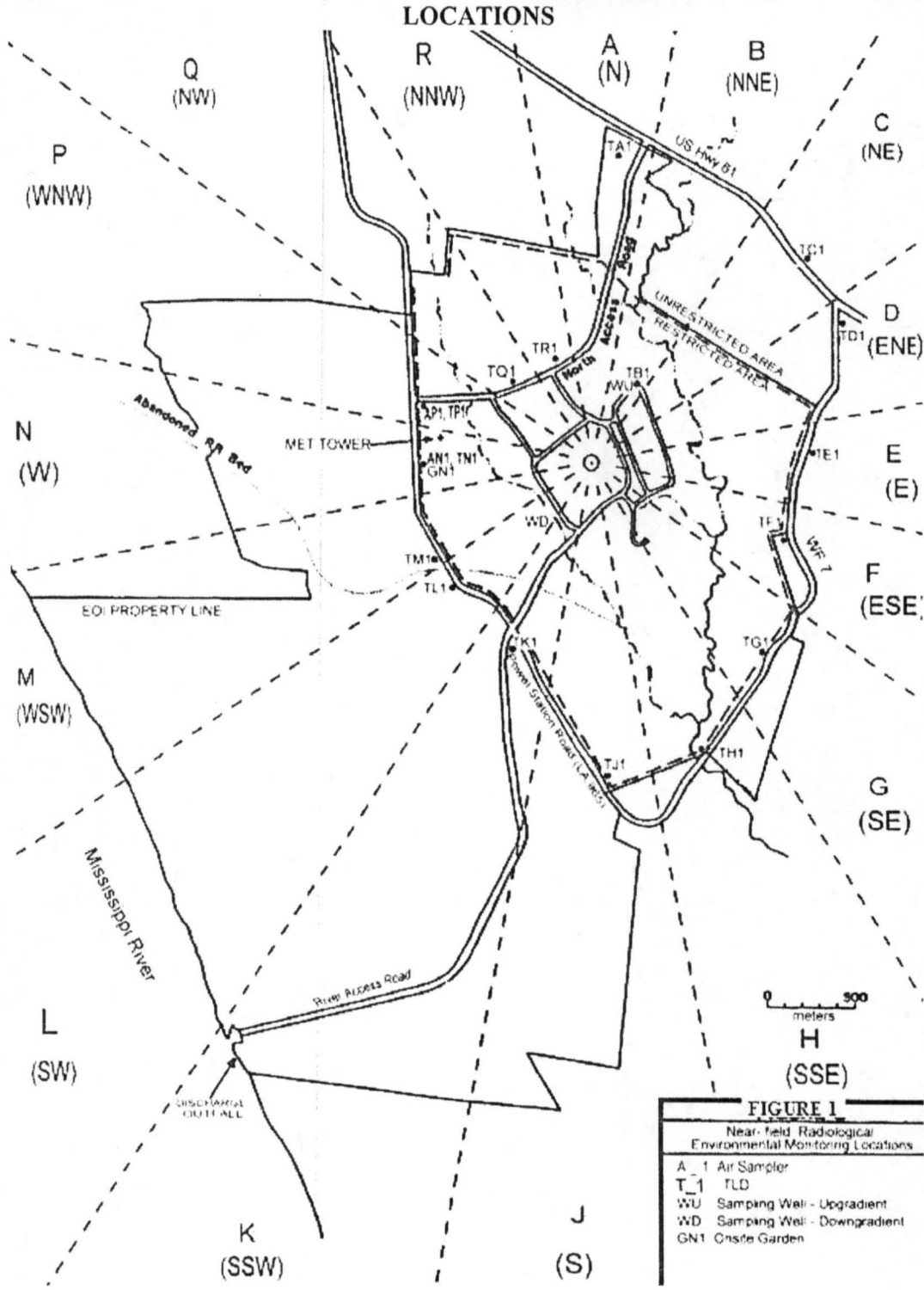
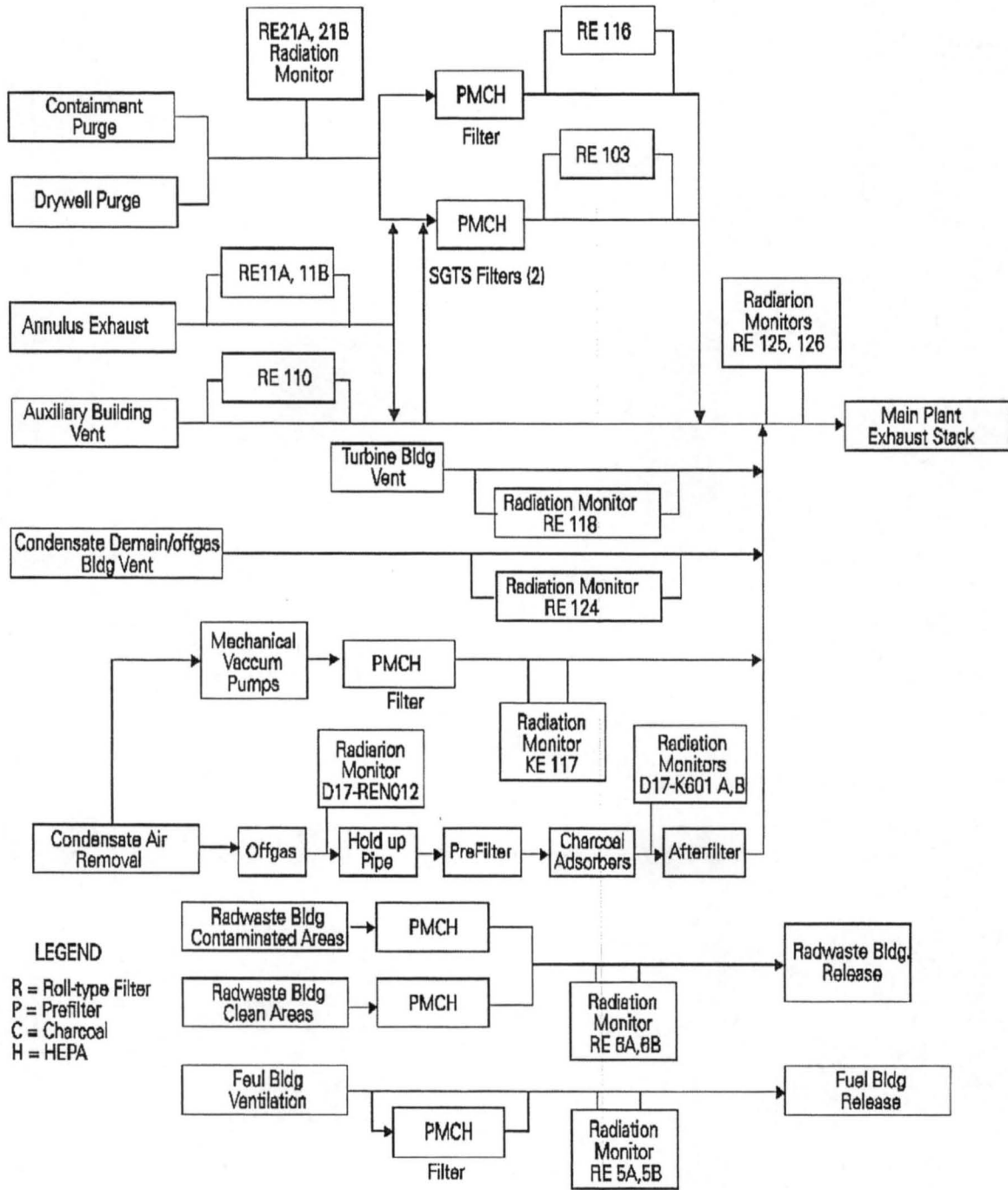


FIGURE 2: SCHEMATIC OF GASEOUS RADWASTE SYSTEM



FOR INFORMATION ONLY

NOT A PERMANANT RECORD

FIGURE 3: EFFLUENT RELEASE POINTS

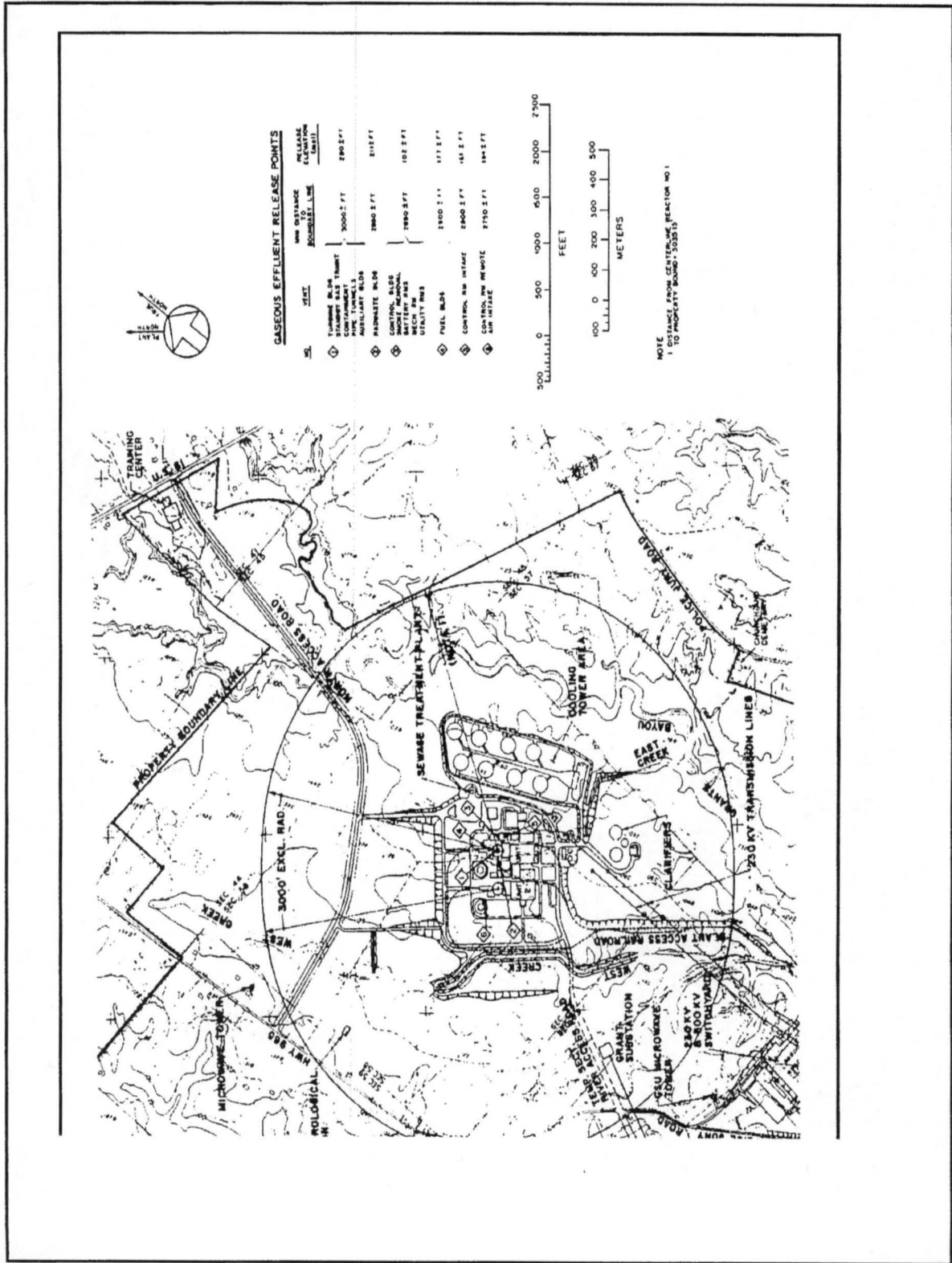


FIGURE 5: FAR-FIELD RADIOLOGICAL ENVIRONMENTAL MONITORING LOCATIONS

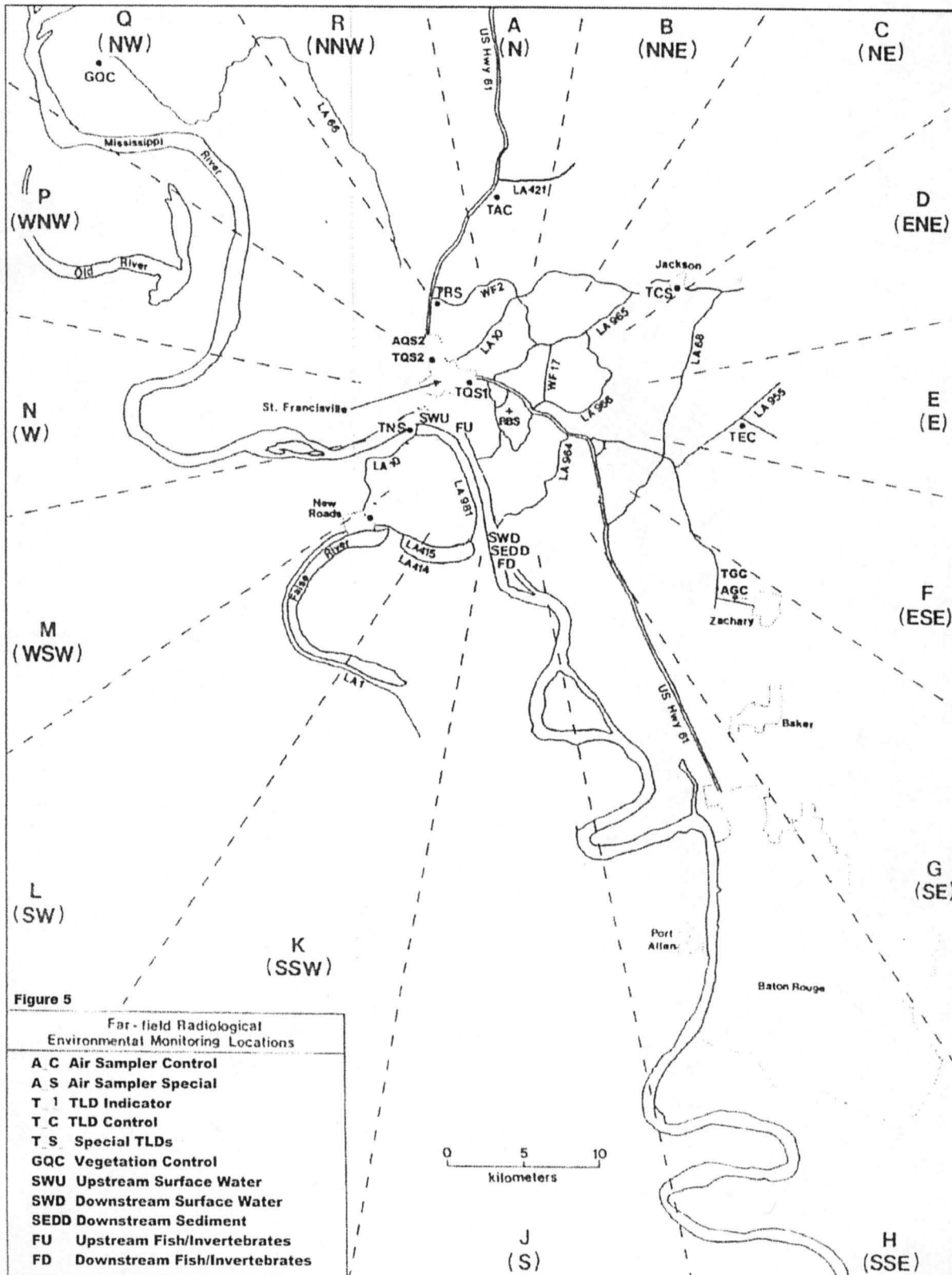
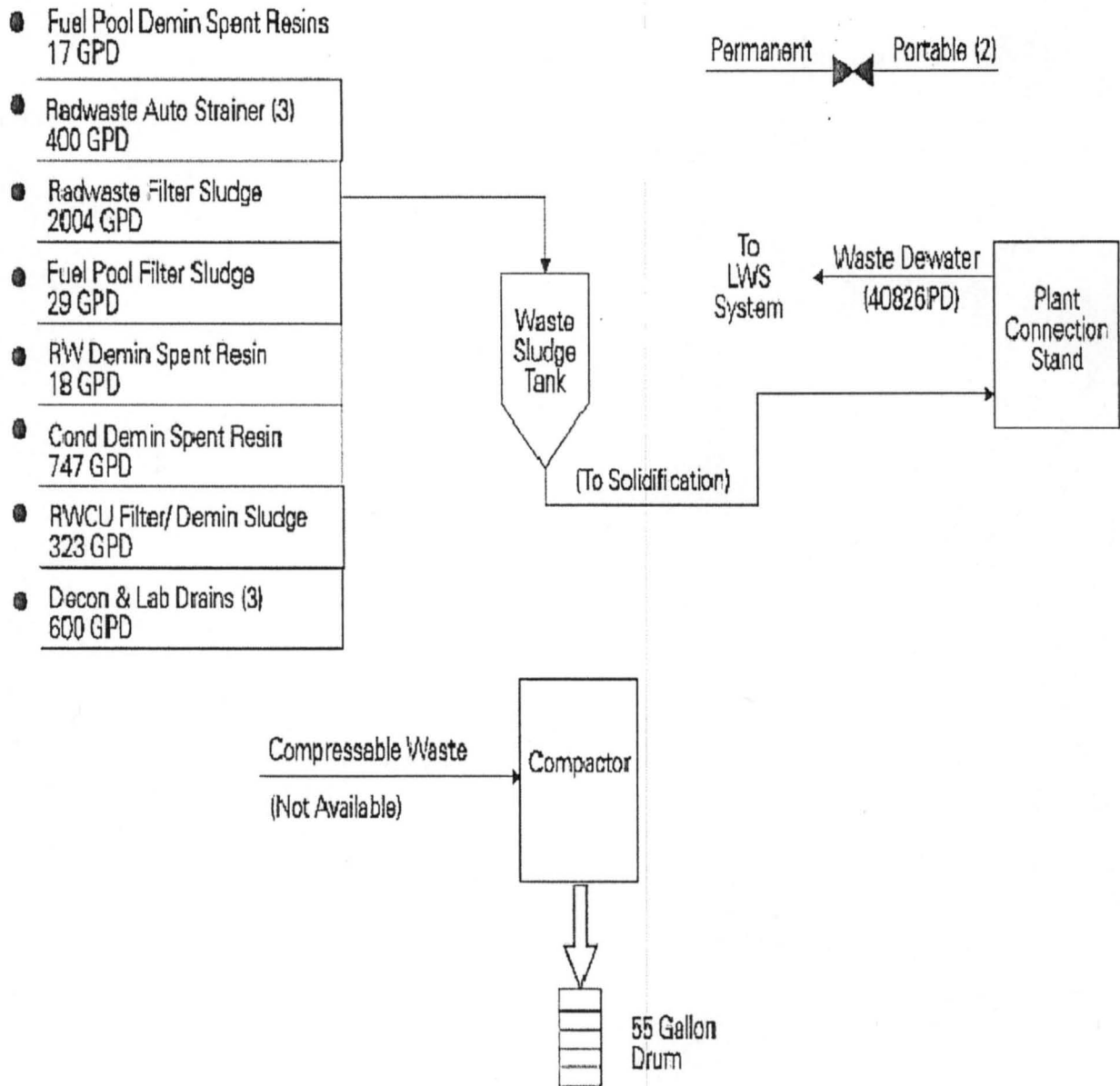


FIGURE 6: SCHEMATIC OF THE SOLID WASTE TREATMENT SYSTEM



NOTE: (1) Flowrates Include Transfer Water and Solids
 (2) Refer to Topical Report Cns1-2 (4314-01354-OIP-A) For Details
 (3) Suspended Solids are Assumed to be Negligible, and are Not Considered

RSP-0223 REPORT VERIFICATION COVER SHEET

Check the applicable report verification being performed:

REPORT	CHECK ONE
Annual Radioactive Effluent Release Report	✓
10CFR20.2206(b) Report	
Annual Radioactive Effluent Release Report for Dry Cask Storage	

Comments: The following items are included in the report and have been verified as required by Section 5.1.1:

A summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit are included. The liquid and gaseous effluent quantities are based on Chemistry sample data per CSP-0110 or RHP-0032. Radwaste provided the solid waste components of the report.

A summary of the doses from radioactive liquid and gaseous effluents released from the unit are included in the report. The doses are calculated using the Chemistry sample data per the ODCM, RPP-0097 and RPP-0102.

The ODCM was revised in 2017 as described in Section XII of the report, and as noted in the attached copy of RSP-0008 Rev. 15, with change bars and effective dates as required by Tech Spec 5.5.1.c.

Mississippi River flow rates were obtained from the US Army Corp of Engineers web site.

Chemistry verified that the estimate of total error (i.e. collective error due to sample collection, laboratory analysis, sample flow, process flow, monitor accuracy, etc.) has not changed.

Chemistry confirmed that the maximum quantity of radioactive material, excluding tritium and dissolved or entrained noble gases, contained in any unprotected outdoor tank during the previous year was less than or equal to the 10 curie limit as required by Technical Specifications.

Engineering supplied information concluding that there were no major changes to radioactive liquid, gaseous and solid waste treatment systems during 2017.

Operations verified the 2017 TR 3.3.11.2 and TR 3.3.11.3 instrumentation LCOs as discussed in Section VII of the report.

The Process Control Program (PCP) was not revised in 2017.

RSP-0223 REPORT VERIFICATION COVER SHEET

No Land Use Census was conducted in 2017.

Meteorological Data – Joint Frequency Tables are included with > 90 % recovery for 2017. Actual = $8368/8760*100 = 95.5\%$.

The surveillance to determine the 40CFR190 (Technical Requirements Manual 3.11.4 and Technical Specification 5.5.4) compliance has been performed (RHP-0036).

Annual groundwater monitoring results per NEI 07-07 are included. Sampling is performed in accordance with EN-CY-111 and counted either in accordance with ESP-8-072 and ESP-8-074, or counted by a contract laboratory.

Check here if an attachment is included.

Verification By: VICTOR HUFFSTADT / [Signature] , 4-26-18
Print / Sign Date

Reviewed By: Robert Hite / [Signature] , 4-26-18
Print / Sign Date