ATTACHMENT 8

Calculation L-003064, "Suppression Pool pH Calculation for Alternative Source Terms," Revision 1

Exelon Nuclear

CC-AA-309-1001
Revision 4

Design Analysis Major Revision Cover Sheet

Design Analysis (Major Revision)		**Last Page No.** 15 / Att. H1	
Analysis No.:	L-003064	**Revision:**	1
Title:	Suppression Pool pH Calculation for Alternative Source Terms		
EC/ECR No.:	EC 352505	**Revision:**	0

Station(s):	LaSalle County Station	**Component(s):**	
Unit No.:	1 & 2	N/A	
Discipline:	MECH		
Descrip. Code/Keyword:	AST,Suppression, Pool, pH, SBLC		
Safety/QA Class:	SR		
System Code:	B21, VC, VE, VG,VS		
Structure:	ZZ		

CONTROLLED DOCUMENT REFERENCES

Document No.:	From/To	Document No.:	From/To
UFSAR Sections 6.1, 6.2, 9.3 & 15.6	From	SEAG 08-000075 TODI	From
UFSAR Sections 9.3 & 15.6	To	Design Analysis L-003128	From
LSCS Tech Spec. Bases Section 3.6.2.2	From	Design Analysis PM-1059	From

Is this Design Analysis Safeguards Information? Yes ☐ No ☒ If yes, see SY-AA-101-106

Does this Design Analysis contain Unverified Assumptions? Yes ☐ No ☒ If yes, ATI/AR#:

This Design Analysis SUPERCEDES: Revision 0 in its entirety

Description of Revision (list affected pages for partials):

(1) Replace out-dated Formula page in Attachment A, by the actually used Formula page. Affected page is Page A4 of A38.
(2) Minor editing on Page 5, 6, A1, A3, A4, C1, C3, D1, and D8
(3) Updated reference 5.13 in Section 5 References and on the cover sheet with the current reference. Affected page is Page 6 of 15 and major revision cover sheet.
(4) Added revision number for the Calculation No. XC-Q1111-98-13. Affected page is Page B1 of B 56.
(5) Clarification notes added on Page 15 of 15 and Page A5 of A38.
(6) Formatted pages B33 of B56 and B45 of B56.

	Print Name	Sign Name	Date
Preparer:	William Golden		10/7/08

Method of Review: Detailed Review ☒ Alternate Calculations (attached) ☐ Testing ☐

	Print Name	Sign Name	Date
Reviewer:	Harold Rothstein/ Donald Gardner		10/7/08

Review Notes: Independent review ☒ Peer review ☐

All inputs, assumptions, approaches, numerical analyses, and results were independently reviewed and checked. Additionally, a line-by-line review of the entire calculation was conducted.

(For External Analyses Only)

	Print Name	Sign Name	Date
External Approver:	Irving Tsang		10/07/08
Exelon Reviewer:	T.J. Mscisz		10/07/08

Independent 3rd Party Review Reqd? Yes ☑ No ☐ *

	Print Name	Sign Name	Date
Exelon Approver:	W. HILTON		10-08-08

WPM 10/8/08

* Original Revision & ITPR performed by WGI. Additional technical and editorial reviews for Revision 1 performed by WGI (D. Gardner) and Exelon (J. DeLaRosa and W. McDonald).

Exelon Nuclear

OWNER'S ACCEPTANCE REVIEW CHECKLIST FOR EXTERNAL DESIGN ANALYSIS

DESIGN ANALYSIS NO. L-003064, Rev. 1 **Page 1.1**

		Yes	No	N/A
1.	Do assumptions have sufficient rationale?	☑	☐	☐
2.	Are assumptions compatible with the way the plant is operated and with the licensing basis?	☑	☐	☐
3.	Do the design inputs have sufficient rationale?	☑	☐	☐
4.	Are design inputs correct and reasonable?	☑	☐	☐
5.	Are design inputs compatible with the way the plant is operated and with the licensing basis?	☑	☐	☐
6.	Are Engineering Judgments clearly documented and justified?	☑	☐	☐
7.	Are Engineering Judgments compatible with the way the plant is operated and with the licensing basis?	☑	☐	☐
8.	Do the results and conclusions satisfy the purpose and objective of the Design Analysis?	☑	☐	☐
9.	Are the results and conclusions compatible with the way the plant is operated and with the licensing basis?	☑	☐	☐
10.	Does the Design Analysis include the applicable design basis documentation?	☑	☐	☐
11.	Have any limitations on the use of the results been identified and transmitted to the appropriate organizations?	☐	☑	☐
12.	Are there any unverified assumptions?	☐	☑	☐
13.	Do all unverified assumptions have a tracking and closure mechanism in place?	☐	☐	☑
14.	Have all affected design analyses been documented on the Affected Documents List (ADL) for the associated Configuration Change?	☐	☑	☐
15.	Do the sources of inputs **and** analysis methodology used meet current technical requirements and regulatory commitments? (If the input sources **or** analysis methodology are based on an out-of-date methodology or code, additional reconciliation may be required if the site has since committed to a more recent code)	☑	☐	☐
16.	Have vendor supporting technical documents and references (including GE DRFs) been reviewed when necessary?	☑	☐	☐

EXELON REVIEWER: T.J. Mscisz [signature] **DATE:** 10/07/08
Print Sign

TABLE OF CONTENTS

DESIGN ANALYSIS COVER SHEET	**1**
OWNER'S ACCEPTANCE REVIEW CHECKLIST FOR EXTERNAL DESIGN ANALYSIS	**1.1**
TABLE OF CONTENTS	**2**
1. PURPOSE AND OBJECTIVE	**3**
2. METHODOLOGY AND ACCEPTANCE CRITERIA	**3**
3. ASSUMPTIONS	**3**
4. DESIGN INPUT	**4**
5. REFERENCES	**6**
6. CALCULATIONS	**7**
7. SUMMARY OF RESULTS AND CONCLUSIONS	**13**

Attachments

R1 A – Determination of Total Exposed Cable Quantities Inside Containment for Assessment of Impact of Radiolytic Chlorine Releases on Suppression Pool pH	A1-A38
B – Dose Assessment, Core Cs & I, and Gamma Mean Free Path Determination	B1-B56
C – Transient Pool pH Calculation Spreadsheet	C1-C7
R1 D – Transient Pool pH Calculation Spreadsheet Cell Formula	D1-D13
E – Transient Pool pH Calculation - Grand Gulf Reference Data	E1-E7
F – GGNS-98-0039, Rev 3 , Entergy Operations Engineering Report for Suppression Pool pH and Iodine Re-Evolution Methodology	F1-F30
G – XC-Q1111-98013, Rev 2, Grand Gulf Design Engineering Calculation - Suppression Pool pH Analysis	G1-G26
H – Computer Disclosure Sheet	H1-H1

1. Purpose and Objective

In order to prevent iodine re-evolution following a Design Basis Accident (DBA)Loss of Coolant Accident (LOCA), the pH of the Suppression Pool should be maintained above 7.0 for the entire post-LOCA potential release duration (30 days = 720 hours for Alternative Source Terms [AST], per the AST guidance of Reference [Ref.] 5.6). The chemistry of this phenomenon and methods of pH control are discussed in Ref. 5.1 and 5.5. Ref. 5.1 is included herein as Attachment F.

The objective of this calculation is to determine the pH of the Suppression Pool following a DBA LOCA based on the use of AST as defined in References 5.4 and 5.6. The pH values are determined, as a function of time, with and without the addition of the sodium pentaborate in the Standby Liquid Control System. The conditions required to maintain the Suppression Pool at a pH above 7.0 are determined.

2. Method of Analysis and Acceptance Criteria

This calculation is based on the methodology developed for the equivalent calculation done for the Grand Gulf Nuclear Station, Unit 1 [Ref. 5.1 & 5.2]. The calculation formulas developed in these Ref. 5.1 and 5.2 documents were reviewed and used by Washington Group International to develop the spreadsheets included herein in Attachments C and D. These references are included in this calculation as Attachments F and G. The accuracy of translation of the equations in these documents into spreadsheet cell formulas is verified by duplicating the Grand Gulf calculation. This verification is presented as Attachment E and accurately duplicates all of the Grand Gulf results.

As noted in this calculation, injection of sodium pentaborate solution by the Standby Liquid Control (SBLC) System is a required function in order to control post-LOCA pH in the suppression pool, and prevent iodine re-evolution. Based on the worst case beginning of cycle condition and the conservative conditions assumed herein, injection needs to be completed within about 3.5 hours after the start of the DBA-LOCA. This is expected, as manual initiation of SBLC would occur early in a DBA-LOCA as a result of emergency operating procedures and severe accident guidelines, particularly for events resulting in fuel damage that would be consistent with AST source terms.

Per the guidance of Appendix A of Regulatory Guide 1.183 [Ref. 5.6], the Suppression Pool pH should be controlled at values of 7 or greater, following loss of coolant accidents.

3. Assumptions

(Note: additional assumptions are identified in the Attachments.)

- The Suppression Pool is assumed to be well mixed so that the pH at any time can be represented by a single value. The adequacy of mixing is addressed in section 4.5 below.
- For hydrochloric acid production by radiolysis of chlorinated polymer cable jacketing, the cable data and conservative methodology presented in Attachment A are used. The Attachment provides the quantities of exposed cables located in the drywell, all considered as subject to Post-LOCA environment. To ensure additional conservatism in the estimation of the cable lengths, an additional 5% of the totals are assumed to be in free air, and a 10% contingency on the total cable surface area reported in Attachment A is also included for the Attachment C spreadsheets. Radiolysis of surface coatings on the steel and concrete surfaces in the Drywell and Containment would not be significant contributors, as per UFSAR [Ref. 5.3] Section 6.1.2.
- In order to conservatively minimize the SBLC Boron gram-moles, natural B^{10} enrichment is assumed.

4. Design Input

4.1. Cable Data

Cable quantities and jacket thickness are developed separately and presented in Attachment A.

4.2. Temperature

Suppression Pool temperatures are taken from UFSAR [Ref. 5.3] Figure 6.2-7A, with the peak calculated temperature conservatively used from the time it is reached through the rest of the transient (higher temperatures give lower calculated pH values). Data utilized until the peak temperature (196.1 degrees F) is reached at 5 hours after the initiation of the LOCA are as follows:

Time after initiation of LOCA - Hours	Temperature Deg F
0	105
1	170
2	180
2.0336	181
3	185

4.3. Sodium Pentaborate Mass in SBLC Tank

The minimum available volume of sodium pentaborate solution stored in the SBLC tank is 4587 gallons, as per LSCS Technical Specification Figure 3.1.7-1 [Ref. 5.7 and 5.13]. Also per these references, a 13.4% solution concentration, by weight, is chosen to conservatively bound the acceptable operable range. As per the sodium pentaborate specific gravity vs. solution weight table and figure included in Attachment C, a specific gravity of 1.0655 gm/cm^3 corresponds to this 13.4% $Na_2B_{10}O_{16}\bullet 10H_2O$ concentration. Based on this volume and density, the total mass for the solution equals 40,788 lbs. Therefore, at 13.4wt% the total mass of $Na_2B_{10}O_{16}\bullet 10H_2O$ in solution is 5465.6 lbs.

Non-enriched Boron is assumed [Ref. 5.13] to minimize the Boron gram-moles for this calculation. The natural ^{10}B enrichment of Boron, 19.9%, is assumed. Because ^{10}B has an atomic weight of 10.0129 gm/mole, and ^{11}B has an atomic weight of 11.0093 gm/mole, the calculated naturally occurring molar mass of Boron is 10.811 gm/mole. This value agrees with the periodic table value. The total molar mass of $Na_2B_{10}O_{16}\bullet 10H_2O$ is 590.23 gm/mole. Based on the calculated 10.811 gm/mole mass of Boron, the percentage of total Boron in $Na_2B_{10}O_{16}\bullet 10H_2O$ is 18.3165%. Taking 18.3% of the total mass of $Na_2B_{10}O_{16}\bullet 10H_2O$ (5465.6 lbs.), gives a total of 1001.1 lbs., or 42,003 gm-atoms of total available Boron.

4.4. Suppression Pool and Airspace Volumes

In order to determine the minimum quantity of sodium pentaborate required to maintain the Suppression Pool at a pH above 7.0 post-LOCA for the purposes of this calculation, the maximum post-LOCA Suppression Pool volume and corresponding minimum Drywell + Suppression Pool Airspace volume is required. Pre-LOCA, the maximum volume Suppression Pool volume is 131,900 ft^3 as per the LSCS Technical Specification Bases [Ref. 5.8] B 3.6.2.2 and Ref. 5.13, as rounded to 4 significant figures. For conservatism in this calculation, the entire 22,712 ft^3 Total Reactor Coolant Volume from UFSAR [Ref. 5.3] Table 6.2-3, "Initial Conditions Employed in Containment Response Analyses", was also added to the maximum Suppression Pool volume as the maximum release from the break during the LOCA, for a total of 154,612 ft^3 maximum Suppression Pool volume. The contents of the Condensate Storage Tank (CST) are not added, as the High Pressure Core Spray system, the only Emergency Core Cooling System (ECCS) which could potentially be supplied from this source (per UFSAR Section 6.1.1.2) for

other than beyond design basis severe accident management, uses the Suppression Pool as its normal source of water, with its connection to the CST isolated by a blind flange which can only be manually removed under administrative control.

For the corresponding conservatively minimized Drywell + Suppression Pool Airspace volume, the drywell free volume of 229,538 ft^3 plus wetwell airspace volume of 165,100 ft^3 values from UFSAR [Ref. 5.3] Table 15.6-22, "Parameters Used in Accident Assessment", are used, minus the difference between the above 154,612 ft^3 conservative maximum Suppression Pool volume and the UFSAR Table 15.6-22 128,800 ft^3 Suppression Pool volume, for a total Drywell + Suppression Pool Airspace volume of 368,826 ft^3.

4.5. Adequacy of Mixing

The ECCS takes water from the Suppression Pool and pumps it into the core region of the reactor vessel. Additionally, the SBLC System will pump from the SBLC Tank into the core region of the reactor vessel, and discharge near the bottom of the core shroud, so it mixes the cooling water rising through the core (per UFSAR section 9.3.5.2). This water will refill the Reactor Pressure Vessel (RPV) under post-LOCA conditions, and the
R1 | mixed ECCS water and SBLC solution will spill out of the break to the Suppression Pool. To illustrate the adequacy of the SBLC solution mixing in the Suppression Pool, the minimum spillage and bounding maximum initial liquid volume of the Suppression Pool of 131,900 ft^3 are considered, with a SBLC solution scenario of no offsite power available following the accident, with only minimum diesel power. As per the Ref. 5.13 TODI based
R1 | on UFSAR Table 6.2-5A for this minimum flow Case C, one pump on the Low-Pressure Coolant Injection System is capable of injecting a minimum of 7,200 gpm, and one High Pressure Core Spray pump is capable of injecting a minimum of 6,200 gpm. A two-hour delay before ECCS and SBLC initiation to refill the RPV is conservatively assumed, consistent with the event timing in Regulatory Guide 1.183. After 2 hours, simultaneous injection of SBLC solution and ECCS fill of the RPV take place. The LSCS RPV and attached pipes have a volume of 22,712 ft^3 (per UFSAR Table 6.2-3). This volume would be flooded in 12.68 minutes utilizing only the 13,400 gpm
R1 | (107,479 ft^3/hour) minimum ECCS flows above. The minimum flow rate of the SBLC pump is not credited in this fill time, but it is noted that 100% injection of the minimum sodium pentaborate solution would occur within approximately 2 hours (per UFSAR section 9.3.5.2 and 9.3.5.3).

Based on the 131,900 ft^3 Suppression Pool volume plus the entire RPV and attached pipes 22,712 ft^3 volume (total of 154,612 ft^3) and a total minimum 107,479 ft^3/hour ECCS flow rate, a turnover of one suppression pool volume containing essentially 100% of the SBLC injection is calculated to be completed by 3.4 hours after the LOCA, with subsequent suppression pool turnover of the suppression pool volume taking place every 1.4 hours. This rapid turnover assures mixing of the Suppression Pool with the SBLC sodium pentaborate.

5. References

5.1. GGNS-98-0039, Rev. 3, "Entergy Operations Engineering Report for Suppression Pool pH and Iodine Re-Evolution Methodology", Applicable Site: Grand Gulf Nuclear Station, 12/20/00.

5.2. XC-Q1111-98013, Rev. 2, Grand Gulf Design Engineering Calculation "Suppression Pool pH Analysis", 12/20/00.

R1 | 5.3. LSCS Units 1 & 2 UFSAR, Rev. 17, April 2008.

5.4. NUREG-1465, "Accident Source Terms for Light-Water Nuclear Power Plants", February 1995.

5.5. NUREG/CR-5950, "Iodine Evolution and pH Control", December 1992.

5.6. USNRC Regulatory Guide 1.183, "Alternative Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors", July 2000.

5.7. LSCS Technical Specifications.

5.8. LSCS Units 1 & 2 Technical Specification Bases.

5.9. GE Report NEDC-32963A, "Prediction of the Onset of fission Gas Release From Fuel in Generic BWR", March 2000 (Allows a 121-second delay in timing of fission product release following design basis accidents).

5.10. Deleted.

5.11. Radioactive Decay Data Tables by David C. Kocher, Report DOE/TIC-11026 Technical Information Center U.S. DOE, Washington, D.C., 1981.

5.12. LSCS Units 1 & 2 Drawing No. M-7 Rev. AC, "General Arrangement Main Floor Plan".

R1 | 5.13. SEAG 08-000075, Rev. 1, "LaSalle County Station - Unit 1 & 2 Transmittal of Design Information of Parameters and Source of Reference for AST Analyses".

5.14. L-003128, Rev. 0, "LaSalle Source Terms for Use in Alternative Source Terms".

5.15. PM-1059, Rev. 2, "Peach Bottom Atomic Power Station Re-analysis of Fuel Handling Accident (FHA) Using Alternative Source Terms".

5.16. NUREG/CR-6604, "RADTRAD: A Simplified Model for RADionuclide Transport and Removal And Dose Estimation", April1998, and Supplements 1, June 1999, and 2, October 2002.

6. Calculations

pH - Fundamental Relationships

$$pH = -\log_{10}[H^+] \qquad 6\text{-}1$$

$$[H^+]\cdot[OH^-] = K_W(T) \qquad 6\text{-}2$$

where:

$[H^+]$ = concentration of hydrogen ions in moles/liter
$[OH^-]$ = concentration of hydroxyl ions in moles/liter
$K_W(T)$ = ionization constant for water as a function of temperature T

The data for K_W for T between 77 and 212 °F can be represented by the following correlation developed in Section 3.0 of Reference 5.1:

$$-\mathrm{Log}_{10}K_W(T) = 15.5129 - 2.24E\text{-}2 * T + 3.352E\text{-}5 * T^2 \qquad 6\text{-}3$$

Hydriodic Acid Production

Iodine, accompanied by Cesium, is released during the Gap Release and Early In-Vessel Release phases.

The following equation, valid during the Early Vessel Release Phase, includes the release during the Gap Release Phase. See analysis in Reference 5.1 (Section 3.1 and Equation 3-1d).

Iodine and cesium core inventories are calculated for both beginning and end of cycle (BOC and EOC) conditions (See Attachment B for a discussion of the assumed BOC conditions). Since EOC conditions result in increased inventory of both acidic (iodine) and basic (cesium) compounds, pH values are calculated for both conditions. For conservatism, the EOC radiation doses are used for the BOC calculation.

The hydriodic acid concentration is governed by the following equation:

$$[HI](t) = m_I / (120 * V_{POOL}) * [t - (0.5 + t_{gap})] + m_I / (400 * V_{POOL}) \qquad 6\text{-}4$$

where:

$[HI](t)$ = concentration of Hydriodic Acid at time t (moles/liter)
m_I = core iodine inventory (gram-moles)
V_{POOL} = Suppression Pool volume (liters)
t = time after start of accident (hrs) (includes t_{gap} + Gap Release [0.5 hrs] + Early In-Vessel Release [1.5 hrs] duration for a t_{max} = 2.0336 hrs) [Ref.5.6, Table 4, page 1.183-15]
t_{gap} = time of onset of gap release = 121 seconds = 0.0336 hrs [Ref. 5.6 and 5.10]
t_{max} = 2.0336 hrs = end of Early In-Vessel Release

[See Spreadsheet: Sheets 1 (EOC) and 5 (BOC), Col H]

Nitric Acid Production

Nitric Acid is produced by radiolysis of the water in the Suppression Pool with a G value of 0.007 molecules HNO_3 / 100 eV absorbed dose or 7.3E-6 g moles / megarad- liter [Ref. 5.1, Section 3.2, Equation 3-2b].

The nitric acid concentration is governed by the following equation:

$[HNO_3](t) = 7.3E\text{-}6 * D(t)_{pool}$ 6-5

[See Spreadsheet Col. I]

where:

$[HNO_3](t)$ = nitric acid concentration at time t (moles/liter)
$D(t)_{pool}$ = Total accumulated dose in Suppression Pool at time t (megarad)

Hydrochloric Acid Production

Hydrochloric Acid is produced by radiolysis of chlorinated polymer cable jacketing. Radiolysis of surface coatings on the steel and concrete surfaces in the Drywell and Containment would not be significant contributors, since the coatings utilize nonchlorinated polymers.

The calculation of the resulting concentration in the Suppression Pool is based on the equations in Section 3.3 of Reference 5.1 [see Ref. 5.2, Equations 5-1, 5-2, and 5-3]. These equations are in turn based on the following G value for HCl production in Hypalon chlorinated polymer given in Reference 5.5.

G_{HCl} = 2.115 molecules/100eV = 3.512E-20 g moles HCl / MeV

The hydrochloric acid concentration is governed by the following equations:

Doses from beta and gamma radiation are calculated separately.

$[HCl]_\beta(t) = G_{HCl} / V_{POOL} * (S_{tray} / 2 + S_{fa}) / \mu_{\beta\ air} * D_\beta(t)$ 6-6

where the effective cable surface area for β dose is:

$S_{tray} / 2 + S_{fa} = \pi * D_0 * (L_{tray} / 2 + L_{fa})$

[See Spreadsheet Cols J & L]

$[HCl]_\gamma(t) = G_{HCl} / V_{POOL} * (S_{tray} + S_{fa}) * (1 - e^{-\mu\lambda\ air * r\lambda}) / \mu_{\gamma\ air} * (1 - e^{-\mu\lambda\ hypalon * th}) * D_\gamma(t)$ 6-7

where: $S_{tray} + S_{fa} = \pi * D_0 * (L_{tray} + L_{fa})$

[See Spreadsheet Cols K & M]

where:

$[HCl]_\beta(t)$ = HCl concentration from Beta radiation at time t (g moles/liter)
$[HCl]_\gamma(t)$ = HCl concentration from Gamma radiation at time t (g moles/liter)
D_0 = cable diameter (cm)
L_{tray} = cable length in trays (raceways) (cm)
L_{fa} = cable length in free air (cm)
$\mu_{\beta\ air}$ = linear beta absorption coefficient in air (1/cm)
$\mu_{\lambda\ air}$ = linear gamma absorption coefficient in air (1/cm)
r_λ = gamma free path (cm)
$\mu_{\lambda\ hypalon}$ = linear gamma absorption coefficient in Hypalon (1/cm)
th = Hypalon jacket thickness (cm)

$D_\beta(t)$ = accumulated beta dose per unit volume at time t (MeV/cm^3)
$D_\gamma(t)$ = accumulated gamma dose per unit volume at time t (MeV/cm^3)
G_{HCl} = 3.512E-20 (g moles HCl / MeV)
V_{POOL} = Suppression Pool volume (Liters)
S_{tray} = Cable surface area in trays (cm^2)
S_{fa} = Cable surface area in free air (cm^2)

Cesium Hydroxide Production

Cesium, accompanied by Iodine, is released during the Gap Release and Early In-Vessel Release phases. The following equation, valid during the Early Vessel Release Phase, includes the release during the Gap Release Phase. See analysis in Reference 5.1 (Section 3.4 and Equation 3-4d).

Iodine and cesium core inventories are calculated for both beginning and end of cycle (BOC and EOC) conditions (See Attachment B for a discussion of the assumed conditions). Since EOC conditions result in increased inventory of both acidic (iodine) and basic (cesium) compounds, pH values are calculated for both conditions. For conservatism, the EOC radiation doses are used for the BOC calculation.

The cesium hydroxide concentration is governed by the following equation:

$$[CsOH](t) = (0.4 * m_{Cs} - 0.475 * m_I) / 3 * V_{POOL}) * [t - (0.5 + t_{gap})] + (0.05 * m_{Cs} - 0.0475 * m_I) / V_{POOL} \quad \text{6-8}$$

[See Spreadsheet: Sheets 1 (EOC) and 5 (BOC), Col O]

[CsOH](t) = concentration of Cesium Hydroxide at time t (g moles/liter)
m_I = core Iodine inventory (gram-moles)
m_{Cs} = core Cesium inventory (gram-moles)
V_{POOL} = Suppression Pool volume (liters)
t = time after start of accident (hrs) (includes t_{gap} + Gap Release [0.5 hrs] + Early In-Vessel Release [1.5 hrs] duration for a t_{max} = 2.0336 hrs) [Ref. 5.6, Table 4, page 1.183-15]
t_{gap} = time of onset of gap release = 121 seconds = 0.0336 hrs [Ref. 5.6]
t_{max} = 2.0336 hrs = end of Early In-Vessel Release

Final Pool pH Calculation (No SBLC Addition)

(Note that the initial Suppression Pool pH is not an important input as it is rapidly changed at the time of the LOCA; consistent with Ref. 5.2 included herein as Attachment G, a lower limit value of 5.3 is used.)

The net Suppression Pool pH can be calculated from the total of the $[H^+]$ and $[OH^-]$ concentrations using the following equations developed in Reference 5.1, Section 3.5.

$$[H^+](t) = [H^+](t=0) + [HI](t) + [HNO_3](t) + [HCl](t)$$
$$[H^+](t) = 10^{-pH}(t=0) + [HI](t) + [HNO_3](t) + [HCl](t) \quad \text{6-9}$$

[See Spreadsheet Col N]

$$[OH^-](t) = [OH^-](t=0) + [CsOH](t)$$

$$[OH^-](t) = 10^{-14}/10^{-pH}(t=0) + [CsOH](t) \quad \text{6-10}$$

[See Spreadsheet Col P]

Accounting for the concentration of neutralized ions [x]:

$$([H^+] - [x]) * ([OH^-] - [x]) = K_W(T)$$

$$[x] = \{ [H^+] + [OH^-] - \{([H^+]+[OH^-])^2 - 4*([H^+]*[OH^-]-K_W)\}^{1/2} \} / 2 \qquad 6\text{-}11$$

[See Spreadsheet Col R]

note: $K_W = 10^{-(-\text{Log } K_W)}$ [See Equation 6-3 and Spreadsheet Col Q]

The equation for the net $[H^+]$ becomes:

$$[H^+]_{net} = [H^+] - [x] \qquad 6\text{-}12$$

[See Spreadsheet Col S]

and

$$pH = -\log_{10}([H^+]_{net}) \qquad 6\text{-}13$$

[See Spreadsheet Col T]

Effect of Sodium Pentaborate (SBLC) Addition

The pH of the Suppression Pool can be increased by the addition of Sodium Pentaborate from the Standby Liquid Control (SBLC) System.

As per Section 4.3 of this calculation, a limiting value (minimum weight) of 1001.1 lbs. of Boron is used. The limiting value is used since it minimizes the number of moles available for buffering.

Addition of Sodium Pentaborate introduces a buffer into the Suppression Pool, which will maintain the pool at a pH corresponding to the following equation: [Ref. 5.1, Sec. 6.1, p. 21].

$$pH = pK_a + \log_{10}\left([anion] / [acid] \right) \qquad 6\text{-}14$$

with data for K_a fitted by the equation

$$K_a = (0.0585 * T + 1.309)E\text{-}10 \qquad 6\text{-}15$$

[See Spreadsheet Col U]

where:
K_a = boric acid dissociation constant
pK_a = negative of the log of the boric acid dissociation constant [See Spreadsheet Col Z]
T = °F
[anion] = borate concentration of $[2B(OH)_4^-]$
[acid] = boric acid concentration of $[8H_3BO_3]$

based on the equation

$$Na_2B_{10}O_{16} + 16H_2O \leftrightarrow 2Na^+ + 2B(OH)_4^- + 8H_3BO_3$$

Therefore,
Borate (g-equivalents) = 2 * $Na_2B_{10}O_{16} \bullet 10\ H_20$ (g-moles)

Boric acid (g-equivalents) = 8 * $Na_2B_{10}O_{16} \bullet 10\ H_20$ (g-moles)

Using the methodology of reference 5.1, the net strong acid equivalents $[H^+]_{net}$ calculated in Equation 6-12 are neutralized by the borate and the above equations become:

$$\text{Borate (g-equivalents)} = 2 * Na_2B_{10}O_{16}\ \text{(g-moles)} - [H^+]_{net} * V_{pool} \qquad 6\text{-}16$$

[See Spreadsheet Col X]

$$\text{Boric acid (g-equivalents)} = 8 * Na_2B_{10}O_{16}\ \text{(g-moles)} + [H^+]_{net} * V_{pool} \qquad 6\text{-}17$$

[See Spreadsheet Col Y]

and equation 6-14 becomes:

$$pH = -\log_{10}K_a + \log_{10} \frac{\left(2 * Na_2B_{10}O_{16}\text{ (g-moles)} - [H^+]_{net} * V_{pool}\right) / V_{pool}}{\left(8 * Na_2B_{10}O_{16}\text{ (g-moles)} + [H^+]_{net} * V_{pool}\right) / V_{pool}} \qquad 6\text{-}18$$

[See Spreadsheet Col AA]

7. Summary of Results and Conclusions

The post accident Suppression Pool pH is calculated as a function of time after accident initiation. The results are shown below in Figures 7-1 and 7-2 for Beginning of Cycle (BOC) and End of Cycle (EOC) conditions respectively. These graphs are based on Excel spreadsheet calculations presented in Attachment C (Sheets C-1 through C-4). The inputs to the pH calculation of radiation doses and the Iodine and Cesium inventories are presented in Attachment B.

The BOC (actually early cycle) condition produces the lowest pH and is therefore the limiting case.

Without addition of sodium pentaborate from the Standby Liquid Control (SBLC) System, the pH in the Suppression Pool for this limiting case could drop below pH 7 after approximately 3.5 hours, reaching a pH of approximately 2.8 at 30 days. Therefore, SBLC addition is required to prevent iodine re-evolution.

With timely SBLC addition, the Suppression Pool for this limiting case remains above pH 7.4 throughout the post-LOCA period out to 30 days (720 hours).

Figure 7-1

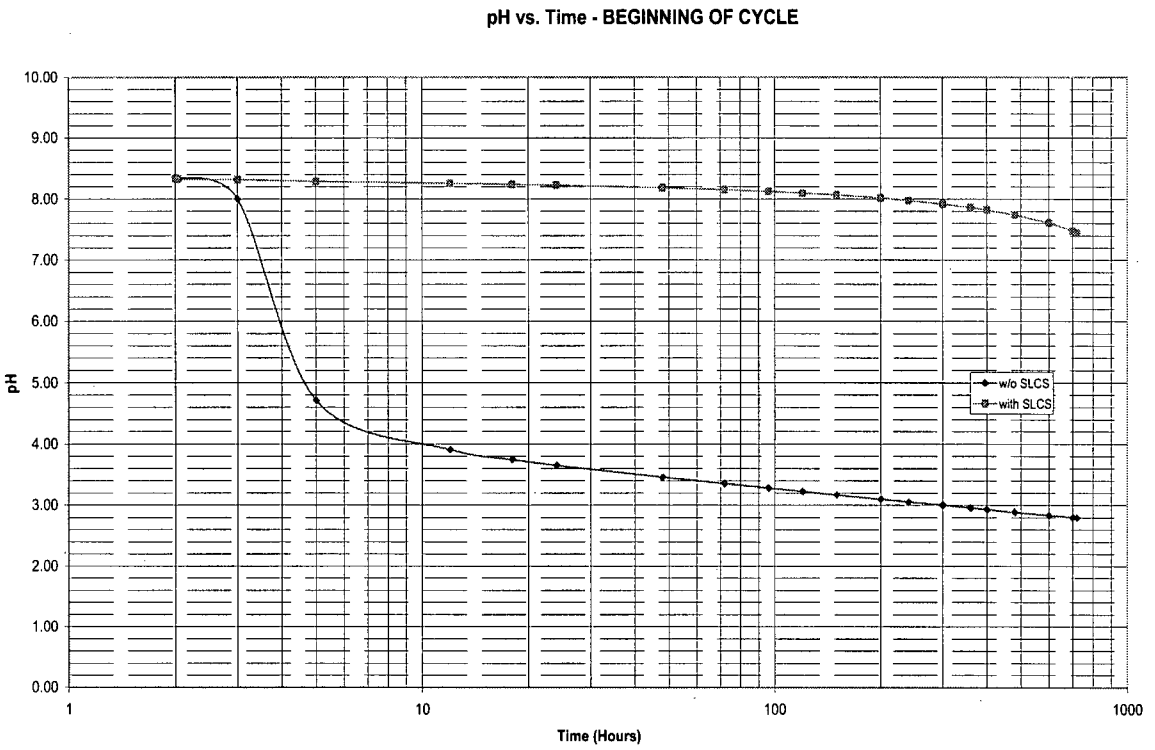
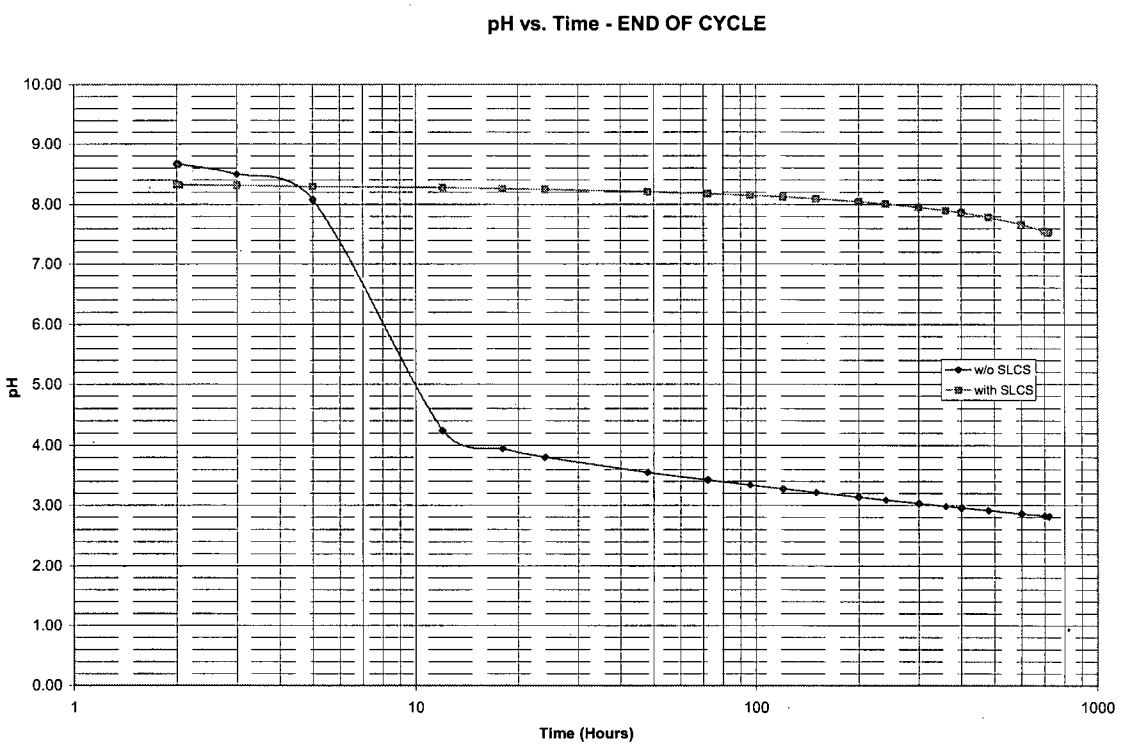

pH vs. Time - BEGINNING OF CYCLE
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
pH
1
10
100
1000
Time (Hours)
w/o SLCS
with SLCS

Figure 7-2



R1

Note:

- 2 hour post accident Suppression Pool pH without addition of sodium pentaborate from the Standby Liquid Control (SBLC) System is 8.67 and 8.32 after addition of sodium pentaborate.
- At End of Cycle the Suppression Pool cesium hydroxide concentration is greater than at the Beginning of Cycle.

"Suppression Pool pH Calculation for Alternative Source Term"
Attachment A
Determination of Total Exposed Cable Quantities Inside Containment
for Assessment of Impact of Radiolytic Chlorine Releases on Suppression Pool pH

1. Purpose

The purpose of this attachment is to provide a conservative basis for the calculation of Hydrochloric Acid addition to the suppression pool from radiolysis of exposed chloride-bearing materials inside the drywell during post-Loss of Coolant Accident (LOCA) conditions. The primary exposed chloride-bearing materials are the DuPont Hypalon (or Hypalon-like chlorosulfonated polyethylene rubbers from other manufacturers, such as Okonite) jackets typically used on containment power and instrument cable. Post-LOCA in-containment radioactivity exposure to these materials can lead to radiolytic breakdown with free chlorine radicals available for carryover as hydrochloric acid to the suppression pool by containment sprays or condensation, with resulting decreases in suppression pool pH. Cables in sealed metal conduits can be excluded from consideration, as there is no mechanism for any significant HCl produced to be released through the conduit (even if connections are assumed to leak, the HCl vapor formed is so chemically reactive that no significant amount would remain unreacted and available for release).

2. Background and Approach

R1 An LSCS estimate of the total drywell exposed cable inventory was developed from current SLICE data for Fire Zones 2J (Unit 1) and 3J (Unit 2) (which comprises each unit's containment). Pages A3 through A5 provide formulas and process calculations, and on page A19 and A38, totals for fire zones 2J and 3J, respectively, were collected from the SLICE database which is used in the calculation. The comparison of the resulting page A4 totals to a detailed cable-by-cable listing from the INDMS database for the similar Limerick Generating Station Units shows good agreement.

In an effort to make a conservative approach the following assumptions were used to calculate the greatest Hypalon content. Of the two fire zones within the SLICE data, 3J was found to be considerably greater than 2J, and was used as the focus for the calculation. The total BTUs were taken from SLICE data and converted into feet using the NES-MS-05.1 BTU per foot data. To assure that the maximum surface area possible was being calculated, the cables were all assumed to be Instrument cables that had a diameter of 3/4 inches. The assumptions yielded the greatest surface area and the most feet per BTU, therefore maximizing the total possible Hypalon content.

Hypalon may be used not only as an external cable jacket material, but also as a filler inside the jacket. Therefore, to conservatively account for such Hypalon use and in accordance with the equivalent assumptions used by Grand Gulf, an equivalent chlorine-containing material thickness of 80% of the cable radius is used in the spreadsheet, considered as 100% Hypalon. Additional conservatism is provided by inclusion of all cable types as if they are all Hypalon or Hypalon-equivalent jacketed.

Finally, an additional 5% of the cable surface area is included (in the Attachment C spreadsheet) to account for free air (not in conduits or trays) cables, and an additional 10% of both of these cable areas is included (in the Attachment C spreadsheet) to assure accounting for any missed or minor future additions to the containment cable inventories.

3. Results

The data were used to develop total cable volumes and the resulting volume-average cable radius [derived as the square root of the quantity (Total Cable Volume divided by pi and the Total Cable Length)]. The Hypalon thickness was then derived as 80% of this average cable radius. The results are provided in the following spreadsheet.

LaSalle Containment Cable Insulation Estimate Per Unit
SLICE Version 7.6 CABLE COMBUSTIBLE LOADING/FIRE ZONE 3J (3)

	Total Cable	Power Cable	Instrument Cable
Btus (1):	45,063,251	0	45,063,251
Btus/ft (2):	907	1,612	907
Length (feet):	49,684	0	49,684
Cable diameter size (inches):		3/4" dia	3/4" dia
Cable Thickness (mills):		140	70

(1) From SLICE Data attached
(2) From NES-MS-05.1
(3) Slice does not

LSCS DRYWELL CABLE ESTIMATES (per unit)
SLICE Version 7.6 CABLE COMBUSTIBLE LOADING/FIRE ZONE 3J

CABLE TYPE	Btus [1]	Btus/ft [2]	CABLE LENGTH (FT)	CABLE O.D. (INCHES)	CABLE O.D. (CM)	CABLE SURFACE AREA (SQ FT)	CABLE SURFACE AREA (SQ CM)	CABLE VOLUME (CU CM)
Power	0	1,612	0.0	0.75	1.91	0.00	0.0	0.0
Instrument	45,063,251	907	49683.8	0.75	1.91	9755.40	9063064.0	4316284.2
SUM - OVERALL	45063251		**49683.849**			**9755.40**	**9063064.0**	**4316284.2**
VOLUME AVERAGED CABLE RADIUS (CM)								**0.95250**
HYPALON AVERAGE THICKNESS AT 80% OF VOLUME AVERAGED CABLE RADIUS (CM)								**0.76200**

R1 Cable Btus based on review of SLICE data for Fire Zones 2J & 3J.
[1] From Calc L-000776, Rev 3C
[2] From NES-MS-05.1

LSCS DRYWELL CABLE ESTIMATES (per unit)
SLICE Version 7.6

CABLE TYPE	Btus [1]	Btus/ft [2]	CABLE LENGTH (FT)	CABLE O.D. (INCHES)	CABLE O.D. (CM)	CABLE SURFACE AREA (SQ FT)	CABLE SURFACE AREA (SQ CM)	CABLE VOLUME (CU CM)	
Power	=B11*0	1612	=B8/C8	0.75	=E8*2.54	=(E8/12)*PI()*D8	=G8*929.0304	=PI()*D8*30.48*(F8/2)^2	R1
Instrument	=B11	907	=B9/C9	0.75	=E9*2.54	=(E9/12)*PI()*D9	=G9*929.0304	=PI()*D9*30.48*(F9/2)^2	
SUM - OVERALL	45063251		=SUM(D8:D10)			=SUM(G8:G10)	=SUM(H8:H10)	=SUM(I8:I10)	
VOLUME AVERAGED CABLE RADIUS								=(I11/(D11*30.48*PI()))^0.5	
HYPALON AVERAGE THICKNESS AT 80% OF VOLUME AVERAGED CABLE RADIUS (CM)								=I13*0.8	

R1 Cable Btus based on review of SLICE data for Fire Zones 2J & 3J.
[1] From Calc L-000776, Rev 3C
[2] From NES-MS-05.1

SLICE DATA:

R1 **Note: SLICE does not specify all cable identifiers.**

2J	BTU
1WR061	36992
1WR062	36992
1WR063	36992
1WR064	36992
1WR065	36992
1WR066	58208
1WR077	116127
1WR079	0
1VP111	82764
1VP112	126324
1VP113	50094
1VP116	50094
1VP117	50094
1VP133	0
1VP134	0
1VP145	14175
1VP146	26622
1VP157	28350
1VP158	53244
1VP172	32844
1VP173	44436
1VP176	53550
1VP177	72450
1VP182	32844
1VP183	44436
1VP186	53550
1VP187	72450
1VP222	6062
1VP223	6928
1VP253	57222
1VP254	77418
1VP264	57222
1VP265	77418
1VP281	176498
1VP283	176498
1VP285	32418
1VP287	32418
1VP289	32418
1VP291	32418
1VP293	165692
1VP295	165692
1VP297	165692
1VP299	165692
1VP301	165692
1VP303	165692

1VP350	169884
1VP351	169884
1VP352	54450
1VP353	54450
1WR051	0
1WR053	0
1WR057	108675
1WR059	100878
1WR060	36992
1RR416	42075
1RT017	35496
1RT023	18900
1RT025	11592
1RT051	24150
1RT053	39375
1RT056	26082
1RT058	42525
1RT073	21252
1RT075	39375
1RT078	24150
1RT080	39375
1RT114	29376
1RT203	77418
1RT210	42075
1RT212	45441
1RT215	42075
1RT217	42075
1RT243	104458
1SC017	102396
1VP024	683820
1VP025	79779
1VP073	53244
1VP074	41022
1VP089	82764
1VP090	169884
1VP091	111078
1VP092	169884
1VP093	169884
1VP094	169884
1VP095	108900
1VP096	126324
1VP097	108900
1VP098	126324
1VP099	50094
1VP100	50094
1VP101	169884
1VP102	126324
1VP103	50094

1VP104	50094
1VP105	126324
1VP106	126324
1VP107	143748
1VP108	126324
1VP109	169884
1VP110	169884
1RR053	0
1RR068	39375
1RR074	16072
1RR077	0
1RR082	171168
1RR083	139074
1RR094	369660
1RR095	26622
1RR097	285480
1RR098	35496
1RR152	250470
1RR158	169884
1RR160	250470
1RR162	169884
1RR165	62560
1RR166	42432
1RR170	18010
1RR173	104458
1RR209	16454
1RR219	13856
1RR225	62560
1RR226	54944
1RR227	54944
1RR232	12124
1RR233	7794
1RR234	12124
1RR235	6062
1RR236	35904
1RR237	35904
1RR238	35904
1RR243	0
1RR244	13856
1RR245	0
1RR246	0
1RR270	171168
1RR271	79200
1RR332	66825
1RR334	41250
1RR362	139074
1RR364	139074
1RR366	64350

1RR368	171168
1RR382	78100
1RR385	55380
1RR390	68160
1RR392	55380
1RF045	25200
1RF062	9386
1RF063	9386
1RF080	48280
1RF100	148104
1RH163	0
1RH165	0
1RH241	0
1RH243	0
1RH296	6062
1RH356	6762
1RH358	11025
1RH451	11258
1RH452	11258
1RH454	29444
1RH455	29444
1RH457	6062
1RH458	6062
1RH460	6062
1RH461	6062
1RH463	38970
1RH464	38970
1RH466	38970
1RH467	38970
1RH594	57222
1RH596	11781
1RH642	24140
1RH644	31950
1RH646	31950
1RI019	0
1RI141	0
1RI143	0
1RI171	239598
1RI212	0
1RI267	112023
1RI271	57510
1RI302	0
1RR015	16443
1RR023	21924
1RR027	13158
1RR029	42398
1RR031	20706
1RR033	35496

1RR047	38454
1RR049	47328
1RR051	57632
1PI174	0
1PI175	16757
1PI176	16757
1PI177	16757
1PI178	16757
1PI179	16757
1PI180	16757
1PI181	16757
1PI182	16757
1PI183	16757
1PI184	16757
1PI185	16757
1PI186	16757
1PI187	16757
1PI188	0
1PI189	0
1PI190	0
1PI191	0
1PI192	0
1PI193	0
1PI194	0
1PI195	16757
1PI196	16757
1PI197	16757
1PI198	16757
1PI199	16757
1PI200	16757
1PI201	16757
1PI202	16757
1PI203	16757
1PI204	16757
1PI205	16757
1PI206	16757
1PI207	16757
1PI208	0
1PI209	0
1PI210	16757
1PI211	16757
1PI212	16757
1PI213	16757
1PI214	16757
1RE064	25200
1RE069	60225
1RE102	13578
1RE103	13578

1RF018	81650
1PI128	0
1PI129	0
1PI130	0
1PI131	0
1PI132	0
1PI133	0
1PI134	0
1PI135	0
1PI136	0
1PI137	0
1PI138	0
1PI139	0
1PI140	0
1PI141	0
1PI142	0
1PI143	0
1PI144	0
1PI145	0
1PI146	16757
1PI147	16757
1PI148	16757
1PI149	16757
1PI150	16757
1PI151	16757
1PI152	16757
1PI153	16757
1PI154	16757
1PI155	16757
1PI156	16757
1PI157	16757
1PI158	16757
1PI159	16757
1PI160	0
1PI161	0
1PI162	0
1PI163	0
1PI164	0
1PI165	0
1PI166	0
1PI167	0
1PI168	0
1PI169	0
1PI170	0
1PI171	0
1PI172	0
1PI173	0
1PI082	18046

1PI083	18046
1PI084	18046
1PI085	18046
1PI086	0
1PI087	0
1PI088	0
1PI089	0
1PI090	0
1PI091	0
1PI092	0
1PI093	0
1PI094	0
1PI095	0
1PI096	0
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1PI099	0
1PI100	0
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1PI102	0
1PI103	0
1PI104	0
1PI105	0
1PI106	0
1PI107	0
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1PI110	18046
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1PI122	0
1PI123	0
1PI124	0
1PI125	0
1PI126	0
1PI127	0
1PI036	18046
1PI037	18046
1PI038	18046

1PI039	0
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1PI041	0
1PI042	0
1PI043	0
1PI044	0
1PI045	0
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1PI047	18046
1PI048	18046
1PI049	18046
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1PI052	18046
1PI053	18046
1PI054	18046
1PI055	18046
1PI056	18046
1PI057	18046
1PI058	18046
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1PI060	0
1PI061	0
1PI062	0
1PI063	0
1PI064	0
1PI065	0
1PI066	0
1PI067	0
1PI068	0
1PI069	0
1PI070	18046
1PI071	18046
1PI072	18046
1PI073	18046
1PI074	18046
1PI075	18046
1PI076	18046
1PI077	18046
1PI078	18046
1PI079	18046
1PI080	18046
1PI081	18046
1NB907	85200
1NB908	37630
1NB909	67450
1NB910	75260
1NB911	67450

1NB912	75260
1NB913	85200
1NB914	37630
1NB915	67450
1NB916	85200
1NB917	67450
1NB918	75260
1NR414	13200
1NR416	34848
1NR418	15675
1NR420	41382
1NR422	0
1NR424	0
1NR426	0
1NR428	0
1NR430	13200
1NR432	34848
1NR434	15675
1NR436	41382
1NR438	14025
1NR440	37026
1NR442	14025
1NR444	37026
1NR446	0
1NR448	0
1NR450	0
1NR452	0
1NR454	0
1NR456	0
1NR458	0
1NR460	0
1NR472	34160
1NR482	0
1NR492	14945
1NR502	14945
1PI030	18046
1PI031	18046
1PI032	18046
1PI033	18046
1PI034	18046
1PI035	18046
1NB650	65898
1NB651	0
1NB652	65898
1NB653	0
1NB654	65898
1NB655	0
1NB675	0

1NB676	102508
1NB677	36610
1NB678	65898
1NB679	65898
1NB680	0
1NB681	0
1NB682	36610
1NB683	36610
1NB684	0
1NB685	168406
1NB686	36610
1NB687	0
1NB688	65898
1NB689	0
1NB724	77418
1NB727	77418
1NB729	77418
1NB731	20196
1NB733	20196
1NB880	85200
1NB882	85200
1NB883	67450
1NB885	67450
1NB886	85200
1NB888	85200
1NB889	85200
1NB891	85200
1NB892	67450
1NB894	67450
1NB895	85200
1NB897	85200
1NB898	67450
1NB900	67450
1NB901	85200
1NB902	82360
1NB903	75260
1NB904	67450
1NB905	85200
1NB906	59640
1NB080	149625
1NB081	189000
1NB082	189000
1NB083	149625
1NB084	149625
1NB086	189000
1NB088	149625
1NB089	189000
1NB090	149625

1NB101	5796
1NB103	96075
1NB105	5796
1NB107	96075
1NB111	11592
1NB113	18900
1NB127	189000
1NB128	149625
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1NB139	16596
1NB141	16596
1NB144	16596
1NB146	16596
1NB149	16596
1NB151	16596
1NB154	16596
1NB176	7728
1NB178	127575
1NB182	28288
1NB183	27200
1NB184	28288
1NB185	27200
1NB186	28288
1NB187	27200
1NB188	28288
1NB189	28288
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1NB191	27200
1NB192	28288
1NB193	27200
1NB194	28288
1NB195	27200
1NB196	28288
1NB197	27200
1NB198	28288
1NB199	27200
1NB599	29376
1LD178	6062
1LD180	21650
1LD182	23382
1LD184	39836
1LD188	70146
1LD190	23382
1LD192	39836
1LD196	10392
1LD198	60620
1LD200	103920
1LD202	84002

1LD204	11258
1LD206	6062
1LD208	48496
1LD210	48496
1LD212	21650
1LD218	21650
1LD222	48496
1LM010	36243
1LM013	36243
1LM019	36243
1LM022	0
1LM025	36243
1LM028	2322
1LM031	209404
1LM034	241620
1LM037	209404
1LM040	36243
1LM043	36243
1LP051	48496
1LP052	48496
1LP079	94248
1LP085	39760
1MV063	91607
1MV064	70746
1MV129	262856
1MV130	262856
1MV131	262856
1MV135	63900
1NB022	273480
1NB024	216505
1NB026	273480
1NB028	273480
1NB030	216505
1NB032	216505
1NB034	273480
1EW257	70395
1EW258	70395
1FC132	96126
1FP271	12124
1FP273	6062
1FP275	91796
1FP277	75342
1FP279	6062
1FP282	19362
1FP285	9681
1FP287	120321
1HC089	61234
1HC091	21612

1HP259	123087
1LD093	24480
1LD094	41888
1LD096	32640
1LD098	28288
1LD100	52224
1LD102	62560
1LD104	41888
1LD106	41888
1LD108	36992
1LD109	32640
1LD110	52224
1LD112	36992
1LD114	36992
1LD116	36992
1LD118	41888
1LD120	36992
1LD122	36992
1LD124	36992
1LD126	36992
1LD128	36992
1LD130	62560
1LD132	36992
1LD134	52224
1LD136	29376
1LD142	52224
1LD144	29376
1LD154	28288
1LD160	0
1LD170	10392
1LD172	10392
1LD174	10392
1LD176	10392
1CT027	66000
1CT028	66000
1CT029	75900
1CT030	75900
1CT031	75900
1CT032	56100
1CT033	56100
1CT034	56100
1CT035	56100
1CT036	75900
1CT037	41250
1CT038	83325
1CT039	41250
1CT040	27690
1CT041	35500

1CT042	48990
1CT043	90880
1CT044	56800
1CT045	65320
1CT046	56800
1CT047	48280
1CT048	35500
1CT049	35500
1CT050	32175
1CT051	41250
1CT052	56925
1CT053	105600
1CT054	66000
1CT055	75900
1CT056	66000
1CT057	56100
1CT058	41250
1CT059	41250
1CT060	56925
1CT062	252540
1CT067	0
1EW175	16055
1EW177	0
1EW183	0
1EW185	16055
1EW188	65455
1EW189	65455
1EW246	0
1EW248	14820
1EW254	0
1EW256	14820
1CM118	2720
1CM250	84363
1CM252	9681
1CM254	92661
1CM256	92661
1CM258	9681
1CM260	92661
1CM262	19362
1CM264	9681
1CM266	19362
1CM268	9681
1CM270	19362
1CM272	9681
1CM274	19362
1CM276	9681
1CM278	77448
1CM280	146598

1CM282	29444
1CM284	92661
1CM286	92661
1CM288	146598
1CM290	146598
1CM292	19362
1CM294	9681
1CM296	9681
1CM301	4896
1CM404	2720
1CM430	4896
1CM431	2720
1CT010	41250
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1CT020	56925
1CT021	56925
1CT022	105600
1CT023	76725
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1CT025	75900
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1CM117	2720
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2RH247	121278
2RH250	165648
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2RH273	36736
2RH296	6928
2RH356	17388
2RH358	53244
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2RH454	46764
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2RH460	15588
2RH461	6062
2RH463	24248
2RH464	24248
2RH466	79672
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2RH594	0
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2RH646	65320
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2RR238	34272
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2RR246	0
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2RR334	51975
2RR362	140857
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2RR366	65175
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2VP222	0
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2VP355	172062
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2WR059	97954
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2WR062	45152
2WR063	45152
2WR064	38624
2WR065	45152
2WR066	50592
2WR077	112761
2WR079	0

Total	45063251

R1 | LSCS pH Calculation
Attachment B

Part 1: Determination of Post-LOCA Drywell and Suppression Pool Integrated γ and β Energy, and Suppression Pool Integrated Doses for Suppression Pool pH Determination

&

Part 2: Core Cesium and Iodine Determination

&

Part 3: Drywell and Suppression Pool Gamma Mean Free Path Determination

1. Part 1 Purpose

The purpose of this analysis is to determine Post-LOCA Drywell/Containment and Suppression Pool Integrated γ and β energies, and Suppression Pool Integrated Doses for Suppression Pool pH Determination. This data is used in Attachment C of this calculation to determine the radiolytic generation of acid input to the suppression pool.

During a DBA-LOCA, analyzed using Alternative Source Terms (AST), radioactivity is released from the reactor, first during a 1/2 hour gap release period, and then during an early in-vessel release period. Activity is then removed from containment by decay only for conservatism and simplicity.

2. Approach

This attachment calculates the total integrated γ and β energy released into drywell/containment at specific points in time, and total γ plus β Dose in the Suppression Pool water. For conservatism in this calculation, all activity is instantly distributed into the drywell and containment airspaces. The data is then used by the spreadsheets in Attachment C to calculate the change in the pH of the pool water as a function of time.

Initial activity in the core is taken from the Calculation L-003128, Rev. 0, "LaSalle Source Terms for Use in Alternative Source Terms" [Ref. 5.14], with the not included isotopes Co-58 and Co-60 from RADTRAD [Ref. 5.16] default values. Release fractions and timing are per RG 1.183[Ref. 5.6], Table 1. For simplicity, and because of its negligible effect, no credit is taken for the 121-second minimum anticipated time before the start of gap activity. No credit is taken for natural deposition or suppression pool scrubbing. This maintains aerosols airborne to conservatively simulate theoretical plateout contributions. In general, significant amounts of plated-out material are likely to be washed into the suppression pool by condensed vapor flow or containment spray. Simultaneously, all non-noble gas releases are assumed to be instantly transported to, and uniformly mixed in, the suppression pool water.

The calculation of the dose in the pool water, and the integrated energies from radiation in drywell/containment, parallel each other, up to the point of determining the total integrated γ and β energy released into containment at the specific time-steps used by Entergy in their GGNS
R1 | Suppression Pool pH Analysis Calculation (No. XC-Q1111-98013, Rev. 2); the basis for this part of the LaSalle Generating Station (LSCS) AST analysis. First, for each isotope the following list of parameters must be calculated or acquired:

Parameter	Origin
Decay Constant	RADTRAD Standard Library Values

Release Fractions from 0 to 0.5 hours and 0.5 to 2 hours	Reg. Guide 1.183, Table 1
Initial Core Activity	Calc L-003128
Activity in Drywell/Containment due to Gap Release at 0.5 hours	Calculated Herein, see below
Time Integrated Activity through 0.5 hours of Gap Release	Calculated Herein, see below
Activity in Drywell/Containment due to Early In-vessel Release at 2 hours	Calculated Herein, see below
Time Integrated Activity through 2 hours of Early In-vessel Release	Calculated Herein, see below
Total Time Integrated Activity Released through 2 hours	Calculated Herein, see below
Total Activity in Drywell/Containment at 2 hours	Calculated Herein, see below
Gamma (Photon) Emission Energy	Radioactive Decay Data Tables, by David C. Kocher [Ref. 5.11] as compiled in RadDecay (see next paragraph below)
Beta Particle Emission Energy	Radioactive Decay Data Tables, by David C. Kocher [Ref. 5.11] as compiled in RadDecay(see next paragraph below)

As noted in the last 2 rows above, the gamma (photon) emission energy and beta particle emission energy are found for each isotopic nuclide using the RadDecay database. The isotopic nuclide of interest is selected in RadDecay and a list is selected (number of photons for photon emission or number of betas for beta emission). The list displays energy in MeV and the probability of decay. The list is copied into a Microsoft Excel spreadsheet where the energy and probability are multiplied (the average energy is used for the beta list). This is then summed and the total emission energy is found (in MeV/decay). The Excel spreadsheet providing the lists and probability fractions by isotope from RadDecay, and the resulting products and summations, is included as pages B6 through B28.

Calculated Values

In order to evaluate the activity in containment, and subsequently the concentration of activity, it was necessary to develop functions that took into account the LSCS conditions, while providing the necessary inputs for the analysis model of GGNS.

- Activity in Drywell/Containment up through 0.5 Hours (Due to Gap Release)

$$\alpha_G(t) = f_{0-t} \times \frac{t}{0.5}\alpha_o e^{-\lambda t}$$

$$\alpha_G(.5) = f_{0-.5} \times \frac{0.5}{0.5}\alpha_o e^{-\lambda 0.5} = f_{0-0.5} \times \alpha_o e^{-\lambda 0.5}$$

$f_{0\text{-}0.5}$= activity release fraction at 30 minutes, variable depending on isotope

α_o= initial core activity, variable depending on isotope (Ci)
e= constant
λ= decay constant, variable depending on isotope (hours^{-1})
t= time (hours)
($^{1}/_{0.5}$)= release fraction buildup over 0.5 hours related linearly (as done in RADTRAD)

- Activity in Drywell/Containment up through 2 Hours (Due to Early In-vessel Release)

$$\alpha_E(2) = f_{.5-2} \times \frac{2-0.5}{1.5} \times \alpha_o e^{-\lambda 0.5} \times e^{-\lambda 1.5} = f_{.5-2} \times \alpha_o e^{-\lambda 2}$$

$$\alpha_E(2) = f_{.5-t} \times \frac{t}{1.5} \times \alpha_o e^{-\lambda t}$$

$f_{0.5-2}$= activity release fraction at 2 hours, variable depending on isotope
α_o= initial core activity, variable depending on isotope (Ci)
e= constant
λ= decay constant, variable depending on isotope (hours^{-1})
t= time (hours)
($^{1}/_{1.5}$)= release fraction buildup over 1.5 hours related linearly (as done in RADTRAD)

- Time Integrated Activity through 0.5 Hours (from Gap Release)

$$\alpha_G(t) = \alpha_o \times f_{0-0.5} \times \left(\frac{t}{0.5}\right) \times e^{-\lambda 0.5}$$

$$\mathrm{A}_{G0-0.5} = \int_0^{0.5} \alpha_G(t)dt = \frac{\alpha_o \times f_{0-0.5}}{0.5} \int_0^{0.5} te^{-\lambda t} dt$$

$$\mathrm{A}_{G0-0.5} = \frac{\alpha_o \times f_{0-.5}}{0.5\lambda^2}\left[1 - e^{-0.5\lambda}(0.5\lambda + 1)\right]$$

$f_{0-0.5}$= activity release fraction at 2 hours, variable depending on isotope
($^{1}/_{0.5}$)= release fraction buildup over 0.5 hours related linearly (as done in RADTRAD)
α_o= initial core activity, variable depending on isotope (Ci)
e= constant
λ= decay constant, variable depending on isotope (hours^{-1})
t= time (hours)
$\alpha_G(t)$= activity in containment as a function of time, due to gap release (Ci)
$\mathrm{A}_{G0-0.5}$= time integrated activity though 0.5 hours due to gap release (Ci-hours)

- Time Integrated Activity through 2 Hours (from Early In-vessel Release)

$$\alpha_E(t) = \alpha_o e^{-\lambda 0.5} \times f_{0.5-2} \times \left(\frac{t}{1.5}\right) \times e^{-\lambda 1.5}$$ [Note: Here, t starts after 0.5 hour]

$$\mathrm{A}_{E0-1.5} = \int_0^{1.5} \alpha_E(t)dt = \frac{\alpha_o e^{-0.5\lambda} \times f_{0.5-2}}{1.5} \int_0^{1.5} te^{-\lambda t} dt$$

$$\mathrm{A}_{E0-1.5} = \frac{\alpha_o e^{-0.5\lambda} \times f_{0.5-2}}{1.5\lambda^2}\left[1 - e^{-1.5\lambda}(1.5\lambda + 1)\right]$$

$f_{0\text{-}0.5}$= activity release fraction at 2 hours, variable depending on isotope
$(^{1}/_{1.5})$= release fraction buildup over 1.5 hours related linearly (as done in RADTRAD)
α_o= initial core activity, variable depending on isotope (Ci)
e= constant
λ= decay constant, variable depending on isotope (hours^{-1})
t= time (hours)
$\alpha_E(t)$= activity in containment as a function of time, due to early in-vessel release (Ci)
$A_{E0\text{-}1.5}$= time integrated activity from 0.5 to 2 hours due to early in-vessel release (Ci-hours), after shutdown

- <u>Total Time Integrated Activity Released in Drywell/Containment through 2 Hours</u>

$$A_{2_{total}} = A_{G0-0.5} + A_{E0-1.5}$$

$A_{G0\text{-}0.5}$= time integrated activity though 0.5 hours due to gap release (Ci-hours)
$A_{E0\text{-}1.5}$= time integrated activity from 0.5 to 2 hours due to early in-vessel release (Ci-hours), after shutdown

- <u>Total Activity in Drywell/Containment at 2 Hours</u>

$$\alpha(2)_{total} = \alpha(2) + \alpha(0.5) \times e^{-1.5\lambda}$$

$\alpha(0.5)$= activity present in containment at 0.5 hours
e= constant
λ= decay constant, variable depending on isotope (hours^{-1})
t= time (hours)

When the above values are obtained for each isotope, the Activity in Containment can be calculated at given times, and subsequently the energy from the activity can be calculated in the following manner:

- <u>Total Time Integrated Activity in Drywell/Containment at Specific Times (t hours)</u>

$$\alpha_{time} = \left(\frac{\alpha(2)_{total}}{\lambda}\right) \times (1 - e^{-\lambda(t-2)}) + A_{2_{total}}$$

$\alpha(2)_{total}$= total activity in containment at 2 hours (Ci)
α_{2total}= total time integrated activity released through 2 hours (Ci-hours)
λ= decay constant, variable depending on isotope (hours^{-1})
t= time (hours)

At this point, the above equation is used to calculate the activity at the given timesteps, due to γ and β radiation and the values are summed for all contributing sources, as used in the GGNS analysis model. Finally, the activity's radiation energy concentration is calculated by dividing

over the airspace volume of containment. Subsequently, this data is input into the spreadsheet of Attachment C to calculate the concentration of HCl that results in the pool (due to the release of chlorine from the radiolysis of cables in primary containment), and its contribution to the pH transient.

Of additional concern is the formation of Nitric Acid (HNO_3), which contributes to the transient calculated in Attachment C, by serving to lower the pH in the pool. Any activity from sources found immediately in the pool water is a factor in this acid's formation; therefore a dose to the water must also be calculated. Because the noble gas sources stay gaseous and do not mix with the pool water, we need only to consider non-noble gas sources in this calculation. As stated earlier, up to the point of determining the total integrated γ and β energy released into containment at the specific time-steps, the calculation of the dose in the pool water, and the integrated energies from radiation in containment parallel each other.

As before, the activities at given timesteps are summed for all contributing sources and the radiation energy concentration is calculated. However, the Entergy designed spreadsheet used in Attachment C uses a dose value for its calculation directly to HNO_3 concentration, so it was necessary to convert the energy concentration (MeV/cm^3) to dose (Mrad). The conversion factor was determined to equal 1.60209E-14 ($Mrad/(MeV/cm^3)$). When all concentrations were converted to doses, the γ and β values were summed and input into Attachment C to calculate the concentration of HNO_3 formed, and its contribution to the pH transient.

Part 2: Core Cesium and Iodine Determination

Cesium and Iodine released from the core during the DBA-LOCA have an impact on suppression pool pH. Iodines can contribute to the formation of hydriodic acid, HI, and cesiums contribute to formation of Cesium Hydroxide, CsOH. There is significantly more Cesium available and released from the core than Iodine. Therefore, these materials lead the suppression pool to be basic essentially from the beginning of fission product release. The conservative determination of the quantities of Cesium and Iodine utilized is provided on page B-55, with the formulas provided on page B-56.

Part 3: Drywell and Suppression Pool Gamma Mean Free Path Determination

Gamma mean free paths in the drywell and suppression pool are used to conservatively assess the size of the contained cloud that will irradiate cable. These mean free paths are used as input values for the Attachment C Transient Pool pH Calculation spreadsheets, cell H-7 and H-8. The values are obtained from LSCS General Arrangement Floor Plan Drawing No. M-7 (Ref. 5.12). To conservatively account for uncertainty, the maximum distance from the reactor vessel center to the inside of the containment wall was used for both the Drywell and suppression pool gamma mean free path. This value was scaled off of the M-7 drawing as approximately 1145.4 cm.

Gamma (Photon) Emission Energy [MeV/decay]

Photon Emission Products: Kr-85

Energy(MeV)	Fraction	
0.51399	0.00434	0.002230717
		0.002230717 MeV/decay

Photon Emission Products: Kr-85m

Energy(MeV)	Fraction	
0.00159	0.001003	1.59477E-06
0.012598	0.011162	0.000140619
0.012649	0.021631	0.000273611
0.0141	0.005509	7.76769E-05
0.30487	0.13989	0.042648264
0.00169	0.000586	9.9034E-07
0.013336	0.006116	8.1563E-05
0.013395	0.01183	0.000158463
0.015	0.003105	0.000046575
0.12985	0.003011	0.000390978
0.15118	0.75278	0.11380528
0.58128	0.000211	0.00012265
		0.157748265 MeV/decay

Photon Emission Products: Kr-87

Energy(MeV)	Fraction	
0.00169	0.000029	4.901E-08
0.013336	0.000339	4.5209E-06
0.013395	0.000655	8.77373E-06
0.015	0.000172	0.00000258
0.40258	0.495	0.1992771
0.67387	0.019058	0.012842614
0.81425	0.001683	0.001370383
0.83637	0.007524	0.006292848
0.84543	0.072765	0.061517714
0.94664	0.001386	0.001312043
1.1754	0.011237	0.01320797
1.338	0.006484	0.008675592
1.3825	0.002871	0.003969158
1.3899	0.001238	0.001720696
1.5312	0.003564	0.005457197
1.578	0.001287	0.002030886
1.6112	0.001039	0.001674037
1.7405	0.020493	0.035668067
1.8426	0.001386	0.002553844
2.0119	0.028957	0.058258588
2.4085	0.002129	0.005127697
2.5548	0.09306	0.237749688
2.5581	0.039105	0.100034501
2.8114	0.003168	0.008906515
3.3085	0.004505	0.014904793
1.6201	0.006499	0.01052903
		0.793096882 MeV/decay

Photon Emission Products: Kr-88

Energy(MeV)	Fraction	
0.00169	0.002274	3.84306E-06
0.013336	0.023716	0.000316277
0.013395	0.045873	0.000614469
0.015	0.012039	0.000180585
0.027513	0.020622	0.000567373
0.12227	0.001972	0.000241116
0.16598	0.031036	0.005151355
0.19632	0.25985	0.051013752
0.24071	0.002526	0.000608033
0.31169	0.001073	0.000334443
0.33471	0.001453	0.000486334
0.36223	0.02249	0.008146553
0.39054	0.006436	0.002513515
0.4217	0.00128	0.000539776
0.4718	0.007266	0.003428099
0.67734	0.002353	0.001593781
0.78828	0.005328	0.004199956
0.79032	0.001246	0.000984739
0.83483	0.12975	0.108319193
0.85034	0.00173	0.001471088
0.86233	0.006712	0.005787959
0.94492	0.002941	0.00277901
0.98578	0.013148	0.012961035
0.99009	0.001419	0.001404938
1.0396	0.004844	0.005035822
1.0495	0.001419	0.001489241
1.1413	0.012837	0.014650868
1.1795	0.009965	0.011753718
1.185	0.006885	0.008158725
1.2098	0.001419	0.001716706
1.2127	0.001384	0.001678377
1.2452	0.003633	0.004523812

1.2507	0.01121	0.014020347
1.325	0.001592	0.0021094
1.3523	0.001592	0.002152862
1.3695	0.014774	0.020232993
1.4069	0.00218	0.003067042
1.4648	0.001142	0.001672802
1.5184	0.021521	0.032677486
1.5298	0.10934	0.167268332
1.6038	0.004567	0.007324555
1.6856	0.006643	0.011197441
1.8928	0.001384	0.002619635
1.9087	0.001003	0.001914426
2.0298	0.045291	0.091931672
2.0354	0.037368	0.076058827
2.1865	0.002872	0.006279628
2.1958	0.13183	0.289472314
2.2318	0.033908	0.075675874
2.3521	0.007301	0.017172682
2.3921	0.346	0.8276666
2.4089	0.001038	0.002500438
2.5484	0.006228	0.015871435
2.771	0.001488	0.004123248
1.0001	0.018892	0.018893889
		1.954558418 MeV/decay

Photon Emission Products: Xe-133

Energy(MeV)	Fraction	
0.00429	0.061419	0.000263488
0.030625	0.13641	0.004177556
0.030973	0.25262	0.007824399
0.035	0.090644	0.00317254
0.079621	0.002165	0.000172379
0.080997	0.36483	0.029550136
0.1777	0.000712	0.000126522
		0.04528702 MeV/decay

Photon Emission Products: Xe-135

Energy(MeV)	Fraction	
0.00429	0.006571	2.81896E-05
0.030625	0.014461	0.000442868
0.030973	0.02678	0.000829457
0.035	0.009609	0.000336315
0.1582	0.002886	0.000456565
0.24979	0.899	0.22456121
0.35839	0.002202	0.000789175
0.40799	0.003578	0.001459788
0.60819	0.028948	0.017605884
0.68433	0.002093	0.001432303
		0.247941755 MeV/decay

Photon Emission Products: I-131

Energy(MeV)	Fraction	
0.00411	0.0055	0.000022605
0.029458	0.013468	0.00039674
0.029779	0.024987	0.000744088
0.0336	0.008883	0.000298469
0.080183	0.026182	0.002099351
0.17721	0.002648	0.000469252
0.2843	0.060521	0.01720612
0.32578	0.002507	0.00081673
0.36448	0.81164	0.295826547
0.50299	0.003605	0.001813279
0.63697	0.072605	0.046247207
0.6427	0.002195	0.001410727
0.72289	0.018025	0.013030092
0.32939	0.002304	0.000758915
		0.381140122 MeV/decay

Photon Emission Products: I-132

Energy(MeV)	Fraction	
0.00411	0.000612	2.51532E-06
0.029458	0.00172	5.06678E-05
0.029779	0.003192	9.50546E-05
0.0336	0.001135	0.000038136
0.1472	0.002369	0.000348717
0.1833	0.001382	0.000253321
0.2548	0.001875	0.00047775
0.2627	0.01441	0.003785507
0.2848	0.007205	0.002051984
0.3165	0.001382	0.000437403
0.3635	0.004935	0.001793873
0.3878	0.002961	0.001148276
0.4168	0.004738	0.001974798
0.4319	0.004836	0.002088668
0.446	0.006021	0.002685366
0.4739	0.001777	0.00084212
0.4785	0.00148	0.00070818

0.4882	0.004145	0.002023589
0.5059	0.050337	0.025465488
0.52265	0.16088	0.084083932
0.5355	0.005231	0.002801201
0.54	0.001086	0.00058644
0.5471	0.012535	0.006857899
0.6	0.001382	0.0008292
0.6208	0.003948	0.002450918
0.6212	0.015792	0.00980999
0.63022	0.13719	0.086459882
0.6506	0.026649	0.017337839
0.659	0.003948	0.002601732
0.66769	0.987	0.65901003
0.6698	0.04935	0.03305463
0.6716	0.052311	0.035132068
0.727	0.031584	0.022961568
0.7272	0.021714	0.015790421
0.7285	0.010857	0.007909325
0.7645	0.003948	0.003018246
0.77261	0.76196	0.588697916
0.7802	0.012338	0.009626108
0.7845	0.004244	0.003329418
0.8098	0.028623	0.023178905
0.8122	0.056259	0.04569356
0.8633	0.005823	0.005026996
0.8768	0.010758	0.009432614
0.9103	0.009179	0.008355644
0.9276	0.004145	0.003844902
0.95455	0.18062	0.172410821
0.9837	0.005626	0.005534296
1.0347	0.004738	0.004902409
1.136	0.02961	0.03363696
1.1434	0.013522	0.015461055
1.1474	0.002764	0.003171414
1.1732	0.010857	0.012737432
1.2727	0.001777	0.002261588
1.2907	0.011351	0.014650736
1.2953	0.01974	0.025569222
1.2976	0.008883	0.011526581
1.3178	0.001184	0.001560275
1.3721	0.024675	0.033856568
1.3986	0.071064	0.09939011
1.4426	0.014213	0.020503674
1.4768	0.001352	0.001996634
1.7575	0.002961	0.005203958
1.9211	0.011844	0.022753508
2.0022	0.010857	0.021737885
2.0868	0.002369	0.004943629
2.1727	0.001974	0.00428891
2.2232	0.001184	0.002632269
2.3905	0.001678	0.004011259
1.0146	0.031946	0.032412412
		2.291306399 MeV/decay

Photon Emission Products: I-133

Energy(MeV)	Fraction	
0.00411	0.000538	2.21118E-06
0.029458	0.001513	4.457E-05
0.029779	0.002807	8.35897E-05
0.0336	0.000998	3.35328E-05
0.2627	0.003565	0.000936526
0.26717	0.001165	0.000311253
0.34543	0.001036	0.000357865
0.36108	0.001122	0.000405132
0.41805	0.001528	0.00063878
0.42291	0.00309	0.001306792
0.51053	0.018127	0.009254377
0.52987	0.8632	0.457383784
0.61797	0.005395	0.003333948
0.68025	0.006448	0.004386252
0.70658	0.014933	0.010551359
0.76838	0.004566	0.003508423
0.82051	0.001537	0.001261124
0.85628	0.012344	0.01056992
0.87533	0.044714	0.039139506
0.90967	0.002123	0.001931229
1.0523	0.005516	0.005804487
1.0601	0.001373	0.001455517
1.2364	0.014933	0.018463161
1.2982	0.023306	0.030255849
1.3504	0.001485	0.002005344
0.53524	0.006072	0.003249977
		0.60667451 MeV/decay

Photon Emission Products: I-134

Energy(MeV)	Fraction	
0.00411	0.001687	6.93357E-06

0.029458	0.004321	0.000127288
0.029779	0.008016	0.000238708
0.0336	0.00285	0.00009576
0.1354	0.037592	0.005089957
0.13903	0.00687	0.000955136
0.15198	0.001059	0.000160947
0.16248	0.002576	0.000418548
0.18847	0.006965	0.001312694
0.217	0.002481	0.000538377
0.23547	0.019845	0.004672902
0.2788	0.001307	0.000364392
0.31981	0.005152	0.001647661
0.35108	0.004961	0.001741708
0.40545	0.073466	0.02978679
0.411	0.006106	0.002509566
0.43335	0.041885	0.018150865
0.45892	0.012976	0.005954946
0.4655	0.003626	0.001687903
0.48888	0.014121	0.006903474
0.5144	0.023375	0.0120241
0.54083	0.078236	0.042312376
0.56552	0.008778	0.004964135
0.57075	0.002099	0.001198004
0.59536	0.11354	0.067597174
0.62179	0.10591	0.065853779
0.62796	0.023662	0.01485879
0.67734	0.084915	0.057516326
0.70665	0.008301	0.005865902
0.73074	0.019082	0.013943981
0.73918	0.007633	0.005642161
0.76668	0.041026	0.031453814
0.81638	0.005248	0.004284362
0.84702	0.9541	0.808141782
0.85729	0.069649	0.059709391
0.864	0.001908	0.001648512
0.88409	0.6526	0.576957134
0.9226	0.001431	0.001320241
0.94786	0.040358	0.038253734
0.9669	0.00353	0.003413157
0.97467	0.046751	0.045566797
1.0403	0.019082	0.019851005
1.0726	0.15266	0.163743116
1.1001	0.00687	0.007557687
1.1032	0.007251	0.007999303
1.1362	0.097318	0.110572712
1.1591	0.00353	0.004091623
1.164	0.001336	0.001555104
1.19	0.00353	0.0042007
1.239	0.002099	0.002600661
1.2695	0.005629	0.007146016
1.3224	0.00105	0.00138852
1.336	0.001431	0.001911816
1.3526	0.004484	0.006065058
1.4143	0.002194	0.003102974
1.4282	0.001717	0.002452219
1.4314	0.001717	0.002457714
1.4552	0.022898	0.03332117
1.47	0.007728	0.01136016
1.5055	0.001145	0.001723798
1.5415	0.005057	0.007795366
1.6138	0.043602	0.070364908
1.6292	0.002576	0.004196819
1.6443	0.004007	0.00658871
1.6552	0.00229	0.003790408
1.7415	0.026715	0.046524173
1.8068	0.057246	0.103432073
1.9259	0.001813	0.003491657
2.0206	0.001717	0.00346937
2.1599	0.002099	0.00453363
2.3124	0.002385	0.005515074
2.4674	0.001527	0.00376772
1.7872	0.013348	0.023855546
		2.625317013 MeV/decay

Photon Emission Products: I-135

Energy(MeV)	Fraction	
0.00411	0.000244	1.00284E-06
0.029458	0.000686	2.02082E-05
0.029779	0.001273	3.79087E-05
0.0336	0.000452	1.51872E-05
0.2205	0.017452	0.003848166
0.22972	0.002317	0.000532261
0.26426	0.00184	0.000486238
0.28845	0.030899	0.008912817
0.29027	0.003033	0.000880389
0.36185	0.00186	0.000673041
0.40303	0.002317	0.000933821

0.41483	0.003004	0.001246149
0.41763	0.03519	0.0146964
0.42993	0.003033	0.001303978
0.43374	0.005522	0.002395112
0.45163	0.003147	0.00142128
0.54656	0.071239	0.038936388
0.57597	0.001288	0.000741849
0.64985	0.004549	0.002956168
0.69013	0.001288	0.000888887
0.70792	0.00658	0.004658114
0.78548	0.001516	0.001190788
0.79771	0.001717	0.001369668
0.8368	0.066661	0.055781925
0.96146	0.001459	0.00140277
0.97196	0.008869	0.008620313
0.97261	0.012016	0.011686882
0.99509	0.001545	0.001537414
1.0388	0.07925	0.0823249
1.1016	0.016022	0.017649835
1.124	0.036049	0.040519076
1.1315	0.22516	0.25476854
1.1599	0.00103	0.001194697
1.169	0.008726	0.010200694
1.2405	0.009012	0.011179386
1.2604	0.2861	0.36060044
1.3679	0.006065	0.008296314
1.4484	0.003147	0.004558115
1.4576	0.086402	0.125939555
1.5028	0.010729	0.016123541
1.5664	0.012875	0.0201674
1.678	0.095271	0.159864738
1.7065	0.040912	0.069816328
1.7912	0.076961	0.137852543
1.8307	0.005779	0.010579615
1.9273	0.002947	0.005679753
2.0459	0.008697	0.017793192
2.2555	0.006122	0.013808171
2.4087	0.009527	0.022947685
1.0734	0.014948	0.016045183
		1.575084826 MeV/decay

Photon Emission Products: Rb-86

Energy(MeV)	Fraction	
1.0766	0.087795	0.094520097
		0.094520097 MeV/decay

Photon Emission Products: Cs-134

Energy(MeV)	Fraction	
0.00447	0.000894	3.99618E-06
0.031817	0.002144	6.82156E-05
0.032194	0.003955	0.000127327
0.0364	0.001439	5.23796E-05
0.47535	0.0146	0.00694011
0.56323	0.0838	0.047198674
0.56932	0.1543	0.087846076
0.6047	0.976	0.5901872
0.79584	0.854	0.67964736
0.80193	0.0873	0.070008489
1.0386	0.01	0.010386
1.1679	0.018	0.0210222
1.3652	0.0304	0.04150208
0.27688	0.000354	9.80155E-05
		1.555088123 MeV/decay

Photon Emission Products: Cs-136

Energy(MeV)	Fraction	
0.00447	0.02818	0.000125965
0.031817	0.049454	0.001573478
0.032194	0.091244	0.002937509
0.0364	0.033205	0.001208662
0.06691	0.12463	0.008338993
0.08629	0.062811	0.005419961
0.10966	0.004088	0.00044829
0.15322	0.074576	0.011426535
0.16389	0.046061	0.007548937
0.16653	0.006281	0.001045975
0.17655	0.13559	0.023938415
0.18725	0.005982	0.00112013
0.27365	0.12662	0.034649563
0.31987	0.005982	0.001913462
0.34057	0.48454	0.165019788
0.50721	0.009771	0.004955949
0.8185	0.997	0.8160445
1.0481	0.79561	0.833878841
1.2353	0.19741	0.243860573
0.78724	0.0033	0.002597892
		2.168053417 MeV/decay

Photon Emission Products: Cs-137 **0 MeV/decay**

Photon Emission Products: Sb-127

Energy(MeV)		Fraction	
	0.00377	0.003878	1.46201E-05
	0.027202	0.010551	0.000287008
	0.027472	0.019684	0.000540759
	0.031	0.006833	0.000211823
	0.0611	0.014209	0.00086817
	0.1543	0.001142	0.000176211
	0.2524	0.083895	0.021175098
	0.2804	0.005355	0.001501542
	0.2908	0.018207	0.005294596
	0.2933	0.002856	0.000837665
	0.31	0.002035	0.00063085
	0.3918	0.009282	0.003636688
	0.405	0.001142	0.00046251
	0.4116	0.034272	0.014106355
	0.4407	0.002499	0.001101309
	0.4449	0.042126	0.018741857
	0.451	0.001785	0.000805035
	0.456	0.001071	0.000488376
	0.473	0.25026	0.11837298
	0.5028	0.006069	0.003051493
	0.543	0.026418	0.014344974
	0.5842	0.003213	0.001877035
	0.6036	0.042483	0.025642739
	0.6378	0.00357	0.002276946
	0.6535	0.002499	0.001633097
	0.6669	0.005355	0.00357125
	0.6823	0.005355	0.003653717
	0.6852	0.357	0.2446164
	0.6985	0.033915	0.023689628
	0.7222	0.017493	0.012633445
	0.7459	0.001071	0.000798859
	0.7838	0.14673	0.115006974
	0.8173	0.002678	0.002188729
	0.8201	0.001142	0.000936554
	0.9235	0.004605	0.004252718
	1.1412	0.00357	0.004074084
	1.2903	0.003463	0.004468309
	0.73674	0.005319	0.00391872
			0.66188912 MeV/decay

Photon Emission Products: Sb-129

Energy(MeV)		Fraction	
	0.00377	0.000309	1.16493E-06
	0.027202	0.00094	2.55699E-05
	0.027472	0.001754	4.81859E-05
	0.031	0.000609	0.000018879
	0.0961	0.001828	0.000175671
	0.1162	0.001828	0.000212414
	0.1466	0.002285	0.000334981
	0.1808	0.026963	0.00487491
	0.2447	0.005484	0.001341935
	0.2686	0.002742	0.000736501
	0.2955	0.010968	0.003241044
	0.3135	0.00914	0.00286539
	0.3325	0.002285	0.000759763
	0.3594	0.030162	0.010840223
	0.363	0.00457	0.00165891
	0.405	0.014624	0.00592272
	0.4535	0.008226	0.003730491
	0.4996	0.002285	0.001141586
	0.5238	0.016909	0.008856934
	0.5447	0.19057	0.103803479
	0.6337	0.029248	0.018534458
	0.6543	0.03199	0.020931057
	0.6698	0.008683	0.005815873
	0.6836	0.007312	0.004998483
	0.6836	0.054383	0.037176219
	0.7371	0.004113	0.003031692
	0.761	0.040216	0.030604376
	0.7734	0.029248	0.022620403
	0.7866	0.020108	0.015816953
	0.8128	0.457	0.3714496
	0.8762	0.02742	0.024025404
	0.9146	0.21296	0.194773216
	0.9397	0.007769	0.007300529
	0.9664	0.081803	0.079054419
	0.9954	0.001371	0.001364693
	1.0301	0.1339	0.13793039
	1.0838	0.005484	0.005943559
	1.1043	0.002285	0.002523326
	1.1254	0.001143	0.001286332
	1.1392	0.001828	0.002082458

1.1618	0.001143	0.001327937
1.1678	0.002742	0.003202108
1.2085	0.009597	0.011597975
1.2233	0.001828	0.002236192
1.2374	0.002742	0.003392951
1.257	0.003656	0.004595592
1.2613	0.007769	0.00979904
1.273	0.002742	0.003490566
1.2808	0.005941	0.007609233
1.3	0.002742	0.0035646
1.3172	0.003656	0.004815683
1.3259	0.005484	0.007271236
1.4186	0.005484	0.007779602
1.4361	0.003199	0.004594084
1.4797	0.005027	0.007438452
1.5259	0.00457	0.006973363
1.54	0.001371	0.00211134
1.5687	0.007312	0.011470334
1.5985	0.005484	0.008766174
1.6211	0.002742	0.004445056
1.6546	0.010511	0.017391501
1.7241	0.002742	0.004727482
1.7365	0.063523	0.11030769
1.8418	0.002285	0.004208513
1.8699	0.003199	0.00598181
2.0696	0.005941	0.012295494
2.113	0.003656	0.007725128
1.3107	0.009826	0.012878938
		1.429852265 MeV/decay

Photon Emission Products: Te-127

Energy(MeV)	Fraction	
0.3603	0.001344	0.000484243
0.4179	0.00988	0.004128852
0.17269	0.001302	0.000224842
		0.004837938 MeV/decay

Photon Emission Products: Te-127m

Energy(MeV)	Fraction	
0.00377	0.073215	0.000276021
0.027202	0.10415	0.002833088
0.027472	0.19432	0.005338359
0.031	0.067455	0.002091105
0.08826	0.000867	7.65214E-05
0.00394	0.001214	4.78316E-06
0.028317	0.003047	8.62819E-05
0.028612	0.005674	0.000162344
0.0323	0.001988	6.42124E-05
0.0576	0.003783	0.000217901
0.64861	0.000113	7.32929E-05
		0.01122391 MeV/decay

Photon Emission Products: Te-129

Energy(MeV)	Fraction	
0.00394	0.06163	0.000242822
0.02777	0.16259	0.004515124
0.20896	0.001661	0.000347083
0.25062	0.003529	0.000884438
0.27843	0.005226	0.001455075
0.28126	0.001519	0.000427234
0.4596	0.071	0.0326316
0.48739	0.013064	0.006367263
0.8021	0.001768	0.001418113
1.0839	0.004544	0.004925242
1.1116	0.001761	0.001957528
0.65688	0.003779	0.00248235
		0.057653871 MeV/decay

Photon Emission Products: Te-129m

Energy(MeV)	Fraction	
0.00377	0.047537	0.000179214
0.027202	0.078797	0.002143436
0.027472	0.14701	0.004038659
0.031	0.051032	0.001581992
0.1055	0.001472	0.000155296
0.00394	0.000111	4.3734E-07
0.55665	0.00129	0.000718079
0.69588	0.032716	0.02276641
0.72957	0.007629	0.00556589
0.74252	0.003084	0.002289932
		0.039439344 MeV/decay

Photon Emission Products: Te-131m

Energy(MeV)	Fraction	
0.00377	0.016695	6.29402E-05
0.027202	0.035883	0.000976089
0.027472	0.066946	0.001839141

0.031	0.023239	0.000720409
0.18225	0.008547	0.001557691
0.00394	0.011091	4.36985E-05
0.028317	0.02832	0.000801937
0.028612	0.052738	0.00150894
0.0323	0.018481	0.000596936
0.07919	0.001279	0.000101284
0.08114	0.040682	0.003300937
0.08643	0.001472	0.000127225
0.1016	0.001705	0.000173228
0.10206	0.079426	0.008106218
0.13486	0.00709	0.000956157
0.14972	0.050755	0.007599039
0.15966	0.001279	0.000204205
0.18225	0.007361	0.001341542
0.18311	0.00155	0.000283821
0.18813	0.002131	0.000400905
0.18976	0.005037	0.000955821
0.19052	0.001162	0.000221384
0.20063	0.075552	0.015157998
0.21398	0.004262	0.000911983
0.23065	0.001937	0.000446769
0.24093	0.075939	0.018295983
0.25317	0.006509	0.001647884
0.25544	0.0031	0.000791864
0.2692	0.001085	0.000292082
0.27856	0.017822	0.004964496
0.2832	0.003874	0.001097117
0.30947	0.003758	0.001162988
0.33427	0.095699	0.031989305
0.33544	0.001356	0.000454857
0.34292	0.003874	0.001328472
0.3513	0.002092	0.00073492
0.3547	0.002286	0.000810844
0.36498	0.012011	0.004383775
0.3839	0.002015	0.000773559
0.4174	0.00279	0.001164546
0.4324	0.006625	0.00286465
0.45232	0.015498	0.007010055
0.46292	0.01821	0.008429773
0.46816	0.003138	0.001469086
0.49266	0.002325	0.001145435
0.5248	0.001356	0.000711629
0.5307	0.001046	0.000555112
0.5414	0.001124	0.000608534
0.5863	0.01976	0.011585288
0.60204	0.0031	0.001866324
0.6094	0.001395	0.000850113
0.66505	0.043394	0.02885918
0.6859	0.00155	0.001063145
0.69562	0.003991	0.002776219
0.7025	0.003913	0.002748883
0.7131	0.014335	0.010222289
0.7442	0.015885	0.011821617
0.77367	0.38202	0.295557413
0.7741	0.005424	0.004198718
0.78249	0.077876	0.060937191
0.79375	0.1387	0.110093125
0.82278	0.061216	0.0503673
0.8449	0.00155	0.001309595
0.85221	0.003874	0.003301462
0.85221	0.20651	0.175989887
0.85608	0.006199	0.00530684
0.8651	0.001937	0.001675699
0.8723	0.001007	0.000878406
0.91	0.032933	0.02996903
0.92062	0.012011	0.011057567
0.9234	0.001162	0.001072991
0.94127	0.007826	0.007366379
0.9878	0.00155	0.00153109
0.99926	0.001705	0.001703738
1.0354	0.001046	0.001083028
1.0597	0.015498	0.016423231
1.1255	0.1143	0.12864465
1.128	0.009686	0.010925808
1.1489	0.01511	0.017359879
1.1489	0.003836	0.00440718
1.1509	0.006586	0.007579827
1.1655	0.001395	0.001625873
1.2066	0.097636	0.117807598
1.2373	0.006586	0.008148858
1.3152	0.006974	0.009172205
1.3406	0.001007	0.001349984
1.3948	0.001085	0.001513358
1.646	0.012398	0.020407108
1.8877	0.013561	0.0255991
2.0009	0.020147	0.040312132

2.1685	0.003487	0.00756156
2.2707	0.003836	0.008710405
0.63194	0.035532	0.022454092
		1.426278626 MeV/decay

Photon Emission Products: Te-132

Energy(MeV)	Fraction	
0.00394	0.072597	0.000286032
0.028317	0.18306	0.00518371
0.028612	0.3409	0.009753831
0.0323	0.11946	0.003858558
0.04972	0.13112	0.006519286
0.11176	0.01848	0.002065325
0.1163	0.01936	0.002251568
0.22816	0.88	0.2007808
		0.23069911 MeV/decay

Photon Emission Products: Sr-89

Energy(MeV)	Fraction	
0.9091	0.00015	0.000136365
		0.000136365 MeV/decay

Photon Emission Products: Sr-90 **0 MeV/decay**

Photon Emission Products: Sr-91

Energy(MeV)	Fraction	
0.2612	0.004355	0.001137526
0.2727	0.002535	0.000691295
0.2747	0.010043	0.002758812
0.3799	0.00143	0.000543257
0.6201	0.017225	0.010681223
0.6313	0.005395	0.003405864
0.6523	0.028925	0.018867778
0.6529	0.078	0.0509262
0.653	0.00455	0.00297115
0.7498	0.22978	0.172289044
0.7614	0.00559	0.004256226
0.8208	0.00156	0.001280448
0.8797	0.00182	0.001601054
0.9258	0.037375	0.034601775
1.0243	0.325	0.3328975
1.0546	0.002177	0.002295864
1.1408	0.001235	0.001408888
1.2809	0.009068	0.011615201
1.4134	0.009523	0.013459808
1.4738	0.001625	0.002394925
1.6514	0.002827	0.004668508
1.724	0.00156	0.00268944
0.77634	0.011908	0.009244657
		0.686686441 MeV/decay

Photon Emission Products: Sr-92

Energy(MeV)	Fraction	
0.24152	0.0297	0.007173144
0.43056	0.0333	0.014337648
0.4913	0.00261	0.001282293
0.6507	0.00369	0.002401083
0.95332	0.036	0.03431952
1.1423	0.0288	0.03289824
1.3839	0.9	1.24551
0.66462	0.00171	0.0011365
		1.339058428 MeV/decay

Photon Emission Products: Ba-139

Energy(MeV)	Fraction	
0.00465	0.004783	2.2241E-05
0.033034	0.009344	0.00030867
0.033442	0.017208	0.00057547
0.0378	0.006319	0.000238858
0.16585	0.1736	0.02879156
1.4205	0.0028	0.0039774
1.2711	0.001053	0.001338468
		0.035252667 MeV/decay

Photon Emission Products: Ba-140

Energy(MeV)	Fraction	
0.00465	0.14713	0.000684155
0.01385	0.01173	0.000162461
0.02997	0.14025	0.004203293
0.033034	0.00532	0.000175741
0.033442	0.009797	0.000327631
0.0378	0.003598	0.000136004
0.13284	0.002142	0.000284543
0.16264	0.06732	0.010948925
0.30484	0.045058	0.013735481
0.4237	0.032461	0.013753726
0.43755	0.019941	0.008725185
0.46757	0.00153	0.000715382

0.53732	0.255	0.1370166
0.11884	0.000714	8.48518E-05
		0.190953977 MeV/decay

Photon Emission Products: Co-58

Energy(MeV)	Fraction	
0.0007	0.003622	2.5354E-06
0.006391	0.077827	0.000497392
0.006404	0.1535	0.000983014
0.00706	0.030998	0.000218846
0.81076	0.9943	0.806138668
0.86394	0.007358	0.006356871
1.6747	0.005369	0.008991464
0.511	0.2986	0.1525846
		0.97577339 MeV/decay

Photon Emission Products: Co-60

Energy(MeV)	Fraction	
1.1732	1	1.1732
1.3325	1	1.3325
0.69382	0.000163	0.000113093
		2.505813093 MeV/decay

Photon Emission Products: Mo-99

Energy(MeV)	Fraction	
0.00242	0.00205	0.000004961
0.018251	0.009046	0.000165099
0.018367	0.017297	0.000317694
0.0206	0.00519	0.000106914
0.040584	0.008832	0.000358438
0.14051	0.037888	0.005323643
0.18106	0.062336	0.011286556
0.36643	0.013696	0.005018625
0.73958	0.128	0.09466624
0.778	0.0448	0.0348544
0.8229	0.001331	0.00109528
0.68013	0.002584	0.001757456
		0.154955306 MeV/decay

Photon Emission Products: Tc-99m

Energy(MeV)	Fraction	
0.00242	0.004838	1.1708E-05
0.018251	0.021021	0.000383654
0.018367	0.040194	0.000738243
0.0206	0.012059	0.000248415
0.14051	0.8907	0.125152257
0.14263	0.000214	3.05228E-05
		0.126564801 MeV/decay

Photon Emission Products: Ru-103

Energy(MeV)	Fraction	
0.0027	0.000533	1.4391E-06
0.020074	0.002511	5.04058E-05
0.020216	0.004773	9.6491E-05
0.0227	0.001486	3.37322E-05
0.053275	0.003734	0.000198929
0.29498	0.002489	0.000734205
0.4438	0.0032	0.00142016
0.49708	0.889	0.44190412
0.55704	0.008268	0.004605607
0.61033	0.056007	0.034182752
0.48693	0.001249	0.000608176
		0.483836017 MeV/decay

Photon Emission Products: Ru-105

Energy(MeV)	Fraction	
0.0027	0.000351	9.477E-07
0.020074	0.001653	3.31823E-05
0.020216	0.003143	6.35389E-05
0.0227	0.000978	2.22006E-05
0.0859	0.0032	0.00027488
0.1492	0.0167	0.00249164
0.1636	0.0014	0.00022904
0.1836	0.001	0.0001836
0.225	0.0015	0.0003375
0.2629	0.072	0.0189288
0.3165	0.117	0.0370305
0.3261	0.0118	0.00384798
0.3309	0.0079	0.00261411
0.35	0.003	0.00105
0.3502	0.011	0.0038522
0.3934	0.042	0.0165228
0.4075	0.0018	0.0007335
0.4135	0.0248	0.0102548
0.4694	0.175	0.082145
0.47	0.013	0.00611
0.4896	0.0059	0.00288864

0.4992	0.024	0.0119808	
0.5004	0.003	0.0015012	
0.5137	0.0036	0.00184932	
0.5392	0.0013	0.00070096	
0.575	0.0013	0.0007475	
0.5753	0.0107	0.00615571	
0.6323	0.0023	0.00145429	
0.6386	0.0028	0.00178808	
0.6526	0.0035	0.0022841	
0.656	0.002	0.001312	
0.6561	0.024	0.0157464	
0.6764	0.167	0.1129588	
0.7245	0.49	0.355005	
0.8221	0.0019	0.00156199	
0.8459	0.0073	0.00617507	
0.8758	0.034	0.0297772	
0.9077	0.0059	0.00535543	
0.9694	0.0234	0.02268396	
1.0172	0.0034	0.00345848	
1.3211	0.0023	0.00303853	
0.70736	0.01281	0.009061282	
		0.784210961	**MeV/decay**

Photon Emission Products: Ru-106 **0 MeV/decay**

Photon Emission Products: Rh-105

Energy(MeV)		Fraction		
	0.00284	0.000228	6.4752E-07	
	0.02102	0.000992	2.08518E-05	
	0.021177	0.001882	3.98551E-05	
	0.0238	0.000598	1.42324E-05	
	0.2801	0.00167	0.000467767	
	0.3061	0.051264	0.01569191	
	0.3189	0.192	0.0612288	
	0.29492	0.00063	0.0001858	
			0.077649864	**MeV/decay**

Photon Emission Products: Ce-141

Energy(MeV)		Fraction		
	0.00503	0.026505	0.00013332	
	0.03555	0.048821	0.001735587	
	0.036026	0.089416	0.003221301	
	0.0407	0.033592	0.001367194	
	0.14544	0.484	0.07039296	
			0.076850362	**MeV/decay**

Photon Emission Products: Ce-143

Energy(MeV)		Fraction		
	0.00503	0.096319	0.000484485	
	0.03555	0.17684	0.006286662	
	0.036026	0.32388	0.011668101	
	0.0407	0.12167	0.004951969	
	0.057365	0.1176	0.006746124	
	0.169	0.00294	0.00049686	
	0.216	0.002058	0.000444528	
	0.23156	0.02016	0.00466825	
	0.29326	0.42	0.1231692	
	0.338	0.002856	0.000965328	
	0.35059	0.0336	0.011779824	
	0.43302	0.001344	0.000581979	
	0.439	0.001176	0.000516264	
	0.49036	0.01974	0.009679706	
	0.58728	0.002436	0.001430614	
	0.66455	0.0525	0.034888875	
	0.72196	0.05124	0.03699323	
	0.88039	0.00924	0.008134804	
	1.103	0.003654	0.004030362	
	0.61062	0.008925	0.005449784	
			0.273366948	**MeV/decay**

Photon Emission Products: Ce-144

Energy(MeV)		Fraction		
	0.00503	0.015785	7.93986E-05	
	0.03362	0.00283	9.51446E-05	
	0.03555	0.024311	0.000864256	
	0.036026	0.044525	0.001604058	
	0.0407	0.016727	0.000680789	
	0.04093	0.003888	0.000159136	
	0.080106	0.015984	0.001280414	
	0.13354	0.108	0.01442232	
	0.06735	0.001325	8.92388E-05	
			0.019274755	**MeV/decay**

Photon Emission Products: Np-239

Energy(MeV)		Fraction		
	0.0143	0.61788	0.008835684	
	0.049412	0.001001	4.94614E-05	

0.057273	0.001509	8.6425E-05
0.06148	0.009588	0.00058947
0.09955	0.14713	0.014646792
0.10376	0.23654	0.02454339
0.10613	0.22701	0.024092571
0.117	0.11127	0.01301859
0.18172	0.001114	0.000202436
0.20975	0.03243	0.006802193
0.22638	0.003384	0.00076607
0.22818	0.10716	0.024451769
0.25441	0.001001	0.000254664
0.2776	0.141	0.0391416
0.28541	0.007755	0.002213355
0.31588	0.015933	0.005032916
0.3343	0.020304	0.006787627
0.15151	0.003933	0.000595889
		0.172110902 MeV/decay

Photon Emission Products: Pu-238

Energy(MeV)	Fraction	
0.0136	0.11575	0.0015742
0.055303	0.000473	2.61583E-05
		0.001600358 MeV/decay

Photon Emission Products: Pu-239

Energy(MeV)	Fraction	
0.0136	0.044141	0.000600318
0.11291	0.000476	5.37452E-05
		0.000654063 MeV/decay

Photon Emission Products: Pu-240

Energy(MeV)	Fraction	
0.0136	0.11012	0.001497632
0.054327	0.000525	2.85217E-05
		0.001526154 MeV/decay

Photon Emission Products: Pu-241 **0 MeV/decay**

Photon Emission Products: Y-90 **0 MeV/decay**

Photon Emission Products: Y-91

Energy(MeV)	Fraction	
1.2049	0.003	0.0036147
		0.0036147 MeV/decay

Photon Emission Products: Y-92

Energy(MeV)	Fraction	
0.4485	0.023352	0.010473372
0.4926	0.004851	0.002389603
0.5611	0.024047	0.013492772
0.8443	0.01251	0.010562193
0.9126	0.006255	0.005708313
0.93446	0.139	0.12988994
1.1324	0.002433	0.002755129
1.4054	0.047816	0.067200606
1.8473	0.0036	0.00665028
1.6472	0.001519	0.002502097
		0.251624305 MeV/decay

Photon Emission Products: Y-93

Energy(MeV)	Fraction	
0.00204	0.000043	8.772E-08
0.015691	0.000318	4.98974E-06
0.015775	0.000611	9.63853E-06
0.0177	0.000172	3.0444E-06
0.2669	0.068502	0.018283184
0.6802	0.006081	0.004136296
0.9471	0.019502	0.018470344
1.2033	0.001027	0.001235789
1.4254	0.002377	0.003388176
1.4505	0.003355	0.004866428
1.9178	0.01405	0.02694509
2.1846	0.001552	0.003390499
2.1908	0.001713	0.00375284
1.4133	0.003257	0.004603118
		0.089089525 MeV/decay

Photon Emission Products: Zr-95

Energy(MeV)	Fraction	
0.72418	0.43656	0.316148021
0.75671	0.55345	0.41880115
		0.73494917 MeV/decay

Photon Emission Products: Zr-97

Energy(MeV)	Fraction	
0.2022	0.001021	0.000206446
0.21868	0.002321	0.000507556

0.25415	0.012533	0.003185262
0.27227	0.002507	0.000682581
0.33043	0.001114	0.000368099
0.35539	0.022746	0.008083701
0.40039	0.003249	0.001300867
0.50763	0.052919	0.026863272
0.51347	0.005106	0.002621778
0.60252	0.013926	0.008390694
0.69063	0.002507	0.001731409
0.6992	0.001207	0.000843934
0.7038	0.009284	0.006534079
0.7957	0.001207	0.00096041
0.80453	0.006499	0.00522864
0.8298	0.002228	0.001848794
0.8549	0.003342	0.002857076
0.97139	0.002878	0.00279566
1.0213	0.012069	0.01232607
1.1191	0.001114	0.001246677
1.148	0.026459	0.030374932
1.2761	0.009748	0.012439423
1.3627	0.013462	0.018344667
1.7505	0.013462	0.023565231
1.8516	0.003528	0.006532445
0.34409	0.002135	0.000734632
		0.180574337 MeV/decay

Photon Emission Products: Nb-95

Energy(MeV)	Fraction	
0.00229	0.000053	1.2137E-07
0.017374	0.000281	4.88209E-06
0.017479	0.000538	9.4037E-06
0.0196	0.000158	3.0968E-06
0.76579	0.99808	0.764319683
0.38917	0.000289	0.00011247
		0.764449657 MeV/decay

Photon Emission Products: La-140

Energy(MeV)	Fraction	
0.00484	0.002549	1.23372E-05
0.034279	0.004718	0.000161728
0.03472	0.008656	0.000300536
0.0393	0.003223	0.000126664
0.10942	0.00191	0.000208992
0.13112	0.005538	0.000726143
0.17355	0.001241	0.000215376
0.24197	0.004297	0.001039745
0.26655	0.00487	0.001298099
0.32877	0.2053	0.067496481
0.43253	0.029411	0.01272114
0.48703	0.45549	0.221837295
0.75179	0.044021	0.033094548
0.81585	0.23491	0.191651324
0.86782	0.056339	0.048892111
0.91963	0.028838	0.02652029
0.92524	0.070854	0.065556955
0.9509	0.005347	0.005084462
1.5965	0.9549	1.52449785
2.3488	0.008508	0.01998359
2.5217	0.034567	0.087167604
2.5471	0.001041	0.002651531
1.208	0.004163	0.005028904
		2.316273704 MeV/decay

Photon Emission Products: La-141

Energy(MeV)	Fraction	
1.3545	0.0262	0.0354879
1.6933	0.001179	0.001996401
1.6743	0.003107	0.00520205
		0.042686351 MeV/decay

Photon Emission Products: La-142

Energy(MeV)	Fraction	
0.00484	0.000286	1.38424E-06
0.034279	0.000647	2.21785E-05
0.03472	0.001187	4.12126E-05
0.0393	0.000442	1.73706E-05
0.1061	0.001575	0.000167108
0.1741	0.00105	0.000182805
0.3673	0.00105	0.000385665
0.3937	0.00105	0.000413385
0.4208	0.002625	0.0011046
0.43334	0.0042	0.001820028
0.5147	0.001575	0.000810653
0.532	0.001575	0.0008379
0.57809	0.01365	0.007890929
0.6195	0.001575	0.000975713
0.64117	0.525	0.33661425

0.86157	0.01995	0.017188322
0.8782	0.0021	0.00184422
0.89485	0.093975	0.084093529
0.9465	0.00105	0.000993825
0.9622	0.0042	0.00404124
0.9912	0.00105	0.00104076
1.0067	0.002625	0.002642588
1.0114	0.043575	0.044071755
1.0392	0.00105	0.00109116
1.0437	0.03045	0.031780665
1.0618	0.001575	0.001672335
1.0703	0.001575	0.001685723
1.0742	0.00105	0.00112791
1.0889	0.002625	0.002858363
1.1126	0.00105	0.00116823
1.1167	0.00105	0.001172535
1.1306	0.00525	0.00593565
1.1445	0.001575	0.001802588
1.1602	0.019425	0.022536885
1.1743	0.001575	0.001849523
1.1909	0.0042	0.00500178
1.2315	0.00315	0.003879225
1.2331	0.020475	0.025247723
1.2423	0.0021	0.00260883
1.2647	0.00105	0.001327935
1.2701	0.00105	0.001333605
1.288	0.00105	0.0013524
1.3232	0.003675	0.00486276
1.3323	0.00105	0.001398915
1.3546	0.00105	0.00142233
1.363	0.023625	0.032200875
1.3736	0.0021	0.00288456
1.3893	0.004725	0.006564443
1.3953	0.0021	0.00293013
1.4022	0.001575	0.002208465
1.4455	0.001575	0.002276663
1.4551	0.00105	0.001527855
1.4937	0.001575	0.002352578
1.5163	0.004725	0.007164518
1.5355	0.002625	0.004030688
1.5402	0.00525	0.00808605
1.5458	0.033075	0.051127335
1.6182	0.00315	0.00509733
1.6514	0.0021	0.00346794
1.6881	0.002625	0.004431263
1.7229	0.0168	0.02894472
1.7524	0.00105	0.00184002
1.7564	0.033075	0.05809293
1.768	0.0021	0.0037128
1.771	0.0021	0.0037191
1.7938	0.00105	0.00188349
1.8063	0.001575	0.002844923
1.8171	0.00105	0.001907955
1.8854	0.005775	0.010888185
1.9013	0.08715	0.165698295
1.923	0.002625	0.005047875
1.9335	0.001575	0.003045263
1.9482	0.00525	0.01022805
1.9606	0.001575	0.003087945
2.0042	0.0105	0.0210441
2.0255	0.01365	0.027648075
2.0387	0.011025	0.022476668
2.0504	0.00525	0.0107646
2.0552	0.0294	0.06042288
2.0769	0.00735	0.015265215
2.0861	0.0042	0.00876162
2.1004	0.0105	0.0220542
2.1262	0.003675	0.007813785
2.1393	0.005775	0.012354458
2.1803	0.005775	0.012591233
2.1872	0.058275	0.12745908
2.2905	0.003675	0.008417588
2.3584	0.0084	0.01981056
2.3644	0.004725	0.01117179
2.3977	0.16275	0.390225675
2.4195	0.0021	0.00508095
2.4594	0.0042	0.01032948
2.5132	0.001575	0.00395829
2.5323	0.00105	0.002658915
2.5394	0.007875	0.019997775
2.5427	0.11235	0.285672345
2.6635	0.007875	0.020975063
2.6668	0.0189	0.05040252
2.6726	0.0021	0.00561246
2.7823	0.00315	0.008764245
2.8008	0.0063	0.01764504
2.8181	0.0084	0.02367204

2.8286	0.002625	0.007425075
2.97	0.007875	0.02338875
2.972	0.033075	0.0982989
2.9917	0.00105	0.003141285
2.9999	0.00525	0.015749475
3.0071	0.0021	0.00631491
3.0129	0.00735	0.022144815
3.0223	0.00105	0.003173415
3.0343	0.005775	0.017523083
3.0469	0.0042	0.01279698
3.0759	0.001575	0.004844543
3.155	0.0021	0.0066255
3.181	0.00315	0.01002015
3.2367	0.00315	0.010195605
3.2424	0.0021	0.00680904
3.2732	0.001575	0.00515529
3.3147	0.01365	0.045245655
3.4019	0.00315	0.010715985
3.4593	0.003675	0.012712928
3.6121	0.008925	0.032237993
3.6327	0.01155	0.041957685
3.7191	0.00315	0.011715165
3.8504	0.002625	0.0101073
		2.718960898 MeV/decay

Photon Emission Products: Pr-143

Energy(MeV)	Fraction	
0.74198	0	0
		0 MeV/decay

Photon Emission Products: Nd-147

Energy(MeV)	Fraction	
0.00543	0.079239	0.000430268
0.038171	0.12956	0.004945435
0.038725	0.23557	0.009122448
0.0438	0.090554	0.003966265
0.091106	0.28	0.02550968
0.12048	0.003976	0.000479028
0.19664	0.002044	0.000401932
0.27537	0.008036	0.002212873
0.31941	0.0196	0.006260436
0.39816	0.008736	0.003478326
0.41048	0.0014	0.000574672
0.4399	0.01204	0.005296396
0.48924	0.00154	0.00075343
0.53102	0.13132	0.069733546
0.5948	0.00266	0.001582168
0.6859	0.008148	0.005588713
0.61662	0.000655	0.000403886
		0.140739503 MeV/decay

Photon Emission Products: Am-241

Energy(MeV)	Fraction	
0.0139	0.427	0.0059353
0.026345	0.024	0.00063228
0.033205	0.00106	3.51973E-05
0.059537	0.359	0.021373783
0.069231	0.001793	0.000124131
		0.028100691 MeV/decay

Photon Emission Products: Cm-242

Energy(MeV)	Fraction	
0.0143	0.11543	0.001650649
0.059249	0.000386	2.28701E-05
		0.001673519 MeV/decay

Photon Emission Products: Cm-244

Energy(MeV)	Fraction	
0.0143	0.10307	0.001473901
0.056867	0.000284	1.61502E-05
		0.001490051 MeV/decay

Beta Particle Emission Energy [MeV/decay]

Beta Emission Products: Kr-85

Average Energy(Mev)	Fraction	
0.0475	0.00437	0.000207575
0.2514	0.99563	0.250301382
		0.250508957 MeV/decay

Beta Emission Products: Kr-85m

Average Energy(Mev)	Fraction	
0.2382	0.0029	0.00069078
0.2904	0.786	0.2282544
0.0746	0.00021	0.000015666
		0.228960846 MeV/decay

Beta Emission Products: Kr-87

Average Energy(Mev)	Fraction	
0.1878	0.005	0.000939
0.2875	0.00108	0.0003105
0.3264	0.044	0.0143616
0.3893	0.0058	0.00225794
0.5004	0.095	0.047538
0.5626	0.0551	0.03099926
0.5787	0.0042	0.00243054
0.87	0.0062	0.005394
0.9456	0.0016	0.00151296
1.0337	0.00124	0.001281788
1.2942	0.069	0.0892998
1.502	0.407	0.611314
1.6948	0.304	0.5152192
		1.322858588 MeV/decay

Beta Emission Products: Kr-88

Average Energy(Mev)	Fraction	
0.038	0.00353	0.00013414
0.109	0.0265	0.0028885
0.165	0.67	0.11055
0.227	0.091	0.020657
0.284	0.0014	0.0003976
0.355	0.00204	0.0007242
0.441	0.0192	0.0084672
0.464	0.0023	0.0010672
0.561	0.0022	0.0012342
0.678	0.009	0.006102
0.697	0.001	0.000697
0.825	0.013	0.010725
1.052	0.0026	0.0027352
1.136	0.018	0.020448
1.233	0.14	0.17262
0.23383	0.00101	0.000236168
		0.359683408 MeV/decay

Beta Emission Products: Xe-133

Average Energy(Mev)	Fraction	
0.0751	0.0069	0.00051819
0.1006	0.993	0.0998958
0.0111	0.000076	8.436E-07
		0.100414834 MeV/decay

Beta Emission Products: Xe-135

Average Energy(Mev)	Fraction	
0.0253	0.00123	0.000031119
0.171	0.0313	0.0053523
0.246	0.00585	0.0014391
0.308	0.961	0.295988
0.048	0.00075	0.000036
		0.302846519 MeV/decay

Beta Emission Products: I-131

Average Energy(Mev)	Fraction	
0.06936	0.0212	0.001470432
0.08695	0.00627	0.000545177
0.09662	0.0736	0.007111232
0.19158	0.893	0.17108094
0.28325	0.00393	0.001113173
0.20022	0.00069	0.000138152
		0.181459105 MeV/decay

Beta Emission Products: I-132

Average

Energy(Mev)	Fraction	
0.092	0.0026	0.0002392
0.103	0.0012	0.0001236
0.127	0.0019	0.0002413
0.154	0.0053	0.0008162
0.161	0.0033	0.0005313
0.223	0.0076	0.0016948
0.242	0.124	0.030008
0.242	0.019	0.004598
0.275	0.0032	0.00088
0.309	0.0355	0.0109695
0.331	0.081	0.026811
0.342	0.0275	0.009405
0.343	0.0336	0.0115248
0.409	0.0249	0.0101841
0.422	0.189	0.079758
0.44	0.0095	0.00418
0.51	0.00113	0.0005763
0.519	0.017	0.008823
0.543	0.101	0.054843
0.543	0.02	0.01086
0.574	0.0014	0.0008036
0.608	0.124	0.075392
0.841	0.169	0.142129
0.13448	0.004954	0.000666214
		0.486057914 MeV/decay

Beta Emission Products: I-133

Average

Energy(Mev)	Fraction	
0.046	0.0041	0.0001886
0.11	0.0124	0.001364
0.122	0.00397	0.00048434
0.14	0.0375	0.00525
0.162	0.0313	0.0050706
0.23	0.00542	0.0012466
0.299	0.0416	0.0124384
0.352	0.0181	0.0063712
0.441	0.835	0.368235
0.573	0.0107	0.0061311
0.284	0.00027	0.00007668
		0.40685652 MeV/decay

Beta Emission Products: I-134

Average

Energy(Mev)	Fraction	
0.255	0.0148	0.003774
0.261	0.0033	0.0008613
0.279	0.00153	0.00042687
0.372	0.0122	0.0045384
0.46	0.325	0.1495
0.5	0.0053	0.00265
0.55	0.081	0.04455
0.58	0.163	0.09454
0.6	0.0367	0.02202
0.66	0.076	0.05016
0.69	0.112	0.07728
0.71	0.0112	0.007952
0.88	0.037	0.03256
0.97	0.115	0.11155
0.26355	0.00226	0.000595623
		0.602958193 MeV/decay

Beta Emission Products: I-135

Average

Energy(Mev)	Fraction	
0.066	0.0014	0.0000924
0.068	0.00126	0.00008568
0.074	0.0014	0.0001036
0.086	0.0108	0.0009288
0.098	0.0091	0.0008918
0.103	0.0139	0.0014317
0.138	0.0473	0.0065274
0.145	0.0733	0.0106285
0.196	0.0157	0.0030772
0.213	0.011	0.002343
0.243	0.079	0.019197
0.272	0.0061	0.0016592
0.313	0.087	0.027231
0.359	0.218	0.078262
0.405	0.079	0.031995
0.451	0.074	0.033374
0.454	0.001	0.000454
0.535	0.236	0.12626
0.591	0.012	0.007092
0.858	0.019	0.016302
0.20722	0.00154	0.000319119

0.368255399 MeV/decay

Beta Emission Products: Rb-86

Average Energy(Mev)	Fraction	
0.2325	0.0878	0.0204135
0.7093	0.9122	0.64702346
		0.66743696 MeV/decay

Beta Emission Products: Cs-134

Average Energy(Mev)	Fraction	
0.02306	0.274	0.00631844
0.1234	0.0248	0.00306032
0.21011	0.701	0.14728711
0.33529	0.00053	0.000177704
		0.156843574 MeV/decay

Beta Emission Products: Cs-136

Average Energy(Mev)	Fraction	
0.0472	0.0249	0.00117528
0.0523	0.0021	0.00010983
0.0988	0.951	0.0939588
0.219	0.022	0.004818
		0.10006191 MeV/decay

Beta Emission Products: Cs-137

Average Energy(Mev)	Fraction	
0.1568	0.946	0.1483328
0.4152	0.054	0.0224208
		0.1707536 MeV/decay

Beta Emission Products: Sb-127

Average Energy(Mev)	Fraction	
0.0727	0.0011	0.00007997
0.0829	0.0061	0.00050569
0.1275	0.008	0.00102
0.1328	0.0125	0.00166
0.1551	0.0522	0.00809622
0.2111	0.0125	0.00263875
0.264	0.078	0.020592
0.2651	0.172	0.0455972
0.3041	0.349	0.1061309
0.3258	0.041	0.0133578
0.3909	0.228	0.0891252
0.4465	0.024	0.010716
0.5619	0.02	0.011238
0.16435	0.0014	0.00023009
		0.31098782 MeV/decay

Beta Emission Products: Sb-129

Average Energy(Mev)	Fraction	
0.074	0.011	0.000814
0.083	0.0041	0.0003403
0.088	0.02	0.00176
0.156	0.0094	0.0014664
0.166	0.225	0.03735
0.199	0.034	0.006766
0.208	0.266	0.055328
0.236	0.0105	0.002478
0.244	0.0174	0.0042456
0.258	0.011	0.002838
0.304	0.0027	0.0008208
0.371	0.04	0.01484
0.386	0.0059	0.0022774
0.408	0.021	0.008568
0.52	0.032	0.01664
0.587	0.101	0.059287
0.61	0.043	0.02623
0.666	0.027	0.017982
0.706	0.077	0.054362
0.741	0.009	0.006669
0.841	0.0027	0.0022707
0.901	0.038	0.034238
0.068	0.00046	0.00003128
		0.35760248 MeV/decay

Beta Emission Products: Te-127

Average Energy(Mev)	Fraction	
0.0782	0.01184	0.000925888
0.2247	0.98789	0.221978883
0.14827	0.000267	3.95881E-05

0.222944359 MeV/decay

Beta Emission Products: Te-127m

Average Energy(Mev)	Fraction	
0.2529	0.0182	0.00460278
0.020075	0.000113	2.26848E-06
		0.004605048 MeV/decay

Beta Emission Products: Te-129

Average Energy(Mev)	Fraction	
0.1141	0.0081	0.00092421
0.2149	0.00196	0.000421204
0.3206	0.0023	0.00073738
0.35	0.086	0.0301
0.437	0.0052	0.0022724
0.5445	0.9	0.49005
0.074546	0.000565	4.21185E-05
		0.524547312 MeV/decay

Beta Emission Products: Te-129m

Average Energy(Mev)	Fraction	
0.0555	0.00166	0.00009213
0.2948	0.0076	0.00224048
0.3083	0.033	0.0101739
0.6073	0.328	0.1991944
0.23254	0.000839	0.000195101
		0.211896011 MeV/decay

Beta Emission Products: Te-131m

Average Energy(Mev)	Fraction	
0.0433	0.0056	0.00024248
0.0518	0.0031	0.00016058
0.0715	0.002	0.000143
0.0733	0.0045	0.00032985
0.074	0.0095	0.000703
0.0913	0.0165	0.00150645
0.108	0.00341	0.00036828
0.1256	0.0227	0.00285112
0.129	0.054	0.006966
0.1362	0.369	0.0502578
0.1383	0.001	0.0001383
0.1557	0.0214	0.00333198
0.1648	0.166	0.0273568
0.169	0.015	0.002535
0.2599	0.025	0.0064975
0.394	0.0022	0.0008668
0.502	0.0037	0.0018574
0.525	0.002	0.00105
0.97	0.038	0.03686
0.26913	0.001817	0.000489009
		0.144511349 MeV/decay

Beta Emission Products: Te-132

Average Energy(Mev)	Fraction	
0.0594	1	0.0594
		0.0594 MeV/decay

Beta Emission Products: Sr-89

Average Energy(Mev)	Fraction	
0.583	0.99985	0.58291255
0.1876	0.00015	0.00002814
		0.58294069 MeV/decay

Beta Emission Products: Sr-90

Average Energy(Mev)	Fraction	
0.1958	1	0.1958
		0.1958 MeV/decay

Beta Emission Products: Sr-91

Average Energy(Mev)	Fraction	
0.1229	0.00231	0.000283899
0.1488	0.0144	0.00214272
0.2009	0.0202	0.00405818
0.2343	0.00361	0.000845823
0.3989	0.339	0.1352271
0.4134	0.0177	0.00731718
0.4445	0.00185	0.000822325
0.518	0.244	0.126392
0.5705	0.00643	0.003668315

0.8129	0.033	0.0268257
1.1212	0.308	0.3453296
0.11021	0.00127	0.000139967
		0.653052809 MeV/decay

Beta Emission Products: Sr-92

Average Energy(Mev)	Fraction	
0.174	0.96	0.16704
0.345	0.003	0.001035
0.371	0.0021	0.0007791
0.777	0.04	0.03108
		0.1999341 MeV/decay

Beta Emission Products: Ba-139

Average Energy(Mev)	Fraction	
0.2974	0.0032	0.00095168
0.837	0.22	0.18414
0.912	0.78	0.71136
0.30467	0.000617	0.000187981
		0.896639661 MeV/decay

Beta Emission Products: Ba-140

Average Energy(Mev)	Fraction	
0.136	0.26	0.03536
0.177	0.102	0.018054
0.306	0.044	0.013464
0.34	0.37	0.1258
0.357	0.22	0.07854
		0.271218 MeV/decay

Beta Emission Products: Co-58

Average Energy(Mev)	Fraction	
		0 MeV/decay

Beta Emission Products: Co-60

Average Energy(Mev)	Fraction	
0.09579	1	0.09579
		0.09579 MeV/decay

Beta Emission Products: Mo-99

Average Energy(Mev)	Fraction	
0.0598	0.00113	0.000067574
0.1042	0.00136	0.000141712
0.133	0.173	0.023009
0.2896	0.0136	0.00393856
0.4427	0.827	0.3661129
0.18089	0.000578	0.000104554
		0.3933743

Beta Emission Products: Tc-99m

Average Energy(Mev)	Fraction	
		0 MeV/decay

Beta Emission Products: Ru-103

Average Energy(Mev)	Fraction	
0.0298	0.064	0.0019072
0.0632	0.9	0.05688
0.1438	0.00238	0.000342244
0.2392	0.035	0.008372
0.038725	0.001023	3.96157E-05
		0.06754106 MeV/decay

Beta Emission Products: Ru-105

Average Energy(Mev)	Fraction	
0.0613	0.00108	0.000066204
0.1308	0.0034	0.00044472
0.147	0.002	0.000294
0.1701	0.0132	0.00224532
0.1818	0.0447	0.00812646
0.1907	0.005	0.0009535
0.2311	0.00113	0.000261143
0.3293	0.0522	0.01718946
0.3975	0.2	0.0795
0.406	0.181	0.073486
0.4162	0.0029	0.00120698
0.4322	0.499	0.2156678
0.5768	0.005	0.002884
0.14031	0.00163	0.000228705

0.402554292 MeV/decay

Beta Emission Products: Ru-106

Average Energy(Mev)	Fraction	
0.01003	1	0.01003
		0.01003 MeV/decay

Beta Emission Products: Rh-105

Average Energy(Mev)	Fraction	
0.0699	0.197	0.0137703
0.0739	0.0522	0.00385758
0.1794	0.75	0.13455
0.033	0.000403	0.000013299
		0.152191179 MeV/decay

Beta Emission Products: Ce-141

Average Energy(Mev)	Fraction	
0.1296	0.705	0.091368
0.1807	0.295	0.0533065
		0.1446745 MeV/decay

Beta Emission Products: Ce-143

Average Energy(Mev)	Fraction	
0.0147	0.0038	0.00005586
0.0836	0.0051	0.00042636
0.1582	0.0142	0.00224644
0.175	0.0039	0.0006825
0.2374	0.121	0.0287254
0.3846	0.48	0.184608
0.5075	0.38	0.19285
0.051705	0.00194	0.000100308
		0.409694868 MeV/decay

Beta Emission Products: Ce-144

Average Energy(Mev)	Fraction	
0.0502	0.196	0.0098392
0.0661	0.047	0.0031067
0.0911	0.772	0.0703292
		0.0832751 MeV/decay

Beta Emission Products: Np-239

Average Energy(Mev)	Fraction	
0.0565	0.0196	0.0011074
0.0921	0.35	0.032235
0.1112	0.071	0.0078952
0.1253	0.52	0.065156
0.2178	0.04	0.008712
0.059819	0.000341	2.03983E-05
		0.115125998 MeV/decay

Beta Emission Products: Pu-238

Average Energy(Mev)	Fraction	
		0 MeV/decay

Beta Emission Products: Pu-239

Average Energy(Mev)	Fraction	
		0 MeV/decay

Beta Emission Products: Pu-240

Average Energy(Mev)	Fraction	
		0 MeV/decay

Beta Emission Products: Pu-241

Average Energy(Mev)	Fraction	
0.00523	0.99998	0.005229895
		0.005229895 MeV/decay

Beta Emission Products: Y-90

Average Energy(Mev)	Fraction	
0.9348	0.99989	0.934697172
0.1865	0.000115	2.14475E-05
		0.93471862 MeV/decay

Beta Emission Products: Y-91

Average Energy(Mev)	Fraction

0.0999	0.003	0.0002997
0.6038	0.997	0.6019886
		0.6022883 MeV/decay

Beta Emission Products: Y-92

Average Energy(Mev)	Fraction	
0.278	0.001	0.000278
0.48	0.065	0.0312
0.601	0.0024	0.0014424
0.7	0.0043	0.00301
0.869	0.0116	0.0100804
0.92	0.023	0.02116
1.123	0.034	0.038182
1.563	0.857	1.339491
0.1834	0.000372	6.82248E-05
		1.444912025 MeV/decay

Beta Emission Products: Y-93

Average Energy(Mev)	Fraction	
0.132	0.00187	0.00024684
0.235	0.016	0.00376
0.535	0.00145	0.00077575
0.544	0.00377	0.00205088
0.555	0.00266	0.0014763
0.771	0.0251	0.0193521
1.087	0.046	0.050002
1.214	0.902	1.095028
0.31046	0.001192	0.000370068
		1.173061938 MeV/decay

Beta Emission Products: Zr-95

Average Energy(Mev)	Fraction	
0.1093	0.554	0.0605522
0.1204	0.437	0.0526148
0.327	0.0078	0.0025506
0.4054	0.001	0.0004054
		0.116123 MeV/decay

Beta Emission Products: Zr-97

Average Energy(Mev)	Fraction	
0.1243	0.0049	0.00060907
0.1753	0.055	0.0096415
0.3092	0.0188	0.00581296
0.3149	0.005	0.0015745
0.3554	0.0018	0.00063972
0.3994	0.0038	0.00151772
0.3996	0.0065	0.0025974
0.5172	0.0021	0.00108612
0.5283	0.044	0.0232452
0.7566	0.86	0.650676
		0.69740019 MeV/decay

Beta Emission Products: Nb-95

Average Energy(Mev)	Fraction	
0.04335	0.9997	0.043336995
0.32195	0.0003	0.000096585
		0.04343358 MeV/decay

Beta Emission Products: La-140

Average Energy(Mev)	Fraction	
0.4382	0.0064	0.00280448
0.4411	0.1111	0.04900621
0.4435	0.0589	0.02612215
0.4582	0.0119	0.00545258
0.4653	0.0563	0.02619639
0.4874	0.445	0.216893
0.5147	0.0508	0.02614676
0.6295	0.207	0.1303065
0.8462	0.052	0.0440024
0.32889	0.001615	0.000531157
		0.527461627 MeV/decay

Beta Emission Products: La-141

Average Energy(Mev)	Fraction	
0.239	0.0012	0.0002868
0.373	0.0261	0.0097353
0.967	0.97	0.93799
0.12545	0.002618	0.000328428
		0.948340528 MeV/decay

Beta Emission Products: La-142

Average Energy(Mev)	Fraction		
0.1433	0.015	0.0021495	
0.1671	0.001	0.0001671	
0.2127	0.0026	0.00055302	
0.2626	0.0058	0.00152308	
0.2635	0.0058	0.0015283	
0.2796	0.012	0.0033552	
0.2964	0.015	0.004446	
0.3042	0.043	0.0130806	
0.3046	0.017	0.0051782	
0.3619	0.0063	0.00227997	
0.3661	0.018	0.0065898	
0.3821	0.025	0.0095525	
0.56	0.0136	0.007616	
0.673	0.0131	0.0088163	
0.693	0.081	0.056133	
0.706	0.037	0.026122	
0.761	0.201	0.152961	
0.826	0.215	0.17759	
0.841	0.02	0.01682	
0.921	0.069	0.063549	
1.004	0.021	0.021084	
1.165	0.008	0.00932	
1.219	0.03	0.03657	
1.634	0.052	0.084968	
1.91	0.07	0.1337	
		0.84565257	**MeV/decay**

Beta Emission Products: Pr-143

Average Energy(Mev)	Fraction		
0.3156	1	0.3156	
0.0626	0	0	
		0.3156	**MeV/decay**

Beta Emission Products: Nd-147

Average Energy(Mev)	Fraction		
0.0576	0.0222	0.00127872	
0.1061	0.153	0.0162333	
0.1199	0.0081	0.00097119	
0.1467	0.0058	0.00085086	
0.264	0.811	0.214104	
0.0592	0.00066	0.000039072	
		0.233477142	**MeV/decay**

Beta Emission Products: Am-241

Average Energy(Mev)	Fraction		
		0	**MeV/decay**

Beta Emission Products: Cm-242

Average Energy(Mev)	Fraction		
		0	**MeV/decay**

Beta Emission Products: Cm-244

Average Energy(Mev)	Fraction		
		0	**MeV/decay**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1							Adjustment for Lasalle Power	Gap Release	Gap Release	Early In-vessel Release	Early In-vessel Release	TOTAL	TOTAL	Gamma (Photon)	Gamma (Photon)		Beta Particle
2			Decay			Isotopic	Initial Core	Activity in Containment	Time Integrated Activity in	Activity in Containment	Time Integrated Activity in	Time Integrated Activity in	Activity in Containment	Emission	Emission Energy per	Beta Particle	Emission Energy per
3		Isotopic	Constant	Release Fractions		Activity	Activity	at 0.5 hours	Containment through 0.5 hours	at 2.0 hours	Containment through 2.0 hours	Containment through 2.0 hours	at 2.0 hours	Energy	Unit of Activity	Emission Energy	Unit of Activity
4	Class	Nuclide	(hours)[1]	0-0.5 hours	0.5-2 hours	(Ci/MW)	(Ci)	(Ci)	(Ci-hours)	(Ci)	(Ci-hours)	(Ci-hours)	(Ci)	(MeV/decay)	(MeV/Ci-hour)	(MeV/decay)	(MeV/Ci-hour)
5	1	Kr-85	7.376E-06	0.05	0.95	3.946E+02	1.404E+06	7.02E+04	1.76E+04	1.33E+06	1.00E+06	1.02E+06	1.40E+06	2.23E-03	2.97E+11	2.51E-01	3.34E+13
6	1	Kr-85m	1.547E-01	0.05	0.95	8.313E+03	2.959E+07	1.37E+06	3.51E+05	2.06E+07	1.67E+07	1.71E+07	2.17E+07	1.58E-01	2.10E+13	2.29E-01	3.05E+13
7	1	Kr-87	5.451E-01	0.05	0.95	1.633E+04	5.812E+07	2.21E+06	6.07E+05	1.86E+07	1.86E+07	1.92E+07	1.95E+07	7.93E-01	1.06E+14	1.32E+00	1.76E+14
8	1	Kr-88	2.441E-01	0.05	0.95	2.303E+04	8.196E+07	3.93E+06	9.45E+05	4.78E+07	4.06E+07	4.16E+07	5.03E+07	1.95E+00	2.60E+14	3.60E-01	4.79E+13
9	1	Xe-133	5.506E-03	0.05	0.95	5.491E+04	1.954E+08	9.74E+06	2.44E+06	1.84E+08	1.38E+08	1.41E+08	1.93E+08	4.53E-02	6.03E+12	1.00E-01	1.34E+13
10	1	Xe-135	7.625E-02	0.05	0.95	2.228E+04	7.929E+07	3.82E+06	9.66E+05	6.47E+07	5.04E+07	5.14E+07	6.81E+07	2.48E-01	3.30E+13	3.03E-01	4.03E+13
11	2	I-131	3.592E-03	0.05	0.25	2.695E+04	9.592E+07	4.79E+06	1.20E+06	2.38E+07	1.79E+07	1.91E+07	2.86E+07	3.81E-01	5.08E+13	1.81E-01	2.42E+13
12	2	I-132	3.014E-01	0.05	0.25	3.889E+04	1.384E+08	5.95E+06	1.57E+06	1.89E+07	1.66E+07	1.82E+07	2.27E+07	2.29E+00	3.05E+14	4.86E-01	6.47E+13
13	2	I-133	3.332E-02	0.05	0.25	5.556E+04	1.977E+08	9.72E+06	2.44E+06	4.62E+07	3.53E+07	3.77E+07	5.55E+07	6.07E-01	8.08E+13	4.07E-01	5.42E+13
14	2	I-134	7.907E-01	0.05	0.25	6.165E+04	2.194E+08	7.39E+06	2.12E+06	1.13E+07	1.31E+07	1.52E+07	1.35E+07	2.63E+00	3.50E+14	6.03E-01	8.03E+13
15	2	I-135	1.049E-01	0.05	0.25	5.192E+04	1.848E+08	8.77E+06	2.23E+06	3.75E+07	2.96E+07	3.19E+07	4.49E+07	1.58E+00	2.10E+14	3.68E-01	4.91E+13
16	3	Rb-86	1.548E-03	0.05	0.20	6.518E+01	2.320E+05	1.16E+04	2.90E+03	4.63E+04	3.47E+04	3.76E+04	5.78E+04	9.45E-02	1.26E+13	6.67E-01	8.89E+13
17	3	Cs-134	3.835E-05	0.05	0.20	7.280E+03	2.591E+07	1.30E+06	3.24E+05	5.18E+06	3.89E+06	4.21E+06	6.48E+06	1.56E+00	2.07E+14	1.57E-01	2.09E+13
18	3	Cs-136	2.205E-03	0.05	0.20	2.027E+03	7.214E+06	3.60E+05	9.01E+04	1.44E+06	1.08E+06	1.17E+06	1.80E+06	2.17E+00	2.89E+14	1.00E-01	1.33E+13
19	3	Cs-137	2.636E-06	0.05	0.20	4.538E+03	1.615E+07	8.08E+05	2.02E+05	3.23E+06	2.42E+06	2.62E+06	4.04E+06	0.00E+00	0.00E+00	1.71E-01	2.27E+13
20	4	Sb-127	7.502E-03	0.00	0.05	2.944E+03	1.048E+07	0.00E+00	0.00E+00	5.16E+05	3.89E+05	3.89E+05	5.16E+05	6.62E-01	8.82E+13	3.11E-01	4.14E+13
21	4	Sb-129	1.605E-01	0.00	0.05	8.725E+03	3.105E+07	0.00E+00	0.00E+00	1.13E+06	9.17E+05	9.17E+05	1.13E+06	1.43E+00	1.90E+14	3.58E-01	4.76E+13
22	4	Te-127	7.413E-02	0.00	0.05	2.918E+03	1.039E+07	0.00E+00	0.00E+00	4.48E+05	3.49E+05	3.49E+05	4.48E+05	4.84E-03	6.44E+11	2.23E-01	2.97E+13
23	4	Te-127m	2.650E-04	0.00	0.05	3.909E+02	1.391E+06	0.00E+00	0.00E+00	6.95E+04	5.21E+04	5.21E+04	6.95E+04	1.12E-02	1.50E+12	4.61E-03	6.13E+11
24	4	Te-129	5.975E-01	0.00	0.05	8.584E+03	3.055E+07	0.00E+00	0.00E+00	4.62E+05	4.78E+05	4.78E+05	4.62E+05	5.77E-02	7.68E+12	5.25E-01	6.99E+13
25	4	Te-129m	8.596E-04	0.00	0.05	1.279E+03	4.552E+06	0.00E+00	0.00E+00	2.27E+05	1.70E+05	1.70E+05	2.27E+05	3.94E-02	5.25E+12	2.12E-01	2.82E+13
26	4	Te-131m	2.310E-02	0.00	0.05	3.892E+03	1.385E+07	0.00E+00	0.00E+00	6.61E+05	5.02E+05	5.02E+05	6.61E+05	1.43E+00	1.90E+14	1.45E-01	1.92E+13
27	4	Te-132	8.864E-03	0.00	0.05	3.829E+04	1.363E+08	0.00E+00	0.00E+00	6.69E+06	5.04E+06	5.04E+06	6.69E+06	2.31E-01	3.07E+13	5.94E-02	7.91E+12
28	5	Sr-89	5.719E-04	0.00	0.02	2.798E+04	9.958E+07	0.00E+00	0.00E+00	1.99E+06	1.49E+06	1.49E+06	1.99E+06	1.36E-04	1.82E+10	5.83E-01	7.76E+13
29	5	Sr-90	2.715E-06	0.00	0.02	3.176E+03	1.131E+07	0.00E+00	0.00E+00	2.26E+05	1.70E+05	1.70E+05	2.26E+05	0.00E+00	0.00E+00	1.96E-01	2.61E+13
30	5	Sr-91	7.296E-02	0.00	0.02	3.801E+04	1.353E+08	0.00E+00	0.00E+00	2.34E+06	1.82E+06	1.82E+06	2.34E+06	6.87E-01	9.15E+13	6.53E-01	8.70E+13
31	5	Sr-92	2.558E-01	0.00	0.02	4.017E+04	1.430E+08	0.00E+00	0.00E+00	1.71E+06	1.47E+06	1.47E+06	1.71E+06	1.34E+00	1.78E+14	2.00E-01	2.66E+13
32	6	Ba-139	5.029E-01	0.00	0.02	5.084E+04	1.809E+08	0.00E+00	0.00E+00	1.32E+06	1.30E+06	1.30E+06	1.32E+06	3.53E-02	4.70E+12	8.97E-01	1.19E+14
33	6	Ba-140	2.267E-03	0.00	0.02	4.896E+04	1.742E+08	0.00E+00	0.00E+00	3.47E+06	2.60E+06	2.60E+06	3.47E+06	1.91E-01	2.54E+13	2.71E-01	3.61E+13
34	7	Co-58	4.075E-04	0.00	0.0025	1.529E+02	5.442E+05	0.00E+00	0.00E+00	1.36E+03	1.02E+03	1.02E+03	1.36E+03	9.76E-01	1.30E+14	0.00E+00	0.00E+00
35	7	Co-60	1.506E-05	0.00	0.0025	1.830E+02	6.513E+05	0.00E+00	0.00E+00	1.63E+03	1.22E+03	1.22E+03	1.63E+03	2.51E+00	3.34E+14	9.58E-02	1.28E+13
36	7	Mo-99	1.050E-02	0.00	0.0025	5.078E+04	1.807E+08	0.00E+00	0.00E+00	4.42E+05	3.34E+05	3.34E+05	4.42E+05	1.55E-01	2.06E+13	3.93E-01	5.24E+13
37	7	Tc-99m	1.151E-01	0.00	0.0025	4.447E+04	1.583E+08	0.00E+00	0.00E+00	3.14E+05	2.50E+05	2.50E+05	3.14E+05	1.27E-01	1.69E+13	0.00E+00	0.00E+00
38	7	Ru-103	7.353E-04	0.00	0.0025	4.242E+04	1.510E+08	0.00E+00	0.00E+00	3.77E+05	2.83E+05	2.83E+05	3.77E+05	4.84E-01	6.44E+13	6.75E-02	9.00E+12
39	7	Ru-105	1.561E-01	0.00	0.0025	2.966E+04	1.056E+08	0.00E+00	0.00E+00	1.93E+05	1.57E+05	1.57E+05	1.93E+05	7.84E-01	1.04E+14	4.03E-01	5.36E+13
40	7	Ru-106	7.844E-05	0.00	0.0025	1.760E+04	6.264E+07	0.00E+00	0.00E+00	1.57E+05	1.17E+05	1.17E+05	1.57E+05	0.00E+00	0.00E+00	1.00E-02	1.34E+12
41	7	Rh-105	1.960E-02	0.00	0.0025	2.796E+04	9.951E+07	0.00E+00	0.00E+00	2.39E+05	1.81E+05	1.81E+05	2.39E+05	7.76E-02	1.03E+13	1.52E-01	2.03E+13
42	8	Ce-141	8.886E-04	0.00	0.0005	4.492E+04	1.599E+08	0.00E+00	0.00E+00	7.98E+04	5.99E+04	5.99E+04	7.98E+04	7.69E-02	1.02E+13	1.45E-01	1.93E+13
43	8	Ce-143	2.100E-02	0.00	0.0005	4.427E+04	1.576E+08	0.00E+00	0.00E+00	7.55E+04	5.73E+04	5.73E+04	7.55E+04	2.73E-01	3.64E+13	4.10E-01	5.46E+13
44	8	Ce-144	1.016E-04	0.00	0.0005	3.596E+04	1.280E+08	0.00E+00	0.00E+00	6.40E+04	4.80E+04	4.80E+04	6.40E+04	1.93E-02	2.57E+12	8.33E-02	1.11E+13
45	8	Nb-239	1.226E-02	0.00	0.0005	5.540E+05	1.972E+09	0.00E+00	0.00E+00	9.62E+05	7.26E+05	7.26E+05	9.62E+05	1.72E-01	2.29E+13	1.15E-01	1.53E+13
46	8	Pu-238	9.012E-07	0.00	0.0005	1.799E+02	6.392E+05	0.00E+00	0.00E+00	3.20E+02	2.40E+02	2.40E+02	3.20E+02	1.60E-03	2.13E+11	0.00E+00	0.00E+00
47	8	Pu-239	3.286E-09	0.00	0.0005	1.207E+01	4.296E+04	0.00E+00	0.00E+00	2.15E+01	1.47E+02	1.47E+02	2.15E+01	6.54E-04	8.71E+10	0.00E+00	0.00E+00
48	8	Pu-240	1.210E-08	0.00	0.0005	1.308E+01	4.655E+04	0.00E+00	0.00E+00	2.33E+01	1.18E+01	1.18E+01	2.33E+01	1.53E-03	2.03E+11	0.00E+00	0.00E+00
49	8	Pu-241	5.491E-06	0.00	0.0005	6.257E+03	2.227E+07	0.00E+00	0.00E+00	1.11E+04	8.35E+03	8.35E+03	1.11E+04	0.00E+00	0.00E+00	5.23E-03	6.97E+11
50	9	Y-90	1.083E-02	0.00	0.0002	3.272E+03	1.165E+07	0.00E+00	0.00E+00	2.28E+03	1.72E+03	1.72E+03	2.28E+03	0.00E+00	0.00E+00	9.35E-01	1.25E+14
51	9	Y-91	4.936E-04	0.00	0.0002	3.448E+04	1.227E+08	0.00E+00	0.00E+00	2.45E+04	1.84E+04	1.84E+04	2.45E+04	3.61E-03	4.81E+11	6.02E-01	8.02E+13
52	9	Y-92	1.958E-01	0.00	0.0002	4.029E+04	1.434E+08	0.00E+00	0.00E+00	1.94E+04	1.61E+04	1.61E+04	1.94E+04	2.52E-01	3.35E+13	1.44E+00	1.92E+14
53	9	Y-93	6.863E-02	0.00	0.0002	4.526E+04	1.611E+08	0.00E+00	0.00E+00	2.81E+04	2.18E+04	2.18E+04	2.81E+04	8.91E-02	1.19E+13	1.17E+00	1.56E+14
54	9	Zr-95	4.514E-04	0.00	0.0002	4.489E+04	1.598E+08	0.00E+00	0.00E+00	3.19E+04	2.39E+04	2.39E+04	3.19E+04	7.35E-01	9.79E+13	1.16E-01	1.55E+13
55	9	Zr-97	4.101E-02	0.00	0.0002	4.657E+04	1.657E+08	0.00E+00	0.00E+00	3.05E+04	2.34E+04	2.34E+04	3.05E+04	1.81E-01	2.41E+13	6.97E-01	9.29E+13
56	9	Nb-95	8.217E-04	0.00	0.0002	4.512E+04	1.606E+08	0.00E+00	0.00E+00	3.21E+04	2.41E+04	2.41E+04	3.21E+04	7.64E-01	1.02E+14	4.34E-02	5.79E+12
57	9	La-140	1.721E-02	0.00	0.0002	5.019E+04	1.786E+08	0.00E+00	0.00E+00	3.45E+04	2.61E+04	2.61E+04	3.45E+04	2.32E+00	3.09E+14	5.27E-01	7.03E+13
58	9	La-141	1.764E-01	0.00	0.0002	4.640E+04	1.651E+08	0.00E+00	0.00E+00	2.32E+04	1.90E+04	1.90E+04	2.32E+04	4.27E-02	5.69E+12	9.48E-01	1.26E+14
59	9	La-142	4.496E-01	0.00	0.0002	4.532E+04	1.613E+08	0.00E+00	0.00E+00	1.31E+04	1.25E+04	1.25E+04	1.31E+04	2.72E+00	3.62E+14	8.46E-01	1.13E+14
60	9	Pr-143	2.130E-03	0.00	0.0002	4.293E+04	1.528E+08	0.00E+00	0.00E+00	3.04E+04	2.28E+04	2.28E+04	3.04E+04	0.00E+00	0.00E+00	3.16E-01	4.20E+13
61	9	Nd-147	2.630E-03	0.00	0.0002	1.838E+04	6.541E+07	0.00E+00	0.00E+00	1.30E+04	9.77E+03	9.77E+03	1.30E+04	1.41E-01	1.87E+13	2.33E-01	3.11E+13
62	9	Am-241	1.830E-07	0.00	0.0002	9.797E+00	3.487E+04	0.00E+00	0.00E+00	6.97E+00	5.24E+00	5.24E+00	6.97E+00	2.81E-02	3.74E+12	0.00E+00	0.00E+00
63	9	Cm-242	1.774E-04	0.00	0.0002	2.388E+03	8.499E+06	0.00E+00	0.00E+00	1.70E+03	1.27E+03	1.27E+03	1.70E+03	1.67E-03	2.23E+11	0.00E+00	0.00E+00
64	9	Cm-244	4.366E-06	0.00	0.0002	2.602E+02	9.261E+05	0.00E+00	0.00E+00	1.85E+02	1.39E+02	1.39E+02	1.85E+02	1.49E-03	1.98E+11	0.00E+00	0.00E+00
65																	
66																	
67																	
68																	
69				Disintegrations per Curie-hour=		1.3320E+14											
70			Drywell (Drywell + Supp. Pool Airspace) cm³=			1.0444E+10											
71																	
72																	
73																	
74																	
75																	

	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO
1																								
2													Activity in Containment at Given Timesteps (Ci-hours)											
3		1	2	2.0336	3	5	12	18	24	48	72	96	120	150	200	240	300	360	400	480	600	700	720	
4																								
5			1.02E+06	1.07E+06	2.42E+06	5.23E+06	1.51E+07	2.35E+07	3.19E+07	6.56E+07	9.93E+07	1.33E+08	1.67E+08	2.09E+08	2.79E+08	3.35E+08	4.19E+08	5.03E+08	5.59E+08	6.71E+08	8.39E+08	9.79E+08	1.01E+09	
6			1.71E+07	1.78E+07	3.72E+07	6.92E+07	1.26E+08	1.46E+08	1.53E+08	1.57E+08	1.57E+08	1.57E+08	1.57E+08	1.57E+08	1.57E+08	1.57E+08	1.57E+08	1.57E+08	1.57E+08	1.57E+08	1.57E+08	1.57E+08	1.57E+08	
7			1.92E+07	1.99E+07	3.43E+07	4.81E+07	5.49E+07	5.51E+07	5.51E+07	5.51E+07	5.51E+07	5.51E+07	5.51E+07	5.51E+07	5.51E+07	5.51E+07	5.51E+07	5.51E+07	5.51E+07	5.51E+07	5.51E+07	5.51E+07	5.51E+07	
8			4.16E+07	4.33E+07	8.62E+07	1.49E+08	2.30E+08	2.44E+08	2.47E+08	2.48E+08	2.48E+08	2.48E+08	2.48E+08	2.48E+08	2.48E+08	2.48E+08	2.48E+08	2.48E+08	2.48E+08	2.48E+08	2.48E+08	2.48E+08	2.48E+08	
9			1.41E+08	1.47E+08	3.33E+08	7.16E+08	2.02E+09	3.10E+09	4.15E+09	7.99E+09	1.14E+10	1.43E+10	1.69E+10	1.97E+10	2.34E+10	2.58E+10	2.84E+10	3.04E+10	3.13E+10	3.27E+10	3.39E+10	3.45E+10	3.46E+10	
10			5.14E+07	5.37E+07	1.17E+08	2.34E+08	5.28E+08	6.81E+08	7.77E+08	9.17E+08	9.40E+08	9.43E+08	9.44E+08	9.44E+08	9.44E+08	9.44E+08	9.44E+08	9.44E+08	9.44E+08	9.44E+08	9.44E+08	9.44E+08	9.44E+08	
11			1.91E+07	2.00E+07	4.76E+07	1.04E+08	3.00E+08	4.63E+08	6.23E+08	1.23E+09	1.79E+09	2.30E+09	2.77E+09	3.30E+09	4.07E+09	4.59E+09	5.25E+09	5.77E+09	6.07E+09	6.54E+09	7.04E+09	7.32E+09	7.37E+09	
12			1.82E+07	1.89E+07	3.78E+07	5.31E+07	8.99E+07	9.30E+07	9.35E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	
13			3.77E+07	3.96E+07	9.23E+07	1.96E+08	5.10E+08	7.26E+08	9.03E+08	1.34E+09	1.54E+09	1.63E+09	1.67E+09	1.69E+09	1.70E+09	1.70E+09	1.70E+09	1.70E+09	1.70E+09	1.70E+09	1.70E+09	1.70E+09	1.70E+09	
14			1.52E+07	1.57E+07	2.46E+07	3.07E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	
15			3.19E+07	3.34E+07	7.45E+07	1.48E+08	3.10E+08	3.80E+08	4.18E+08	4.57E+08	4.60E+08	4.60E+08	4.60E+08	4.60E+08	4.60E+08	4.60E+08	4.60E+08	4.60E+08	4.60E+08	4.60E+08	4.60E+08	4.60E+08	4.60E+08	
16			3.76E+04	3.96E+04	9.54E+04	2.11E+05	6.11E+05	9.51E+05	1.29E+06	2.60E+06	3.87E+06	5.10E+06	6.27E+06	7.68E+06	9.90E+06	1.15E+07	1.38E+07	1.59E+07	1.72E+07	1.96E+07	2.26E+07	2.47E+07	2.51E+07	
17			4.21E+06	4.43E+06	1.07E+07	2.36E+07	6.90E+07	1.08E+08	1.47E+08	3.02E+08	4.57E+08	6.12E+08	7.67E+08	9.60E+08	1.28E+09	1.54E+09	1.92E+09	2.31E+09	2.56E+09	3.07E+09	3.83E+09	4.47E+09	4.59E+09	
18			1.17E+06	1.23E+06	2.96E+06	6.54E+06	1.89E+07	2.94E+07	3.97E+07	7.97E+07	1.18E+08	1.54E+08	1.88E+08	2.28E+08	2.89E+08	3.34E+08	3.93E+08	4.40E+08	4.77E+08	5.32E+08	5.98E+08	6.41E+08	6.48E+08	
19			2.62E+06	2.76E+06	6.66E+06	1.47E+07	4.30E+07	6.72E+07	9.15E+07	1.88E+08	2.85E+08	3.82E+08	4.79E+08	6.00E+08	8.02E+08	9.63E+08	1.21E+09	1.45E+09	1.61E+09	1.93E+09	2.42E+09	2.82E+09	2.90E+09	
20			3.89E+05	4.06E+05	9.03E+05	1.92E+06	5.36E+06	8.17E+06	1.09E+07	2.05E+07	2.85E+07	3.52E+07	4.08E+07	4.65E+07	5.36E+07	5.76E+07	6.18E+07	6.45E+07	6.57E+07	6.73E+07	6.84E+07	6.88E+07	6.89E+07	
21			9.17E+05	9.55E+05	1.96E+06	3.60E+06	6.53E+06	7.40E+06	7.73E+06	7.93E+06	7.94E+06	7.94E+06	7.94E+06	7.94E+06	7.94E+06	7.94E+06	7.94E+06	7.94E+06	7.94E+06	7.94E+06	7.94E+06	7.94E+06	7.94E+06	
22			3.49E+05	3.64E+05	7.80E+05	1.55E+06	3.51E+06	4.54E+06	5.21E+06	6.19E+06	6.35E+06	6.38E+06	6.39E+06	6.39E+06	6.39E+06	6.39E+06	6.39E+06	6.39E+06	6.39E+06	6.39E+06	6.39E+06	6.39E+06	6.39E+06	
23			5.21E+04	5.45E+04	1.22E+05	2.61E+05	7.46E+05	1.16E+06	1.58E+06	3.23E+06	4.87E+06	6.51E+06	8.15E+06	1.01E+07	1.35E+07	1.61E+07	2.00E+07	2.38E+07	2.63E+07	3.13E+07	3.88E+07	4.44E+07	4.56E+07	
24			4.78E+05	4.94E+05	8.27E+05	1.12E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	
25			1.70E+05	1.78E+05	3.98E+05	8.51E+05	2.43E+06	3.78E+06	5.12E+06	1.04E+07	1.56E+07	2.07E+07	2.57E+07	3.17E+07	4.15E+07	4.91E+07	5.99E+07	7.02E+07	7.68E+07	8.92E+07	1.06E+08	1.19E+08	1.22E+08	
26			5.02E+05	5.24E+05	1.16E+06	2.42E+06	6.41E+06	9.35E+06	1.19E+07	1.92E+07	2.34E+07	2.59E+07	2.73E+07	2.82E+07	2.88E+07	2.90E+07	2.91E+07	2.91E+07	2.91E+07	2.91E+07	2.91E+07	2.91E+07	2.91E+07	
27			5.04E+06	5.27E+06	1.17E+07	2.49E+07	6.91E+07	1.05E+08	1.39E+08	2.58E+08	3.54E+08	4.32E+08	4.95E+08	5.57E+08	6.30E+08	6.69E+08	7.06E+08	7.29E+08	7.38E+08	7.49E+08	7.56E+08	7.59E+08	7.59E+08	
28			1.49E+06	1.56E+06	3.48E+06	7.46E+06	2.13E+07	3.32E+07	4.50E+07	9.18E+07	1.38E+08	1.84E+08	2.28E+08	2.84E+08	3.74E+08	4.44E+08	5.47E+08	6.46E+08	7.10E+08	8.33E+08	1.01E+09	1.15E+09	1.17E+09	
29			1.70E+05	1.77E+05	3.96E+05	8.48E+05	2.43E+06	3.79E+06	5.15E+06	1.06E+07	1.60E+07	2.14E+07	2.69E+07	3.36E+07	4.49E+07	5.40E+07	6.76E+07	8.11E+07	9.02E+07	1.08E+08	1.30E+08	1.58E+08	1.62E+08	
30			1.82E+06	1.90E+06	4.07E+06	8.12E+06	1.84E+07	2.39E+07	2.74E+07	3.27E+07	3.37E+07	3.38E+07	3.39E+07	3.39E+07	3.39E+07	3.39E+07	3.39E+07	3.39E+07	3.39E+07	3.39E+07	3.39E+07	3.39E+07	3.39E+07	
31			1.47E+06	1.52E+06	2.98E+06	5.06E+06	7.65E+06	8.06E+06	8.15E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	
32			1.30E+06	1.34E+06	2.34E+06	3.35E+06	3.91E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	
33			2.60E+06	2.72E+06	6.07E+06	1.30E+07	3.69E+07	5.71E+07	7.71E+07	1.54E+08	2.27E+08	2.96E+08	3.62E+08	4.39E+08	5.56E+08	6.41E+08	7.54E+08	8.53E+08	9.12E+08	1.02E+09	1.14E+09	1.22E+09	1.23E+09	
34			1.02E+03	1.07E+03	2.38E+03	5.10E+03	1.46E+04	2.27E+04	3.08E+04	6.30E+04	9.48E+04	1.26E+05	1.58E+05	1.96E+05	2.60E+05	3.09E+05	3.82E+05	4.54E+05	5.00E+05	5.91E+05	7.22E+05	8.27E+05	8.47E+05	
35			1.22E+03	1.28E+03	2.85E+03	6.11E+03	1.75E+04	2.73E+04	3.70E+04	7.61E+04	1.15E+05	1.54E+05	1.93E+05	2.42E+05	3.23E+05	3.88E+05	4.85E+05	5.83E+05	6.47E+05	7.77E+05	9.71E+05	1.13E+06	1.16E+06	
36			3.34E+05	3.48E+05	7.74E+05	1.64E+06	4.53E+06	6.85E+06	9.02E+06	1.65E+07	2.23E+07	2.68E+07	3.03E+07	3.36E+07	3.72E+07	3.90E+07	4.06E+07	4.15E+07	4.18E+07	4.22E+07	4.24E+07	4.24E+07	4.24E+07	
37			2.50E+05	2.60E+05	5.47E+05	1.05E+06	2.12E+06	2.55E+06	2.76E+06	2.97E+06	2.98E+06	2.98E+06	2.98E+06	2.98E+06	2.98E+06	2.98E+06	2.98E+06	2.98E+06	2.98E+06	2.98E+06	2.98E+06	2.98E+06	2.98E+06	
38			2.83E+05	2.95E+05	6.60E+05	1.41E+06	4.04E+06	6.28E+06	8.51E+06	1.73E+07	2.60E+07	3.45E+07	4.29E+07	5.31E+07	6.97E+07	8.26E+07	1.01E+08	1.19E+08	1.30E+08	1.52E+08	1.83E+08	2.06E+08	2.11E+08	
39			1.57E+05	1.63E+05	3.36E+05	6.19E+05	1.13E+06	1.29E+06	1.35E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	
40			1.17E+05	1.23E+05	2.74E+05	5.81E+05	1.68E+06	2.62E+06	3.56E+06	7.31E+06	1.10E+07	1.48E+07	1.85E+07	2.32E+07	3.09E+07	3.70E+07	4.62E+07	5.54E+07	6.15E+07	7.36E+07	9.16E+07	1.09E+08	1.09E+08	
41			1.81E+05	1.89E+05	4.18E+05	8.78E+05	2.35E+06	3.47E+06	4.46E+06	7.43E+06	9.29E+06	1.05E+07	1.12E+07	1.17E+07	1.21E+07	1.23E+07	1.23E+07	1.24E+07	1.24E+07	1.24E+07	1.24E+07	1.24E+07	1.24E+07	
42			5.99E+04	6.26E+04	1.40E+05	2.99E+05	8.54E+05	1.33E+06	1.80E+06	3.66E+06	5.48E+06	7.26E+06	9.00E+06	1.11E+07	1.45E+07	1.72E+07	2.10E+07	2.45E+07	2.68E+07	3.11E+07	3.71E+07	4.16E+07	4.24E+07	
43			5.73E+04	5.98E+04	1.32E+05	2.77E+05	7.39E+05	1.08E+06	1.39E+06	2.29E+06	2.83E+06	3.15E+06	3.35E+06	3.49E+06	3.60E+06	3.63E+06	3.65E+06	3.65E+06	3.65E+06	3.65E+06	3.65E+06	3.65E+06	3.65E+06	
44			4.80E+04	5.01E+04	1.12E+05	2.40E+05	6.87E+05	1.07E+06	1.45E+06	2.98E+06	4.51E+06	6.03E+06	7.55E+06	9.45E+06	1.26E+07	1.51E+07	1.88E+07	2.25E+07	2.50E+07	2.99E+07	3.72E+07	4.32E+07	4.43E+07	
45			7.26E+05	7.58E+05	1.68E+06	3.56E+06	9.78E+06	1.47E+07	1.93E+07	3.45E+07	4.59E+07	5.44E+07	6.07E+07	6.64E+07	7.22E+07	7.49E+07	7.71E+07	7.82E+07	7.86E+07	7.89E+07	7.91E+07	7.91E+07	7.92E+07	
46			2.40E+02	2.50E+02	5.59E+02	1.20E+03	3.44E+03	5.35E+03	7.27E+03	1.49E+04	2.26E+04	3.03E+04	3.80E+04	4.75E+04	6.35E+04	7.63E+04	9.55E+04	1.15E+05	1.27E+05	1.53E+05	1.91E+05	2.23E+05	2.30E+05	
47			1.47E+02	1.48E+02	1.69E+02	2.12E+02	3.62E+02	4.91E+02	6.20E+02	1.14E+03	1.65E+03	2.17E+03	2.68E+03	3.33E+03	4.40E+03	5.26E+03	6.55E+03	7.84E+03	8.70E+03	1.04E+04	1.30E+04	1.51E+04	1.56E+04	
48			1.18E+01	1.26E+01	3.51E+01	8.18E+01	2.45E+02	3.84E+02	5.24E+02	1.08E+03	1.64E+03	2.20E+03	2.76E+03	3.46E+03	4.62E+03	5.55E+03	6.95E+03	8.34E+03	9.28E+03	1.11E+04	1.39E+04	1.63E+04	1.67E+04	
49			8.35E+03	8.72E+03	1.95E+04	4.18E+04	1.20E+05	1.86E+05	2.53E+05	5.20E+05	7.88E+05	1.05E+06	1.32E+06	1.66E+06	2.21E+06	2.66E+06	3.32E+06	3.99E+06	4.43E+06	5.32E+06	6.66E+06	7.77E+06	7.99E+06	
50			1.72E+03	1.80E+03	3.99E+03	8.45E+03	2.33E+04	3.52E+04	4.63E+04	8.43E+04	1.14E+05	1.36E+05	1.54E+05	1.70E+05	1.88E+05	1.96E+05	2.04E+05	2.08E+05	2.09E+05	2.11E+05	2.12E+05	2.12E+05	2.12E+05	
51			1.84E+04	1.92E+04	4.29E+04	9.19E+04	2.63E+05	4.09E+05	5.55E+05	1.13E+06	1.71E+06	2.27E+06	2.83E+06	3.52E+06	4.64E+06	5.52E+06	6.81E+06	8.06E+06	8.88E+06	1.05E+07	1.27E+07	1.45E+07	1.48E+07	
52			1.61E+04	1.67E+04	3.37E+04	6.01E+04	1.01E+05	1.11E+05	1.14E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	
53			2.18E+04	2.27E+04	4.89E+04	9.80E+04	2.25E+05	2.95E+05	3.41E+05	4.14E+05	4.28E+05	4.30E+05	4.31E+05	4.31E+05	4.31E+05	4.31E+05	4.31E+05	4.31E+05	4.31E+05	4.31E+05	4.31E+05	4.31E+05	4.31E+05	
54			2.39E+04	2.50E+04	5.59E+04	1.20E+05	3.42E+05	5.33E+05	7.23E+05	1.48E+06	2.22E+06	2.96E+06	3.69E+06	4.59E+06	6.07E+06	7.23E+06	8.93E+06	1.06E+07	1.17E+07	1.37E+07	1.68E+07	1.91E+07	1.96E+07	
55			2.34E+04	2.44E+04	5.33E+04	1.10E+05	2.74E+05	3.82E+05	4.66E+05	6.55E+05	7.66E+05	7.52E+05	7.62E+05	7.66E+05	7.68E+05	7.68E+05	7.68E+05	7.68E+05	7.68E+05	7.68E+05	7.68E+05	7.68E+05	7.68E+05	
56			2.41E+04	2.51E+04	5.61E+04	1.20E+05	3.43E+05	5.34E+05	7.23E+05	1.47E+06	2.21E+06	2.92E+06	3.63E+06	4.49E+06	5.86E+06	6.96E+06	8.50E+06	9.97E+06	1.09E+07	1.27E+07	1.52E+07	1.71E+07	1.74E+07	
57			2.61E+04	2.73E+04	6.03E+04	1.27E+05	3.43E+05	5.09E+05	6.58E+05	1.12E+06	1.43E+06	1.63E+06	1.77E+06	1.87E+06	1.97E+06	2.00E+06	2.02E+06	2.03E+06	2.03E+06	2.03E+06	2.03E+06	2.03E+06	2.03E+06	
58			1.90E+04	1.98E+04	4.03E+04	7.31E+04	1.28E+05	1.43E+05	1.48E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	
59			1.25E+04	1.29E+04	2.31E+04	3.41E+04	4.14E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	
60			2.28E+04	2.39E+04	5.32E+04	1.14E+05	3.24E+05	5.01E+05	6.77E+05	1.36E+06	2.00E+06	2.61E+06	3.20E+06	3.89E+06	4.94E+06	5.70E+06	6.74E+06	7.64E+06	8.19E+06	9.15E+06	1.03E+07	1.11E+07	1.12E+07	
61			9.77E+03	1.02E+04	2.28E+04	4.87E+04	1.38E+05	2.14E+05	2.88E+05	5.74E+05	8.42E+05	1.09E+06	1.33E+06	1.61E+06	2.02E+06	2.31E+06	2.70E+06	3.03E+06	3.22E+06	3.55E+06	3.93E+06	4.17E+06	4.21E+06	
62			5.24E+00	5.48E+00	1.22E+01	2.62E+01	7.50E+01	1.17E+02	1.59E+02	3.26E+02	4.92E+02	6.61E+02	8.28E+02	1.04E+03	1.39E+03	1.66E+03	2.08E+03	2.50E+03	2.78E+03	3.34E+03	4.18E+03	4.87E+03	5.01E+03	
63			1.27E+03	1.33E+03	2.97E+03	6.37E+03	1.83E+04	2.84E+04	3.86E+04	7.31E+04	1.19E+05	1.60E+05	2.00E+05	2.49E+05	3.32E+05	3.97E+05	4.94E+05	5.91E+05	6.54E+05	7.80E+05	9.65E+05	1.12E+06	1.15E+06	
64			1.39E+02	1.45E+02	3.24E+02	6.95E+02	1.99E+03	3.10E+03	4.21E+03	8.66E+03	1.31E+04	1.75E+04	2.20E+04	2.75E+04	3.68E+04	4.42E+04	5.53E+04	6.64E+04	7.38E+04	8.86E+04	1.11E+05	1.29E+05	1.33E+05	
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	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM
1																								
2			Gamma (Photon) Radiation Energy in Containment at Given Timesteps (MeV)																					
3		1	2	2.0336	3	5	12	18	24	48	72	96	120	150	200	240	300	360	400	480	600	700	720	
4																								
5			3.03E+17	3.17E+17	7.20E+17	1.55E+18	4.48E+18	6.98E+18	9.48E+18	1.95E+19	2.95E+19	3.95E+19	4.95E+19	6.20E+19	8.29E+19	9.95E+19	1.25E+20	1.49E+20	1.66E+20	1.99E+20	2.49E+20	2.91E+20	2.99E+20	
6			3.59E+20	3.74E+20	7.62E+20	1.45E+21	2.68E+21	3.06E+21	3.21E+21	3.31E+21	3.31E+21	3.31E+21	3.31E+21	3.31E+21	3.31E+21	3.31E+21	3.31E+21	3.31E+21	3.31E+21	3.31E+21	3.31E+21	3.31E+21	3.31E+21	
7			2.03E+21	2.10E+21	3.62E+21	5.06E+21	5.80E+21	5.82E+21	5.82E+21	5.82E+21	5.82E+21	5.82E+21	5.82E+21	5.82E+21	5.82E+21	5.82E+21	5.82E+21	5.82E+21	5.82E+21	5.82E+21	5.82E+21	5.82E+21	5.82E+21	
8			1.08E+22	1.13E+22	2.25E+22	3.87E+22	5.98E+22	6.34E+22	6.42E+22	6.45E+22	6.45E+22	6.45E+22	6.45E+22	6.45E+22	6.45E+22	6.45E+22	6.45E+22	6.45E+22	6.45E+22	6.45E+22	6.45E+22	6.45E+22	6.45E+22	
9			8.48E+20	8.87E+20	2.01E+21	4.32E+21	1.22E+22	1.87E+22	2.50E+22	4.82E+22	6.86E+22	8.64E+22	1.02E+23	1.19E+23	1.41E+23	1.55E+23	1.72E+23	1.83E+23	1.89E+23	1.97E+23	2.05E+23	2.08E+23	2.09E+23	
10			1.70E+21	1.77E+21	3.86E+21	7.73E+21	1.74E+22	2.25E+22	2.57E+22	3.03E+22	3.10E+22	3.12E+22	3.12E+22	3.12E+22	3.12E+22	3.12E+22	3.12E+22	3.12E+22	3.12E+22	3.12E+22	3.12E+22	3.12E+22	3.12E+22	
11			9.69E+20	1.02E+21	2.42E+21	5.30E+21	1.52E+22	2.35E+22	3.16E+22	6.25E+22	9.07E+22	1.17E+23	1.40E+23	1.67E+23	2.08E+23	2.33E+23	2.66E+23	2.93E+23	3.08E+23	3.32E+23	3.58E+23	3.72E+23	3.74E+23	
12			5.55E+21	5.78E+21	1.15E+22	1.92E+22	2.74E+22	2.84E+22	2.85E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	
13			3.05E+21	3.20E+21	7.46E+21	1.59E+22	4.12E+22	5.87E+22	7.30E+22	1.09E+23	1.25E+23	1.32E+23	1.35E+23	1.37E+23	1.37E+23	1.38E+23	1.38E+23	1.38E+23	1.38E+23	1.38E+23	1.38E+23	1.38E+23	1.38E+23	
14			5.32E+21	5.47E+21	8.59E+21	1.07E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	
15			6.68E+21	7.00E+21	1.56E+22	3.10E+22	6.51E+22	7.98E+22	8.77E+22	9.59E+22	9.66E+22	9.66E+22	9.66E+22	9.66E+22	9.66E+22	9.66E+22	9.66E+22	9.66E+22	9.66E+22	9.66E+22	9.66E+22	9.66E+22	9.66E+22	
16			4.74E+17	4.98E+17	1.20E+18	2.65E+18	7.70E+18	1.20E+19	1.62E+19	3.28E+19	4.88E+19	6.42E+19	7.90E+19	9.68E+19	1.25E+20	1.45E+20	1.74E+20	2.01E+20	2.17E+20	2.46E+20	2.84E+20	3.11E+20	3.16E+20	
17			8.72E+20	9.17E+20	2.21E+21	4.90E+21	1.43E+22	2.23E+22	3.04E+22	6.25E+22	9.47E+22	1.27E+23	1.59E+23	1.99E+23	2.66E+23	3.19E+23	3.88E+23	4.78E+23	5.31E+23	6.36E+23	7.94E+23	9.25E+23	9.51E+23	
18			3.37E+20	3.55E+20	8.56E+20	1.89E+21	5.47E+21	8.49E+21	1.15E+22	2.30E+22	3.40E+22	4.44E+22	5.42E+22	6.58E+22	8.35E+22	9.64E+22	1.14E+23	1.29E+23	1.38E+23	1.54E+23	1.73E+23	1.85E+23	1.87E+23	
19			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
20			3.43E+19	3.58E+19	7.96E+19	1.69E+20	4.73E+20	7.20E+20	9.57E+20	1.60E+21	2.51E+21	3.10E+21	3.60E+21	4.10E+21	4.73E+21	5.08E+21	5.45E+21	5.69E+21	5.79E+21	5.93E+21	6.03E+21	6.07E+21	6.07E+21	
21			1.75E+20	1.82E+20	3.73E+20	6.85E+20	1.24E+21	1.41E+21	1.47E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	
22			2.25E+17	2.34E+17	5.03E+17	1.00E+18	2.26E+18	2.93E+18	3.35E+18	3.99E+18	4.09E+18	4.11E+18	4.12E+18	4.12E+18	4.12E+18	4.12E+18	4.12E+18	4.12E+18	4.12E+18	4.12E+18	4.12E+18	4.12E+18	4.12E+18	
23			7.80E+16	8.15E+16	1.82E+17	3.90E+17	1.12E+18	1.74E+18	2.36E+18	4.83E+18	7.29E+18	9.73E+18	1.22E+19	1.52E+19	2.01E+19	2.41E+19	2.99E+19	3.58E+19	3.93E+19	4.67E+19	5.76E+19	6.63E+19	6.80E+19	
24			3.67E+18	3.79E+18	6.35E+18	8.63E+18	9.60E+18	9.62E+18	9.62E+18	9.62E+18	9.62E+18	9.62E+18	9.62E+18	9.62E+18	9.62E+18	9.62E+18	9.62E+18	9.62E+18	9.62E+18	9.62E+18	9.62E+18	9.62E+18	9.62E+18	
25			8.96E+17	9.36E+17	2.09E+18	4.47E+18	1.28E+19	1.99E+19	2.69E+19	5.47E+19	8.20E+19	1.09E+20	1.35E+20	1.67E+20	2.18E+20	2.58E+20	3.15E+20	3.69E+20	4.03E+20	4.69E+20	5.59E+20	6.27E+20	6.40E+20	
26			9.53E+19	9.95E+19	2.20E+20	4.59E+20	1.22E+21	1.78E+21	2.26E+21	3.65E+21	4.45E+21	4.91E+21	5.18E+21	5.35E+21	5.48E+21	5.51E+21	5.53E+21	5.53E+21	5.53E+21	5.53E+21	5.53E+21	5.53E+21	5.53E+21	
27			1.55E+20	1.62E+20	3.60E+20	7.64E+20	2.12E+21	3.22E+21	4.27E+21	7.93E+21	1.09E+22	1.33E+22	1.52E+22	1.71E+22	1.93E+22	2.05E+22	2.17E+22	2.24E+22	2.27E+22	2.30E+22	2.32E+22	2.33E+22	2.33E+22	
28			2.71E+16	2.83E+16	6.32E+16	1.35E+17	3.87E+17	6.03E+17	8.17E+17	1.67E+18	2.51E+18	3.33E+18	4.15E+18	5.15E+18	6.79E+18	8.07E+18	9.93E+18	1.17E+19	1.29E+19	1.51E+19	1.83E+19	2.08E+19	2.13E+19	
29			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
30			1.66E+20	1.74E+20	3.73E+20	7.43E+20	1.68E+21	2.19E+21	2.51E+21	3.00E+21	3.08E+21	3.09E+21	3.10E+21	3.10E+21	3.10E+21	3.10E+21	3.10E+21	3.10E+21	3.10E+21	3.10E+21	3.10E+21	3.10E+21	3.10E+21	
31			2.62E+20	2.72E+20	5.32E+20	9.02E+20	1.36E+21	1.44E+21	1.45E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	
32			6.09E+18	6.30E+18	1.10E+19	1.57E+19	1.84E+19	1.84E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	
33			6.63E+19	6.92E+19	1.54E+20	3.30E+20	9.39E+20	1.45E+21	1.90E+21	3.92E+21	5.78E+21	7.54E+21	9.20E+21	1.12E+22	1.41E+22	1.63E+22	1.92E+22	2.17E+22	2.32E+22	2.58E+22	2.90E+22	3.10E+22	3.13E+22	
34			1.33E+17	1.38E+17	3.09E+17	6.62E+17	1.90E+18	2.95E+18	4.00E+18	8.18E+18	1.23E+19	1.64E+19	2.05E+19	2.55E+19	3.37E+19	4.07E+19	4.97E+19	5.90E+19	6.50E+19	7.69E+19	9.39E+19	1.07E+20	1.10E+20	
35			4.08E+17	4.26E+17	9.51E+17	2.04E+18	5.84E+18	9.10E+18	1.24E+19	2.54E+19	3.84E+19	5.13E+19	6.45E+19	8.07E+19	1.08E+20	1.30E+20	1.62E+20	1.94E+20	2.16E+20	2.59E+20	3.24E+20	3.78E+20	3.89E+20	
36			6.88E+18	7.19E+18	1.60E+19	3.39E+19	9.36E+19	1.41E+20	1.86E+20	3.40E+20	4.60E+20	5.52E+20	6.25E+20	6.93E+20	7.68E+20	8.05E+20	8.38E+20	8.56E+20	8.63E+20	8.71E+20	8.75E+20	8.76E+20	8.76E+20	
37			4.21E+18	4.39E+18	9.22E+18	1.77E+19	3.57E+19	4.29E+19	4.66E+19	5.00E+19	5.02E+19	5.02E+19	5.02E+19	5.02E+19	5.02E+19	5.02E+19	5.02E+19	5.02E+19	5.02E+19	5.02E+19	5.02E+19	5.02E+19	5.02E+19	
38			1.82E+19	1.90E+19	4.25E+19	9.10E+19	2.60E+20	4.05E+20	5.48E+20	1.12E+21	1.68E+21	2.22E+21	2.76E+21	3.42E+21	4.49E+21	5.32E+21	6.52E+21	7.66E+21	8.40E+21	9.81E+21	1.18E+22	1.33E+22	1.36E+22	
39			1.64E+19	1.71E+19	3.51E+19	6.47E+19	1.18E+20	1.35E+20	1.41E+20	1.46E+20	1.46E+20	1.46E+20	1.46E+20	1.46E+20	1.46E+20	1.46E+20	1.46E+20	1.46E+20	1.46E+20	1.46E+20	1.46E+20	1.46E+20	1.46E+20	
40			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
41			1.87E+18	1.96E+18	4.32E+18	9.08E+18	2.43E+19	3.59E+19	4.61E+19	7.69E+19	9.61E+19	1.08E+20	1.16E+20	1.21E+20	1.25E+20	1.27E+20	1.28E+20	1.28E+20	1.28E+20	1.28E+20	1.28E+20	1.28E+20	1.28E+20	
42			6.13E+17	6.40E+17	1.43E+18	3.06E+18	8.74E+18	1.36E+19	1.84E+19	3.74E+19	5.60E+19	7.43E+19	9.21E+19	1.14E+20	1.49E+20	1.78E+20	2.14E+20	2.51E+20	2.74E+20	3.19E+20	3.80E+20	4.25E+20	4.34E+20	
43			2.08E+18	2.18E+18	4.81E+18	1.01E+19	2.69E+19	3.95E+19	5.05E+19	8.32E+19	1.03E+20	1.15E+20	1.22E+20	1.27E+20	1.31E+20	1.32E+20	1.33E+20	1.33E+20	1.33E+20	1.33E+20	1.33E+20	1.33E+20	1.33E+20	
44			1.23E+17	1.29E+17	2.87E+17	6.16E+17	1.76E+18	2.75E+18	3.73E+18	7.66E+18	1.16E+19	1.55E+19	1.94E+19	2.43E+19	3.23E+19	3.87E+19	4.83E+19	5.79E+19	6.42E+19	7.68E+19	9.54E+19	1.11E+20	1.14E+20	
45			1.66E+19	1.74E+19	3.86E+19	8.16E+19	2.24E+20	3.37E+20	4.42E+20	7.92E+20	1.05E+21	1.25E+21	1.39E+21	1.52E+21	1.66E+21	1.72E+21	1.77E+21	1.79E+21	1.80E+21	1.81E+21	1.81E+21	1.81E+21	1.81E+21	
46			5.11E+13	5.34E+13	1.19E+14	2.55E+14	7.32E+14	1.14E+15	1.55E+15	3.18E+15	4.82E+15	6.45E+15	8.09E+15	1.01E+16	1.35E+16	1.63E+16	2.04E+16	2.44E+16	2.72E+16	3.26E+16	4.08E+16	4.76E+16	4.90E+16	
47			1.28E+13	1.29E+13	1.47E+13	1.84E+13	3.15E+13	4.28E+13	5.40E+13	9.89E+13	1.44E+14	1.89E+14	2.34E+14	2.90E+14	3.83E+14	4.58E+14	5.70E+14	6.83E+14	7.58E+14	9.07E+14	1.13E+15	1.32E+15	1.36E+15	
48			2.39E+12	2.55E+12	7.13E+12	1.66E+13	4.97E+13	7.81E+13	1.06E+14	2.20E+14	3.34E+14	4.47E+14	5.61E+14	7.03E+14	9.39E+14	1.13E+15	1.41E+15	1.70E+15	1.88E+15	2.26E+15	2.83E+15	3.31E+15	3.40E+15	
49			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
50			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
51			8.86E+15	9.25E+15	2.07E+16	4.42E+16	1.27E+17	1.97E+17	2.67E+17	5.46E+17	8.21E+17	1.09E+18	1.36E+18	1.69E+18	2.24E+18	2.66E+18	3.29E+18	3.88E+18	4.27E+18	5.04E+18	6.12E+18	6.98E+18	7.15E+18	
52			5.39E+17	5.60E+17	1.13E+18	2.01E+18	3.39E+18	3.71E+18	3.81E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	
53			2.59E+17	2.70E+17	5.81E+17	1.16E+18	2.67E+18	3.50E+18	4.04E+18	4.91E+18	5.08E+18	5.11E+18	5.11E+18	5.11E+18	5.11E+18	5.11E+18	5.11E+18	5.11E+18	5.11E+18	5.11E+18	5.11E+18	5.11E+18	5.11E+18	
54			2.34E+18	2.45E+18	5.47E+18	1.17E+19	3.35E+19	5.22E+19	7.08E+19	1.45E+20	2.18E+20	2.90E+20	3.61E+20	4.50E+20	5.94E+20	7.08E+20	8.74E+20	1.04E+21	1.14E+21	1.35E+21	1.64E+21	1.87E+21	1.92E+21	
55			5.62E+17	5.87E+17	1.28E+18	2.64E+18	6.59E+18	9.18E+18	1.12E+19	1.58E+19	1.75E+19	1.81E+19	1.83E+19	1.84E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	
56			2.45E+18	2.56E+18	5.71E+18	1.22E+19	3.50E+19	5.43E+19	7.36E+19	1.50E+20	2.25E+20	2.98E+20	3.70E+20	4.57E+20	5.99E+20	7.08E+20	8.89E+20	1.02E+21	1.11E+21	1.29E+21	1.54E+21	1.74E+21	1.77E+21	
57			8.06E+18	8.41E+18	1.86E+19	3.92E+19	1.06E+20	1.57E+20	2.03E+20	3.46E+20	4.41E+20	5.04E+20	5.46E+20	5.78E+20	6.06E+20	6.16E+20	6.23E+20	6.25E+20	6.26E+20	6.27E+20	6.27E+20	6.27E+20	6.27E+20	
58			1.08E+17	1.13E+17	2.29E+17	4.16E+17	7.28E+17	8.12E+17	8.41E+17	8.56E+17	8.57E+17	8.57E+17	8.57E+17	8.57E+17	8.57E+17	8.57E+17	8.57E+17	8.57E+17	8.57E+17	8.57E+17	8.57E+17	8.57E+17	8.57E+17	
59			4.52E+18	4.68E+18	8.35E+18	1.24E+19	1.50E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	
60			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
61			1.83E+17	1.91E+17	4.27E+17	9.12E+17	2.59E+18	4.01E+18	5.40E+18	1.08E+19	1.58E+19	2.05E+19	2.49E+19	3.01E+19	3.78E+19	4.33E+19	5.06E+19	5.68E+19	6.04E+19	6.66E+19	7.37E+19	7.81E+19	7.89E+19	
62			1.96E+13	2.05E+13	4.57E+13	9.79E+13	2.81E+14	4.37E+14	5.94E+14	1.22E+15	1.85E+15	2.47E+15	3.10E+15	3.88E+15	5.19E+15	6.23E+15	7.80E+15	9.36E+15	1.04E+16	1.25E+16	1.56E+16	1.82E+16	1.88E+16	
63			2.84E+14	2.97E+14	6.63E+14	1.42E+15	4.07E+15	6.34E+15	8.60E+15	1.79E+16	2.66E+16	3.56E+16	4.45E+16	5.56E+16	7.40E+16	8.86E+16	1.10E+17	1.32E+17	1.46E+17	1.74E+17	2.15E+17	2.49E+17	2.56E+17	
64			2.76E+13	2.88E+13	6.43E+13	1.38E+14	3.95E+14	6.16E+14	8.36E+14	1.72E+15	2.60E+15	3.48E+15	4.36E+15	5.47E+15	7.30E+15	8.77E+15	1.10E+16	1.32E+16	1.46E+16	1.76E+16	2.20E+16	2.56E+16	2.64E+16	
65																								
66			3.96E+22	4.12E+22	8.37E+22	1.51E+23	2.88E+23	3.60E+23	4.15E+23	5.71E+23	6.88E+23	7.88E+23	8.78E+23	9.81E+23	1.14E+24	1.25E+24	1.40E+24	1.54E+24	1.62E+24	1.78E+24	2.00E+24	2.16E+24	2.20E+24	
67																								
68																								
69			Total Integrated Gamma Energy in Containment at Given Timesteps (MeV/cm³)																					
70			3.79E+12	3.95E+12	8.02E+12	1.44E+13	2.76E+13	3.44E+13	3.97E+13	5.47E+13	6.59E+13	7.55E+13	8.41E+13	9.39E+13	1.09E+14	1.19E+14	1.34E+14	1.47E+14	1.55E+14	1.71E+14	1.91E+14	2.07E+14	2.10E+14	
71																								
72																								
73																								
74																								
75																								

	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK
1																								
2			Beta Particle Radiation Energy in Containment at Given Timesteps (MeV)																					
3		1	2	2.0336	3	5	12	18	24	48	72	96	120	150	200	240	300	360	400	480	600	700	720	
4																								
5			3.40E+19	3.55E+19	8.08E+19	1.75E+20	5.03E+20	7.84E+20	1.06E+21	2.19E+21	3.31E+21	4.44E+21	5.56E+21	6.97E+21	9.31E+21	1.12E+22	1.40E+22	1.68E+22	1.87E+22	2.24E+22	2.80E+22	3.27E+22	3.35E+22	
6			5.21E+20	5.43E+20	1.13E+21	2.11E+21	3.89E+21	4.44E+21	4.66E+21	4.80E+21	4.80E+21	4.80E+21	4.80E+21	4.80E+21	4.80E+21	4.80E+21	4.80E+21	4.80E+21	4.80E+21	4.80E+21	4.80E+21	4.80E+21	4.80E+21	
7			3.39E+21	3.51E+21	6.04E+21	8.48E+21	9.68E+21	9.71E+21	9.71E+21	9.71E+21	9.71E+21	9.71E+21	9.71E+21	9.71E+21	9.71E+21	9.71E+21	9.71E+21	9.71E+21	9.71E+21	9.71E+21	9.71E+21	9.71E+21	9.71E+21	
8			1.99E+21	2.07E+21	4.13E+21	7.12E+21	1.10E+22	1.17E+22	1.18E+22	1.19E+22	1.19E+22	1.19E+22	1.19E+22	1.19E+22	1.19E+22	1.19E+22	1.19E+22	1.19E+22	1.19E+22	1.19E+22	1.19E+22	1.19E+22	1.19E+22	
9			1.88E+21	1.97E+21	4.46E+21	9.57E+21	2.70E+22	4.15E+22	5.54E+22	1.07E+23	1.52E+23	1.92E+23	2.26E+23	2.64E+23	3.14E+23	3.45E+23	3.80E+23	4.06E+23	4.19E+23	4.38E+23	4.54E+23	4.61E+23	4.62E+23	
10			2.07E+21	2.16E+21	4.72E+21	9.44E+21	2.13E+22	2.75E+22	3.14E+22	3.70E+22	3.79E+22	3.81E+22	3.81E+22	3.81E+22	3.81E+22	3.81E+22	3.81E+22	3.81E+22	3.81E+22	3.81E+22	3.81E+22	3.81E+22	3.81E+22	
11			4.61E+20	4.84E+20	1.15E+21	2.52E+21	7.24E+21	1.12E+22	1.51E+22	2.97E+22	4.32E+22	5.55E+22	6.68E+22	7.97E+22	9.83E+22	1.11E+23	1.27E+23	1.40E+23	1.47E+23	1.58E+23	1.70E+23	1.77E+23	1.78E+23	
12			1.18E+21	1.23E+21	2.45E+21	4.08E+21	5.82E+21	6.02E+21	6.05E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	
13			2.04E+21	2.14E+21	5.00E+21	1.06E+22	2.76E+22	3.93E+22	4.89E+22	7.28E+22	8.35E+22	8.84E+22	9.05E+22	9.16E+22	9.22E+22	9.23E+22	9.23E+22	9.23E+22	9.23E+22	9.23E+22	9.23E+22	9.23E+22	9.23E+22	
14			1.22E+21	1.26E+21	1.97E+21	2.47E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	
15			1.56E+21	1.64E+21	3.66E+21	7.24E+21	1.52E+22	1.87E+22	2.05E+22	2.24E+22	2.26E+22	2.26E+22	2.26E+22	2.26E+22	2.26E+22	2.26E+22	2.26E+22	2.26E+22	2.26E+22	2.26E+22	2.26E+22	2.26E+22	2.26E+22	
16			3.34E+18	3.52E+18	8.48E+18	1.87E+19	5.43E+19	8.46E+19	1.15E+20	2.32E+20	3.44E+20	4.53E+20	5.58E+20	6.83E+20	8.80E+20	1.03E+21	1.23E+21	1.42E+21	1.53E+21	1.74E+21	2.01E+21	2.20E+21	2.23E+21	
17			8.80E+19	9.25E+19	2.23E+20	4.94E+20	1.44E+21	2.25E+21	3.06E+21	6.31E+21	9.55E+21	1.28E+22	1.60E+22	2.01E+22	2.68E+22	3.21E+22	4.02E+22	4.82E+22	5.35E+22	6.42E+22	8.01E+22	9.33E+22	9.59E+22	
18			1.56E+19	1.64E+19	3.95E+19	8.71E+19	2.52E+20	3.92E+20	5.30E+20	1.06E+21	1.57E+21	2.05E+21	2.50E+21	3.04E+21	3.86E+21	4.45E+21	5.24E+21	5.94E+21	6.36E+21	7.09E+21	7.97E+21	8.54E+21	8.64E+21	
19			5.97E+19	6.28E+19	1.52E+20	3.35E+20	9.78E+20	1.53E+21	2.08E+21	4.28E+21	6.49E+21	8.69E+21	1.09E+22	1.36E+22	1.82E+22	2.19E+22	2.74E+22	3.29E+22	3.66E+22	4.39E+22	5.49E+22	6.41E+22	6.59E+22	
20			1.61E+19	1.68E+19	3.74E+19	7.95E+19	2.22E+20	3.38E+20	4.50E+20	8.48E+20	1.18E+21	1.46E+21	1.69E+21	1.93E+21	2.22E+21	2.39E+21	2.56E+21	2.67E+21	2.72E+21	2.79E+21	2.83E+21	2.85E+21	2.85E+21	
21			4.37E+19	4.55E+19	9.32E+19	1.71E+20	3.11E+20	3.52E+20	3.68E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	
22			1.04E+19	1.08E+19	2.32E+19	4.61E+19	1.04E+20	1.35E+20	1.55E+20	1.84E+20	1.89E+20	1.90E+20	1.90E+20	1.90E+20	1.90E+20	1.90E+20	1.90E+20	1.90E+20	1.90E+20	1.90E+20	1.90E+20	1.90E+20	1.90E+20	
23			3.20E+16	3.34E+16	7.46E+16	1.60E+17	4.58E+17	7.13E+17	9.67E+17	1.98E+18	2.99E+18	3.99E+18	4.99E+18	6.22E+18	7.26E+18	9.07E+18	1.23E+19	1.46E+19	1.61E+19	1.92E+19	2.36E+19	2.72E+19	2.79E+19	
24			3.34E+19	3.45E+19	5.77E+19	7.85E+19	8.74E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	
25			4.81E+18	5.03E+18	1.12E+19	2.40E+19	6.87E+19	1.07E+20	1.45E+20	2.94E+20	4.40E+20	5.84E+20	7.24E+20	8.96E+20	1.17E+21	1.39E+21	1.69E+21	1.98E+21	2.17E+21	2.52E+21	3.00E+21	3.37E+21	3.44E+21	
26			9.66E+18	1.01E+19	2.22E+19	4.66E+19	1.23E+20	1.80E+20	2.29E+20	3.70E+20	4.51E+20	4.98E+20	5.25E+20	5.43E+20	5.55E+20	5.58E+20	5.60E+20	5.60E+20	5.61E+20	5.61E+20	5.61E+20	5.61E+20	5.61E+20	
27			3.99E+19	4.17E+19	9.26E+19	1.97E+20	5.47E+20	8.30E+20	1.10E+21	2.04E+21	2.80E+21	3.42E+21	3.92E+21	4.41E+21	4.98E+21	5.29E+21	5.59E+21	5.76E+21	5.84E+21	5.93E+21	5.99E+21	6.00E+21	6.00E+21	
28			1.16E+20	1.21E+20	2.70E+20	5.79E+20	1.66E+21	2.58E+21	3.49E+21	7.13E+21	1.07E+22	1.43E+22	1.77E+22	2.20E+22	2.90E+22	3.45E+22	4.24E+22	5.01E+22	5.51E+22	6.47E+22	7.83E+22	8.90E+22	9.11E+22	
29			4.42E+18	4.62E+18	1.03E+19	2.21E+19	6.34E+19	9.88E+19	1.34E+20	2.76E+20	4.17E+20	5.59E+20	7.00E+20	8.77E+20	1.17E+21	1.41E+21	1.76E+21	2.12E+21	2.35E+21	2.82E+21	3.53E+21	4.12E+21	4.24E+21	
30			1.58E+20	1.65E+20	3.54E+20	7.06E+20	1.80E+21	2.08E+21	2.39E+21	2.65E+21	2.93E+21	2.94E+21	2.95E+21	2.95E+21	2.95E+21	2.95E+21	2.95E+21	2.95E+21	2.95E+21	2.95E+21	2.95E+21	2.95E+21	2.95E+21	
31			3.91E+19	4.06E+19	7.94E+19	1.35E+20	2.04E+20	2.15E+20	2.17E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	
32			1.55E+20	1.60E+20	2.79E+20	4.00E+20	4.67E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	
33			9.41E+19	9.83E+19	2.19E+20	4.69E+20	1.33E+21	2.06E+21	2.78E+21	5.57E+21	8.21E+21	1.07E+22	1.31E+22	1.59E+22	2.01E+22	2.31E+22	2.72E+22	3.08E+22	3.30E+22	3.67E+22	4.11E+22	4.40E+22	4.45E+22	
34			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
35			1.56E+16	1.63E+16	3.94E+16	7.79E+16	2.23E+17	3.48E+17	4.73E+17	9.71E+17	1.47E+18	1.97E+18	2.46E+18	3.05E+18	4.12E+18	4.95E+18	6.19E+18	7.43E+18	8.26E+18	9.91E+18	1.24E+19	1.44E+19	1.49E+19	
36			1.75E+19	1.83E+19	4.05E+19	8.59E+19	2.38E+20	3.59E+20	4.73E+20	8.63E+20	1.17E+21	1.40E+21	1.59E+21	1.76E+21	1.95E+21	2.04E+21	2.13E+21	2.17E+21	2.19E+21	2.21E+21	2.22E+21	2.22E+21	2.22E+21	
37			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
38			2.54E+18	2.66E+18	5.93E+18	1.27E+19	3.63E+19	5.65E+19	7.65E+19	1.56E+20	2.34E+20	3.11E+20	3.86E+20	4.78E+20	6.27E+20	7.43E+20	9.10E+20	1.07E+21	1.17E+21	1.37E+21	1.64E+21	1.85E+21	1.89E+21	
39			8.41E+18	8.76E+18	1.80E+19	3.32E+19	6.08E+19	6.93E+19	7.26E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	
40			1.57E+17	1.64E+17	3.66E+17	7.94E+17	2.25E+18	3.50E+18	4.75E+18	9.76E+18	1.48E+19	1.97E+19	2.47E+19	3.09E+19	4.13E+19	4.95E+19	6.18E+19	7.40E+19	8.21E+19	9.83E+19	1.22E+20	1.42E+20	1.46E+20	
41			3.67E+18	3.84E+18	8.47E+18	1.78E+19	4.77E+19	7.03E+19	9.03E+19	1.51E+20	1.88E+20	2.12E+20	2.27E+20	2.37E+20	2.46E+20	2.49E+20	2.50E+20	2.51E+20	2.51E+20	2.51E+20	2.51E+20	2.51E+20	2.51E+20	
42			1.15E+18	1.21E+18	2.69E+18	5.76E+18	1.65E+19	2.56E+19	3.47E+19	7.05E+19	1.06E+20	1.40E+20	1.73E+20	2.14E+20	2.80E+20	3.31E+20	4.04E+20	4.73E+20	5.17E+20	6.00E+20	7.14E+20	8.01E+20	8.17E+20	
43			3.12E+18	3.26E+18	7.20E+18	1.51E+19	4.03E+19	5.91E+19	7.57E+19	1.25E+20	1.54E+20	1.72E+20	1.83E+20	1.91E+20	1.96E+20	1.98E+20	1.99E+20	1.99E+20	1.99E+20	1.99E+20	1.99E+20	1.99E+20	1.99E+20	
44			5.32E+17	5.56E+17	1.24E+18	2.69E+18	7.63E+18	1.19E+19	1.61E+19	3.31E+19	5.00E+19	6.69E+19	8.38E+19	1.05E+20	1.40E+20	1.67E+20	2.09E+20	2.50E+20	2.77E+20	3.32E+20	4.12E+20	4.75E+20	4.92E+20	
45			1.11E+19	1.16E+19	2.58E+19	5.46E+19	1.50E+20	2.25E+20	2.96E+20	5.30E+20	7.04E+20	8.34E+20	9.31E+20	1.02E+21	1.11E+21	1.15E+21	1.18E+21	1.20E+21	1.20E+21	1.21E+21	1.21E+21	1.21E+21	1.21E+21	
46			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
47			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
48			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
49			5.82E+15	6.08E+15	1.36E+16	2.91E+16	8.34E+16	1.30E+17	1.76E+17	3.63E+17	5.49E+17	7.35E+17	9.21E+17	1.15E+18	1.54E+18	1.85E+18	2.32E+18	2.78E+18	3.09E+18	3.71E+18	4.64E+18	5.41E+18	5.56E+18	
50			2.14E+17	2.24E+17	4.96E+17	1.05E+18	2.90E+18	4.38E+18	5.77E+18	1.05E+19	1.41E+19	1.69E+19	1.91E+19	2.11E+19	2.33E+19	2.44E+19	2.54E+19	2.59E+19	2.61E+19	2.63E+19	2.64E+19	2.64E+19	2.64E+19	
51			1.48E+18	1.54E+18	3.44E+18	7.37E+18	2.11E+19	3.28E+19	4.45E+19	9.06E+19	1.37E+20	1.82E+20	2.27E+20	2.82E+20	3.73E+20	4.43E+20	5.47E+20	6.47E+20	7.12E+20	8.39E+20	1.02E+21	1.16E+21	1.19E+21	
52			3.09E+18	3.22E+18	6.48E+18	1.16E+19	1.95E+19	2.13E+19	2.19E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	
53			3.41E+18	3.55E+18	7.65E+18	1.53E+19	3.52E+19	4.60E+19	5.32E+19	6.46E+19	6.68E+19	6.72E+19	6.73E+19	6.73E+19	6.73E+19	6.73E+19	6.73E+19	6.73E+19	6.73E+19	6.73E+19	6.73E+19	6.73E+19	6.73E+19	
54			3.70E+17	3.87E+17	8.64E+17	1.85E+18	5.30E+18	8.24E+18	1.12E+19	2.29E+19	3.44E+19	4.58E+19	5.71E+19	7.11E+19	9.39E+19	1.12E+20	1.38E+20	1.64E+20	1.80E+20	2.13E+20	2.59E+20	2.96E+20	3.03E+20	
55			2.17E+18	2.27E+18	4.95E+18	1.02E+19	2.54E+19	3.55E+19	4.33E+19	6.09E+19	6.74E+19	6.99E+19	7.08E+19	7.12E+19	7.13E+19	7.13E+19	7.13E+19	7.13E+19	7.13E+19	7.13E+19	7.13E+19	7.13E+19	7.13E+19	
56			1.39E+17	1.45E+17	3.25E+17	6.95E+17	1.99E+18	3.09E+18	4.18E+18	8.51E+18	1.28E+19	1.69E+19	2.10E+19	2.66E+19	3.40E+19	4.02E+19	4.92E+19	5.77E+19	6.31E+19	7.35E+19	8.78E+19	9.87E+19	1.01E+20	
57			1.83E+18	1.92E+18	4.24E+18	8.93E+18	2.41E+19	3.58E+19	4.62E+19	7.89E+19	1.00E+20	1.15E+20	1.24E+20	1.32E+20	1.38E+20	1.40E+20	1.42E+20	1.42E+20	1.43E+20	1.43E+20	1.43E+20	1.43E+20	1.43E+20	
58			2.41E+18	2.50E+18	5.09E+18	9.24E+18	1.62E+19	1.80E+19	1.87E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	
59			1.41E+18	1.46E+18	2.60E+18	3.84E+18	4.66E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	
60			9.60E+17	1.00E+18	2.24E+18	4.79E+18	1.36E+19	2.11E+19	2.85E+19	5.70E+19	8.41E+19	1.10E+20	1.34E+20	1.63E+20	2.08E+20	2.40E+20	2.83E+20	3.21E+20	3.44E+20	3.85E+20	4.33E+20	4.66E+20	4.71E+20	
61			3.04E+17	3.18E+17	7.08E+17	1.51E+18	4.30E+18	6.65E+18	8.96E+18	1.78E+19	2.62E+19	3.40E+19	4.14E+19	4.99E+19	6.28E+19	7.19E+19	8.39E+19	9.42E+19	1.00E+20	1.10E+20	1.22E+20	1.30E+20	1.31E+20	
62			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
64			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
65																								
66			1.73E+22	1.80E+22	3.69E+22	6.80E+22	1.42E+23	1.88E+23	2.26E+23	3.41E+23	4.27E+23	4.99E+23	5.62E+23	6.31E+23	7.28E+23	7.94E+23	8.76E+23	9.45E+23	9.84E+23	1.05E+24	1.13E+24	1.19E+24	1.20E+24	
67																								
68																								
69			Total Integrated Beta Energy in Containment at Given Timesteps (MeV/cm^3)																					
70			1.66E+12	1.73E+12	3.53E+12	6.51E+12	1.36E+13	1.80E+13	2.17E+13	3.27E+13	4.09E+13	4.78E+13	5.38E+13	6.04E+13	6.97E+13	7.60E+13	8.39E+13	9.04E+13	9.42E+13	1.01E+14	1.09E+14	1.14E+14	1.15E+14	
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	A	B	C	D	E	F	G	H	I
1							Adjustment for Lasalle	Gap Release	Gap Release
2			Decay			Isotopic	Power Initial Core	Activity in Containment	Time Integrated Activity in
3		Isotopic	Constant	Release Fractions		Activity	Activity	at 0.5 hours	Containment through 0.5 hours
4	Class	Nuclide	(hours)[1]	0-0.5 hours	0.5-2 hours	(Ci/MW)	(Ci)	(Ci)	(Ci-hours)
5	1	Kr-85	7.37614098995042E-06	0.05	0.95	394.6	=(F5*3559)	=G5*D5*EXP(-C5*0.5)	=((G5*D5)/(0.5*C5*2))*(1-EXP(-0.5*C5))/(0.5*C5+1))
6	1	Kr-85m	0.154720352803559	0.05	0.95	8313	=(F6*3559)	=G6*D6*EXP(-C6*0.5)	=((G6*D6)/(0.5*C6*2))*(1-EXP(-0.5*C6))/(0.5*C6+1))
7	1	Kr-87	0.545069866757493	0.05	0.95	16330	=(F7*3559)	=G7*D7*EXP(-C7*0.5)	=((G7*D7)/(0.5*C7*2))*(1-EXP(-0.5*C7))/(0.5*C7+1))
8	1	Kr-88	0.244065908647868	0.05	0.95	23030	=(F8*3559)	=G8*D8*EXP(-C8*0.5)	=((G8*D8)/(0.5*C8*2))*(1-EXP(-0.5*C8))/(0.5*C8+1))
9	1	Xe-133	0.00550641230187437	0.05	0.95	54910	=(F9*3559)	=G9*D9*EXP(-C9*0.5)	=((G9*D9)/(0.5*C9*2))*(1-EXP(-0.5*C9))/(0.5*C9+1))
10	1	Xe-135	0.0762538152431183	0.05	0.95	22280	=(F10*3559)	=G10*D10*EXP(-C10*0.5)	=((G10*D10)/(0.5*C10*2))*(1-EXP(-0.5*C10))/(0.5*C10+1))
11	2	I-131	0.00359218066210585	0.05	0.25	26950	=(F11*3559)	=G11*D11*EXP(-C11*0.5)	=((G11*D11)/(0.5*C11*2))*(1-EXP(-0.5*C11))/(0.5*C11+1))
12	2	I-132	0.301368339373889	0.05	0.25	38890	=(F12*3559)	=G12*D12*EXP(-C12*0.5)	=((G12*D12)/(0.5*C12*2))*(1-EXP(-0.5*C12))/(0.5*C12+1))
13	2	I-133	0.0333243836807666	0.05	0.25	55560	=(F13*3559)	=G13*D13*EXP(-C13*0.5)	=((G13*D13)/(0.5*C13*2))*(1-EXP(-0.5*C13))/(0.5*C13+1))
14	2	I-134	0.790662183148227	0.05	0.25	61650	=(F14*3559)	=G14*D14*EXP(-C14*0.5)	=((G14*D14)/(0.5*C14*2))*(1-EXP(-0.5*C14))/(0.5*C14+1))
15	2	I-135	0.1048634161210 2	0.05	0.25	51920	=(F15*3559)	=G15*D15*EXP(-C15*0.5)	=((G15*D15)/(0.5*C15*2))*(1-EXP(-0.5*C15))/(0.5*C15+1))
16	3	Rb-86	0.00154775629814207	0.05	0.2	65.18	=(F16*3559)	=G16*D16*EXP(-C16*0.5)	=((G16*D16)/(0.5*C16*2))*(1-EXP(-0.5*C16))/(0.5*C16+1))
17	3	Cs-134	0.000003834734792059658	0.05	0.2	7280	=(F17*3559)	=G17*D17*EXP(-C17*0.5)	=((G17*D17)/(0.5*C17*2))*(1-EXP(-0.5*C17))/(0.5*C17+1))
18	3	Cs-136	0.00220456660463443	0.05	0.2	2027	=(F18*3559)	=G18*D18*EXP(-C18*0.5)	=((G18*D18)/(0.5*C18*2))*(1-EXP(-0.5*C18))/(0.5*C18+1))
19	3	Cs-137	2.63574104707562E-06	0.05	0.2	4538	=(F19*3559)	=G19*D19*EXP(-C19*0.5)	=((G19*D19)/(0.5*C19*2))*(1-EXP(-0.5*C19))/(0.5*C19+1))
20	4	Sb-127	0.00750159286320287	0	0.05	2944	=(F20*3559)	=G20*D20*EXP(-C20*0.5)	=((G20*D20)/(0.5*C20*2))*(1-EXP(-0.5*C20))/(0.5*C20+1))
21	4	Sb-129	0.160450736240728	0	0.05	8725	=(F21*3559)	=G21*D21*EXP(-C21*0.5)	=((G21*D21)/(0.5*C21*2))*(1-EXP(-0.5*C21))/(0.5*C21+1))
22	4	Te-127	0.0741333882951813	0	0.05	2918	=(F22*3559)	=G22*D22*EXP(-C22*0.5)	=((G22*D22)/(0.5*C22*2))*(1-EXP(-0.5*C22))/(0.5*C22+1))
23	4	Te-127m	0.00026496451856267	0	0.05	390.9	=(F23*3559)	=G23*D23*EXP(-C23*0.5)	=((G23*D23)/(0.5*C23*2))*(1-EXP(-0.5*C23))/(0.5*C23+1))
24	4	Te-129	0.597540672896505	0	0.05	8584	=(F24*3559)	=G24*D24*EXP(-C24*0.5)	=((G24*D24)/(0.5*C24*2))*(1-EXP(-0.5*C24))/(0.5*C24+1))
25	4	Te-129m	0.00085955751575329	0	0.05	1279	=(F25*3559)	=G25*D25*EXP(-C25*0.5)	=((G25*D25)/(0.5*C25*2))*(1-EXP(-0.5*C25))/(0.5*C25+1))
26	4	Te-131m	0.0231049060186648	0	0.05	3892	=(F26*3559)	=G26*D26*EXP(-C26*0.5)	=((G26*D26)/(0.5*C26*2))*(1-EXP(-0.5*C26))/(0.5*C26+1))
27	4	Te-132	0.00886377468746733	0	0.05	38290	=(F27*3559)	=G27*D27*EXP(-C27*0.5)	=((G27*D27)/(0.5*C27*2))*(1-EXP(-0.5*C27))/(0.5*C27+1))
28	5	Sr-89	0.00057190361432338 7	0	0.02	27980	=(F28*3559)	=G28*D28*EXP(-C28*0.5)	=((G28*D28)/(0.5*C28*2))*(1-EXP(-0.5*C28))/(0.5*C28+1))
29	5	Sr-90	2.71539256723449E-06	0	0.02	3178	=(F29*3559)	=G29*D29*EXP(-C29*0.5)	=((G29*D29)/(0.5*C29*2))*(1-EXP(-0.5*C29))/(0.5*C29+1))
30	5	Sr-91	0.0729628611115732	0	0.02	38010	=(F30*3559)	=G30*D30*EXP(-C30*0.5)	=((G30*D30)/(0.5*C30*2))*(1-EXP(-0.5*C30))/(0.5*C30+1))
31	5	Sr-92	0.255773867365293	0	0.02	40170	=(F31*3559)	=G31*D31*EXP(-C31*0.5)	=((G31*D31)/(0.5*C31*2))*(1-EXP(-0.5*C31))/(0.5*C31+1))
32	6	Ba-139	0.502887918181339	0	0.02	50840	=(F32*3559)	=G32*D32*EXP(-C32*0.5)	=((G32*D32)/(0.5*C32*2))*(1-EXP(-0.5*C32))/(0.5*C32+1))
33	6	Ba-140	0.0022669648762426 3	0	0.02	48960	=(F33*3559)	=G33*D33*EXP(-C33*0.5)	=((G33*D33)/(0.5*C33*2))*(1-EXP(-0.5*C33))/(0.5*C33+1))
34	7	Co-58	0.00040792560012021	0	0.0025	152.9	=(F34*3559)	=G34*D34*EXP(-C34*0.5)	=((G34*D34)/(0.5*C34*2))*(1-EXP(-0.5*C34))/(0.5*C34+1))
35	7	Co-60	0.000015001371924194	0	0.0025	183	=(F35*3559)	=G35*D35*EXP(-C35*0.5)	=((G35*D35)/(0.5*C35*2))*(1-EXP(-0.5*C35))/(0.5*C35+1))
36	7	Mo-99	0.0105022300084 84	0	0.0025	50780	=(F36*3559)	=G36*D36*EXP(-C36*0.5)	=((G36*D36)/(0.5*C36*2))*(1-EXP(-0.5*C36))/(0.5*C36+1))
37	7	Tc-99m	0.115140727667765	0	0.0025	44470	=(F37*3559)	=G37*D37*EXP(-C37*0.5)	=((G37*D37)/(0.5*C37*2))*(1-EXP(-0.5*C37))/(0.5*C37+1))
38	7	Ru-103	0.00073526304794631	0	0.0025	42424	=(F38*3559)	=G38*D38*EXP(-C38*0.5)	=((G38*D38)/(0.5*C38*2))*(1-EXP(-0.5*C38))/(0.5*C38+1))
39	7	Ru-105	0.156114229855844	0	0.0025	29660	=(F39*3559)	=G39*D39*EXP(-C39*0.5)	=((G39*D39)/(0.5*C39*2))*(1-EXP(-0.5*C39))/(0.5*C39+1))
40	7	Ru-106	0.000078438708456574	0	0.0025	17600	=(F40*3559)	=G40*D40*EXP(-C40*0.5)	=((G40*D40)/(0.5*C40*2))*(1-EXP(-0.5*C40))/(0.5*C40+1))
41	7	Rh-105	0.019602578635745 1	0	0.0025	27960	=(F41*3559)	=G41*D41*EXP(-C41*0.5)	=((G41*D41)/(0.5*C41*2))*(1-EXP(-0.5*C41))/(0.5*C41+1))
42	8	Ce-141	0.000888622889244363	0	0.0005	44920	=(F42*3559)	=G42*D42*EXP(-C42*0.5)	=((G42*D42)/(0.5*C42*2))*(1-EXP(-0.5*C42))/(0.5*C42+1))
43	8	Ce-143	0.021004480016968	0	0.0005	44270	=(F43*3559)	=G43*D43*EXP(-C43*0.5)	=((G43*D43)/(0.5*C43*2))*(1-EXP(-0.5*C43))/(0.5*C43+1))
44	8	Ce-144	0.000101586818583648	0	0.0005	35960	=(F44*3559)	=G44*D44*EXP(-C44*0.5)	=((G44*D44)/(0.5*C44*2))*(1-EXP(-0.5*C44))/(0.5*C44+1))
45	8	Np-239	0.012763750540692 6	0	0.0005	554000	=(F45*3559)	=G45*D45*EXP(-C45*0.5)	=((G45*D45)/(0.5*C45*2))*(1-EXP(-0.5*C45))/(0.5*C45+1))
46	8	Pu-238	9.01210752362303E-07	0	0.0005	179.6	=(F46*3559)	=G46*D46*EXP(-C46*0.5)	=((G46*D46)/(0.5*C46*2))*(1-EXP(-0.5*C46))/(0.5*C46+1))
47	8	Pu-239	3.28577732857962E-09	0	0.0005	12.07	=(F47*3559)	=G47*D47*EXP(-C47*0.5)	=((G47*D47)/(0.5*C47*2))*(1-EXP(-0.5*C47))/(0.5*C47+1))
48	8	Pu-240	1.20961039333438E-08	0	0.0005	13.08	=(F48*3559)	=G48*D48*EXP(-C48*0.5)	=((G48*D48)/(0.5*C48*2))*(1-EXP(-0.5*C48))/(0.5*C48+1))
49	8	Pu-241	5.49112718140753E-06	0	0.0005	6257	=(F49*3559)	=G49*D49*EXP(-C49*0.5)	=((G49*D49)/(0.5*C49*2))*(1-EXP(-0.5*C49))/(0.5*C49+1))
50	9	Y-90	0.0108304246962491	0	0.0002	3272	=(F50*3559)	=G50*D50*EXP(-C50*0.5)	=((G50*D50)/(0.5*C50*2))*(1-EXP(-0.5*C50))/(0.5*C50+1))
51	9	Y-91	0.000493610195237242	0	0.0002	34480	=(F51*3559)	=G51*D51*EXP(-C51*0.5)	=((G51*D51)/(0.5*C51*2))*(1-EXP(-0.5*C51))/(0.5*C51+1))
52	9	Y-92	0.195804288293 77	0	0.0002	40290	=(F52*3559)	=G52*D52*EXP(-C52*0.5)	=((G52*D52)/(0.5*C52*2))*(1-EXP(-0.5*C52))/(0.5*C52+1))
53	9	Y-93	0.0686284337188065	0	0.0002	45260	=(F53*3559)	=G53*D53*EXP(-C53*0.5)	=((G53*D53)/(0.5*C53*2))*(1-EXP(-0.5*C53))/(0.5*C53+1))
54	9	Zr-95	0.00045140876091483 4	0	0.0002	44890	=(F54*3559)	=G54*D54*EXP(-C54*0.5)	=((G54*D54)/(0.5*C54*2))*(1-EXP(-0.5*C54))/(0.5*C54+1))
55	9	Zr-97	0.0410146260686358	0	0.0002	46570	=(F55*3559)	=G55*D55*EXP(-C55*0.5)	=((G55*D55)/(0.5*C55*2))*(1-EXP(-0.5*C55))/(0.5*C55+1))
56	9	Nb-95	0.000921653841346545	0	0.0002	45120	=(F56*3559)	=G56*D56*EXP(-C56*0.5)	=((G56*D56)/(0.5*C56*2))*(1-EXP(-0.5*C56))/(0.5*C56+1))
57	9	La-140	0.017211640355537	0	0.0002	50190	=(F57*3559)	=G57*D57*EXP(-C57*0.5)	=((G57*D57)/(0.5*C57*2))*(1-EXP(-0.5*C57))/(0.5*C57+1))
58	9	La-141	0.176373328386755	0	0.0002	46400	=(F58*3559)	=G58*D58*EXP(-C58*0.5)	=((G58*D58)/(0.5*C58*2))*(1-EXP(-0.5*C58))/(0.5*C58+1))
59	9	La-142	0.449608981984829	0	0.0002	45320	=(F59*3559)	=G59*D59*EXP(-C59*0.5)	=((G59*D59)/(0.5*C59*2))*(1-EXP(-0.5*C59))/(0.5*C59+1))
60	9	Pr-143	0.00212987702974418	0	0.0002	42930	=(F60*3559)	=G60*D60*EXP(-C60*0.5)	=((G60*D60)/(0.5*C60*2))*(1-EXP(-0.5*C60))/(0.5*C60+1))
61	9	Nd-147	0.00263033993837259	0	0.0002	18380	=(F61*3559)	=G61*D61*EXP(-C61*0.5)	=((G61*D61)/(0.5*C61*2))*(1-EXP(-0.5*C61))/(0.5*C61+1))
62	9	Am-241	1.82852872306737E-07	0	0.0002	9.797	=(F62*3559)	=G62*D62*EXP(-C62*0.5)	=((G62*D62)/(0.5*C62*2))*(1-EXP(-0.5*C62))/(0.5*C62+1))
63	9	Cm-242	0.000177402533927095	0	0.0002	2388	=(F63*3559)	=G63*D63*EXP(-C63*0.5)	=((G63*D63)/(0.5*C63*2))*(1-EXP(-0.5*C63))/(0.5*C63+1))
64	9	Cm-244	4.36621929368561E-06	0	0.0002	260.2	=(F64*3559)	=G64*D64*EXP(-C64*0.5)	=((G64*D64)/(0.5*C64*2))*(1-EXP(-0.5*C64))/(0.5*C64+1))
65									
66									
67									
68									
69				Disintegrations per Curie-hour=		=370000000000*3600			
70				Drywell (Drywell + Supp. Pool Airspace) cm^3=		=((229538+165100-(131900-128800))-22712)*28316.8			
71									
72									
73									
74									
75									

R1

	J	K	L	M	N	O	P
1	Early In-vessel Release	Early In-vessel Release	TOTAL	TOTAL	Gamma (Photon)	Gamma (Photon)	
2	Activity in Containment	Time Integrated Activity in	Time Integrated Activity in	Activity in Containment	Emission	Emission Energy per	Beta Particle
3	at 2.0 hours	Containment through 2.0 hours	Containment through 2.0 hours	at 2.0 hours	Energy	Unit of Activity	Emission Energy
4	(Ci)	(Ci-hours)	(Ci-hours)	(Ci)	(MeV/decay)	(MeV/Ci-hour)	(MeV/decay)
5	=G5*EXP(-C5*0.5)*E5*EXP(-1.5*C5)	=(((G5*EXP(-0.5*C5))*E5)/(1.5*C5^2))*(1-EXP(-1.5*C5))*(1.5*C5+1))	=I5+K5	=J5+H5*EXP(-C5*1.5)	0.0022307166	=$F$69*N5	0.250508957
6	=G6*EXP(-C6*0.5)*E6*EXP(-1.5*C6)	=(((G6*EXP(-0.5*C6))*E6)/(1.5*C6^2))*(1-EXP(-1.5*C6))*(1.5*C6+1))	=I6+K6	=J6+H6*EXP(-C6*1.5)	0.15774826536 1	=$F$69*N6	0.228966846
7	=G7*EXP(-C7*0.5)*E7*EXP(-1.5*C7)	=(((G7*EXP(-0.5*C7))*E7)/(1.5*C7^2))*(1-EXP(-1.5*C7))*(1.5*C7+1))	=I7+K7	=J7+H7*EXP(-C7*1.5)	0.793096881819	=$F$69*N7	1.322658588
8	=G8*EXP(-C8*0.5)*E8*EXP(-1.5*C8)	=(((G8*EXP(-0.5*C8))*E8)/(1.5*C8^2))*(1-EXP(-1.5*C8))*(1.5*C8+1))	=I8+K8	=J8+H8*EXP(-C8*1.5)	1.954558418287	=$F$69*N8	3.596834083
9	=G9*EXP(-C9*0.5)*E9*EXP(-1.5*C9)	=(((G9*EXP(-0.5*C9))*E9)/(1.5*C9^2))*(1-EXP(-1.5*C9))*(1.5*C9+1))	=I9+K9	=J9+H9*EXP(-C9*1.5)	0.045287020395	=$F$69*N9	0.1004148336
10	=G10*EXP(-C10*0.5)*E10*EXP(-1.5*C10)	=(((G10*EXP(-0.5*C10))*E10)/(1.5*C10^2))*(1-EXP(-1.5*C10))*(1.5*C10+1))	=I10+K10	=J10+H10*EXP(-C10*1.5)	0.247941754665	=$F$69*N10	0.302846519
11	=G11*EXP(-C11*0.5)*E11*EXP(-1.5*C11)	=(((G11*EXP(-0.5*C11))*E11)/(1.5*C11^2))*(1-EXP(-1.5*C11))*(1.5*C11+1))	=I11+K11	=J11+H11*EXP(-C11*1.5)	0.381140122473	=$F$69*N11	0.1814591046
12	=G12*EXP(-C12*0.5)*E12*EXP(-1.5*C12)	=(((G12*EXP(-0.5*C12))*E12)/(1.5*C12^2))*(1-EXP(-1.5*C12))*(1.5*C12+1))	=I12+K12	=J12+H12*EXP(-C12*1.5)	2.291306399248	=$F$69*N12	4.48605791392
13	=G13*EXP(-C13*0.5)*E13*EXP(-1.5*C13)	=(((G13*EXP(-0.5*C13))*E13)/(1.5*C13^2))*(1-EXP(-1.5*C13))*(1.5*C13+1))	=I13+K13	=J13+H13*EXP(-C13*1.5)	0.606674510357	=$F$69*N13	0.40685652
14	=G14*EXP(-C14*0.5)*E14*EXP(-1.5*C14)	=(((G14*EXP(-0.5*C14))*E14)/(1.5*C14^2))*(1-EXP(-1.5*C14))*(1.5*C14+1))	=I14+K14	=J14+H14*EXP(-C14*1.5)	2.625317012962	=$F$69*N14	0.602958193
15	=G15*EXP(-C15*0.5)*E15*EXP(-1.5*C15)	=(((G15*EXP(-0.5*C15))*E15)/(1.5*C15^2))*(1-EXP(-1.5*C15))*(1.5*C15+1))	=I15+K15	=J15+H15*EXP(-C15*1.5)	1.575084825635	=$F$69*N15	0.3682553988
16	=G16*EXP(-C16*0.5)*E16*EXP(-1.5*C16)	=(((G16*EXP(-0.5*C16))*E16)/(1.5*C16^2))*(1-EXP(-1.5*C16))*(1.5*C16+1))	=I16+K16	=J16+H16*EXP(-C16*1.5)	0.094520097	=$F$69*N16	0.66743696
17	=G17*EXP(-C17*0.5)*E17*EXP(-1.5*C17)	=(((G17*EXP(-0.5*C17))*E17)/(1.5*C17^2))*(1-EXP(-1.5*C17))*(1.5*C17+1))	=I17+K17	=J17+H17*EXP(-C17*1.5)	1.555068123218	=$F$69*N17	0.1568435737
18	=G18*EXP(-C18*0.5)*E18*EXP(-1.5*C18)	=(((G18*EXP(-0.5*C18))*E18)/(1.5*C18^2))*(1-EXP(-1.5*C18))*(1.5*C18+1))	=I18+K18	=J18+H18*EXP(-C18*1.5)	2.188003417414	=$F$69*N18	0.10006191
19	=G19*EXP(-C19*0.5)*E19*EXP(-1.5*C19)	=(((G19*EXP(-0.5*C19))*E19)/(1.5*C19^2))*(1-EXP(-1.5*C19))*(1.5*C19+1))	=I19+K19	=J19+H19*EXP(-C19*1.5)	0	=$F$69*N19	0.1707536
20	=G20*EXP(-C20*0.5)*E20*EXP(-1.5*C20)	=(((G20*EXP(-0.5*C20))*E20)/(1.5*C20^2))*(1-EXP(-1.5*C20))*(1.5*C20+1))	=I20+K20	=J20+H20*EXP(-C20*1.5)	0.6818891977	=$F$69*N20	0.31098782
21	=G21*EXP(-C21*0.5)*E21*EXP(-1.5*C21)	=(((G21*EXP(-0.5*C21))*E21)/(1.5*C21^2))*(1-EXP(-1.5*C21))*(1.5*C21+1))	=I21+K21	=J21+H21*EXP(-C21*1.5)	1.429852264698	=$F$69*N21	0.35760248
22	=G22*EXP(-C22*0.5)*E22*EXP(-1.5*C22)	=(((G22*EXP(-0.5*C22))*E22)/(1.5*C22^2))*(1-EXP(-1.5*C22))*(1.5*C22+1))	=I22+K22	=J22+H22*EXP(-C22*1.5)	0.00483793758	=$F$69*N22	0.22294435909
23	=G23*EXP(-C23*0.5)*E23*EXP(-1.5*C23)	=(((G23*EXP(-0.5*C23))*E23)/(1.5*C23^2))*(1-EXP(-1.5*C23))*(1.5*C23+1))	=I23+K23	=J23+H23*EXP(-C23*1.5)	0.011223909987	=$F$69*N23	0.004605048475
24	=G24*EXP(-C24*0.5)*E24*EXP(-1.5*C24)	=(((G24*EXP(-0.5*C24))*E24)/(1.5*C24^2))*(1-EXP(-1.5*C24))*(1.5*C24+1))	=I24+K24	=J24+H24*EXP(-C24*1.5)	0.05765387064	=$F$69*N24	0.52454731249
25	=G25*EXP(-C25*0.5)*E25*EXP(-1.5*C25)	=(((G25*EXP(-0.5*C25))*E25)/(1.5*C25^2))*(1-EXP(-1.5*C25))*(1.5*C25+1))	=I25+K25	=J25+H25*EXP(-C25*1.5)	0.039439344334	=$F$69*N25	0.21189601106
26	=G26*EXP(-C26*0.5)*E26*EXP(-1.5*C26)	=(((G26*EXP(-0.5*C26))*E26)/(1.5*C26^2))*(1-EXP(-1.5*C26))*(1.5*C26+1))	=I26+K26	=J26+H26*EXP(-C26*1.5)	1.426278626444	=$F$69*N26	0.14451134921
27	=G27*EXP(-C27*0.5)*E27*EXP(-1.5*C27)	=(((G27*EXP(-0.5*C27))*E27)/(1.5*C27^2))*(1-EXP(-1.5*C27))*(1.5*C27+1))	=I27+K27	=J27+H27*EXP(-C27*1.5)	0.2306991102	=$F$69*N27	0.0594
28	=G28*EXP(-C28*0.5)*E28*EXP(-1.5*C28)	=(((G28*EXP(-0.5*C28))*E28)/(1.5*C28^2))*(1-EXP(-1.5*C28))*(1.5*C28+1))	=I28+K28	=J28+H28*EXP(-C28*1.5)	0.000136365	=$F$69*N28	0.58294069
29	=G29*EXP(-C29*0.5)*E29*EXP(-1.5*C29)	=(((G29*EXP(-0.5*C29))*E29)/(1.5*C29^2))*(1-EXP(-1.5*C29))*(1.5*C29+1))	=I29+K29	=J29+H29*EXP(-C29*1.5)	0	=$F$69*N29	0.1958
30	=G30*EXP(-C30*0.5)*E30*EXP(-1.5*C30)	=(((G30*EXP(-0.5*C30))*E30)/(1.5*C30^2))*(1-EXP(-1.5*C30))*(1.5*C30+1))	=I30+K30	=J30+H30*EXP(-C30*1.5)	0.6866844122	=$F$69*N30	0.6530528087
31	=G31*EXP(-C31*0.5)*E31*EXP(-1.5*C31)	=(((G31*EXP(-0.5*C31))*E31)/(1.5*C31^2))*(1-EXP(-1.5*C31))*(1.5*C31+1))	=I31+K31	=J31+H31*EXP(-C31*1.5)	1.3390584282	=$F$69*N31	0.1999341
32	=G32*EXP(-C32*0.5)*E32*EXP(-1.5*C32)	=(((G32*EXP(-0.5*C32))*E32)/(1.5*C32^2))*(1-EXP(-1.5*C32))*(1.5*C32+1))	=I32+K32	=J32+H32*EXP(-C32*1.5)	0.03252667082	=$F$69*N32	0.89663966139
33	=G33*EXP(-C33*0.5)*E33*EXP(-1.5*C33)	=(((G33*EXP(-0.5*C33))*E33)/(1.5*C33^2))*(1-EXP(-1.5*C33))*(1.5*C33+1))	=I33+K33	=J33+H33*EXP(-C33*1.5)	0.190953976964	=$F$69*N33	0.271218
34	=G34*EXP(-C34*0.5)*E34*EXP(-1.5*C34)	=(((G34*EXP(-0.5*C34))*E34)/(1.5*C34^2))*(1-EXP(-1.5*C34))*(1.5*C34+1))	=I34+K34	=J34+H34*EXP(-C34*1.5)	0.975777390457	=$F$69*N34	0
35	=G35*EXP(-C35*0.5)*E35*EXP(-1.5*C35)	=(((G35*EXP(-0.5*C35))*E35)/(1.5*C35^2))*(1-EXP(-1.5*C35))*(1.5*C35+1))	=I35+K35	=J35+H35*EXP(-C35*1.5)	2.50581309266	=$F$69*N35	0.09579
36	=G36*EXP(-C36*0.5)*E36*EXP(-1.5*C36)	=(((G36*EXP(-0.5*C36))*E36)/(1.5*C36^2))*(1-EXP(-1.5*C36))*(1.5*C36+1))	=I36+K36	=J36+H36*EXP(-C36*1.5)	0.154955305573	=$F$69*N36	0.39337430042
37	=G37*EXP(-C37*0.5)*E37*EXP(-1.5*C37)	=(((G37*EXP(-0.5*C37))*E37)/(1.5*C37^2))*(1-EXP(-1.5*C37))*(1.5*C37+1))	=I37+K37	=J37+H37*EXP(-C37*1.5)	0.126564800649	=$F$69*N37	0
38	=G38*EXP(-C38*0.5)*E38*EXP(-1.5*C38)	=(((G38*EXP(-0.5*C38))*E38)/(1.5*C38^2))*(1-EXP(-1.5*C38))*(1.5*C38+1))	=I38+K38	=J38+H38*EXP(-C38*1.5)	0.483836016752	=$F$69*N38	0.067541059675
39	=G39*EXP(-C39*0.5)*E39*EXP(-1.5*C39)	=(((G39*EXP(-0.5*C39))*E39)/(1.5*C39^2))*(1-EXP(-1.5*C39))*(1.5*C39+1))	=I39+K39	=J39+H39*EXP(-C39*1.5)	0.78421096111	=$F$69*N39	0.4025542923
40	=G40*EXP(-C40*0.5)*E40*EXP(-1.5*C40)	=(((G40*EXP(-0.5*C40))*E40)/(1.5*C40^2))*(1-EXP(-1.5*C40))*(1.5*C40+1))	=I40+K40	=J40+H40*EXP(-C40*1.5)	0	=$F$69*N40	0.01063
41	=G41*EXP(-C41*0.5)*E41*EXP(-1.5*C41)	=(((G41*EXP(-0.5*C41))*E41)/(1.5*C41^2))*(1-EXP(-1.5*C41))*(1.5*C41+1))	=I41+K41	=J41+H41*EXP(-C41*1.5)	0.077649863874	=$F$69*N41	0.152191179
42	=G42*EXP(-C42*0.5)*E42*EXP(-1.5*C42)	=(((G42*EXP(-0.5*C42))*E42)/(1.5*C42^2))*(1-EXP(-1.5*C42))*(1.5*C42+1))	=I42+K42	=J42+H42*EXP(-C42*1.5)	0.076850361916	=$F$69*N42	0.1446745
43	=G43*EXP(-C43*0.5)*E43*EXP(-1.5*C43)	=(((G43*EXP(-0.5*C43))*E43)/(1.5*C43^2))*(1-EXP(-1.5*C43))*(1.5*C43+1))	=I43+K43	=J43+H43*EXP(-C43*1.5)	0.27336694791	=$F$69*N43	0.4096948677
44	=G44*EXP(-C44*0.5)*E44*EXP(-1.5*C44)	=(((G44*EXP(-0.5*C44))*E44)/(1.5*C44^2))*(1-EXP(-1.5*C44))*(1.5*C44+1))	=I44+K44	=J44+H44*EXP(-C44*1.5)	0.019274754644	=$F$69*N44	0.0832751
45	=G45*EXP(-C45*0.5)*E45*EXP(-1.5*C45)	=(((G45*EXP(-0.5*C45))*E45)/(1.5*C45^2))*(1-EXP(-1.5*C45))*(1.5*C45+1))	=I45+K45	=J45+H45*EXP(-C45*1.5)	0.172110902139	=$F$69*N45	0.115125998279
46	=G46*EXP(-C46*0.5)*E46*EXP(-1.5*C46)	=(((G46*EXP(-0.5*C46))*E46)/(1.5*C46^2))*(1-EXP(-1.5*C46))*(1.5*C46+1))	=I46+K46	=J46+H46*EXP(-C46*1.5)	0.001900358319	=$F$69*N46	0
47	=G47*EXP(-C47*0.5)*E47*EXP(-1.5*C47)	=(((G47*EXP(-0.5*C47))*E47)/(1.5*C47^2))*(1-EXP(-1.5*C47))*(1.5*C47+1))	=I47+K47	=J47+H47*EXP(-C47*1.5)	0.00065406276	=$F$69*N47	0
48	=G48*EXP(-C48*0.5)*E48*EXP(-1.5*C48)	=(((G48*EXP(-0.5*C48))*E48)/(1.5*C48^2))*(1-EXP(-1.5*C48))*(1.5*C48+1))	=I48+K48	=J48+H48*EXP(-C48*1.5)	0.001526153675	=$F$69*N48	0
49	=G49*EXP(-C49*0.5)*E49*EXP(-1.5*C49)	=(((G49*EXP(-0.5*C49))*E49)/(1.5*C49^2))*(1-EXP(-1.5*C49))*(1.5*C49+1))	=I49+K49	=J49+H49*EXP(-C49*1.5)	0	=$F$69*N49	0.0052298954
50	=G50*EXP(-C50*0.5)*E50*EXP(-1.5*C50)	=(((G50*EXP(-0.5*C50))*E50)/(1.5*C50^2))*(1-EXP(-1.5*C50))*(1.5*C50+1))	=I50+K50	=J50+H50*EXP(-C50*1.5)	0	=$F$69*N50	0.9347186195
51	=G51*EXP(-C51*0.5)*E51*EXP(-1.5*C51)	=(((G51*EXP(-0.5*C51))*E51)/(1.5*C51^2))*(1-EXP(-1.5*C51))*(1.5*C51+1))	=I51+K51	=J51+H51*EXP(-C51*1.5)	0.0036147	=$F$69*N51	0.6022883
52	=G52*EXP(-C52*0.5)*E52*EXP(-1.5*C52)	=(((G52*EXP(-0.5*C52))*E52)/(1.5*C52^2))*(1-EXP(-1.5*C52))*(1.5*C52+1))	=I52+K52	=J52+H52*EXP(-C52*1.5)	0.2516243047	=$F$69*N52	1.4449120248
53	=G53*EXP(-C53*0.5)*E53*EXP(-1.5*C53)	=(((G53*EXP(-0.5*C53))*E53)/(1.5*C53^2))*(1-EXP(-1.5*C53))*(1.5*C53+1))	=I53+K53	=J53+H53*EXP(-C53*1.5)	0.089089524683	=$F$69*N53	1.17306193832
54	=G54*EXP(-C54*0.5)*E54*EXP(-1.5*C54)	=(((G54*EXP(-0.5*C54))*E54)/(1.5*C54^2))*(1-EXP(-1.5*C54))*(1.5*C54+1))	=I54+K54	=J54+H54*EXP(-C54*1.5)	0.7349491703	=$F$69*N54	0.116123
55	=G55*EXP(-C55*0.5)*E55*EXP(-1.5*C55)	=(((G55*EXP(-0.5*C55))*E55)/(1.5*C55^2))*(1-EXP(-1.5*C55))*(1.5*C55+1))	=I55+K55	=J55+H55*EXP(-C55*1.5)	0.18057433695	=$F$69*N55	0.69740019
56	=G56*EXP(-C56*0.5)*E56*EXP(-1.5*C56)	=(((G56*EXP(-0.5*C56))*E56)/(1.5*C56^2))*(1-EXP(-1.5*C56))*(1.5*C56+1))	=I56+K56	=J56+H56*EXP(-C56*1.5)	0.764449657296	=$F$69*N56	0.04343358
57	=G57*EXP(-C57*0.5)*E57*EXP(-1.5*C57)	=(((G57*EXP(-0.5*C57))*E57)/(1.5*C57^2))*(1-EXP(-1.5*C57))*(1.5*C57+1))	=I57+K57	=J57+H57*EXP(-C57*1.5)	2.316273703802	=$F$69*N57	0.52746162735
58	=G58*EXP(-C58*0.5)*E58*EXP(-1.5*C58)	=(((G58*EXP(-0.5*C58))*E58)/(1.5*C58^2))*(1-EXP(-1.5*C58))*(1.5*C58+1))	=I58+K58	=J58+H58*EXP(-C58*1.5)	0.0426863508	=$F$69*N58	0.9483405281
59	=G59*EXP(-C59*0.5)*E59*EXP(-1.5*C59)	=(((G59*EXP(-0.5*C59))*E59)/(1.5*C59^2))*(1-EXP(-1.5*C59))*(1.5*C59+1))	=I59+K59	=J59+H59*EXP(-C59*1.5)	2.718966897743	=$F$69*N59	0.84565257
60	=G60*EXP(-C60*0.5)*E60*EXP(-1.5*C60)	=(((G60*EXP(-0.5*C60))*E60)/(1.5*C60^2))*(1-EXP(-1.5*C60))*(1.5*C60+1))	=I60+K60	=J60+H60*EXP(-C60*1.5)	0	=$F$69*N60	0.3156
61	=G61*EXP(-C61*0.5)*E61*EXP(-1.5*C61)	=(((G61*EXP(-0.5*C61))*E61)/(1.5*C61^2))*(1-EXP(-1.5*C61))*(1.5*C61+1))	=I61+K61	=J61+H61*EXP(-C61*1.5)	0.140739503	=$F$69*N61	0.233477142
62	=G62*EXP(-C62*0.5)*E62*EXP(-1.5*C62)	=(((G62*EXP(-0.5*C62))*E62)/(1.5*C62^2))*(1-EXP(-1.5*C62))*(1.5*C62+1))	=I62+K62	=J62+H62*EXP(-C62*1.5)	0.028100691483	=$F$69*N62	0
63	=G63*EXP(-C63*0.5)*E63*EXP(-1.5*C63)	=(((G63*EXP(-0.5*C63))*E63)/(1.5*C63^2))*(1-EXP(-1.5*C63))*(1.5*C63+1))	=I63+K63	=J63+H63*EXP(-C63*1.5)	0.001673519114	=$F$69*N63	0
64	=G64*EXP(-C64*0.5)*E64*EXP(-1.5*C64)	=(((G64*EXP(-0.5*C64))*E64)/(1.5*C64^2))*(1-EXP(-1.5*C64))*(1.5*C64+1))	=I64+K64	=J64+H64*EXP(-C64*1.5)	0.001490051228	=$F$69*N64	0
65							
66							
67							
68							
69							
70							
71							
72							
73							
74							
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	Q	R	S	T	U	V	W	X
1	**Beta Particle**							
2	**Emission Energy per**							
3	**Unit of Activity**	1	2	2.0336	3	5	12	18
4	**(MeV/Ci-hour)**							
5	=$F$69*P5		=$L5	=($M5/$C5)*(1-EXP(-$C5*(T$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(U$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(V$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(W$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(X$3-2)))+$L5
6	=$F$69*P6		=$L6	=($M6/$C6)*(1-EXP(-$C6*(T$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(U$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(V$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(W$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(X$3-2)))+$L6
7	=$F$69*P7		=$L7	=($M7/$C7)*(1-EXP(-$C7*(T$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(U$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(V$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(W$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(X$3-2)))+$L7
8	=$F$69*P8		=$L8	=($M8/$C8)*(1-EXP(-$C8*(T$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(U$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(V$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(W$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(X$3-2)))+$L8
9	=$F$69*P9		=$L9	=($M9/$C9)*(1-EXP(-$C9*(T$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(U$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(V$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(W$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(X$3-2)))+$L9
10	=$F$69*P10		=$L10	=($M10/$C10)*(1-EXP(-$C10*(T$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(U$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(V$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(W$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(X$3-2)))+$L10
11	=$F$69*P11		=$L11	=($M11/$C11)*(1-EXP(-$C11*(T$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(U$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(V$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(W$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(X$3-2)))+$L11
12	=$F$69*P12		=$L12	=($M12/$C12)*(1-EXP(-$C12*(T$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(U$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(V$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(W$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(X$3-2)))+$L12
13	=$F$69*P13		=$L13	=($M13/$C13)*(1-EXP(-$C13*(T$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(U$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(V$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(W$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(X$3-2)))+$L13
14	=$F$69*P14		=$L14	=($M14/$C14)*(1-EXP(-$C14*(T$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(U$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(V$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(W$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(X$3-2)))+$L14
15	=$F$69*P15		=$L15	=($M15/$C15)*(1-EXP(-$C15*(T$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(U$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(V$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(W$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(X$3-2)))+$L15
16	=$F$69*P16		=$L16	=($M16/$C16)*(1-EXP(-$C16*(T$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(U$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(V$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(W$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(X$3-2)))+$L16
17	=$F$69*P17		=$L17	=($M17/$C17)*(1-EXP(-$C17*(T$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(U$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(V$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(W$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(X$3-2)))+$L17
18	=$F$69*P18		=$L18	=($M18/$C18)*(1-EXP(-$C18*(T$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(U$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(V$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(W$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(X$3-2)))+$L18
19	=$F$69*P19		=$L19	=($M19/$C19)*(1-EXP(-$C19*(T$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(U$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(V$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(W$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(X$3-2)))+$L19
20	=$F$69*P20		=$L20	=($M20/$C20)*(1-EXP(-$C20*(T$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(U$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(V$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(W$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(X$3-2)))+$L20
21	=$F$69*P21		=$L21	=($M21/$C21)*(1-EXP(-$C21*(T$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(U$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(V$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(W$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(X$3-2)))+$L21
22	=$F$69*P22		=$L22	=($M22/$C22)*(1-EXP(-$C22*(T$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(U$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(V$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(W$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(X$3-2)))+$L22
23	=$F$69*P23		=$L23	=($M23/$C23)*(1-EXP(-$C23*(T$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(U$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(V$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(W$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(X$3-2)))+$L23
24	=$F$69*P24		=$L24	=($M24/$C24)*(1-EXP(-$C24*(T$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(U$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(V$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(W$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(X$3-2)))+$L24
25	=$F$69*P25		=$L25	=($M25/$C25)*(1-EXP(-$C25*(T$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(U$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(V$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(W$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(X$3-2)))+$L25
26	=$F$69*P26		=$L26	=($M26/$C26)*(1-EXP(-$C26*(T$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(U$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(V$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(W$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(X$3-2)))+$L26
27	=$F$69*P27		=$L27	=($M27/$C27)*(1-EXP(-$C27*(T$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(U$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(V$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(W$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(X$3-2)))+$L27
28	=$F$69*P28		=$L28	=($M28/$C28)*(1-EXP(-$C28*(T$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(U$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(V$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(W$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(X$3-2)))+$L28
29	=$F$69*P29		=$L29	=($M29/$C29)*(1-EXP(-$C29*(T$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(U$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(V$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(W$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(X$3-2)))+$L29
30	=$F$69*P30		=$L30	=($M30/$C30)*(1-EXP(-$C30*(T$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(U$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(V$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(W$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(X$3-2)))+$L30
31	=$F$69*P31		=$L31	=($M31/$C31)*(1-EXP(-$C31*(T$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(U$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(V$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(W$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(X$3-2)))+$L31
32	=$F$69*P32		=$L32	=($M32/$C32)*(1-EXP(-$C32*(T$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(U$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(V$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(W$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(X$3-2)))+$L32
33	=$F$69*P33		=$L33	=($M33/$C33)*(1-EXP(-$C33*(T$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(U$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(V$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(W$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(X$3-2)))+$L33
34	=$F$69*P34		=$L34	=($M34/$C34)*(1-EXP(-$C34*(T$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(U$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(V$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(W$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(X$3-2)))+$L34
35	=$F$69*P35		=$L35	=($M35/$C35)*(1-EXP(-$C35*(T$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(U$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(V$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(W$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(X$3-2)))+$L35
36	=$F$69*P36		=$L36	=($M36/$C36)*(1-EXP(-$C36*(T$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(U$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(V$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(W$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(X$3-2)))+$L36
37	=$F$69*P37		=$L37	=($M37/$C37)*(1-EXP(-$C37*(T$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(U$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(V$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(W$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(X$3-2)))+$L37
38	=$F$69*P38		=$L38	=($M38/$C38)*(1-EXP(-$C38*(T$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(U$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(V$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(W$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(X$3-2)))+$L38
39	=$F$69*P39		=$L39	=($M39/$C39)*(1-EXP(-$C39*(T$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(U$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(V$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(W$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(X$3-2)))+$L39
40	=$F$69*P40		=$L40	=($M40/$C40)*(1-EXP(-$C40*(T$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(U$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(V$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(W$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(X$3-2)))+$L40
41	=$F$69*P41		=$L41	=($M41/$C41)*(1-EXP(-$C41*(T$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(U$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(V$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(W$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(X$3-2)))+$L41
42	=$F$69*P42		=$L42	=($M42/$C42)*(1-EXP(-$C42*(T$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(U$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(V$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(W$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(X$3-2)))+$L42
43	=$F$69*P43		=$L43	=($M43/$C43)*(1-EXP(-$C43*(T$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(U$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(V$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(W$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(X$3-2)))+$L43
44	=$F$69*P44		=$L44	=($M44/$C44)*(1-EXP(-$C44*(T$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(U$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(V$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(W$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(X$3-2)))+$L44
45	=$F$69*P45		=$L45	=($M45/$C45)*(1-EXP(-$C45*(T$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(U$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(V$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(W$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(X$3-2)))+$L45
46	=$F$69*P46		=$L46	=($M46/$C46)*(1-EXP(-$C46*(T$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(U$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(V$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(W$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(X$3-2)))+$L46
47	=$F$69*P47		=$L47	=($M47/$C47)*(1-EXP(-$C47*(T$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(U$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(V$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(W$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(X$3-2)))+$L47
48	=$F$69*P48		=$L48	=($M48/$C48)*(1-EXP(-$C48*(T$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(U$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(V$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(W$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(X$3-2)))+$L48
49	=$F$69*P49		=$L49	=($M49/$C49)*(1-EXP(-$C49*(T$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(U$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(V$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(W$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(X$3-2)))+$L49
50	=$F$69*P50		=$L50	=($M50/$C50)*(1-EXP(-$C50*(T$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(U$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(V$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(W$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(X$3-2)))+$L50
51	=$F$69*P51		=$L51	=($M51/$C51)*(1-EXP(-$C51*(T$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(U$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(V$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(W$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(X$3-2)))+$L51
52	=$F$69*P52		=$L52	=($M52/$C52)*(1-EXP(-$C52*(T$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(U$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(V$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(W$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(X$3-2)))+$L52
53	=$F$69*P53		=$L53	=($M53/$C53)*(1-EXP(-$C53*(T$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(U$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(V$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(W$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(X$3-2)))+$L53
54	=$F$69*P54		=$L54	=($M54/$C54)*(1-EXP(-$C54*(T$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(U$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(V$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(W$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(X$3-2)))+$L54
55	=$F$69*P55		=$L55	=($M55/$C55)*(1-EXP(-$C55*(T$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(U$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(V$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(W$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(X$3-2)))+$L55
56	=$F$69*P56		=$L56	=($M56/$C56)*(1-EXP(-$C56*(T$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(U$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(V$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(W$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(X$3-2)))+$L56
57	=$F$69*P57		=$L57	=($M57/$C57)*(1-EXP(-$C57*(T$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(U$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(V$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(W$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(X$3-2)))+$L57
58	=$F$69*P58		=$L58	=($M58/$C58)*(1-EXP(-$C58*(T$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(U$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(V$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(W$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(X$3-2)))+$L58
59	=$F$69*P59		=$L59	=($M59/$C59)*(1-EXP(-$C59*(T$3-2)))+$L59	=($M59/$C59)*(1-EXP(-$C59*(U$3-2)))+$L59	=($M59/$C59)*(1-EXP(-$C59*(V$3-2)))+$L59	=($M59/$C59)*(1-EXP(-$C59*(W$3-2)))+$L59	=($M59/$C59)*(1-EXP(-$C59*(X$3-2)))+$L59
60	=$F$69*P60		=$L60	=($M60/$C60)*(1-EXP(-$C60*(T$3-2)))+$L60	=($M60/$C60)*(1-EXP(-$C60*(U$3-2)))+$L60	=($M60/$C60)*(1-EXP(-$C60*(V$3-2)))+$L60	=($M60/$C60)*(1-EXP(-$C60*(W$3-2)))+$L60	=($M60/$C60)*(1-EXP(-$C60*(X$3-2)))+$L60
61	=$F$69*P61		=$L61	=($M61/$C61)*(1-EXP(-$C61*(T$3-2)))+$L61	=($M61/$C61)*(1-EXP(-$C61*(U$3-2)))+$L61	=($M61/$C61)*(1-EXP(-$C61*(V$3-2)))+$L61	=($M61/$C61)*(1-EXP(-$C61*(W$3-2)))+$L61	=($M61/$C61)*(1-EXP(-$C61*(X$3-2)))+$L61
62	=$F$69*P62		=$L62	=($M62/$C62)*(1-EXP(-$C62*(T$3-2)))+$L62	=($M62/$C62)*(1-EXP(-$C62*(U$3-2)))+$L62	=($M62/$C62)*(1-EXP(-$C62*(V$3-2)))+$L62	=($M62/$C62)*(1-EXP(-$C62*(W$3-2)))+$L62	=($M62/$C62)*(1-EXP(-$C62*(X$3-2)))+$L62
63	=$F$69*P63		=$L63	=($M63/$C63)*(1-EXP(-$C63*(T$3-2)))+$L63	=($M63/$C63)*(1-EXP(-$C63*(U$3-2)))+$L63	=($M63/$C63)*(1-EXP(-$C63*(V$3-2)))+$L63	=($M63/$C63)*(1-EXP(-$C63*(W$3-2)))+$L63	=($M63/$C63)*(1-EXP(-$C63*(X$3-2)))+$L63
64	=$F$69*P64		=$L64	=($M64/$C64)*(1-EXP(-$C64*(T$3-2)))+$L64	=($M64/$C64)*(1-EXP(-$C64*(U$3-2)))+$L64	=($M64/$C64)*(1-EXP(-$C64*(V$3-2)))+$L64	=($M64/$C64)*(1-EXP(-$C64*(W$3-2)))+$L64	=($M64/$C64)*(1-EXP(-$C64*(X$3-2)))+$L64
65								
66								
67								
68								
69								
70								
71								
72								
73								
74								
75								

	Y	Z	AA	AB	AC	AD	AE
1							
2					Activity in Containment at Given Timesteps (Ci-hours)		
3	24	48	72	96	120	150	200
4							
5	=($M5/$C5)*(1-EXP(-$C5*(Y$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(Z$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AA$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AB$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AC$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AD$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AE$3-2)))+$L5
6	=($M6/$C6)*(1-EXP(-$C6*(Y$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(Z$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AA$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AB$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AC$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AD$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AE$3-2)))+$L6
7	=($M7/$C7)*(1-EXP(-$C7*(Y$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(Z$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AA$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AB$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AC$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AD$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AE$3-2)))+$L7
8	=($M8/$C8)*(1-EXP(-$C8*(Y$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(Z$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AA$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AB$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AC$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AD$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AE$3-2)))+$L8
9	=($M9/$C9)*(1-EXP(-$C9*(Y$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(Z$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AA$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AB$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AC$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AD$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AE$3-2)))+$L9
10	=($M10/$C10)*(1-EXP(-$C10*(Y$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(Z$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AA$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AB$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AC$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AD$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AE$3-2)))+$L10
11	=($M11/$C11)*(1-EXP(-$C11*(Y$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(Z$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AA$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AB$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AC$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AD$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AE$3-2)))+$L11
12	=($M12/$C12)*(1-EXP(-$C12*(Y$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(Z$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AA$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AB$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AC$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AD$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AE$3-2)))+$L12
13	=($M13/$C13)*(1-EXP(-$C13*(Y$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(Z$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AA$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AB$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AC$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AD$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AE$3-2)))+$L13
14	=($M14/$C14)*(1-EXP(-$C14*(Y$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(Z$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AA$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AB$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AC$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AD$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AE$3-2)))+$L14
15	=($M15/$C15)*(1-EXP(-$C15*(Y$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(Z$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AA$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AB$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AC$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AD$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AE$3-2)))+$L15
16	=($M16/$C16)*(1-EXP(-$C16*(Y$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(Z$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AA$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AB$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AC$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AD$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AE$3-2)))+$L16
17	=($M17/$C17)*(1-EXP(-$C17*(Y$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(Z$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AA$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AB$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AC$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AD$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AE$3-2)))+$L17
18	=($M18/$C18)*(1-EXP(-$C18*(Y$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(Z$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AA$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AB$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AC$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AD$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AE$3-2)))+$L18
19	=($M19/$C19)*(1-EXP(-$C19*(Y$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(Z$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AA$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AB$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AC$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AD$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AE$3-2)))+$L19
20	=($M20/$C20)*(1-EXP(-$C20*(Y$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(Z$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AA$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AB$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AC$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AD$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AE$3-2)))+$L20
21	=($M21/$C21)*(1-EXP(-$C21*(Y$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(Z$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AA$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AB$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AC$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AD$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AE$3-2)))+$L21
22	=($M22/$C22)*(1-EXP(-$C22*(Y$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(Z$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AA$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AB$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AC$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AD$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AE$3-2)))+$L22
23	=($M23/$C23)*(1-EXP(-$C23*(Y$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(Z$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AA$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AB$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AC$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AD$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AE$3-2)))+$L23
24	=($M24/$C24)*(1-EXP(-$C24*(Y$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(Z$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AA$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AB$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AC$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AD$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AE$3-2)))+$L24
25	=($M25/$C25)*(1-EXP(-$C25*(Y$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(Z$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AA$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AB$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AC$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AD$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AE$3-2)))+$L25
26	=($M26/$C26)*(1-EXP(-$C26*(Y$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(Z$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AA$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AB$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AC$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AD$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AE$3-2)))+$L26
27	=($M27/$C27)*(1-EXP(-$C27*(Y$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(Z$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AA$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AB$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AC$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AD$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AE$3-2)))+$L27
28	=($M28/$C28)*(1-EXP(-$C28*(Y$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(Z$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AA$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AB$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AC$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AD$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AE$3-2)))+$L28
29	=($M29/$C29)*(1-EXP(-$C29*(Y$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(Z$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AA$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AB$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AC$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AD$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AE$3-2)))+$L29
30	=($M30/$C30)*(1-EXP(-$C30*(Y$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(Z$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AA$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AB$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AC$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AD$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AE$3-2)))+$L30
31	=($M31/$C31)*(1-EXP(-$C31*(Y$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(Z$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AA$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AB$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AC$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AD$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AE$3-2)))+$L31
32	=($M32/$C32)*(1-EXP(-$C32*(Y$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(Z$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AA$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AB$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AC$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AD$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AE$3-2)))+$L32
33	=($M33/$C33)*(1-EXP(-$C33*(Y$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(Z$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AA$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AB$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AC$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AD$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AE$3-2)))+$L33
34	=($M34/$C34)*(1-EXP(-$C34*(Y$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(Z$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AA$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AB$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AC$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AD$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AE$3-2)))+$L34
35	=($M35/$C35)*(1-EXP(-$C35*(Y$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(Z$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AA$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AB$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AC$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AD$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AE$3-2)))+$L35
36	=($M36/$C36)*(1-EXP(-$C36*(Y$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(Z$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AA$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AB$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AC$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AD$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AE$3-2)))+$L36
37	=($M37/$C37)*(1-EXP(-$C37*(Y$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(Z$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AA$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AB$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AC$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AD$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AE$3-2)))+$L37
38	=($M38/$C38)*(1-EXP(-$C38*(Y$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(Z$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AA$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AB$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AC$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AD$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AE$3-2)))+$L38
39	=($M39/$C39)*(1-EXP(-$C39*(Y$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(Z$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AA$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AB$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AC$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AD$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AE$3-2)))+$L39
40	=($M40/$C40)*(1-EXP(-$C40*(Y$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(Z$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AA$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AB$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AC$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AD$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AE$3-2)))+$L40
41	=($M41/$C41)*(1-EXP(-$C41*(Y$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(Z$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AA$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AB$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AC$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AD$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AE$3-2)))+$L41
42	=($M42/$C42)*(1-EXP(-$C42*(Y$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(Z$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AA$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AB$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AC$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AD$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AE$3-2)))+$L42
43	=($M43/$C43)*(1-EXP(-$C43*(Y$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(Z$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AA$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AB$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AC$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AD$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AE$3-2)))+$L43
44	=($M44/$C44)*(1-EXP(-$C44*(Y$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(Z$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AA$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AB$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AC$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AD$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AE$3-2)))+$L44
45	=($M45/$C45)*(1-EXP(-$C45*(Y$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(Z$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AA$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AB$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AC$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AD$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AE$3-2)))+$L45
46	=($M46/$C46)*(1-EXP(-$C46*(Y$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(Z$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AA$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AB$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AC$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AD$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AE$3-2)))+$L46
47	=($M47/$C47)*(1-EXP(-$C47*(Y$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(Z$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AA$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AB$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AC$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AD$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AE$3-2)))+$L47
48	=($M48/$C48)*(1-EXP(-$C48*(Y$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(Z$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AA$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AB$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AC$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AD$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AE$3-2)))+$L48
49	=($M49/$C49)*(1-EXP(-$C49*(Y$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(Z$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AA$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AB$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AC$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AD$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AE$3-2)))+$L49
50	=($M50/$C50)*(1-EXP(-$C50*(Y$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(Z$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AA$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AB$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AC$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AD$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AE$3-2)))+$L50
51	=($M51/$C51)*(1-EXP(-$C51*(Y$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(Z$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AA$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AB$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AC$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AD$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AE$3-2)))+$L51
52	=($M52/$C52)*(1-EXP(-$C52*(Y$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(Z$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AA$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AB$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AC$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AD$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AE$3-2)))+$L52
53	=($M53/$C53)*(1-EXP(-$C53*(Y$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(Z$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AA$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AB$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AC$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AD$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AE$3-2)))+$L53
54	=($M54/$C54)*(1-EXP(-$C54*(Y$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(Z$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AA$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AB$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AC$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AD$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AE$3-2)))+$L54
55	=($M55/$C55)*(1-EXP(-$C55*(Y$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(Z$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AA$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AB$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AC$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AD$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AE$3-2)))+$L55
56	=($M56/$C56)*(1-EXP(-$C56*(Y$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(Z$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AA$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AB$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AC$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AD$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AE$3-2)))+$L56
57	=($M57/$C57)*(1-EXP(-$C57*(Y$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(Z$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AA$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AB$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AC$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AD$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AE$3-2)))+$L57
58	=($M58/$C58)*(1-EXP(-$C58*(Y$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(Z$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AA$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AB$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AC$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AD$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AE$3-2)))+$L58
59	=($M59/$C59)*(1-EXP(-$C59*(Y$3-2)))+$L59	=($M59/$C59)*(1-EXP(-$C59*(Z$3-2)))+$L59	=($M59/$C59)*(1-EXP(-$C59*(AA$3-2)))+$L59	=($M59/$C59)*(1-EXP(-$C59*(AB$3-2)))+$L59	=($M59/$C59)*(1-EXP(-$C59*(AC$3-2)))+$L59	=($M59/$C59)*(1-EXP(-$C59*(AD$3-2)))+$L59	=($M59/$C59)*(1-EXP(-$C59*(AE$3-2)))+$L59
60	=($M60/$C60)*(1-EXP(-$C60*(Y$3-2)))+$L60	=($M60/$C60)*(1-EXP(-$C60*(Z$3-2)))+$L60	=($M60/$C60)*(1-EXP(-$C60*(AA$3-2)))+$L60	=($M60/$C60)*(1-EXP(-$C60*(AB$3-2)))+$L60	=($M60/$C60)*(1-EXP(-$C60*(AC$3-2)))+$L60	=($M60/$C60)*(1-EXP(-$C60*(AD$3-2)))+$L60	=($M60/$C60)*(1-EXP(-$C60*(AE$3-2)))+$L60
61	=($M61/$C61)*(1-EXP(-$C61*(Y$3-2)))+$L61	=($M61/$C61)*(1-EXP(-$C61*(Z$3-2)))+$L61	=($M61/$C61)*(1-EXP(-$C61*(AA$3-2)))+$L61	=($M61/$C61)*(1-EXP(-$C61*(AB$3-2)))+$L61	=($M61/$C61)*(1-EXP(-$C61*(AC$3-2)))+$L61	=($M61/$C61)*(1-EXP(-$C61*(AD$3-2)))+$L61	=($M61/$C61)*(1-EXP(-$C61*(AE$3-2)))+$L61
62	=($M62/$C62)*(1-EXP(-$C62*(Y$3-2)))+$L62	=($M62/$C62)*(1-EXP(-$C62*(Z$3-2)))+$L62	=($M62/$C62)*(1-EXP(-$C62*(AA$3-2)))+$L62	=($M62/$C62)*(1-EXP(-$C62*(AB$3-2)))+$L62	=($M62/$C62)*(1-EXP(-$C62*(AC$3-2)))+$L62	=($M62/$C62)*(1-EXP(-$C62*(AD$3-2)))+$L62	=($M62/$C62)*(1-EXP(-$C62*(AE$3-2)))+$L62
63	=($M63/$C63)*(1-EXP(-$C63*(Y$3-2)))+$L63	=($M63/$C63)*(1-EXP(-$C63*(Z$3-2)))+$L63	=($M63/$C63)*(1-EXP(-$C63*(AA$3-2)))+$L63	=($M63/$C63)*(1-EXP(-$C63*(AB$3-2)))+$L63	=($M63/$C63)*(1-EXP(-$C63*(AC$3-2)))+$L63	=($M63/$C63)*(1-EXP(-$C63*(AD$3-2)))+$L63	=($M63/$C63)*(1-EXP(-$C63*(AE$3-2)))+$L63
64	=($M64/$C64)*(1-EXP(-$C64*(Y$3-2)))+$L64	=($M64/$C64)*(1-EXP(-$C64*(Z$3-2)))+$L64	=($M64/$C64)*(1-EXP(-$C64*(AA$3-2)))+$L64	=($M64/$C64)*(1-EXP(-$C64*(AB$3-2)))+$L64	=($M64/$C64)*(1-EXP(-$C64*(AC$3-2)))+$L64	=($M64/$C64)*(1-EXP(-$C64*(AD$3-2)))+$L64	=($M64/$C64)*(1-EXP(-$C64*(AE$3-2)))+$L64
65							
66							
67							
68							
69							
70							
71							
72							
73							
74							
75							

	AF	AG	AH	AI	AJ	AK	AL
1							
2							
3	240	300	360	400	480	600	700
4							
5	=($M5/$C5)*(1-EXP(-$C5*(AF$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AG$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AH$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AI$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AJ$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AK$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AL$3-2)))+$L5
6	=($M6/$C6)*(1-EXP(-$C6*(AF$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AG$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AH$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AI$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AJ$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AK$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AL$3-2)))+$L6
7	=($M7/$C7)*(1-EXP(-$C7*(AF$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AG$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AH$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AI$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AJ$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AK$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AL$3-2)))+$L7
8	=($M8/$C8)*(1-EXP(-$C8*(AF$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AG$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AH$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AI$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AJ$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AK$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AL$3-2)))+$L8
9	=($M9/$C9)*(1-EXP(-$C9*(AF$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AG$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AH$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AI$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AJ$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AK$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AL$3-2)))+$L9
10	=($M10/$C10)*(1-EXP(-$C10*(AF$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AG$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AH$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AI$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AJ$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AK$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AL$3-2)))+$L10
11	=($M11/$C11)*(1-EXP(-$C11*(AF$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AG$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AH$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AI$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AJ$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AK$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AL$3-2)))+$L11
12	=($M12/$C12)*(1-EXP(-$C12*(AF$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AG$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AH$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AI$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AJ$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AK$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AL$3-2)))+$L12
13	=($M13/$C13)*(1-EXP(-$C13*(AF$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AG$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AH$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AI$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AJ$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AK$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AL$3-2)))+$L13
14	=($M14/$C14)*(1-EXP(-$C14*(AF$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AG$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AH$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AI$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AJ$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AK$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AL$3-2)))+$L14
15	=($M15/$C15)*(1-EXP(-$C15*(AF$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AG$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AH$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AI$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AJ$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AK$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AL$3-2)))+$L15
16	=($M16/$C16)*(1-EXP(-$C16*(AF$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AG$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AH$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AI$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AJ$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AK$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AL$3-2)))+$L16
17	=($M17/$C17)*(1-EXP(-$C17*(AF$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AG$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AH$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AI$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AJ$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AK$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AL$3-2)))+$L17
18	=($M18/$C18)*(1-EXP(-$C18*(AF$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AG$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AH$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AI$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AJ$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AK$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AL$3-2)))+$L18
19	=($M19/$C19)*(1-EXP(-$C19*(AF$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AG$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AH$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AI$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AJ$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AK$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AL$3-2)))+$L19
20	=($M20/$C20)*(1-EXP(-$C20*(AF$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AG$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AH$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AI$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AJ$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AK$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AL$3-2)))+$L20
21	=($M21/$C21)*(1-EXP(-$C21*(AF$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AG$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AH$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AI$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AJ$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AK$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AL$3-2)))+$L21
22	=($M22/$C22)*(1-EXP(-$C22*(AF$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AG$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AH$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AI$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AJ$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AK$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AL$3-2)))+$L22
23	=($M23/$C23)*(1-EXP(-$C23*(AF$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AG$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AH$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AI$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AJ$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AK$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AL$3-2)))+$L23
24	=($M24/$C24)*(1-EXP(-$C24*(AF$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AG$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AH$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AI$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AJ$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AK$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AL$3-2)))+$L24
25	=($M25/$C25)*(1-EXP(-$C25*(AF$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AG$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AH$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AI$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AJ$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AK$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AL$3-2)))+$L25
26	=($M26/$C26)*(1-EXP(-$C26*(AF$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AG$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AH$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AI$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AJ$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AK$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AL$3-2)))+$L26
27	=($M27/$C27)*(1-EXP(-$C27*(AF$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AG$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AH$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AI$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AJ$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AK$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AL$3-2)))+$L27
28	=($M28/$C28)*(1-EXP(-$C28*(AF$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AG$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AH$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AI$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AJ$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AK$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AL$3-2)))+$L28
29	=($M29/$C29)*(1-EXP(-$C29*(AF$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AG$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AH$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AI$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AJ$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AK$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AL$3-2)))+$L29
30	=($M30/$C30)*(1-EXP(-$C30*(AF$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AG$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AH$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AI$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AJ$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AK$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AL$3-2)))+$L30
31	=($M31/$C31)*(1-EXP(-$C31*(AF$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AG$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AH$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AI$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AJ$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AK$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AL$3-2)))+$L31
32	=($M32/$C32)*(1-EXP(-$C32*(AF$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AG$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AH$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AI$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AJ$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AK$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AL$3-2)))+$L32
33	=($M33/$C33)*(1-EXP(-$C33*(AF$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AG$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AH$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AI$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AJ$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AK$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AL$3-2)))+$L33
34	=($M34/$C34)*(1-EXP(-$C34*(AF$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AG$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AH$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AI$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AJ$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AK$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AL$3-2)))+$L34
35	=($M35/$C35)*(1-EXP(-$C35*(AF$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AG$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AH$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AI$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AJ$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AK$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AL$3-2)))+$L35
36	=($M36/$C36)*(1-EXP(-$C36*(AF$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AG$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AH$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AI$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AJ$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AK$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AL$3-2)))+$L36
37	=($M37/$C37)*(1-EXP(-$C37*(AF$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AG$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AH$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AI$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AJ$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AK$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AL$3-2)))+$L37
38	=($M38/$C38)*(1-EXP(-$C38*(AF$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AG$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AH$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AI$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AJ$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AK$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AL$3-2)))+$L38
39	=($M39/$C39)*(1-EXP(-$C39*(AF$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AG$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AH$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AI$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AJ$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AK$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AL$3-2)))+$L39
40	=($M40/$C40)*(1-EXP(-$C40*(AF$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AG$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AH$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AI$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AJ$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AK$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AL$3-2)))+$L40
41	=($M41/$C41)*(1-EXP(-$C41*(AF$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AG$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AH$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AI$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AJ$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AK$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AL$3-2)))+$L41
42	=($M42/$C42)*(1-EXP(-$C42*(AF$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AG$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AH$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AI$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AJ$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AK$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AL$3-2)))+$L42
43	=($M43/$C43)*(1-EXP(-$C43*(AF$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AG$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AH$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AI$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AJ$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AK$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AL$3-2)))+$L43
44	=($M44/$C44)*(1-EXP(-$C44*(AF$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AG$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AH$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AI$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AJ$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AK$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AL$3-2)))+$L44
45	=($M45/$C45)*(1-EXP(-$C45*(AF$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AG$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AH$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AI$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AJ$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AK$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AL$3-2)))+$L45
46	=($M46/$C46)*(1-EXP(-$C46*(AF$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AG$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AH$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AI$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AJ$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AK$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AL$3-2)))+$L46
47	=($M47/$C47)*(1-EXP(-$C47*(AF$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AG$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AH$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AI$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AJ$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AK$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AL$3-2)))+$L47
48	=($M48/$C48)*(1-EXP(-$C48*(AF$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AG$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AH$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AI$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AJ$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AK$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AL$3-2)))+$L48
49	=($M49/$C49)*(1-EXP(-$C49*(AF$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AG$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AH$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AI$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AJ$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AK$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AL$3-2)))+$L49
50	=($M50/$C50)*(1-EXP(-$C50*(AF$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AG$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AH$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AI$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AJ$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AK$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AL$3-2)))+$L50
51	=($M51/$C51)*(1-EXP(-$C51*(AF$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AG$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AH$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AI$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AJ$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AK$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AL$3-2)))+$L51
52	=($M52/$C52)*(1-EXP(-$C52*(AF$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AG$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AH$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AI$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AJ$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AK$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AL$3-2)))+$L52
53	=($M53/$C53)*(1-EXP(-$C53*(AF$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AG$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AH$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AI$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AJ$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AK$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AL$3-2)))+$L53
54	=($M54/$C54)*(1-EXP(-$C54*(AF$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AG$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AH$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AI$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AJ$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AK$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AL$3-2)))+$L54
55	=($M55/$C55)*(1-EXP(-$C55*(AF$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AG$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AH$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AI$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AJ$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AK$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AL$3-2)))+$L55
56	=($M56/$C56)*(1-EXP(-$C56*(AF$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AG$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AH$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AI$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AJ$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AK$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AL$3-2)))+$L56
57	=($M57/$C57)*(1-EXP(-$C57*(AF$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AG$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AH$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AI$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AJ$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AK$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AL$3-2)))+$L57
58	=($M58/$C58)*(1-EXP(-$C58*(AF$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AG$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AH$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AI$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AJ$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AK$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AL$3-2)))+$L58
59	=($M59/$C59)*(1-EXP(-$C59*(AF$3-2)))+$L59	=($M59/$C59)*(1-EXP(-$C59*(AG$3-2)))+$L59	=($M59/$C59)*(1-EXP(-$C59*(AH$3-2)))+$L59	=($M59/$C59)*(1-EXP(-$C59*(AI$3-2)))+$L59	=($M59/$C59)*(1-EXP(-$C59*(AJ$3-2)))+$L59	=($M59/$C59)*(1-EXP(-$C59*(AK$3-2)))+$L59	=($M59/$C59)*(1-EXP(-$C59*(AL$3-2)))+$L59
60	=($M60/$C60)*(1-EXP(-$C60*(AF$3-2)))+$L60	=($M60/$C60)*(1-EXP(-$C60*(AG$3-2)))+$L60	=($M60/$C60)*(1-EXP(-$C60*(AH$3-2)))+$L60	=($M60/$C60)*(1-EXP(-$C60*(AI$3-2)))+$L60	=($M60/$C60)*(1-EXP(-$C60*(AJ$3-2)))+$L60	=($M60/$C60)*(1-EXP(-$C60*(AK$3-2)))+$L60	=($M60/$C60)*(1-EXP(-$C60*(AL$3-2)))+$L60
61	=($M61/$C61)*(1-EXP(-$C61*(AF$3-2)))+$L61	=($M61/$C61)*(1-EXP(-$C61*(AG$3-2)))+$L61	=($M61/$C61)*(1-EXP(-$C61*(AH$3-2)))+$L61	=($M61/$C61)*(1-EXP(-$C61*(AI$3-2)))+$L61	=($M61/$C61)*(1-EXP(-$C61*(AJ$3-2)))+$L61	=($M61/$C61)*(1-EXP(-$C61*(AK$3-2)))+$L61	=($M61/$C61)*(1-EXP(-$C61*(AL$3-2)))+$L61
62	=($M62/$C62)*(1-EXP(-$C62*(AF$3-2)))+$L62	=($M62/$C62)*(1-EXP(-$C62*(AG$3-2)))+$L62	=($M62/$C62)*(1-EXP(-$C62*(AH$3-2)))+$L62	=($M62/$C62)*(1-EXP(-$C62*(AI$3-2)))+$L62	=($M62/$C62)*(1-EXP(-$C62*(AJ$3-2)))+$L62	=($M62/$C62)*(1-EXP(-$C62*(AK$3-2)))+$L62	=($M62/$C62)*(1-EXP(-$C62*(AL$3-2)))+$L62
63	=($M63/$C63)*(1-EXP(-$C63*(AF$3-2)))+$L63	=($M63/$C63)*(1-EXP(-$C63*(AG$3-2)))+$L63	=($M63/$C63)*(1-EXP(-$C63*(AH$3-2)))+$L63	=($M63/$C63)*(1-EXP(-$C63*(AI$3-2)))+$L63	=($M63/$C63)*(1-EXP(-$C63*(AJ$3-2)))+$L63	=($M63/$C63)*(1-EXP(-$C63*(AK$3-2)))+$L63	=($M63/$C63)*(1-EXP(-$C63*(AL$3-2)))+$L63
64	=($M64/$C64)*(1-EXP(-$C64*(AF$3-2)))+$L64	=($M64/$C64)*(1-EXP(-$C64*(AG$3-2)))+$L64	=($M64/$C64)*(1-EXP(-$C64*(AH$3-2)))+$L64	=($M64/$C64)*(1-EXP(-$C64*(AI$3-2)))+$L64	=($M64/$C64)*(1-EXP(-$C64*(AJ$3-2)))+$L64	=($M64/$C64)*(1-EXP(-$C64*(AK$3-2)))+$L64	=($M64/$C64)*(1-EXP(-$C64*(AL$3-2)))+$L64
65							
66							
67							
68							
69							
70							
71							
72							
73							
74							
75							

	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC
1																	
2													Gamma (*Photon*) Radiation Energy in Containment at Given Timesteps (MeV)				
3	720		1	2	2.0336	3	5	12	18	24	48	72	96	120	150	200	240
4																	
5	=($M5/$C5)*(1-EXP(-$C5*(AM$3-2)))+$L5			=$S5*$O5	=T5*$O5	=U5*$O5	=V5*$O5	=W5*$O5	=X5*$O5	=Y5*$O5	=Z5*$O5	=AA5*$O5	=AB5*$O5	=AC5*$O5	=AD5*$O5	=AE5*$O5	=AF5*$O5
6	=($M6/$C6)*(1-EXP(-$C6*(AM$3-2)))+$L6			=$S6*$O6	=T6*$O6	=U6*$O6	=V6*$O6	=W6*$O6	=X6*$O6	=Y6*$O6	=Z6*$O6	=AA6*$O6	=AB6*$O6	=AC6*$O6	=AD6*$O6	=AE6*$O6	=AF6*$O6
7	=($M7/$C7)*(1-EXP(-$C7*(AM$3-2)))+$L7			=$S7*$O7	=T7*$O7	=U7*$O7	=V7*$O7	=W7*$O7	=X7*$O7	=Y7*$O7	=Z7*$O7	=AA7*$O7	=AB7*$O7	=AC7*$O7	=AD7*$O7	=AE7*$O7	=AF7*$O7
8	=($M8/$C8)*(1-EXP(-$C8*(AM$3-2)))+$L8			=$S8*$O8	=T8*$O8	=U8*$O8	=V8*$O8	=W8*$O8	=X8*$O8	=Y8*$O8	=Z8*$O8	=AA8*$O8	=AB8*$O8	=AC8*$O8	=AD8*$O8	=AE8*$O8	=AF8*$O8
9	=($M9/$C9)*(1-EXP(-$C9*(AM$3-2)))+$L9			=$9*$O9	=T9*$O9	=U9*$O9	=V9*$O9	=W9*$O9	=X9*$O9	=Y9*$O9	=Z9*$O9	=AA9*$O9	=AB9*$O9	=AC9*$O9	=AD9*$O9	=AE9*$O9	=AF9*$O9
10	=($M10/$C10)*(1-EXP(-$C10*(AM$3-2)))+$L10			=$10*$O10	=T10*$O10	=U10*$O10	=V10*$O10	=W10*$O10	=X10*$O10	=Y10*$O10	=Z10*$O10	=AA10*$O10	=AB10*$O10	=AC10*$O10	=AD10*$O10	=AE10*$O10	=AF10*$O10
11	=($M11/$C11)*(1-EXP(-$C11*(AM$3-2)))+$L11			=$11*$O11	=T11*$O11	=U11*$O11	=V11*$O11	=W11*$O11	=X11*$O11	=Y11*$O11	=Z11*$O11	=AA11*$O11	=AB11*$O11	=AC11*$O11	=AD11*$O11	=AE11*$O11	=AF11*$O11
12	=($M12/$C12)*(1-EXP(-$C12*(AM$3-2)))+$L12			=$12*$O12	=T12*$O12	=U12*$O12	=V12*$O12	=W12*$O12	=X12*$O12	=Y12*$O12	=Z12*$O12	=AA12*$O12	=AB12*$O12	=AC12*$O12	=AD12*$O12	=AE12*$O12	=AF12*$O12
13	=($M13/$C13)*(1-EXP(-$C13*(AM$3-2)))+$L13			=$13*$O13	=T13*$O13	=U13*$O13	=V13*$O13	=W13*$O13	=X13*$O13	=Y13*$O13	=Z13*$O13	=AA13*$O13	=AB13*$O13	=AC13*$O13	=AD13*$O13	=AE13*$O13	=AF13*$O13
14	=($M14/$C14)*(1-EXP(-$C14*(AM$3-2)))+$L14			=$14*$O14	=T14*$O14	=U14*$O14	=V14*$O14	=W14*$O14	=X14*$O14	=Y14*$O14	=Z14*$O14	=AA14*$O14	=AB14*$O14	=AC14*$O14	=AD14*$O14	=AE14*$O14	=AF14*$O14
15	=($M15/$C15)*(1-EXP(-$C15*(AM$3-2)))+$L15			=$15*$O15	=T15*$O15	=U15*$O15	=V15*$O15	=W15*$O15	=X15*$O15	=Y15*$O15	=Z15*$O15	=AA15*$O15	=AB15*$O15	=AC15*$O15	=AD15*$O15	=AE15*$O15	=AF15*$O15
16	=($M16/$C16)*(1-EXP(-$C16*(AM$3-2)))+$L16			=$16*$O16	=T16*$O16	=U16*$O16	=V16*$O16	=W16*$O16	=X16*$O16	=Y16*$O16	=Z16*$O16	=AA16*$O16	=AB16*$O16	=AC16*$O16	=AD16*$O16	=AE16*$O16	=AF16*$O16
17	=($M17/$C17)*(1-EXP(-$C17*(AM$3-2)))+$L17			=$17*$O17	=T17*$O17	=U17*$O17	=V17*$O17	=W17*$O17	=X17*$O17	=Y17*$O17	=Z17*$O17	=AA17*$O17	=AB17*$O17	=AC17*$O17	=AD17*$O17	=AE17*$O17	=AF17*$O17
18	=($M18/$C18)*(1-EXP(-$C18*(AM$3-2)))+$L18			=$18*$O18	=T18*$O18	=U18*$O18	=V18*$O18	=W18*$O18	=X18*$O18	=Y18*$O18	=Z18*$O18	=AA18*$O18	=AB18*$O18	=AC18*$O18	=AD18*$O18	=AE18*$O18	=AF18*$O18
19	=($M19/$C19)*(1-EXP(-$C19*(AM$3-2)))+$L19			=$19*$O19	=T19*$O19	=U19*$O19	=V19*$O19	=W19*$O19	=X19*$O19	=Y19*$O19	=Z19*$O19	=AA19*$O19	=AB19*$O19	=AC19*$O19	=AD19*$O19	=AE19*$O19	=AF19*$O19
20	=($M20/$C20)*(1-EXP(-$C20*(AM$3-2)))+$L20			=$20*$O20	=T20*$O20	=U20*$O20	=V20*$O20	=W20*$O20	=X20*$O20	=Y20*$O20	=Z20*$O20	=AA20*$O20	=AB20*$O20	=AC20*$O20	=AD20*$O20	=AE20*$O20	=AF20*$O20
21	=($M21/$C21)*(1-EXP(-$C21*(AM$3-2)))+$L21			=$21*$O21	=T21*$O21	=U21*$O21	=V21*$O21	=W21*$O21	=X21*$O21	=Y21*$O21	=Z21*$O21	=AA21*$O21	=AB21*$O21	=AC21*$O21	=AD21*$O21	=AE21*$O21	=AF21*$O21
22	=($M22/$C22)*(1-EXP(-$C22*(AM$3-2)))+$L22			=$22*$O22	=T22*$O22	=U22*$O22	=V22*$O22	=W22*$O22	=X22*$O22	=Y22*$O22	=Z22*$O22	=AA22*$O22	=AB22*$O22	=AC22*$O22	=AD22*$O22	=AE22*$O22	=AF22*$O22
23	=($M23/$C23)*(1-EXP(-$C23*(AM$3-2)))+$L23			=$23*$O23	=T23*$O23	=U23*$O23	=V23*$O23	=W23*$O23	=X23*$O23	=Y23*$O23	=Z23*$O23	=AA23*$O23	=AB23*$O23	=AC23*$O23	=AD23*$O23	=AE23*$O23	=AF23*$O23
24	=($M24/$C24)*(1-EXP(-$C24*(AM$3-2)))+$L24			=$24*$O24	=T24*$O24	=U24*$O24	=V24*$O24	=W24*$O24	=X24*$O24	=Y24*$O24	=Z24*$O24	=AA24*$O24	=AB24*$O24	=AC24*$O24	=AD24*$O24	=AE24*$O24	=AF24*$O24
25	=($M25/$C25)*(1-EXP(-$C25*(AM$3-2)))+$L25			=$25*$O25	=T25*$O25	=U25*$O25	=V25*$O25	=W25*$O25	=X25*$O25	=Y25*$O25	=Z25*$O25	=AA25*$O25	=AB25*$O25	=AC25*$O25	=AD25*$O25	=AE25*$O25	=AF25*$O25
26	=($M26/$C26)*(1-EXP(-$C26*(AM$3-2)))+$L26			=$26*$O26	=T26*$O26	=U26*$O26	=V26*$O26	=W26*$O26	=X26*$O26	=Y26*$O26	=Z26*$O26	=AA26*$O26	=AB26*$O26	=AC26*$O26	=AD26*$O26	=AE26*$O26	=AF26*$O26
27	=($M27/$C27)*(1-EXP(-$C27*(AM$3-2)))+$L27			=$27*$O27	=T27*$O27	=U27*$O27	=V27*$O27	=W27*$O27	=X27*$O27	=Y27*$O27	=Z27*$O27	=AA27*$O27	=AB27*$O27	=AC27*$O27	=AD27*$O27	=AE27*$O27	=AF27*$O27
28	=($M28/$C28)*(1-EXP(-$C28*(AM$3-2)))+$L28			=$28*$O28	=T28*$O28	=U28*$O28	=V28*$O28	=W28*$O28	=X28*$O28	=Y28*$O28	=Z28*$O28	=AA28*$O28	=AB28*$O28	=AC28*$O28	=AD28*$O28	=AE28*$O28	=AF28*$O28
29	=($M29/$C29)*(1-EXP(-$C29*(AM$3-2)))+$L29			=$29*$O29	=T29*$O29	=U29*$O29	=V29*$O29	=W29*$O29	=X29*$O29	=Y29*$O29	=Z29*$O29	=AA29*$O29	=AB29*$O29	=AC29*$O29	=AD29*$O29	=AE29*$O29	=AF29*$O29
30	=($M30/$C30)*(1-EXP(-$C30*(AM$3-2)))+$L30			=$30*$O30	=T30*$O30	=U30*$O30	=V30*$O30	=W30*$O30	=X30*$O30	=Y30*$O30	=Z30*$O30	=AA30*$O30	=AB30*$O30	=AC30*$O30	=AD30*$O30	=AE30*$O30	=AF30*$O30
31	=($M31/$C31)*(1-EXP(-$C31*(AM$3-2)))+$L31			=$31*$O31	=T31*$O31	=U31*$O31	=V31*$O31	=W31*$O31	=X31*$O31	=Y31*$O31	=Z31*$O31	=AA31*$O31	=AB31*$O31	=AC31*$O31	=AD31*$O31	=AE31*$O31	=AF31*$O31
32	=($M32/$C32)*(1-EXP(-$C32*(AM$3-2)))+$L32			=$32*$O32	=T32*$O32	=U32*$O32	=V32*$O32	=W32*$O32	=X32*$O32	=Y32*$O32	=Z32*$O32	=AA32*$O32	=AB32*$O32	=AC32*$O32	=AD32*$O32	=AE32*$O32	=AF32*$O32
33	=($M33/$C33)*(1-EXP(-$C33*(AM$3-2)))+$L33			=$33*$O33	=T33*$O33	=U33*$O33	=V33*$O33	=W33*$O33	=X33*$O33	=Y33*$O33	=Z33*$O33	=AA33*$O33	=AB33*$O33	=AC33*$O33	=AD33*$O33	=AE33*$O33	=AF33*$O33
34	=($M34/$C34)*(1-EXP(-$C34*(AM$3-2)))+$L34			=$34*$O34	=T34*$O34	=U34*$O34	=V34*$O34	=W34*$O34	=X34*$O34	=Y34*$O34	=Z34*$O34	=AA34*$O34	=AB34*$O34	=AC34*$O34	=AD34*$O34	=AE34*$O34	=AF34*$O34
35	=($M35/$C35)*(1-EXP(-$C35*(AM$3-2)))+$L35			=$35*$O35	=T35*$O35	=U35*$O35	=V35*$O35	=W35*$O35	=X35*$O35	=Y35*$O35	=Z35*$O35	=AA35*$O35	=AB35*$O35	=AC35*$O35	=AD35*$O35	=AE35*$O35	=AF35*$O35
36	=($M36/$C36)*(1-EXP(-$C36*(AM$3-2)))+$L36			=$36*$O36	=T36*$O36	=U36*$O36	=V36*$O36	=W36*$O36	=X36*$O36	=Y36*$O36	=Z36*$O36	=AA36*$O36	=AB36*$O36	=AC36*$O36	=AD36*$O36	=AE36*$O36	=AF36*$O36
37	=($M37/$C37)*(1-EXP(-$C37*(AM$3-2)))+$L37			=$37*$O37	=T37*$O37	=U37*$O37	=V37*$O37	=W37*$O37	=X37*$O37	=Y37*$O37	=Z37*$O37	=AA37*$O37	=AB37*$O37	=AC37*$O37	=AD37*$O37	=AE37*$O37	=AF37*$O37
38	=($M38/$C38)*(1-EXP(-$C38*(AM$3-2)))+$L38			=$38*$O38	=T38*$O38	=U38*$O38	=V38*$O38	=W38*$O38	=X38*$O38	=Y38*$O38	=Z38*$O38	=AA38*$O38	=AB38*$O38	=AC38*$O38	=AD38*$O38	=AE38*$O38	=AF38*$O38
39	=($M39/$C39)*(1-EXP(-$C39*(AM$3-2)))+$L39			=$39*$O39	=T39*$O39	=U39*$O39	=V39*$O39	=W39*$O39	=X39*$O39	=Y39*$O39	=Z39*$O39	=AA39*$O39	=AB39*$O39	=AC39*$O39	=AD39*$O39	=AE39*$O39	=AF39*$O39
40	=($M40/$C40)*(1-EXP(-$C40*(AM$3-2)))+$L40			=$40*$O40	=T40*$O40	=U40*$O40	=V40*$O40	=W40*$O40	=X40*$O40	=Y40*$O40	=Z40*$O40	=AA40*$O40	=AB40*$O40	=AC40*$O40	=AD40*$O40	=AE40*$O40	=AF40*$O40
41	=($M41/$C41)*(1-EXP(-$C41*(AM$3-2)))+$L41			=$41*$O41	=T41*$O41	=U41*$O41	=V41*$O41	=W41*$O41	=X41*$O41	=Y41*$O41	=Z41*$O41	=AA41*$O41	=AB41*$O41	=AC41*$O41	=AD41*$O41	=AE41*$O41	=AF41*$O41
42	=($M42/$C42)*(1-EXP(-$C42*(AM$3-2)))+$L42			=$42*$O42	=T42*$O42	=U42*$O42	=V42*$O42	=W42*$O42	=X42*$O42	=Y42*$O42	=Z42*$O42	=AA42*$O42	=AB42*$O42	=AC42*$O42	=AD42*$O42	=AE42*$O42	=AF42*$O42
43	=($M43/$C43)*(1-EXP(-$C43*(AM$3-2)))+$L43			=$43*$O43	=T43*$O43	=U43*$O43	=V43*$O43	=W43*$O43	=X43*$O43	=Y43*$O43	=Z43*$O43	=AA43*$O43	=AB43*$O43	=AC43*$O43	=AD43*$O43	=AE43*$O43	=AF43*$O43
44	=($M44/$C44)*(1-EXP(-$C44*(AM$3-2)))+$L44			=$44*$O44	=T44*$O44	=U44*$O44	=V44*$O44	=W44*$O44	=X44*$O44	=Y44*$O44	=Z44*$O44	=AA44*$O44	=AB44*$O44	=AC44*$O44	=AD44*$O44	=AE44*$O44	=AF44*$O44
45	=($M45/$C45)*(1-EXP(-$C45*(AM$3-2)))+$L45			=$45*$O45	=T45*$O45	=U45*$O45	=V45*$O45	=W45*$O45	=X45*$O45	=Y45*$O45	=Z45*$O45	=AA45*$O45	=AB45*$O45	=AC45*$O45	=AD45*$O45	=AE45*$O45	=AF45*$O45
46	=($M46/$C46)*(1-EXP(-$C46*(AM$3-2)))+$L46			=$46*$O46	=T46*$O46	=U46*$O46	=V46*$O46	=W46*$O46	=X46*$O46	=Y46*$O46	=Z46*$O46	=AA46*$O46	=AB46*$O46	=AC46*$O46	=AD46*$O46	=AE46*$O46	=AF46*$O46
47	=($M47/$C47)*(1-EXP(-$C47*(AM$3-2)))+$L47			=$47*$O47	=T47*$O47	=U47*$O47	=V47*$O47	=W47*$O47	=X47*$O47	=Y47*$O47	=Z47*$O47	=AA47*$O47	=AB47*$O47	=AC47*$O47	=AD47*$O47	=AE47*$O47	=AF47*$O47
48	=($M48/$C48)*(1-EXP(-$C48*(AM$3-2)))+$L48			=$48*$O48	=T48*$O48	=U48*$O48	=V48*$O48	=W48*$O48	=X48*$O48	=Y48*$O48	=Z48*$O48	=AA48*$O48	=AB48*$O48	=AC48*$O48	=AD48*$O48	=AE48*$O48	=AF48*$O48
49	=($M49/$C49)*(1-EXP(-$C49*(AM$3-2)))+$L49			=$49*$O49	=T49*$O49	=U49*$O49	=V49*$O49	=W49*$O49	=X49*$O49	=Y49*$O49	=Z49*$O49	=AA49*$O49	=AB49*$O49	=AC49*$O49	=AD49*$O49	=AE49*$O49	=AF49*$O49
50	=($M50/$C50)*(1-EXP(-$C50*(AM$3-2)))+$L50			=$50*$O50	=T50*$O50	=U50*$O50	=V50*$O50	=W50*$O50	=X50*$O50	=Y50*$O50	=Z50*$O50	=AA50*$O50	=AB50*$O50	=AC50*$O50	=AD50*$O50	=AE50*$O50	=AF50*$O50
51	=($M51/$C51)*(1-EXP(-$C51*(AM$3-2)))+$L51			=$51*$O51	=T51*$O51	=U51*$O51	=V51*$O51	=W51*$O51	=X51*$O51	=Y51*$O51	=Z51*$O51	=AA51*$O51	=AB51*$O51	=AC51*$O51	=AD51*$O51	=AE51*$O51	=AF51*$O51
52	=($M52/$C52)*(1-EXP(-$C52*(AM$3-2)))+$L52			=$52*$O52	=T52*$O52	=U52*$O52	=V52*$O52	=W52*$O52	=X52*$O52	=Y52*$O52	=Z52*$O52	=AA52*$O52	=AB52*$O52	=AC52*$O52	=AD52*$O52	=AE52*$O52	=AF52*$O52
53	=($M53/$C53)*(1-EXP(-$C53*(AM$3-2)))+$L53			=$53*$O53	=T53*$O53	=U53*$O53	=V53*$O53	=W53*$O53	=X53*$O53	=Y53*$O53	=Z53*$O53	=AA53*$O53	=AB53*$O53	=AC53*$O53	=AD53*$O53	=AE53*$O53	=AF53*$O53
54	=($M54/$C54)*(1-EXP(-$C54*(AM$3-2)))+$L54			=$54*$O54	=T54*$O54	=U54*$O54	=V54*$O54	=W54*$O54	=X54*$O54	=Y54*$O54	=Z54*$O54	=AA54*$O54	=AB54*$O54	=AC54*$O54	=AD54*$O54	=AE54*$O54	=AF54*$O54
55	=($M55/$C55)*(1-EXP(-$C55*(AM$3-2)))+$L55			=$55*$O55	=T55*$O55	=U55*$O55	=V55*$O55	=W55*$O55	=X55*$O55	=Y55*$O55	=Z55*$O55	=AA55*$O55	=AB55*$O55	=AC55*$O55	=AD55*$O55	=AE55*$O55	=AF55*$O55
56	=($M56/$C56)*(1-EXP(-$C56*(AM$3-2)))+$L56			=$56*$O56	=T56*$O56	=U56*$O56	=V56*$O56	=W56*$O56	=X56*$O56	=Y56*$O56	=Z56*$O56	=AA56*$O56	=AB56*$O56	=AC56*$O56	=AD56*$O56	=AE56*$O56	=AF56*$O56
57	=($M57/$C57)*(1-EXP(-$C57*(AM$3-2)))+$L57			=$57*$O57	=T57*$O57	=U57*$O57	=V57*$O57	=W57*$O57	=X57*$O57	=Y57*$O57	=Z57*$O57	=AA57*$O57	=AB57*$O57	=AC57*$O57	=AD57*$O57	=AE57*$O57	=AF57*$O57
58	=($M58/$C58)*(1-EXP(-$C58*(AM$3-2)))+$L58			=$58*$O58	=T58*$O58	=U58*$O58	=V58*$O58	=W58*$O58	=X58*$O58	=Y58*$O58	=Z58*$O58	=AA58*$O58	=AB58*$O58	=AC58*$O58	=AD58*$O58	=AE58*$O58	=AF58*$O58
59	=($M59/$C59)*(1-EXP(-$C59*(AM$3-2)))+$L59			=$59*$O59	=T59*$O59	=U59*$O59	=V59*$O59	=W59*$O59	=X59*$O59	=Y59*$O59	=Z59*$O59	=AA59*$O59	=AB59*$O59	=AC59*$O59	=AD59*$O59	=AE59*$O59	=AF59*$O59
60	=($M60/$C60)*(1-EXP(-$C60*(AM$3-2)))+$L60			=$60*$O60	=T60*$O60	=U60*$O60	=V60*$O60	=W60*$O60	=X60*$O60	=Y60*$O60	=Z60*$O60	=AA60*$O60	=AB60*$O60	=AC60*$O60	=AD60*$O60	=AE60*$O60	=AF60*$O60
61	=($M61/$C61)*(1-EXP(-$C61*(AM$3-2)))+$L61			=$61*$O61	=T61*$O61	=U61*$O61	=V61*$O61	=W61*$O61	=X61*$O61	=Y61*$O61	=Z61*$O61	=AA61*$O61	=AB61*$O61	=AC61*$O61	=AD61*$O61	=AE61*$O61	=AF61*$O61
62	=($M62/$C62)*(1-EXP(-$C62*(AM$3-2)))+$L62			=$62*$O62	=T62*$O62	=U62*$O62	=V62*$O62	=W62*$O62	=X62*$O62	=Y62*$O62	=Z62*$O62	=AA62*$O62	=AB62*$O62	=AC62*$O62	=AD62*$O62	=AE62*$O62	=AF62*$O62
63	=($M63/$C63)*(1-EXP(-$C63*(AM$3-2)))+$L63			=$63*$O63	=T63*$O63	=U63*$O63	=V63*$O63	=W63*$O63	=X63*$O63	=Y63*$O63	=Z63*$O63	=AA63*$O63	=AB63*$O63	=AC63*$O63	=AD63*$O63	=AE63*$O63	=AF63*$O63
64	=($M64/$C64)*(1-EXP(-$C64*(AM$3-2)))+$L64			=$64*$O64	=T64*$O64	=U64*$O64	=V64*$O64	=W64*$O64	=X64*$O64	=Y64*$O64	=Z64*$O64	=AA64*$O64	=AB64*$O64	=AC64*$O64	=AD64*$O64	=AE64*$O64	=AF64*$O64
65																	
66				=SUM(AP5:AP64)	=SUM(AQ5:AQ64)	=SUM(AR5:AR64)	=SUM(AS5:AS64)	=SUM(AT5:AT64)	=SUM(AU5:AU64)	=SUM(AV5:AV64)	=SUM(AW5:AW64)	=SUM(AX5:AX64)	=SUM(AY5:AY64)	=SUM(AZ5:AZ64)	=SUM(BA5:BA64)	=SUM(BB5:BB64)	=SUM(BC5:BC64)
67																	
68																	
69													Total Integrated Gamma Energy in Containment at Given Timesteps (MeV/cm³)				
70				=AP66/$F$70	=AQ66/$F$70	=AR66/$F$70	=AS66/$F$70	=AT66/$F$70	=AU66/$F$70	=AV66/$F$70	=AW66/$F$70	=AX66/$F$70	=AY66/$F$70	=AZ66/$F$70	=BA66/$F$70	=BB66/$F$70	=BC66/$F$70
71																	
72																	
73																	
74																	
75																	

	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV
1																			
2																	Beta Particle Radiation Energy in Containment at Given Ti		
3	300	360	400	480	600	700	720	1	2	2.0336	3	5	12	18	24	48	72	96	120
4																			
5	=AG5*$O5	=AH5*$O5	=AI5*$O5	=AJ5*$O5	=AK5*$O5	=AL5*$O5	=AM5*$O5		=$S5*$Q5	=T5*$Q5	=U5*$Q5	=V5*$Q5	=W5*$Q5	=X5*$Q5	=Y5*$Q5	=Z5*$Q5	=AA5*$Q5	=AB5*$Q5	=AC5*$Q5
6	=AG6*$O6	=AH6*$O6	=AI6*$O6	=AJ6*$O6	=AK6*$O6	=AL6*$O6	=AM6*$O6		=$S6*$Q6	=T6*$Q6	=U6*$Q6	=V6*$Q6	=W6*$Q6	=X6*$Q6	=Y6*$Q6	=Z6*$Q6	=AA6*$Q6	=AB6*$Q6	=AC6*$Q6
7	=AG7*$O7	=AH7*$O7	=AI7*$O7	=AJ7*$O7	=AK7*$O7	=AL7*$O7	=AM7*$O7		=$S7*$Q7	=T7*$Q7	=U7*$Q7	=V7*$Q7	=W7*$Q7	=X7*$Q7	=Y7*$Q7	=Z7*$Q7	=AA7*$Q7	=AB7*$Q7	=AC7*$Q7
8	=AG8*$O8	=AH8*$O8	=AI8*$O8	=AJ8*$O8	=AK8*$O8	=AL8*$O8	=AM8*$O8		=$S8*$Q8	=T8*$Q8	=U8*$Q8	=V8*$Q8	=W8*$Q8	=X8*$Q8	=Y8*$Q8	=Z8*$Q8	=AA8*$Q8	=AB8*$Q8	=AC8*$Q8
9	=AG9*$O9	=AH9*$O9	=AI9*$O9	=AJ9*$O9	=AK9*$O9	=AL9*$O9	=AM9*$O9		=$S9*$Q9	=T9*$Q9	=U9*$Q9	=V9*$Q9	=W9*$Q9	=X9*$Q9	=Y9*$Q9	=Z9*$Q9	=AA9*$Q9	=AB9*$Q9	=AC9*$Q9
10	=AG10*$O10	=AH10*$O10	=AI10*$O10	=AJ10*$O10	=AK10*$O10	=AL10*$O10	=AM10*$O10		=$S10*$Q10	=T10*$Q10	=U10*$Q10	=V10*$Q10	=W10*$Q10	=X10*$Q10	=Y10*$Q10	=Z10*$Q10	=AA10*$Q10	=AB10*$Q10	=AC10*$Q10
11	=AG11*$O11	=AH11*$O11	=AI11*$O11	=AJ11*$O11	=AK11*$O11	=AL11*$O11	=AM11*$O11		=$S11*$Q11	=T11*$Q11	=U11*$Q11	=V11*$Q11	=W11*$Q11	=X11*$Q11	=Y11*$Q11	=Z11*$Q11	=AA11*$Q11	=AB11*$Q11	=AC11*$Q11
12	=AG12*$O12	=AH12*$O12	=AI12*$O12	=AJ12*$O12	=AK12*$O12	=AL12*$O12	=AM12*$O12		=$S12*$Q12	=T12*$Q12	=U12*$Q12	=V12*$Q12	=W12*$Q12	=X12*$Q12	=Y12*$Q12	=Z12*$Q12	=AA12*$Q12	=AB12*$Q12	=AC12*$Q12
13	=AG13*$O13	=AH13*$O13	=AI13*$O13	=AJ13*$O13	=AK13*$O13	=AL13*$O13	=AM13*$O13		=$S13*$Q13	=T13*$Q13	=U13*$Q13	=V13*$Q13	=W13*$Q13	=X13*$Q13	=Y13*$Q13	=Z13*$Q13	=AA13*$Q13	=AB13*$Q13	=AC13*$Q13
14	=AG14*$O14	=AH14*$O14	=AI14*$O14	=AJ14*$O14	=AK14*$O14	=AL14*$O14	=AM14*$O14		=$S14*$Q14	=T14*$Q14	=U14*$Q14	=V14*$Q14	=W14*$Q14	=X14*$Q14	=Y14*$Q14	=Z14*$Q14	=AA14*$Q14	=AB14*$Q14	=AC14*$Q14
15	=AG15*$O15	=AH15*$O15	=AI15*$O15	=AJ15*$O15	=AK15*$O15	=AL15*$O15	=AM15*$O15		=$S15*$Q15	=T15*$Q15	=U15*$Q15	=V15*$Q15	=W15*$Q15	=X15*$Q15	=Y15*$Q15	=Z15*$Q15	=AA15*$Q15	=AB15*$Q15	=AC15*$Q15
16	=AG16*$O16	=AH16*$O16	=AI16*$O16	=AJ16*$O16	=AK16*$O16	=AL16*$O16	=AM16*$O16		=$S16*$Q16	=T16*$Q16	=U16*$Q16	=V16*$Q16	=W16*$Q16	=X16*$Q16	=Y16*$Q16	=Z16*$Q16	=AA16*$Q16	=AB16*$Q16	=AC16*$Q16
17	=AG17*$O17	=AH17*$O17	=AI17*$O17	=AJ17*$O17	=AK17*$O17	=AL17*$O17	=AM17*$O17		=$S17*$Q17	=T17*$Q17	=U17*$Q17	=V17*$Q17	=W17*$Q17	=X17*$Q17	=Y17*$Q17	=Z17*$Q17	=AA17*$Q17	=AB17*$Q17	=AC17*$Q17
18	=AG18*$O18	=AH18*$O18	=AI18*$O18	=AJ18*$O18	=AK18*$O18	=AL18*$O18	=AM18*$O18		=$S18*$Q18	=T18*$Q18	=U18*$Q18	=V18*$Q18	=W18*$Q18	=X18*$Q18	=Y18*$Q18	=Z18*$Q18	=AA18*$Q18	=AB18*$Q18	=AC18*$Q18
19	=AG19*$O19	=AH19*$O19	=AI19*$O19	=AJ19*$O19	=AK19*$O19	=AL19*$O19	=AM19*$O19		=$S19*$Q19	=T19*$Q19	=U19*$Q19	=V19*$Q19	=W19*$Q19	=X19*$Q19	=Y19*$Q19	=Z19*$Q19	=AA19*$Q19	=AB19*$Q19	=AC19*$Q19
20	=AG20*$O20	=AH20*$O20	=AI20*$O20	=AJ20*$O20	=AK20*$O20	=AL20*$O20	=AM20*$O20		=$S20*$Q20	=T20*$Q20	=U20*$Q20	=V20*$Q20	=W20*$Q20	=X20*$Q20	=Y20*$Q20	=Z20*$Q20	=AA20*$Q20	=AB20*$Q20	=AC20*$Q20
21	=AG21*$O21	=AH21*$O21	=AI21*$O21	=AJ21*$O21	=AK21*$O21	=AL21*$O21	=AM21*$O21		=$S21*$Q21	=T21*$Q21	=U21*$Q21	=V21*$Q21	=W21*$Q21	=X21*$Q21	=Y21*$Q21	=Z21*$Q21	=AA21*$Q21	=AB21*$Q21	=AC21*$Q21
22	=AG22*$O22	=AH22*$O22	=AI22*$O22	=AJ22*$O22	=AK22*$O22	=AL22*$O22	=AM22*$O22		=$S22*$Q22	=T22*$Q22	=U22*$Q22	=V22*$Q22	=W22*$Q22	=X22*$Q22	=Y22*$Q22	=Z22*$Q22	=AA22*$Q22	=AB22*$Q22	=AC22*$Q22
23	=AG23*$O23	=AH23*$O23	=AI23*$O23	=AJ23*$O23	=AK23*$O23	=AL23*$O23	=AM23*$O23		=$S23*$Q23	=T23*$Q23	=U23*$Q23	=V23*$Q23	=W23*$Q23	=X23*$Q23	=Y23*$Q23	=Z23*$Q23	=AA23*$Q23	=AB23*$Q23	=AC23*$Q23
24	=AG24*$O24	=AH24*$O24	=AI24*$O24	=AJ24*$O24	=AK24*$O24	=AL24*$O24	=AM24*$O24		=$S24*$Q24	=T24*$Q24	=U24*$Q24	=V24*$Q24	=W24*$Q24	=X24*$Q24	=Y24*$Q24	=Z24*$Q24	=AA24*$Q24	=AB24*$Q24	=AC24*$Q24
25	=AG25*$O25	=AH25*$O25	=AI25*$O25	=AJ25*$O25	=AK25*$O25	=AL25*$O25	=AM25*$O25		=$S25*$Q25	=T25*$Q25	=U25*$Q25	=V25*$Q25	=W25*$Q25	=X25*$Q25	=Y25*$Q25	=Z25*$Q25	=AA25*$Q25	=AB25*$Q25	=AC25*$Q25
26	=AG26*$O26	=AH26*$O26	=AI26*$O26	=AJ26*$O26	=AK26*$O26	=AL26*$O26	=AM26*$O26		=$S26*$Q26	=T26*$Q26	=U26*$Q26	=V26*$Q26	=W26*$Q26	=X26*$Q26	=Y26*$Q26	=Z26*$Q26	=AA26*$Q26	=AB26*$Q26	=AC26*$Q26
27	=AG27*$O27	=AH27*$O27	=AI27*$O27	=AJ27*$O27	=AK27*$O27	=AL27*$O27	=AM27*$O27		=$S27*$Q27	=T27*$Q27	=U27*$Q27	=V27*$Q27	=W27*$Q27	=X27*$Q27	=Y27*$Q27	=Z27*$Q27	=AA27*$Q27	=AB27*$Q27	=AC27*$Q27
28	=AG28*$O28	=AH28*$O28	=AI28*$O28	=AJ28*$O28	=AK28*$O28	=AL28*$O28	=AM28*$O28		=$S28*$Q28	=T28*$Q28	=U28*$Q28	=V28*$Q28	=W28*$Q28	=X28*$Q28	=Y28*$Q28	=Z28*$Q28	=AA28*$Q28	=AB28*$Q28	=AC28*$Q28
29	=AG29*$O29	=AH29*$O29	=AI29*$O29	=AJ29*$O29	=AK29*$O29	=AL29*$O29	=AM29*$O29		=$S29*$Q29	=T29*$Q29	=U29*$Q29	=V29*$Q29	=W29*$Q29	=X29*$Q29	=Y29*$Q29	=Z29*$Q29	=AA29*$Q29	=AB29*$Q29	=AC29*$Q29
30	=AG30*$O30	=AH30*$O30	=AI30*$O30	=AJ30*$O30	=AK30*$O30	=AL30*$O30	=AM30*$O30		=$S30*$Q30	=T30*$Q30	=U30*$Q30	=V30*$Q30	=W30*$Q30	=X30*$Q30	=Y30*$Q30	=Z30*$Q30	=AA30*$Q30	=AB30*$Q30	=AC30*$Q30
31	=AG31*$O31	=AH31*$O31	=AI31*$O31	=AJ31*$O31	=AK31*$O31	=AL31*$O31	=AM31*$O31		=$S31*$Q31	=T31*$Q31	=U31*$Q31	=V31*$Q31	=W31*$Q31	=X31*$Q31	=Y31*$Q31	=Z31*$Q31	=AA31*$Q31	=AB31*$Q31	=AC31*$Q31
32	=AG32*$O32	=AH32*$O32	=AI32*$O32	=AJ32*$O32	=AK32*$O32	=AL32*$O32	=AM32*$O32		=$S32*$Q32	=T32*$Q32	=U32*$Q32	=V32*$Q32	=W32*$Q32	=X32*$Q32	=Y32*$Q32	=Z32*$Q32	=AA32*$Q32	=AB32*$Q32	=AC32*$Q32
33	=AG33*$O33	=AH33*$O33	=AI33*$O33	=AJ33*$O33	=AK33*$O33	=AL33*$O33	=AM33*$O33		=$S33*$Q33	=T33*$Q33	=U33*$Q33	=V33*$Q33	=W33*$Q33	=X33*$Q33	=Y33*$Q33	=Z33*$Q33	=AA33*$Q33	=AB33*$Q33	=AC33*$Q33
34	=AG34*$O34	=AH34*$O34	=AI34*$O34	=AJ34*$O34	=AK34*$O34	=AL34*$O34	=AM34*$O34		=$S34*$Q34	=T34*$Q34	=U34*$Q34	=V34*$Q34	=W34*$Q34	=X34*$Q34	=Y34*$Q34	=Z34*$Q34	=AA34*$Q34	=AB34*$Q34	=AC34*$Q34
35	=AG35*$O35	=AH35*$O35	=AI35*$O35	=AJ35*$O35	=AK35*$O35	=AL35*$O35	=AM35*$O35		=$S35*$Q35	=T35*$Q35	=U35*$Q35	=V35*$Q35	=W35*$Q35	=X35*$Q35	=Y35*$Q35	=Z35*$Q35	=AA35*$Q35	=AB35*$Q35	=AC35*$Q35
36	=AG36*$O36	=AH36*$O36	=AI36*$O36	=AJ36*$O36	=AK36*$O36	=AL36*$O36	=AM36*$O36		=$S36*$Q36	=T36*$Q36	=U36*$Q36	=V36*$Q36	=W36*$Q36	=X36*$Q36	=Y36*$Q36	=Z36*$Q36	=AA36*$Q36	=AB36*$Q36	=AC36*$Q36
37	=AG37*$O37	=AH37*$O37	=AI37*$O37	=AJ37*$O37	=AK37*$O37	=AL37*$O37	=AM37*$O37		=$S37*$Q37	=T37*$Q37	=U37*$Q37	=V37*$Q37	=W37*$Q37	=X37*$Q37	=Y37*$Q37	=Z37*$Q37	=AA37*$Q37	=AB37*$Q37	=AC37*$Q37
38	=AG38*$O38	=AH38*$O38	=AI38*$O38	=AJ38*$O38	=AK38*$O38	=AL38*$O38	=AM38*$O38		=$S38*$Q38	=T38*$Q38	=U38*$Q38	=V38*$Q38	=W38*$Q38	=X38*$Q38	=Y38*$Q38	=Z38*$Q38	=AA38*$Q38	=AB38*$Q38	=AC38*$Q38
39	=AG39*$O39	=AH39*$O39	=AI39*$O39	=AJ39*$O39	=AK39*$O39	=AL39*$O39	=AM39*$O39		=$S39*$Q39	=T39*$Q39	=U39*$Q39	=V39*$Q39	=W39*$Q39	=X39*$Q39	=Y39*$Q39	=Z39*$Q39	=AA39*$Q39	=AB39*$Q39	=AC39*$Q39
40	=AG40*$O40	=AH40*$O40	=AI40*$O40	=AJ40*$O40	=AK40*$O40	=AL40*$O40	=AM40*$O40		=$S40*$Q40	=T40*$Q40	=U40*$Q40	=V40*$Q40	=W40*$Q40	=X40*$Q40	=Y40*$Q40	=Z40*$Q40	=AA40*$Q40	=AB40*$Q40	=AC40*$Q40
41	=AG41*$O41	=AH41*$O41	=AI41*$O41	=AJ41*$O41	=AK41*$O41	=AL41*$O41	=AM41*$O41		=$S41*$Q41	=T41*$Q41	=U41*$Q41	=V41*$Q41	=W41*$Q41	=X41*$Q41	=Y41*$Q41	=Z41*$Q41	=AA41*$Q41	=AB41*$Q41	=AC41*$Q41
42	=AG42*$O42	=AH42*$O42	=AI42*$O42	=AJ42*$O42	=AK42*$O42	=AL42*$O42	=AM42*$O42		=$S42*$Q42	=T42*$Q42	=U42*$Q42	=V42*$Q42	=W42*$Q42	=X42*$Q42	=Y42*$Q42	=Z42*$Q42	=AA42*$Q42	=AB42*$Q42	=AC42*$Q42
43	=AG43*$O43	=AH43*$O43	=AI43*$O43	=AJ43*$O43	=AK43*$O43	=AL43*$O43	=AM43*$O43		=$S43*$Q43	=T43*$Q43	=U43*$Q43	=V43*$Q43	=W43*$Q43	=X43*$Q43	=Y43*$Q43	=Z43*$Q43	=AA43*$Q43	=AB43*$Q43	=AC43*$Q43
44	=AG44*$O44	=AH44*$O44	=AI44*$O44	=AJ44*$O44	=AK44*$O44	=AL44*$O44	=AM44*$O44		=$S44*$Q44	=T44*$Q44	=U44*$Q44	=V44*$Q44	=W44*$Q44	=X44*$Q44	=Y44*$Q44	=Z44*$Q44	=AA44*$Q44	=AB44*$Q44	=AC44*$Q44
45	=AG45*$O45	=AH45*$O45	=AI45*$O45	=AJ45*$O45	=AK45*$O45	=AL45*$O45	=AM45*$O45		=$S45*$Q45	=T45*$Q45	=U45*$Q45	=V45*$Q45	=W45*$Q45	=X45*$Q45	=Y45*$Q45	=Z45*$Q45	=AA45*$Q45	=AB45*$Q45	=AC45*$Q45
46	=AG46*$O46	=AH46*$O46	=AI46*$O46	=AJ46*$O46	=AK46*$O46	=AL46*$O46	=AM46*$O46		=$S46*$Q46	=T46*$Q46	=U46*$Q46	=V46*$Q46	=W46*$Q46	=X46*$Q46	=Y46*$Q46	=Z46*$Q46	=AA46*$Q46	=AB46*$Q46	=AC46*$Q46
47	=AG47*$O47	=AH47*$O47	=AI47*$O47	=AJ47*$O47	=AK47*$O47	=AL47*$O47	=AM47*$O47		=$S47*$Q47	=T47*$Q47	=U47*$Q47	=V47*$Q47	=W47*$Q47	=X47*$Q47	=Y47*$Q47	=Z47*$Q47	=AA47*$Q47	=AB47*$Q47	=AC47*$Q47
48	=AG48*$O48	=AH48*$O48	=AI48*$O48	=AJ48*$O48	=AK48*$O48	=AL48*$O48	=AM48*$O48		=$S48*$Q48	=T48*$Q48	=U48*$Q48	=V48*$Q48	=W48*$Q48	=X48*$Q48	=Y48*$Q48	=Z48*$Q48	=AA48*$Q48	=AB48*$Q48	=AC48*$Q48
49	=AG49*$O49	=AH49*$O49	=AI49*$O49	=AJ49*$O49	=AK49*$O49	=AL49*$O49	=AM49*$O49		=$S49*$Q49	=T49*$Q49	=U49*$Q49	=V49*$Q49	=W49*$Q49	=X49*$Q49	=Y49*$Q49	=Z49*$Q49	=AA49*$Q49	=AB49*$Q49	=AC49*$Q49
50	=AG50*$O50	=AH50*$O50	=AI50*$O50	=AJ50*$O50	=AK50*$O50	=AL50*$O50	=AM50*$O50		=$S50*$Q50	=T50*$Q50	=U50*$Q50	=V50*$Q50	=W50*$Q50	=X50*$Q50	=Y50*$Q50	=Z50*$Q50	=AA50*$Q50	=AB50*$Q50	=AC50*$Q50
51	=AG51*$O51	=AH51*$O51	=AI51*$O51	=AJ51*$O51	=AK51*$O51	=AL51*$O51	=AM51*$O51		=$S51*$Q51	=T51*$Q51	=U51*$Q51	=V51*$Q51	=W51*$Q51	=X51*$Q51	=Y51*$Q51	=Z51*$Q51	=AA51*$Q51	=AB51*$Q51	=AC51*$Q51
52	=AG52*$O52	=AH52*$O52	=AI52*$O52	=AJ52*$O52	=AK52*$O52	=AL52*$O52	=AM52*$O52		=$S52*$Q52	=T52*$Q52	=U52*$Q52	=V52*$Q52	=W52*$Q52	=X52*$Q52	=Y52*$Q52	=Z52*$Q52	=AA52*$Q52	=AB52*$Q52	=AC52*$Q52
53	=AG53*$O53	=AH53*$O53	=AI53*$O53	=AJ53*$O53	=AK53*$O53	=AL53*$O53	=AM53*$O53		=$S53*$Q53	=T53*$Q53	=U53*$Q53	=V53*$Q53	=W53*$Q53	=X53*$Q53	=Y53*$Q53	=Z53*$Q53	=AA53*$Q53	=AB53*$Q53	=AC53*$Q53
54	=AG54*$O54	=AH54*$O54	=AI54*$O54	=AJ54*$O54	=AK54*$O54	=AL54*$O54	=AM54*$O54		=$S54*$Q54	=T54*$Q54	=U54*$Q54	=V54*$Q54	=W54*$Q54	=X54*$Q54	=Y54*$Q54	=Z54*$Q54	=AA54*$Q54	=AB54*$Q54	=AC54*$Q54
55	=AG55*$O55	=AH55*$O55	=AI55*$O55	=AJ55*$O55	=AK55*$O55	=AL55*$O55	=AM55*$O55		=$S55*$Q55	=T55*$Q55	=U55*$Q55	=V55*$Q55	=W55*$Q55	=X55*$Q55	=Y55*$Q55	=Z55*$Q55	=AA55*$Q55	=AB55*$Q55	=AC55*$Q55
56	=AG56*$O56	=AH56*$O56	=AI56*$O56	=AJ56*$O56	=AK56*$O56	=AL56*$O56	=AM56*$O56		=$S56*$Q56	=T56*$Q56	=U56*$Q56	=V56*$Q56	=W56*$Q56	=X56*$Q56	=Y56*$Q56	=Z56*$Q56	=AA56*$Q56	=AB56*$Q56	=AC56*$Q56
57	=AG57*$O57	=AH57*$O57	=AI57*$O57	=AJ57*$O57	=AK57*$O57	=AL57*$O57	=AM57*$O57		=$S57*$Q57	=T57*$Q57	=U57*$Q57	=V57*$Q57	=W57*$Q57	=X57*$Q57	=Y57*$Q57	=Z57*$Q57	=AA57*$Q57	=AB57*$Q57	=AC57*$Q57
58	=AG58*$O58	=AH58*$O58	=AI58*$O58	=AJ58*$O58	=AK58*$O58	=AL58*$O58	=AM58*$O58		=$S58*$Q58	=T58*$Q58	=U58*$Q58	=V58*$Q58	=W58*$Q58	=X58*$Q58	=Y58*$Q58	=Z58*$Q58	=AA58*$Q58	=AB58*$Q58	=AC58*$Q58
59	=AG59*$O59	=AH59*$O59	=AI59*$O59	=AJ59*$O59	=AK59*$O59	=AL59*$O59	=AM59*$O59		=$S59*$Q59	=T59*$Q59	=U59*$Q59	=V59*$Q59	=W59*$Q59	=X59*$Q59	=Y59*$Q59	=Z59*$Q59	=AA59*$Q59	=AB59*$Q59	=AC59*$Q59
60	=AG60*$O60	=AH60*$O60	=AI60*$O60	=AJ60*$O60	=AK60*$O60	=AL60*$O60	=AM60*$O60		=$S60*$Q60	=T60*$Q60	=U60*$Q60	=V60*$Q60	=W60*$Q60	=X60*$Q60	=Y60*$Q60	=Z60*$Q60	=AA60*$Q60	=AB60*$Q60	=AC60*$Q60
61	=AG61*$O61	=AH61*$O61	=AI61*$O61	=AJ61*$O61	=AK61*$O61	=AL61*$O61	=AM61*$O61		=$S61*$Q61	=T61*$Q61	=U61*$Q61	=V61*$Q61	=W61*$Q61	=X61*$Q61	=Y61*$Q61	=Z61*$Q61	=AA61*$Q61	=AB61*$Q61	=AC61*$Q61
62	=AG62*$O62	=AH62*$O62	=AI62*$O62	=AJ62*$O62	=AK62*$O62	=AL62*$O62	=AM62*$O62		=$S62*$Q62	=T62*$Q62	=U62*$Q62	=V62*$Q62	=W62*$Q62	=X62*$Q62	=Y62*$Q62	=Z62*$Q62	=AA62*$Q62	=AB62*$Q62	=AC62*$Q62
63	=AG63*$O63	=AH63*$O63	=AI63*$O63	=AJ63*$O63	=AK63*$O63	=AL63*$O63	=AM63*$O63		=$S63*$Q63	=T63*$Q63	=U63*$Q63	=V63*$Q63	=W63*$Q63	=X63*$Q63	=Y63*$Q63	=Z63*$Q63	=AA63*$Q63	=AB63*$Q63	=AC63*$Q63
64	=AG64*$O64	=AH64*$O64	=AI64*$O64	=AJ64*$O64	=AK64*$O64	=AL64*$O64	=AM64*$O64		=$S64*$Q64	=T64*$Q64	=U64*$Q64	=V64*$Q64	=W64*$Q64	=X64*$Q64	=Y64*$Q64	=Z64*$Q64	=AA64*$Q64	=AB64*$Q64	=AC64*$Q64
65																			
66	=SUM(BD5:BD64)	=SUM(BE5:BE64)	=SUM(BF5:BF64)	=SUM(BG5:BG64)	=SUM(BH5:BH64)	=SUM(BI5:BI64)	=SUM(BJ5:BJ64)		=SUM(BL5:BL64)	=SUM(BM5:BM64)	=SUM(BN5:BN64)	=SUM(BO5:BO64)	=SUM(BP5:BP64)	=SUM(BQ5:BQ64)	=SUM(BR5:BR64)	=SUM(BS5:BS64)	=SUM(BT5:BT64)	=SUM(BU5:BU64)	=SUM(BV5:BV64)
67																			
68																			
69																	Total Integrated Beta Energy in Containment at Given Time		
70	=BD66/$F$70	=BE66/$F$70	=BF66/$F$70	=BG66/$F$70	=BH66/$F$70	=BI66/$F$70	=BJ66/$F$70		=BL66/$F$70	=BM66/$F$70	=BN66/$F$70	=BO66/$F$70	=BP66/$F$70	=BQ66/$F$70	=BR66/$F$70	=BS66/$F$70	=BT66/$F$70	=BU66/$F$70	=BV66/$F$70
71																			
72																			
73																			
74																			
75																			

	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF
1										
2	mesteps (MeV)									
3	150	200	240	300	360	400	480	600	700	720
4										
5	=AD5*$Q5	=AE5*$Q5	=AF5*$Q5	=AG5*$Q5	=AH5*$Q5	=AI5*$Q5	=AJ5*$Q5	=AK5*$Q5	=AL5*$Q5	=AM5*$Q5
6	=AD6*$Q6	=AE6*$Q6	=AF6*$Q6	=AG6*$Q6	=AH6*$Q6	=AI6*$Q6	=AJ6*$Q6	=AK6*$Q6	=AL6*$Q6	=AM6*$Q6
7	=AD7*$Q7	=AE7*$Q7	=AF7*$Q7	=AG7*$Q7	=AH7*$Q7	=AI7*$Q7	=AJ7*$Q7	=AK7*$Q7	=AL7*$Q7	=AM7*$Q7
8	=AD8*$Q8	=AE8*$Q8	=AF8*$Q8	=AG8*$Q8	=AH8*$Q8	=AI8*$Q8	=AJ8*$Q8	=AK8*$Q8	=AL8*$Q8	=AM8*$Q8
9	=AD9*$Q9	=AE9*$Q9	=AF9*$Q9	=AG9*$Q9	=AH9*$Q9	=AI9*$Q9	=AJ9*$Q9	=AK9*$Q9	=AL9*$Q9	=AM9*$Q9
10	=AD10*$Q10	=AE10*$Q10	=AF10*$Q10	=AG10*$Q10	=AH10*$Q10	=AI10*$Q10	=AJ10*$Q10	=AK10*$Q10	=AL10*$Q10	=AM10*$Q10
11	=AD11*$Q11	=AE11*$Q11	=AF11*$Q11	=AG11*$Q11	=AH11*$Q11	=AI11*$Q11	=AJ11*$Q11	=AK11*$Q11	=AL11*$Q11	=AM11*$Q11
12	=AD12*$Q12	=AE12*$Q12	=AF12*$Q12	=AG12*$Q12	=AH12*$Q12	=AI12*$Q12	=AJ12*$Q12	=AK12*$Q12	=AL12*$Q12	=AM12*$Q12
13	=AD13*$Q13	=AE13*$Q13	=AF13*$Q13	=AG13*$Q13	=AH13*$Q13	=AI13*$Q13	=AJ13*$Q13	=AK13*$Q13	=AL13*$Q13	=AM13*$Q13
14	=AD14*$Q14	=AE14*$Q14	=AF14*$Q14	=AG14*$Q14	=AH14*$Q14	=AI14*$Q14	=AJ14*$Q14	=AK14*$Q14	=AL14*$Q14	=AM14*$Q14
15	=AD15*$Q15	=AE15*$Q15	=AF15*$Q15	=AG15*$Q15	=AH15*$Q15	=AI15*$Q15	=AJ15*$Q15	=AK15*$Q15	=AL15*$Q15	=AM15*$Q15
16	=AD16*$Q16	=AE16*$Q16	=AF16*$Q16	=AG16*$Q16	=AH16*$Q16	=AI16*$Q16	=AJ16*$Q16	=AK16*$Q16	=AL16*$Q16	=AM16*$Q16
17	=AD17*$Q17	=AE17*$Q17	=AF17*$Q17	=AG17*$Q17	=AH17*$Q17	=AI17*$Q17	=AJ17*$Q17	=AK17*$Q17	=AL17*$Q17	=AM17*$Q17
18	=AD18*$Q18	=AE18*$Q18	=AF18*$Q18	=AG18*$Q18	=AH18*$Q18	=AI18*$Q18	=AJ18*$Q18	=AK18*$Q18	=AL18*$Q18	=AM18*$Q18
19	=AD19*$Q19	=AE19*$Q19	=AF19*$Q19	=AG19*$Q19	=AH19*$Q19	=AI19*$Q19	=AJ19*$Q19	=AK19*$Q19	=AL19*$Q19	=AM19*$Q19
20	=AD20*$Q20	=AE20*$Q20	=AF20*$Q20	=AG20*$Q20	=AH20*$Q20	=AI20*$Q20	=AJ20*$Q20	=AK20*$Q20	=AL20*$Q20	=AM20*$Q20
21	=AD21*$Q21	=AE21*$Q21	=AF21*$Q21	=AG21*$Q21	=AH21*$Q21	=AI21*$Q21	=AJ21*$Q21	=AK21*$Q21	=AL21*$Q21	=AM21*$Q21
22	=AD22*$Q22	=AE22*$Q22	=AF22*$Q22	=AG22*$Q22	=AH22*$Q22	=AI22*$Q22	=AJ22*$Q22	=AK22*$Q22	=AL22*$Q22	=AM22*$Q22
23	=AD23*$Q23	=AE23*$Q23	=AF23*$Q23	=AG23*$Q23	=AH23*$Q23	=AI23*$Q23	=AJ23*$Q23	=AK23*$Q23	=AL23*$Q23	=AM23*$Q23
24	=AD24*$Q24	=AE24*$Q24	=AF24*$Q24	=AG24*$Q24	=AH24*$Q24	=AI24*$Q24	=AJ24*$Q24	=AK24*$Q24	=AL24*$Q24	=AM24*$Q24
25	=AD25*$Q25	=AE25*$Q25	=AF25*$Q25	=AG25*$Q25	=AH25*$Q25	=AI25*$Q25	=AJ25*$Q25	=AK25*$Q25	=AL25*$Q25	=AM25*$Q25
26	=AD26*$Q26	=AE26*$Q26	=AF26*$Q26	=AG26*$Q26	=AH26*$Q26	=AI26*$Q26	=AJ26*$Q26	=AK26*$Q26	=AL26*$Q26	=AM26*$Q26
27	=AD27*$Q27	=AE27*$Q27	=AF27*$Q27	=AG27*$Q27	=AH27*$Q27	=AI27*$Q27	=AJ27*$Q27	=AK27*$Q27	=AL27*$Q27	=AM27*$Q27
28	=AD28*$Q28	=AE28*$Q28	=AF28*$Q28	=AG28*$Q28	=AH28*$Q28	=AI28*$Q28	=AJ28*$Q28	=AK28*$Q28	=AL28*$Q28	=AM28*$Q28
29	=AD29*$Q29	=AE29*$Q29	=AF29*$Q29	=AG29*$Q29	=AH29*$Q29	=AI29*$Q29	=AJ29*$Q29	=AK29*$Q29	=AL29*$Q29	=AM29*$Q29
30	=AD30*$Q30	=AE30*$Q30	=AF30*$Q30	=AG30*$Q30	=AH30*$Q30	=AI30*$Q30	=AJ30*$Q30	=AK30*$Q30	=AL30*$Q30	=AM30*$Q30
31	=AD31*$Q31	=AE31*$Q31	=AF31*$Q31	=AG31*$Q31	=AH31*$Q31	=AI31*$Q31	=AJ31*$Q31	=AK31*$Q31	=AL31*$Q31	=AM31*$Q31
32	=AD32*$Q32	=AE32*$Q32	=AF32*$Q32	=AG32*$Q32	=AH32*$Q32	=AI32*$Q32	=AJ32*$Q32	=AK32*$Q32	=AL32*$Q32	=AM32*$Q32
33	=AD33*$Q33	=AE33*$Q33	=AF33*$Q33	=AG33*$Q33	=AH33*$Q33	=AI33*$Q33	=AJ33*$Q33	=AK33*$Q33	=AL33*$Q33	=AM33*$Q33
34	=AD34*$Q34	=AE34*$Q34	=AF34*$Q34	=AG34*$Q34	=AH34*$Q34	=AI34*$Q34	=AJ34*$Q34	=AK34*$Q34	=AL34*$Q34	=AM34*$Q34
35	=AD35*$Q35	=AE35*$Q35	=AF35*$Q35	=AG35*$Q35	=AH35*$Q35	=AI35*$Q35	=AJ35*$Q35	=AK35*$Q35	=AL35*$Q35	=AM35*$Q35
36	=AD36*$Q36	=AE36*$Q36	=AF36*$Q36	=AG36*$Q36	=AH36*$Q36	=AI36*$Q36	=AJ36*$Q36	=AK36*$Q36	=AL36*$Q36	=AM36*$Q36
37	=AD37*$Q37	=AE37*$Q37	=AF37*$Q37	=AG37*$Q37	=AH37*$Q37	=AI37*$Q37	=AJ37*$Q37	=AK37*$Q37	=AL37*$Q37	=AM37*$Q37
38	=AD38*$Q38	=AE38*$Q38	=AF38*$Q38	=AG38*$Q38	=AH38*$Q38	=AI38*$Q38	=AJ38*$Q38	=AK38*$Q38	=AL38*$Q38	=AM38*$Q38
39	=AD39*$Q39	=AE39*$Q39	=AF39*$Q39	=AG39*$Q39	=AH39*$Q39	=AI39*$Q39	=AJ39*$Q39	=AK39*$Q39	=AL39*$Q39	=AM39*$Q39
40	=AD40*$Q40	=AE40*$Q40	=AF40*$Q40	=AG40*$Q40	=AH40*$Q40	=AI40*$Q40	=AJ40*$Q40	=AK40*$Q40	=AL40*$Q40	=AM40*$Q40
41	=AD41*$Q41	=AE41*$Q41	=AF41*$Q41	=AG41*$Q41	=AH41*$Q41	=AI41*$Q41	=AJ41*$Q41	=AK41*$Q41	=AL41*$Q41	=AM41*$Q41
42	=AD42*$Q42	=AE42*$Q42	=AF42*$Q42	=AG42*$Q42	=AH42*$Q42	=AI42*$Q42	=AJ42*$Q42	=AK42*$Q42	=AL42*$Q42	=AM42*$Q42
43	=AD43*$Q43	=AE43*$Q43	=AF43*$Q43	=AG43*$Q43	=AH43*$Q43	=AI43*$Q43	=AJ43*$Q43	=AK43*$Q43	=AL43*$Q43	=AM43*$Q43
44	=AD44*$Q44	=AE44*$Q44	=AF44*$Q44	=AG44*$Q44	=AH44*$Q44	=AI44*$Q44	=AJ44*$Q44	=AK44*$Q44	=AL44*$Q44	=AM44*$Q44
45	=AD45*$Q45	=AE45*$Q45	=AF45*$Q45	=AG45*$Q45	=AH45*$Q45	=AI45*$Q45	=AJ45*$Q45	=AK45*$Q45	=AL45*$Q45	=AM45*$Q45
46	=AD46*$Q46	=AE46*$Q46	=AF46*$Q46	=AG46*$Q46	=AH46*$Q46	=AI46*$Q46	=AJ46*$Q46	=AK46*$Q46	=AL46*$Q46	=AM46*$Q46
47	=AD47*$Q47	=AE47*$Q47	=AF47*$Q47	=AG47*$Q47	=AH47*$Q47	=AI47*$Q47	=AJ47*$Q47	=AK47*$Q47	=AL47*$Q47	=AM47*$Q47
48	=AD48*$Q48	=AE48*$Q48	=AF48*$Q48	=AG48*$Q48	=AH48*$Q48	=AI48*$Q48	=AJ48*$Q48	=AK48*$Q48	=AL48*$Q48	=AM48*$Q48
49	=AD49*$Q49	=AE49*$Q49	=AF49*$Q49	=AG49*$Q49	=AH49*$Q49	=AI49*$Q49	=AJ49*$Q49	=AK49*$Q49	=AL49*$Q49	=AM49*$Q49
50	=AD50*$Q50	=AE50*$Q50	=AF50*$Q50	=AG50*$Q50	=AH50*$Q50	=AI50*$Q50	=AJ50*$Q50	=AK50*$Q50	=AL50*$Q50	=AM50*$Q50
51	=AD51*$Q51	=AE51*$Q51	=AF51*$Q51	=AG51*$Q51	=AH51*$Q51	=AI51*$Q51	=AJ51*$Q51	=AK51*$Q51	=AL51*$Q51	=AM51*$Q51
52	=AD52*$Q52	=AE52*$Q52	=AF52*$Q52	=AG52*$Q52	=AH52*$Q52	=AI52*$Q52	=AJ52*$Q52	=AK52*$Q52	=AL52*$Q52	=AM52*$Q52
53	=AD53*$Q53	=AE53*$Q53	=AF53*$Q53	=AG53*$Q53	=AH53*$Q53	=AI53*$Q53	=AJ53*$Q53	=AK53*$Q53	=AL53*$Q53	=AM53*$Q53
54	=AD54*$Q54	=AE54*$Q54	=AF54*$Q54	=AG54*$Q54	=AH54*$Q54	=AI54*$Q54	=AJ54*$Q54	=AK54*$Q54	=AL54*$Q54	=AM54*$Q54
55	=AD55*$Q55	=AE55*$Q55	=AF55*$Q55	=AG55*$Q55	=AH55*$Q55	=AI55*$Q55	=AJ55*$Q55	=AK55*$Q55	=AL55*$Q55	=AM55*$Q55
56	=AD56*$Q56	=AE56*$Q56	=AF56*$Q56	=AG56*$Q56	=AH56*$Q56	=AI56*$Q56	=AJ56*$Q56	=AK56*$Q56	=AL56*$Q56	=AM56*$Q56
57	=AD57*$Q57	=AE57*$Q57	=AF57*$Q57	=AG57*$Q57	=AH57*$Q57	=AI57*$Q57	=AJ57*$Q57	=AK57*$Q57	=AL57*$Q57	=AM57*$Q57
58	=AD58*$Q58	=AE58*$Q58	=AF58*$Q58	=AG58*$Q58	=AH58*$Q58	=AI58*$Q58	=AJ58*$Q58	=AK58*$Q58	=AL58*$Q58	=AM58*$Q58
59	=AD59*$Q59	=AE59*$Q59	=AF59*$Q59	=AG59*$Q59	=AH59*$Q59	=AI59*$Q59	=AJ59*$Q59	=AK59*$Q59	=AL59*$Q59	=AM59*$Q59
60	=AD60*$Q60	=AE60*$Q60	=AF60*$Q60	=AG60*$Q60	=AH60*$Q60	=AI60*$Q60	=AJ60*$Q60	=AK60*$Q60	=AL60*$Q60	=AM60*$Q60
61	=AD61*$Q61	=AE61*$Q61	=AF61*$Q61	=AG61*$Q61	=AH61*$Q61	=AI61*$Q61	=AJ61*$Q61	=AK61*$Q61	=AL61*$Q61	=AM61*$Q61
62	=AD62*$Q62	=AE62*$Q62	=AF62*$Q62	=AG62*$Q62	=AH62*$Q62	=AI62*$Q62	=AJ62*$Q62	=AK62*$Q62	=AL62*$Q62	=AM62*$Q62
63	=AD63*$Q63	=AE63*$Q63	=AF63*$Q63	=AG63*$Q63	=AH63*$Q63	=AI63*$Q63	=AJ63*$Q63	=AK63*$Q63	=AL63*$Q63	=AM63*$Q63
64	=AD64*$Q64	=AE64*$Q64	=AF64*$Q64	=AG64*$Q64	=AH64*$Q64	=AI64*$Q64	=AJ64*$Q64	=AK64*$Q64	=AL64*$Q64	=AM64*$Q64
65										
66	=SUM(BW5:BW64)	=SUM(BX5:BX64)	=SUM(BY5:BY64)	=SUM(BZ5:BZ64)	=SUM(CA5:CA64)	=SUM(CB5:CB64)	=SUM(CC5:CC64)	=SUM(CD5:CD64)	=SUM(CE5:CE64)	=SUM(CF5:CF64)
67										
68										
69	steps (MeV/cm²)									
70	=BW66/$F$70	=BX66/$F$70	=BY66/$F$70	=BZ66/$F$70	=CA66/$F$70	=CB66/$F$70	=CC66/$F$70	=CD66/$F$70	=CE66/$F$70	=CF66/$F$70
71										
72										
73										
74										
75										

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1							Adjustment for Lasalle Power	Gap Release	Gap Release	Early In-vessel Release	Early In-vessel Release	TOTAL	TOTAL	Gamma *(Photon)*	Gamma *(Photon)*		Beta Particle
2			Decay			Initial Core	Initial Core	Activity in Containment	Time Integrated Activity in	Activity in Containment	Time Integrated Activity in	Time Integrated Activity in	Activity in Containment	Emission	Emission Energy per	Beta Particle	Emission Energy per
3		Isotopic	Constant	Release Fractions		Activity	Activity	at 0.5 hours	Containment through 0.5 hours	at 2.0 hours	Containment through 2.0 hours	Containment through 2.0 hours	at 2.0 hours	Energy	Unit of Activity	Emission Energy	Unit of Activity
4	Class	Nuclide	(hours)[1]	0-0.5 hours	0.5-2 hours	(Ci/MW)	(Ci)	(Ci)	(Ci-hours)	(Ci)	(Ci-hours)	(Ci-hours)	(Ci)	(MeV/decay)	(MeV/Ci-hour)	(MeV/decay)	(MeV/Ci-hour)
5	2	I-131	3.592E-03	0.05	0.25	2.695E+04	9.592E+07	4.79E+06	1.20E+06	2.38E+07	1.79E+07	1.91E+07	2.86E+07	3.81E-01	5.08E+13	1.81E-01	2.42E+13
6	2	I-132	3.014E-01	0.05	0.25	3.889E+04	1.384E+08	5.95E+06	1.57E+06	1.89E+07	1.66E+07	1.82E+07	2.27E+07	2.29E+00	3.05E+14	4.86E-01	6.47E+13
7	2	I-133	3.332E-02	0.05	0.25	5.558E+04	1.977E+08	9.72E+06	2.44E+06	4.62E+07	3.53E+07	3.77E+07	5.55E+07	6.07E-01	8.08E+13	4.07E-01	5.42E+13
8	2	I-134	7.907E-01	0.05	0.25	6.165E+04	2.194E+08	7.39E+06	2.12E+06	1.13E+07	1.31E+07	1.52E+07	1.35E+07	2.63E+00	3.50E+14	6.03E-01	8.03E+13
9	2	I-135	1.049E-01	0.05	0.25	5.192E+04	1.848E+08	8.77E+06	2.23E+06	3.75E+07	2.96E+07	3.19E+07	4.49E+07	1.58E+00	2.10E+14	3.68E-01	4.91E+13
10	3	Rb-86	1.548E-03	0.05	0.20	8.518E+01	2.320E+05	1.16E+04	2.90E+03	4.63E+04	3.47E+04	3.76E+04	5.78E+04	9.45E-02	1.26E+13	6.67E-01	8.89E+13
11	3	Cs-134	3.835E-05	0.05	0.20	7.280E+03	2.591E+07	1.30E+06	3.24E+05	5.18E+06	3.89E+06	4.21E+06	6.48E+06	1.56E+00	2.07E+14	1.57E-01	2.09E+13
12	3	Cs-136	2.205E-03	0.05	0.20	2.027E+03	7.214E+06	3.60E+05	9.01E+04	1.44E+06	1.08E+06	1.17E+06	1.80E+06	2.17E+00	2.89E+14	1.00E-01	1.33E+13
13	3	Cs-137	2.636E-06	0.05	0.20	4.536E+03	1.615E+07	8.08E+05	2.02E+05	3.23E+06	2.42E+06	2.62E+06	4.04E+06	0.00E+00	0.00E+00	1.71E-01	2.27E+13
14	4	Sb-127	7.502E-03	0.00	0.05	2.944E+03	1.048E+07	0.00E+00	0.00E+00	5.16E+05	3.89E+05	3.89E+05	5.16E+05	6.62E-01	8.82E+13	3.11E-01	4.14E+13
15	4	Sb-129	1.605E-01	0.00	0.05	8.725E+03	3.105E+07	0.00E+00	0.00E+00	1.13E+06	9.17E+05	9.17E+05	1.13E+06	1.43E+00	1.90E+14	3.98E-01	4.76E+13
16	4	Te-127	7.413E-02	0.00	0.05	2.918E+03	1.039E+07	0.00E+00	0.00E+00	4.48E+05	3.49E+05	3.49E+05	4.48E+05	4.84E-03	6.44E+11	2.23E-01	2.97E+13
17	4	Te-127m	2.650E-04	0.00	0.05	3.909E+02	1.391E+06	0.00E+00	0.00E+00	6.95E+04	5.21E+04	5.21E+04	6.95E+04	1.12E-02	1.50E+12	4.61E-03	6.13E+11
18	4	Te-129	5.975E-01	0.00	0.05	8.584E+03	3.055E+07	0.00E+00	0.00E+00	4.82E+05	4.78E+05	4.78E+05	4.82E+05	5.77E-02	7.68E+12	5.25E-01	6.99E+13
19	4	Te-129m	8.596E-04	0.00	0.05	1.279E+03	4.552E+06	0.00E+00	0.00E+00	2.27E+05	1.70E+05	1.70E+05	2.27E+05	3.94E-02	5.25E+12	2.12E-01	2.82E+13
20	4	Te-131m	2.310E-02	0.00	0.05	3.892E+03	1.385E+07	0.00E+00	0.00E+00	6.61E+05	5.02E+05	5.02E+05	6.61E+05	1.43E+00	1.90E+14	1.45E-01	1.92E+13
21	4	Te-132	8.864E-03	0.00	0.05	3.829E+04	1.363E+08	0.00E+00	0.00E+00	6.69E+06	5.04E+06	5.04E+06	6.69E+06	2.31E-01	3.07E+13	5.94E-02	7.91E+12
22	5	Sr-89	5.719E-04	0.00	0.02	2.788E+04	9.958E+07	0.00E+00	0.00E+00	1.98E+06	1.49E+06	1.49E+06	1.99E+06	1.36E-04	1.82E+10	5.83E-01	7.76E+13
23	5	Sr-90	2.715E-06	0.00	0.02	3.178E+03	1.131E+07	0.00E+00	0.00E+00	2.26E+05	1.70E+05	1.70E+05	2.26E+05	0.00E+00	0.00E+00	1.96E-01	2.61E+13
24	5	Sr-91	7.266E-02	0.00	0.02	3.801E+04	1.353E+08	0.00E+00	0.00E+00	2.34E+06	1.82E+06	1.82E+06	2.34E+06	6.67E-01	9.15E+13	6.53E-01	8.70E+13
25	5	Sr-92	2.558E-01	0.00	0.02	4.017E+04	1.430E+08	0.00E+00	0.00E+00	1.71E+06	1.47E+06	1.47E+06	1.71E+06	1.34E+00	1.78E+14	2.00E-01	2.66E+13
26	6	Ba-139	5.029E-01	0.00	0.02	5.084E+04	1.809E+08	0.00E+00	0.00E+00	1.32E+06	1.30E+06	1.30E+06	1.32E+06	3.53E-02	4.70E+12	8.97E-01	1.19E+14
27	6	Ba-140	2.267E-03	0.00	0.02	4.896E+04	1.742E+08	0.00E+00	0.00E+00	3.47E+06	2.60E+06	2.80E+06	3.47E+06	1.91E-01	2.54E+13	2.71E-01	3.61E+13
28	7	Co-58	4.079E-04	0.00	0.0025	1.529E+02	5.442E+05	0.00E+00	0.00E+00	1.36E+03	1.02E+03	1.02E+03	1.36E+03	9.76E-01	1.30E+14	0.00E+00	0.00E+00
29	7	Co-60	1.500E-05	0.00	0.0025	1.830E+02	6.513E+05	0.00E+00	0.00E+00	1.63E+03	1.22E+03	1.22E+03	1.63E+03	2.51E+00	3.34E+14	9.98E-02	1.28E+13
30	7	Mo-99	1.050E-02	0.00	0.0025	5.078E+04	1.807E+08	0.00E+00	0.00E+00	4.42E+05	3.34E+05	3.34E+05	4.42E+05	1.55E-01	2.06E+13	3.93E-01	5.24E+13
31	7	Tc-99m	1.151E-01	0.00	0.0025	4.447E+04	1.583E+08	0.00E+00	0.00E+00	3.14E+05	2.50E+05	2.50E+05	3.14E+05	1.27E-01	1.69E+13	0.00E+00	0.00E+00
32	7	Ru-103	7.353E-04	0.00	0.0025	4.242E+04	1.510E+08	0.00E+00	0.00E+00	3.77E+05	2.83E+05	2.83E+05	3.77E+05	4.84E-01	6.44E+13	6.75E-02	9.00E+12
33	7	Ru-105	1.561E-01	0.00	0.0025	2.966E+04	1.056E+08	0.00E+00	0.00E+00	1.93E+05	1.57E+05	1.57E+05	1.93E+05	7.84E-01	1.04E+14	4.03E-01	5.36E+13
34	7	Ru-106	7.844E-05	0.00	0.0025	1.760E+04	6.264E+07	0.00E+00	0.00E+00	1.57E+05	1.17E+05	1.17E+05	1.57E+05	0.00E+00	0.00E+00	1.00E-02	1.34E+12
35	7	Rh-105	1.960E-02	0.00	0.0025	2.786E+04	9.951E+07	0.00E+00	0.00E+00	2.39E+05	1.81E+05	1.81E+05	2.39E+05	7.76E-02	1.03E+13	1.52E-01	2.03E+13
36	8	Ce-141	8.886E-04	0.00	0.0005	4.492E+04	1.599E+08	0.00E+00	0.00E+00	7.98E+04	5.99E+04	5.99E+04	7.98E+04	7.69E-02	1.02E+13	1.45E-01	1.93E+13
37	8	Ce-143	2.100E-02	0.00	0.0005	4.427E+04	1.576E+08	0.00E+00	0.00E+00	7.55E+04	5.73E+04	5.73E+04	7.55E+04	2.73E-01	3.64E+13	4.10E-01	5.46E+13
38	8	Ce-144	1.016E-04	0.00	0.0005	3.586E+04	1.280E+08	0.00E+00	0.00E+00	6.40E+04	4.80E+04	4.80E+04	6.40E+04	1.93E-02	2.57E+12	8.33E-02	1.11E+13
39	8	Np-239	1.226E-02	0.00	0.0005	5.540E+05	1.972E+09	0.00E+00	0.00E+00	9.62E+05	7.26E+05	7.26E+05	9.62E+05	1.72E-01	2.29E+13	1.15E-01	1.53E+13
40	8	Pu-238	9.012E-07	0.00	0.0005	1.796E+02	6.392E+05	0.00E+00	0.00E+00	3.20E+02	2.40E+02	2.40E+02	3.20E+02	1.60E-03	2.13E+11	0.00E+00	0.00E+00
41	8	Pu-239	3.286E-09	0.00	0.0005	1.207E+01	4.296E+04	0.00E+00	0.00E+00	2.15E+01	1.47E+02	1.47E+02	2.15E+01	6.54E-04	8.71E+10	0.00E+00	0.00E+00
42	8	Pu-240	1.210E-08	0.00	0.0005	1.308E+01	4.655E+04	0.00E+00	0.00E+00	2.33E+01	1.18E+01	1.18E+01	2.33E+01	1.53E-03	2.03E+11	0.00E+00	0.00E+00
43	8	Pu-241	5.491E-06	0.00	0.0005	6.257E+03	2.227E+07	0.00E+00	0.00E+00	1.11E+04	8.35E+03	8.35E+03	1.11E+04	0.00E+00	0.00E+00	5.23E-03	6.97E+11
44	9	Y-90	1.083E-02	0.00	0.0002	3.272E+03	1.165E+07	0.00E+00	0.00E+00	2.28E+03	1.72E+03	1.72E+03	2.28E+03	0.00E+00	0.00E+00	9.35E-01	1.25E+14
45	9	Y-91	4.936E-04	0.00	0.0002	3.448E+04	1.227E+08	0.00E+00	0.00E+00	2.45E+04	1.84E+04	1.84E+04	2.45E+04	3.61E-03	4.81E+11	6.02E-01	8.02E+13
46	9	Y-92	1.958E-01	0.00	0.0002	4.029E+04	1.434E+08	0.00E+00	0.00E+00	1.94E+04	1.61E+04	1.61E+04	1.94E+04	2.52E-01	3.35E+13	1.44E-00	1.92E+14
47	9	Y-93	6.863E-02	0.00	0.0002	4.526E+04	1.611E+08	0.00E+00	0.00E+00	2.81E+04	2.18E+04	2.18E+04	2.81E+04	8.91E-02	1.19E+13	1.17E+00	1.56E+14
48	9	Zr-95	4.514E-04	0.00	0.0002	4.489E+04	1.598E+08	0.00E+00	0.00E+00	3.19E+04	2.39E+04	2.39E+04	3.19E+04	7.35E-01	9.79E+13	1.16E-01	1.55E+13
49	9	Zr-97	4.101E-02	0.00	0.0002	4.657E+04	1.657E+08	0.00E+00	0.00E+00	3.05E+04	2.34E+04	2.34E+04	3.05E+04	1.81E-01	2.41E+13	6.97E-01	9.29E+13
50	9	Nb-95	8.217E-04	0.00	0.0002	4.512E+04	1.606E+08	0.00E+00	0.00E+00	3.21E+04	2.41E+04	2.41E+04	3.21E+04	7.64E-01	1.02E+14	4.34E-02	5.79E+12
51	9	La-140	1.721E-02	0.00	0.0002	5.019E+04	1.786E+08	0.00E+00	0.00E+00	3.45E+04	2.61E+04	2.61E+04	3.45E+04	2.32E+00	3.09E+14	5.27E-01	7.03E+13
52	9	La-141	1.764E-01	0.00	0.0002	4.640E+04	1.651E+08	0.00E+00	0.00E+00	2.32E+04	1.90E+04	1.90E+04	2.32E+04	4.27E-02	5.69E+12	9.48E-01	1.26E+14
53	9	La-142	4.496E-01	0.00	0.0002	4.532E+04	1.613E+08	0.00E+00	0.00E+00	1.31E+04	1.25E+04	1.25E+04	1.31E+04	2.72E+00	3.62E+14	8.46E-01	1.13E+14
54	9	Pr-143	2.130E-03	0.00	0.0002	4.293E+04	1.528E+08	0.00E+00	0.00E+00	3.04E+04	2.28E+04	2.28E+04	3.04E+04	0.00E+00	0.00E+00	3.16E-01	4.20E+13
55	9	Nd-147	2.630E-03	0.00	0.0002	1.838E+04	6.541E+07	0.00E+00	0.00E+00	1.30E+04	9.77E+03	9.77E+03	1.30E+04	1.41E-01	1.87E+13	2.33E-01	3.11E+13
56	9	Am-241	1.830E-07	0.00	0.0002	9.797E+00	3.487E+04	0.00E+00	0.00E+00	6.97E+00	5.24E+00	5.24E+00	6.97E+00	2.81E-02	3.74E+12	0.00E+00	0.00E+00
57	9	Cm-242	1.774E-04	0.00	0.0002	2.388E+03	8.499E+06	0.00E+00	0.00E+00	1.70E+03	1.27E+03	1.27E+03	1.70E+03	1.67E-03	2.23E+11	0.00E+00	0.00E+00
58	9	Cm-244	4.366E-06	0.00	0.0002	2.602E+02	9.261E+05	0.00E+00	0.00E+00	1.85E+02	1.39E+02	1.39E+02	1.85E+02	1.49E-03	1.98E+11	0.00E+00	0.00E+00
59																	
60																	
61																	
62																	
63			Disintegrations per Curie-hours			1.3320E+14											
64			Max. Suppression Pool Water Volume cm³=			4.3781E+09											
65			MeV/cm³ to Mrad Conversion Factor=			1.6021E-14											
66																	
67																	
68																	
69																	
70																	
71																	
72																	
73																	
74																	
75																	

	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO
1																								
2										Activity in Containment at Given Timesteps (Ci-hours)														
3		1	2	2.0336	3	5	12	18	24	48	72	96	120	150	200	240	300	360	400	480	600	700	720	
4																								
5			1.91E+07	2.00E+07	4.76E+07	1.04E+08	3.00E+08	4.83E+08	6.23E+08	1.23E+09	1.79E+09	2.30E+09	2.77E+09	3.30E+09	4.07E+09	4.59E+09	5.25E+09	5.77E+09	6.07E+09	6.54E+09	7.04E+09	7.32E+09	7.37E+09	
6			1.82E+07	1.89E+07	3.78E+07	6.31E+07	8.99E+07	9.30E+07	9.35E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	9.36E+07	
7			3.77E+07	3.96E+07	9.23E+07	1.96E+08	5.10E+08	7.26E+08	9.03E+08	1.34E+09	1.54E+09	1.63E+09	1.67E+09	1.68E+09	1.70E+09	1.70E+09	1.70E+09	1.70E+09	1.70E+09	1.70E+09	1.70E+09	1.70E+09	1.70E+09	
8			1.52E+07	1.57E+07	2.46E+07	3.07E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	3.23E+07	
9			3.19E+07	3.34E+07	7.45E+07	1.48E+08	3.10E+08	3.80E+08	4.18E+08	4.57E+08	4.60E+08	4.60E+08	4.60E+08	4.60E+08	4.60E+08	4.60E+08	4.60E+08	4.60E+08	4.60E+08	4.60E+08	4.60E+08	4.60E+08	4.60E+08	
10			3.76E+04	3.96E+04	9.54E+04	2.11E+05	6.11E+05	9.51E+05	1.29E+06	2.60E+06	3.87E+06	5.10E+06	6.27E+06	7.68E+06	9.90E+06	1.15E+07	1.38E+07	1.59E+07	1.72E+07	1.96E+07	2.26E+07	2.47E+07	2.51E+07	
11			4.21E+06	4.43E+06	1.07E+07	2.36E+07	6.90E+07	1.08E+08	1.47E+08	3.02E+08	4.57E+08	6.12E+08	7.67E+08	9.60E+08	1.28E+09	1.54E+09	1.92E+09	2.31E+09	2.56E+09	3.07E+09	3.83E+09	4.47E+09	4.59E+09	
12			1.17E+06	1.23E+06	2.96E+06	6.54E+06	1.89E+07	2.94E+07	3.97E+07	7.97E+07	1.18E+08	1.54E+08	1.88E+08	2.28E+08	2.89E+08	3.34E+08	3.99E+08	4.48E+08	4.77E+08	5.32E+08	5.98E+08	6.41E+08	6.48E+08	
13			2.62E+06	2.76E+06	6.66E+06	1.47E+07	4.30E+07	6.72E+07	9.15E+07	1.88E+08	2.85E+08	3.82E+08	4.70E+08	6.00E+08	8.02E+08	9.83E+08	1.21E+09	1.45E+09	1.61E+09	1.93E+09	2.42E+09	2.82E+09	2.90E+09	
14			3.89E+05	4.06E+05	9.03E+05	1.92E+06	5.58E+06	8.17E+06	1.09E+07	2.05E+07	2.85E+07	3.52E+07	4.08E+07	4.65E+07	5.36E+07	5.76E+07	6.18E+07	6.45E+07	6.57E+07	6.73E+07	6.84E+07	6.88E+07	6.89E+07	
15			9.17E+05	9.55E+05	1.96E+06	3.60E+06	6.53E+06	7.40E+06	7.73E+06	7.93E+06	7.94E+06	7.94E+06	7.94E+06	7.94E+06	7.94E+06	7.94E+06	7.94E+06	7.94E+06	7.94E+06	7.94E+06	7.94E+06	7.94E+06	7.94E+06	
16			3.49E+05	3.64E+05	7.80E+05	1.55E+06	3.51E+06	4.54E+06	5.21E+06	6.19E+06	6.35E+06	6.38E+06	6.39E+06	6.39E+06	6.39E+06	6.39E+06	6.39E+06	6.39E+06	6.39E+06	6.39E+06	6.39E+06	6.39E+06	6.39E+06	
17			5.21E+04	5.45E+04	1.22E+05	2.61E+05	7.48E+05	1.16E+06	1.58E+06	3.23E+06	4.87E+06	6.51E+06	8.13E+06	1.01E+07	1.35E+07	1.61E+07	2.00E+07	2.38E+07	2.63E+07	3.13E+07	3.85E+07	4.44E+07	4.55E+07	
18			4.78E+05	4.94E+05	8.27E+05	1.12E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	1.25E+06	
19			1.70E+05	1.76E+05	3.98E+05	8.51E+05	2.43E+06	3.78E+06	5.12E+06	1.04E+07	1.56E+07	2.07E+07	2.57E+07	3.17E+07	4.15E+07	4.91E+07	5.99E+07	7.02E+07	7.68E+07	8.92E+07	1.08E+08	1.19E+08	1.22E+08	
20			5.02E+05	5.24E+05	1.16E+06	2.42E+06	6.41E+06	9.35E+06	1.19E+07	1.92E+07	2.34E+07	2.58E+07	2.73E+07	2.82E+07	2.88E+07	2.90E+07	2.91E+07	2.91E+07	2.91E+07	2.91E+07	2.91E+07	2.91E+07	2.91E+07	
21			8.04E+06	8.37E+06	1.17E+07	2.49E+07	6.91E+07	1.05E+08	1.39E+08	2.58E+08	3.54E+08	4.32E+08	4.95E+08	5.57E+08	6.30E+08	6.69E+08	7.06E+08	7.29E+08	7.38E+08	7.49E+08	7.56E+08	7.59E+08	7.59E+08	
22			1.49E+06	1.56E+06	3.48E+06	7.46E+06	2.13E+07	3.32E+07	4.50E+07	9.18E+07	1.38E+08	1.84E+08	2.28E+08	2.84E+08	3.74E+08	4.44E+08	5.47E+08	6.46E+08	7.10E+08	8.31E+08	1.01E+09	1.15E+09	1.17E+09	
23			1.70E+05	1.77E+05	3.96E+05	8.48E+05	2.43E+06	3.79E+06	5.15E+06	1.06E+07	1.60E+07	2.14E+07	2.66E+07	3.36E+07	4.49E+07	5.40E+07	6.76E+07	8.11E+07	9.02E+07	1.06E+08	1.35E+08	1.58E+08	1.62E+08	
24			1.82E+06	1.90E+06	4.07E+06	8.12E+06	1.84E+07	2.39E+07	2.74E+07	3.27E+07	3.37E+07	3.38E+07	3.39E+07	3.39E+07	3.39E+07	3.39E+07	3.39E+07	3.39E+07	3.39E+07	3.39E+07	3.39E+07	3.39E+07	3.39E+07	
25			1.47E+06	1.52E+06	2.98E+06	5.06E+06	7.65E+06	8.06E+06	8.15E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	8.17E+06	
26			1.30E+06	1.34E+06	2.34E+06	3.35E+06	3.91E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	3.93E+06	
27			2.60E+06	2.72E+06	6.07E+06	1.30E+07	3.69E+07	5.71E+07	7.71E+07	1.54E+08	2.27E+08	2.96E+08	3.62E+08	4.39E+08	5.56E+08	6.41E+08	7.54E+08	8.53E+08	9.12E+08	1.02E+09	1.14E+09	1.22E+09	1.23E+09	
28			1.02E+03	1.07E+03	2.38E+03	5.10E+03	1.46E+04	2.27E+04	3.08E+04	6.30E+04	9.48E+04	1.26E+05	1.58E+05	1.96E+05	2.60E+05	3.09E+05	3.82E+05	4.54E+05	5.00E+05	5.91E+05	7.22E+05	8.27E+05	8.47E+05	
29			1.22E+03	1.26E+03	2.85E+03	6.11E+03	1.75E+04	2.73E+04	3.70E+04	7.61E+04	1.15E+05	1.54E+05	1.93E+05	2.42E+05	3.23E+05	3.88E+05	4.85E+05	5.83E+05	6.47E+05	7.77E+05	9.71E+05	1.13E+06	1.16E+06	
30			3.34E+05	3.48E+05	7.74E+05	1.64E+06	4.53E+06	6.85E+06	9.02E+06	1.65E+07	2.23E+07	2.68E+07	3.03E+07	3.36E+07	3.72E+07	3.99E+07	4.09E+07	4.15E+07	4.16E+07	4.22E+07	4.24E+07	4.24E+07	4.24E+07	
31			2.50E+05	2.60E+05	5.47E+05	1.05E+06	2.12E+06	2.55E+06	2.76E+06	2.97E+06	2.98E+06	2.98E+06	2.98E+06	2.98E+06	2.98E+06	2.98E+06	2.98E+06	2.98E+06	2.98E+06	2.98E+06	2.98E+06	2.98E+06	2.98E+06	
32			2.83E+05	2.95E+05	6.60E+05	1.41E+06	4.04E+06	6.28E+06	8.51E+06	1.73E+07	2.60E+07	3.45E+07	4.29E+07	5.31E+07	6.97E+07	8.26E+07	1.01E+08	1.19E+08	1.30E+08	1.52E+08	1.83E+08	2.06E+08	2.11E+08	
33			1.57E+05	1.63E+05	3.36E+05	6.19E+05	1.13E+06	1.29E+06	1.35E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	1.39E+06	
34			1.17E+05	1.23E+05	2.74E+05	5.87E+05	1.68E+06	2.62E+06	3.56E+06	7.31E+06	1.10E+07	1.48E+07	1.85E+07	2.32E+07	3.09E+07	3.70E+07	4.62E+07	5.54E+07	6.15E+07	7.38E+07	9.16E+07	1.06E+08	1.09E+08	
35			1.61E+05	1.69E+05	4.18E+05	8.76E+05	2.35E+06	3.47E+06	4.49E+06	7.43E+06	9.29E+06	1.05E+07	1.12E+07	1.17E+07	1.21E+07	1.23E+07	1.23E+07	1.24E+07	1.24E+07	1.24E+07	1.24E+07	1.24E+07	1.24E+07	
36			5.99E+04	6.26E+04	1.40E+05	2.99E+05	8.54E+05	1.33E+06	1.80E+06	3.66E+06	5.48E+06	7.26E+06	9.00E+06	1.11E+07	1.45E+07	1.72E+07	2.10E+07	2.45E+07	2.68E+07	3.11E+07	3.71E+07	4.16E+07	4.24E+07	
37			5.73E+04	5.98E+04	1.32E+05	2.77E+05	7.39E+05	1.08E+06	1.39E+06	2.20E+06	2.83E+06	3.15E+06	3.35E+06	3.48E+06	3.60E+06	3.63E+06	3.65E+06	3.65E+06	3.65E+06	3.65E+06	3.65E+06	3.65E+06	3.65E+06	
38			4.80E+04	5.01E+04	1.12E+05	2.40E+05	6.87E+05	1.07E+06	1.45E+06	2.98E+06	4.51E+06	6.03E+06	7.55E+06	9.45E+06	1.26E+07	1.51E+07	1.88E+07	2.25E+07	2.50E+07	2.99E+07	3.72E+07	4.32E+07	4.43E+07	
39			7.26E+05	7.58E+05	1.68E+06	3.58E+06	9.78E+06	1.47E+07	1.93E+07	3.45E+07	4.56E+07	5.44E+07	6.07E+07	6.64E+07	7.22E+07	7.49E+07	7.71E+07	7.82E+07	7.86E+07	7.89E+07	7.91E+07	7.91E+07	7.92E+07	
40			2.40E+02	2.50E+02	5.58E+02	1.20E+03	3.44E+03	5.35E+03	7.27E+03	1.49E+04	2.26E+04	3.03E+04	3.80E+04	4.75E+04	6.35E+04	7.63E+04	9.55E+04	1.15E+05	1.27E+05	1.53E+05	1.91E+05	2.23E+05	2.30E+05	
41			1.47E+02	1.48E+02	1.69E+02	2.12E+02	3.62E+02	4.91E+02	6.20E+02	1.14E+03	1.65E+03	2.17E+03	2.68E+03	3.33E+03	4.40E+03	5.26E+03	6.55E+03	7.84E+03	8.70E+03	1.04E+04	1.30E+04	1.51E+04	1.56E+04	
42			1.18E+01	1.26E+01	3.51E+01	8.16E+01	2.45E+02	3.84E+02	5.24E+02	1.08E+03	1.64E+03	2.20E+03	2.76E+03	3.46E+03	4.62E+03	5.55E+03	6.95E+03	8.34E+03	9.28E+03	1.11E+04	1.39E+04	1.63E+04	1.67E+04	
43			8.35E+03	8.72E+03	1.95E+04	4.18E+04	1.20E+05	1.86E+05	2.53E+05	5.20E+05	7.88E+05	1.05E+06	1.32E+06	1.66E+06	2.21E+06	2.66E+06	3.32E+06	3.99E+06	4.43E+06	5.32E+06	6.66E+06	7.77E+06	7.99E+06	
44			1.72E+03	1.80E+03	3.99E+03	8.45E+03	2.33E+04	3.52E+04	4.63E+04	8.43E+04	1.14E+05	1.36E+05	1.54E+05	1.70E+05	1.88E+05	1.96E+05	2.04E+05	2.08E+05	2.09E+05	2.11E+05	2.12E+05	2.12E+05	2.12E+05	
45			1.84E+04	1.92E+04	4.29E+04	9.19E+04	2.63E+05	4.09E+05	5.55E+05	1.13E+06	1.71E+06	2.27E+06	2.83E+06	3.52E+06	4.64E+06	5.52E+06	6.81E+06	8.06E+06	8.88E+06	1.05E+07	1.27E+07	1.45E+07	1.48E+07	
46			1.61E+04	1.67E+04	3.37E+04	6.01E+04	1.01E+05	1.11E+05	1.14E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	1.15E+05	
47			2.18E+04	2.27E+04	4.89E+04	9.80E+04	2.25E+05	2.95E+05	3.41E+05	4.14E+05	4.28E+05	4.30E+05	4.31E+05	4.31E+05	4.31E+05	4.31E+05	4.31E+05	4.31E+05	4.31E+05	4.31E+05	4.31E+05	4.31E+05	4.31E+05	
48			2.39E+04	2.50E+04	5.59E+04	1.20E+05	3.42E+05	5.33E+05	7.23E+05	1.49E+06	2.22E+06	2.96E+06	3.68E+06	4.58E+06	6.07E+06	7.23E+06	8.93E+06	1.06E+07	1.17E+07	1.37E+07	1.68E+07	1.91E+07	1.96E+07	
49			2.34E+04	2.44E+04	5.33E+04	1.10E+05	2.74E+05	3.82E+05	4.66E+05	6.55E+05	7.26E+05	7.52E+05	7.62E+05	7.66E+05	7.68E+05	7.68E+05	7.68E+05	7.68E+05	7.68E+05	7.68E+05	7.68E+05	7.68E+05	7.68E+05	
50			2.41E+04	2.51E+04	5.61E+04	1.20E+05	3.43E+05	5.34E+05	7.23E+05	1.47E+06	2.21E+06	2.82E+06	3.63E+06	4.48E+06	5.88E+06	6.96E+06	8.50E+06	9.97E+06	1.09E+07	1.27E+07	1.52E+07	1.71E+07	1.74E+07	
51			2.61E+04	2.73E+04	6.03E+04	1.27E+05	3.43E+05	5.08E+05	6.58E+05	1.12E+06	1.43E+06	1.63E+06	1.77E+06	1.87E+06	1.97E+06	2.00E+06	2.02E+06	2.03E+06	2.03E+06	2.03E+06	2.03E+06	2.03E+06	2.03E+06	
52			1.90E+04	1.98E+04	4.03E+04	7.31E+04	1.28E+05	1.43E+05	1.48E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	1.51E+05	
53			1.25E+04	1.29E+04	2.31E+04	3.41E+04	4.14E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	4.17E+04	
54			2.28E+04	2.39E+04	5.32E+04	1.14E+05	3.24E+05	5.01E+05	6.77E+05	1.36E+06	2.00E+06	2.61E+06	3.20E+06	3.86E+06	4.94E+06	5.70E+06	6.74E+06	7.64E+06	8.19E+06	9.15E+06	1.03E+07	1.11E+07	1.12E+07	
55			9.77E+03	1.02E+04	2.28E+04	4.87E+04	1.38E+05	2.14E+05	2.88E+05	5.74E+05	8.42E+05	1.09E+06	1.33E+06	1.61E+06	2.02E+06	2.31E+06	2.70E+06	3.03E+06	3.22E+06	3.55E+06	3.93E+06	4.17E+06	4.21E+06	
56			5.24E+00	5.48E+00	1.22E+01	2.62E+01	7.50E+01	1.17E+02	1.59E+02	3.26E+02	4.93E+02	6.61E+02	8.28E+02	1.04E+03	1.39E+03	1.66E+03	2.08E+03	2.50E+03	2.78E+03	3.34E+03	4.18E+03	4.87E+03	5.01E+03	
57			1.27E+03	1.33E+03	2.97E+03	6.37E+03	1.83E+04	2.84E+04	3.86E+04	7.91E+04	1.19E+05	1.60E+05	2.00E+05	2.49E+05	3.32E+05	3.97E+05	4.94E+05	5.91E+05	6.54E+05	7.80E+05	9.65E+05	1.12E+06	1.15E+06	
58			1.39E+02	1.45E+02	3.24E+02	6.95E+02	1.99E+03	3.10E+03	4.21E+03	8.60E+03	1.31E+04	1.75E+04	2.20E+04	2.75E+04	3.68E+04	4.42E+04	5.53E+04	6.64E+04	7.38E+04	8.86E+04	1.11E+05	1.29E+05	1.33E+05	
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	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM
1																								
2												Gamma (Photon) Radiation Energy in Containment at Given Timesteps (MeV)												
3		1	2	2.0336	3	5	12	18	24	48	72	96	120	150	200	240	300	360	400	480	600	700	720	
4																								
5			9.69E+20	1.02E+21	2.42E+21	5.30E+21	1.52E+22	2.35E+22	3.16E+22	6.25E+22	9.07E+22	1.17E+23	1.40E+23	1.67E+23	2.06E+23	2.33E+23	2.66E+23	2.93E+23	3.08E+23	3.32E+23	3.58E+23	3.72E+23	3.74E+23	
6			5.55E+21	5.78E+21	1.15E+22	1.92E+22	2.74E+22	2.84E+22	2.85E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	2.86E+22	
7			3.05E+21	3.20E+21	7.40E+21	1.59E+22	4.12E+22	5.87E+22	7.30E+22	1.09E+23	1.25E+23	1.32E+23	1.35E+23	1.37E+23	1.37E+23	1.38E+23	1.38E+23	1.38E+23	1.38E+23	1.38E+23	1.38E+23	1.38E+23	1.38E+23	
8			5.32E+21	5.47E+21	8.59E+21	1.07E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	1.13E+22	
9			6.68E+21	7.00E+21	1.56E+22	3.10E+22	6.51E+22	7.98E+22	8.77E+22	9.59E+22	9.66E+22	9.66E+22	9.66E+22	9.66E+22	9.66E+22	9.66E+22	9.66E+22	9.66E+22	9.66E+22	9.66E+22	9.66E+22	9.66E+22	9.66E+22	
10			4.74E+17	4.98E+17	1.20E+18	2.65E+18	7.70E+18	1.20E+19	1.62E+19	3.28E+19	4.68E+19	6.42E+19	7.90E+19	9.68E+19	1.25E+20	1.45E+20	1.74E+20	2.01E+20	2.17E+20	2.46E+20	2.84E+20	3.11E+20	3.16E+20	
11			8.72E+20	9.17E+20	2.21E+21	4.90E+21	1.43E+22	2.23E+22	3.04E+22	6.25E+22	9.47E+22	1.27E+23	1.59E+23	1.89E+23	2.66E+23	3.19E+23	3.98E+23	4.76E+23	5.31E+23	6.36E+23	7.94E+23	9.25E+23	9.51E+23	
12			3.37E+20	3.55E+20	8.55E+20	1.86E+21	5.47E+21	8.49E+21	1.15E+22	2.30E+22	3.40E+22	4.44E+22	5.42E+22	6.58E+22	8.35E+22	9.64E+22	1.14E+23	1.29E+23	1.38E+23	1.54E+23	1.73E+23	1.85E+23	1.87E+23	
13			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
14			3.43E+19	3.58E+19	7.96E+19	1.69E+20	4.73E+20	7.26E+20	9.57E+20	1.80E+21	2.51E+21	3.10E+21	3.60E+21	4.10E+21	4.73E+21	5.08E+21	5.45E+21	5.69E+21	5.79E+21	5.93E+21	6.03E+21	6.07E+21	6.07E+21	
15			1.75E+20	1.82E+20	3.73E+20	6.85E+20	1.24E+21	1.41E+21	1.47E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	1.51E+21	
16			2.26E-17	2.34E-17	5.03E-17	1.00E+18	2.26E+18	2.93E+18	3.35E+18	3.99E+18	4.09E+18	4.11E+18	4.12E+18	4.12E+18	4.12E+18	4.12E+18	4.12E+18	4.12E+18	4.12E+18	4.12E+18	4.12E+18	4.12E+18	4.12E+18	
17			7.80E-16	8.15E-16	1.82E-17	3.90E-17	1.12E-16	1.74E-16	2.38E-16	4.83E-16	7.29E-16	9.73E-16	1.22E-19	1.52E-19	2.01E-19	2.41E-19	2.99E-19	3.56E-19	3.93E-19	4.67E-19	5.76E-19	6.63E-19	6.80E-19	
18			3.67E-18	3.79E-18	6.35E-18	8.63E-18	9.60E-18	9.62E-18	9.62E-18	9.62E-18	9.62E-18	9.62E-18	9.62E-18	9.62E-18	9.62E-18	9.62E-18	9.62E-18	9.62E-18	9.62E-18	9.62E-18	9.62E-18	9.62E-18	9.62E-18	
19			8.96E-17	9.36E-17	2.09E-18	4.47E-18	1.28E-19	1.99E-19	2.69E-19	5.47E-19	8.20E-19	1.09E-20	1.35E-20	1.67E-20	2.18E-20	2.58E-20	3.15E-20	3.69E-20	4.03E-20	4.69E-20	5.59E-20	6.27E-20	6.40E-20	
20			9.53E-19	9.95E-19	2.20E-20	4.59E-20	1.22E-21	1.78E-21	2.26E-21	3.65E-21	4.45E-21	4.91E-21	5.18E-21	5.35E-21	5.48E-21	5.51E-21	5.53E-21	5.53E-21	5.53E-21	5.53E-21	5.53E-21	5.53E-21	5.53E-21	
21			1.55E-20	1.62E-20	3.60E-20	7.64E-20	2.12E-21	3.22E-21	4.27E-21	7.93E-21	1.09E-22	1.33E-22	1.52E-22	1.71E-22	1.93E-22	2.05E-22	2.17E-22	2.24E-22	2.27E-22	2.30E-22	2.32E-22	2.33E-22	2.33E-22	
22			2.71E-16	2.83E-16	6.32E-16	1.35E-17	3.87E-17	6.03E-17	8.17E-17	1.67E-18	2.51E-18	3.33E-18	4.15E-18	5.15E-18	6.79E-18	8.07E-18	9.93E-18	1.17E-19	1.29E-19	1.51E-19	1.83E-19	2.06E-19	2.13E-19	
23			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
24			1.66E+20	1.74E+20	3.73E+20	7.43E+20	1.68E+21	2.19E+21	2.51E+21	3.00E+21	3.08E+21	3.09E+21	3.10E+21	3.10E+21	3.10E+21	3.10E+21	3.10E+21	3.10E+21	3.10E+21	3.10E+21	3.10E+21	3.10E+21	3.10E+21	
25			2.82E+20	2.72E+20	5.32E+20	9.02E+20	1.30E+21	1.44E+21	1.45E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	1.46E+21	
26			6.09E+18	6.50E+18	1.10E+19	1.57E+19	1.84E+19	1.84E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	
27			6.63E+19	6.92E+19	1.54E+20	3.30E+20	9.39E+20	1.45E+21	1.98E+21	3.92E+21	5.78E+21	7.54E+21	9.20E+21	1.12E+22	1.41E+22	1.63E+22	1.92E+22	2.17E+22	2.32E+22	2.58E+22	2.90E+22	3.10E+22	3.13E+22	
28			1.33E+17	1.38E+17	3.09E+17	6.62E+17	1.90E+18	2.95E+18	4.00E+18	8.18E+18	1.23E+19	1.64E+19	2.05E+19	2.55E+19	3.37E+19	4.02E+19	4.97E+19	5.90E+19	6.50E+19	7.69E+19	9.39E+19	1.07E+20	1.10E+20	
29			4.08E+17	4.26E+17	9.51E+17	2.04E+18	5.84E+18	9.10E+18	1.24E+19	2.54E+19	3.84E+19	5.15E+19	6.45E+19	8.07E+19	1.06E+20	1.30E+20	1.62E+20	1.94E+20	2.16E+20	2.59E+20	3.24E+20	3.89E+20	3.88E+20	
30			6.88E-18	7.19E-18	1.60E-19	3.39E-19	9.36E-19	1.41E-20	1.86E-20	3.40E-20	4.60E-20	5.52E-20	6.25E-20	6.93E-20	7.68E-20	8.05E-20	8.38E-20	8.56E-20	8.63E-20	8.71E-20	8.75E-20	8.76E-20	8.76E-20	
31			4.21E-18	4.39E-18	9.22E-18	1.77E-19	3.57E-19	4.29E-19	4.66E-19	5.00E-19	5.02E-19	5.02E-19	5.02E-19	5.02E-19	5.02E-19	5.02E-19	5.02E-19	5.02E-19	5.02E-19	5.02E-19	5.02E-19	5.02E-19	5.02E-19	
32			1.62E-19	1.90E-19	4.25E-19	9.10E-19	2.60E-20	4.05E-20	5.48E-20	1.12E-21	1.68E-21	2.22E-21	2.76E-21	3.42E-21	4.49E-21	5.32E-21	6.52E-21	7.66E-21	8.40E-21	9.81E-21	1.18E-22	1.33E-22	1.36E-22	
33			1.64E-19	1.71E-19	3.51E-19	6.47E-19	1.18E-20	1.35E-20	1.41E-20	1.46E-20	1.46E-20	1.46E-20	1.46E-20	1.46E-20	1.46E-20	1.46E-20	1.46E-20	1.46E-20	1.46E-20	1.46E-20	1.46E-20	1.46E-20	1.46E-20	
34			0.00E-00	0.00E-00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
35			1.87E-18	1.96E-18	4.32E-18	9.08E-18	2.43E-19	3.56E-19	4.61E-19	7.69E-19	9.61E-19	1.08E-20	1.16E-20	1.21E-20	1.25E-20	1.27E-20	1.28E-20	1.28E-20	1.28E-20	1.28E-20	1.28E-20	1.28E-20	1.28E-20	
36			6.13E-17	6.40E-17	1.43E-18	3.06E-18	8.74E-18	1.36E-19	1.84E-19	3.74E-19	5.60E-19	7.43E-19	9.21E-19	1.14E-20	1.49E-20	1.76E-20	2.14E-20	2.51E-20	2.74E-20	3.19E-20	3.80E-20	4.25E-20	4.34E-20	
37			2.08E-16	2.18E-16	4.81E-16	1.01E-19	2.69E-19	3.95E-19	5.05E-19	6.32E-19	1.03E-20	1.15E-20	1.22E-20	1.27E-20	1.31E-20	1.32E-20	1.33E-20	1.33E-20	1.33E-20	1.33E-20	1.33E-20	1.33E-20	1.33E-20	
38			1.23E-17	1.29E-17	2.87E-17	6.16E-17	1.76E-18	2.75E-18	3.73E-18	7.66E-18	1.16E-19	1.55E-19	1.84E-19	2.43E-19	3.23E-19	3.87E-19	4.83E-19	5.79E-19	6.42E-19	7.68E-19	9.54E-19	1.11E-20	1.14E-20	
39			1.68E-19	1.74E-19	3.86E-19	6.16E-19	2.24E-20	3.37E-20	4.42E-20	7.92E-20	1.05E-21	1.25E-21	1.39E-21	1.52E-21	1.66E-21	1.72E-21	1.77E-21	1.79E-21	1.80E-21	1.81E-21	1.81E-21	1.81E-21	1.81E-21	
40			5.11E-13	5.34E-13	1.19E-14	2.55E-14	7.32E-14	1.14E-15	1.55E-15	3.16E-15	4.82E-15	6.45E-15	8.09E-15	1.01E-16	1.35E-16	1.63E-16	2.04E-16	2.44E-16	2.72E-16	3.26E-16	4.08E-16	4.76E-16	4.90E-16	
41			1.28E+13	1.29E+13	1.47E+13	1.84E+13	3.15E+13	4.28E+13	5.40E+13	9.89E+13	1.44E+14	1.88E+14	2.34E+14	2.90E+14	3.83E+14	4.58E+14	5.70E+14	6.83E+14	7.58E+14	9.07E+14	1.13E+15	1.32E+15	1.36E+15	
42			2.39E+12	2.55E+12	7.13E+12	1.66E+13	4.97E+13	7.81E+13	1.06E+14	2.20E+14	3.34E+14	4.47E+14	5.61E+14	7.03E+14	9.39E+14	1.13E+15	1.41E+15	1.70E+15	1.89E+15	2.26E+15	2.83E+15	3.31E+15	3.40E+15	
43			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
44			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
45			8.86E-15	9.25E-15	2.07E-16	4.42E-16	1.27E-17	1.97E-17	2.67E-17	5.46E-17	8.21E-17	1.09E-18	1.36E-18	1.69E-18	2.24E-18	2.66E-18	3.28E-18	3.88E-18	4.27E-18	5.04E-18	6.12E-18	6.98E-18	7.15E-18	
46			5.39E+17	5.60E+17	1.13E+18	2.01E+18	3.39E+18	3.71E+18	3.81E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	3.86E+18	
47			2.59E+17	2.70E+17	5.61E+17	1.16E+18	2.67E+18	3.50E+18	4.04E+18	4.91E+18	5.08E+18	5.11E+18	5.11E+18	5.11E+18	5.11E+18	5.11E+18	5.11E+18	5.11E+18	5.11E+18	5.11E+18	5.11E+18	5.11E+18	5.11E+18	
48			2.34E+18	2.45E+18	5.47E+18	1.17E+19	3.35E+19	5.22E+19	7.08E+19	1.45E+20	2.18E+20	2.90E+20	3.61E+20	4.50E+20	5.84E+20	7.08E+20	8.74E+20	1.04E+21	1.14E+21	1.35E+21	1.64E+21	1.87E+21	1.92E+21	
49			5.62E+17	5.87E+17	1.28E+18	2.64E+18	6.59E+18	9.18E+18	1.12E+19	1.58E+19	1.78E+19	1.81E+19	1.83E+19	1.84E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	1.85E+19	
50			2.45E+18	2.56E+18	5.71E+18	1.22E+19	3.50E+19	5.43E+19	7.36E+19	1.50E+20	2.25E+20	2.98E+20	3.70E+20	4.57E+20	5.99E+20	7.08E+20	8.65E+20	1.02E+21	1.11E+21	1.29E+21	1.54E+21	1.74E+21	1.77E+21	
51			8.09E+18	8.41E+18	1.86E+19	3.92E+19	1.06E+20	1.57E+20	2.03E+20	3.46E+20	4.41E+20	5.04E+20	5.46E+20	5.78E+20	6.06E+20	6.16E+20	6.23E+20	6.25E+20	6.26E+20	6.27E+20	6.27E+20	6.27E+20	6.27E+20	
52			1.08E+17	1.13E+17	2.29E+17	4.16E+17	7.28E+17	8.12E+17	8.41E+17	8.56E+17	8.57E+17	8.57E+17	8.57E+17	8.57E+17	8.57E+17	8.57E+17	8.57E+17	8.57E+17	8.57E+17	8.57E+17	8.57E+17	8.57E+17	8.57E+17	
53			1.52E+18	1.68E+18	8.35E+18	1.24E+19	1.50E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	1.51E+19	
54			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
55			1.83E+17	1.91E+17	4.27E+17	9.12E+17	2.55E+18	4.01E+18	5.40E+18	1.08E+19	1.58E+19	2.05E+19	2.49E+19	3.01E+19	3.76E+19	4.33E+19	5.00E+19	5.68E+19	6.04E+19	6.66E+19	7.37E+19	7.81E+19	7.89E+19	
56			1.96E+13	2.05E+13	4.57E+13	9.79E+13	2.81E+14	4.37E+14	5.94E+14	1.22E+15	1.85E+15	2.47E+15	3.10E+15	3.88E+15	5.18E+15	6.23E+15	7.80E+15	9.36E+15	1.04E+16	1.25E+16	1.56E+16	1.82E+16	1.88E+16	
57			2.84E+14	2.97E+14	6.63E+14	1.42E+15	4.07E+15	6.34E+15	8.60E+15	1.76E+16	2.66E+16	3.56E+16	4.45E+16	5.56E+16	7.40E+16	8.86E+16	1.10E+17	1.32E+17	1.46E+17	1.74E+17	2.15E+17	2.49E+17	2.58E+17	
58			2.78E+13	2.88E+13	6.43E+13	1.36E+14	3.95E+14	6.16E+14	8.36E+14	1.72E+15	2.60E+15	3.48E+15	4.36E+15	5.47E+15	7.30E+15	8.77E+15	1.10E+16	1.32E+16	1.46E+16	1.76E+16	2.20E+16	2.56E+16	2.64E+16	
59																								
60			2.38E+22	2.48E+22	5.10E+22	9.34E+22	1.90E+23	2.46E+23	2.91E+23	4.19E+23	5.15E+23	5.97E+23	6.71E+23	7.57E+23	8.89E+23	9.87E+23	1.12E+24	1.25E+24	1.33E+24	1.48E+24	1.69E+24	1.85E+24	1.88E+24	
61																								
62																								
63												TOTAL Integrated Gamma Energy in Suppression Pool Water at Given Timesteps (MeV/cm³)												
64			5.44E+12	5.67E+12	1.17E+13	2.13E+13	4.34E+13	5.62E+13	6.64E+13	9.57E+13	1.18E+14	1.36E+14	1.53E+14	1.73E+14	2.03E+14	2.25E+14	2.57E+14	2.86E+14	3.04E+14	3.38E+14	3.86E+14	4.23E+14	4.30E+14	
65																								
66												TOTAL Integrated Gamma Dose in Pool at Given Timesteps (Mrad)												
67			8.72E-02	8.09E-02	1.87E-01	3.42E-01	6.96E-01	9.01E-01	1.06E+00	1.53E+00	1.88E+00	2.18E+00	2.46E+00	2.77E+00	3.25E+00	3.61E+00	4.11E+00	4.57E+00	4.87E+00	5.42E+00	6.18E+00	6.77E+00	6.89E+00	
68																								
69																								
70												TOTAL Gamma + Beta Pool Dose (Mrad)												
71			1.14E-01	1.19E-01	2.47E-01	4.56E-01	9.47E-01	1.24E+00	1.48E+00	2.15E+00	2.64E+00	3.06E+00	3.43E+00	3.85E+00	4.50E+00	4.98E+00	5.64E+00	6.25E+00	6.63E+00	7.35E+00	8.33E+00	9.09E+00	9.23E+00	
72																								
73																								
74																								
75																								

	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK
1																								
2										Beta Particle Radiation Energy in Containment at Given Timesteps (MeV)														
3		1	2	2.0336	3	5	12	18	24	48	72	96	120	150	200	240	300	360	400	480	600	700	720	
4																								
5			4.61E+20	4.84E+20	1.15E+21	2.52E+21	7.24E+21	1.12E+22	1.51E+22	3.97E+22	4.32E+22	5.55E+22	6.69E+22	7.97E+22	9.83E+22	1.11E+23	1.27E+23	1.40E+23	1.47E+23	1.58E+23	1.70E+23	1.77E+23	1.78E+23	
6			1.18E+21	1.23E+21	2.45E+21	4.06E+21	5.82E+21	6.02E+21	6.05E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	6.06E+21	
7			2.04E+21	2.14E+21	3.00E+21	1.06E+22	2.76E+22	3.93E+22	4.89E+22	7.28E+22	8.35E+22	8.84E+22	9.05E+22	9.16E+22	9.22E+22	9.23E+22	9.23E+22	9.23E+22	9.23E+22	9.23E+22	9.23E+22	9.23E+22	9.23E+22	
8			1.22E+21	1.26E+21	1.97E+21	2.47E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	2.60E+21	
9			1.56E+21	1.64E+21	3.68E+21	7.24E+21	1.52E+22	1.87E+22	2.05E+22	2.24E+22	2.26E+22	2.26E+22	2.26E+22	2.26E+22	2.26E+22	2.26E+22	2.26E+22	2.26E+22	2.26E+22	2.26E+22	2.26E+22	2.26E+22	2.26E+22	
10			3.34E+18	3.52E+18	8.48E+18	1.87E+19	5.43E+19	8.46E+19	1.15E+20	2.32E+20	3.44E+20	4.53E+20	5.58E+20	6.83E+20	8.80E+20	1.03E+21	1.23E+21	1.42E+21	1.53E+21	1.74E+21	2.01E+21	2.20E+21	2.23E+21	
11			8.80E+19	9.25E+19	2.23E+20	4.94E+20	1.44E+21	2.25E+21	3.06E+21	6.31E+21	9.55E+21	1.28E+22	1.60E+22	2.01E+22	2.68E+22	3.21E+22	4.02E+22	4.82E+22	5.35E+22	6.42E+22	8.01E+22	9.33E+22	9.59E+22	
12			1.56E+19	1.64E+19	3.95E+19	8.71E+19	2.52E+20	3.92E+20	5.30E+20	1.06E+21	1.57E+21	2.05E+21	2.50E+21	3.04E+21	3.86E+21	4.45E+21	5.24E+21	5.94E+21	6.36E+21	7.09E+21	7.97E+21	8.54E+21	8.64E+21	
13			5.97E+19	6.28E+19	1.52E+20	3.35E+20	9.78E+20	1.53E+21	2.08E+21	4.28E+21	6.49E+21	8.69E+21	1.09E+22	1.36E+22	1.82E+22	2.19E+22	2.74E+22	3.29E+22	3.66E+22	4.39E+22	5.49E+22	6.41E+22	6.59E+22	
14			1.61E+19	1.68E+19	3.74E+19	7.95E+19	2.22E+20	3.38E+20	4.50E+20	8.48E+20	1.18E+21	1.48E+21	1.68E+21	1.93E+21	2.22E+21	2.39E+21	2.56E+21	2.67E+21	2.72E+21	2.79E+21	2.83E+21	2.85E+21	2.85E+21	
15			4.37E+19	4.55E+19	9.32E+19	1.71E+20	3.11E+20	3.52E+20	3.68E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	3.78E+20	
16			1.04E+19	1.08E+19	2.32E+19	4.61E+19	1.04E+20	1.35E+20	1.55E+20	1.64E+20	1.89E+20	1.90E+20	1.90E+20	1.90E+20	1.90E+20	1.90E+20	1.90E+20	1.90E+20	1.90E+20	1.90E+20	1.90E+20	1.90E+20	1.90E+20	
17			3.20E+16	3.34E+16	7.46E+16	1.60E+17	4.58E+17	7.13E+17	9.67E+17	1.98E+18	2.99E+18	3.99E+18	4.99E+18	6.22E+18	8.26E+18	9.87E+18	1.23E+19	1.46E+19	1.61E+19	1.92E+19	2.36E+19	2.72E+19	2.79E+19	
18			3.34E+19	3.45E+19	5.77E+19	7.85E+19	8.74E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	8.75E+19	
19			4.81E+18	5.03E+18	1.12E+19	2.40E+19	6.87E+19	1.07E+20	1.45E+20	2.94E+20	4.40E+20	5.84E+20	7.24E+20	8.96E+20	1.17E+21	1.39E+21	1.69E+21	1.98E+21	2.17E+21	2.52E+21	3.00E+21	3.37E+21	3.44E+21	
20			9.66E+18	1.01E+19	2.22E+19	4.66E+19	1.23E+20	1.80E+20	2.29E+20	3.70E+20	4.51E+20	4.98E+20	5.25E+20	5.43E+20	5.55E+20	5.58E+20	5.60E+20	5.60E+20	5.61E+20	5.61E+20	5.61E+20	5.61E+20	5.61E+20	
21			3.99E+19	4.17E+19	9.26E+19	1.97E+20	5.47E+20	8.30E+20	1.10E+21	2.04E+21	2.80E+21	3.42E+21	3.92E+21	4.41E+21	4.98E+21	5.29E+21	5.59E+21	5.76E+21	5.84E+21	5.93E+21	5.99E+21	6.00E+21	6.00E+21	
22			1.18E+20	1.21E+20	2.70E+20	5.79E+20	1.66E+21	2.58E+21	3.49E+21	7.13E+21	1.07E+22	1.43E+22	1.77E+22	2.20E+22	2.90E+22	3.45E+22	4.24E+22	5.01E+22	5.51E+22	6.47E+22	7.83E+22	8.90E+22	9.11E+22	
23			4.42E+18	4.62E+18	1.03E+19	2.21E+19	6.34E+19	9.88E+19	1.34E+20	2.76E+20	4.17E+20	5.59E+20	7.00E+20	8.77E+20	1.17E+21	1.41E+21	1.76E+21	2.12E+21	2.35E+21	2.82E+21	3.53E+21	4.12E+21	4.24E+21	
24			1.58E+20	1.65E+20	3.54E+20	7.06E+20	1.60E+21	2.08E+21	2.39E+21	2.65E+21	2.93E+21	2.94E+21	2.95E+21	2.95E+21	2.95E+21	2.95E+21	2.95E+21	2.95E+21	2.95E+21	2.95E+21	2.95E+21	2.95E+21	2.95E+21	
25			3.91E+19	4.06E+19	7.94E+19	1.35E+20	2.00E+20	2.15E+20	2.17E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	2.18E+20	
26			1.55E+20	1.60E+20	2.79E+20	4.00E+20	4.87E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	4.69E+20	
27			9.41E+19	9.83E+19	2.19E+20	4.69E+20	1.33E+21	2.06E+21	2.78E+21	5.57E+21	8.21E+21	1.07E+22	1.31E+22	1.59E+22	2.01E+22	2.31E+22	2.72E+22	3.08E+22	3.30E+22	3.67E+22	4.11E+22	4.40E+22	4.45E+22	
28			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
29			1.58E+16	1.63E+16	3.64E+16	7.76E+16	2.23E+17	3.48E+17	4.73E+17	9.71E+17	1.47E+18	1.97E+18	2.40E+18	3.09E+18	4.12E+18	4.95E+18	6.19E+18	7.43E+18	8.26E+18	9.91E+18	1.24E+19	1.44E+19	1.49E+19	
30			1.75E+19	1.83E+19	4.05E+19	8.59E+19	2.38E+20	3.59E+20	4.73E+20	8.63E+20	1.17E+21	1.40E+21	1.59E+21	1.76E+21	1.95E+21	2.04E+21	2.13E+21	2.17E+21	2.19E+21	2.21E+21	2.22E+21	2.22E+21	2.22E+21	
31			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
32			2.54E+18	2.66E+18	5.93E+18	1.27E+19	3.63E+19	5.65E+19	7.65E+19	1.56E+20	2.34E+20	3.10E+20	3.86E+20	4.78E+20	6.27E+20	7.43E+20	9.10E+20	1.07E+21	1.17E+21	1.37E+21	1.64E+21	1.85E+21	1.89E+21	
33			8.41E+18	8.76E+18	1.80E+19	3.32E+19	6.08E+19	6.93E+19	7.26E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	7.47E+19	
34			1.57E+17	1.64E+17	3.66E+17	7.84E+17	2.25E+18	3.50E+18	4.75E+18	9.76E+18	1.48E+19	1.97E+19	2.47E+19	3.09E+19	4.13E+19	4.95E+19	6.18E+19	7.40E+19	8.21E+19	9.83E+19	1.23E+20	1.42E+20	1.46E+20	
35			3.67E+18	3.84E+18	8.47E+18	1.78E+19	4.77E+19	7.03E+19	9.03E+19	1.51E+20	1.88E+20	2.12E+20	2.27E+20	2.37E+20	2.46E+20	2.49E+20	2.50E+20	2.51E+20	2.51E+20	2.51E+20	2.51E+20	2.51E+20	2.51E+20	
36			1.15E+18	1.21E+18	2.69E+18	5.76E+18	1.65E+19	2.56E+19	3.47E+19	7.05E+19	1.06E+20	1.40E+20	1.73E+20	2.14E+20	2.80E+20	3.31E+20	4.04E+20	4.73E+20	5.17E+20	6.00E+20	7.14E+20	8.01E+20	8.17E+20	
37			3.12E+18	3.26E+18	7.20E+18	1.51E+19	4.03E+19	5.91E+19	7.57E+19	1.25E+20	1.54E+20	1.72E+20	1.83E+20	1.91E+20	1.96E+20	1.98E+20	1.99E+20	1.99E+20	1.99E+20	1.99E+20	1.99E+20	1.99E+20	1.99E+20	
38			5.32E+17	5.56E+17	1.24E+18	2.66E+18	7.63E+18	1.19E+19	1.61E+19	3.31E+19	5.00E+19	6.69E+19	8.38E+19	1.05E+20	1.40E+20	1.67E+20	2.09E+20	2.50E+20	2.77E+20	3.32E+20	4.12E+20	4.79E+20	4.92E+20	
39			1.11E+19	1.16E+19	2.58E+19	5.46E+19	1.50E+20	2.25E+20	2.98E+20	5.30E+20	7.04E+20	8.34E+20	9.31E+20	1.02E+21	1.11E+21	1.15E+21	1.18E+21	1.20E+21	1.20E+21	1.21E+21	1.21E+21	1.21E+21	1.21E+21	
40			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
41			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
42			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
43			5.82E+15	6.08E+15	1.36E+16	2.91E+16	8.34E+16	1.30E+17	1.76E+17	3.63E+17	5.49E+17	7.35E+17	9.21E+17	1.15E+18	1.54E+18	1.85E+18	2.32E+18	2.78E+18	3.09E+18	3.71E+18	4.64E+18	5.41E+18	5.56E+18	
44			2.14E+17	2.24E+17	4.98E+17	1.05E+18	2.90E+18	4.38E+18	5.77E+18	1.05E+19	1.41E+19	1.69E+19	1.91E+19	2.11E+19	2.33E+19	2.44E+19	2.54E+19	2.59E+19	2.61E+19	2.63E+19	2.64E+19	2.64E+19	2.64E+19	
45			1.48E+18	1.54E+18	3.44E+18	7.37E+18	2.11E+19	3.28E+19	4.45E+19	9.09E+19	1.37E+20	1.82E+20	2.27E+20	2.82E+20	3.73E+20	4.43E+20	5.47E+20	6.47E+20	7.12E+20	8.39E+20	1.02E+21	1.16E+21	1.19E+21	
46			3.09E+18	3.22E+18	6.48E+18	1.16E+19	1.95E+19	2.13E+19	2.19E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	2.21E+19	
47			3.41E+18	3.55E+18	7.65E+18	1.55E+19	3.52E+19	4.80E+19	5.32E+19	6.46E+19	6.68E+19	6.72E+19	6.73E+19	6.73E+19	6.73E+19	6.73E+19	6.73E+19	6.73E+19	6.73E+19	6.73E+19	6.73E+19	6.73E+19	6.73E+19	
48			3.70E+17	3.87E+17	8.64E+17	1.85E+18	5.30E+18	8.24E+18	1.12E+19	2.28E+19	3.44E+19	4.56E+19	5.71E+19	7.11E+19	9.39E+19	1.72E+20	1.38E+20	1.64E+20	1.80E+20	2.13E+20	2.59E+20	2.96E+20	3.03E+20	
49			2.17E+18	2.27E+18	4.95E+18	1.02E+19	2.54E+19	3.55E+19	4.33E+19	6.09E+19	6.74E+19	6.99E+19	7.08E+19	7.12E+19	7.13E+19	7.13E+19	7.13E+19	7.13E+19	7.13E+19	7.13E+19	7.13E+19	7.13E+19	7.13E+19	
50			1.39E+17	1.45E+17	3.25E+17	6.95E+17	1.99E+18	3.09E+18	4.18E+18	8.51E+18	1.26E+19	1.69E+19	2.10E+19	2.60E+19	3.40E+19	4.02E+19	4.92E+19	5.77E+19	6.31E+19	7.35E+19	8.78E+19	9.87E+19	1.01E+20	
51			1.83E+18	1.92E+18	4.24E+18	8.93E+18	2.41E+19	3.58E+19	4.62E+19	7.89E+19	1.00E+20	1.15E+20	1.24E+20	1.32E+20	1.38E+20	1.40E+20	1.42E+20	1.42E+20	1.43E+20	1.43E+20	1.43E+20	1.43E+20	1.43E+20	
52			2.41E+18	2.50E+18	5.09E+18	9.24E+18	1.62E+19	1.80E+19	1.87E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	1.90E+19	
53			1.41E+18	1.46E+18	2.60E+18	3.84E+18	4.66E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	4.69E+18	
54			9.60E+17	1.00E+18	2.24E+18	4.79E+18	1.36E+19	2.11E+19	2.85E+19	5.70E+19	8.41E+19	1.10E+20	1.34E+20	1.63E+20	2.08E+20	2.40E+20	2.83E+20	3.21E+20	3.44E+20	3.85E+20	4.33E+20	4.66E+20	4.71E+20	
55			3.04E+17	3.18E+17	7.08E+17	1.51E+18	4.30E+18	6.85E+18	8.96E+18	1.78E+19	2.62E+19	3.40E+19	4.14E+19	4.99E+19	6.28E+19	7.19E+19	8.39E+19	9.42E+19	1.00E+20	1.10E+20	1.22E+20	1.30E+20	1.31E+20	
56			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
57			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
58			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
59																								
60			7.42E+21	7.75E+21	1.64E+22	3.11E+22	6.88E+22	9.27E+22	1.12E+23	1.69E+23	2.08E+23	2.39E+23	2.66E+23	2.96E+23	3.41E+23	3.73E+23	4.17E+23	4.57E+23	4.82E+23	5.27E+23	5.88E+23	6.33E+23	6.41E+23	
61																								
62																								
63										Total Integrated Beta Energy in Suppression Pool Water at Given Timesteps (MeV/cm³)														
64			1.70E+12	1.77E+12	3.73E+12	7.11E+12	1.57E+13	2.12E+13	2.57E+13	3.85E+13	4.74E+13	5.45E+13	6.07E+13	6.76E+13	7.78E+13	8.52E+13	9.53E+13	1.04E+14	1.10E+14	1.20E+14	1.34E+14	1.45E+14	1.46E+14	
65																								
66										TOTAL Integrated Beta Dose in Pool at Given Timesteps (Mrad)														
67			2.72E-02	2.84E-02	5.98E-02	1.14E-01	2.52E-01	3.39E-01	4.11E-01	6.17E-01	7.60E-01	8.74E-01	9.72E-01	1.08E+00	1.25E+00	1.37E+00	1.53E+00	1.67E+00	1.76E+00	1.93E+00	2.15E+00	2.32E+00	2.35E+00	
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	A	B	C	D	E	F	G	H	I
1							Adjustment for Lasalle	Gap Release	Gap Release
2			Decay			Initial Core	Power Initial Core	Activity in Containment	Time Integrated Activity in
3		Isotopic	Constant	Release Fractions		Activity	Activity	at 0.5 hours	Containment through 0.5 hours
4	Class	Nuclide	(hours)[1]	0-0.5 hours	0.5-2 hours	(Ci/MW)	(Ci/MW)	(Ci)	(Ci-hours)
5	2	I-131	0.003592186621058 5	0.05	0.25	94440000	=(F5*3559)	=G5*D5*EXP(-C5*0.5)	=((G5*D5)/(0.5*C5*2))*(1-EXP(-0.5*C5))*(0.5*C5+1))
6	2	I-132	0.301368339373889	0.05	0.25	136400000	=(F6*3559)	=G6*D6*EXP(-C6*0.5)	=((G6*D6)/(0.5*C6*2))*(1-EXP(-0.5*C6))*(0.5*C6+1))
7	2	I-133	0.033324838680766 8	0.05	0.25	195300000	=(F7*3559)	=G7*D7*EXP(-C7*0.5)	=((G7*D7)/(0.5*C7*2))*(1-EXP(-0.5*C7))*(0.5*C7+1))
8	2	I-134	0.790862183482277	0.05	0.25	216700000	=(F8*3559)	=G8*D8*EXP(-C8*0.5)	=((G8*D8)/(0.5*C8*2))*(1-EXP(-0.5*C8))*(0.5*C8+1))
9	2	I-135	0.104863418121021	0.05	0.25	182500000	=(F9*3559)	=G9*D9*EXP(-C9*0.5)	=((G9*D9)/(0.5*C9*2))*(1-EXP(-0.5*C9))*(0.5*C9+1))
10	3	Rb-86	0.001547756298142 07	0.05	0.2	229100	=(F10*3559)	=G10*D10*EXP(-C10*0.5)	=((G10*D10)/(0.5*C10*2))*(1-EXP(-0.5*C10))*(0.5*C10+1))
11	3	Cs-134	0.000038347347920695 8	0.05	0.2	25590000	=(F11*3559)	=G11*D11*EXP(-C11*0.5)	=((G11*D11)/(0.5*C11*2))*(1-EXP(-0.5*C11))*(0.5*C11+1))
12	3	Cs-136	0.002204966604834 43	0.05	0.2	7123000	=(F12*3559)	=G12*D12*EXP(-C12*0.5)	=((G12*D12)/(0.5*C12*2))*(1-EXP(-0.5*C12))*(0.5*C12+1))
13	3	Cs-137	2.635741047075825E-06	0.05	0.2	15950000	=(F13*3559)	=G13*D13*EXP(-C13*0.5)	=((G13*D13)/(0.5*C13*2))*(1-EXP(-0.5*C13))*(0.5*C13+1))
14	4	Sb-127	0.007501592863202 87	0	0.05	10180000	=(F14*3559)	=G14*D14*EXP(-C14*0.5)	=((G14*D14)/(0.5*C14*2))*(1-EXP(-0.5*C14))*(0.5*C14+1))
15	4	Sb-129	0.160450736240728	0	0.05	30360000	=(F15*3559)	=G15*D15*EXP(-C15*0.5)	=((G15*D15)/(0.5*C15*2))*(1-EXP(-0.5*C15))*(0.5*C15+1))
16	4	Te-127	0.074133386295181 3	0	0.05	10100000	=(F16*3559)	=G16*D16*EXP(-C16*0.5)	=((G16*D16)/(0.5*C16*2))*(1-EXP(-0.5*C16))*(0.5*C16+1))
17	4	Te-127m	0.000264964518562 67	0	0.05	1355000	=(F17*3559)	=G17*D17*EXP(-C17*0.5)	=((G17*D17)/(0.5*C17*2))*(1-EXP(-0.5*C17))*(0.5*C17+1))
18	4	Te-129	0.597540672896505	0	0.05	29880000	=(F18*3559)	=G18*D18*EXP(-C18*0.5)	=((G18*D18)/(0.5*C18*2))*(1-EXP(-0.5*C18))*(0.5*C18+1))
19	4	Te-129m	0.000859557515575329	0	0.05	4453000	=(F19*3559)	=G19*D19*EXP(-C19*0.5)	=((G19*D19)/(0.5*C19*2))*(1-EXP(-0.5*C19))*(0.5*C19+1))
20	4	Te-131m	0.023104906018664 8	0	0.05	13600000	=(F20*3559)	=G20*D20*EXP(-C20*0.5)	=((G20*D20)/(0.5*C20*2))*(1-EXP(-0.5*C20))*(0.5*C20+1))
21	4	Te-132	0.008863774687467 33	0	0.05	134300000	=(F21*3559)	=G21*D21*EXP(-C21*0.5)	=((G21*D21)/(0.5*C21*2))*(1-EXP(-0.5*C21))*(0.5*C21+1))
22	5	Sr-89	0.000571903614323387	0	0.02	88360000	=(F22*3559)	=G22*D22*EXP(-C22*0.5)	=((G22*D22)/(0.5*C22*2))*(1-EXP(-0.5*C22))*(0.5*C22+1))
23	5	Sr-90	2.715392562234496E-08	0	0.02	11170000	=(F23*3559)	=G23*D23*EXP(-C23*0.5)	=((G23*D23)/(0.5*C23*2))*(1-EXP(-0.5*C23))*(0.5*C23+1))
24	5	Sr-91	0.072962881111573 2	0	0.02	133600000	=(F24*3559)	=G24*D24*EXP(-C24*0.5)	=((G24*D24)/(0.5*C24*2))*(1-EXP(-0.5*C24))*(0.5*C24+1))
25	5	Sr-92	0.255773867365293	0	0.02	141200000	=(F25*3559)	=G25*D25*EXP(-C25*0.5)	=((G25*D25)/(0.5*C25*2))*(1-EXP(-0.5*C25))*(0.5*C25+1))
26	6	Ba-139	0.502887918181339	0	0.02	178700000	=(F26*3559)	=G26*D26*EXP(-C26*0.5)	=((G26*D26)/(0.5*C26*2))*(1-EXP(-0.5*C26))*(0.5*C26+1))
27	6	Ba-140	0.002269964876242 63	0	0.02	172100000	=(F27*3559)	=G27*D27*EXP(-C27*0.5)	=((G27*D27)/(0.5*C27*2))*(1-EXP(-0.5*C27))*(0.5*C27+1))
28	7	Co-58	0.000407925600612021	0	0.0025	5394312	=(F28*3559)	=G28*D28*EXP(-C28*0.5)	=((G28*D28)/(0.5*C28*2))*(1-EXP(-0.5*C28))*(0.5*C28+1))
29	7	Co-60	0.000015001371924164	0	0.0025	6360984	=(F29*3559)	=G29*D29*EXP(-C29*0.5)	=((G29*D29)/(0.5*C29*2))*(1-EXP(-0.5*C29))*(0.5*C29+1))
30	7	Mo-99	0.010502230008484	0	0.0025	176500000	=(F30*3559)	=G30*D30*EXP(-C30*0.5)	=((G30*D30)/(0.5*C30*2))*(1-EXP(-0.5*C30))*(0.5*C30+1))
31	7	Tc-99m	0.115140727667765	0	0.0025	156300000	=(F31*3559)	=G31*D31*EXP(-C31*0.5)	=((G31*D31)/(0.5*C31*2))*(1-EXP(-0.5*C31))*(0.5*C31+1))
32	7	Ru-103	0.000735263047946 31	0	0.0025	147700000	=(F32*3559)	=G32*D32*EXP(-C32*0.5)	=((G32*D32)/(0.5*C32*2))*(1-EXP(-0.5*C32))*(0.5*C32+1))
33	7	Ru-105	0.156114229855844	0	0.0025	102200000	=(F33*3559)	=G33*D33*EXP(-C33*0.5)	=((G33*D33)/(0.5*C33*2))*(1-EXP(-0.5*C33))*(0.5*C33+1))
34	7	Ru-106	0.000078438709456574	0	0.0025	60810000	=(F34*3559)	=G34*D34*EXP(-C34*0.5)	=((G34*D34)/(0.5*C34*2))*(1-EXP(-0.5*C34))*(0.5*C34+1))
35	7	Rh-105	0.019602578635745 1	0	0.0025	96730000	=(F35*3559)	=G35*D35*EXP(-C35*0.5)	=((G35*D35)/(0.5*C35*2))*(1-EXP(-0.5*C35))*(0.5*C35+1))
36	8	Ce-141	0.000888622889244363	0	0.0005	157900000	=(F36*3559)	=G36*D36*EXP(-C36*0.5)	=((G36*D36)/(0.5*C36*2))*(1-EXP(-0.5*C36))*(0.5*C36+1))
37	8	Ce-143	0.021004480016968	0	0.0005	155600000	=(F37*3559)	=G37*D37*EXP(-C37*0.5)	=((G37*D37)/(0.5*C37*2))*(1-EXP(-0.5*C37))*(0.5*C37+1))
38	8	Ce-144	0.000101558681658364 8	0	0.0005	126400000	=(F38*3559)	=G38*D38*EXP(-C38*0.5)	=((G38*D38)/(0.5*C38*2))*(1-EXP(-0.5*C38))*(0.5*C38+1))
39	8	Np-239	0.012263750540692 6	0	0.0005	1887000000	=(F39*3559)	=G39*D39*EXP(-C39*0.5)	=((G39*D39)/(0.5*C39*2))*(1-EXP(-0.5*C39))*(0.5*C39+1))
40	8	Pu-238	9.012107523823033E-07	0	0.0005	631200	=(F40*3559)	=G40*D40*EXP(-C40*0.5)	=((G40*D40)/(0.5*C40*2))*(1-EXP(-0.5*C40))*(0.5*C40+1))
41	8	Pu-239	3.285777328579625E-09	0	0.0005	42180	=(F41*3559)	=G41*D41*EXP(-C41*0.5)	=((G41*D41)/(0.5*C41*2))*(1-EXP(-0.5*C41))*(0.5*C41+1))
42	8	Pu-240	1.209610393334385E-08	0	0.0005	45260	=(F42*3559)	=G42*D42*EXP(-C42*0.5)	=((G42*D42)/(0.5*C42*2))*(1-EXP(-0.5*C42))*(0.5*C42+1))
43	8	Pu-241	5.491127181407535E-06	0	0.0005	21730000	=(F43*3559)	=G43*D43*EXP(-C43*0.5)	=((G43*D43)/(0.5*C43*2))*(1-EXP(-0.5*C43))*(0.5*C43+1))
44	9	Y-90	0.010830424969491	0	0.0002	11500000	=(F44*3559)	=G44*D44*EXP(-C44*0.5)	=((G44*D44)/(0.5*C44*2))*(1-EXP(-0.5*C44))*(0.5*C44+1))
45	9	Y-91	0.000493610195237242	0	0.0002	1212000000	=(F45*3559)	=G45*D45*EXP(-C45*0.5)	=((G45*D45)/(0.5*C45*2))*(1-EXP(-0.5*C45))*(0.5*C45+1))
46	9	Y-92	0.195804288829377	0	0.0002	141600000	=(F46*3559)	=G46*D46*EXP(-C46*0.5)	=((G46*D46)/(0.5*C46*2))*(1-EXP(-0.5*C46))*(0.5*C46+1))
47	9	Y-93	0.068628433718505 6	0	0.0002	158100000	=(F47*3559)	=G47*D47*EXP(-C47*0.5)	=((G47*D47)/(0.5*C47*2))*(1-EXP(-0.5*C47))*(0.5*C47+1))
48	9	Zr-95	0.000451408760914834	0	0.0002	157800000	=(F48*3559)	=G48*D48*EXP(-C48*0.5)	=((G48*D48)/(0.5*C48*2))*(1-EXP(-0.5*C48))*(0.5*C48+1))
49	9	Zr-97	0.041014826068635 8	0	0.0002	163700000	=(F49*3559)	=G49*D49*EXP(-C49*0.5)	=((G49*D49)/(0.5*C49*2))*(1-EXP(-0.5*C49))*(0.5*C49+1))
50	9	Nb-95	0.000821653813465455	0	0.0002	158800000	=(F50*3559)	=G50*D50*EXP(-C50*0.5)	=((G50*D50)/(0.5*C50*2))*(1-EXP(-0.5*C50))*(0.5*C50+1))
51	9	La-140	0.017211640359553 7	0	0.0002	176400000	=(F51*3559)	=G51*D51*EXP(-C51*0.5)	=((G51*D51)/(0.5*C51*2))*(1-EXP(-0.5*C51))*(0.5*C51+1))
52	9	La-141	0.176373283867 55	0	0.0002	163100000	=(F52*3559)	=G52*D52*EXP(-C52*0.5)	=((G52*D52)/(0.5*C52*2))*(1-EXP(-0.5*C52))*(0.5*C52+1))
53	9	La-142	0.449608981984829	0	0.0002	159300000	=(F53*3559)	=G53*D53*EXP(-C53*0.5)	=((G53*D53)/(0.5*C53*2))*(1-EXP(-0.5*C53))*(0.5*C53+1))
54	9	Pr-143	0.002129677029744 18	0	0.0002	150900000	=(F54*3559)	=G54*D54*EXP(-C54*0.5)	=((G54*D54)/(0.5*C54*2))*(1-EXP(-0.5*C54))*(0.5*C54+1))
55	9	Nd-147	0.002630339933725 9	0	0.0002	64590000	=(F55*3559)	=G55*D55*EXP(-C55*0.5)	=((G55*D55)/(0.5*C55*2))*(1-EXP(-0.5*C55))*(0.5*C55+1))
56	9	Am-241	1.82952872309737E-07	0	0.0002	33490	=(F56*3559)	=G56*D56*EXP(-C56*0.5)	=((G56*D56)/(0.5*C56*2))*(1-EXP(-0.5*C56))*(0.5*C56+1))
57	9	Cm-242	0.000177402533927095	0	0.0002	8389000	=(F57*3559)	=G57*D57*EXP(-C57*0.5)	=((G57*D57)/(0.5*C57*2))*(1-EXP(-0.5*C57))*(0.5*C57+1))
58	9	Cm-244	4.366219293865 81E-06	0	0.0002	914700	=(F58*3559)	=G58*D58*EXP(-C58*0.5)	=((G58*D58)/(0.5*C58*2))*(1-EXP(-0.5*C58))*(0.5*C58+1))
59									
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63			Disintegrations per Curie-hour=			=37000000000*3600			
64			Max. Suppression Pool Water Volume cm³=			=(131900+22712)*28316.8			
65			MeV/cm³ to Mrad Conversion Factor=			=0.000000000000000160209			
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R1

	J	K	L	M	N	O	P
1	Early In-vessel Release	Early In-vessel Release	TOTAL	TOTAL	Gamma (Photon)	Gamma (Photon)	
2	Activity in Containment	Time Integrated Activity in	Time Integrated Activity in	Activity in Containment	Emission	Emission Energy per	Beta Particle
3	at 2.0 hours	Containment through 2.0 hours	Containment through 2.0 hours	at 2.0 hours	Energy	Unit of Activity	Emission Energy
4	(Ci)	(Ci-hours)	(Ci-hours)	(Ci)	(MeV/decay)	(MeV/Ci-hour)	(MeV/decay)
5	=G5*EXP(-C5*0.5)/E5*EXP(-1.5*C5)	=(((G5*EXP(-0.5*C5))/E5)/(1.5*C5^2))/(1-EXP(-1.5*C5)/(1.5*C5+1))	=I5+K5	=J5+H5*EXP(-C5*1.5)	0.381140122473	=$F$63*N5	0.1814591048
6	=G6*EXP(-C6*0.5)/E6*EXP(-1.5*C6)	=(((G6*EXP(-0.5*C6))/E6)/(1.5*C6^2))/(1-EXP(-1.5*C6)/(1.5*C6+1))	=I6+K6	=J6+H6*EXP(-C6*1.5)	2.291306399248	=$F$63*N6	0.48605791392
7	=G7*EXP(-C7*0.5)/E7*EXP(-1.5*C7)	=(((G7*EXP(-0.5*C7))/E7)/(1.5*C7^2))/(1-EXP(-1.5*C7)/(1.5*C7+1))	=I7+K7	=J7+H7*EXP(-C7*1.5)	0.606674510357	=$F$63*N7	0.40685652
8	=G8*EXP(-C8*0.5)/E8*EXP(-1.5*C8)	=(((G8*EXP(-0.5*C8))/E8)/(1.5*C8^2))/(1-EXP(-1.5*C8)/(1.5*C8+1))	=I8+K8	=J8+H8*EXP(-C8*1.5)	2.625317012962	=$F$63*N8	0.602958193
9	=G9*EXP(-C9*0.5)/E9*EXP(-1.5*C9)	=(((G9*EXP(-0.5*C9))/E9)/(1.5*C9^2))/(1-EXP(-1.5*C9)/(1.5*C9+1))	=I9+K9	=J9+H9*EXP(-C9*1.5)	1.575084825635	=$F$63*N9	0.3682553988
10	=G10*EXP(-C10*0.5)/E10*EXP(-1.5*C10)	=(((G10*EXP(-0.5*C10))/E10)/(1.5*C10^2))/(1-EXP(-1.5*C10)/(1.5*C10+1))	=I10+K10	=J10+H10*EXP(-C10*1.5)	0.094520097	=$F$63*N10	0.66743698
11	=G11*EXP(-C11*0.5)/E11*EXP(-1.5*C11)	=(((G11*EXP(-0.5*C11))/E11)/(1.5*C11^2))/(1-EXP(-1.5*C11)/(1.5*C11+1))	=I11+K11	=J11+H11*EXP(-C11*1.5)	1.55508812321 8	=$F$63*N11	0.1568435737
12	=G12*EXP(-C12*0.5)/E12*EXP(-1.5*C12)	=(((G12*EXP(-0.5*C12))/E12)/(1.5*C12^2))/(1-EXP(-1.5*C12)/(1.5*C12+1))	=I12+K12	=J12+H12*EXP(-C12*1.5)	2.168053417414	=$F$63*N12	0.10006191
13	=G13*EXP(-C13*0.5)/E13*EXP(-1.5*C13)	=(((G13*EXP(-0.5*C13))/E13)/(1.5*C13^2))/(1-EXP(-1.5*C13)/(1.5*C13+1))	=I13+K13	=J13+H13*EXP(-C13*1.5)	0	=$F$63*N13	0.1707536
14	=G14*EXP(-C14*0.5)/E14*EXP(-1.5*C14)	=(((G14*EXP(-0.5*C14))/E14)/(1.5*C14^2))/(1-EXP(-1.5*C14)/(1.5*C14+1))	=I14+K14	=J14+H14*EXP(-C14*1.5)	0.6618891977	=$F$63*N14	0.3109878 2
15	=G15*EXP(-C15*0.5)/E15*EXP(-1.5*C15)	=(((G15*EXP(-0.5*C15))/E15)/(1.5*C15^2))/(1-EXP(-1.5*C15)/(1.5*C15+1))	=I15+K15	=J15+H15*EXP(-C15*1.5)	1.429652264696	=$F$63*N15	0.3576024 8
16	=G16*EXP(-C16*0.5)/E16*EXP(-1.5*C16)	=(((G16*EXP(-0.5*C16))/E16)/(1.5*C16^2))/(1-EXP(-1.5*C16)/(1.5*C16+1))	=I16+K16	=J16+H16*EXP(-C16*1.5)	0.00463793758	=$F$63*N16	0.22294435809
17	=G17*EXP(-C17*0.5)/E17*EXP(-1.5*C17)	=(((G17*EXP(-0.5*C17))/E17)/(1.5*C17^2))/(1-EXP(-1.5*C17)/(1.5*C17+1))	=I17+K17	=J17+H17*EXP(-C17*1.5)	0.011223909967	=$F$63*N17	0.004605048475
18	=G18*EXP(-C18*0.5)/E18*EXP(-1.5*C18)	=(((G18*EXP(-0.5*C18))/E18)/(1.5*C18^2))/(1-EXP(-1.5*C18)/(1.5*C18+1))	=I18+K18	=J18+H18*EXP(-C18*1.5)	0.05765387064	=$F$63*N18	0.52454731249
19	=G19*EXP(-C19*0.5)/E19*EXP(-1.5*C19)	=(((G19*EXP(-0.5*C19))/E19)/(1.5*C19^2))/(1-EXP(-1.5*C19)/(1.5*C19+1))	=I19+K19	=J19+H19*EXP(-C19*1.5)	0.039439344334	=$F$63*N19	0.21189601106
20	=G20*EXP(-C20*0.5)/E20*EXP(-1.5*C20)	=(((G20*EXP(-0.5*C20))/E20)/(1.5*C20^2))/(1-EXP(-1.5*C20)/(1.5*C20+1))	=I20+K20	=J20+H20*EXP(-C20*1.5)	1.426278826444	=$F$63*N20	0.14451134921
21	=G21*EXP(-C21*0.5)/E21*EXP(-1.5*C21)	=(((G21*EXP(-0.5*C21))/E21)/(1.5*C21^2))/(1-EXP(-1.5*C21)/(1.5*C21+1))	=I21+K21	=J21+H21*EXP(-C21*1.5)	0.2306991102	=$F$63*N21	0.0594
22	=G22*EXP(-C22*0.5)/E22*EXP(-1.5*C22)	=(((G22*EXP(-0.5*C22))/E22)/(1.5*C22^2))/(1-EXP(-1.5*C22)/(1.5*C22+1))	=I22+K22	=J22+H22*EXP(-C22*1.5)	0.000136365	=$F$63*N22	0.58294069
23	=G23*EXP(-C23*0.5)/E23*EXP(-1.5*C23)	=(((G23*EXP(-0.5*C23))/E23)/(1.5*C23^2))/(1-EXP(-1.5*C23)/(1.5*C23+1))	=I23+K23	=J23+H23*EXP(-C23*1.5)	0	=$F$63*N23	0.1958
24	=G24*EXP(-C24*0.5)/E24*EXP(-1.5*C24)	=(((G24*EXP(-0.5*C24))/E24)/(1.5*C24^2))/(1-EXP(-1.5*C24)/(1.5*C24+1))	=I24+K24	=J24+H24*EXP(-C24*1.5)	0.68668644122	=$F$63*N24	0.6530528067
25	=G25*EXP(-C25*0.5)/E25*EXP(-1.5*C25)	=(((G25*EXP(-0.5*C25))/E25)/(1.5*C25^2))/(1-EXP(-1.5*C25)/(1.5*C25+1))	=I25+K25	=J25+H25*EXP(-C25*1.5)	1.339058428 2	=$F$63*N25	0.1999341
26	=G26*EXP(-C26*0.5)/E26*EXP(-1.5*C26)	=(((G26*EXP(-0.5*C26))/E26)/(1.5*C26^2))/(1-EXP(-1.5*C26)/(1.5*C26+1))	=I26+K26	=J26+H26*EXP(-C26*1.5)	0.035252667082	=$F$63*N26	0.89663968139
27	=G27*EXP(-C27*0.5)/E27*EXP(-1.5*C27)	=(((G27*EXP(-0.5*C27))/E27)/(1.5*C27^2))/(1-EXP(-1.5*C27)/(1.5*C27+1))	=I27+K27	=J27+H27*EXP(-C27*1.5)	0.190953976964	=$F$63*N27	0.271218
28	=G28*EXP(-C28*0.5)/E28*EXP(-1.5*C28)	=(((G28*EXP(-0.5*C28))/E28)/(1.5*C28^2))/(1-EXP(-1.5*C28)/(1.5*C28+1))	=I28+K28	=J28+H28*EXP(-C28*1.5)	0.97577390457	=$F$63*N28	0
29	=G29*EXP(-C29*0.5)/E29*EXP(-1.5*C29)	=(((G29*EXP(-0.5*C29))/E29)/(1.5*C29^2))/(1-EXP(-1.5*C29)/(1.5*C29+1))	=I29+K29	=J29+H29*EXP(-C29*1.5)	2.5058130926 6	=$F$63*N29	0.09579
30	=G30*EXP(-C30*0.5)/E30*EXP(-1.5*C30)	=(((G30*EXP(-0.5*C30))/E30)/(1.5*C30^2))/(1-EXP(-1.5*C30)/(1.5*C30+1))	=I30+K30	=J30+H30*EXP(-C30*1.5)	0.154955305573	=$F$63*N30	0.39337430042
31	=G31*EXP(-C31*0.5)/E31*EXP(-1.5*C31)	=(((G31*EXP(-0.5*C31))/E31)/(1.5*C31^2))/(1-EXP(-1.5*C31)/(1.5*C31+1))	=I31+K31	=J31+H31*EXP(-C31*1.5)	0.126564800649	=$F$63*N31	0
32	=G32*EXP(-C32*0.5)/E32*EXP(-1.5*C32)	=(((G32*EXP(-0.5*C32))/E32)/(1.5*C32^2))/(1-EXP(-1.5*C32)/(1.5*C32+1))	=I32+K32	=J32+H32*EXP(-C32*1.5)	0.483836016752	=$F$63*N32	0.067541059675
33	=G33*EXP(-C33*0.5)/E33*EXP(-1.5*C33)	=(((G33*EXP(-0.5*C33))/E33)/(1.5*C33^2))/(1-EXP(-1.5*C33)/(1.5*C33+1))	=I33+K33	=J33+H33*EXP(-C33*1.5)	0.78421096111	=$F$63*N33	0.4025542923
34	=G34*EXP(-C34*0.5)/E34*EXP(-1.5*C34)	=(((G34*EXP(-0.5*C34))/E34)/(1.5*C34^2))/(1-EXP(-1.5*C34)/(1.5*C34+1))	=I34+K34	=J34+H34*EXP(-C34*1.5)	0	=$F$63*N34	0.01003
35	=G35*EXP(-C35*0.5)/E35*EXP(-1.5*C35)	=(((G35*EXP(-0.5*C35))/E35)/(1.5*C35^2))/(1-EXP(-1.5*C35)/(1.5*C35+1))	=I35+K35	=J35+H35*EXP(-C35*1.5)	0.077649863674	=$F$63*N35	0.152191179
36	=G36*EXP(-C36*0.5)/E36*EXP(-1.5*C36)	=(((G36*EXP(-0.5*C36))/E36)/(1.5*C36^2))/(1-EXP(-1.5*C36)/(1.5*C36+1))	=I36+K36	=J36+H36*EXP(-C36*1.5)	0.076850361916	=$F$63*N36	0.1446745
37	=G37*EXP(-C37*0.5)/E37*EXP(-1.5*C37)	=(((G37*EXP(-0.5*C37))/E37)/(1.5*C37^2))/(1-EXP(-1.5*C37)/(1.5*C37+1))	=I37+K37	=J37+H37*EXP(-C37*1.5)	0.27336684791	=$F$63*N37	0.4096948677
38	=G38*EXP(-C38*0.5)/E38*EXP(-1.5*C38)	=(((G38*EXP(-0.5*C38))/E38)/(1.5*C38^2))/(1-EXP(-1.5*C38)/(1.5*C38+1))	=I38+K38	=J38+H38*EXP(-C38*1.5)	0.019274754644	=$F$63*N38	0.0832751
39	=G39*EXP(-C39*0.5)/E39*EXP(-1.5*C39)	=(((G39*EXP(-0.5*C39))/E39)/(1.5*C39^2))/(1-EXP(-1.5*C39)/(1.5*C39+1))	=I39+K39	=J39+H39*EXP(-C39*1.5)	0.172110902139	=$F$63*N39	0.115125968279
40	=G40*EXP(-C40*0.5)/E40*EXP(-1.5*C40)	=(((G40*EXP(-0.5*C40))/E40)/(1.5*C40^2))/(1-EXP(-1.5*C40)/(1.5*C40+1))	=I40+K40	=J40+H40*EXP(-C40*1.5)	0.001600358319	=$F$63*N40	0
41	=G41*EXP(-C41*0.5)/E41*EXP(-1.5*C41)	=(((G41*EXP(-0.5*C41))/E41)/(1.5*C41^2))/(1-EXP(-1.5*C41)/(1.5*C41+1))	=I41+K41	=J41+H41*EXP(-C41*1.5)	0.00085406276	=$F$63*N41	0
42	=G42*EXP(-C42*0.5)/E42*EXP(-1.5*C42)	=(((G42*EXP(-0.5*C42))/E42)/(1.5*C42^2))/(1-EXP(-1.5*C42)/(1.5*C42+1))	=I42+K42	=J42+H42*EXP(-C42*1.5)	0.001526153675	=$F$63*N42	0
43	=G43*EXP(-C43*0.5)/E43*EXP(-1.5*C43)	=(((G43*EXP(-0.5*C43))/E43)/(1.5*C43^2))/(1-EXP(-1.5*C43)/(1.5*C43+1))	=I43+K43	=J43+H43*EXP(-C43*1.5)	0	=$F$63*N43	0.0052298954
44	=G44*EXP(-C44*0.5)/E44*EXP(-1.5*C44)	=(((G44*EXP(-0.5*C44))/E44)/(1.5*C44^2))/(1-EXP(-1.5*C44)/(1.5*C44+1))	=I44+K44	=J44+H44*EXP(-C44*1.5)	0	=$F$63*N44	0.9347186195
45	=G45*EXP(-C45*0.5)/E45*EXP(-1.5*C45)	=(((G45*EXP(-0.5*C45))/E45)/(1.5*C45^2))/(1-EXP(-1.5*C45)/(1.5*C45+1))	=I45+K45	=J45+H45*EXP(-C45*1.5)	0.0036147	=$F$63*N45	0.6022883
46	=G46*EXP(-C46*0.5)/E46*EXP(-1.5*C46)	=(((G46*EXP(-0.5*C46))/E46)/(1.5*C46^2))/(1-EXP(-1.5*C46)/(1.5*C46+1))	=I46+K46	=J46+H46*EXP(-C46*1.5)	0.2516243047	=$F$63*N46	1.4449120248
47	=G47*EXP(-C47*0.5)/E47*EXP(-1.5*C47)	=(((G47*EXP(-0.5*C47))/E47)/(1.5*C47^2))/(1-EXP(-1.5*C47)/(1.5*C47+1))	=I47+K47	=J47+H47*EXP(-C47*1.5)	0.089089524883	=$F$63*N47	1.1730619363 2
48	=G48*EXP(-C48*0.5)/E48*EXP(-1.5*C48)	=(((G48*EXP(-0.5*C48))/E48)/(1.5*C48^2))/(1-EXP(-1.5*C48)/(1.5*C48+1))	=I48+K48	=J48+H48*EXP(-C48*1.5)	0.73494917703	=$F$63*N48	0.116123
49	=G49*EXP(-C49*0.5)/E49*EXP(-1.5*C49)	=(((G49*EXP(-0.5*C49))/E49)/(1.5*C49^2))/(1-EXP(-1.5*C49)/(1.5*C49+1))	=I49+K49	=J49+H49*EXP(-C49*1.5)	0.18057433695	=$F$63*N49	0.69740019
50	=G50*EXP(-C50*0.5)/E50*EXP(-1.5*C50)	=(((G50*EXP(-0.5*C50))/E50)/(1.5*C50^2))/(1-EXP(-1.5*C50)/(1.5*C50+1))	=I50+K50	=J50+H50*EXP(-C50*1.5)	0.764449657296	=$F$63*N50	0.04343358
51	=G51*EXP(-C51*0.5)/E51*EXP(-1.5*C51)	=(((G51*EXP(-0.5*C51))/E51)/(1.5*C51^2))/(1-EXP(-1.5*C51)/(1.5*C51+1))	=I51+K51	=J51+H51*EXP(-C51*1.5)	2.31627373602	=$F$63*N51	0.52746162735
52	=G52*EXP(-C52*0.5)/E52*EXP(-1.5*C52)	=(((G52*EXP(-0.5*C52))/E52)/(1.5*C52^2))/(1-EXP(-1.5*C52)/(1.5*C52+1))	=I52+K52	=J52+H52*EXP(-C52*1.5)	0.0426863508	=$F$63*N52	0.948305281
53	=G53*EXP(-C53*0.5)/E53*EXP(-1.5*C53)	=(((G53*EXP(-0.5*C53))/E53)/(1.5*C53^2))/(1-EXP(-1.5*C53)/(1.5*C53+1))	=I53+K53	=J53+H53*EXP(-C53*1.5)	2.71896069743	=$F$63*N53	0.84565257
54	=G54*EXP(-C54*0.5)/E54*EXP(-1.5*C54)	=(((G54*EXP(-0.5*C54))/E54)/(1.5*C54^2))/(1-EXP(-1.5*C54)/(1.5*C54+1))	=I54+K54	=J54+H54*EXP(-C54*1.5)	0	=$F$63*N54	0.3156
55	=G55*EXP(-C55*0.5)/E55*EXP(-1.5*C55)	=(((G55*EXP(-0.5*C55))/E55)/(1.5*C55^2))/(1-EXP(-1.5*C55)/(1.5*C55+1))	=I55+K55	=J55+H55*EXP(-C55*1.5)	0.140739503	=$F$63*N55	0.233477142
56	=G56*EXP(-C56*0.5)/E56*EXP(-1.5*C56)	=(((G56*EXP(-0.5*C56))/E56)/(1.5*C56^2))/(1-EXP(-1.5*C56)/(1.5*C56+1))	=I56+K56	=J56+H56*EXP(-C56*1.5)	0.028100691483	=$F$63*N56	0
57	=G57*EXP(-C57*0.5)/E57*EXP(-1.5*C57)	=(((G57*EXP(-0.5*C57))/E57)/(1.5*C57^2))/(1-EXP(-1.5*C57)/(1.5*C57+1))	=I57+K57	=J57+H57*EXP(-C57*1.5)	0.001673519114	=$F$63*N57	0
58	=G58*EXP(-C58*0.5)/E58*EXP(-1.5*C58)	=(((G58*EXP(-0.5*C58))/E58)/(1.5*C58^2))/(1-EXP(-1.5*C58)/(1.5*C58+1))	=I58+K58	=J58+H58*EXP(-C58*1.5)	0.001490051226	=$F$63*N58	0
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75							

	Q
1	**Beta Particle**
2	**Emission Energy per**
3	**Unit of Activity**
4	**(MeV/Ci-hour)**
5	=$F$63*P5
6	=$F$63*P6
7	=$F$63*P7
8	=$F$63*P8
9	=$F$63*P9
10	=$F$63*P10
11	=$F$63*P11
12	=$F$63*P12
13	=$F$63*P13
14	=$F$63*P14
15	=$F$63*P15
16	=$F$63*P16
17	=$F$63*P17
18	=$F$63*P18
19	=$F$63*P19
20	=$F$63*P20
21	=$F$63*P21
22	=$F$63*P22
23	=$F$63*P23
24	=$F$63*P24
25	=$F$63*P25
26	=$F$63*P26
27	=$F$63*P27
28	=$F$63*P28
29	=$F$63*P29
30	=$F$63*P30
31	=$F$63*P31
32	=$F$63*P32
33	=$F$63*P33
34	=$F$63*P34
35	=$F$63*P35
36	=$F$63*P36
37	=$F$63*P37
38	=$F$63*P38
39	=$F$63*P39
40	=$F$63*P40
41	=$F$63*P41
42	=$F$63*P42
43	=$F$63*P43
44	=$F$63*P44
45	=$F$63*P45
46	=$F$63*P46
47	=$F$63*P47
48	=$F$63*P48
49	=$F$63*P49
50	=$F$63*P50
51	=$F$63*P51
52	=$F$63*P52
53	=$F$63*P53
54	=$F$63*P54
55	=$F$63*P55
56	=$F$63*P56
57	=$F$63*P57
58	=$F$63*P58
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69	
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	R	S	T	U	V	W	X	Y	Z	AA
1										
2										
3		1	2	2.0336	3	5	12	18	24	48
4										
5			=$L5	=($M5/$C5)^(1-EXP(-$C5*(U$3-2)))*$L5	=($M5/$C5)^(1-EXP(-$C5*(V$3-2)))*$L5	=($M5/$C5)^(1-EXP(-$C5*(W$3-2)))*$L5	=($M5/$C5)^(1-EXP(-$C5*(X$3-2)))*$L5	=($M5/$C5)^(1-EXP(-$C5*(Y$3-2)))*$L5	=($M5/$C5)^(1-EXP(-$C5*(Z$3-2)))*$L5	=($M5/$C5)^(1-EXP(-$C5*(AA$3-2)))*$L5
6			=$L6	=($M6/$C6)^(1-EXP(-$C6*(U$3-2)))*$L6	=($M6/$C6)^(1-EXP(-$C6*(V$3-2)))*$L6	=($M6/$C6)^(1-EXP(-$C6*(W$3-2)))*$L6	=($M6/$C6)^(1-EXP(-$C6*(X$3-2)))*$L6	=($M6/$C6)^(1-EXP(-$C6*(Y$3-2)))*$L6	=($M6/$C6)^(1-EXP(-$C6*(Z$3-2)))*$L6	=($M6/$C6)^(1-EXP(-$C6*(AA$3-2)))*$L6
7			=$L7	=($M7/$C7)^(1-EXP(-$C7*(U$3-2)))*$L7	=($M7/$C7)^(1-EXP(-$C7*(V$3-2)))*$L7	=($M7/$C7)^(1-EXP(-$C7*(W$3-2)))*$L7	=($M7/$C7)^(1-EXP(-$C7*(X$3-2)))*$L7	=($M7/$C7)^(1-EXP(-$C7*(Y$3-2)))*$L7	=($M7/$C7)^(1-EXP(-$C7*(Z$3-2)))*$L7	=($M7/$C7)^(1-EXP(-$C7*(AA$3-2)))*$L7
8			=$L8	=($M8/$C8)^(1-EXP(-$C8*(U$3-2)))*$L8	=($M8/$C8)^(1-EXP(-$C8*(V$3-2)))*$L8	=($M8/$C8)^(1-EXP(-$C8*(W$3-2)))*$L8	=($M8/$C8)^(1-EXP(-$C8*(X$3-2)))*$L8	=($M8/$C8)^(1-EXP(-$C8*(Y$3-2)))*$L8	=($M8/$C8)^(1-EXP(-$C8*(Z$3-2)))*$L8	=($M8/$C8)^(1-EXP(-$C8*(AA$3-2)))*$L8
9			=$L9	=($M9/$C9)^(1-EXP(-$C9*(U$3-2)))*$L9	=($M9/$C9)^(1-EXP(-$C9*(V$3-2)))*$L9	=($M9/$C9)^(1-EXP(-$C9*(W$3-2)))*$L9	=($M9/$C9)^(1-EXP(-$C9*(X$3-2)))*$L9	=($M9/$C9)^(1-EXP(-$C9*(Y$3-2)))*$L9	=($M9/$C9)^(1-EXP(-$C9*(Z$3-2)))*$L9	=($M9/$C9)^(1-EXP(-$C9*(AA$3-2)))*$L9
10			=$L10	=($M10/$C10)^(1-EXP(-$C10*(U$3-2)))*$L10	=($M10/$C10)^(1-EXP(-$C10*(V$3-2)))*$L10	=($M10/$C10)^(1-EXP(-$C10*(W$3-2)))*$L10	=($M10/$C10)^(1-EXP(-$C10*(X$3-2)))*$L10	=($M10/$C10)^(1-EXP(-$C10*(Y$3-2)))*$L10	=($M10/$C10)^(1-EXP(-$C10*(Z$3-2)))*$L10	=($M10/$C10)^(1-EXP(-$C10*(AA$3-2)))*$L10
11			=$L11	=($M11/$C11)^(1-EXP(-$C11*(U$3-2)))*$L11	=($M11/$C11)^(1-EXP(-$C11*(V$3-2)))*$L11	=($M11/$C11)^(1-EXP(-$C11*(W$3-2)))*$L11	=($M11/$C11)^(1-EXP(-$C11*(X$3-2)))*$L11	=($M11/$C11)^(1-EXP(-$C11*(Y$3-2)))*$L11	=($M11/$C11)^(1-EXP(-$C11*(Z$3-2)))*$L11	=($M11/$C11)^(1-EXP(-$C11*(AA$3-2)))*$L11
12			=$L12	=($M12/$C12)^(1-EXP(-$C12*(U$3-2)))*$L12	=($M12/$C12)^(1-EXP(-$C12*(V$3-2)))*$L12	=($M12/$C12)^(1-EXP(-$C12*(W$3-2)))*$L12	=($M12/$C12)^(1-EXP(-$C12*(X$3-2)))*$L12	=($M12/$C12)^(1-EXP(-$C12*(Y$3-2)))*$L12	=($M12/$C12)^(1-EXP(-$C12*(Z$3-2)))*$L12	=($M12/$C12)^(1-EXP(-$C12*(AA$3-2)))*$L12
13			=$L13	=($M13/$C13)^(1-EXP(-$C13*(U$3-2)))*$L13	=($M13/$C13)^(1-EXP(-$C13*(V$3-2)))*$L13	=($M13/$C13)^(1-EXP(-$C13*(W$3-2)))*$L13	=($M13/$C13)^(1-EXP(-$C13*(X$3-2)))*$L13	=($M13/$C13)^(1-EXP(-$C13*(Y$3-2)))*$L13	=($M13/$C13)^(1-EXP(-$C13*(Z$3-2)))*$L13	=($M13/$C13)^(1-EXP(-$C13*(AA$3-2)))*$L13
14			=$L14	=($M14/$C14)^(1-EXP(-$C14*(U$3-2)))*$L14	=($M14/$C14)^(1-EXP(-$C14*(V$3-2)))*$L14	=($M14/$C14)^(1-EXP(-$C14*(W$3-2)))*$L14	=($M14/$C14)^(1-EXP(-$C14*(X$3-2)))*$L14	=($M14/$C14)^(1-EXP(-$C14*(Y$3-2)))*$L14	=($M14/$C14)^(1-EXP(-$C14*(Z$3-2)))*$L14	=($M14/$C14)^(1-EXP(-$C14*(AA$3-2)))*$L14
15			=$L15	=($M15/$C15)^(1-EXP(-$C15*(U$3-2)))*$L15	=($M15/$C15)^(1-EXP(-$C15*(V$3-2)))*$L15	=($M15/$C15)^(1-EXP(-$C15*(W$3-2)))*$L15	=($M15/$C15)^(1-EXP(-$C15*(X$3-2)))*$L15	=($M15/$C15)^(1-EXP(-$C15*(Y$3-2)))*$L15	=($M15/$C15)^(1-EXP(-$C15*(Z$3-2)))*$L15	=($M15/$C15)^(1-EXP(-$C15*(AA$3-2)))*$L15
16			=$L16	=($M16/$C16)^(1-EXP(-$C16*(U$3-2)))*$L16	=($M16/$C16)^(1-EXP(-$C16*(V$3-2)))*$L16	=($M16/$C16)^(1-EXP(-$C16*(W$3-2)))*$L16	=($M16/$C16)^(1-EXP(-$C16*(X$3-2)))*$L16	=($M16/$C16)^(1-EXP(-$C16*(Y$3-2)))*$L16	=($M16/$C16)^(1-EXP(-$C16*(Z$3-2)))*$L16	=($M16/$C16)^(1-EXP(-$C16*(AA$3-2)))*$L16
17			=$L17	=($M17/$C17)^(1-EXP(-$C17*(U$3-2)))*$L17	=($M17/$C17)^(1-EXP(-$C17*(V$3-2)))*$L17	=($M17/$C17)^(1-EXP(-$C17*(W$3-2)))*$L17	=($M17/$C17)^(1-EXP(-$C17*(X$3-2)))*$L17	=($M17/$C17)^(1-EXP(-$C17*(Y$3-2)))*$L17	=($M17/$C17)^(1-EXP(-$C17*(Z$3-2)))*$L17	=($M17/$C17)^(1-EXP(-$C17*(AA$3-2)))*$L17
18			=$L18	=($M18/$C18)^(1-EXP(-$C18*(U$3-2)))*$L18	=($M18/$C18)^(1-EXP(-$C18*(V$3-2)))*$L18	=($M18/$C18)^(1-EXP(-$C18*(W$3-2)))*$L18	=($M18/$C18)^(1-EXP(-$C18*(X$3-2)))*$L18	=($M18/$C18)^(1-EXP(-$C18*(Y$3-2)))*$L18	=($M18/$C18)^(1-EXP(-$C18*(Z$3-2)))*$L18	=($M18/$C18)^(1-EXP(-$C18*(AA$3-2)))*$L18
19			=$L19	=($M19/$C19)^(1-EXP(-$C19*(U$3-2)))*$L19	=($M19/$C19)^(1-EXP(-$C19*(V$3-2)))*$L19	=($M19/$C19)^(1-EXP(-$C19*(W$3-2)))*$L19	=($M19/$C19)^(1-EXP(-$C19*(X$3-2)))*$L19	=($M19/$C19)^(1-EXP(-$C19*(Y$3-2)))*$L19	=($M19/$C19)^(1-EXP(-$C19*(Z$3-2)))*$L19	=($M19/$C19)^(1-EXP(-$C19*(AA$3-2)))*$L19
20			=$L20	=($M20/$C20)^(1-EXP(-$C20*(U$3-2)))*$L20	=($M20/$C20)^(1-EXP(-$C20*(V$3-2)))*$L20	=($M20/$C20)^(1-EXP(-$C20*(W$3-2)))*$L20	=($M20/$C20)^(1-EXP(-$C20*(X$3-2)))*$L20	=($M20/$C20)^(1-EXP(-$C20*(Y$3-2)))*$L20	=($M20/$C20)^(1-EXP(-$C20*(Z$3-2)))*$L20	=($M20/$C20)^(1-EXP(-$C20*(AA$3-2)))*$L20
21			=$L21	=($M21/$C21)^(1-EXP(-$C21*(U$3-2)))*$L21	=($M21/$C21)^(1-EXP(-$C21*(V$3-2)))*$L21	=($M21/$C21)^(1-EXP(-$C21*(W$3-2)))*$L21	=($M21/$C21)^(1-EXP(-$C21*(X$3-2)))*$L21	=($M21/$C21)^(1-EXP(-$C21*(Y$3-2)))*$L21	=($M21/$C21)^(1-EXP(-$C21*(Z$3-2)))*$L21	=($M21/$C21)^(1-EXP(-$C21*(AA$3-2)))*$L21
22			=$L22	=($M22/$C22)^(1-EXP(-$C22*(U$3-2)))*$L22	=($M22/$C22)^(1-EXP(-$C22*(V$3-2)))*$L22	=($M22/$C22)^(1-EXP(-$C22*(W$3-2)))*$L22	=($M22/$C22)^(1-EXP(-$C22*(X$3-2)))*$L22	=($M22/$C22)^(1-EXP(-$C22*(Y$3-2)))*$L22	=($M22/$C22)^(1-EXP(-$C22*(Z$3-2)))*$L22	=($M22/$C22)^(1-EXP(-$C22*(AA$3-2)))*$L22
23			=$L23	=($M23/$C23)^(1-EXP(-$C23*(U$3-2)))*$L23	=($M23/$C23)^(1-EXP(-$C23*(V$3-2)))*$L23	=($M23/$C23)^(1-EXP(-$C23*(W$3-2)))*$L23	=($M23/$C23)^(1-EXP(-$C23*(X$3-2)))*$L23	=($M23/$C23)^(1-EXP(-$C23*(Y$3-2)))*$L23	=($M23/$C23)^(1-EXP(-$C23*(Z$3-2)))*$L23	=($M23/$C23)^(1-EXP(-$C23*(AA$3-2)))*$L23
24			=$L24	=($M24/$C24)^(1-EXP(-$C24*(U$3-2)))*$L24	=($M24/$C24)^(1-EXP(-$C24*(V$3-2)))*$L24	=($M24/$C24)^(1-EXP(-$C24*(W$3-2)))*$L24	=($M24/$C24)^(1-EXP(-$C24*(X$3-2)))*$L24	=($M24/$C24)^(1-EXP(-$C24*(Y$3-2)))*$L24	=($M24/$C24)^(1-EXP(-$C24*(Z$3-2)))*$L24	=($M24/$C24)^(1-EXP(-$C24*(AA$3-2)))*$L24
25			=$L25	=($M25/$C25)^(1-EXP(-$C25*(U$3-2)))*$L25	=($M25/$C25)^(1-EXP(-$C25*(V$3-2)))*$L25	=($M25/$C25)^(1-EXP(-$C25*(W$3-2)))*$L25	=($M25/$C25)^(1-EXP(-$C25*(X$3-2)))*$L25	=($M25/$C25)^(1-EXP(-$C25*(Y$3-2)))*$L25	=($M25/$C25)^(1-EXP(-$C25*(Z$3-2)))*$L25	=($M25/$C25)^(1-EXP(-$C25*(AA$3-2)))*$L25
26			=$L26	=($M26/$C26)^(1-EXP(-$C26*(U$3-2)))*$L26	=($M26/$C26)^(1-EXP(-$C26*(V$3-2)))*$L26	=($M26/$C26)^(1-EXP(-$C26*(W$3-2)))*$L26	=($M26/$C26)^(1-EXP(-$C26*(X$3-2)))*$L26	=($M26/$C26)^(1-EXP(-$C26*(Y$3-2)))*$L26	=($M26/$C26)^(1-EXP(-$C26*(Z$3-2)))*$L26	=($M26/$C26)^(1-EXP(-$C26*(AA$3-2)))*$L26
27			=$L27	=($M27/$C27)^(1-EXP(-$C27*(U$3-2)))*$L27	=($M27/$C27)^(1-EXP(-$C27*(V$3-2)))*$L27	=($M27/$C27)^(1-EXP(-$C27*(W$3-2)))*$L27	=($M27/$C27)^(1-EXP(-$C27*(X$3-2)))*$L27	=($M27/$C27)^(1-EXP(-$C27*(Y$3-2)))*$L27	=($M27/$C27)^(1-EXP(-$C27*(Z$3-2)))*$L27	=($M27/$C27)^(1-EXP(-$C27*(AA$3-2)))*$L27
28			=$L28	=($M28/$C28)^(1-EXP(-$C28*(U$3-2)))*$L28	=($M28/$C28)^(1-EXP(-$C28*(V$3-2)))*$L28	=($M28/$C28)^(1-EXP(-$C28*(W$3-2)))*$L28	=($M28/$C28)^(1-EXP(-$C28*(X$3-2)))*$L28	=($M28/$C28)^(1-EXP(-$C28*(Y$3-2)))*$L28	=($M28/$C28)^(1-EXP(-$C28*(Z$3-2)))*$L28	=($M28/$C28)^(1-EXP(-$C28*(AA$3-2)))*$L28
29			=$L29	=($M29/$C29)^(1-EXP(-$C29*(U$3-2)))*$L29	=($M29/$C29)^(1-EXP(-$C29*(V$3-2)))*$L29	=($M29/$C29)^(1-EXP(-$C29*(W$3-2)))*$L29	=($M29/$C29)^(1-EXP(-$C29*(X$3-2)))*$L29	=($M29/$C29)^(1-EXP(-$C29*(Y$3-2)))*$L29	=($M29/$C29)^(1-EXP(-$C29*(Z$3-2)))*$L29	=($M29/$C29)^(1-EXP(-$C29*(AA$3-2)))*$L29
30			=$L30	=($M30/$C30)^(1-EXP(-$C30*(U$3-2)))*$L30	=($M30/$C30)^(1-EXP(-$C30*(V$3-2)))*$L30	=($M30/$C30)^(1-EXP(-$C30*(W$3-2)))*$L30	=($M30/$C30)^(1-EXP(-$C30*(X$3-2)))*$L30	=($M30/$C30)^(1-EXP(-$C30*(Y$3-2)))*$L30	=($M30/$C30)^(1-EXP(-$C30*(Z$3-2)))*$L30	=($M30/$C30)^(1-EXP(-$C30*(AA$3-2)))*$L30
31			=$L31	=($M31/$C31)^(1-EXP(-$C31*(U$3-2)))*$L31	=($M31/$C31)^(1-EXP(-$C31*(V$3-2)))*$L31	=($M31/$C31)^(1-EXP(-$C31*(W$3-2)))*$L31	=($M31/$C31)^(1-EXP(-$C31*(X$3-2)))*$L31	=($M31/$C31)^(1-EXP(-$C31*(Y$3-2)))*$L31	=($M31/$C31)^(1-EXP(-$C31*(Z$3-2)))*$L31	=($M31/$C31)^(1-EXP(-$C31*(AA$3-2)))*$L31
32			=$L32	=($M32/$C32)^(1-EXP(-$C32*(U$3-2)))*$L32	=($M32/$C32)^(1-EXP(-$C32*(V$3-2)))*$L32	=($M32/$C32)^(1-EXP(-$C32*(W$3-2)))*$L32	=($M32/$C32)^(1-EXP(-$C32*(X$3-2)))*$L32	=($M32/$C32)^(1-EXP(-$C32*(Y$3-2)))*$L32	=($M32/$C32)^(1-EXP(-$C32*(Z$3-2)))*$L32	=($M32/$C32)^(1-EXP(-$C32*(AA$3-2)))*$L32
33			=$L33	=($M33/$C33)^(1-EXP(-$C33*(U$3-2)))*$L33	=($M33/$C33)^(1-EXP(-$C33*(V$3-2)))*$L33	=($M33/$C33)^(1-EXP(-$C33*(W$3-2)))*$L33	=($M33/$C33)^(1-EXP(-$C33*(X$3-2)))*$L33	=($M33/$C33)^(1-EXP(-$C33*(Y$3-2)))*$L33	=($M33/$C33)^(1-EXP(-$C33*(Z$3-2)))*$L33	=($M33/$C33)^(1-EXP(-$C33*(AA$3-2)))*$L33
34			=$L34	=($M34/$C34)^(1-EXP(-$C34*(U$3-2)))*$L34	=($M34/$C34)^(1-EXP(-$C34*(V$3-2)))*$L34	=($M34/$C34)^(1-EXP(-$C34*(W$3-2)))*$L34	=($M34/$C34)^(1-EXP(-$C34*(X$3-2)))*$L34	=($M34/$C34)^(1-EXP(-$C34*(Y$3-2)))*$L34	=($M34/$C34)^(1-EXP(-$C34*(Z$3-2)))*$L34	=($M34/$C34)^(1-EXP(-$C34*(AA$3-2)))*$L34
35			=$L35	=($M35/$C35)^(1-EXP(-$C35*(U$3-2)))*$L35	=($M35/$C35)^(1-EXP(-$C35*(V$3-2)))*$L35	=($M35/$C35)^(1-EXP(-$C35*(W$3-2)))*$L35	=($M35/$C35)^(1-EXP(-$C35*(X$3-2)))*$L35	=($M35/$C35)^(1-EXP(-$C35*(Y$3-2)))*$L35	=($M35/$C35)^(1-EXP(-$C35*(Z$3-2)))*$L35	=($M35/$C35)^(1-EXP(-$C35*(AA$3-2)))*$L35
36			=$L36	=($M36/$C36)^(1-EXP(-$C36*(U$3-2)))*$L36	=($M36/$C36)^(1-EXP(-$C36*(V$3-2)))*$L36	=($M36/$C36)^(1-EXP(-$C36*(W$3-2)))*$L36	=($M36/$C36)^(1-EXP(-$C36*(X$3-2)))*$L36	=($M36/$C36)^(1-EXP(-$C36*(Y$3-2)))*$L36	=($M36/$C36)^(1-EXP(-$C36*(Z$3-2)))*$L36	=($M36/$C36)^(1-EXP(-$C36*(AA$3-2)))*$L36
37			=$L37	=($M37/$C37)^(1-EXP(-$C37*(U$3-2)))*$L37	=($M37/$C37)^(1-EXP(-$C37*(V$3-2)))*$L37	=($M37/$C37)^(1-EXP(-$C37*(W$3-2)))*$L37	=($M37/$C37)^(1-EXP(-$C37*(X$3-2)))*$L37	=($M37/$C37)^(1-EXP(-$C37*(Y$3-2)))*$L37	=($M37/$C37)^(1-EXP(-$C37*(Z$3-2)))*$L37	=($M37/$C37)^(1-EXP(-$C37*(AA$3-2)))*$L37
38			=$L38	=($M38/$C38)^(1-EXP(-$C38*(U$3-2)))*$L38	=($M38/$C38)^(1-EXP(-$C38*(V$3-2)))*$L38	=($M38/$C38)^(1-EXP(-$C38*(W$3-2)))*$L38	=($M38/$C38)^(1-EXP(-$C38*(X$3-2)))*$L38	=($M38/$C38)^(1-EXP(-$C38*(Y$3-2)))*$L38	=($M38/$C38)^(1-EXP(-$C38*(Z$3-2)))*$L38	=($M38/$C38)^(1-EXP(-$C38*(AA$3-2)))*$L38
39			=$L39	=($M39/$C39)^(1-EXP(-$C39*(U$3-2)))*$L39	=($M39/$C39)^(1-EXP(-$C39*(V$3-2)))*$L39	=($M39/$C39)^(1-EXP(-$C39*(W$3-2)))*$L39	=($M39/$C39)^(1-EXP(-$C39*(X$3-2)))*$L39	=($M39/$C39)^(1-EXP(-$C39*(Y$3-2)))*$L39	=($M39/$C39)^(1-EXP(-$C39*(Z$3-2)))*$L39	=($M39/$C39)^(1-EXP(-$C39*(AA$3-2)))*$L39
40			=$L40	=($M40/$C40)^(1-EXP(-$C40*(U$3-2)))*$L40	=($M40/$C40)^(1-EXP(-$C40*(V$3-2)))*$L40	=($M40/$C40)^(1-EXP(-$C40*(W$3-2)))*$L40	=($M40/$C40)^(1-EXP(-$C40*(X$3-2)))*$L40	=($M40/$C40)^(1-EXP(-$C40*(Y$3-2)))*$L40	=($M40/$C40)^(1-EXP(-$C40*(Z$3-2)))*$L40	=($M40/$C40)^(1-EXP(-$C40*(AA$3-2)))*$L40
41			=$L41	=($M41/$C41)^(1-EXP(-$C41*(U$3-2)))*$L41	=($M41/$C41)^(1-EXP(-$C41*(V$3-2)))*$L41	=($M41/$C41)^(1-EXP(-$C41*(W$3-2)))*$L41	=($M41/$C41)^(1-EXP(-$C41*(X$3-2)))*$L41	=($M41/$C41)^(1-EXP(-$C41*(Y$3-2)))*$L41	=($M41/$C41)^(1-EXP(-$C41*(Z$3-2)))*$L41	=($M41/$C41)^(1-EXP(-$C41*(AA$3-2)))*$L41
42			=$L42	=($M42/$C42)^(1-EXP(-$C42*(U$3-2)))*$L42	=($M42/$C42)^(1-EXP(-$C42*(V$3-2)))*$L42	=($M42/$C42)^(1-EXP(-$C42*(W$3-2)))*$L42	=($M42/$C42)^(1-EXP(-$C42*(X$3-2)))*$L42	=($M42/$C42)^(1-EXP(-$C42*(Y$3-2)))*$L42	=($M42/$C42)^(1-EXP(-$C42*(Z$3-2)))*$L42	=($M42/$C42)^(1-EXP(-$C42*(AA$3-2)))*$L42
43			=$L43	=($M43/$C43)^(1-EXP(-$C43*(U$3-2)))*$L43	=($M43/$C43)^(1-EXP(-$C43*(V$3-2)))*$L43	=($M43/$C43)^(1-EXP(-$C43*(W$3-2)))*$L43	=($M43/$C43)^(1-EXP(-$C43*(X$3-2)))*$L43	=($M43/$C43)^(1-EXP(-$C43*(Y$3-2)))*$L43	=($M43/$C43)^(1-EXP(-$C43*(Z$3-2)))*$L43	=($M43/$C43)^(1-EXP(-$C43*(AA$3-2)))*$L43
44			=$L44	=($M44/$C44)^(1-EXP(-$C44*(U$3-2)))*$L44	=($M44/$C44)^(1-EXP(-$C44*(V$3-2)))*$L44	=($M44/$C44)^(1-EXP(-$C44*(W$3-2)))*$L44	=($M44/$C44)^(1-EXP(-$C44*(X$3-2)))*$L44	=($M44/$C44)^(1-EXP(-$C44*(Y$3-2)))*$L44	=($M44/$C44)^(1-EXP(-$C44*(Z$3-2)))*$L44	=($M44/$C44)^(1-EXP(-$C44*(AA$3-2)))*$L44
45			=$L45	=($M45/$C45)^(1-EXP(-$C45*(U$3-2)))*$L45	=($M45/$C45)^(1-EXP(-$C45*(V$3-2)))*$L45	=($M45/$C45)^(1-EXP(-$C45*(W$3-2)))*$L45	=($M45/$C45)^(1-EXP(-$C45*(X$3-2)))*$L45	=($M45/$C45)^(1-EXP(-$C45*(Y$3-2)))*$L45	=($M45/$C45)^(1-EXP(-$C45*(Z$3-2)))*$L45	=($M45/$C45)^(1-EXP(-$C45*(AA$3-2)))*$L45
46			=$L46	=($M46/$C46)^(1-EXP(-$C46*(U$3-2)))*$L46	=($M46/$C46)^(1-EXP(-$C46*(V$3-2)))*$L46	=($M46/$C46)^(1-EXP(-$C46*(W$3-2)))*$L46	=($M46/$C46)^(1-EXP(-$C46*(X$3-2)))*$L46	=($M46/$C46)^(1-EXP(-$C46*(Y$3-2)))*$L46	=($M46/$C46)^(1-EXP(-$C46*(Z$3-2)))*$L46	=($M46/$C46)^(1-EXP(-$C46*(AA$3-2)))*$L46
47			=$L47	=($M47/$C47)^(1-EXP(-$C47*(U$3-2)))*$L47	=($M47/$C47)^(1-EXP(-$C47*(V$3-2)))*$L47	=($M47/$C47)^(1-EXP(-$C47*(W$3-2)))*$L47	=($M47/$C47)^(1-EXP(-$C47*(X$3-2)))*$L47	=($M47/$C47)^(1-EXP(-$C47*(Y$3-2)))*$L47	=($M47/$C47)^(1-EXP(-$C47*(Z$3-2)))*$L47	=($M47/$C47)^(1-EXP(-$C47*(AA$3-2)))*$L47
48			=$L48	=($M48/$C48)^(1-EXP(-$C48*(U$3-2)))*$L48	=($M48/$C48)^(1-EXP(-$C48*(V$3-2)))*$L48	=($M48/$C48)^(1-EXP(-$C48*(W$3-2)))*$L48	=($M48/$C48)^(1-EXP(-$C48*(X$3-2)))*$L48	=($M48/$C48)^(1-EXP(-$C48*(Y$3-2)))*$L48	=($M48/$C48)^(1-EXP(-$C48*(Z$3-2)))*$L48	=($M48/$C48)^(1-EXP(-$C48*(AA$3-2)))*$L48
49			=$L49	=($M49/$C49)^(1-EXP(-$C49*(U$3-2)))*$L49	=($M49/$C49)^(1-EXP(-$C49*(V$3-2)))*$L49	=($M49/$C49)^(1-EXP(-$C49*(W$3-2)))*$L49	=($M49/$C49)^(1-EXP(-$C49*(X$3-2)))*$L49	=($M49/$C49)^(1-EXP(-$C49*(Y$3-2)))*$L49	=($M49/$C49)^(1-EXP(-$C49*(Z$3-2)))*$L49	=($M49/$C49)^(1-EXP(-$C49*(AA$3-2)))*$L49
50			=$L50	=($M50/$C50)^(1-EXP(-$C50*(U$3-2)))*$L50	=($M50/$C50)^(1-EXP(-$C50*(V$3-2)))*$L50	=($M50/$C50)^(1-EXP(-$C50*(W$3-2)))*$L50	=($M50/$C50)^(1-EXP(-$C50*(X$3-2)))*$L50	=($M50/$C50)^(1-EXP(-$C50*(Y$3-2)))*$L50	=($M50/$C50)^(1-EXP(-$C50*(Z$3-2)))*$L50	=($M50/$C50)^(1-EXP(-$C50*(AA$3-2)))*$L50
51			=$L51	=($M51/$C51)^(1-EXP(-$C51*(U$3-2)))*$L51	=($M51/$C51)^(1-EXP(-$C51*(V$3-2)))*$L51	=($M51/$C51)^(1-EXP(-$C51*(W$3-2)))*$L51	=($M51/$C51)^(1-EXP(-$C51*(X$3-2)))*$L51	=($M51/$C51)^(1-EXP(-$C51*(Y$3-2)))*$L51	=($M51/$C51)^(1-EXP(-$C51*(Z$3-2)))*$L51	=($M51/$C51)^(1-EXP(-$C51*(AA$3-2)))*$L51
52			=$L52	=($M52/$C52)^(1-EXP(-$C52*(U$3-2)))*$L52	=($M52/$C52)^(1-EXP(-$C52*(V$3-2)))*$L52	=($M52/$C52)^(1-EXP(-$C52*(W$3-2)))*$L52	=($M52/$C52)^(1-EXP(-$C52*(X$3-2)))*$L52	=($M52/$C52)^(1-EXP(-$C52*(Y$3-2)))*$L52	=($M52/$C52)^(1-EXP(-$C52*(Z$3-2)))*$L52	=($M52/$C52)^(1-EXP(-$C52*(AA$3-2)))*$L52
53			=$L53	=($M53/$C53)^(1-EXP(-$C53*(U$3-2)))*$L53	=($M53/$C53)^(1-EXP(-$C53*(V$3-2)))*$L53	=($M53/$C53)^(1-EXP(-$C53*(W$3-2)))*$L53	=($M53/$C53)^(1-EXP(-$C53*(X$3-2)))*$L53	=($M53/$C53)^(1-EXP(-$C53*(Y$3-2)))*$L53	=($M53/$C53)^(1-EXP(-$C53*(Z$3-2)))*$L53	=($M53/$C53)^(1-EXP(-$C53*(AA$3-2)))*$L53
54			=$L54	=($M54/$C54)^(1-EXP(-$C54*(U$3-2)))*$L54	=($M54/$C54)^(1-EXP(-$C54*(V$3-2)))*$L54	=($M54/$C54)^(1-EXP(-$C54*(W$3-2)))*$L54	=($M54/$C54)^(1-EXP(-$C54*(X$3-2)))*$L54	=($M54/$C54)^(1-EXP(-$C54*(Y$3-2)))*$L54	=($M54/$C54)^(1-EXP(-$C54*(Z$3-2)))*$L54	=($M54/$C54)^(1-EXP(-$C54*(AA$3-2)))*$L54
55			=$L55	=($M55/$C55)^(1-EXP(-$C55*(U$3-2)))*$L55	=($M55/$C55)^(1-EXP(-$C55*(V$3-2)))*$L55	=($M55/$C55)^(1-EXP(-$C55*(W$3-2)))*$L55	=($M55/$C55)^(1-EXP(-$C55*(X$3-2)))*$L55	=($M55/$C55)^(1-EXP(-$C55*(Y$3-2)))*$L55	=($M55/$C55)^(1-EXP(-$C55*(Z$3-2)))*$L55	=($M55/$C55)^(1-EXP(-$C55*(AA$3-2)))*$L55
56			=$L56	=($M56/$C56)^(1-EXP(-$C56*(U$3-2)))*$L56	=($M56/$C56)^(1-EXP(-$C56*(V$3-2)))*$L56	=($M56/$C56)^(1-EXP(-$C56*(W$3-2)))*$L56	=($M56/$C56)^(1-EXP(-$C56*(X$3-2)))*$L56	=($M56/$C56)^(1-EXP(-$C56*(Y$3-2)))*$L56	=($M56/$C56)^(1-EXP(-$C56*(Z$3-2)))*$L56	=($M56/$C56)^(1-EXP(-$C56*(AA$3-2)))*$L56
57			=$L57	=($M57/$C57)^(1-EXP(-$C57*(U$3-2)))*$L57	=($M57/$C57)^(1-EXP(-$C57*(V$3-2)))*$L57	=($M57/$C57)^(1-EXP(-$C57*(W$3-2)))*$L57	=($M57/$C57)^(1-EXP(-$C57*(X$3-2)))*$L57	=($M57/$C57)^(1-EXP(-$C57*(Y$3-2)))*$L57	=($M57/$C57)^(1-EXP(-$C57*(Z$3-2)))*$L57	=($M57/$C57)^(1-EXP(-$C57*(AA$3-2)))*$L57
58			=$L58	=($M58/$C58)^(1-EXP(-$C58*(U$3-2)))*$L58	=($M58/$C58)^(1-EXP(-$C58*(V$3-2)))*$L58	=($M58/$C58)^(1-EXP(-$C58*(W$3-2)))*$L58	=($M58/$C58)^(1-EXP(-$C58*(X$3-2)))*$L58	=($M58/$C58)^(1-EXP(-$C58*(Y$3-2)))*$L58	=($M58/$C58)^(1-EXP(-$C58*(Z$3-2)))*$L58	=($M58/$C58)^(1-EXP(-$C58*(AA$3-2)))*$L58
59										
60										
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75										

	AB	AC	AD	AE	AF	AG	AH	AI
1								
2			Activity in Containment at Given Timesteps (Ci-hours)					
3	72	96	120	150	200	240	300	360
4								
5	=($M5/$C5)*(1-EXP(-$C5*(AB$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AC$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AD$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AE$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AF$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AG$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AH$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AI$3-2)))+$L5
6	=($M6/$C6)*(1-EXP(-$C6*(AB$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AC$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AD$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AE$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AF$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AG$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AH$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AI$3-2)))+$L6
7	=($M7/$C7)*(1-EXP(-$C7*(AB$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AC$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AD$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AE$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AF$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AG$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AH$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AI$3-2)))+$L7
8	=($M8/$C8)*(1-EXP(-$C8*(AB$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AC$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AD$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AE$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AF$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AG$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AH$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AI$3-2)))+$L8
9	=($M9/$C9)*(1-EXP(-$C9*(AB$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AC$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AD$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AE$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AF$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AG$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AH$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AI$3-2)))+$L9
10	=($M10/$C10)*(1-EXP(-$C10*(AB$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AC$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AD$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AE$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AF$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AG$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AH$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AI$3-2)))+$L10
11	=($M11/$C11)*(1-EXP(-$C11*(AB$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AC$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AD$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AE$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AF$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AG$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AH$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AI$3-2)))+$L11
12	=($M12/$C12)*(1-EXP(-$C12*(AB$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AC$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AD$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AE$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AF$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AG$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AH$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AI$3-2)))+$L12
13	=($M13/$C13)*(1-EXP(-$C13*(AB$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AC$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AD$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AE$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AF$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AG$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AH$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AI$3-2)))+$L13
14	=($M14/$C14)*(1-EXP(-$C14*(AB$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AC$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AD$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AE$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AF$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AG$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AH$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AI$3-2)))+$L14
15	=($M15/$C15)*(1-EXP(-$C15*(AB$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AC$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AD$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AE$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AF$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AG$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AH$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AI$3-2)))+$L15
16	=($M16/$C16)*(1-EXP(-$C16*(AB$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AC$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AD$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AE$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AF$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AG$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AH$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AI$3-2)))+$L16
17	=($M17/$C17)*(1-EXP(-$C17*(AB$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AC$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AD$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AE$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AF$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AG$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AH$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AI$3-2)))+$L17
18	=($M18/$C18)*(1-EXP(-$C18*(AB$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AC$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AD$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AE$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AF$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AG$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AH$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AI$3-2)))+$L18
19	=($M19/$C19)*(1-EXP(-$C19*(AB$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AC$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AD$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AE$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AF$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AG$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AH$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AI$3-2)))+$L19
20	=($M20/$C20)*(1-EXP(-$C20*(AB$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AC$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AD$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AE$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AF$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AG$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AH$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AI$3-2)))+$L20
21	=($M21/$C21)*(1-EXP(-$C21*(AB$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AC$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AD$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AE$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AF$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AG$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AH$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AI$3-2)))+$L21
22	=($M22/$C22)*(1-EXP(-$C22*(AB$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AC$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AD$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AE$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AF$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AG$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AH$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AI$3-2)))+$L22
23	=($M23/$C23)*(1-EXP(-$C23*(AB$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AC$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AD$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AE$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AF$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AG$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AH$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AI$3-2)))+$L23
24	=($M24/$C24)*(1-EXP(-$C24*(AB$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AC$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AD$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AE$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AF$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AG$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AH$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AI$3-2)))+$L24
25	=($M25/$C25)*(1-EXP(-$C25*(AB$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AC$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AD$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AE$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AF$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AG$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AH$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AI$3-2)))+$L25
26	=($M26/$C26)*(1-EXP(-$C26*(AB$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AC$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AD$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AE$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AF$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AG$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AH$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AI$3-2)))+$L26
27	=($M27/$C27)*(1-EXP(-$C27*(AB$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AC$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AD$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AE$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AF$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AG$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AH$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AI$3-2)))+$L27
28	=($M28/$C28)*(1-EXP(-$C28*(AB$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AC$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AD$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AE$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AF$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AG$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AH$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AI$3-2)))+$L28
29	=($M29/$C29)*(1-EXP(-$C29*(AB$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AC$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AD$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AE$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AF$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AG$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AH$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AI$3-2)))+$L29
30	=($M30/$C30)*(1-EXP(-$C30*(AB$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AC$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AD$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AE$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AF$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AG$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AH$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AI$3-2)))+$L30
31	=($M31/$C31)*(1-EXP(-$C31*(AB$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AC$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AD$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AE$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AF$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AG$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AH$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AI$3-2)))+$L31
32	=($M32/$C32)*(1-EXP(-$C32*(AB$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AC$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AD$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AE$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AF$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AG$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AH$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AI$3-2)))+$L32
33	=($M33/$C33)*(1-EXP(-$C33*(AB$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AC$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AD$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AE$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AF$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AG$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AH$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AI$3-2)))+$L33
34	=($M34/$C34)*(1-EXP(-$C34*(AB$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AC$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AD$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AE$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AF$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AG$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AH$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AI$3-2)))+$L34
35	=($M35/$C35)*(1-EXP(-$C35*(AB$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AC$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AD$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AE$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AF$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AG$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AH$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AI$3-2)))+$L35
36	=($M36/$C36)*(1-EXP(-$C36*(AB$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AC$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AD$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AE$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AF$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AG$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AH$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AI$3-2)))+$L36
37	=($M37/$C37)*(1-EXP(-$C37*(AB$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AC$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AD$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AE$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AF$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AG$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AH$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AI$3-2)))+$L37
38	=($M38/$C38)*(1-EXP(-$C38*(AB$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AC$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AD$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AE$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AF$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AG$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AH$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AI$3-2)))+$L38
39	=($M39/$C39)*(1-EXP(-$C39*(AB$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AC$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AD$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AE$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AF$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AG$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AH$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AI$3-2)))+$L39
40	=($M40/$C40)*(1-EXP(-$C40*(AB$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AC$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AD$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AE$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AF$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AG$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AH$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AI$3-2)))+$L40
41	=($M41/$C41)*(1-EXP(-$C41*(AB$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AC$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AD$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AE$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AF$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AG$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AH$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AI$3-2)))+$L41
42	=($M42/$C42)*(1-EXP(-$C42*(AB$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AC$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AD$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AE$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AF$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AG$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AH$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AI$3-2)))+$L42
43	=($M43/$C43)*(1-EXP(-$C43*(AB$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AC$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AD$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AE$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AF$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AG$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AH$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AI$3-2)))+$L43
44	=($M44/$C44)*(1-EXP(-$C44*(AB$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AC$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AD$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AE$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AF$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AG$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AH$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AI$3-2)))+$L44
45	=($M45/$C45)*(1-EXP(-$C45*(AB$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AC$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AD$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AE$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AF$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AG$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AH$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AI$3-2)))+$L45
46	=($M46/$C46)*(1-EXP(-$C46*(AB$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AC$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AD$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AE$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AF$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AG$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AH$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AI$3-2)))+$L46
47	=($M47/$C47)*(1-EXP(-$C47*(AB$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AC$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AD$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AE$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AF$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AG$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AH$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AI$3-2)))+$L47
48	=($M48/$C48)*(1-EXP(-$C48*(AB$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AC$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AD$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AE$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AF$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AG$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AH$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AI$3-2)))+$L48
49	=($M49/$C49)*(1-EXP(-$C49*(AB$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AC$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AD$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AE$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AF$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AG$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AH$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AI$3-2)))+$L49
50	=($M50/$C50)*(1-EXP(-$C50*(AB$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AC$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AD$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AE$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AF$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AG$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AH$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AI$3-2)))+$L50
51	=($M51/$C51)*(1-EXP(-$C51*(AB$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AC$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AD$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AE$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AF$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AG$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AH$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AI$3-2)))+$L51
52	=($M52/$C52)*(1-EXP(-$C52*(AB$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AC$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AD$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AE$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AF$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AG$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AH$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AI$3-2)))+$L52
53	=($M53/$C53)*(1-EXP(-$C53*(AB$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AC$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AD$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AE$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AF$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AG$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AH$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AI$3-2)))+$L53
54	=($M54/$C54)*(1-EXP(-$C54*(AB$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AC$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AD$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AE$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AF$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AG$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AH$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AI$3-2)))+$L54
55	=($M55/$C55)*(1-EXP(-$C55*(AB$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AC$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AD$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AE$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AF$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AG$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AH$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AI$3-2)))+$L55
56	=($M56/$C56)*(1-EXP(-$C56*(AB$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AC$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AD$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AE$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AF$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AG$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AH$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AI$3-2)))+$L56
57	=($M57/$C57)*(1-EXP(-$C57*(AB$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AC$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AD$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AE$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AF$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AG$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AH$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AI$3-2)))+$L57
58	=($M58/$C58)*(1-EXP(-$C58*(AB$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AC$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AD$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AE$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AF$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AG$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AH$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AI$3-2)))+$L58
59								
60								
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75								

	AJ	AK	AL	AM	AN	AO
1						
2						
3	400	480	600	700	720	
4						
5	=($M5/$C5)*(1-EXP(-$C5*(AJ$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AK$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AL$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AM$3-2)))+$L5	=($M5/$C5)*(1-EXP(-$C5*(AN$3-2)))+$L5	
6	=($M6/$C6)*(1-EXP(-$C6*(AJ$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AK$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AL$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AM$3-2)))+$L6	=($M6/$C6)*(1-EXP(-$C6*(AN$3-2)))+$L6	
7	=($M7/$C7)*(1-EXP(-$C7*(AJ$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AK$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AL$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AM$3-2)))+$L7	=($M7/$C7)*(1-EXP(-$C7*(AN$3-2)))+$L7	
8	=($M8/$C8)*(1-EXP(-$C8*(AJ$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AK$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AL$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AM$3-2)))+$L8	=($M8/$C8)*(1-EXP(-$C8*(AN$3-2)))+$L8	
9	=($M9/$C9)*(1-EXP(-$C9*(AJ$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AK$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AL$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AM$3-2)))+$L9	=($M9/$C9)*(1-EXP(-$C9*(AN$3-2)))+$L9	
10	=($M10/$C10)*(1-EXP(-$C10*(AJ$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AK$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AL$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AM$3-2)))+$L10	=($M10/$C10)*(1-EXP(-$C10*(AN$3-2)))+$L10	
11	=($M11/$C11)*(1-EXP(-$C11*(AJ$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AK$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AL$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AM$3-2)))+$L11	=($M11/$C11)*(1-EXP(-$C11*(AN$3-2)))+$L11	
12	=($M12/$C12)*(1-EXP(-$C12*(AJ$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AK$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AL$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AM$3-2)))+$L12	=($M12/$C12)*(1-EXP(-$C12*(AN$3-2)))+$L12	
13	=($M13/$C13)*(1-EXP(-$C13*(AJ$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AK$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AL$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AM$3-2)))+$L13	=($M13/$C13)*(1-EXP(-$C13*(AN$3-2)))+$L13	
14	=($M14/$C14)*(1-EXP(-$C14*(AJ$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AK$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AL$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AM$3-2)))+$L14	=($M14/$C14)*(1-EXP(-$C14*(AN$3-2)))+$L14	
15	=($M15/$C15)*(1-EXP(-$C15*(AJ$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AK$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AL$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AM$3-2)))+$L15	=($M15/$C15)*(1-EXP(-$C15*(AN$3-2)))+$L15	
16	=($M16/$C16)*(1-EXP(-$C16*(AJ$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AK$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AL$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AM$3-2)))+$L16	=($M16/$C16)*(1-EXP(-$C16*(AN$3-2)))+$L16	
17	=($M17/$C17)*(1-EXP(-$C17*(AJ$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AK$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AL$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AM$3-2)))+$L17	=($M17/$C17)*(1-EXP(-$C17*(AN$3-2)))+$L17	
18	=($M18/$C18)*(1-EXP(-$C18*(AJ$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AK$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AL$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AM$3-2)))+$L18	=($M18/$C18)*(1-EXP(-$C18*(AN$3-2)))+$L18	
19	=($M19/$C19)*(1-EXP(-$C19*(AJ$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AK$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AL$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AM$3-2)))+$L19	=($M19/$C19)*(1-EXP(-$C19*(AN$3-2)))+$L19	
20	=($M20/$C20)*(1-EXP(-$C20*(AJ$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AK$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AL$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AM$3-2)))+$L20	=($M20/$C20)*(1-EXP(-$C20*(AN$3-2)))+$L20	
21	=($M21/$C21)*(1-EXP(-$C21*(AJ$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AK$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AL$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AM$3-2)))+$L21	=($M21/$C21)*(1-EXP(-$C21*(AN$3-2)))+$L21	
22	=($M22/$C22)*(1-EXP(-$C22*(AJ$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AK$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AL$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AM$3-2)))+$L22	=($M22/$C22)*(1-EXP(-$C22*(AN$3-2)))+$L22	
23	=($M23/$C23)*(1-EXP(-$C23*(AJ$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AK$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AL$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AM$3-2)))+$L23	=($M23/$C23)*(1-EXP(-$C23*(AN$3-2)))+$L23	
24	=($M24/$C24)*(1-EXP(-$C24*(AJ$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AK$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AL$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AM$3-2)))+$L24	=($M24/$C24)*(1-EXP(-$C24*(AN$3-2)))+$L24	
25	=($M25/$C25)*(1-EXP(-$C25*(AJ$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AK$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AL$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AM$3-2)))+$L25	=($M25/$C25)*(1-EXP(-$C25*(AN$3-2)))+$L25	
26	=($M26/$C26)*(1-EXP(-$C26*(AJ$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AK$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AL$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AM$3-2)))+$L26	=($M26/$C26)*(1-EXP(-$C26*(AN$3-2)))+$L26	
27	=($M27/$C27)*(1-EXP(-$C27*(AJ$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AK$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AL$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AM$3-2)))+$L27	=($M27/$C27)*(1-EXP(-$C27*(AN$3-2)))+$L27	
28	=($M28/$C28)*(1-EXP(-$C28*(AJ$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AK$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AL$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AM$3-2)))+$L28	=($M28/$C28)*(1-EXP(-$C28*(AN$3-2)))+$L28	
29	=($M29/$C29)*(1-EXP(-$C29*(AJ$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AK$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AL$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AM$3-2)))+$L29	=($M29/$C29)*(1-EXP(-$C29*(AN$3-2)))+$L29	
30	=($M30/$C30)*(1-EXP(-$C30*(AJ$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AK$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AL$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AM$3-2)))+$L30	=($M30/$C30)*(1-EXP(-$C30*(AN$3-2)))+$L30	
31	=($M31/$C31)*(1-EXP(-$C31*(AJ$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AK$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AL$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AM$3-2)))+$L31	=($M31/$C31)*(1-EXP(-$C31*(AN$3-2)))+$L31	
32	=($M32/$C32)*(1-EXP(-$C32*(AJ$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AK$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AL$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AM$3-2)))+$L32	=($M32/$C32)*(1-EXP(-$C32*(AN$3-2)))+$L32	
33	=($M33/$C33)*(1-EXP(-$C33*(AJ$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AK$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AL$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AM$3-2)))+$L33	=($M33/$C33)*(1-EXP(-$C33*(AN$3-2)))+$L33	
34	=($M34/$C34)*(1-EXP(-$C34*(AJ$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AK$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AL$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AM$3-2)))+$L34	=($M34/$C34)*(1-EXP(-$C34*(AN$3-2)))+$L34	
35	=($M35/$C35)*(1-EXP(-$C35*(AJ$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AK$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AL$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AM$3-2)))+$L35	=($M35/$C35)*(1-EXP(-$C35*(AN$3-2)))+$L35	
36	=($M36/$C36)*(1-EXP(-$C36*(AJ$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AK$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AL$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AM$3-2)))+$L36	=($M36/$C36)*(1-EXP(-$C36*(AN$3-2)))+$L36	
37	=($M37/$C37)*(1-EXP(-$C37*(AJ$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AK$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AL$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AM$3-2)))+$L37	=($M37/$C37)*(1-EXP(-$C37*(AN$3-2)))+$L37	
38	=($M38/$C38)*(1-EXP(-$C38*(AJ$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AK$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AL$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AM$3-2)))+$L38	=($M38/$C38)*(1-EXP(-$C38*(AN$3-2)))+$L38	
39	=($M39/$C39)*(1-EXP(-$C39*(AJ$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AK$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AL$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AM$3-2)))+$L39	=($M39/$C39)*(1-EXP(-$C39*(AN$3-2)))+$L39	
40	=($M40/$C40)*(1-EXP(-$C40*(AJ$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AK$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AL$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AM$3-2)))+$L40	=($M40/$C40)*(1-EXP(-$C40*(AN$3-2)))+$L40	
41	=($M41/$C41)*(1-EXP(-$C41*(AJ$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AK$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AL$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AM$3-2)))+$L41	=($M41/$C41)*(1-EXP(-$C41*(AN$3-2)))+$L41	
42	=($M42/$C42)*(1-EXP(-$C42*(AJ$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AK$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AL$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AM$3-2)))+$L42	=($M42/$C42)*(1-EXP(-$C42*(AN$3-2)))+$L42	
43	=($M43/$C43)*(1-EXP(-$C43*(AJ$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AK$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AL$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AM$3-2)))+$L43	=($M43/$C43)*(1-EXP(-$C43*(AN$3-2)))+$L43	
44	=($M44/$C44)*(1-EXP(-$C44*(AJ$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AK$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AL$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AM$3-2)))+$L44	=($M44/$C44)*(1-EXP(-$C44*(AN$3-2)))+$L44	
45	=($M45/$C45)*(1-EXP(-$C45*(AJ$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AK$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AL$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AM$3-2)))+$L45	=($M45/$C45)*(1-EXP(-$C45*(AN$3-2)))+$L45	
46	=($M46/$C46)*(1-EXP(-$C46*(AJ$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AK$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AL$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AM$3-2)))+$L46	=($M46/$C46)*(1-EXP(-$C46*(AN$3-2)))+$L46	
47	=($M47/$C47)*(1-EXP(-$C47*(AJ$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AK$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AL$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AM$3-2)))+$L47	=($M47/$C47)*(1-EXP(-$C47*(AN$3-2)))+$L47	
48	=($M48/$C48)*(1-EXP(-$C48*(AJ$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AK$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AL$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AM$3-2)))+$L48	=($M48/$C48)*(1-EXP(-$C48*(AN$3-2)))+$L48	
49	=($M49/$C49)*(1-EXP(-$C49*(AJ$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AK$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AL$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AM$3-2)))+$L49	=($M49/$C49)*(1-EXP(-$C49*(AN$3-2)))+$L49	
50	=($M50/$C50)*(1-EXP(-$C50*(AJ$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AK$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AL$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AM$3-2)))+$L50	=($M50/$C50)*(1-EXP(-$C50*(AN$3-2)))+$L50	
51	=($M51/$C51)*(1-EXP(-$C51*(AJ$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AK$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AL$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AM$3-2)))+$L51	=($M51/$C51)*(1-EXP(-$C51*(AN$3-2)))+$L51	
52	=($M52/$C52)*(1-EXP(-$C52*(AJ$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AK$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AL$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AM$3-2)))+$L52	=($M52/$C52)*(1-EXP(-$C52*(AN$3-2)))+$L52	
53	=($M53/$C53)*(1-EXP(-$C53*(AJ$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AK$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AL$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AM$3-2)))+$L53	=($M53/$C53)*(1-EXP(-$C53*(AN$3-2)))+$L53	
54	=($M54/$C54)*(1-EXP(-$C54*(AJ$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AK$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AL$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AM$3-2)))+$L54	=($M54/$C54)*(1-EXP(-$C54*(AN$3-2)))+$L54	
55	=($M55/$C55)*(1-EXP(-$C55*(AJ$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AK$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AL$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AM$3-2)))+$L55	=($M55/$C55)*(1-EXP(-$C55*(AN$3-2)))+$L55	
56	=($M56/$C56)*(1-EXP(-$C56*(AJ$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AK$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AL$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AM$3-2)))+$L56	=($M56/$C56)*(1-EXP(-$C56*(AN$3-2)))+$L56	
57	=($M57/$C57)*(1-EXP(-$C57*(AJ$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AK$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AL$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AM$3-2)))+$L57	=($M57/$C57)*(1-EXP(-$C57*(AN$3-2)))+$L57	
58	=($M58/$C58)*(1-EXP(-$C58*(AJ$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AK$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AL$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AM$3-2)))+$L58	=($M58/$C58)*(1-EXP(-$C58*(AN$3-2)))+$L58	
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	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE
1																
2												Gamma (Photon) Radiation Energy in Containment at Given Timesteps (MeV)				
3		1	2	2.0336	3	5	12	18	24	48	72	96	120	150	200	240
4																
5			=I5*$O5	=U5*$O5	=V5*$O5	=W5*$O5	=X5*$O5	=Y5*$O5	=Z5*$O5	=AA5*$O5	=AB5*$O5	=AC5*$O5	=AD5*$O5	=AE5*$O5	=AF5*$O5	=AG5*$O5
6			=I6*$O6	=U6*$O6	=V6*$O6	=W6*$O6	=X6*$O6	=Y6*$O6	=Z6*$O6	=AA6*$O6	=AB6*$O6	=AC6*$O6	=AD6*$O6	=AE6*$O6	=AF6*$O6	=AG6*$O6
7			=I7*$O7	=U7*$O7	=V7*$O7	=W7*$O7	=X7*$O7	=Y7*$O7	=Z7*$O7	=AA7*$O7	=AB7*$O7	=AC7*$O7	=AD7*$O7	=AE7*$O7	=AF7*$O7	=AG7*$O7
8			=I8*$O8	=U8*$O8	=V8*$O8	=W8*$O8	=X8*$O8	=Y8*$O8	=Z8*$O8	=AA8*$O8	=AB8*$O8	=AC8*$O8	=AD8*$O8	=AE8*$O8	=AF8*$O8	=AG8*$O8
9			=I9*$O9	=U9*$O9	=V9*$O9	=W9*$O9	=X9*$O9	=Y9*$O9	=Z9*$O9	=AA9*$O9	=AB9*$O9	=AC9*$O9	=AD9*$O9	=AE9*$O9	=AF9*$O9	=AG9*$O9
10			=I10*$O10	=U10*$O10	=V10*$O10	=W10*$O10	=X10*$O10	=Y10*$O10	=Z10*$O10	=AA10*$O10	=AB10*$O10	=AC10*$O10	=AD10*$O10	=AE10*$O10	=AF10*$O10	=AG10*$O10
11			=I11*$O11	=U11*$O11	=V11*$O11	=W11*$O11	=X11*$O11	=Y11*$O11	=Z11*$O11	=AA11*$O11	=AB11*$O11	=AC11*$O11	=AD11*$O11	=AE11*$O11	=AF11*$O11	=AG11*$O11
12			=I12*$O12	=U12*$O12	=V12*$O12	=W12*$O12	=X12*$O12	=Y12*$O12	=Z12*$O12	=AA12*$O12	=AB12*$O12	=AC12*$O12	=AD12*$O12	=AE12*$O12	=AF12*$O12	=AG12*$O12
13			=I13*$O13	=U13*$O13	=V13*$O13	=W13*$O13	=X13*$O13	=Y13*$O13	=Z13*$O13	=AA13*$O13	=AB13*$O13	=AC13*$O13	=AD13*$O13	=AE13*$O13	=AF13*$O13	=AG13*$O13
14			=I14*$O14	=U14*$O14	=V14*$O14	=W14*$O14	=X14*$O14	=Y14*$O14	=Z14*$O14	=AA14*$O14	=AB14*$O14	=AC14*$O14	=AD14*$O14	=AE14*$O14	=AF14*$O14	=AG14*$O14
15			=I15*$O15	=U15*$O15	=V15*$O15	=W15*$O15	=X15*$O15	=Y15*$O15	=Z15*$O15	=AA15*$O15	=AB15*$O15	=AC15*$O15	=AD15*$O15	=AE15*$O15	=AF15*$O15	=AG15*$O15
16			=I16*$O16	=U16*$O16	=V16*$O16	=W16*$O16	=X16*$O16	=Y16*$O16	=Z16*$O16	=AA16*$O16	=AB16*$O16	=AC16*$O16	=AD16*$O16	=AE16*$O16	=AF16*$O16	=AG16*$O16
17			=I17*$O17	=U17*$O17	=V17*$O17	=W17*$O17	=X17*$O17	=Y17*$O17	=Z17*$O17	=AA17*$O17	=AB17*$O17	=AC17*$O17	=AD17*$O17	=AE17*$O17	=AF17*$O17	=AG17*$O17
18			=I18*$O18	=U18*$O18	=V18*$O18	=W18*$O18	=X18*$O18	=Y18*$O18	=Z18*$O18	=AA18*$O18	=AB18*$O18	=AC18*$O18	=AD18*$O18	=AE18*$O18	=AF18*$O18	=AG18*$O18
19			=I19*$O19	=U19*$O19	=V19*$O19	=W19*$O19	=X19*$O19	=Y19*$O19	=Z19*$O19	=AA19*$O19	=AB19*$O19	=AC19*$O19	=AD19*$O19	=AE19*$O19	=AF19*$O19	=AG19*$O19
20			=I20*$O20	=U20*$O20	=V20*$O20	=W20*$O20	=X20*$O20	=Y20*$O20	=Z20*$O20	=AA20*$O20	=AB20*$O20	=AC20*$O20	=AD20*$O20	=AE20*$O20	=AF20*$O20	=AG20*$O20
21			=I21*$O21	=U21*$O21	=V21*$O21	=W21*$O21	=X21*$O21	=Y21*$O21	=Z21*$O21	=AA21*$O21	=AB21*$O21	=AC21*$O21	=AD21*$O21	=AE21*$O21	=AF21*$O21	=AG21*$O21
22			=I22*$O22	=U22*$O22	=V22*$O22	=W22*$O22	=X22*$O22	=Y22*$O22	=Z22*$O22	=AA22*$O22	=AB22*$O22	=AC22*$O22	=AD22*$O22	=AE22*$O22	=AF22*$O22	=AG22*$O22
23			=I23*$O23	=U23*$O23	=V23*$O23	=W23*$O23	=X23*$O23	=Y23*$O23	=Z23*$O23	=AA23*$O23	=AB23*$O23	=AC23*$O23	=AD23*$O23	=AE23*$O23	=AF23*$O23	=AG23*$O23
24			=I24*$O24	=U24*$O24	=V24*$O24	=W24*$O24	=X24*$O24	=Y24*$O24	=Z24*$O24	=AA24*$O24	=AB24*$O24	=AC24*$O24	=AD24*$O24	=AE24*$O24	=AF24*$O24	=AG24*$O24
25			=I25*$O25	=U25*$O25	=V25*$O25	=W25*$O25	=X25*$O25	=Y25*$O25	=Z25*$O25	=AA25*$O25	=AB25*$O25	=AC25*$O25	=AD25*$O25	=AE25*$O25	=AF25*$O25	=AG25*$O25
26			=I26*$O26	=U26*$O26	=V26*$O26	=W26*$O26	=X26*$O26	=Y26*$O26	=Z26*$O26	=AA26*$O26	=AB26*$O26	=AC26*$O26	=AD26*$O26	=AE26*$O26	=AF26*$O26	=AG26*$O26
27			=I27*$O27	=U27*$O27	=V27*$O27	=W27*$O27	=X27*$O27	=Y27*$O27	=Z27*$O27	=AA27*$O27	=AB27*$O27	=AC27*$O27	=AD27*$O27	=AE27*$O27	=AF27*$O27	=AG27*$O27
28			=I28*$O28	=U28*$O28	=V28*$O28	=W28*$O28	=X28*$O28	=Y28*$O28	=Z28*$O28	=AA28*$O28	=AB28*$O28	=AC28*$O28	=AD28*$O28	=AE28*$O28	=AF28*$O28	=AG28*$O28
29			=I29*$O29	=U29*$O29	=V29*$O29	=W29*$O29	=X29*$O29	=Y29*$O29	=Z29*$O29	=AA29*$O29	=AB29*$O29	=AC29*$O29	=AD29*$O29	=AE29*$O29	=AF29*$O29	=AG29*$O29
30			=I30*$O30	=U30*$O30	=V30*$O30	=W30*$O30	=X30*$O30	=Y30*$O30	=Z30*$O30	=AA30*$O30	=AB30*$O30	=AC30*$O30	=AD30*$O30	=AE30*$O30	=AF30*$O30	=AG30*$O30
31			=I31*$O31	=U31*$O31	=V31*$O31	=W31*$O31	=X31*$O31	=Y31*$O31	=Z31*$O31	=AA31*$O31	=AB31*$O31	=AC31*$O31	=AD31*$O31	=AE31*$O31	=AF31*$O31	=AG31*$O31
32			=I32*$O32	=U32*$O32	=V32*$O32	=W32*$O32	=X32*$O32	=Y32*$O32	=Z32*$O32	=AA32*$O32	=AB32*$O32	=AC32*$O32	=AD32*$O32	=AE32*$O32	=AF32*$O32	=AG32*$O32
33			=I33*$O33	=U33*$O33	=V33*$O33	=W33*$O33	=X33*$O33	=Y33*$O33	=Z33*$O33	=AA33*$O33	=AB33*$O33	=AC33*$O33	=AD33*$O33	=AE33*$O33	=AF33*$O33	=AG33*$O33
34			=I34*$O34	=U34*$O34	=V34*$O34	=W34*$O34	=X34*$O34	=Y34*$O34	=Z34*$O34	=AA34*$O34	=AB34*$O34	=AC34*$O34	=AD34*$O34	=AE34*$O34	=AF34*$O34	=AG34*$O34
35			=I35*$O35	=U35*$O35	=V35*$O35	=W35*$O35	=X35*$O35	=Y35*$O35	=Z35*$O35	=AA35*$O35	=AB35*$O35	=AC35*$O35	=AD35*$O35	=AE35*$O35	=AF35*$O35	=AG35*$O35
36			=I36*$O36	=U36*$O36	=V36*$O36	=W36*$O36	=X36*$O36	=Y36*$O36	=Z36*$O36	=AA36*$O36	=AB36*$O36	=AC36*$O36	=AD36*$O36	=AE36*$O36	=AF36*$O36	=AG36*$O36
37			=I37*$O37	=U37*$O37	=V37*$O37	=W37*$O37	=X37*$O37	=Y37*$O37	=Z37*$O37	=AA37*$O37	=AB37*$O37	=AC37*$O37	=AD37*$O37	=AE37*$O37	=AF37*$O37	=AG37*$O37
38			=I38*$O38	=U38*$O38	=V38*$O38	=W38*$O38	=X38*$O38	=Y38*$O38	=Z38*$O38	=AA38*$O38	=AB38*$O38	=AC38*$O38	=AD38*$O38	=AE38*$O38	=AF38*$O38	=AG38*$O38
39			=I39*$O39	=U39*$O39	=V39*$O39	=W39*$O39	=X39*$O39	=Y39*$O39	=Z39*$O39	=AA39*$O39	=AB39*$O39	=AC39*$O39	=AD39*$O39	=AE39*$O39	=AF39*$O39	=AG39*$O39
40			=I40*$O40	=U40*$O40	=V40*$O40	=W40*$O40	=X40*$O40	=Y40*$O40	=Z40*$O40	=AA40*$O40	=AB40*$O40	=AC40*$O40	=AD40*$O40	=AE40*$O40	=AF40*$O40	=AG40*$O40
41			=I41*$O41	=U41*$O41	=V41*$O41	=W41*$O41	=X41*$O41	=Y41*$O41	=Z41*$O41	=AA41*$O41	=AB41*$O41	=AC41*$O41	=AD41*$O41	=AE41*$O41	=AF41*$O41	=AG41*$O41
42			=I42*$O42	=U42*$O42	=V42*$O42	=W42*$O42	=X42*$O42	=Y42*$O42	=Z42*$O42	=AA42*$O42	=AB42*$O42	=AC42*$O42	=AD42*$O42	=AE42*$O42	=AF42*$O42	=AG42*$O42
43			=I43*$O43	=U43*$O43	=V43*$O43	=W43*$O43	=X43*$O43	=Y43*$O43	=Z43*$O43	=AA43*$O43	=AB43*$O43	=AC43*$O43	=AD43*$O43	=AE43*$O43	=AF43*$O43	=AG43*$O43
44			=I44*$O44	=U44*$O44	=V44*$O44	=W44*$O44	=X44*$O44	=Y44*$O44	=Z44*$O44	=AA44*$O44	=AB44*$O44	=AC44*$O44	=AD44*$O44	=AE44*$O44	=AF44*$O44	=AG44*$O44
45			=I45*$O45	=U45*$O45	=V45*$O45	=W45*$O45	=X45*$O45	=Y45*$O45	=Z45*$O45	=AA45*$O45	=AB45*$O45	=AC45*$O45	=AD45*$O45	=AE45*$O45	=AF45*$O45	=AG45*$O45
46			=I46*$O46	=U46*$O46	=V46*$O46	=W46*$O46	=X46*$O46	=Y46*$O46	=Z46*$O46	=AA46*$O46	=AB46*$O46	=AC46*$O46	=AD46*$O46	=AE46*$O46	=AF46*$O46	=AG46*$O46
47			=I47*$O47	=U47*$O47	=V47*$O47	=W47*$O47	=X47*$O47	=Y47*$O47	=Z47*$O47	=AA47*$O47	=AB47*$O47	=AC47*$O47	=AD47*$O47	=AE47*$O47	=AF47*$O47	=AG47*$O47
48			=I48*$O48	=U48*$O48	=V48*$O48	=W48*$O48	=X48*$O48	=Y48*$O48	=Z48*$O48	=AA48*$O48	=AB48*$O48	=AC48*$O48	=AD48*$O48	=AE48*$O48	=AF48*$O48	=AG48*$O48
49			=I49*$O49	=U49*$O49	=V49*$O49	=W49*$O49	=X49*$O49	=Y49*$O49	=Z49*$O49	=AA49*$O49	=AB49*$O49	=AC49*$O49	=AD49*$O49	=AE49*$O49	=AF49*$O49	=AG49*$O49
50			=I50*$O50	=U50*$O50	=V50*$O50	=W50*$O50	=X50*$O50	=Y50*$O50	=Z50*$O50	=AA50*$O50	=AB50*$O50	=AC50*$O50	=AD50*$O50	=AE50*$O50	=AF50*$O50	=AG50*$O50
51			=I51*$O51	=U51*$O51	=V51*$O51	=W51*$O51	=X51*$O51	=Y51*$O51	=Z51*$O51	=AA51*$O51	=AB51*$O51	=AC51*$O51	=AD51*$O51	=AE51*$O51	=AF51*$O51	=AG51*$O51
52			=I52*$O52	=U52*$O52	=V52*$O52	=W52*$O52	=X52*$O52	=Y52*$O52	=Z52*$O52	=AA52*$O52	=AB52*$O52	=AC52*$O52	=AD52*$O52	=AE52*$O52	=AF52*$O52	=AG52*$O52
53			=I53*$O53	=U53*$O53	=V53*$O53	=W53*$O53	=X53*$O53	=Y53*$O53	=Z53*$O53	=AA53*$O53	=AB53*$O53	=AC53*$O53	=AD53*$O53	=AE53*$O53	=AF53*$O53	=AG53*$O53
54			=I54*$O54	=U54*$O54	=V54*$O54	=W54*$O54	=X54*$O54	=Y54*$O54	=Z54*$O54	=AA54*$O54	=AB54*$O54	=AC54*$O54	=AD54*$O54	=AE54*$O54	=AF54*$O54	=AG54*$O54
55			=I55*$O55	=U55*$O55	=V55*$O55	=W55*$O55	=X55*$O55	=Y55*$O55	=Z55*$O55	=AA55*$O55	=AB55*$O55	=AC55*$O55	=AD55*$O55	=AE55*$O55	=AF55*$O55	=AG55*$O55
56			=I56*$O56	=U56*$O56	=V56*$O56	=W56*$O56	=X56*$O56	=Y56*$O56	=Z56*$O56	=AA56*$O56	=AB56*$O56	=AC56*$O56	=AD56*$O56	=AE56*$O56	=AF56*$O56	=AG56*$O56
57			=I57*$O57	=U57*$O57	=V57*$O57	=W57*$O57	=X57*$O57	=Y57*$O57	=Z57*$O57	=AA57*$O57	=AB57*$O57	=AC57*$O57	=AD57*$O57	=AE57*$O57	=AF57*$O57	=AG57*$O57
58			=I58*$O58	=U58*$O58	=V58*$O58	=W58*$O58	=X58*$O58	=Y58*$O58	=Z58*$O58	=AA58*$O58	=AB58*$O58	=AC58*$O58	=AD58*$O58	=AE58*$O58	=AF58*$O58	=AG58*$O58
59																
60			=SUM(AR5:AR58)	=SUM(AS5:AS58)	=SUM(AT5:AT58)	=SUM(AU5:AU58)	=SUM(AV5:AV58)	=SUM(AW5:AW58)	=SUM(AX5:AX58)	=SUM(AY5:AY58)	=SUM(AZ5:AZ58)	=SUM(BA5:BA58)	=SUM(BB5:BB58)	=SUM(BC5:BC58)	=SUM(BD5:BD58)	=SUM(BE5:BE58)
61																
62																
63												TOTAL Integrated Gamma Energy in Suppression Pool Water at Given Timesteps (MeV/cm³)				
64			=AR60/$F$64	=AS60/$F$64	=AT60/$F$64	=AU60/$F$64	=AV60/$F$64	=AW60/$F$64	=AX60/$F$64	=AY60/$F$64	=AZ60/$F$64	=BA60/$F$64	=BB60/$F$64	=BC60/$F$64	=BD60/$F$64	=BE60/$F$64
65																
66												TOTAL Integrated Gamma Dose in Pool at Given Timesteps (Mrad)				
67			=AR64*$F$65	=AS64*$F$65	=AT64*$F$65	=AU64*$F$65	=AV64*$F$65	=AW64*$F$65	=AX64*$F$65	=AY64*$F$65	=AZ64*$F$65	=BA64*$F$65	=BB64*$F$65	=BC64*$F$65	=BD64*$F$65	=BE64*$F$65
68																
69																
70												TOTAL Gamma + Beta Pool Dose (Mrad)				
71			=AR67+BP67	=AS67+BQ67	=AT67+BR67	=AU67+BS67	=AV67+BT67	=AW67+BU67	=AX67+BV67	=AY67+BW67	=AZ67+BX67	=BA67+BY67	=BB67+BZ67	=BC67+CA67	=BD67+CB67	=BE67+CC67
72																
73																
74																
75																

	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ
1												
2												
3	300	360	400	480	600	700	720			1	2	2.0336
4												
5	=AH5*$O5	=AI5*$O5	=AJ5*$O5	=AK5*$O5	=AL5*$O5	=AM5*$O5	=AN5*$O5				=T5*$Q5	=U5*$Q5
6	=AH6*$O6	=AI6*$O6	=AJ6*$O6	=AK6*$O6	=AL6*$O6	=AM6*$O6	=AN6*$O6				=T6*$Q6	=U6*$Q6
7	=AH7*$O7	=AI7*$O7	=AJ7*$O7	=AK7*$O7	=AL7*$O7	=AM7*$O7	=AN7*$O7				=T7*$Q7	=U7*$Q7
8	=AH8*$O8	=AI8*$O8	=AJ8*$O8	=AK8*$O8	=AL8*$O8	=AM8*$O8	=AN8*$O8				=T8*$Q8	=U8*$Q8
9	=AH9*$O9	=AI9*$O9	=AJ9*$O9	=AK9*$O9	=AL9*$O9	=AM9*$O9	=AN9*$O9				=T9*$Q9	=U9*$Q9
10	=AH10*$O10	=AI10*$O10	=AJ10*$O10	=AK10*$O10	=AL10*$O10	=AM10*$O10	=AN10*$O10				=T10*$Q10	=U10*$Q10
11	=AH11*$O11	=AI11*$O11	=AJ11*$O11	=AK11*$O11	=AL11*$O11	=AM11*$O11	=AN11*$O11				=T11*$Q11	=U11*$Q11
12	=AH12*$O12	=AI12*$O12	=AJ12*$O12	=AK12*$O12	=AL12*$O12	=AM12*$O12	=AN12*$O12				=T12*$Q12	=U12*$Q12
13	=AH13*$O13	=AI13*$O13	=AJ13*$O13	=AK13*$O13	=AL13*$O13	=AM13*$O13	=AN13*$O13				=T13*$Q13	=U13*$Q13
14	=AH14*$O14	=AI14*$O14	=AJ14*$O14	=AK14*$O14	=AL14*$O14	=AM14*$O14	=AN14*$O14				=T14*$Q14	=U14*$Q14
15	=AH15*$O15	=AI15*$O15	=AJ15*$O15	=AK15*$O15	=AL15*$O15	=AM15*$O15	=AN15*$O15				=T15*$Q15	=U15*$Q15
16	=AH16*$O16	=AI16*$O16	=AJ16*$O16	=AK16*$O16	=AL16*$O16	=AM16*$O16	=AN16*$O16				=T16*$Q16	=U16*$Q16
17	=AH17*$O17	=AI17*$O17	=AJ17*$O17	=AK17*$O17	=AL17*$O17	=AM17*$O17	=AN17*$O17				=T17*$Q17	=U17*$Q17
18	=AH18*$O18	=AI18*$O18	=AJ18*$O18	=AK18*$O18	=AL18*$O18	=AM18*$O18	=AN18*$O18				=T18*$Q18	=U18*$Q18
19	=AH19*$O19	=AI19*$O19	=AJ19*$O19	=AK19*$O19	=AL19*$O19	=AM19*$O19	=AN19*$O19				=T19*$Q19	=U19*$Q19
20	=AH20*$O20	=AI20*$O20	=AJ20*$O20	=AK20*$O20	=AL20*$O20	=AM20*$O20	=AN20*$O20				=T20*$Q20	=U20*$Q20
21	=AH21*$O21	=AI21*$O21	=AJ21*$O21	=AK21*$O21	=AL21*$O21	=AM21*$O21	=AN21*$O21				=T21*$Q21	=U21*$Q21
22	=AH22*$O22	=AI22*$O22	=AJ22*$O22	=AK22*$O22	=AL22*$O22	=AM22*$O22	=AN22*$O22				=T22*$Q22	=U22*$Q22
23	=AH23*$O23	=AI23*$O23	=AJ23*$O23	=AK23*$O23	=AL23*$O23	=AM23*$O23	=AN23*$O23				=T23*$Q23	=U23*$Q23
24	=AH24*$O24	=AI24*$O24	=AJ24*$O24	=AK24*$O24	=AL24*$O24	=AM24*$O24	=AN24*$O24				=T24*$Q24	=U24*$Q24
25	=AH25*$O25	=AI25*$O25	=AJ25*$O25	=AK25*$O25	=AL25*$O25	=AM25*$O25	=AN25*$O25				=T25*$Q25	=U25*$Q25
26	=AH26*$O26	=AI26*$O26	=AJ26*$O26	=AK26*$O26	=AL26*$O26	=AM26*$O26	=AN26*$O26				=T26*$Q26	=U26*$Q26
27	=AH27*$O27	=AI27*$O27	=AJ27*$O27	=AK27*$O27	=AL27*$O27	=AM27*$O27	=AN27*$O27				=T27*$Q27	=U27*$Q27
28	=AH28*$O28	=AI28*$O28	=AJ28*$O28	=AK28*$O28	=AL28*$O28	=AM28*$O28	=AN28*$O28				=T28*$Q28	=U28*$Q28
29	=AH29*$O29	=AI29*$O29	=AJ29*$O29	=AK29*$O29	=AL29*$O29	=AM29*$O29	=AN29*$O29				=T29*$Q29	=U29*$Q29
30	=AH30*$O30	=AI30*$O30	=AJ30*$O30	=AK30*$O30	=AL30*$O30	=AM30*$O30	=AN30*$O30				=T30*$Q30	=U30*$Q30
31	=AH31*$O31	=AI31*$O31	=AJ31*$O31	=AK31*$O31	=AL31*$O31	=AM31*$O31	=AN31*$O31				=T31*$Q31	=U31*$Q31
32	=AH32*$O32	=AI32*$O32	=AJ32*$O32	=AK32*$O32	=AL32*$O32	=AM32*$O32	=AN32*$O32				=T32*$Q32	=U32*$Q32
33	=AH33*$O33	=AI33*$O33	=AJ33*$O33	=AK33*$O33	=AL33*$O33	=AM33*$O33	=AN33*$O33				=T33*$Q33	=U33*$Q33
34	=AH34*$O34	=AI34*$O34	=AJ34*$O34	=AK34*$O34	=AL34*$O34	=AM34*$O34	=AN34*$O34				=T34*$Q34	=U34*$Q34
35	=AH35*$O35	=AI35*$O35	=AJ35*$O35	=AK35*$O35	=AL35*$O35	=AM35*$O35	=AN35*$O35				=T35*$Q35	=U35*$Q35
36	=AH36*$O36	=AI36*$O36	=AJ36*$O36	=AK36*$O36	=AL36*$O36	=AM36*$O36	=AN36*$O36				=T36*$Q36	=U36*$Q36
37	=AH37*$O37	=AI37*$O37	=AJ37*$O37	=AK37*$O37	=AL37*$O37	=AM37*$O37	=AN37*$O37				=T37*$Q37	=U37*$Q37
38	=AH38*$O38	=AI38*$O38	=AJ38*$O38	=AK38*$O38	=AL38*$O38	=AM38*$O38	=AN38*$O38				=T38*$Q38	=U38*$Q38
39	=AH39*$O39	=AI39*$O39	=AJ39*$O39	=AK39*$O39	=AL39*$O39	=AM39*$O39	=AN39*$O39				=T39*$Q39	=U39*$Q39
40	=AH40*$O40	=AI40*$O40	=AJ40*$O40	=AK40*$O40	=AL40*$O40	=AM40*$O40	=AN40*$O40				=T40*$Q40	=U40*$Q40
41	=AH41*$O41	=AI41*$O41	=AJ41*$O41	=AK41*$O41	=AL41*$O41	=AM41*$O41	=AN41*$O41				=T41*$Q41	=U41*$Q41
42	=AH42*$O42	=AI42*$O42	=AJ42*$O42	=AK42*$O42	=AL42*$O42	=AM42*$O42	=AN42*$O42				=T42*$Q42	=U42*$Q42
43	=AH43*$O43	=AI43*$O43	=AJ43*$O43	=AK43*$O43	=AL43*$O43	=AM43*$O43	=AN43*$O43				=T43*$Q43	=U43*$Q43
44	=AH44*$O44	=AI44*$O44	=AJ44*$O44	=AK44*$O44	=AL44*$O44	=AM44*$O44	=AN44*$O44				=T44*$Q44	=U44*$Q44
45	=AH45*$O45	=AI45*$O45	=AJ45*$O45	=AK45*$O45	=AL45*$O45	=AM45*$O45	=AN45*$O45				=T45*$Q45	=U45*$Q45
46	=AH46*$O46	=AI46*$O46	=AJ46*$O46	=AK46*$O46	=AL46*$O46	=AM46*$O46	=AN46*$O46				=T46*$Q46	=U46*$Q46
47	=AH47*$O47	=AI47*$O47	=AJ47*$O47	=AK47*$O47	=AL47*$O47	=AM47*$O47	=AN47*$O47				=T47*$Q47	=U47*$Q47
48	=AH48*$O48	=AI48*$O48	=AJ48*$O48	=AK48*$O48	=AL48*$O48	=AM48*$O48	=AN48*$O48				=T48*$Q48	=U48*$Q48
49	=AH49*$O49	=AI49*$O49	=AJ49*$O49	=AK49*$O49	=AL49*$O49	=AM49*$O49	=AN49*$O49				=T49*$Q49	=U49*$Q49
50	=AH50*$O50	=AI50*$O50	=AJ50*$O50	=AK50*$O50	=AL50*$O50	=AM50*$O50	=AN50*$O50				=T50*$Q50	=U50*$Q50
51	=AH51*$O51	=AI51*$O51	=AJ51*$O51	=AK51*$O51	=AL51*$O51	=AM51*$O51	=AN51*$O51				=T51*$Q51	=U51*$Q51
52	=AH52*$O52	=AI52*$O52	=AJ52*$O52	=AK52*$O52	=AL52*$O52	=AM52*$O52	=AN52*$O52				=T52*$Q52	=U52*$Q52
53	=AH53*$O53	=AI53*$O53	=AJ53*$O53	=AK53*$O53	=AL53*$O53	=AM53*$O53	=AN53*$O53				=T53*$Q53	=U53*$Q53
54	=AH54*$O54	=AI54*$O54	=AJ54*$O54	=AK54*$O54	=AL54*$O54	=AM54*$O54	=AN54*$O54				=T54*$Q54	=U54*$Q54
55	=AH55*$O55	=AI55*$O55	=AJ55*$O55	=AK55*$O55	=AL55*$O55	=AM55*$O55	=AN55*$O55				=T55*$Q55	=U55*$Q55
56	=AH56*$O56	=AI56*$O56	=AJ56*$O56	=AK56*$O56	=AL56*$O56	=AM56*$O56	=AN56*$O56				=T56*$Q56	=U56*$Q56
57	=AH57*$O57	=AI57*$O57	=AJ57*$O57	=AK57*$O57	=AL57*$O57	=AM57*$O57	=AN57*$O57				=T57*$Q57	=U57*$Q57
58	=AH58*$O58	=AI58*$O58	=AJ58*$O58	=AK58*$O58	=AL58*$O58	=AM58*$O58	=AN58*$O58				=T58*$Q58	=U58*$Q58
59												
60	=SUM(BF5:BF58)	=SUM(BG5:BG58)	=SUM(BH5:BH58)	=SUM(BI5:BI58)	=SUM(BJ5:BJ58)	=SUM(BK5:BK58)	=SUM(BL5:BL58)				=SUM(BP5:BP58)	=SUM(BQ5:BQ58)
61												
62												
63												
64	=BF60/$F$64	=BG60/$F$64	=BH60/$F$64	=BI60/$F$64	=BJ60/$F$64	=BK60/$F$64	=BL60/$F$64				=BP60/$F$64	=BQ60/$F$64
65												
66												
67	=BF64*$F$65	=BG64*$F$65	=BH64*$F$65	=BI64*$F$65	=BJ64*$F$65	=BK64*$F$65	=BL64*$F$65				=BP64*$F$65	=BQ64*$F$65
68												
69												
70												
71	=BF67+CD67	=BG67+CE67	=BH67+CF67	=BI67+CG67	=BJ67+CH67	=BK67+CI67	=BL67+CJ67					
72												
73												
74												
75												

	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD
1													
2								Beta Particle Radiation Energy in Containment at Given Timesteps (MeV)					
3	3	5	12	18	24	48	72	96	120	150	200	240	300
4													
5	=V5*$Q5	=W5*$Q5	=X5*$Q5	=Y5*$Q5	=Z5*$Q5	=AA5*$Q5	=AB5*$Q5	=AC5*$Q5	=AD5*$Q5	=AE5*$Q5	=AF5*$Q5	=AG5*$Q5	=AH5*$Q5
6	=V6*$Q6	=W6*$Q6	=X6*$Q6	=Y6*$Q6	=Z6*$Q6	=AA6*$Q6	=AB6*$Q6	=AC6*$Q6	=AD6*$Q6	=AE6*$Q6	=AF6*$Q6	=AG6*$Q6	=AH6*$Q6
7	=V7*$Q7	=W7*$Q7	=X7*$Q7	=Y7*$Q7	=Z7*$Q7	=AA7*$Q7	=AB7*$Q7	=AC7*$Q7	=AD7*$Q7	=AE7*$Q7	=AF7*$Q7	=AG7*$Q7	=AH7*$Q7
8	=V8*$Q8	=W8*$Q8	=X8*$Q8	=Y8*$Q8	=Z8*$Q8	=AA8*$Q8	=AB8*$Q8	=AC8*$Q8	=AD8*$Q8	=AE8*$Q8	=AF8*$Q8	=AG8*$Q8	=AH8*$Q8
9	=V9*$Q9	=W9*$Q9	=X9*$Q9	=Y9*$Q9	=Z9*$Q9	=AA9*$Q9	=AB9*$Q9	=AC9*$Q9	=AD9*$Q9	=AE9*$Q9	=AF9*$Q9	=AG9*$Q9	=AH9*$Q9
10	=V10*$Q10	=W10*$Q10	=X10*$Q10	=Y10*$Q10	=Z10*$Q10	=AA10*$Q10	=AB10*$Q10	=AC10*$Q10	=AD10*$Q10	=AE10*$Q10	=AF10*$Q10	=AG10*$Q10	=AH10*$Q10
11	=V11*$Q11	=W11*$Q11	=X11*$Q11	=Y11*$Q11	=Z11*$Q11	=AA11*$Q11	=AB11*$Q11	=AC11*$Q11	=AD11*$Q11	=AE11*$Q11	=AF11*$Q11	=AG11*$Q11	=AH11*$Q11
12	=V12*$Q12	=W12*$Q12	=X12*$Q12	=Y12*$Q12	=Z12*$Q12	=AA12*$Q12	=AB12*$Q12	=AC12*$Q12	=AD12*$Q12	=AE12*$Q12	=AF12*$Q12	=AG12*$Q12	=AH12*$Q12
13	=V13*$Q13	=W13*$Q13	=X13*$Q13	=Y13*$Q13	=Z13*$Q13	=AA13*$Q13	=AB13*$Q13	=AC13*$Q13	=AD13*$Q13	=AE13*$Q13	=AF13*$Q13	=AG13*$Q13	=AH13*$Q13
14	=V14*$Q14	=W14*$Q14	=X14*$Q14	=Y14*$Q14	=Z14*$Q14	=AA14*$Q14	=AB14*$Q14	=AC14*$Q14	=AD14*$Q14	=AE14*$Q14	=AF14*$Q14	=AG14*$Q14	=AH14*$Q14
15	=V15*$Q15	=W15*$Q15	=X15*$Q15	=Y15*$Q15	=Z15*$Q15	=AA15*$Q15	=AB15*$Q15	=AC15*$Q15	=AD15*$Q15	=AE15*$Q15	=AF15*$Q15	=AG15*$Q15	=AH15*$Q15
16	=V16*$Q16	=W16*$Q16	=X16*$Q16	=Y16*$Q16	=Z16*$Q16	=AA16*$Q16	=AB16*$Q16	=AC16*$Q16	=AD16*$Q16	=AE16*$Q16	=AF16*$Q16	=AG16*$Q16	=AH16*$Q16
17	=V17*$Q17	=W17*$Q17	=X17*$Q17	=Y17*$Q17	=Z17*$Q17	=AA17*$Q17	=AB17*$Q17	=AC17*$Q17	=AD17*$Q17	=AE17*$Q17	=AF17*$Q17	=AG17*$Q17	=AH17*$Q17
18	=V18*$Q18	=W18*$Q18	=X18*$Q18	=Y18*$Q18	=Z18*$Q18	=AA18*$Q18	=AB18*$Q18	=AC18*$Q18	=AD18*$Q18	=AE18*$Q18	=AF18*$Q18	=AG18*$Q18	=AH18*$Q18
19	=V19*$Q19	=W19*$Q19	=X19*$Q19	=Y19*$Q19	=Z19*$Q19	=AA19*$Q19	=AB19*$Q19	=AC19*$Q19	=AD19*$Q19	=AE19*$Q19	=AF19*$Q19	=AG19*$Q19	=AH19*$Q19
20	=V20*$Q20	=W20*$Q20	=X20*$Q20	=Y20*$Q20	=Z20*$Q20	=AA20*$Q20	=AB20*$Q20	=AC20*$Q20	=AD20*$Q20	=AE20*$Q20	=AF20*$Q20	=AG20*$Q20	=AH20*$Q20
21	=V21*$Q21	=W21*$Q21	=X21*$Q21	=Y21*$Q21	=Z21*$Q21	=AA21*$Q21	=AB21*$Q21	=AC21*$Q21	=AD21*$Q21	=AE21*$Q21	=AF21*$Q21	=AG21*$Q21	=AH21*$Q21
22	=V22*$Q22	=W22*$Q22	=X22*$Q22	=Y22*$Q22	=Z22*$Q22	=AA22*$Q22	=AB22*$Q22	=AC22*$Q22	=AD22*$Q22	=AE22*$Q22	=AF22*$Q22	=AG22*$Q22	=AH22*$Q22
23	=V23*$Q23	=W23*$Q23	=X23*$Q23	=Y23*$Q23	=Z23*$Q23	=AA23*$Q23	=AB23*$Q23	=AC23*$Q23	=AD23*$Q23	=AE23*$Q23	=AF23*$Q23	=AG23*$Q23	=AH23*$Q23
24	=V24*$Q24	=W24*$Q24	=X24*$Q24	=Y24*$Q24	=Z24*$Q24	=AA24*$Q24	=AB24*$Q24	=AC24*$Q24	=AD24*$Q24	=AE24*$Q24	=AF24*$Q24	=AG24*$Q24	=AH24*$Q24
25	=V25*$Q25	=W25*$Q25	=X25*$Q25	=Y25*$Q25	=Z25*$Q25	=AA25*$Q25	=AB25*$Q25	=AC25*$Q25	=AD25*$Q25	=AE25*$Q25	=AF25*$Q25	=AG25*$Q25	=AH25*$Q25
26	=V26*$Q26	=W26*$Q26	=X26*$Q26	=Y26*$Q26	=Z26*$Q26	=AA26*$Q26	=AB26*$Q26	=AC26*$Q26	=AD26*$Q26	=AE26*$Q26	=AF26*$Q26	=AG26*$Q26	=AH26*$Q26
27	=V27*$Q27	=W27*$Q27	=X27*$Q27	=Y27*$Q27	=Z27*$Q27	=AA27*$Q27	=AB27*$Q27	=AC27*$Q27	=AD27*$Q27	=AE27*$Q27	=AF27*$Q27	=AG27*$Q27	=AH27*$Q27
28	=V28*$Q28	=W28*$Q28	=X28*$Q28	=Y28*$Q28	=Z28*$Q28	=AA28*$Q28	=AB28*$Q28	=AC28*$Q28	=AD28*$Q28	=AE28*$Q28	=AF28*$Q28	=AG28*$Q28	=AH28*$Q28
29	=V29*$Q29	=W29*$Q29	=X29*$Q29	=Y29*$Q29	=Z29*$Q29	=AA29*$Q29	=AB29*$Q29	=AC29*$Q29	=AD29*$Q29	=AE29*$Q29	=AF29*$Q29	=AG29*$Q29	=AH29*$Q29
30	=V30*$Q30	=W30*$Q30	=X30*$Q30	=Y30*$Q30	=Z30*$Q30	=AA30*$Q30	=AB30*$Q30	=AC30*$Q30	=AD30*$Q30	=AE30*$Q30	=AF30*$Q30	=AG30*$Q30	=AH30*$Q30
31	=V31*$Q31	=W31*$Q31	=X31*$Q31	=Y31*$Q31	=Z31*$Q31	=AA31*$Q31	=AB31*$Q31	=AC31*$Q31	=AD31*$Q31	=AE31*$Q31	=AF31*$Q31	=AG31*$Q31	=AH31*$Q31
32	=V32*$Q32	=W32*$Q32	=X32*$Q32	=Y32*$Q32	=Z32*$Q32	=AA32*$Q32	=AB32*$Q32	=AC32*$Q32	=AD32*$Q32	=AE32*$Q32	=AF32*$Q32	=AG32*$Q32	=AH32*$Q32
33	=V33*$Q33	=W33*$Q33	=X33*$Q33	=Y33*$Q33	=Z33*$Q33	=AA33*$Q33	=AB33*$Q33	=AC33*$Q33	=AD33*$Q33	=AE33*$Q33	=AF33*$Q33	=AG33*$Q33	=AH33*$Q33
34	=V34*$Q34	=W34*$Q34	=X34*$Q34	=Y34*$Q34	=Z34*$Q34	=AA34*$Q34	=AB34*$Q34	=AC34*$Q34	=AD34*$Q34	=AE34*$Q34	=AF34*$Q34	=AG34*$Q34	=AH34*$Q34
35	=V35*$Q35	=W35*$Q35	=X35*$Q35	=Y35*$Q35	=Z35*$Q35	=AA35*$Q35	=AB35*$Q35	=AC35*$Q35	=AD35*$Q35	=AE35*$Q35	=AF35*$Q35	=AG35*$Q35	=AH35*$Q35
36	=V36*$Q36	=W36*$Q36	=X36*$Q36	=Y36*$Q36	=Z36*$Q36	=AA36*$Q36	=AB36*$Q36	=AC36*$Q36	=AD36*$Q36	=AE36*$Q36	=AF36*$Q36	=AG36*$Q36	=AH36*$Q36
37	=V37*$Q37	=W37*$Q37	=X37*$Q37	=Y37*$Q37	=Z37*$Q37	=AA37*$Q37	=AB37*$Q37	=AC37*$Q37	=AD37*$Q37	=AE37*$Q37	=AF37*$Q37	=AG37*$Q37	=AH37*$Q37
38	=V38*$Q38	=W38*$Q38	=X38*$Q38	=Y38*$Q38	=Z38*$Q38	=AA38*$Q38	=AB38*$Q38	=AC38*$Q38	=AD38*$Q38	=AE38*$Q38	=AF38*$Q38	=AG38*$Q38	=AH38*$Q38
39	=V39*$Q39	=W39*$Q39	=X39*$Q39	=Y39*$Q39	=Z39*$Q39	=AA39*$Q39	=AB39*$Q39	=AC39*$Q39	=AD39*$Q39	=AE39*$Q39	=AF39*$Q39	=AG39*$Q39	=AH39*$Q39
40	=V40*$Q40	=W40*$Q40	=X40*$Q40	=Y40*$Q40	=Z40*$Q40	=AA40*$Q40	=AB40*$Q40	=AC40*$Q40	=AD40*$Q40	=AE40*$Q40	=AF40*$Q40	=AG40*$Q40	=AH40*$Q40
41	=V41*$Q41	=W41*$Q41	=X41*$Q41	=Y41*$Q41	=Z41*$Q41	=AA41*$Q41	=AB41*$Q41	=AC41*$Q41	=AD41*$Q41	=AE41*$Q41	=AF41*$Q41	=AG41*$Q41	=AH41*$Q41
42	=V42*$Q42	=W42*$Q42	=X42*$Q42	=Y42*$Q42	=Z42*$Q42	=AA42*$Q42	=AB42*$Q42	=AC42*$Q42	=AD42*$Q42	=AE42*$Q42	=AF42*$Q42	=AG42*$Q42	=AH42*$Q42
43	=V43*$Q43	=W43*$Q43	=X43*$Q43	=Y43*$Q43	=Z43*$Q43	=AA43*$Q43	=AB43*$Q43	=AC43*$Q43	=AD43*$Q43	=AE43*$Q43	=AF43*$Q43	=AG43*$Q43	=AH43*$Q43
44	=V44*$Q44	=W44*$Q44	=X44*$Q44	=Y44*$Q44	=Z44*$Q44	=AA44*$Q44	=AB44*$Q44	=AC44*$Q44	=AD44*$Q44	=AE44*$Q44	=AF44*$Q44	=AG44*$Q44	=AH44*$Q44
45	=V45*$Q45	=W45*$Q45	=X45*$Q45	=Y45*$Q45	=Z45*$Q45	=AA45*$Q45	=AB45*$Q45	=AC45*$Q45	=AD45*$Q45	=AE45*$Q45	=AF45*$Q45	=AG45*$Q45	=AH45*$Q45
46	=V46*$Q46	=W46*$Q46	=X46*$Q46	=Y46*$Q46	=Z46*$Q46	=AA46*$Q46	=AB46*$Q46	=AC46*$Q46	=AD46*$Q46	=AE46*$Q46	=AF46*$Q46	=AG46*$Q46	=AH46*$Q46
47	=V47*$Q47	=W47*$Q47	=X47*$Q47	=Y47*$Q47	=Z47*$Q47	=AA47*$Q47	=AB47*$Q47	=AC47*$Q47	=AD47*$Q47	=AE47*$Q47	=AF47*$Q47	=AG47*$Q47	=AH47*$Q47
48	=V48*$Q48	=W48*$Q48	=X48*$Q48	=Y48*$Q48	=Z48*$Q48	=AA48*$Q48	=AB48*$Q48	=AC48*$Q48	=AD48*$Q48	=AE48*$Q48	=AF48*$Q48	=AG48*$Q48	=AH48*$Q48
49	=V49*$Q49	=W49*$Q49	=X49*$Q49	=Y49*$Q49	=Z49*$Q49	=AA49*$Q49	=AB49*$Q49	=AC49*$Q49	=AD49*$Q49	=AE49*$Q49	=AF49*$Q49	=AG49*$Q49	=AH49*$Q49
50	=V50*$Q50	=W50*$Q50	=X50*$Q50	=Y50*$Q50	=Z50*$Q50	=AA50*$Q50	=AB50*$Q50	=AC50*$Q50	=AD50*$Q50	=AE50*$Q50	=AF50*$Q50	=AG50*$Q50	=AH50*$Q50
51	=V51*$Q51	=W51*$Q51	=X51*$Q51	=Y51*$Q51	=Z51*$Q51	=AA51*$Q51	=AB51*$Q51	=AC51*$Q51	=AD51*$Q51	=AE51*$Q51	=AF51*$Q51	=AG51*$Q51	=AH51*$Q51
52	=V52*$Q52	=W52*$Q52	=X52*$Q52	=Y52*$Q52	=Z52*$Q52	=AA52*$Q52	=AB52*$Q52	=AC52*$Q52	=AD52*$Q52	=AE52*$Q52	=AF52*$Q52	=AG52*$Q52	=AH52*$Q52
53	=V53*$Q53	=W53*$Q53	=X53*$Q53	=Y53*$Q53	=Z53*$Q53	=AA53*$Q53	=AB53*$Q53	=AC53*$Q53	=AD53*$Q53	=AE53*$Q53	=AF53*$Q53	=AG53*$Q53	=AH53*$Q53
54	=V54*$Q54	=W54*$Q54	=X54*$Q54	=Y54*$Q54	=Z54*$Q54	=AA54*$Q54	=AB54*$Q54	=AC54*$Q54	=AD54*$Q54	=AE54*$Q54	=AF54*$Q54	=AG54*$Q54	=AH54*$Q54
55	=V55*$Q55	=W55*$Q55	=X55*$Q55	=Y55*$Q55	=Z55*$Q55	=AA55*$Q55	=AB55*$Q55	=AC55*$Q55	=AD55*$Q55	=AE55*$Q55	=AF55*$Q55	=AG55*$Q55	=AH55*$Q55
56	=V56*$Q56	=W56*$Q56	=X56*$Q56	=Y56*$Q56	=Z56*$Q56	=AA56*$Q56	=AB56*$Q56	=AC56*$Q56	=AD56*$Q56	=AE56*$Q56	=AF56*$Q56	=AG56*$Q56	=AH56*$Q56
57	=V57*$Q57	=W57*$Q57	=X57*$Q57	=Y57*$Q57	=Z57*$Q57	=AA57*$Q57	=AB57*$Q57	=AC57*$Q57	=AD57*$Q57	=AE57*$Q57	=AF57*$Q57	=AG57*$Q57	=AH57*$Q57
58	=V58*$Q58	=W58*$Q58	=X58*$Q58	=Y58*$Q58	=Z58*$Q58	=AA58*$Q58	=AB58*$Q58	=AC58*$Q58	=AD58*$Q58	=AE58*$Q58	=AF58*$Q58	=AG58*$Q58	=AH58*$Q58
59													
60	=SUM(BR5:BR58)	=SUM(BS5:BS58)	=SUM(BT5:BT58)	=SUM(BU5:BU58)	=SUM(BV5:BV58)	=SUM(BW5:BW58)	=SUM(BX5:BX58)	=SUM(BY5:BY58)	=SUM(BZ5:BZ58)	=SUM(CA5:CA58)	=SUM(CB5:CB58)	=SUM(CC5:CC58)	=SUM(CD5:CD58)
61													
62													
63								Total Integrated Beta Energy in Suppression Pool Water at Given Timesteps (MeV/cm³)					
64	=BR60/$F$64	=BS60/$F$64	=BT60/$F$64	=BU60/$F$64	=BV60/$F$64	=BW60/$F$64	=BX60/$F$64	=BY60/$F$64	=BZ60/$F$64	=CA60/$F$64	=CB60/$F$64	=CC60/$F$64	=CD60/$F$64
65													
66								TOTAL Integrated Beta Dose in Pool at Given Timesteps (Mrad)					
67	=BR64*$F$65	=BS64*$F$65	=BT64*$F$65	=BU64*$F$65	=BV64*$F$65	=BW64*$F$65	=BX64*$F$65	=BY64*$F$65	=BZ64*$F$65	=CA64*$F$65	=CB64*$F$65	=CC64*$F$65	=CD64*$F$65
68													
69													
70													
71													
72													
73													
74													
75													

	CE	CF	CG	CH	CI	CJ	CK
1							
2							
3	360	400	480	600	700	720	
4							
5	=AI5*$Q5	=AJ5*$Q5	=AK5*$Q5	=AL5*$Q5	=AM5*$Q5	=AN5*$Q5	
6	=AI6*$Q6	=AJ6*$Q6	=AK6*$Q6	=AL6*$Q6	=AM6*$Q6	=AN6*$Q6	
7	=AI7*$Q7	=AJ7*$Q7	=AK7*$Q7	=AL7*$Q7	=AM7*$Q7	=AN7*$Q7	
8	=AI8*$Q8	=AJ8*$Q8	=AK8*$Q8	=AL8*$Q8	=AM8*$Q8	=AN8*$Q8	
9	=AI9*$Q9	=AJ9*$Q9	=AK9*$Q9	=AL9*$Q9	=AM9*$Q9	=AN9*$Q9	
10	=AI10*$Q10	=AJ10*$Q10	=AK10*$Q10	=AL10*$Q10	=AM10*$Q10	=AN10*$Q10	
11	=AI11*$Q11	=AJ11*$Q11	=AK11*$Q11	=AL11*$Q11	=AM11*$Q11	=AN11*$Q11	
12	=AI12*$Q12	=AJ12*$Q12	=AK12*$Q12	=AL12*$Q12	=AM12*$Q12	=AN12*$Q12	
13	=AI13*$Q13	=AJ13*$Q13	=AK13*$Q13	=AL13*$Q13	=AM13*$Q13	=AN13*$Q13	
14	=AI14*$Q14	=AJ14*$Q14	=AK14*$Q14	=AL14*$Q14	=AM14*$Q14	=AN14*$Q14	
15	=AI15*$Q15	=AJ15*$Q15	=AK15*$Q15	=AL15*$Q15	=AM15*$Q15	=AN15*$Q15	
16	=AI16*$Q16	=AJ16*$Q16	=AK16*$Q16	=AL16*$Q16	=AM16*$Q16	=AN16*$Q16	
17	=AI17*$Q17	=AJ17*$Q17	=AK17*$Q17	=AL17*$Q17	=AM17*$Q17	=AN17*$Q17	
18	=AI18*$Q18	=AJ18*$Q18	=AK18*$Q18	=AL18*$Q18	=AM18*$Q18	=AN18*$Q18	
19	=AI19*$Q19	=AJ19*$Q19	=AK19*$Q19	=AL19*$Q19	=AM19*$Q19	=AN19*$Q19	
20	=AI20*$Q20	=AJ20*$Q20	=AK20*$Q20	=AL20*$Q20	=AM20*$Q20	=AN20*$Q20	
21	=AI21*$Q21	=AJ21*$Q21	=AK21*$Q21	=AL21*$Q21	=AM21*$Q21	=AN21*$Q21	
22	=AI22*$Q22	=AJ22*$Q22	=AK22*$Q22	=AL22*$Q22	=AM22*$Q22	=AN22*$Q22	
23	=AI23*$Q23	=AJ23*$Q23	=AK23*$Q23	=AL23*$Q23	=AM23*$Q23	=AN23*$Q23	
24	=AI24*$Q24	=AJ24*$Q24	=AK24*$Q24	=AL24*$Q24	=AM24*$Q24	=AN24*$Q24	
25	=AI25*$Q25	=AJ25*$Q25	=AK25*$Q25	=AL25*$Q25	=AM25*$Q25	=AN25*$Q25	
26	=AI26*$Q26	=AJ26*$Q26	=AK26*$Q26	=AL26*$Q26	=AM26*$Q26	=AN26*$Q26	
27	=AI27*$Q27	=AJ27*$Q27	=AK27*$Q27	=AL27*$Q27	=AM27*$Q27	=AN27*$Q27	
28	=AI28*$Q28	=AJ28*$Q28	=AK28*$Q28	=AL28*$Q28	=AM28*$Q28	=AN28*$Q28	
29	=AI29*$Q29	=AJ29*$Q29	=AK29*$Q29	=AL29*$Q29	=AM29*$Q29	=AN29*$Q29	
30	=AI30*$Q30	=AJ30*$Q30	=AK30*$Q30	=AL30*$Q30	=AM30*$Q30	=AN30*$Q30	
31	=AI31*$Q31	=AJ31*$Q31	=AK31*$Q31	=AL31*$Q31	=AM31*$Q31	=AN31*$Q31	
32	=AI32*$Q32	=AJ32*$Q32	=AK32*$Q32	=AL32*$Q32	=AM32*$Q32	=AN32*$Q32	
33	=AI33*$Q33	=AJ33*$Q33	=AK33*$Q33	=AL33*$Q33	=AM33*$Q33	=AN33*$Q33	
34	=AI34*$Q34	=AJ34*$Q34	=AK34*$Q34	=AL34*$Q34	=AM34*$Q34	=AN34*$Q34	
35	=AI35*$Q35	=AJ35*$Q35	=AK35*$Q35	=AL35*$Q35	=AM35*$Q35	=AN35*$Q35	
36	=AI36*$Q36	=AJ36*$Q36	=AK36*$Q36	=AL36*$Q36	=AM36*$Q36	=AN36*$Q36	
37	=AI37*$Q37	=AJ37*$Q37	=AK37*$Q37	=AL37*$Q37	=AM37*$Q37	=AN37*$Q37	
38	=AI38*$Q38	=AJ38*$Q38	=AK38*$Q38	=AL38*$Q38	=AM38*$Q38	=AN38*$Q38	
39	=AI39*$Q39	=AJ39*$Q39	=AK39*$Q39	=AL39*$Q39	=AM39*$Q39	=AN39*$Q39	
40	=AI40*$Q40	=AJ40*$Q40	=AK40*$Q40	=AL40*$Q40	=AM40*$Q40	=AN40*$Q40	
41	=AI41*$Q41	=AJ41*$Q41	=AK41*$Q41	=AL41*$Q41	=AM41*$Q41	=AN41*$Q41	
42	=AI42*$Q42	=AJ42*$Q42	=AK42*$Q42	=AL42*$Q42	=AM42*$Q42	=AN42*$Q42	
43	=AI43*$Q43	=AJ43*$Q43	=AK43*$Q43	=AL43*$Q43	=AM43*$Q43	=AN43*$Q43	
44	=AI44*$Q44	=AJ44*$Q44	=AK44*$Q44	=AL44*$Q44	=AM44*$Q44	=AN44*$Q44	
45	=AI45*$Q45	=AJ45*$Q45	=AK45*$Q45	=AL45*$Q45	=AM45*$Q45	=AN45*$Q45	
46	=AI46*$Q46	=AJ46*$Q46	=AK46*$Q46	=AL46*$Q46	=AM46*$Q46	=AN46*$Q46	
47	=AI47*$Q47	=AJ47*$Q47	=AK47*$Q47	=AL47*$Q47	=AM47*$Q47	=AN47*$Q47	
48	=AI48*$Q48	=AJ48*$Q48	=AK48*$Q48	=AL48*$Q48	=AM48*$Q48	=AN48*$Q48	
49	=AI49*$Q49	=AJ49*$Q49	=AK49*$Q49	=AL49*$Q49	=AM49*$Q49	=AN49*$Q49	
50	=AI50*$Q50	=AJ50*$Q50	=AK50*$Q50	=AL50*$Q50	=AM50*$Q50	=AN50*$Q50	
51	=AI51*$Q51	=AJ51*$Q51	=AK51*$Q51	=AL51*$Q51	=AM51*$Q51	=AN51*$Q51	
52	=AI52*$Q52	=AJ52*$Q52	=AK52*$Q52	=AL52*$Q52	=AM52*$Q52	=AN52*$Q52	
53	=AI53*$Q53	=AJ53*$Q53	=AK53*$Q53	=AL53*$Q53	=AM53*$Q53	=AN53*$Q53	
54	=AI54*$Q54	=AJ54*$Q54	=AK54*$Q54	=AL54*$Q54	=AM54*$Q54	=AN54*$Q54	
55	=AI55*$Q55	=AJ55*$Q55	=AK55*$Q55	=AL55*$Q55	=AM55*$Q55	=AN55*$Q55	
56	=AI56*$Q56	=AJ56*$Q56	=AK56*$Q56	=AL56*$Q56	=AM56*$Q56	=AN56*$Q56	
57	=AI57*$Q57	=AJ57*$Q57	=AK57*$Q57	=AL57*$Q57	=AM57*$Q57	=AN57*$Q57	
58	=AI58*$Q58	=AJ58*$Q58	=AK58*$Q58	=AL58*$Q58	=AM58*$Q58	=AN58*$Q58	
59							
60	=SUM(CE5:CE58)	=SUM(CF5:CF58)	=SUM(CG5:CG58)	=SUM(CH5:CH58)	=SUM(CI5:CI58)	=SUM(CJ5:CJ58)	
61							
62							
63							
64	=CE60/$F$64	=CF60/$F$64	=CG60/$F$64	=CH60/$F$64	=CI60/$F$64	=CJ60/$F$64	
65							
66							
67	=CE64*$F$65	=CF64*$F$65	=CG64*$F$65	=CH64*$F$65	=CI64*$F$65	=CJ64*$F$65	
68							
69							
70							
71							
72							
73							
74							
75							

Assessment of Core Iodines and Cesiums for Post-LOCA pH Determination

For this analysis it is conservative to maximize Iodines, which form acids, and to minimize Cesiums, which provide neutralization before Standby Liquid Control System injection of sodium pentaborate. Both End-of-Cycle (EOC) and near Beginning-of-Cycle (BOC) conditions are modeled, with the BOC conditions limiting for pH purposes.
The non-adjusted inventories below are taken from Peach Bottom Atomic Power Station (PBAPS) AST Calculation PM-1059, Rev. 2, Attachment A.
For Iodine, the inventories are then adjusted assuming the inventories are proportional to Core Thermal Power, including a 2% instrument uncertainty value, by using a LSCS/PBAPS power ratio of 3559/3514.9.
(Long-lived isotopes, which dominate the iodine inventories below, are proportional to burnup more than power.
Since PBAPS and LSCS fuel cycles are similar in cycle length with comparable burnups, per the PM-1059 and L-003128 calculations, this power ratio adjustment adds conservatism.)
For Cesium, a Thermal Power ratio of 1 is used for conservatism.
The rounding below is used to provide additional conservatism.

	100 EFPD (grams)	EOC (grams)	100 EFPD (grams) adjusted	EOC (grams) adjusted
I-127	4.533E+03	8.040E+03	4.590E+03	8.141E+03
I-129	1.571E+04	2.727E+04	1.591E+04	2.761E+04
I-131	7.369E+02	7.615E+02	7.461E+02	7.711E+02
I-132	1.296E+01	1.321E+01	1.312E+01	1.338E+01
I-133	1.723E+02	1.699E+02	1.745E+02	1.720E+02
I-134	8.118E+00	7.936E+00	8.220E+00	8.036E+00
I-135	5.195E+01	5.140E+01	5.260E+01	5.204E+01
Total	**2.123E+04**	**3.631E+04**	**2.149E+04**	**3.677E+04**
Cs-133	1.025E+05	1.678E+05	1.025E+05	1.678E+05
Cs-134	1.031E+04	1.977E+04	1.031E+04	1.977E+04
Cs-135	4.502E+04	7.841E+04	4.502E+04	7.841E+04
Cs-137	1.087E+05	1.832E+05	1.087E+05	1.832E+05
Total	**2.665E+05**	**4.492E+05**	**2.665E+05**	**4.492E+05**

	At. Mass	100 EFPD (gm-moles)	EOC (gm-moles)	100 EFPD (gm-moles) adjusted	EOC (gm-moles) adjusted	Ratio
I-127	126.9045	3.572E+01	6.335E+01	3.617E+01	6.415E+01	0.564
I-129	128.9050	1.219E+02	2.116E+02	1.234E+02	2.142E+02	0.576
I-131	130.9061	5.629E+00	5.817E+00	5.700E+00	5.890E+00	0.968
I-132	131.9069	9.825E-02	1.001E-01	9.948E-02	1.014E-01	0.981
I-133	132.9078	1.296E+00	1.278E+00	1.313E+00	1.294E+00	1.014
I-134	133.9099	6.062E-02	5.926E-02	6.138E-02	6.001E-02	1.023
I-135	134.9100	3.851E-01	3.810E-01	3.899E-01	3.858E-01	1.011
Total		**1.651E+02**	**2.825E+02**	**1.671E+02**	**2.861E+02**	**0.584**
for conservatism, use				**170**	**290**	
Cs-133	132.9054	7.712E+02	1.263E+03	7.712E+02	1.263E+03	0.611
Cs-134	133.9067	7.699E+01	1.476E+02	7.699E+01	1.476E+02	0.521
Cs-135	134.9059	3.337E+02	5.812E+02	3.337E+02	5.812E+02	0.574
Cs-137	136.9071	7.940E+02	1.338E+03	7.940E+02	1.338E+03	0.593
Total		**1.976E+03**	**3.330E+03**	**1.976E+03**	**3.330E+03**	**0.593**
for conservatism, use				**1900**	**3200**	

Assessment of Core Iodines and Cesiums for Post-LOCA pH Determination

For this analysis it is
neutralization before
(EOC) and near Begi
purposes.
The non-adjusted inv
For Iodine, the invent
by using a LSCS/PBA
(Long-lived isotopes,
Since PBAPS and LS
this power ratio adjus
For Cesium, a Therm
The rounding below i

	100 EFPD (grams)	EOC (grams)	100 EFPD (grams) adjusted	EOC (grams) adjusted
I-127	4533	8040	=(B23*3559)/3514.9	=(C23*3559)/3514.9
I-129	15710	27270	=(B24*3559)/3514.9	=(C24*3559)/3514.9
I-131	736.9	761.5	=(B25*3559)/3514.9	=(C25*3559)/3514.9
I-132	12.96	13.21	=(B26*3559)/3514.9	=(C26*3559)/3514.9
I-133	172.3	169.9	=(B27*3559)/3514.9	=(C27*3559)/3514.9
I-134	8.118	7.936	=(B28*3559)/3514.9	=(C28*3559)/3514.9
I-135	51.95	51.4	=(B29*3559)/3514.9	=(C29*3559)/3514.9
Total	**=SUM(B23:B29)**	**=SUM(C23:C29)**	**=SUM(D23:D29)**	**=SUM(E23:E29)**

	At. Mass	100 EFPD (gm-moles)	EOC (gm-moles)	100 EFPD (gm-moles) adjusted	EOC (gm-moles) adjusted	Ratio
I-127	126.9045	=B23/H23	=C23/H23	=D23/H23	=E23/H23	=I23/J23
I-129	128.905	=B24/H24	=C24/H24	=D24/H24	=E24/H24	=I24/J24
I-131	130.9061	=B25/H25	=C25/H25	=D25/H25	=E25/H25	=I25/J25
I-132	131.9069	=B26/H26	=C26/H26	=D26/H26	=E26/H26	=I26/J26
I-133	132.9078	=B27/H27	=C27/H27	=D27/H27	=E27/H27	=I27/J27
I-134	133.9099	=B28/H28	=C28/H28	=D28/H28	=E28/H28	=I28/J28
I-135	134.91	=B29/H29	=C29/H29	=D29/H29	=E29/H29	=I29/J29
Total		**=SUM(I23:I29)**	**=SUM(J23:J29)**	**=SUM(K23:K29)**	**=SUM(L23:L29)**	**=I30/J30**
for conservatism,				**170**	**290**	

	100 EFPD (grams)	EOC (grams)	100 EFPD (grams) adjusted	EOC (grams) adjusted
Cs-133	102500	167800	=(B33*1)	=(C33*1)
Cs-134	10310	19770	=(B34*1)	=(C34*1)
Cs-135	45020	78410	=(B35*1)	=(C35*1)
Cs-137	108700	183200	=(B36*1)	=(C36*1)
Total	**=SUM(B33:B36)**	**=SUM(C33:C36)**	**=SUM(D33:D36)**	**=SUM(E33:E36)**

	At. Mass	100 EFPD (gm-moles)	EOC (gm-moles)	100 EFPD (gm-moles) adjusted	EOC (gm-moles) adjusted	Ratio
Cs-133	132.9054	=B33/H33	=C33/H33	=D33/H33	=E33/H33	=I33/J33
Cs-134	133.9067	=B34/H34	=C34/H34	=D34/H34	=E34/H34	=I34/J34
Cs-135	134.9059	=B35/H35	=C35/H35	=D35/H35	=E35/H35	=I35/J35
Cs-137	136.9071	=B36/H36	=C36/H36	=D36/H36	=E36/H36	=I36/J36
Total		**=SUM(I33:I36)**	**=SUM(J33:J36)**	**=SUM(K33:K36)**	**=SUM(L33:L36)**	**=I37/J37**
for conservatism,				**1900**	**3200**	

LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	**LaSalle pH CALCULATION**					**pH TRANSIENT**	**BEGINNING OF CYCLE**				**Cable Data [22]**				
2							Linear Absorption Coefficients [4]			$S_{A\ tray}$ [cm^2]	9,969,370	Cable Surface [trays]- Drywell + 10% contingency			
3	V_{POOL}	4.378E+06	Liters [131900+22712 additional ft^3] [13]				$u_{beta\ air}$	1.980E-02	1/cm	$S_{A\ fa}$ [cm^2]	498,469	Cable Surface [free air]- Drywell + 10% contingency			
4	m_I	1.700E+02	Iodine inventory [g-atoms] BOC[19]				$u_{beta\ hypalon}$	52.08	1/cm	$S_{B\ tray}$ [cm^2]	0	Cable Surface [trays] - Supp. Pool + 10% contingency			
5	m_{Cs}	1.900E+03	Cesium inventory [g-atoms] BOC[19]				$u_{gamma\ air}$	3.75E-05	1/cm	$S_{B\ fa}$ [cm^2]	0	Cable Surface [free air] - Supp. Pool + 10% contingency			
6	t_{gap}	3.361E-02	Onset of Gap release [hrs] [20]				$u_{gamma\ hypalon}$	0.099	1/cm						
7							$r_{[gamma\ free\ path\text{-}DRYWELL]}$ [16]	1145.4	cm	th [cm]	0.762	Hypalon Jacket Thickness [22]			
8							$r_{[gamma\ free\ path\text{-}SUPP\ POOL\ AIR]}$ [16]	1145.4	cm						
9				INTEGRATED DOSES											
10			Beta+Gamma[18]	Gamma[18]	Beta[18]	Gamma[18]	Beta[18]			From Beta	From Gamma	From Beta	From Gamma		
11	TIME		POOL	DRYWELL	DRYWELL	Supp. Pool AIR	Supp. Pool AIR	[HI] [1]	[HNO_3] [2]	[HCL] -DRYWELL [5]	[HCL] -DRYWELL [6]	[HCL] -CONTAIN [5]	[HCL] -CONTAIN [6]	Total [H+] [7]	[CsOH] [3]
12	Hours	Deg F [17]	Mrad	MeV/cm^3	MeV/cm^3	MeV/cm^3	MeV/cm^3	g-mols/liter	g-mols/liter	g-mols/liter	g-mols/liter	g-mols/liter	g-mols/liter	g-ions/liter	g-mols/liter
13	0	105						0.00E+00						5.012E-06	0.000E+00
14	1	170						2.480E-07						5.260E-06	4.397E-05
15	2	180	1.144E-01	3.791E+12	1.658E+12	3.791E+12	1.658E+12	5.716E-07	8.348E-07	3.515E-06	2.470E-05	0.000E+00	0.000E+00	3.463E-05	9.569E-05
16	2.0336	181	1.192E-01	3.949E+12	1.727E+12	3.949E+12	1.727E+12	5.824E-07	8.704E-07	3.662E-06	2.573E-05	0.000E+00	0.000E+00	3.585E-05	9.743E-05
17	3	185	2.465E-01	8.018E+12	3.535E+12	8.018E+12	3.535E+12	5.824E-07	1.799E-06	7.495E-06	5.224E-05	0.000E+00	0.000E+00	6.713E-05	9.743E-05
18	5	196.1	4.556E-01	1.442E+13	6.513E+12	1.442E+13	6.513E+12	5.824E-07	3.326E-06	1.381E-05	9.396E-05	0.000E+00	0.000E+00	1.167E-04	9.743E-05
19	12	196.1	9.473E-01	2.758E+13	1.361E+13	2.758E+13	1.361E+13	5.824E-07	6.915E-06	2.887E-05	1.797E-04	0.000E+00	0.000E+00	2.210E-04	9.743E-05
20	18	196.1	1.240E+00	3.444E+13	1.802E+13	3.444E+13	1.802E+13	5.824E-07	9.055E-06	3.822E-05	2.244E-04	0.000E+00	0.000E+00	2.773E-04	9.743E-05
21	24	196.1	1.475E+00	3.971E+13	2.168E+13	3.971E+13	2.168E+13	5.824E-07	1.077E-05	4.597E-05	2.587E-04	0.000E+00	0.000E+00	3.211E-04	9.743E-05
22	48	196.1	2.151E+00	5.470E+13	3.267E+13	5.470E+13	3.267E+13	5.824E-07	1.570E-05	6.927E-05	3.564E-04	0.000E+00	0.000E+00	4.469E-04	9.743E-05
23	72	196.1	2.644E+00	6.589E+13	4.092E+13	6.589E+13	4.092E+13	5.824E-07	1.930E-05	8.676E-05	4.292E-04	0.000E+00	0.000E+00	5.409E-04	9.743E-05
24	96	196.1	3.058E+00	7.546E+13	4.781E+13	7.546E+13	4.781E+13	5.824E-07	2.232E-05	1.014E-04	4.916E-04	0.000E+00	0.000E+00	6.209E-04	9.743E-05
25	120	196.1	3.429E+00	8.408E+13	5.381E+13	8.408E+13	5.381E+13	5.824E-07	2.503E-05	1.141E-04	5.478E-04	0.000E+00	0.000E+00	6.925E-04	9.743E-05
26	150	196.1	3.854E+00	9.393E+13	6.041E+13	9.393E+13	6.041E+13	5.824E-07	2.813E-05	1.281E-04	6.119E-04	0.000E+00	0.000E+00	7.738E-04	9.743E-05
27	200	196.1	4.501E+00	1.087E+14	6.971E+13	1.087E+14	6.971E+13	5.824E-07	3.286E-05	1.478E-04	7.083E-04	0.000E+00	0.000E+00	8.946E-04	9.743E-05
28	240	196.1	4.977E+00	1.194E+14	7.599E+13	1.194E+14	7.599E+13	5.824E-07	3.633E-05	1.611E-04	7.781E-04	0.000E+00	0.000E+00	9.811E-04	9.743E-05
29	300	196.1	5.638E+00	1.340E+14	8.390E+13	1.340E+14	8.390E+13	5.824E-07	4.116E-05	1.779E-04	8.732E-04	0.000E+00	0.000E+00	1.098E-03	9.743E-05
30	360	196.1	6.248E+00	1.473E+14	9.044E+13	1.473E+14	9.044E+13	5.824E-07	4.561E-05	1.918E-04	9.594E-04	0.000E+00	0.000E+00	1.202E-03	9.743E-05
31	400	196.1	6.630E+00	1.555E+14	9.422E+13	1.555E+14	9.422E+13	5.824E-07	4.840E-05	1.998E-04	1.013E-03	0.000E+00	0.000E+00	1.267E-03	9.743E-05
32	480	196.1	7.347E+00	1.707E+14	1.007E+14	1.707E+14	1.007E+14	5.824E-07	5.363E-05	2.135E-04	1.112E-03	0.000E+00	0.000E+00	1.385E-03	9.743E-05
33	600	196.1	8.330E+00	1.914E+14	1.086E+14	1.914E+14	1.086E+14	5.824E-07	6.081E-05	2.302E-04	1.247E-03	0.000E+00	0.000E+00	1.543E-03	9.743E-05
34	700	196.1	9.088E+00	2.072E+14	1.141E+14	2.072E+14	1.141E+14	5.824E-07	6.634E-05	2.418E-04	1.350E-03	0.000E+00	0.000E+00	1.664E-03	9.743E-05
35	720	196.1	9.234E+00	2.102E+14	1.151E+14	2.102E+14	1.151E+14	5.824E-07	6.741E-05	2.440E-04	1.370E-03	0.000E+00	0.000E+00	1.687E-03	9.743E-05
36															
37	NOTES:						14	Acid dissociation constant from: Entergy Eng. Report GGNS-98-0039 Rev.3, Sect.6.1,p.21							
38	1	Entergy Eng. Report GGNS-98-0039 Rev.3 , Equation 3-1d [30+90 min release duration]					15	Entergy Calc. XC-Q1111-98013 Rev.2, Section 5.7							
39	2	Ibid, Equation 3-2b					16	See attachment B for gamma free paths							
40	3	Ibid, Equation 3-4d [30+90 min release duration]					17	LSCS UFSAR Rev. 17, Figure 6.2-7a, with 105 initial Temp. per Section 6.2.1.8							
41	4	Ibid, Table A-1					18	Attachment B							
42	5	Ibid, Equation 3-3a					19	Attachment B							
43	6	Ibid, Equation 3-3b					20	USNRC Reg. Guide 1.183							
44	7	Ibid, Equation 3-5a; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5.7					21	See page C6 of this attachment.							
45	8	Ibid, Equation 3-5b; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5-7					22	Cable Data from Attachment A.							
46	9	Ibid, Equation 3-0a; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5-7													
47	10	Ibid, Equation 3-5d; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5-7													
48	11	Ibid, Equation 3-5d; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5-7													
49	12	Ibid, Equation 3-5e; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5-7													
50	13	Max. Suppression Pool volume from LSCS Tech. Spec. Bases B 3.6.2.2 plus the 22712 from UFSAR Table 6.2-3 Total Reactor Coolant Volume													

LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1				**pH TRANSIENT**	**BEGINNING OF CYCLE**								
2	**Cable Data** [22]												
3	9,063,064	Cable Surface [Trays] - DRYWELL [cm2]											
4	453,153	Cable Surface [Free air] - DRYWELL [cm2]					4200.26	g. mols $Na_2B_{10}O_{16}*10H_2O$ Added[21]					
5	0	Cable Surface [Free air] - Supp. Pool [cm2]					42002.65	g.atoms total boron[21]					
6	0	Cable Surface [Trays] - Supp. Pool [cm2]											
7													
8						**pH EFFECT OF ADDITION OF SODIUM PENTABORATE STANDBY LIQUID CONTROL [SLC] SOLUTION**							
9													
10							Strong Acid						
11	Total [OH+] [8]	-LOG(Kw) [9]	Root x [10]	Net [H+] [11]	pH [12]	K_a	g-equiv.	$Na_2B_{10}O_{16}*10H_2O$	Borate	Boric Acid	pK_a	**pH**	
12	g-ions/liter			g-ions/liter	Before SLC	[14]	Net [H+] * V_{POOL}	g-mols	g-equiv.	g-equiv.	$-\log_{10}K_a$	[15]	
13	1.995E-09	1.353E+01	-3.882E-09	5.016E-06	5.30	7.452E-10	2.196E+01	4200.3	8379	33624	9.13	**8.52**	
14	4.398E-05	1.267E+01	5.254E-06	5.475E-09	8.26	1.125E-09	2.397E-02	4200.3	8401	33602	8.95	**8.35**	
15	9.569E-05	1.257E+01	3.463E-05	4.439E-09	8.35	1.184E-09	1.943E-02	4200.3	8401	33602	8.93	**8.32**	
16	9.743E-05	1.256E+01	3.585E-05	4.507E-09	8.35	1.190E-09	1.973E-02	4200.3	8401	33602	8.92	**8.32**	
17	9.743E-05	1.252E+01	6.712E-05	1.005E-08	8.00	1.213E-09	4.401E-02	4200.3	8400	33602	8.92	**8.31**	
18	9.743E-05	1.241E+01	9.741E-05	1.928E-05	4.71	1.278E-09	8.443E+01	4200.3	8316	33687	8.89	**8.29**	
19	9.743E-05	1.241E+01	9.743E-05	1.236E-04	3.91	1.278E-09	5.412E+02	4200.3	7859	34143	8.89	**8.26**	
20	9.743E-05	1.241E+01	9.743E-05	1.798E-04	3.75	1.278E-09	7.873E+02	4200.3	7613	34389	8.89	**8.24**	
21	9.743E-05	1.241E+01	9.743E-05	2.236E-04	3.65	1.278E-09	9.791E+02	4200.3	7421	34581	8.89	**8.23**	
22	9.743E-05	1.241E+01	9.743E-05	3.495E-04	3.46	1.278E-09	1.530E+03	4200.3	6870	35132	8.89	**8.18**	
23	9.743E-05	1.241E+01	9.743E-05	4.435E-04	3.35	1.278E-09	1.942E+03	4200.3	6459	35544	8.89	**8.15**	
24	9.743E-05	1.241E+01	9.743E-05	5.235E-04	3.28	1.278E-09	2.292E+03	4200.3	6109	35894	8.89	**8.12**	
25	9.743E-05	1.241E+01	9.743E-05	5.951E-04	3.23	1.278E-09	2.605E+03	4200.3	5795	36207	8.89	**8.10**	
26	9.743E-05	1.241E+01	9.743E-05	6.763E-04	3.17	1.278E-09	2.961E+03	4200.3	5439	36563	8.89	**8.07**	
27	9.743E-05	1.241E+01	9.743E-05	7.971E-04	3.10	1.278E-09	3.490E+03	4200.3	4911	37092	8.89	**8.02**	
28	9.743E-05	1.241E+01	9.743E-05	8.837E-04	3.05	1.278E-09	3.869E+03	4200.3	4532	37471	8.89	**7.98**	
29	9.743E-05	1.241E+01	9.743E-05	1.000E-03	3.00	1.278E-09	4.380E+03	4200.3	4020	37982	8.89	**7.92**	
30	9.743E-05	1.241E+01	9.743E-05	1.105E-03	2.96	1.278E-09	4.838E+03	4200.3	3563	38440	8.89	**7.86**	
31	9.743E-05	1.241E+01	9.743E-05	1.169E-03	2.93	1.278E-09	5.119E+03	4200.3	3282	38721	8.89	**7.82**	
32	9.743E-05	1.241E+01	9.743E-05	1.287E-03	2.89	1.278E-09	5.637E+03	4200.3	2764	39239	8.89	**7.74**	
33	9.743E-05	1.241E+01	9.743E-05	1.446E-03	2.84	1.278E-09	6.331E+03	4200.3	2070	39933	8.89	**7.61**	
34	9.743E-05	1.241E+01	9.743E-05	1.566E-03	2.81	1.278E-09	6.857E+03	4200.3	1544	40459	8.89	**7.47**	
35	9.743E-05	1.241E+01	9.743E-05	1.589E-03	2.80	1.278E-09	6.958E+03	4200.3	1443	40560	8.89	**7.44**	
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LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	**LaSalle pH CALCULATION**					**pH TRANSIENT**	**END OF CYCLE**				**Cable Data [22]**				
2							Linear Absorption Coefficients [4]			$S_{A\ tray}$ [cm^2]	9,969,370	Cable Surface [trays]- Drywell + 10% contingency			
3	V_{POOL}	4.378E+06	Liters [131900+22712 additional ft3] [13]				$u_{beta\ air}$	1.980E-02	1/cm	$S_{A\ fa}$ [cm^2]	498,469	Cable Surface [free air]- Drywell + 10% contingency			
4	m_I	2.900E+02	Iodine inventory [g-atoms] EOC[19]				$u_{beta\ hypalon}$	52.08	1/cm	$S_{B\ tray}$ [cm^2]	0	Cable Surface [trays] - Supp. Pool + 10% contingency			
5	m_{Cs}	3.200E+03	Cesium inventory [g-atoms] EOC[19]				$u_{gamma\ air}$	3.75E-05	1/cm	$S_{B\ fa}$ [cm^2]	0	Cable Surface [free air] - Supp. Pool + 10% contingency			
6	t_{gap}	3.361E-02	Onset of Gap release [hrs] [20]				$u_{gamma\ hypalon}$	0.099	1/cm						
7							$r_{[gamma\ free\ path\text{-}DRYWELL]}$ [16]	1145.4	cm	th [cm]	0.762	Hypalon Jacket Thickness [22]			
8							$r_{[gamma\ free\ path\text{-}SUPP\ POOL\ AIR]}$ [16]	1145.4	cm						
9				INTEGRATED DOSES											
10			Beta+Gamma[18]	Gamma[18]	Beta[18]	Gamma[18]	Beta[18]			From Beta	From Gamma	From Beta	From Gamma		
11	TIME		POOL	DRYWELL	DRYWELL	Supp. Pool AIR	Supp. Pool AIR	[HI] [1]	[HNO_3] [2]	[HCL] -DRYWELL [5]	[HCL] -DRYWELL [6]	[HCL] -CONTAIN [5]	[HCL] -CONTAIN [6]	Total [H+] [7]	[CsOH] [3]
12	Hours	Deg F [17]	Mrad	MeV/cm^3	MeV/cm^3	MeV/cm^3	MeV/cm^3	g-mols/liter	g-mols/liter	g-mols/liter	g-mols/liter	g-mols/liter	g-mols/liter	g-ions/liter	g-mols/liter
13	0	105						0.00E+00						5.012E-06	0.000E+00
14	1	170						4.230E-07						5.435E-06	7.396E-05
15	2	180	1.144E-01	3.791E+12	1.658E+12	3.791E+12	1.658E+12	9.750E-07	8.348E-07	3.515E-06	2.470E-05	0.000E+00	0.000E+00	3.503E-05	1.609E-04
16	2.0336	181	1.192E-01	3.949E+12	1.727E+12	3.949E+12	1.727E+12	9.936E-07	8.704E-07	3.662E-06	2.573E-05	0.000E+00	0.000E+00	3.626E-05	1.638E-04
17	3	185	2.465E-01	8.018E+12	3.535E+12	8.018E+12	3.535E+12	9.936E-07	1.799E-06	7.495E-06	5.224E-05	0.000E+00	0.000E+00	6.754E-05	1.638E-04
18	5	196.1	4.556E-01	1.442E+13	6.513E+12	1.442E+13	6.513E+12	9.936E-07	3.326E-06	1.381E-05	9.396E-05	0.000E+00	0.000E+00	1.171E-04	1.638E-04
19	12	196.1	9.473E-01	2.758E+13	1.361E+13	2.758E+13	1.361E+13	9.936E-07	6.915E-06	2.887E-05	1.797E-04	0.000E+00	0.000E+00	2.215E-04	1.638E-04
20	18	196.1	1.240E+00	3.444E+13	1.802E+13	3.444E+13	1.802E+13	9.936E-07	9.055E-06	3.822E-05	2.244E-04	0.000E+00	0.000E+00	2.777E-04	1.638E-04
21	24	196.1	1.475E+00	3.971E+13	2.168E+13	3.971E+13	2.168E+13	9.936E-07	1.077E-05	4.597E-05	2.587E-04	0.000E+00	0.000E+00	3.215E-04	1.638E-04
22	48	196.1	2.151E+00	5.470E+13	3.267E+13	5.470E+13	3.267E+13	9.936E-07	1.570E-05	6.927E-05	3.564E-04	0.000E+00	0.000E+00	4.473E-04	1.638E-04
23	72	196.1	2.644E+00	6.589E+13	4.092E+13	6.589E+13	4.092E+13	9.936E-07	1.930E-05	8.676E-05	4.292E-04	0.000E+00	0.000E+00	5.413E-04	1.638E-04
24	96	196.1	3.058E+00	7.546E+13	4.781E+13	7.546E+13	4.781E+13	9.936E-07	2.232E-05	1.014E-04	4.916E-04	0.000E+00	0.000E+00	6.213E-04	1.638E-04
25	120	196.1	3.429E+00	8.408E+13	5.381E+13	8.408E+13	5.381E+13	9.936E-07	2.503E-05	1.141E-04	5.478E-04	0.000E+00	0.000E+00	6.929E-04	1.638E-04
26	150	196.1	3.854E+00	9.393E+13	6.041E+13	9.393E+13	6.041E+13	9.936E-07	2.813E-05	1.281E-04	6.119E-04	0.000E+00	0.000E+00	7.742E-04	1.638E-04
27	200	196.1	4.501E+00	1.087E+14	6.971E+13	1.087E+14	6.971E+13	9.936E-07	3.286E-05	1.478E-04	7.083E-04	0.000E+00	0.000E+00	8.950E-04	1.638E-04
28	240	196.1	4.977E+00	1.194E+14	7.599E+13	1.194E+14	7.599E+13	9.936E-07	3.633E-05	1.611E-04	7.781E-04	0.000E+00	0.000E+00	9.815E-04	1.638E-04
29	300	196.1	5.638E+00	1.340E+14	8.390E+13	1.340E+14	8.390E+13	9.936E-07	4.116E-05	1.779E-04	8.732E-04	0.000E+00	0.000E+00	1.098E-03	1.638E-04
30	360	196.1	6.248E+00	1.473E+14	9.044E+13	1.473E+14	9.044E+13	9.936E-07	4.561E-05	1.918E-04	9.594E-04	0.000E+00	0.000E+00	1.203E-03	1.638E-04
31	400	196.1	6.630E+00	1.555E+14	9.422E+13	1.555E+14	9.422E+13	9.936E-07	4.840E-05	1.998E-04	1.013E-03	0.000E+00	0.000E+00	1.267E-03	1.638E-04
32	480	196.1	7.347E+00	1.707E+14	1.007E+14	1.707E+14	1.007E+14	9.936E-07	5.363E-05	2.135E-04	1.112E-03	0.000E+00	0.000E+00	1.385E-03	1.638E-04
33	600	196.1	8.330E+00	1.914E+14	1.086E+14	1.914E+14	1.086E+14	9.936E-07	6.081E-05	2.302E-04	1.247E-03	0.000E+00	0.000E+00	1.544E-03	1.638E-04
34	700	196.1	9.088E+00	2.072E+14	1.141E+14	2.072E+14	1.141E+14	9.936E-07	6.634E-05	2.418E-04	1.350E-03	0.000E+00	0.000E+00	1.664E-03	1.638E-04
35	720	196.1	9.234E+00	2.102E+14	1.151E+14	2.102E+14	1.151E+14	9.936E-07	6.741E-05	2.440E-04	1.370E-03	0.000E+00	0.000E+00	1.687E-03	1.638E-04
36															
37	NOTES:							14	Acid dissociation constant from: Entergy Eng. Report GGNS-98-0039 Rev.3, Sect.6.1,p.21						
38	1	Entergy Eng. Report GGNS-98-0039 Rev.3 , Equation 3-1d [30+90 min release duration]						15	Entergy Calc. XC-Q1111-98013 Rev.2, Section 5.7						
39	2	Ibid, Equation 3-2b						16	See attachment B for gamma free paths						
40	3	Ibid, Equation 3-4d [30+90 min release duration]						17	LSCS UFSAR Rev. 17, Figure 6.2-7a, with 105 initial Temp. per Section 6.2.1.8						
41	4	Ibid, Table A-1						18	Attachment B						
42	5	Ibid, Equation 3-3a						19	Attachment B						
43	6	Ibid, Equation 3-3b						20	USNRC Reg. Guide 1.183						
44	7	Ibid, Equation 3-5a; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5.7						21	Page C6 of this attachment						
45	8	Ibid, Equation 3-5b; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5-7						22	Cable Data from Attachment A.						
46	9	Ibid, Equation 3-0a; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5-7													
47	10	Ibid, Equation 3-5d; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5-7													
48	11	Ibid, Equation 3-5d; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5-7													
49	12	Ibid, Equation 3-5e; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5-7													
50	13	Max. Suppression Pool volume from LSCS Tech. Spec. Bases B 3.6.2.2 plus the 22712 from UFSAR Table 6.2-3 Total Reactor Coolant Volume													

LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1				pH TRANSIENT		END OF CYCLE							
2	**Cable Data** [22]												
3	9,063,064	Cable Surface [Trays] - DRYWELL [cm2]											
4	453,153	Cable Surface [Free air] - DRYWELL [cm2]					4200.26	g. mols $Na_2B_{10}O_{16}*10H_2O$ Added					
5	0	Cable Surface [Free air] - Supp. Pool [cm2]					42002.65	g.atoms total boron					
6	0	Cable Surface [Trays] - Supp. Pool [cm2]											
7													
8						pH EFFECT OF ADDITION OF SODIUM PENTABORATE STANDBY LIQUID CONTROL [SLC] SOLUTION							
9													
10							Strong Acid						
11	Total [OH+] [8]	-LOG(Kw) [9]	Root x [10]	Net [H+] [11]	pH [12]	K_a	g-equiv.	$Na_2B_{10}O_{16}*10H_2O$	Borate	Boric Acid	pK_a	pH	
12	g-ions/liter			g-ions/liter	Before SLC	[14]	Net [H+] * V_{POOL}	g-mols	g-equiv.	g-equiv.	$-\log_{10}K_a$	[15]	
13	1.995E-09	1.353E+01	-3.882E-09	5.016E-06	5.30	7.452E-10	2.196E+01	4200.3	8379	33624	9.13	**8.52**	
14	7.396E-05	1.267E+01	5.432E-06	3.094E-09	8.51	1.125E-09	1.355E-02	4200.3	8401	33602	8.95	**8.35**	
15	1.609E-04	1.257E+01	3.503E-05	2.153E-09	8.67	1.184E-09	9.426E-03	4200.3	8401	33602	8.93	**8.32**	
16	1.639E-04	1.256E+01	3.626E-05	2.175E-09	8.66	1.190E-09	9.524E-03	4200.3	8401	33602	8.92	**8.32**	
17	1.639E-04	1.252E+01	6.753E-05	3.164E-09	8.50	1.213E-09	1.385E-02	4200.3	8401	33602	8.92	**8.31**	
18	1.639E-04	1.241E+01	1.171E-04	8.335E-09	8.08	1.278E-09	3.649E-02	4200.3	8400	33602	8.89	**8.29**	
19	1.639E-04	1.241E+01	1.638E-04	5.761E-05	4.24	1.278E-09	2.522E+02	4200.3	8148	33854	8.89	**8.27**	
20	1.639E-04	1.241E+01	1.638E-04	1.138E-04	3.94	1.278E-09	4.983E+02	4200.3	7902	34100	8.89	**8.26**	
21	1.639E-04	1.241E+01	1.638E-04	1.576E-04	3.80	1.278E-09	6.901E+02	4200.3	7710	34292	8.89	**8.25**	
22	1.639E-04	1.241E+01	1.638E-04	2.835E-04	3.55	1.278E-09	1.241E+03	4200.3	7159	34843	8.89	**8.21**	
23	1.639E-04	1.241E+01	1.638E-04	3.775E-04	3.42	1.278E-09	1.653E+03	4200.3	6748	35255	8.89	**8.18**	
24	1.639E-04	1.241E+01	1.639E-04	4.575E-04	3.34	1.278E-09	2.003E+03	4200.3	6398	35605	8.89	**8.15**	
25	1.639E-04	1.241E+01	1.639E-04	5.290E-04	3.28	1.278E-09	2.316E+03	4200.3	6084	35918	8.89	**8.12**	
26	1.639E-04	1.241E+01	1.639E-04	6.103E-04	3.21	1.278E-09	2.672E+03	4200.3	5728	36274	8.89	**8.09**	
27	1.639E-04	1.241E+01	1.639E-04	7.311E-04	3.14	1.278E-09	3.201E+03	4200.3	5200	36803	8.89	**8.04**	
28	1.639E-04	1.241E+01	1.639E-04	8.177E-04	3.09	1.278E-09	3.580E+03	4200.3	4821	37182	8.89	**8.01**	
29	1.639E-04	1.241E+01	1.639E-04	9.345E-04	3.03	1.278E-09	4.091E+03	4200.3	4309	37693	8.89	**7.95**	
30	1.639E-04	1.241E+01	1.639E-04	1.039E-03	2.98	1.278E-09	4.549E+03	4200.3	3852	38151	8.89	**7.90**	
31	1.639E-04	1.241E+01	1.639E-04	1.103E-03	2.96	1.278E-09	4.830E+03	4200.3	3571	38432	8.89	**7.86**	
32	1.639E-04	1.241E+01	1.639E-04	1.221E-03	2.91	1.278E-09	5.348E+03	4200.3	3053	38950	8.89	**7.79**	
33	1.639E-04	1.241E+01	1.639E-04	1.380E-03	2.86	1.278E-09	6.042E+03	4200.3	2359	39644	8.89	**7.67**	
34	1.639E-04	1.241E+01	1.639E-04	1.500E-03	2.82	1.278E-09	6.568E+03	4200.3	1833	40170	8.89	**7.55**	
35	1.639E-04	1.241E+01	1.639E-04	1.523E-03	2.82	1.278E-09	6.669E+03	4200.3	1732	40271	8.89	**7.53**	
36													
37													
38													
39													
40													
41													
42													
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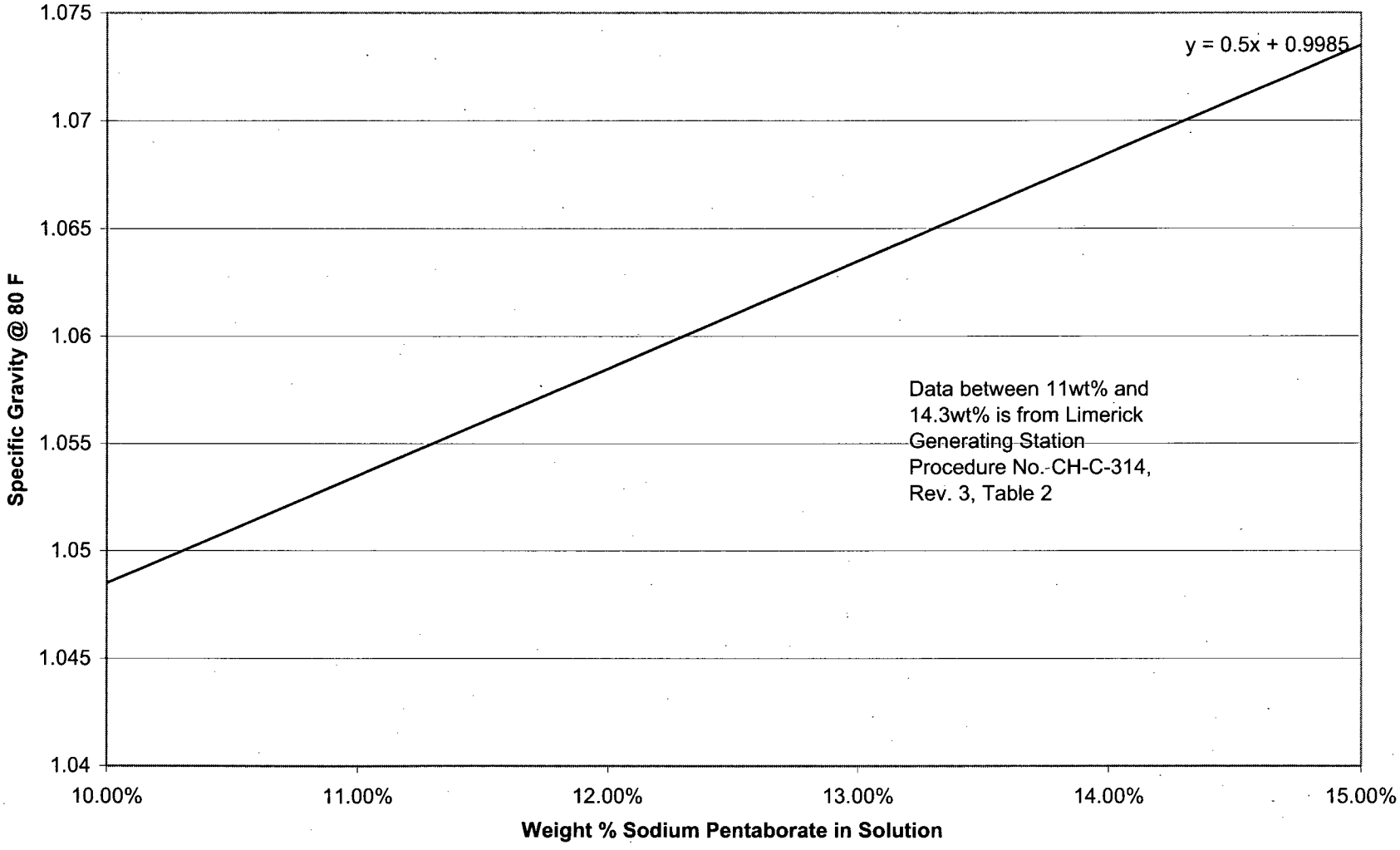
44													
45													
46													
47													
48													
49													
50													

Weight % Sodium Pentaborate in Solution vs. Specific Gravity @ 80 F



LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	A	B	C	D	E	F	G
1		**Available Boron Calculation**					
2							
3		3734985.92					
4		**Quantity**	**Volume**	**Basis**			
5							
6		**Volume of Solution (gal)=**	4.5870E+03	LSCS Technical Specification figure 3.1.7-1			
7		**wt% of $Na_2B_{10}O_{16}$*10H_2O=**	13.4%	LSCS Technical Specification figure 3.1.5-1			
8		**Specific Gravity (gm/cm^3)=**	1.0655	Ref. 5.10 Table CH-C-105-3 and Attachment C, Page C-5			
9		**Conversion Factor (cm^3/gal)=**	3785.41				
10		**Conversion Factor (lbs/gm)=**	0.0022				
11							
12		**Total Mass of Solution (lbs)=**	4.0788E+04				
13		**Total $Na_2B_{10}O_{16}$*10H_2O (lbs)=**	5.4656E+03				
14		**Total $Na_2B_{10}O_{16}$*10H_2O (gm)=**	2.4791E+06				
15		**Total $Na_2B_{10}O_{16}$*10H_2O (gm-moles)=**	4.2003E+03				
16		**Total Boron (gm-moles)=**	4.2003E+04				
17							
18							
19		***Total Available Boron (lbs)=***	***1.0011E+03***				
20		***Total Available Boron (moles)=***	***4.2003E+04***				
21							
22		**B-10 Enrichment=**	**19.90%**				
23							
24			**Molar Mass**		**Total Molar Mass of**		
25			**(gm/mole)**		**$Na_2B_{10}O_{16}$ * 10H_2O**		
26		Sodium	22.99		**590.2330**		
27		***Boron***	***10.8110***				
28		Oxygen	16.00				
29		Hydrogen	1.01				
30		Boron-10	10.0129				
31		Boron-11	11.0093				
32							
33		**Percentage of Total Boron=**	18.3165%				

CH-C-314 TABLE 2

Weight % Sodium pentaborate vs Specific Gravity at 80 degrees C

LGS ONLY

Weight % Sodium pentaborate in Solution	Specific Gravity @ 80 °F	Weight % Sodium pentaborate in Solution	Specific Gravity @ 80 °F
11.0	1.0535	12.7	1.0620
11.1	1.0540	12.8	1.0625
11.2	1.0545	12.9	1.0630
11.3	1.0550	13.0	1.0635
11.4	1.0555	13.1	1.0640
11.5	1.0560	13.2	1.0645
11.6	1.0565	13.3	1.0650
11.7	1.0570	13.4	1.0655
11.8	1.0575	13.5	1.0660
11.9	1.0580	13.6	1.0665
12.0	1.0585	13.7	1.0670
12.1	1.0590	13.8	1.0675
12.2	1.0595	13.9	1.0680
12.3	1.0600	14.0	1.0685
12.4	1.0605	14.1	1.0690
12.5	1.0610	14.2	1.0695
12.6	1.0615	14.3	1.0700

LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	A	B	C	D	E	F	G	H	I
1	**LaSalle pH**					**pH TRANSIENT**	**BEGINNING OF CYCLE**		
2							Linear Absorption Co		
3	V_{POOL}	=(131900+22712)*26	Liters [131900+22712 f				$u_{beta\ air}$	0.0198	1/cm
4	m_I	=170	Iodine inventory [g-atom				$u_{beta\ hypalon}$	52.08	1/cm
5	m_{Cs}	=1900	Cesium inventory [g-ato				$u_{gamma\ air}$	0.0000375	1/cm
6	t_{gap}	=121/3600	Onset of Gap release [h				$u_{gamma\ hypalon}$	0.099	1/cm
7							$r_{[gamma\ free\ path\text{-}DRYWELL]}$ [16]	1145.4	cm
8							$r_{[gamma\ free\ path\text{-}SUPP\ POOL\ Al}$	1145.4	cm
9				INTEGRATED					
10			Beta+Gamma[18]	Gamma[18]	Beta[18]	Gamma[18]	Beta[18]		
11	TIME	POOL Temp	POOL	DRYWELL	DRYWELL	Supp Pool AIR	Supp Pool AIR	[HI] [1]	$[HNO_3]$ [2]
12	Hours	Deg F [17]	Mrad	MeV/cm³	MeV/cm³	MeV/cm³	MeV/cm³	g-mols/liter	g-mols/liter
13	0	80						0	
14	1	175						=$B$4/(120*$B$3)*($A14-(0.5+$B$6))+$B$4/(400*$B$3)	
15	2	187	0.114350690881495	3790880503691	1657791983720.3	3790880503691	1657791983720.3	=$B$4/(120*$B$3)*($A15-(0.5+$B$6))+$B$4/(400*$B$3)	=0.0000073*$C15
16	=0.5+1.5+B6	188	0.119239216805713	3948701086072.37	1726980020148.44	3948701086072.37	1726980020148.44	=$B$4/(120*$B$3)*($A16-(0.5+$B$6))+$B$4/(400*$B$3)	=0.0000073*$C16
17	3	192	0.246503758693045	8018164351599.42	3534749118108.12	8018164351599.42	3534749118108.12	=H$16	=0.0000073*$C17
18	5	196.1	0.455565662635391	14422612584938.7	6513016665673.48	14422612584938.7	6513016665673.48	=H$16	=0.0000073*$C18
19	12	196.1	0.947321614636899	27577220707280.2	13614438264713.9	27577220707280.2	13614438264713.9	=H$16	=0.0000073*$C19
20	18	196.1	1.24035312656345	34442170719290.2	18024890934106.9	34442170719290.2	18024890934106.9	=H$16	=0.0000073*$C20
21	24	196.1	1.47540965485085	39713693242271.1	21681328090223.4	39713693242271.1	21681328090223.4	=H$16	=0.0000073*$C21
22	48	196.1	2.15094766131462	54698635664437.7	32668988446125.1	54698635664437.7	32668988446125.1	=H$16	=0.0000073*$C22
23	72	196.1	2.64394690696364	65885535777661.8	40916807890604.8	65885535777661.8	40916807890604.8	=H$16	=0.0000073*$C23
24	96	196.1	3.05810702190641	75459953398150.9	47805167716688.5	75459953398150.9	47805167716688.5	=H$16	=0.0000073*$C24
25	120	196.1	3.4287336546583	84077551764018.3	53810095454120.1	84077551764018.3	53810095454120.1	=H$16	=0.0000073*$C25
26	150	196.1	3.85395425802565	93929699467813.7	60406887098065.2	93929699467813.7	60406887098065.2	=H$16	=0.0000073*$C26
27	200	196.1	4.50070070908295	108719574927709	69714909824775.2	108719574927709	69714909824775.2	=H$16	=0.0000073*$C27
28	240	196.1	4.97707764028497	119428235673629	75986070859729.3	119428235673629	75986070859729.3	=H$16	=0.0000073*$C28
29	300	196.1	5.63835110881547	134037703829197	83899590931009.8	134037703829197	83899590931009.8	=H$16	=0.0000073*$C29
30	360	196.1	6.2475454026586	147264238135522	90440778258257.2	147264238135522	90440778258257.2	=H$16	=0.0000073*$C30
31	400	196.1	6.62970632166082	155465936395942	94215137770998.6	155465936395942	94215137770998.6	=H$16	=0.0000073*$C31
32	480	196.1	7.34682314059028	170699608182561	100703356872217	170699608182561	100703356872217	=H$16	=0.0000073*$C32
33	600	196.1	8.33040031237555	191367734998598	108581147160701	191367734998598	108581147160701	=H$16	=0.0000073*$C33
34	700	196.1	9.08760106603799	207188024321776	114050181194301	207188024321776	114050181194301	=H$16	=0.0000073*$C34
35	720	196.1	9.23367503333038	210236350018260	115059763356440	210236350018260	115059763356440	=H$16	=0.0000073*$C35
36									
37	NOTES:						14	Acid dissociation constant from: Entergy Eng. Report GGNS-9	
38	1	Entergy Eng. Report					15	Entergy Calc. XC-Q1111-98013 Rev.2, Section 5.7	
39	2	Ibid, Equation 3-2b					16	See attachment B for gamma free paths	
40	3	Ibid, Equation 3-4d [3					17	LSCS UFSAR Rev. 17, Figure 6.2-7a, with 105 initial Temp. pe	
41	4	Ibid, Table A-1					18	Attachment B	
42	5	Ibid, Equation 3-3a					19	Attachment B	
43	6	Ibid, Equation 3-3b					20	USNRC Reg. Guide 1.183	
44	7	Ibid, Equation 3-5a; E					21	See page C6 of this attachment.	
45	8	Ibid, Equation 3-5b; E					22	Cable Data from Attachment A.	
46	9	Ibid, Equation 3-0a; E							
47	10	Ibid, Equation 3-5d; E							
48	11	Ibid, Equation 3-5d; E							
49	12	Ibid, Equation 3-5e; E							
50	13	Max. Suppression Pp							

LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	J	K	L
1		**Cable Data** [22]	
2	$S_{A\ tray}$ [cm^2]	=$P$3*1.1	Cable Surface [trays]- Drywell + 10% contingency
3	$S_{A\ fa}$ [cm^2]	=$P$4*1.1	Cable Surface [free air]- Drywell + 10% contingency
4	$S_{B\ tray}$ [cm^2]	=$P$6*0.95*1.1	Cable Surface [trays] - Supp. Pool + 10% contingency
5	$S_{B\ fa}$ [cm^2]	=P6*1.1*0.05	Cable Surface [free air] - Supp. Pool + 10% contingenc
6			
7	th [cm]	0.61173	Hypalon Jacket Thickness [22]
8			
9			
10	From Beta	From Gamma	From Beta
11	[HCL] -DRYWELL [5]	[HCL] -DRYWELL [5]	[HCL] -CONTAIN [5]
12	g-mols/liter	g-mols/liter	g-mols/liter
13			
14			
15	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E15	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D15	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E15
16	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E16	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D16	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E16
17	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E17	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D17	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E17
18	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E18	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D18	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E18
19	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E19	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D19	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E19
20	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E20	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D20	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E20
21	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E21	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D21	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E21
22	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E22	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D22	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E22
23	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E23	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D23	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E23
24	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E24	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D24	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E24
25	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E25	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D25	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E25
26	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E26	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D26	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E26
27	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E27	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D27	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E27
28	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E28	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D28	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E28
29	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E29	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D29	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E29
30	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E30	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D30	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E30
31	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E31	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D31	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E31
32	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E32	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D32	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E32
33	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E33	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D33	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E33
34	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E34	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D34	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E34
35	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E35	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D35	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E35
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LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	M	N	O
1			
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10	From Gamma		
11	[HCL] -CONTAIN[6]	Total [H+] [7]	[CsOH] [3]
12	g-mols/liter	g-ions/liter	g-mols/liter
13		=POWER(10,-$T$13)+$H13+$I13+$J13+$K13+$L13+$M13	0
14		=POWER(10,-$T$13)+$H14+$I14+$J14+$K14+$L14+$M14	=(0.4*$B$5-0.475*$B$4)/(3*$B$3)*($A14-(0.5+$B$6))+(0.05*$B$5-0.0475*$B$4)/$B$3
15	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D15	=POWER(10,-$T$13)+$H15+$I15+$J15+$K15+$L15+$M15	=(0.4*$B$5-0.475*$B$4)/(3*$B$3)*($A15-(0.5+$B$6))+(0.05*$B$5-0.0475*$B$4)/$B$3
16	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D16	=POWER(10,-$T$13)+$H16+$I16+$J16+$K16+$L16+$M16	=(0.4*$B$5-0.475*$B$4)/(3*$B$3)*($A16-(0.5+$B$6))+(0.05*$B$5-0.0475*$B$4)/$B$3
17	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D17	=POWER(10,-$T$13)+$H17+$I17+$J17+$K17+$L17+$M17	=$O$16
18	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D18	=POWER(10,-$T$13)+$H18+$I18+$J18+$K18+$L18+$M18	=$O$16
19	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D19	=POWER(10,-$T$13)+$H19+$I19+$J19+$K19+$L19+$M19	=$O$16
20	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D20	=POWER(10,-$T$13)+$H20+$I20+$J20+$K20+$L20+$M20	=$O$16
21	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D21	=POWER(10,-$T$13)+$H21+$I21+$J21+$K21+$L21+$M21	=$O$16
22	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D22	=POWER(10,-$T$13)+$H22+$I22+$J22+$K22+$L22+$M22	=$O$16
23	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D23	=POWER(10,-$T$13)+$H23+$I23+$J23+$K23+$L23+$M23	=$O$16
24	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D24	=POWER(10,-$T$13)+$H24+$I24+$J24+$K24+$L24+$M24	=$O$16
25	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D25	=POWER(10,-$T$13)+$H25+$I25+$J25+$K25+$L25+$M25	=$O$16
26	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D26	=POWER(10,-$T$13)+$H26+$I26+$J26+$K26+$L26+$M26	=$O$16
27	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D27	=POWER(10,-$T$13)+$H27+$I27+$J27+$K27+$L27+$M27	=$O$16
28	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D28	=POWER(10,-$T$13)+$H28+$I28+$J28+$K28+$L28+$M28	=$O$16
29	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D29	=POWER(10,-$T$13)+$H29+$I29+$J29+$K29+$L29+$M29	=$O$16
30	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D30	=POWER(10,-$T$13)+$H30+$I30+$J30+$K30+$L30+$M30	=$O$16
31	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D31	=POWER(10,-$T$13)+$H31+$I31+$J31+$K31+$L31+$M31	=$O$16
32	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D32	=POWER(10,-$T$13)+$H32+$I32+$J32+$K32+$L32+$M32	=$O$16
33	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D33	=POWER(10,-$T$13)+$H33+$I33+$J33+$K33+$L33+$M33	=$O$16
34	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D34	=POWER(10,-$T$13)+$H34+$I34+$J34+$K34+$L34+$M34	=$O$16
35	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D35	=POWER(10,-$T$13)+$H35+$I35+$J35+$K35+$L35+$M35	=$O$16
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LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	P	Q	R	S	T	U
1				pH TRANSIEN		BEGINNING OF CYCLE
2	**Cable Data** [22]					
3	9063064	Cable Surface [Trays] - DRYWELL [cm2]				
4	=$P$3*0.05	Cable Surface [Free air] - DRYWELL [cm2]				
5	=P6*0.05	Cable Surface [Free air] - Supp. Pool [cm2]				
6	0	Cable Surface [Trays] - Supp. Pool [cm2]				
7						
8						pH EFFECT
9						
10						
11	Total [OH+] [8]	-LOG(Kw) [9]	Root x [10]	Net [H+] [11]	pH [12]	K_a
12	g-ions/liter			g-ions/liter	Before SLC	[14]
13	=POWER(10,-14)/POWER(10,-$T$13)+$O13	=15.5129-0.0224*$B13+0.00003352*POWER(B13,2)	=(N13+P13-SQRT(POWER(($N13+$P13),2)-(4*(N13*P13-POWER(10,-$Q13)))))/2	=$N13-$R13	5.3	=(0.0585*B13+1.309)/10000000000
14	=POWER(10,-14)/POWER(10,-$T$13)+$O14	=15.5129-0.0224*$B14+0.00003352*POWER(B14,2)	=(N14+P14-SQRT(POWER(($N14+$P14),2)-(4*(N14*P14-POWER(10,-$Q14)))))/2	=$N14-$R14	=-LOG10($S14)	=(0.0585*B14+1.309)/10000000000
15	=POWER(10,-14)/POWER(10,-$T$13)+$O15	=15.5129-0.0224*$B15+0.00003352*POWER(B15,2)	=(N15+P15-SQRT(POWER(($N15+$P15),2)-(4*(N15*P15-POWER(10,-$Q15)))))/2	=$N15-$R15	=-LOG10($S15)	=(0.0585*B15+1.309)/10000000000
16	=POWER(10,-14)/POWER(10,-$T$13)+$O16	=15.5129-0.0224*$B16+0.00003352*POWER(B16,2)	=(N16+P16-SQRT(POWER(($N16+$P16),2)-(4*(N16*P16-POWER(10,-$Q16)))))/2	=$N16-$R16	=-LOG10($S16)	=(0.0585*B16+1.309)/10000000000
17	=POWER(10,-14)/POWER(10,-$T$13)+$O17	=15.5129-0.0224*$B17+0.00003352*POWER(B17,2)	=(N17+P17-SQRT(POWER(($N17+$P17),2)-(4*(N17*P17-POWER(10,-$Q17)))))/2	=$N17-$R17	=-LOG10($S17)	=(0.0585*B17+1.309)/10000000000
18	=POWER(10,-14)/POWER(10,-$T$13)+$O18	=15.5129-0.0224*$B18+0.00003352*POWER(B18,2)	=(N18+P18-SQRT(POWER(($N18+$P18),2)-(4*(N18*P18-POWER(10,-$Q18)))))/2	=$N18-$R18	=-LOG10($S18)	=(0.0585*B18+1.309)/10000000000
19	=POWER(10,-14)/POWER(10,-$T$13)+$O19	=15.5129-0.0224*$B19+0.00003352*POWER(B19,2)	=(N19+P19-SQRT(POWER(($N19+$P19),2)-(4*(N19*P19-POWER(10,-$Q19)))))/2	=$N19-$R19	=-LOG10($S19)	=(0.0585*B19+1.309)/10000000000
20	=POWER(10,-14)/POWER(10,-$T$13)+$O20	=15.5129-0.0224*$B20+0.00003352*POWER(B20,2)	=(N20+P20-SQRT(POWER(($N20+$P20),2)-(4*(N20*P20-POWER(10,-$Q20)))))/2	=$N20-$R20	=-LOG10($S20)	=(0.0585*B20+1.309)/10000000000
21	=POWER(10,-14)/POWER(10,-$T$13)+$O21	=15.5129-0.0224*$B21+0.00003352*POWER(B21,2)	=(N21+P21-SQRT(POWER(($N21+$P21),2)-(4*(N21*P21-POWER(10,-$Q21)))))/2	=$N21-$R21	=-LOG10($S21)	=(0.0585*B21+1.309)/10000000000
22	=POWER(10,-14)/POWER(10,-$T$13)+$O22	=15.5129-0.0224*$B22+0.00003352*POWER(B22,2)	=(N22+P22-SQRT(POWER(($N22+$P22),2)-(4*(N22*P22-POWER(10,-$Q22)))))/2	=$N22-$R22	=-LOG10($S22)	=(0.0585*B22+1.309)/10000000000
23	=POWER(10,-14)/POWER(10,-$T$13)+$O23	=15.5129-0.0224*$B23+0.00003352*POWER(B23,2)	=(N23+P23-SQRT(POWER(($N23+$P23),2)-(4*(N23*P23-POWER(10,-$Q23)))))/2	=$N23-$R23	=-LOG10($S23)	=(0.0585*B23+1.309)/10000000000
24	=POWER(10,-14)/POWER(10,-$T$13)+$O24	=15.5129-0.0224*$B24+0.00003352*POWER(B24,2)	=(N24+P24-SQRT(POWER(($N24+$P24),2)-(4*(N24*P24-POWER(10,-$Q24)))))/2	=$N24-$R24	=-LOG10($S24)	=(0.0585*B24+1.309)/10000000000
25	=POWER(10,-14)/POWER(10,-$T$13)+$O25	=15.5129-0.0224*$B25+0.00003352*POWER(B25,2)	=(N25+P25-SQRT(POWER(($N25+$P25),2)-(4*(N25*P25-POWER(10,-$Q25)))))/2	=$N25-$R25	=-LOG10($S25)	=(0.0585*B25+1.309)/10000000000
26	=POWER(10,-14)/POWER(10,-$T$13)+$O26	=15.5129-0.0224*$B26+0.00003352*POWER(B26,2)	=(N26+P26-SQRT(POWER(($N26+$P26),2)-(4*(N26*P26-POWER(10,-$Q26)))))/2	=$N26-$R26	=-LOG10($S26)	=(0.0585*B26+1.309)/10000000000
27	=POWER(10,-14)/POWER(10,-$T$13)+$O27	=15.5129-0.0224*$B27+0.00003352*POWER(B27,2)	=(N27+P27-SQRT(POWER(($N27+$P27),2)-(4*(N27*P27-POWER(10,-$Q27)))))/2	=$N27-$R27	=-LOG10($S27)	=(0.0585*B27+1.309)/10000000000
28	=POWER(10,-14)/POWER(10,-$T$13)+$O28	=15.5129-0.0224*$B28+0.00003352*POWER(B28,2)	=(N28+P28-SQRT(POWER(($N28+$P28),2)-(4*(N28*P28-POWER(10,-$Q28)))))/2	=$N28-$R28	=-LOG10($S28)	=(0.0585*B28+1.309)/10000000000
29	=POWER(10,-14)/POWER(10,-$T$13)+$O29	=15.5129-0.0224*$B29+0.00003352*POWER(B29,2)	=(N29+P29-SQRT(POWER(($N29+$P29),2)-(4*(N29*P29-POWER(10,-$Q29)))))/2	=$N29-$R29	=-LOG10($S29)	=(0.0585*B29+1.309)/10000000000
30	=POWER(10,-14)/POWER(10,-$T$13)+$O30	=15.5129-0.0224*$B30+0.00003352*POWER(B30,2)	=(N30+P30-SQRT(POWER(($N30+$P30),2)-(4*(N30*P30-POWER(10,-$Q30)))))/2	=$N30-$R30	=-LOG10($S30)	=(0.0585*B30+1.309)/10000000000
31	=POWER(10,-14)/POWER(10,-$T$13)+$O31	=15.5129-0.0224*$B31+0.00003352*POWER(B31,2)	=(N31+P31-SQRT(POWER(($N31+$P31),2)-(4*(N31*P31-POWER(10,-$Q31)))))/2	=$N31-$R31	=-LOG10($S31)	=(0.0585*B31+1.309)/10000000000
32	=POWER(10,-14)/POWER(10,-$T$13)+$O32	=15.5129-0.0224*$B32+0.00003352*POWER(B32,2)	=(N32+P32-SQRT(POWER(($N32+$P32),2)-(4*(N32*P32-POWER(10,-$Q32)))))/2	=$N32-$R32	=-LOG10($S32)	=(0.0585*B32+1.309)/10000000000
33	=POWER(10,-14)/POWER(10,-$T$13)+$O33	=15.5129-0.0224*$B33+0.00003352*POWER(B33,2)	=(N33+P33-SQRT(POWER(($N33+$P33),2)-(4*(N33*P33-POWER(10,-$Q33)))))/2	=$N33-$R33	=-LOG10($S33)	=(0.0585*B33+1.309)/10000000000
34	=POWER(10,-14)/POWER(10,-$T$13)+$O34	=15.5129-0.0224*$B34+0.00003352*POWER(B34,2)	=(N34+P34-SQRT(POWER(($N34+$P34),2)-(4*(N34*P34-POWER(10,-$Q34)))))/2	=$N34-$R34	=-LOG10($S34)	=(0.0585*B34+1.309)/10000000000
35	=POWER(10,-14)/POWER(10,-$T$13)+$O35	=15.5129-0.0224*$B35+0.00003352*POWER(B35,2)	=(N35+P35-SQRT(POWER(($N35+$P35),2)-(4*(N35*P35-POWER(10,-$Q35)))))/2	=$N35-$R35	=-LOG10($S35)	=(0.0585*B35+1.309)/10000000000
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LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	V	W	X	Y	Z	AA
1						
2						
3						
4	='Available B	g. mols				
5	='Available B	g.atoms				
6						
7						
8	**OF ADDITION OF SODIUM PENTABORATE STANDBY LIQUID CONTROL [SLC] SOLUTION**					
9						
10	Strong Acid					
11	g-equiv.	$_{10}O_{16}$*1(	Borate	Boric Acid	pK_a	**pH**
12	let [H+] * V_{Pod}	g-mols	g-equiv.	g-equiv.	$-\log_{10}K_a$	15
13	=S13*$B$3	=$V$4	=W13*2-V13	=W13*8+V13	=-LOG10(U13)	**=Z13+LOG10((X13/$B$3)/(Y13/$B$3))**
14	=S14*$B$3	=$V$4	=W14*2-V14	=W14*8+V14	=-LOG10(U14)	**=Z14+LOG10((X14/$B$3)/(Y14/$B$3))**
15	=S15*$B$3	=$V$4	=W15*2-V15	=W15*8+V15	=-LOG10(U15)	**=Z15+LOG10((X15/$B$3)/(Y15/$B$3))**
16	=S16*$B$3	=$V$4	=W16*2-V16	=W16*8+V16	=-LOG10(U16)	**=Z16+LOG10((X16/$B$3)/(Y16/$B$3))**
17	=S17*$B$3	=$V$4	=W17*2-V17	=W17*8+V17	=-LOG10(U17)	**=Z17+LOG10((X17/$B$3)/(Y17/$B$3))**
18	=S18*$B$3	=$V$4	=W18*2-V18	=W18*8+V18	=-LOG10(U18)	**=Z18+LOG10((X18/$B$3)/(Y18/$B$3))**
19	=S19*$B$3	=$V$4	=W19*2-V19	=W19*8+V19	=-LOG10(U19)	**=Z19+LOG10((X19/$B$3)/(Y19/$B$3))**
20	=S20*$B$3	=$V$4	=W20*2-V20	=W20*8+V20	=-LOG10(U20)	**=Z20+LOG10((X20/$B$3)/(Y20/$B$3))**
21	=S21*$B$3	=$V$4	=W21*2-V21	=W21*8+V21	=-LOG10(U21)	**=Z21+LOG10((X21/$B$3)/(Y21/$B$3))**
22	=S22*$B$3	=$V$4	=W22*2-V22	=W22*8+V22	=-LOG10(U22)	**=Z22+LOG10((X22/$B$3)/(Y22/$B$3))**
23	=S23*$B$3	=$V$4	=W23*2-V23	=W23*8+V23	=-LOG10(U23)	**=Z23+LOG10((X23/$B$3)/(Y23/$B$3))**
24	=S24*$B$3	=$V$4	=W24*2-V24	=W24*8+V24	=-LOG10(U24)	**=Z24+LOG10((X24/$B$3)/(Y24/$B$3))**
25	=S25*$B$3	=$V$4	=W25*2-V25	=W25*8+V25	=-LOG10(U25)	**=Z25+LOG10((X25/$B$3)/(Y25/$B$3))**
26	=S26*$B$3	=$V$4	=W26*2-V26	=W26*8+V26	=-LOG10(U26)	**=Z26+LOG10((X26/$B$3)/(Y26/$B$3))**
27	=S27*$B$3	=$V$4	=W27*2-V27	=W27*8+V27	=-LOG10(U27)	**=Z27+LOG10((X27/$B$3)/(Y27/$B$3))**
28	=S28*$B$3	=$V$4	=W28*2-V28	=W28*8+V28	=-LOG10(U28)	**=Z28+LOG10((X28/$B$3)/(Y28/$B$3))**
29	=S29*$B$3	=$V$4	=W29*2-V29	=W29*8+V29	=-LOG10(U29)	**=Z29+LOG10((X29/$B$3)/(Y29/$B$3))**
30	=S30*$B$3	=$V$4	=W30*2-V30	=W30*8+V30	=-LOG10(U30)	**=Z30+LOG10((X30/$B$3)/(Y30/$B$3))**
31	=S31*$B$3	=$V$4	=W31*2-V31	=W31*8+V31	=-LOG10(U31)	**=Z31+LOG10((X31/$B$3)/(Y31/$B$3))**
32	=S32*$B$3	=$V$4	=W32*2-V32	=W32*8+V32	=-LOG10(U32)	**=Z32+LOG10((X32/$B$3)/(Y32/$B$3))**
33	=S33*$B$3	=$V$4	=W33*2-V33	=W33*8+V33	=-LOG10(U33)	**=Z33+LOG10((X33/$B$3)/(Y33/$B$3))**
34	=S34*$B$3	=$V$4	=W34*2-V34	=W34*8+V34	=-LOG10(U34)	**=Z34+LOG10((X34/$B$3)/(Y34/$B$3))**
35	=S35*$B$3	=$V$4	=W35*2-V35	=W35*8+V35	=-LOG10(U35)	**=Z35+LOG10((X35/$B$3)/(Y35/$B$3))**
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LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	A	B	C	D	E
1	**LaSalle pH CALCULATION**				
2					
3	V_{POOL}	=(131900+22712)*28.3168	Liters [131900+22712 ft^3] [13]		
4	m_I	=290	Iodine inventory [g-atoms] EOC[19]		
5	m_{Cs}	=3200	Cesium inventory [g-atoms] EOC[19]		
6	t_{gap}	=121/3600	Onset of Gap release [hrs] [20]		
7					
8					
9				INTEGRATED DOSES	
10			Beta+Gamma[18]	Gamma[18]	Beta[18]
11	TIME	POOL Temp	POOL	DRYWELL	DRYWELL
12	Hours	Deg F [17]	Mrad	MeV/cm^3	MeV/cm^3
13	0	80			
14	1	175			
15	2	187	0.114350690881495	3790880503691	1657791983720.3
16	=0.5+1.5+B6	188	0.119239216805713	3948701086072.37	1726980020148.44
17	3	192	0.246503758693045	8018164351599.42	3534749118108.12
18	5	196.1	0.455565662635391	14422612584938.7	6513016665673.48
19	12	196.1	0.947321614636899	27577220707280.2	13614438264713.9
20	18	196.1	1.24035312656345	34442170719290.2	18024890934106.9
21	24	196.1	1.47540965485085	39713693242271.1	21681328090223.4
22	48	196.1	2.15094766131462	54698635664437.7	32668988446125.1
23	72	196.1	2.64394690696364	65885535777661.8	40916807890604.8
24	96	196.1	3.05810702190641	75459953398150.9	47805167716688.5
25	120	196.1	3.4287336546583	84077551764018.3	53810095454120.1
26	150	196.1	3.85395425802565	93929699467813.7	60406887098065.2
27	200	196.1	4.50070070908295	108719574927709	69714909824775.2
28	240	196.1	4.97707764028497	119428235673629	75986070859729.3
29	300	196.1	5.63835110881547	134037703829197	83899590931009.8
30	360	196.1	6.2475454026586	147264238135522	90440778258257.2
31	400	196.1	6.62970632166082	155465936395942	94215137770998.6
32	480	196.1	7.34682314059028	170699608182561	100703356872217
33	600	196.1	8.33040031237555	191367734998598	108581147160701
34	700	196.1	9.08760106603799	207188024321776	114050181194301
35	720	196.1	9.23367503333038	210236350018260	115059763356440
36					
37	NOTES:				
38	1	Entergy Eng. Report GGNS-98-0039 Rev.3 , Equation 3-1d [30+90 min release duration]			
39	2	Ibid, Equation 3-2b			
40	3	Ibid, Equation 3-4d [30+90 min release duration]			
41	4	Ibid, Table A-1			
42	5	Ibid, Equation 3-3a			
43	6	Ibid, Equation 3-3b			
44	7	Ibid, Equation 3-5a; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5.7			
45	8	Ibid, Equation 3-5b; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5-7			
46	9	Ibid, Equation 3-0a; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5-7			
47	10	Ibid, Equation 3-5d; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5-7			
48	11	Ibid, Equation 3-5d; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5-7			
49	12	Ibid, Equation 3-5e; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5-7			
50	13	Max. Suppression Pool volume from LSCS Tech. Spec. Bases B 3.6.2.2 plus the 22712 fror			

	F	G
1	**pH TRANSIENT**	**END OF CYCLE**
2		Linear Absorption Coefficients [4]
3		$u_{beta\ air}$
4		$u_{beta\ hypalon}$
5		$u_{gamma\ air}$
6		$u_{gamma\ hypalon}$
7		$r_{[gamma\ free\ path\text{-}DRYWELL]}$ [16]
8		$r_{[gamma\ free\ path\text{-}SUPP\ POOL\ AIR]}$ [16]
9		
10	Gamma[18]	Beta[18]
11	Supp Pool AIR	Supp Pool AIR
12	MeV/cm^3	MeV/cm^3
13		
14		
15	3790880503691	1657791983720.3
16	3948701086072.37	1726980020148.44
17	8018164351599.42	3534749118108.12
18	14422612584938.7	6513016665673.48
19	27577220707280.2	13614438264713.9
20	34442170719290.2	18024890934106.9
21	39713693242271.1	21681328090223.4
22	54698635664437.7	32668988446125.1
23	65885535777661.8	40916807890604.8
24	75459953398150.9	47805167716688.5
25	84077551764018.3	53810095454120.1
26	93929699467813.7	60406887098065.2
27	108719574927709	69714909824775.2
28	119428235673629	75986070859729.3
29	134037703829197	83899590931009.8
30	147264238135522	90440778258257.2
31	155465936395942	94215137770998.6
32	170699608182561	100703356872217
33	191367734998598	108581147160701
34	207188024321776	114050181194301
35	210236350018260	115059763356440
36		
37		14
38		15
39		16
40		17
41		18
42		19
43		20
44		21
45		22
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LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	H	I	J
1			
2			$S_{A\ tray}$ [cm^2]
3	0.0198	1/cm	$S_{A\ fa}$ [cm^2]
4	52.08	1/cm	$S_{B\ tray}$ [cm^2]
5	0.0000375	1/cm	$S_{B\ fa}$ [cm^2]
6	0.099	1/cm	
7	1145.4	cm	th [cm]
8	1145.4	cm	
9			
10			From Beta
11	[HI] [1]	$[HNO_3]$ [2]	[HCL] -DRYWELL [5]
12	g-mols/liter	g-mols/liter	g-mols/liter
13	0		
14	=$B$4/(120*$B$3)*($A14-(0.5+$B$6))+$B$4/(400*$B$3)		
15	=$B$4/(120*$B$3)*($A15-(0.5+$B$6))+$B$4/(400*$B$3)	=0.0000073*$C15	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E15
16	=$B$4/(120*$B$3)*($A16-(0.5+$B$6))+$B$4/(400*$B$3)	=0.0000073*$C16	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E16
17	=H$16	=0.0000073*$C17	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E17
18	=H$16	=0.0000073*$C18	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E18
19	=H$16	=0.0000073*$C19	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E19
20	=H$16	=0.0000073*$C20	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E20
21	=H$16	=0.0000073*$C21	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E21
22	=H$16	=0.0000073*$C22	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E22
23	=H$16	=0.0000073*$C23	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E23
24	=H$16	=0.0000073*$C24	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E24
25	=H$16	=0.0000073*$C25	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E25
26	=H$16	=0.0000073*$C26	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E26
27	=H$16	=0.0000073*$C27	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E27
28	=H$16	=0.0000073*$C28	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E28
29	=H$16	=0.0000073*$C29	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E29
30	=H$16	=0.0000073*$C30	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E30
31	=H$16	=0.0000073*$C31	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E31
32	=H$16	=0.0000073*$C32	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E32
33	=H$16	=0.0000073*$C33	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E33
34	=H$16	=0.0000073*$C34	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E34
35	=H$16	=0.0000073*$C35	=3.512E-20/$B$3*($K$2*0.95/2+$K$3)/$H$3*$E35
36			
37	Acid dissociation constant from: Entergy Eng. Report GGNS-98-0039 Rev.3, Sect.6.1,p.21		
38	Entergy Calc. XC-Q1111-98013 Rev.2, Section 5.7		
39	See attachment B for gamma free paths		
40	LSCS UFSAR Rev. 17, Figure 6.2-7a, with 105 initial Temp. per Section 6.2.1.8		
41	Attachment B		
42	Attachment B		
43	USNRC Reg. Guide 1.183		
44	Page C6 of this attachment		
45	Cable Data from Attachment A.		
46			
47			
48			
49			
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LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	K	L	M
1	**Cable Data** [22]		
2	=$P$3*1.1	Cable Surface [trays]- Drywell + 10% contingency	
3	=$P$4*1.1	Cable Surface [free air]- Drywell + 10% contingency	
4	=$P$6*0.95*1.1	Cable Surface [trays] - Supp. Pool + 10% contingency	
5	=P6*1.1*0.05	Cable Surface [free air] - Supp. Pool + 10% contingency	
6			
7	0.61173	Hypalon Jacket Thickness [22]	
8			
9			
10	From Gamma	From Beta	From Gamma
11	[HCL] -DRYWELL [6]	[HCL] -CONTAIN [5]	[HCL] -CONTAIN [5]
12	g-mols/liter	g-mols/liter	g-mols/liter
13			
14			
15	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D15	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E15	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D15
16	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D16	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E16	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D16
17	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D17	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E17	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D17
18	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D18	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E18	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D18
19	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D19	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E19	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D19
20	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D20	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E20	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D20
21	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D21	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E21	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D21
22	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D22	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E22	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D22
23	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D23	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E23	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D23
24	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D24	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E24	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D24
25	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D25	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E25	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D25
26	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D26	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E26	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D26
27	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D27	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E27	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D27
28	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D28	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E28	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D28
29	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D29	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E29	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D29
30	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D30	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E30	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D30
31	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D31	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E31	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D31
32	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D32	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E32	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D32
33	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D33	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E33	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D33
34	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D34	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E34	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D34
35	=3.512E-20/$B$3*($K$2*0.95+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D35	=3.512E-20/$B$3*($K$4*0.95/2+$K$5)/$H$3*$E35	=3.512E-20/$B$3*($K$4*0.95+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$D35
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LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	N	O	P	Q
1				
2			**Cable Data** [22]	
3			9063064	Cable Surface [Trays] - DRYWELL [cm2]
4			=$P$3*0.05	Cable Surface [Free air] - DRYWELL [cm2]
5			=P6*0.05	Cable Surface [Free air] - TORUS [cm2]
6			0	Cable Surface [Trays] - TORUS [cm2]
7				
8				
9				
10				
11	Total [H+] [7]	[CsOH] [3]	Total [OH+] [8]	-LOG(Kw) [9]
12	g-ions/liter	g-mols/liter	g-ions/liter	
13	=POWER(10,-$T$13)+$H13+$I13+$J13+$K13+$L13+$M13	0	=POWER(10,-14)/POWER(10,-$T$13)+$O13	=15.5129-0.0224*$B13+0.00003352*POWER(B13,2)
14	=POWER(10,-$T$13)+$H14+$I14+$J14+$K14+$L14+$M14	=(0.4*$B$5-0.475*$B$4)/(3*$B$3)*($A14-(0.5+$B$6))+(0.05*$B$5-0.0475*$B$4)/$B$3	=POWER(10,-14)/POWER(10,-$T$13)+$O14	=15.5129-0.0224*$B14+0.00003352*POWER(B14,2)
15	=POWER(10,-$T$13)+$H15+$I15+$J15+$K15+$L15+$M15	=(0.4*$B$5-0.475*$B$4)/(3*$B$3)*($A15-(0.5+$B$6))+(0.05*$B$5-0.0475*$B$4)/$B$3	=POWER(10,-14)/POWER(10,-$T$13)+$O15	=15.5129-0.0224*$B15+0.00003352*POWER(B15,2)
16	=POWER(10,-$T$13)+$H16+$I16+$J16+$K16+$L16+$M16	=(0.4*$B$5-0.475*$B$4)/(3*$B$3)*($A16-(0.5+$B$6))+(0.05*$B$5-0.0475*$B$4)/$B$3	=POWER(10,-14)/POWER(10,-$T$13)+$O16	=15.5129-0.0224*$B16+0.00003352*POWER(B16,2)
17	=POWER(10,-$T$13)+$H17+$I17+$J17+$K17+$L17+$M17	=$O$16	=POWER(10,-14)/POWER(10,-$T$13)+$O17	=15.5129-0.0224*$B17+0.00003352*POWER(B17,2)
18	=POWER(10,-$T$13)+$H18+$I18+$J18+$K18+$L18+$M18	=$O$16	=POWER(10,-14)/POWER(10,-$T$13)+$O18	=15.5129-0.0224*$B18+0.00003352*POWER(B18,2)
19	=POWER(10,-$T$13)+$H19+$I19+$J19+$K19+$L19+$M19	=$O$16	=POWER(10,-14)/POWER(10,-$T$13)+$O19	=15.5129-0.0224*$B19+0.00003352*POWER(B19,2)
20	=POWER(10,-$T$13)+$H20+$I20+$J20+$K20+$L20+$M20	=$O$16	=POWER(10,-14)/POWER(10,-$T$13)+$O20	=15.5129-0.0224*$B20+0.00003352*POWER(B20,2)
21	=POWER(10,-$T$13)+$H21+$I21+$J21+$K21+$L21+$M21	=$O$16	=POWER(10,-14)/POWER(10,-$T$13)+$O21	=15.5129-0.0224*$B21+0.00003352*POWER(B21,2)
22	=POWER(10,-$T$13)+$H22+$I22+$J22+$K22+$L22+$M22	=$O$16	=POWER(10,-14)/POWER(10,-$T$13)+$O22	=15.5129-0.0224*$B22+0.00003352*POWER(B22,2)
23	=POWER(10,-$T$13)+$H23+$I23+$J23+$K23+$L23+$M23	=$O$16	=POWER(10,-14)/POWER(10,-$T$13)+$O23	=15.5129-0.0224*$B23+0.00003352*POWER(B23,2)
24	=POWER(10,-$T$13)+$H24+$I24+$J24+$K24+$L24+$M24	=$O$16	=POWER(10,-14)/POWER(10,-$T$13)+$O24	=15.5129-0.0224*$B24+0.00003352*POWER(B24,2)
25	=POWER(10,-$T$13)+$H25+$I25+$J25+$K25+$L25+$M25	=$O$16	=POWER(10,-14)/POWER(10,-$T$13)+$O25	=15.5129-0.0224*$B25+0.00003352*POWER(B25,2)
26	=POWER(10,-$T$13)+$H26+$I26+$J26+$K26+$L26+$M26	=$O$16	=POWER(10,-14)/POWER(10,-$T$13)+$O26	=15.5129-0.0224*$B26+0.00003352*POWER(B26,2)
27	=POWER(10,-$T$13)+$H27+$I27+$J27+$K27+$L27+$M27	=$O$16	=POWER(10,-14)/POWER(10,-$T$13)+$O27	=15.5129-0.0224*$B27+0.00003352*POWER(B27,2)
28	=POWER(10,-$T$13)+$H28+$I28+$J28+$K28+$L28+$M28	=$O$16	=POWER(10,-14)/POWER(10,-$T$13)+$O28	=15.5129-0.0224*$B28+0.00003352*POWER(B28,2)
29	=POWER(10,-$T$13)+$H29+$I29+$J29+$K29+$L29+$M29	=$O$16	=POWER(10,-14)/POWER(10,-$T$13)+$O29	=15.5129-0.0224*$B29+0.00003352*POWER(B29,2)
30	=POWER(10,-$T$13)+$H30+$I30+$J30+$K30+$L30+$M30	=$O$16	=POWER(10,-14)/POWER(10,-$T$13)+$O30	=15.5129-0.0224*$B30+0.00003352*POWER(B30,2)
31	=POWER(10,-$T$13)+$H31+$I31+$J31+$K31+$L31+$M31	=$O$16	=POWER(10,-14)/POWER(10,-$T$13)+$O31	=15.5129-0.0224*$B31+0.00003352*POWER(B31,2)
32	=POWER(10,-$T$13)+$H32+$I32+$J32+$K32+$L32+$M32	=$O$16	=POWER(10,-14)/POWER(10,-$T$13)+$O32	=15.5129-0.0224*$B32+0.00003352*POWER(B32,2)
33	=POWER(10,-$T$13)+$H33+$I33+$J33+$K33+$L33+$M33	=$O$16	=POWER(10,-14)/POWER(10,-$T$13)+$O33	=15.5129-0.0224*$B33+0.00003352*POWER(B33,2)
34	=POWER(10,-$T$13)+$H34+$I34+$J34+$K34+$L34+$M34	=$O$16	=POWER(10,-14)/POWER(10,-$T$13)+$O34	=15.5129-0.0224*$B34+0.00003352*POWER(B34,2)
35	=POWER(10,-$T$13)+$H35+$I35+$J35+$K35+$L35+$M35	=$O$16	=POWER(10,-14)/POWER(10,-$T$13)+$O35	=15.5129-0.0224*$B35+0.00003352*POWER(B35,2)
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LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	R	S	T	U	V	W	X	Y
1		**pH TRANSIENT**		**END OF CYCLE**				
2								
3								
4					='Available Boron'!C15	g. mols $Na_2B_{10}O_{16}$*$10H_2O$ Added		
5					='Available Boron'!C20	g.atoms total boron		
6								
7								
8				**pH EFFECT OF ADDITION OF SODIUM PENTABORATE STANDBY LIQUID C**				
9								
10					Strong Acid			
11	Root x [10]	Net [H+] [11]	pH [12]	K_a	g-equiv.	$Na_2B_{10}O_{16}$*$10H_2O$	Borate	Boric Acid
12		g-ions/liter	Before SLC	[14]	Net [H+] * V_{POOL}	g-mols	g-equiv.	g-equiv.
13	=(N13+P13-SQRT(POWER(($N13+$P13),2)-(4*(N13*P13-POWER(10,-$Q13)))))/2	=$N13-$R13	5.3	=(0.0585*B13+1.309)/10000000000	=S13*$B$3	=$V$4	=W13*2-V13	=W13*8+V13
14	=(N14+P14-SQRT(POWER(($N14+$P14),2)-(4*(N14*P14-POWER(10,-$Q14)))))/2	=$N14-$R14	=-LOG10($S14)	=(0.0585*B14+1.309)/10000000000	=S14*$B$3	=$V$4	=W14*2-V14	=W14*8+V14
15	=(N15+P15-SQRT(POWER(($N15+$P15),2)-(4*(N15*P15-POWER(10,-$Q15)))))/2	=$N15-$R15	=-LOG10($S15)	=(0.0585*B15+1.309)/10000000000	=S15*$B$3	=$V$4	=W15*2-V15	=W15*8+V15
16	=(N16+P16-SQRT(POWER(($N16+$P16),2)-(4*(N16*P16-POWER(10,-$Q16)))))/2	=$N16-$R16	=-LOG10($S16)	=(0.0585*B16+1.309)/10000000000	=S16*$B$3	=$V$4	=W16*2-V16	=W16*8+V16
17	=(N17+P17-SQRT(POWER(($N17+$P17),2)-(4*(N17*P17-POWER(10,-$Q17)))))/2	=$N17-$R17	=-LOG10($S17)	=(0.0585*B17+1.309)/10000000000	=S17*$B$3	=$V$4	=W17*2-V17	=W17*8+V17
18	=(N18+P18-SQRT(POWER(($N18+$P18),2)-(4*(N18*P18-POWER(10,-$Q18)))))/2	=$N18-$R18	=-LOG10($S18)	=(0.0585*B18+1.309)/10000000000	=S18*$B$3	=$V$4	=W18*2-V18	=W18*8+V18
19	=(N19+P19-SQRT(POWER(($N19+$P19),2)-(4*(N19*P19-POWER(10,-$Q19)))))/2	=$N19-$R19	=-LOG10($S19)	=(0.0585*B19+1.309)/10000000000	=S19*$B$3	=$V$4	=W19*2-V19	=W19*8+V19
20	=(N20+P20-SQRT(POWER(($N20+$P20),2)-(4*(N20*P20-POWER(10,-$Q20)))))/2	=$N20-$R20	=-LOG10($S20)	=(0.0585*B20+1.309)/10000000000	=S20*$B$3	=$V$4	=W20*2-V20	=W20*8+V20
21	=(N21+P21-SQRT(POWER(($N21+$P21),2)-(4*(N21*P21-POWER(10,-$Q21)))))/2	=$N21-$R21	=-LOG10($S21)	=(0.0585*B21+1.309)/10000000000	=S21*$B$3	=$V$4	=W21*2-V21	=W21*8+V21
22	=(N22+P22-SQRT(POWER(($N22+$P22),2)-(4*(N22*P22-POWER(10,-$Q22)))))/2	=$N22-$R22	=-LOG10($S22)	=(0.0585*B22+1.309)/10000000000	=S22*$B$3	=$V$4	=W22*2-V22	=W22*8+V22
23	=(N23+P23-SQRT(POWER(($N23+$P23),2)-(4*(N23*P23-POWER(10,-$Q23)))))/2	=$N23-$R23	=-LOG10($S23)	=(0.0585*B23+1.309)/10000000000	=S23*$B$3	=$V$4	=W23*2-V23	=W23*8+V23
24	=(N24+P24-SQRT(POWER(($N24+$P24),2)-(4*(N24*P24-POWER(10,-$Q24)))))/2	=$N24-$R24	=-LOG10($S24)	=(0.0585*B24+1.309)/10000000000	=S24*$B$3	=$V$4	=W24*2-V24	=W24*8+V24
25	=(N25+P25-SQRT(POWER(($N25+$P25),2)-(4*(N25*P25-POWER(10,-$Q25)))))/2	=$N25-$R25	=-LOG10($S25)	=(0.0585*B25+1.309)/10000000000	=S25*$B$3	=$V$4	=W25*2-V25	=W25*8+V25
26	=(N26+P26-SQRT(POWER(($N26+$P26),2)-(4*(N26*P26-POWER(10,-$Q26)))))/2	=$N26-$R26	=-LOG10($S26)	=(0.0585*B26+1.309)/10000000000	=S26*$B$3	=$V$4	=W26*2-V26	=W26*8+V26
27	=(N27+P27-SQRT(POWER(($N27+$P27),2)-(4*(N27*P27-POWER(10,-$Q27)))))/2	=$N27-$R27	=-LOG10($S27)	=(0.0585*B27+1.309)/10000000000	=S27*$B$3	=$V$4	=W27*2-V27	=W27*8+V27
28	=(N28+P28-SQRT(POWER(($N28+$P28),2)-(4*(N28*P28-POWER(10,-$Q28)))))/2	=$N28-$R28	=-LOG10($S28)	=(0.0585*B28+1.309)/10000000000	=S28*$B$3	=$V$4	=W28*2-V28	=W28*8+V28
29	=(N29+P29-SQRT(POWER(($N29+$P29),2)-(4*(N29*P29-POWER(10,-$Q29)))))/2	=$N29-$R29	=-LOG10($S29)	=(0.0585*B29+1.309)/10000000000	=S29*$B$3	=$V$4	=W29*2-V29	=W29*8+V29
30	=(N30+P30-SQRT(POWER(($N30+$P30),2)-(4*(N30*P30-POWER(10,-$Q30)))))/2	=$N30-$R30	=-LOG10($S30)	=(0.0585*B30+1.309)/10000000000	=S30*$B$3	=$V$4	=W30*2-V30	=W30*8+V30
31	=(N31+P31-SQRT(POWER(($N31+$P31),2)-(4*(N31*P31-POWER(10,-$Q31)))))/2	=$N31-$R31	=-LOG10($S31)	=(0.0585*B31+1.309)/10000000000	=S31*$B$3	=$V$4	=W31*2-V31	=W31*8+V31
32	=(N32+P32-SQRT(POWER(($N32+$P32),2)-(4*(N32*P32-POWER(10,-$Q32)))))/2	=$N32-$R32	=-LOG10($S32)	=(0.0585*B32+1.309)/10000000000	=S32*$B$3	=$V$4	=W32*2-V32	=W32*8+V32
33	=(N33+P33-SQRT(POWER(($N33+$P33),2)-(4*(N33*P33-POWER(10,-$Q33)))))/2	=$N33-$R33	=-LOG10($S33)	=(0.0585*B33+1.309)/10000000000	=S33*$B$3	=$V$4	=W33*2-V33	=W33*8+V33
34	=(N34+P34-SQRT(POWER(($N34+$P34),2)-(4*(N34*P34-POWER(10,-$Q34)))))/2	=$N34-$R34	=-LOG10($S34)	=(0.0585*B34+1.309)/10000000000	=S34*$B$3	=$V$4	=W34*2-V34	=W34*8+V34
35	=(N35+P35-SQRT(POWER(($N35+$P35),2)-(4*(N35*P35-POWER(10,-$Q35)))))/2	=$N35-$R35	=-LOG10($S35)	=(0.0585*B35+1.309)/10000000000	=S35*$B$3	=$V$4	=W35*2-V35	=W35*8+V35
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LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	Z	AA	AB
1			
2			
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8	**CONTROL [SLC] SOLUTION**		
9			
10			
11	pK_a	**pH**	
12	$-\log_{10}K_a$	[15]	
13	=-LOG10(U13)	**=Z13+LOG10((X13/$B$3)/(Y13/$B$3))**	
14	=-LOG10(U14)	**=Z14+LOG10((X14/$B$3)/(Y14/$B$3))**	
15	=-LOG10(U15)	**=Z15+LOG10((X15/$B$3)/(Y15/$B$3))**	
16	=-LOG10(U16)	**=Z16+LOG10((X16/$B$3)/(Y16/$B$3))**	
17	=-LOG10(U17)	**=Z17+LOG10((X17/$B$3)/(Y17/$B$3))**	
18	=-LOG10(U18)	**=Z18+LOG10((X18/$B$3)/(Y18/$B$3))**	
19	=-LOG10(U19)	**=Z19+LOG10((X19/$B$3)/(Y19/$B$3))**	
20	=-LOG10(U20)	**=Z20+LOG10((X20/$B$3)/(Y20/$B$3))**	
21	=-LOG10(U21)	**=Z21+LOG10((X21/$B$3)/(Y21/$B$3))**	
22	=-LOG10(U22)	**=Z22+LOG10((X22/$B$3)/(Y22/$B$3))**	
23	=-LOG10(U23)	**=Z23+LOG10((X23/$B$3)/(Y23/$B$3))**	
24	=-LOG10(U24)	**=Z24+LOG10((X24/$B$3)/(Y24/$B$3))**	
25	=-LOG10(U25)	**=Z25+LOG10((X25/$B$3)/(Y25/$B$3))**	
26	=-LOG10(U26)	**=Z26+LOG10((X26/$B$3)/(Y26/$B$3))**	
27	=-LOG10(U27)	**=Z27+LOG10((X27/$B$3)/(Y27/$B$3))**	
28	=-LOG10(U28)	**=Z28+LOG10((X28/$B$3)/(Y28/$B$3))**	
29	=-LOG10(U29)	**=Z29+LOG10((X29/$B$3)/(Y29/$B$3))**	
30	=-LOG10(U30)	**=Z30+LOG10((X30/$B$3)/(Y30/$B$3))**	
31	=-LOG10(U31)	**=Z31+LOG10((X31/$B$3)/(Y31/$B$3))**	
32	=-LOG10(U32)	**=Z32+LOG10((X32/$B$3)/(Y32/$B$3))**	
33	=-LOG10(U33)	**=Z33+LOG10((X33/$B$3)/(Y33/$B$3))**	
34	=-LOG10(U34)	**=Z34+LOG10((X34/$B$3)/(Y34/$B$3))**	
35	=-LOG10(U35)	**=Z35+LOG10((X35/$B$3)/(Y35/$B$3))**	
36			
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LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	A	B	C	D
1				
2	**Available Boron Calculation**			
3		=131900*28.3168		
4	**Quantity**	**Volume**	**Basis**	
5				
6	**Volume of Solution (gal)=**	4587	LSCS Technical Specification section 4.1.5	
7	**wt% of Na2B10O16*10H2O=**	0.134	LSCS Technical Specification figure 3.1.5-1	
8	**Specific Gravity (gm/cm3)=**	=0.5*($B$7)+0.9985	Table CH-C-105-3 and Attachment C	
9	**Conversion Factor (cm3/gal)=**	3785.412		
10	**Conversion Factor (lbs/gm)=**	=(1/453.59)		
11				
12	**Total Mass of Solution (lbs)=**	=B6*B8*B9*B10		
13	**Total Na2B10O16*10H2O (lbs)=**	=B12*B7		
14	**Total Na2B10O16*10H2O (gm)=**	=B13/B10		
15	**Total Na2B10O16*10H2O (gm-moles)=**	=B14/D26		
16	**Total Boron (gm-moles)=**	=10*B15		
17				
18				
19	**Total Available Boron (lbs)=**	=B13*B33		
20	**Total Available Boron (moles)=**	=(B19/B10)/B27		
21				
22	**B-10 Enrichment=**	**0.199**		
23				
24		Molar Mass		Total Molar Mass of
25		(gm/mole)		Na2B10O16 * 10H2O
26	**Sodium**	22.98977		=2*(B26)+10*(B27)+16*(B28)+10*((2*B29)+(1*(B28)))
27	**Boron**	=B30*(B22)+B31*(1-B22)		
28	**Oxygen**	15.9994		
29	**Hydrogen**	1.00794		
30	**Boron-10**	10.0129369		
31	**Boron-11**	11.0093054		
32				
33	**Percentage of Total Boron=**	=10*(B27)/D26		

LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	CASE 1	GRAND GULF REFERENCE DATA			pH TRANSIENT													
2							Linear Absorption Coefficients [4]			$L_{A\ tray}$ [lb]	873.65	Cable Length [trays]- Zone A				SLC [lbs]	5800	$Na_2B_{10}O_{16}$ Adde
3	V_{POOL}	3.735E+06	Liters [Min.Tech Spec Basis B 3.6.2.2]				$u_{beta\ air}$	1.980E-02	1/cm	$L_{A\ fa}$ [lb]	873.65	Cable Length [free air]- Zone A						
4	m_I	325	Iodine inventory [g-atoms]				$u_{beta\ hypalon}$	52.08	1/cm	$L_{B\ tray}$ [lb]	14049.27	Cable Length [trays] - Zone B						
5	m_{Cs}	2400	Cesium inventory [g-atoms]				$u_{gamma\ air}$	3.75E-05	1/cm	$L_{B\ fa}$ [lb]	1561.03	Cable Length [free air] - Zone B						
6	t_{gap}	0.0336	Onset of Gap release [hrs]				$u_{gamma\ hypalon}$	0.099	1/cm	R_0 [cm^2]/lb	800	Cable Area						
7							$r_{[gamma\ free\ path-A]}$	1112.5	cm	th [cm]	0.7112	Hypalon Jacket Thickness [13]						
8							$r_{[gamma\ free\ path-B]}$	1384	cm									
9				INTEGRATED DOSES						CONCENTRATIONS								
10			Beta+Gamma	Gamma	Beta	Gamma	Beta			From Beta	From Gamma	From Beta	From Gamma					
11	TIME	POOL Temp	POOL	DRYWELL	DRYWELL	CONTAINMENT	CONTAINMENT	[HI] [1]	[HNO_3] [2]	[HCL] -A [5]	[HCL] -A [6]	[HCL] -B [5]	[HCL] -B [6]	Total [H+] [7]	[CsOH] [3]	Total [OH+] [8]	-LOG(Kw) [9]	Root x [10]
12	Hours	Deg F		MeV/cm^3	MeV/cm^3	MeV/cm^3	MeV/cm^3	g-mols/liter	g-mols/liter	g-mols/liter	g-mols/liter	g-mols/liter	g-mols/liter	g-ions/liter	g-mols/liter	g-ions/liter		
13	0	105						0.00E+00						5.012E-06	0.0000E+00	2.00E-09	1.353E+01	-3.8824E-09
14	1	170						5.557E-07						5.568E-06	6.1528E-05	6.15E-05	1.267E+01	5.5638E-06
15	2	180	1.3645E-01	1.4200E+12	2.8733E+12	0.0000E+00	1.1220E+12	1.2809E-06	9.961E-07	1.431E-06	1.383E-06	3.660E-06	0.000E+00	1.376E-05	1.3343E-04	1.33E-04	1.257E+01	1.3760E-05
16	2.0336	181	1.4229E-01	1.4506E+12	2.8784E+12	0.0000E+00	1.2148E+12	1.3052E-06	1.039E-06	1.433E-06	1.412E-06	3.962E-06	0.000E+00	1.416E-05	1.3584E-04	1.36E-04	1.256E+01	1.4162E-05
17	3	185	2.9415E-01	2.1630E+12	3.0235E+12	6.6925E+10	1.2908E+12	1.3052E-06	2.147E-06	1.505E-06	2.106E-06	4.210E-06	7.206E-07	1.701E-05	1.3584E-04	1.36E-04	1.252E+01	1.7004E-05
18	5	196.1	5.4364E-01	3.0991E+12	3.3208E+12	6.4671E+11	1.4468E+12	1.3052E-06	3.969E-06	1.653E-06	3.018E-06	4.719E-06	6.963E-06	2.664E-05	1.3584E-04	1.36E-04	1.241E+01	2.6636E-05
19	12	196.1	1.1306E+00	4.7032E+12	4.3312E+12	1.6404E+12	1.9789E+12	1.3052E-06	8.253E-06	2.156E-06	4.579E-06	6.455E-06	1.766E-05	4.542E-05	1.3584E-04	1.36E-04	1.241E+01	4.5420E-05
20	18	196.1	1.4804E+00	5.4462E+12	5.1609E+12	2.1006E+12	2.4183E+12	1.3052E-06	1.081E-05	2.569E-06	5.303E-06	7.888E-06	2.262E-05	5.550E-05	1.3584E-04	1.36E-04	1.241E+01	5.5498E-05
21	24	196.1	1.7610E+00	5.9733E+12	5.9584E+12	2.4271E+12	2.8430E+12	1.3052E-06	1.286E-05	2.967E-06	5.816E-06	9.273E-06	2.613E-05	6.336E-05	1.3584E-04	1.36E-04	1.241E+01	6.3357E-05
22	48	196.1	2.5674E+00	7.2434E+12	8.8503E+12	3.2138E+12	4.4038E+12	1.3052E-06	1.874E-05	4.406E-06	7.053E-06	1.436E-05	3.460E-05	8.549E-05	1.3584E-04	1.36E-04	1.241E+01	8.5479E-05
23	72	196.1	3.1560E+00	7.9863E+12	1.1319E+13	3.6740E+12	5.7649E+12	1.3052E-06	2.304E-05	5.635E-06	7.776E-06	1.880E-05	3.956E-05	1.011E-04	1.3584E-04	1.36E-04	1.241E+01	1.0112E-04
24	96	196.1	3.6505E+00	8.5135E+12	1.3425E+13	4.0005E+12	6.9521E+12	1.3052E-06	2.665E-05	6.684E-06	8.290E-06	2.268E-05	4.307E-05	1.137E-04	1.3584E-04	1.36E-04	1.241E+01	1.1367E-04
25	120	196.1	4.0931E+00	8.9224E+12	1.5224E+13	4.2538E+12	7.9874E+12	1.3052E-06	2.988E-05	7.580E-06	8.688E-06	2.605E-05	4.580E-05	1.243E-04	1.3584E-04	1.36E-04	1.241E+01	1.2429E-04
26	150	196.1	4.6010E+00	9.3312E+12	1.7105E+13	4.5071E+12	9.0975E+12	1.3052E-06	3.359E-05	8.516E-06	9.086E-06	2.967E-05	4.853E-05	1.357E-04	1.3584E-04	1.36E-04	1.241E+01	1.3515E-04
27	200	196.1	5.3738E+00	9.8584E+12	1.9521E+13	4.8336E+12	1.0574E+13	1.3052E-06	3.923E-05	9.719E-06	9.599E-06	3.449E-05	5.205E-05	1.514E-04	1.3584E-04	1.36E-04	1.241E+01	1.3582E-04
28	240	196.1	5.9431E+00	1.0192E+13	2.0955E+13	5.0405E+12	1.1486E+13	1.3052E-06	4.338E-05	1.043E-05	9.924E-06	3.747E-05	5.427E-05	1.618E-04	1.3584E-04	1.36E-04	1.241E+01	1.3583E-04
29	300	196.1	6.7335E+00	1.0601E+13	2.2506E+13	5.2938E+12	1.2519E+13	1.3052E-06	4.915E-05	1.121E-05	1.032E-05	4.084E-05	5.700E-05	1.748E-04	1.3584E-04	1.36E-04	1.241E+01	1.3584E-04
30	360	196.1	7.4620E+00	1.0935E+13	2.3551E+13	5.5007E+12	1.3252E+13	1.3052E-06	5.447E-05	1.173E-05	1.065E-05	4.323E-05	5.923E-05	1.856E-04	1.3584E-04	1.36E-04	1.241E+01	1.3584E-04
31	400	196.1	7.9191E+00	1.1128E+13	2.4049E+13	5.6203E+12	1.3618E+13	1.3052E-06	5.781E-05	1.197E-05	1.084E-05	4.442E-05	6.052E-05	1.919E-04	1.3584E-04	1.36E-04	1.241E+01	1.3584E-04
32	480	196.1	8.7770E+00	1.1463E+13	2.4727E+13	5.8272E+12	1.4143E+13	1.3052E-06	6.407E-05	1.231E-05	1.116E-05	4.613E-05	6.274E-05	2.027E-04	1.3584E-04	1.36E-04	1.241E+01	1.3584E-04
33	600	196.1	9.9540E+00	1.1871E+13	2.5259E+13	6.0805E+12	1.4592E+13	1.3052E-06	7.266E-05	1.258E-05	1.156E-05	4.760E-05	6.547E-05	2.162E-04	1.3584E-04	1.36E-04	1.241E+01	1.3584E-04
34	700	196.1	1.0861E+01	1.2154E+13	2.5472E+13	6.2555E+12	1.4791E+13	1.3052E-06	7.928E-05	1.268E-05	1.183E-05	4.825E-05	6.736E-05	2.257E-04	1.3584E-04	1.36E-04	1.241E+01	1.3584E-04
35	720	196.1	1.1035E+01	1.2205E+13	2.5500E+13	6.2875E+12	1.4819E+13	1.3052E-06	8.056E-05	1.270E-05	1.188E-05	4.834E-05	6.770E-05	2.275E-04	1.3584E-04	1.36E-04	1.241E+01	1.3584E-04
36																		
37	NOTES																	
38	1	Entergy Eng. Report GGNS-98-0039 Rev.3 , Equation 3-1d [30+90 min release duration]						14	Acid dissociation constant from: Entergy Eng. Rep. GGNS-98-0039 Rev.3, Sect.6.1,p.21									
39	2	Ibid, Equation 3-2b						15	Entergy Calc. XC-Q1111-98013 Rev.2, Section 5.7									
40	3	Ibid, Equation 3-4d [30+90 min release duration]																
41	4	Ibid, Table A-1																
42	5	Ibid, Equation 3-3a; Entergy Calc. XC-Q1111-98013 Rev.2, Equation 5-1																
43	6	Ibid, Equation 3-3b; Entergy Calc. XC-Q1111-98013 Rev.2, Equation 5-2																
44	7	Ibid, Equation 3-5a; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5.7																
45	8	Ibid, Equation 3-5b; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5.7																
46	9	Ibid, Equation 3-0a; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5.7																
47	10	Ibid, Equation 3-5d; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5.7																
48	11	Ibid, Equation 3-5d; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5.7																
49	12	Ibid, Equation 3-5e; Entergy Calc. XC-Q1111-98013 Rev.2, Section 5.7																
50	13	Entergy Calc. XC-Q1111-98013 Rev.2, Section 5.2.2																

LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	S	T	U	V	W	X	Y	Z	AA	AB
1										
2	d [MW=410]									
3										
4										
5										
6										
7										
8			pH EFFECT OF ADDITION OF SODIUM PENTABORATE STANDBY LIQUID CONTROL [SLC] SOLUTION							
9										
10				Strong Acid						
11	Net [H+] [11]	pH [12]	K_a	g-equiv.	$Na_2B_{10}O_{16}$	Borate	Boric Acid	pK_a	pH	
12	g-ions/liter		[14]	Net [H+] * V_{POOL}	g-mols	g-equiv.	g-equiv.	$-\log_{10}K_a$		
13	5.0158E-06	5.300	7.4515E-10	1.8734E+01	6416.8	12815	51353	9.13	8.52	
14	3.7883E-09	8.422	1.1254E-09	1.4149E-02	6416.8	12834	51334	8.95	8.35	
15	2.2650E-09	8.645	1.1839E-09	8.4597E-03	6416.8	12834	51334	8.93	8.32	
16	2.2810E-09	8.642	1.1898E-09	8.5193E-03	6416.8	12834	51334	8.92	8.32	
17	2.5639E-09	8.591	1.2132E-09	9.5763E-03	6416.8	12834	51334	8.92	8.31	
18	3.5683E-09	8.448	1.2781E-09	1.3327E-02	6416.8	12834	51334	8.89	8.29	
19	4.3095E-09	8.366	1.2781E-09	1.6096E-02	6416.8	12834	51334	8.89	8.29	
20	4.8500E-09	8.314	1.2781E-09	1.8115E-02	6416.8	12834	51334	8.89	8.29	
21	5.3759E-09	8.270	1.2781E-09	2.0079E-02	6416.8	12834	51334	8.89	8.29	
22	7.7371E-09	8.111	1.2781E-09	2.8898E-02	6416.8	12834	51334	8.89	8.29	
23	1.1222E-08	7.950	1.2781E-09	4.1914E-02	6416.8	12834	51334	8.89	8.29	
24	1.7575E-08	7.755	1.2781E-09	6.5644E-02	6416.8	12833	51334	8.89	8.29	
25	3.3712E-08	7.472	1.2781E-09	1.2592E-01	6416.8	12833	51334	8.89	8.29	
26	5.6040E-07	6.252	1.2781E-09	2.0931E+00	6416.8	12831	51336	8.89	8.29	
27	1.5579E-05	4.807	1.2781E-09	5.8186E+01	6416.8	12775	51392	8.89	8.29	
28	2.5966E-05	4.586	1.2781E-09	9.6982E+01	6416.8	12737	51431	8.89	8.29	
29	3.8999E-05	4.409	1.2781E-09	1.4566E+02	6416.8	12688	51480	8.89	8.29	
30	4.9778E-05	4.303	1.2781E-09	1.8592E+02	6416.8	12648	51520	8.89	8.28	
31	5.6032E-05	4.252	1.2781E-09	2.0928E+02	6416.8	12624	51544	8.89	8.28	
32	6.6897E-05	4.175	1.2781E-09	2.4986E+02	6416.8	12584	51584	8.89	8.28	
33	8.0343E-05	4.095	1.2781E-09	3.0008E+02	6416.8	12533	51634	8.89	8.28	
34	8.9875E-05	4.046	1.2781E-09	3.3568E+02	6416.8	12498	51670	8.89	8.28	
35	9.1651E-05	4.038	1.2781E-09	3.4231E+02	6416.8	12491	51677	8.89	8.28	
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LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	A	B	C	D	E	F	G	H
1	CASE 1	GRAND GULF REFEREN			pH TRANSIENT			
2							Linear Absorption Coefficie	
3	V_{POOL}	=131900*28.3168	Liters [Min.Tech Spec Basis B				$u_{beta\ air}$	0.0198
4	m_I	=325	Iodine inventory [g-atoms]				$u_{beta\ hypalon}$	52.08
5	m_{Cs}	=2400	Cesium inventory [g-atoms]				$u_{gamma\ air}$	0.0000375
6	t_{gap}	=121/3600	Onset of Gap release [hrs]				$u_{gamma\ hypalon}$	0.099
7							$r_{[gamma\ free\ path-A]}$	1112.5
8							$r_{[gamma\ free\ path-B]}$	1384
9				INTEGRATED DOSES				
10			Beta+Gamma	Gamma	Beta	Gamma	Beta	
11	TIME	POOL Temp	POOL	DRYWELL-A	DRYWELL-A	DRYWELL-B	DRYWELL-B	$[HI]^{-1}$
12	Hours	Deg F	Mrad	MeV/cm³	MeV/cm³	MeV/cm³	MeV/cm³	g-mols/liter
13	0	105						0
14	1	170						=$B$4/(120*$B$3)*($A14-(0.5+$B$6))+$B$4/(400*$B$3)
15	2	180	1.3783	1420000000000	2873300000000	0	1122000000000	=$B$4/(120*$B$3)*($A15-(0.5+$B$6))+$B$4/(400*$B$3)
16	=0.5+1.5+B6	181	1.3792	1450600000000	2878400000000	0	1214800000000	=$B$4/(120*$B$3)*($A16-(0.5+$B$6))+$B$4/(400*$B$3)
17	3	185	1.4049	2163000000000	3023500000000	66925000000	1290800000000	=H$16
18	5	196.1	1.4581	3099100000000	3320800000000	646710000000	1446800000000	=H$16
19	12	196.1	1.6425	4703200000000	4331200000000	1640400000000	1978900000000	=H$16
20	18	196.1	1.7985	5446200000000	5160900000000	2100600000000	2418300000000	=H$16
21	24	196.1	1.9526	5973300000000	5958400000000	2427100000000	2843000000000	=H$16
22	48	196.1	2.5509	7243400000000	8850300000000	3213800000000	4403800000000	=H$16
23	72	196.1	3.1213	7986300000000	11319000000000	3674000000000	5764900000000	=H$16
24	96	196.1	3.6648	8513500000000	13425000000000	4000500000000	6952100000000	=H$16
25	120	196.1	4.183	8922400000000	15224000000000	4253800000000	7987400000000	=H$16
26	150	196.1	4.7966	9331200000000	17105000000000	4507100000000	9097500000000	=H$16
27	200	196.1	5.7409	9858400000000	19521000000000	4833600000000	10574000000000	=H$16
28	240	196.1	6.4313	10192000000000	20955000000000	5040500000000	11486000000000	=H$16
29	300	196.1	7.3686	10601000000000	22506000000000	5293800000000	12519000000000	=H$16
30	360	196.1	8.1999	10935000000000	23551000000000	5500700000000	13252000000000	=H$16
31	400	196.1	8.7011	11128000000000	24049000000000	5620300000000	13618000000000	=H$16
32	480	196.1	9.5911	11463000000000	24727000000000	5827200000000	14143000000000	=H$16
33	600	196.1	10.685	11871000000000	25259000000000	6080500000000	14592000000000	=H$16
34	700	196.1	11.417	12154000000000	25472000000000	6255500000000	14791000000000	=H$16
35	720	196.1	11.546	12205000000000	25500000000000	6287500000000	14819000000000	=H$16
36								
37	NOTES							
38	1	Entergy Eng. Report GGN						14
39	2	Ibid, Equation 3-2b						15
40	3	Ibid, Equation 3-4d [30+9						
41	4	Ibid, Table A-1						
42	5	Ibid, Equation 3-3a; Ente						
43	6	Ibid, Equation 3-3b; Ente						
44	7	Ibid, Equation 3-5a; Enter						
45	8	Ibid, Equation 3-5b; Enter						
46	9	Ibid, Equation 3-0a; Ente						
47	10	Ibid, Equation 3-5d; Ente						
48	11	Ibid, Equation 3-5d; Ente						
49	12	Ibid, Equation 3-5e; Ente						
50	13	Entergy Calc. XC-Q1111						

LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	I	J	K	L
1				
2		$L_{A\ tray}$ [lb]	873.65	Cable Length [trays]- Zone A
3	1/cm	$L_{A\ fa}$ [lb]	873.65	Cable Length [free air]- Zone A
4	1/cm	$L_{B\ tray}$ [lb]	14049.27	Cable Length [trays] - Zone B
5	1/cm	$L_{B\ fa}$ [lb]	1561.03	Cable Length [free air] - Zone B
6	1/cm	R_0 [cm^2]/lb	800	Cable Area
7	cm	th [cm]	=0.28*2.54	Hypalon Jacket Thickness [13]
8	cm			
9		CONCENTRATIONS		
10		From Beta	From Gamma	From Beta
11	$[HNO_3]$ [2]	[HCL] -A [5]	[HCL] -A [6]	[HCL] -B [5]
12	g-mols/liter	g-mols/liter	g-mols/liter	g-mols/liter
13				
14				
15	=0.0000073*$C15	=3.512E-20/$B$3*$K$6*($K$2/2+$K$3)/$H$3*$E15	=3.512E-20/$B$3*$K$6*($K$2+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D15	=3.512E-20/$B$3*$K$6*($K$4/2+$K$5)/$H$3*$G15
16	=0.0000073*$C16	=3.512E-20/$B$3*$K$6*($K$2/2+$K$3)/$H$3*$E16	=3.512E-20/$B$3*$K$6*($K$2+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D16	=3.512E-20/$B$3*$K$6*($K$4/2+$K$5)/$H$3*$G16
17	=0.0000073*$C17	=3.512E-20/$B$3*$K$6*($K$2/2+$K$3)/$H$3*$E17	=3.512E-20/$B$3*$K$6*($K$2+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D17	=3.512E-20/$B$3*$K$6*($K$4/2+$K$5)/$H$3*$G17
18	=0.0000073*$C18	=3.512E-20/$B$3*$K$6*($K$2/2+$K$3)/$H$3*$E18	=3.512E-20/$B$3*$K$6*($K$2+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D18	=3.512E-20/$B$3*$K$6*($K$4/2+$K$5)/$H$3*$G18
19	=0.0000073*$C19	=3.512E-20/$B$3*$K$6*($K$2/2+$K$3)/$H$3*$E19	=3.512E-20/$B$3*$K$6*($K$2+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D19	=3.512E-20/$B$3*$K$6*($K$4/2+$K$5)/$H$3*$G19
20	=0.0000073*$C20	=3.512E-20/$B$3*$K$6*($K$2/2+$K$3)/$H$3*$E20	=3.512E-20/$B$3*$K$6*($K$2+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D20	=3.512E-20/$B$3*$K$6*($K$4/2+$K$5)/$H$3*$G20
21	=0.0000073*$C21	=3.512E-20/$B$3*$K$6*($K$2/2+$K$3)/$H$3*$E21	=3.512E-20/$B$3*$K$6*($K$2+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D21	=3.512E-20/$B$3*$K$6*($K$4/2+$K$5)/$H$3*$G21
22	=0.0000073*$C22	=3.512E-20/$B$3*$K$6*($K$2/2+$K$3)/$H$3*$E22	=3.512E-20/$B$3*$K$6*($K$2+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D22	=3.512E-20/$B$3*$K$6*($K$4/2+$K$5)/$H$3*$G22
23	=0.0000073*$C23	=3.512E-20/$B$3*$K$6*($K$2/2+$K$3)/$H$3*$E23	=3.512E-20/$B$3*$K$6*($K$2+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D23	=3.512E-20/$B$3*$K$6*($K$4/2+$K$5)/$H$3*$G23
24	=0.0000073*$C24	=3.512E-20/$B$3*$K$6*($K$2/2+$K$3)/$H$3*$E24	=3.512E-20/$B$3*$K$6*($K$2+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D24	=3.512E-20/$B$3*$K$6*($K$4/2+$K$5)/$H$3*$G24
25	=0.0000073*$C25	=3.512E-20/$B$3*$K$6*($K$2/2+$K$3)/$H$3*$E25	=3.512E-20/$B$3*$K$6*($K$2+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D25	=3.512E-20/$B$3*$K$6*($K$4/2+$K$5)/$H$3*$G25
26	=0.0000073*$C26	=3.512E-20/$B$3*$K$6*($K$2/2+$K$3)/$H$3*$E26	=3.512E-20/$B$3*$K$6*($K$2+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D26	=3.512E-20/$B$3*$K$6*($K$4/2+$K$5)/$H$3*$G26
27	=0.0000073*$C27	=3.512E-20/$B$3*$K$6*($K$2/2+$K$3)/$H$3*$E27	=3.512E-20/$B$3*$K$6*($K$2+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D27	=3.512E-20/$B$3*$K$6*($K$4/2+$K$5)/$H$3*$G27
28	=0.0000073*$C28	=3.512E-20/$B$3*$K$6*($K$2/2+$K$3)/$H$3*$E28	=3.512E-20/$B$3*$K$6*($K$2+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D28	=3.512E-20/$B$3*$K$6*($K$4/2+$K$5)/$H$3*$G28
29	=0.0000073*$C29	=3.512E-20/$B$3*$K$6*($K$2/2+$K$3)/$H$3*$E29	=3.512E-20/$B$3*$K$6*($K$2+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D29	=3.512E-20/$B$3*$K$6*($K$4/2+$K$5)/$H$3*$G29
30	=0.0000073*$C30	=3.512E-20/$B$3*$K$6*($K$2/2+$K$3)/$H$3*$E30	=3.512E-20/$B$3*$K$6*($K$2+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D30	=3.512E-20/$B$3*$K$6*($K$4/2+$K$5)/$H$3*$G30
31	=0.0000073*$C31	=3.512E-20/$B$3*$K$6*($K$2/2+$K$3)/$H$3*$E31	=3.512E-20/$B$3*$K$6*($K$2+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D31	=3.512E-20/$B$3*$K$6*($K$4/2+$K$5)/$H$3*$G31
32	=0.0000073*$C32	=3.512E-20/$B$3*$K$6*($K$2/2+$K$3)/$H$3*$E32	=3.512E-20/$B$3*$K$6*($K$2+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D32	=3.512E-20/$B$3*$K$6*($K$4/2+$K$5)/$H$3*$G32
33	=0.0000073*$C33	=3.512E-20/$B$3*$K$6*($K$2/2+$K$3)/$H$3*$E33	=3.512E-20/$B$3*$K$6*($K$2+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D33	=3.512E-20/$B$3*$K$6*($K$4/2+$K$5)/$H$3*$G33
34	=0.0000073*$C34	=3.512E-20/$B$3*$K$6*($K$2/2+$K$3)/$H$3*$E34	=3.512E-20/$B$3*$K$6*($K$2+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D34	=3.512E-20/$B$3*$K$6*($K$4/2+$K$5)/$H$3*$G34
35	=0.0000073*$C35	=3.512E-20/$B$3*$K$6*($K$2/2+$K$3)/$H$3*$E35	=3.512E-20/$B$3*$K$6*($K$2+$K$3)*(1-EXP(-$H$5*$H$7))/$H$5*(1-EXP(-$H$6*$K$7))*$D35	=3.512E-20/$B$3*$K$6*($K$4/2+$K$5)/$H$3*$G35
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38	Acid dissociation consta			
39	Entergy Calc. XC-Q111			
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LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	M	N	O
1			
2			
3			
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9			
10	From Gamma		
11	[HCL] -B [6]	Total [H+] [7]	[CsOH] [3]
12	g-mols/liter	g-ions/liter	g-mols/liter
13		=POWER(10,-$T$13)+$H13+$I13+$J13+$K13+$L13+$M13	0
14		=POWER(10,-$T$13)+$H14+$I14+$J14+$K14+$L14+$M14	=(0.4*$B$5-0.475*$B$4)/(3*$B$3)*($A14-(0.5+$B$6))+(0.05*$B$5-0.0475*$B$4)/$B$3
15	=3.512E-20/$B$3*$K$6*($K$4+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$F15	=POWER(10,-$T$13)+$H15+$I15+$J15+$K15+$L15+$M15	=(0.4*$B$5-0.475*$B$4)/(3*$B$3)*($A15-(0.5+$B$6))+(0.05*$B$5-0.0475*$B$4)/$B$3
16	=3.512E-20/$B$3*$K$6*($K$4+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$F16	=POWER(10,-$T$13)+$H16+$I16+$J16+$K16+$L16+$M16	=(0.4*$B$5-0.475*$B$4)/(3*$B$3)*($A16-(0.5+$B$6))+(0.05*$B$5-0.0475*$B$4)/$B$3
17	=3.512E-20/$B$3*$K$6*($K$4+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$F17	=POWER(10,-$T$13)+$H17+$I17+$J17+$K17+$L17+$M17	=$O$16
18	=3.512E-20/$B$3*$K$6*($K$4+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$F18	=POWER(10,-$T$13)+$H18+$I18+$J18+$K18+$L18+$M18	=$O$16
19	=3.512E-20/$B$3*$K$6*($K$4+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$F19	=POWER(10,-$T$13)+$H19+$I19+$J19+$K19+$L19+$M19	=$O$16
20	=3.512E-20/$B$3*$K$6*($K$4+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$F20	=POWER(10,-$T$13)+$H20+$I20+$J20+$K20+$L20+$M20	=$O$16
21	=3.512E-20/$B$3*$K$6*($K$4+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$F21	=POWER(10,-$T$13)+$H21+$I21+$J21+$K21+$L21+$M21	=$O$16
22	=3.512E-20/$B$3*$K$6*($K$4+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$F22	=POWER(10,-$T$13)+$H22+$I22+$J22+$K22+$L22+$M22	=$O$16
23	=3.512E-20/$B$3*$K$6*($K$4+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$F23	=POWER(10,-$T$13)+$H23+$I23+$J23+$K23+$L23+$M23	=$O$16
24	=3.512E-20/$B$3*$K$6*($K$4+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$F24	=POWER(10,-$T$13)+$H24+$I24+$J24+$K24+$L24+$M24	=$O$16
25	=3.512E-20/$B$3*$K$6*($K$4+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$F25	=POWER(10,-$T$13)+$H25+$I25+$J25+$K25+$L25+$M25	=$O$16
26	=3.512E-20/$B$3*$K$6*($K$4+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$F26	=POWER(10,-$T$13)+$H26+$I26+$J26+$K26+$L26+$M26	=$O$16
27	=3.512E-20/$B$3*$K$6*($K$4+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$F27	=POWER(10,-$T$13)+$H27+$I27+$J27+$K27+$L27+$M27	=$O$16
28	=3.512E-20/$B$3*$K$6*($K$4+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$F28	=POWER(10,-$T$13)+$H28+$I28+$J28+$K28+$L28+$M28	=$O$16
29	=3.512E-20/$B$3*$K$6*($K$4+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$F29	=POWER(10,-$T$13)+$H29+$I29+$J29+$K29+$L29+$M29	=$O$16
30	=3.512E-20/$B$3*$K$6*($K$4+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$F30	=POWER(10,-$T$13)+$H30+$I30+$J30+$K30+$L30+$M30	=$O$16
31	=3.512E-20/$B$3*$K$6*($K$4+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$F31	=POWER(10,-$T$13)+$H31+$I31+$J31+$K31+$L31+$M31	=$O$16
32	=3.512E-20/$B$3*$K$6*($K$4+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$F32	=POWER(10,-$T$13)+$H32+$I32+$J32+$K32+$L32+$M32	=$O$16
33	=3.512E-20/$B$3*$K$6*($K$4+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$F33	=POWER(10,-$T$13)+$H33+$I33+$J33+$K33+$L33+$M33	=$O$16
34	=3.512E-20/$B$3*$K$6*($K$4+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$F34	=POWER(10,-$T$13)+$H34+$I34+$J34+$K34+$L34+$M34	=$O$16
35	=3.512E-20/$B$3*$K$6*($K$4+$K$5)*(1-EXP(-$H$5*$H$8))/$H$5*(1-EXP(-$H$6*$K$7))*$F35	=POWER(10,-$T$13)+$H35+$I35+$J35+$K35+$L35+$M35	=$O$16
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LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	P	Q	R	S	T	U
1						
2	SLC [lbs]	5800	$Na_2B_4O_7 10H_2O$ Added [MW=410]			
3						
4						
5						
6						
7						
8						pH EFFECT OF ADDITION OF SODIUM
9						
10						
11	Total [OH+] [8]	-LOG(Kw) [9]	Root x [10]	Net [H+] [11]	pH [12]	K_a
12	g-ions/liter			g-ions/liter		[14]
13	=POWER(10,-14)/POWER(10,-$T$13)+$O13	=15.5129-0.0224*$B13+0.00003352*POWER(B13,2)	=(N13+P13-SQRT(POWER(($N13+$P13),2)-(4*(N13*P13-POWER(10,-$Q13)))))/2	=$N13-$R13	5.3	=(0.0585*B13+1.309)/10000000000
14	=POWER(10,-14)/POWER(10,-$T$13)+$O14	=15.5129-0.0224*$B14+0.00003352*POWER(B14,2)	=(N14+P14-SQRT(POWER(($N14+$P14),2)-(4*(N14*P14-POWER(10,-$Q14)))))/2	=$N14-$R14	=-LOG10($S14)	=(0.0585*B14+1.309)/10000000000
15	=POWER(10,-14)/POWER(10,-$T$13)+$O15	=15.5129-0.0224*$B15+0.00003352*POWER(B15,2)	=(N15+P15-SQRT(POWER(($N15+$P15),2)-(4*(N15*P15-POWER(10,-$Q15)))))/2	=$N15-$R15	=-LOG10($S15)	=(0.0585*B15+1.309)/10000000000
16	=POWER(10,-14)/POWER(10,-$T$13)+$O16	=15.5129-0.0224*$B16+0.00003352*POWER(B16,2)	=(N16+P16-SQRT(POWER(($N16+$P16),2)-(4*(N16*P16-POWER(10,-$Q16)))))/2	=$N16-$R16	=-LOG10($S16)	=(0.0585*B16+1.309)/10000000000
17	=POWER(10,-14)/POWER(10,-$T$13)+$O17	=15.5129-0.0224*$B17+0.00003352*POWER(B17,2)	=(N17+P17-SQRT(POWER(($N17+$P17),2)-(4*(N17*P17-POWER(10,-$Q17)))))/2	=$N17-$R17	=-LOG10($S17)	=(0.0585*B17+1.309)/10000000000
18	=POWER(10,-14)/POWER(10,-$T$13)+$O18	=15.5129-0.0224*$B18+0.00003352*POWER(B18,2)	=(N18+P18-SQRT(POWER(($N18+$P18),2)-(4*(N18*P18-POWER(10,-$Q18)))))/2	=$N18-$R18	=-LOG10($S18)	=(0.0585*B18+1.309)/10000000000
19	=POWER(10,-14)/POWER(10,-$T$13)+$O19	=15.5129-0.0224*$B19+0.00003352*POWER(B19,2)	=(N19+P19-SQRT(POWER(($N19+$P19),2)-(4*(N19*P19-POWER(10,-$Q19)))))/2	=$N19-$R19	=-LOG10($S19)	=(0.0585*B19+1.309)/10000000000
20	=POWER(10,-14)/POWER(10,-$T$13)+$O20	=15.5129-0.0224*$B20+0.00003352*POWER(B20,2)	=(N20+P20-SQRT(POWER(($N20+$P20),2)-(4*(N20*P20-POWER(10,-$Q20)))))/2	=$N20-$R20	=-LOG10($S20)	=(0.0585*B20+1.309)/10000000000
21	=POWER(10,-14)/POWER(10,-$T$13)+$O21	=15.5129-0.0224*$B21+0.00003352*POWER(B21,2)	=(N21+P21-SQRT(POWER(($N21+$P21),2)-(4*(N21*P21-POWER(10,-$Q21)))))/2	=$N21-$R21	=-LOG10($S21)	=(0.0585*B21+1.309)/10000000000
22	=POWER(10,-14)/POWER(10,-$T$13)+$O22	=15.5129-0.0224*$B22+0.00003352*POWER(B22,2)	=(N22+P22-SQRT(POWER(($N22+$P22),2)-(4*(N22*P22-POWER(10,-$Q22)))))/2	=$N22-$R22	=-LOG10($S22)	=(0.0585*B22+1.309)/10000000000
23	=POWER(10,-14)/POWER(10,-$T$13)+$O23	=15.5129-0.0224*$B23+0.00003352*POWER(B23,2)	=(N23+P23-SQRT(POWER(($N23+$P23),2)-(4*(N23*P23-POWER(10,-$Q23)))))/2	=$N23-$R23	=-LOG10($S23)	=(0.0585*B23+1.309)/10000000000
24	=POWER(10,-14)/POWER(10,-$T$13)+$O24	=15.5129-0.0224*$B24+0.00003352*POWER(B24,2)	=(N24+P24-SQRT(POWER(($N24+$P24),2)-(4*(N24*P24-POWER(10,-$Q24)))))/2	=$N24-$R24	=-LOG10($S24)	=(0.0585*B24+1.309)/10000000000
25	=POWER(10,-14)/POWER(10,-$T$13)+$O25	=15.5129-0.0224*$B25+0.00003352*POWER(B25,2)	=(N25+P25-SQRT(POWER(($N25+$P25),2)-(4*(N25*P25-POWER(10,-$Q25)))))/2	=$N25-$R25	=-LOG10($S25)	=(0.0585*B25+1.309)/10000000000
26	=POWER(10,-14)/POWER(10,-$T$13)+$O26	=15.5129-0.0224*$B26+0.00003352*POWER(B26,2)	=(N26+P26-SQRT(POWER(($N26+$P26),2)-(4*(N26*P26-POWER(10,-$Q26)))))/2	=$N26-$R26	=-LOG10($S26)	=(0.0585*B26+1.309)/10000000000
27	=POWER(10,-14)/POWER(10,-$T$13)+$O27	=15.5129-0.0224*$B27+0.00003352*POWER(B27,2)	=(N27+P27-SQRT(POWER(($N27+$P27),2)-(4*(N27*P27-POWER(10,-$Q27)))))/2	=$N27-$R27	=-LOG10($S27)	=(0.0585*B27+1.309)/10000000000
28	=POWER(10,-14)/POWER(10,-$T$13)+$O28	=15.5129-0.0224*$B28+0.00003352*POWER(B28,2)	=(N28+P28-SQRT(POWER(($N28+$P28),2)-(4*(N28*P28-POWER(10,-$Q28)))))/2	=$N28-$R28	=-LOG10($S28)	=(0.0585*B28+1.309)/10000000000
29	=POWER(10,-14)/POWER(10,-$T$13)+$O29	=15.5129-0.0224*$B29+0.00003352*POWER(B29,2)	=(N29+P29-SQRT(POWER(($N29+$P29),2)-(4*(N29*P29-POWER(10,-$Q29)))))/2	=$N29-$R29	=-LOG10($S29)	=(0.0585*B29+1.309)/10000000000
30	=POWER(10,-14)/POWER(10,-$T$13)+$O30	=15.5129-0.0224*$B30+0.00003352*POWER(B30,2)	=(N30+P30-SQRT(POWER(($N30+$P30),2)-(4*(N30*P30-POWER(10,-$Q30)))))/2	=$N30-$R30	=-LOG10($S30)	=(0.0585*B30+1.309)/10000000000
31	=POWER(10,-14)/POWER(10,-$T$13)+$O31	=15.5129-0.0224*$B31+0.00003352*POWER(B31,2)	=(N31+P31-SQRT(POWER(($N31+$P31),2)-(4*(N31*P31-POWER(10,-$Q31)))))/2	=$N31-$R31	=-LOG10($S31)	=(0.0585*B31+1.309)/10000000000
32	=POWER(10,-14)/POWER(10,-$T$13)+$O32	=15.5129-0.0224*$B32+0.00003352*POWER(B32,2)	=(N32+P32-SQRT(POWER(($N32+$P32),2)-(4*(N32*P32-POWER(10,-$Q32)))))/2	=$N32-$R32	=-LOG10($S32)	=(0.0585*B32+1.309)/10000000000
33	=POWER(10,-14)/POWER(10,-$T$13)+$O33	=15.5129-0.0224*$B33+0.00003352*POWER(B33,2)	=(N33+P33-SQRT(POWER(($N33+$P33),2)-(4*(N33*P33-POWER(10,-$Q33)))))/2	=$N33-$R33	=-LOG10($S33)	=(0.0585*B33+1.309)/10000000000
34	=POWER(10,-14)/POWER(10,-$T$13)+$O34	=15.5129-0.0224*$B34+0.00003352*POWER(B34,2)	=(N34+P34-SQRT(POWER(($N34+$P34),2)-(4*(N34*P34-POWER(10,-$Q34)))))/2	=$N34-$R34	=-LOG10($S34)	=(0.0585*B34+1.309)/10000000000
35	=POWER(10,-14)/POWER(10,-$T$13)+$O35	=15.5129-0.0224*$B35+0.00003352*POWER(B35,2)	=(N35+P35-SQRT(POWER(($N35+$P35),2)-(4*(N35*P35-POWER(10,-$Q35)))))/2	=$N35-$R35	=-LOG10($S35)	=(0.0585*B35+1.309)/10000000000
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LASALLE GENERATING STATION
TRANSIENT POOL pH CALCULATION

	V	W	X	Y	Z	AA
1						
2						
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7						
8						
9						
10	Strong Acid					
11	g-equiv.	$Na_2B_4O_7 10H_2O$	Borate	Boric Acid	pK_a	pH
12	Net [H+] * V_{POOL}	g-mols	g-equiv.	g-equiv.	$-\log_{10}K_a$	[15]
13	=S13*$B$3	=$Q$2*453.6/410	=W13*2-V13	=W13*8+V13	=-LOG10(U13)	=Z13+LOG10((X13/$B$3)/(Y13/$B$3))
14	=S14*$B$3	=$Q$2*453.6/410	=W14*2-V14	=W14*8+V14	=-LOG10(U14)	=Z14+LOG10((X14/$B$3)/(Y14/$B$3))
15	=S15*$B$3	=$Q$2*453.6/410	=W15*2-V15	=W15*8+V15	=-LOG10(U15)	=Z15+LOG10((X15/$B$3)/(Y15/$B$3))
16	=S16*$B$3	=$Q$2*453.6/410	=W16*2-V16	=W16*8+V16	=-LOG10(U16)	=Z16+LOG10((X16/$B$3)/(Y16/$B$3))
17	=S17*$B$3	=$Q$2*453.6/410	=W17*2-V17	=W17*8+V17	=-LOG10(U17)	=Z17+LOG10((X17/$B$3)/(Y17/$B$3))
18	=S18*$B$3	=$Q$2*453.6/410	=W18*2-V18	=W18*8+V18	=-LOG10(U18)	=Z18+LOG10((X18/$B$3)/(Y18/$B$3))
19	=S19*$B$3	=$Q$2*453.6/410	=W19*2-V19	=W19*8+V19	=-LOG10(U19)	=Z19+LOG10((X19/$B$3)/(Y19/$B$3))
20	=S20*$B$3	=$Q$2*453.6/410	=W20*2-V20	=W20*8+V20	=-LOG10(U20)	=Z20+LOG10((X20/$B$3)/(Y20/$B$3))
21	=S21*$B$3	=$Q$2*453.6/410	=W21*2-V21	=W21*8+V21	=-LOG10(U21)	=Z21+LOG10((X21/$B$3)/(Y21/$B$3))
22	=S22*$B$3	=$Q$2*453.6/410	=W22*2-V22	=W22*8+V22	=-LOG10(U22)	=Z22+LOG10((X22/$B$3)/(Y22/$B$3))
23	=S23*$B$3	=$Q$2*453.6/410	=W23*2-V23	=W23*8+V23	=-LOG10(U23)	=Z23+LOG10((X23/$B$3)/(Y23/$B$3))
24	=S24*$B$3	=$Q$2*453.6/410	=W24*2-V24	=W24*8+V24	=-LOG10(U24)	=Z24+LOG10((X24/$B$3)/(Y24/$B$3))
25	=S25*$B$3	=$Q$2*453.6/410	=W25*2-V25	=W25*8+V25	=-LOG10(U25)	=Z25+LOG10((X25/$B$3)/(Y25/$B$3))
26	=S26*$B$3	=$Q$2*453.6/410	=W26*2-V26	=W26*8+V26	=-LOG10(U26)	=Z26+LOG10((X26/$B$3)/(Y26/$B$3))
27	=S27*$B$3	=$Q$2*453.6/410	=W27*2-V27	=W27*8+V27	=-LOG10(U27)	=Z27+LOG10((X27/$B$3)/(Y27/$B$3))
28	=S28*$B$3	=$Q$2*453.6/410	=W28*2-V28	=W28*8+V28	=-LOG10(U28)	=Z28+LOG10((X28/$B$3)/(Y28/$B$3))
29	=S29*$B$3	=$Q$2*453.6/410	=W29*2-V29	=W29*8+V29	=-LOG10(U29)	=Z29+LOG10((X29/$B$3)/(Y29/$B$3))
30	=S30*$B$3	=$Q$2*453.6/410	=W30*2-V30	=W30*8+V30	=-LOG10(U30)	=Z30+LOG10((X30/$B$3)/(Y30/$B$3))
31	=S31*$B$3	=$Q$2*453.6/410	=W31*2-V31	=W31*8+V31	=-LOG10(U31)	=Z31+LOG10((X31/$B$3)/(Y31/$B$3))
32	=S32*$B$3	=$Q$2*453.6/410	=W32*2-V32	=W32*8+V32	=-LOG10(U32)	=Z32+LOG10((X32/$B$3)/(Y32/$B$3))
33	=S33*$B$3	=$Q$2*453.6/410	=W33*2-V33	=W33*8+V33	=-LOG10(U33)	=Z33+LOG10((X33/$B$3)/(Y33/$B$3))
34	=S34*$B$3	=$Q$2*453.6/410	=W34*2-V34	=W34*8+V34	=-LOG10(U34)	=Z34+LOG10((X34/$B$3)/(Y34/$B$3))
35	=S35*$B$3	=$Q$2*453.6/410	=W35*2-V35	=W35*8+V35	=-LOG10(U35)	=Z35+LOG10((X35/$B$3)/(Y35/$B$3))
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Computer Disclosure Sheet

Discipline Nuclear

Client:: Exelon Corporation
Project: LaSalle County Station

Date: October 2008
Job No. 28062-LAS0152

Program(s) used	Rev No.	Rev Date
Excel Spreadsheet included	N/A	N/A

Calculation No.: L-003064 Rev 1

Status [ ] Prelim.
[X] Final
[ ] Void

WGI Prequalification [ ] Yes
[X] No, the Excel Spreadsheet qualification is included herein

Run No. N/A Description: The Excel spreadsheet utilized is presented in Attachment C included with the Calculation. The cell formulae, presented in Attachment D of this Calculation, are based on the methodology developed for the equivalent calculations done for the Grand Gulf Nuclear Station, as described in Attachment F and G included with the Calculation. The accuracy of translation of these formulas is verified by duplicating the Grand Gulf calculation, as presented in Attachment E included with the Calculation.

Analysis Description: The Excel spreadsheet uses input values of pool volume, I and Cs inventory, onset of gap release, absorption coefficients, cable surface area and Hypalon jacket thickness, pool temperature as a function of time, and integrated drywell and containment air beta and gamma doses as a function of time. It calculates HI, Nitric acid, hydrochloric acid (from cable radiolysis), H+, CsOH, OH, and pH in the suppression pool as a function of time. This calculation is done with consideration of sodium pentaborate addition (as an input quantity).

The attached computer output has been reviewed, the input data checked,
And the results approved for release. Input criteria for this analysis were established.

By: William Golden On:

Run by: William Golden 10/2008

Checked by: Harold Rothstein 10/2008

Approved by: Harold Rothstein 10/2008