

Enclosure (11)

CA06421 Gas Gap Isotopic Fraction Calculation

**Calvert Cliffs Nuclear Power, Inc.
November 3, 2005**

ESP No.:	ES200100401	Supp No.	000	Rev. No.	000	Page 1 of 1
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FORM 19, CALCULATION COVER SHEET

A. INITIATION (Control Doc Type - DCALC)

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DCALC No.: CA06421

Revision No.: 000

Vendor Calculation (Check one): ☐ Yes ☒ No

Responsible Group: FOSU

Responsible Engineer: Gerard E. Gryczkowski

B. CALCULATION

ENGINEERING
DISCIPLINE:☐ Civil☐ Instr & Controls☒ Nuc Engrg☐ Electrical☐ Mechanical☐ Nuc Fuel Mngmt☐ Other:☐ Reliability Engrg

Title: GAS GAP ISOTOPIC FRACTION CALCULATIONS

Unit

☐ 1☐ 2☒ COMMON

Proprietary or Safeguards Calculation

☐ YES☒ NO

Comments: NA

Vendor Calc No.: NA

REVISION NO.: NA

Vendor Name: NA

Safety Class (Check one):

☒ SR☐ AQ☐ NSR

There are assumptions that require Verification during walkdown:

AIT #: NA

This calculation SUPERSEDES: NA

C. REVIEW AND APPROVAL:

Responsible Engineer: Gerard E. Gryczkowski

6/28/2005

Printed Name and Signature

Date

Independent Reviewer: Ian M. Sommerville

Printed Name and Signature

Date

Approval:

Phillip Wengloski

Printed Name and Signature

Date

IF the results or conclusions of this calculation or revision might affect a procedure or the basis of a procedure, a Change Notification Form (Form 14) shall be forwarded to the Procedure Development Unit with a summary of the calculation's purpose and results.

2. LIST OF EFFECTIVE PAGES

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001	0	002	0	003	0	004	0	005	0
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011	0	012	0	013	0	014	0	015	0
016	0	017	0	018	0	019	0	020	0
021	0	022	0	023	0	024	0	025	0
026	0	027	0	028	0	029	0	030	0
031	0	032	0	033	0	034	0	035	0
036	0	037	0	038	0	039	0	040	0
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236	0	237	0	238	0	239	0	240	0
241	0	242	0	243	0	244	0	245	0
246	0	247	0	248	0	249	0	250	0

251	0	252	0	253	0	254	0	255	0
256	0	257	0	258	0	259	0	260	0
261	0	262	0	263	0	264	0	265	0
266	0	267	0	268	0	269	0	270	0
271	0	272	0	273	0	274	0	275	0
276	0	277	0	278	0	279	0	280	0
281	0	282	0	283	0	284	0	285	0
286	0	287	0	288	0	289	0	290	0
291	0	292	0	293	0	294	0	295	0
296	0	297	0	298	0	299	0	300	0
301	0	302	0	303	0	304	0	305	0
306	0	307	0						

3. REVIEWER COMMENTS

(1)p.7 - Table 1 – High Burnup Assemblies

There should be a reference for the EFPD column

Response: Reference 30 was added for the assembly mass reference, and Reference 31 was added for the EFPD reference.

(2)p.11 - Include the following statement:

The low temperature equations are included for completeness but are not used.

Response: OK

(3)p.11 - Should indicate which equations are used with what nuclides

Response: As indicated in the write-up, only Kr-85 is considered long-lived (half-life greater than one year).

(4) Tables (Attach E, F, G) should indicate the file name and Interpin case such that A, B, or C can be related to files 01H, 01M, 02H, 03 etc.

Response: Attachment E is Case A from Interpin Run 3. Attachment F is Case B from Interpin runs 1H, 1M, 1L, and 2M. Attachment G is Case C from Interpin runs 1H, 1M, 1L, 2H, 2M, and 2L.

(5) p. 18 - Table 6: The note at the bottom regarding Cases B and C should not state that a pf of 1.216 was used; 1.089 is the correct value

Response: Corrected

(6) The following flow chart of the cases and their file names and input values is recommended to assist the reader in identifying the location and flow of information.

CASE	MWD/mtu	APF	RPF	InterpinCase	Spreadsheet	Worksheet		
A	62	1.0	1.0	3	GasgapI1.xls	I131RG	etc	
					GasgapX1	Xe133RG	etc	
					GasgapK1	Kr85RG	etc	
B	12	1.65	1.1	1H	GasgapI1	I131	etc	
	12	1.65	1.0	1M		Kr85	etc	
	12	1.65	0.9	1L		Xe133	etc	
	26	1.089	1.0	2M				
C	12	1.65	1.1	1H	GasgapI2	I131	etc	
	12	1.65	1.0	1M				
	12	1.65	0.9	1L				
	26	1.089	1.1	2H	GasgapI2	I131	etc	(average)
		1.089	0.9	2L		I131(2)	etc	(average)

** - Each worksheet provides a result for input to Table 6, Results. e.g., - I-131, and all, worksheets include conditions which encompass all 62,000 mwd/mtu, i.e., 12, 12, 12, and 26 mwd/mtu.

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5. INTRODUCTION

For current Calvert Cliffs Nuclear Power Plant (CCNPP) Design Basis Accidents (DBAs) in which cladding failure releases the gas gap activity of the affected fuel rods, the gas gap fractions were extracted from Safety Guide 25 (Ref.4) in conjunction with the high burnup Safety Evaluation Report (Ref.5), and the NRC generic approval of the Combustion Engineering (CE) Topical Report (Ref.6). All of the gas gap activity in the damaged rods is released and consists of 10% of the total noble gases other than Kr-85, 30% of the Kr-85, 10% of the total radioactive iodines except I-131, and 12% of the I-131 inventory at the time of the accident.

In December 1999, the NRC issued a new regulation, 10 CFR 50.67, "Accident Source Term," which provided a mechanism for licensed power reactors to replace the traditional accident source term used in their DBA analyses with an alternate source term. Regulatory guidance for the implementation of these ASTs was provided in Regulatory Guide (RG) 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors" (Ref.1) issued in July of 2000. In addition, the methodology for Standard Source Terms (SSTs) was upgraded in May 2003 via RG 1.195 (Ref.2). For the AST and updated SST methodologies, all of the gas gap activity in the damaged rods is released and consists of 5% of the total noble gases other than Kr-85, 10% of the Kr-85, 5% of the total radioactive iodines except I-131, and 8% of the I-131 inventory at the time of the accident.

However, footnotes in Ref.1-2 state that "The release fractions listed here have been determined to be acceptable for use with currently approved LWR fuel with a peak burnup up to 62000 MWD/MTU provided that the maximum linear heat generation rate does not exceed 6.3 kw/ft peak rod average power for rods with burnups that exceed 54 GWD/MTU. As an alternative, fission gas release calculations performed using NRC-approved methodologies may be considered on a case-by-case basis. To be acceptable, these calculations must use a projected power history that will bound the limiting projected plant-specific power history for the specified fuel load."

Assembly and peak pin burnups and linear heat generation rates were examined for previous cycles for units 1 and 2. It was discovered that linear heat generation rates in excess of 6.3 kw/ft exist for pins with burnups in excess of 54 GWD/MTU. Thus, alternative fission gas release fractions must be calculated using an NRC-approved methodology.

An approved NRC methodology is that presented in ANSI/ANS-5.4-1982 (Refs.7-8) for high and low temperature releases. The most limiting power history is a two cycle burn, assuming the maximum radial peaking factor of 1.65 for cycle 1 and a peaking factor of 1.089 in cycle 2, a conservative power in conformance with the radial falloff curve. Note that assemblies burned three cycles have very low power fractions in the third cycle and are thus not limiting. Axial profile effects were also modeled. The fuel temperature profile was modeled using the Studsvik computer code INTERPIN (Ref.9), which conservatively showed large increases in fuel temperature with increasing burnup.

The results indicate that gas gap fractions must be significantly increased for the limiting pins with burnups over 54 GWD/MTU and with linear heat generation rates in excess of 6.3 kw/ft. Doubling of the gas gap release fractions detailed in Refs.1-2 yield bounding and conservative results. All of the gas gap activity in the damaged rods is released and consists of 10% of the total noble gases other than Kr-85, 20% of the Kr-85, 10% of the total radioactive iodines except I-131, and 16% of the I-131 inventory at the time of the accident. Note that these results are similar to those proposed by Fort Calhoun Station and D.C.Cook Units 1 and 2 in Refs.25 and 26.

6.1 Applicability

[illegible]

2N628	12	29366	51312	21946	0.389147	636.674	13.4138	1.0781	6.6904
2N623	12	29366	51312	21946	0.388883	636.674	13.4047	1.0773	6.6859
2N611	12	29366	51312	21946	0.389577	636.674	13.4286	1.0793	6.6978
2N604	12	29366	51312	21946	0.388632	636.674	13.3961	1.0766	6.6815
2N644	12	29507	51281	21774	0.388753	636.674	13.2952	1.0685	6.6312
2N641	12	29507	51281	21774	0.388897	636.674	13.3001	1.0689	6.6337
2N639	12	29507	51281	21774	0.389218	636.674	13.3111	1.0698	6.6392
2N618	12	29507	51281	21774	0.388708	636.674	13.2937	1.0684	6.6305
CC1-FO-2001-0140: Maximum axially averaged fuel rod burnup is 57820 MWD/T for U1C16									
1T2	16	25651	48332	22681	0.407000	699.521	13.1964	1.0606	6.5820

Thus the requirements of RG 1.183 (Ref.1) footnote 11 of peak pin average burnups in excess of 54 GWD/MTU with sustained linear heat generation rates less than 6.3 kw/ft are not met for all peak pins.

6.2 Limiting Power History

Footnotes in Ref.1-2 state that "To be acceptable, these calculations must use a projected power history that will bound the limiting projected plant-specific power history for the specified fuel load." The power histories in Table 2 are limiting for a two or three cycle assembly. Note that since end-of-cycle (EOC) powers and burnups determine the peak gas gap fractions, the two cycle assembly is most limiting. This is evident from the assembly data in Attachment A and Table 1. For the two cycle assembly, the second cycle power fraction value of 1.089 incorporates the radial falloff curve value at 62 gwd/mtu of Attachment B ($1.65 \times 0.66 = 1.089$)(Ref.18). Since the two cycle assembly is limiting, only it will be modeled in this work.

Table 2: Cycle Burnups and Powers GASGAP.XLS(cycle powers)				
2754	Mwt		UFSAR 3.2.1-RG 1.49	
217	assms/core		UFSAR 3.1	
176	pins/assm		UFSAR 3.1	
136.7	ln		UFSAR 3.1	
410371.65	gm/assm		CA06015-Ref.17	
89.0506	mtu/core		gm/assm * assm/core * mtu/gm	
PF	kw/ft	BU(mwd/t)	EFPD	
1.650	10.4445	17859.89	350.00	
1.650	10.4445	35719.78	700.00	
1.089	6.8934	48854.46	1090.00	
1.089	6.8934	62000.25	1480.33	
PF	kw/ft	BU(mwd/t)	EFPD	
1.650	10.4445	17859.89	350.00	
1.650	10.4445	35719.78	700.00	
0.955	6.0452	46056.87	1050.00	
0.955	6.0452	56393.96	1400.00	
0.259	1.6395	59197.43	1750.00	
0.259	1.6395	62000.89	2100.00	

6.3 Axial Shape Profile

Table 3, which was extracted from Ref.19, presents the bounding Q-curve for Calvert Cliffs 24-month low-leakage/low-fluence core designs. All axial peaking factors fall below the generic data. Per Ref.19, cycle-by-cycle verification of the bounding Q-curve is not required.

Table 3: CCNPP Maximum and Generic Q Axial Shapes			
GASGAP.XLS(axial shape)			
Plane	Avg Core	Maximum	Q
	Ht	AS	AS
20	97.5		
19	92.5		
18	87.5	1.001	1.010
17	82.5	1.049	1.055
16	77.5	1.071	1.075
15	72.5	1.075	1.080
14	67.5	1.076	1.080
13	62.5	1.076	1.080
12	57.5	1.077	1.080
11	52.5	1.078	1.080
10	47.5	1.078	1.080
9	42.5	1.079	1.085
8	37.5	1.081	1.085
7	32.5	1.084	1.085
6	27.5	1.085	1.090
5	22.5	1.085	1.090
4	17.5	1.072	1.075
3	12.5	1.036	1.040
2	7.5		
1	2.5		

Thus, the assumption of an axial peaking factor of 1.1 would be bounding. Note that a peak axial power factor of 1.1 also requires a corresponding minimum axial power of 0.9 to remain at the pin average peak power.

6.4 INTERPIN Inputs

To determine limiting gas gap fractions for non-LOCA design basis accidents, three cases will be examined. The first (Case A) assumes a constant linear heat generation rate of 6.3 kw/ft to show that the ANSI/ANS-5.4-1982 (Refs.7-8) Methodology conforms to Regulatory Guides 1.183 and 1.195 (Refs.1-2) limits. The second case (Case B) assumes a first cycle power of 2754 MWt adjusted up by the radial peaking factor of 1.65 and by the axial peaking factor of 1.1 for the first 12 GWD/mtu of burnup. The axial peaking factor is reduced to 1.0 for the second 12 GWD/mtu of burnup and to 0.9 for the third 12 GWD/mtu of burnup. The second cycle assumes a power of 2754 MWt adjusted up by the radial peaking factor of 1.65 but decreased by 0.66 to conform with the radial falloff curve of Attachment B. A constant axial power factor of 1.0 is assumed for the 26 GWD/mtu of second cycle burnup. The third case (Case C) is similar to Case B, except that for the second cycle the fuel rod is assumed to be divided into two equal parts: one with an axial power fraction of 1.10 and the other with an axial power fraction of 0.9.

To support the above assumptions, the following inputs for the INTERPIN executions were utilized:

Table 4: Interpin Inputs GASGAP.XLS(Interpin)				
TIT		CCNPP - Fuel Temperature Calculation		

COR	TIN	559.82	degK	Coolant Inlet Temp	UFSAR Figure 4-9
	PRES	2250	psia	Operating pressure	UFSAR Table 4-1
ROD	ZCRIN	0.49276	cm	Cladding IR	UFSAR Table 3.3-1/2
	ZCRON	0.5588	cm	Cladding OR	UFSAR Table 3.3-1/2
	ZSTACK	347.218	cm	Fuel stack length	UFSAR 3.1
	PINT	380	psia	Fill gas pressure	CN-WFE-CCAL1-03-9 (Table C.3-1)
	VPLEN	13.5	cc	Plenum free volume	
	NNODES	1		Number of axial nodes	ANSI/ANS-5.4 1982
PEL	FTDN	10.3572	g/cm2	Fuel density	UFSAR Table 3.3-1/2 - CA06015
	ZPRON	0.48387	cm	Pellet radius	UFSAR Table 3.3-1/2
	ZPRDN		cm	Dish Radius	
	ZPRCN		cm	Chamfer radius	
POW	PAM	37.6935	kW/m	Linear heat rate (1H)	2754000*1.65*1.1/217/176/3.47218
		34.2668		(1M)	2754000*1.65*1.0/217/176/3.47218
		30.8401		(1L)	2754000*1.65*0.9/217/176/3.47218
		24.8777		(2H)	2754000*1.65*.66*1.1/217/176/3.47218
		22.6161		(2M)	2754000*1.65*.66*1.0/217/176/3.47218
		20.3545		(2L)	2754000*1.65*.66*0.9/217/176/3.47218
		20.6700		(3)	6.3 kw/ft
PRO	PRORL	1		Relative powers for temp ed	
WAT	NOPT	2		clad surface temp opt	
	TYP	SQR		Square lattice	
	FLOW	0.40546	kg/sec	Per rod mass flow	UFSAR Table 14.15-1
	PITCH	1.4732	cm	Lattice pitch	UFSAR Figure 3.3-1

The plenum free volume range is calculated as follows:

Table 5: Plenum Free Volume Calculation GASGAP.XLS(Plenum)							
	Inches	plus	minus				
Plenum Length	7.390	0.450	0.500	BGE Drawing 12131-0552SH0001 Rev.0			
Clad ID	0.3880	0.0015	0.0015	BGE Drawing 12131-0505SH0001 Rev.0			
Spring Free Length	8.703	0.175	0.175	BGE Drawing 12131-0511SH0001 Rev.0			
Spring OD	0.064	0.001	0.001	BGE Drawing 12131-0511SH0001 Rev.0			
End Cap Length	0.062	0.016	0.016	BGE Drawing 12131-0509SH0001 Rev.0			
End Cap OD	0.250	0.016	0.016	BGE Drawing 12131-0509SH0001 Rev.0			
	max(in3)	min(in3)					
Raw Plenum Volume	0.934158	0.808365					
Spring Volume	0.026584	0.029460					
End Cap Volume	0.001978	0.004335					
Net Plenum Volume in3	0.905596	0.774571					
Net Plenum Volume cc	14.840064	12.692944					

Thus, a mid-range plenum volume of 13.5 cc was assumed in the calculations. A sensitivity study on plenum volume is included in the results.

6.5 Gas Gap Fraction Calculations per ANSI/ANS-5.4-1982

ANSI/ANS-5.4-1982 (Refs.7-8) requires that releases for nuclides of interest be calculated with both the high-temperature and the low-temperature models, and the larger of the two calculated releases is to be taken as the result.

Note that ANSI/ANS-5.4-1982 (Refs.7-8) suggests that Xe-133 and Xe-135 gas gap release fractions should be corrected for precursor effects. This is unnecessary, since the source term generation performed in CA06358 (Ref.27) utilized the SAS2H code sequence of SCALE 4.4 (Ref.28), which includes activation products, actinides, fission products, and daughters. The activity transport and dose code RADTRAD (Ref.29) also includes the effects of daughters. Thus, correcting for daughters in the gas gap fractions would double count their effect.

6.5.1 Low Temperature Calculations for Long-Lived Nuclides

Long-lived nuclides are defined as those with halflives greater than one year. The cumulative fractional release F is independent of temperature and given by:

$$F = 7E-08 * Bu$$

where Bu is the rod-averaged accumulated burnup in MWd/t. The low temperature equations are included for completeness but are not used.

6.5.2 Low Temperature Calculations for Short-Lived Nuclides

Short-lived nuclides are defined as those with halflives less than one year. The release fraction F is given by:

$$F = (1/\lambda) * (1.E-7*\sqrt{\lambda}) + 1.6E-12*P$$

where P is the specific power in MW/mtu and λ is the decay constant in 1/sec. For conservatism, the specific power P should correspond to the maximum power level during the last two halflives of operation.

6.5.3 High Temperature Calculations for Long-Lived Nuclides

For nuclides with halflives greater than one year (e.g. Kr-85), equations for stable nuclides are assumed to apply. The fractional release $F(i,j)$ at the end of burnup increment "j" and at radial position "i" is

$$F(i,j) = 1 - g(i,j)$$

where

$$R_p = 0.48387 \text{ cm} = \text{Fuel Rod Radius (UFSAR Table 3.3-1/2)}$$

$$A_p = 347.218 \text{ cm} = \text{Fuel Rod Height (UFSAR 3.1)}$$

$$V_p = 176 * \pi * R_p^2 * A_p = \text{Fuel Rod Volume}$$

$$D_p = 10.96 * 0.945 \text{ gm/cc} = \text{UO}_2 \text{ Fuel Rod Density (UFSAR Table 3.3-1/2)}$$

$$M_p = D_p * V_p * 238/270 = \text{Uranium Fuel Rod Mass}$$

$$Q = 72300 \text{ cal/mol (ANSI/ANS-5.4-1982)}$$

$$R = 1.987 \text{ cal/mol-K (ANSI/ANS-5.4-1982)}$$

$$D_0/a^2 = 0.61/\text{sec (ANSI/ANS-5.4-1982)}$$

$$\lambda = \text{Decay Constant (Ref.13)}$$

$$Bu(i,j) = \text{Burnup in MWD/mtu}$$

Tf(i,j) = Fuel temperature in degrees Kelvin from Interpin

pf = Radial power peaking factor

af = Axial power peaking factor

Sp = pf * af * 2754 / 217 / Mp * 1.E+6 = Specific power in mw/mtu

EFPD(i,j) = EFPD(i,j-1) + (Bu(i,j) - Bu(i,j-1)) / Sp = Effective Full Power Days

t(i,j) = EFPD(i,j) * 24 * 3600 = Effective Full Power Seconds

D'(i,j) = f * Do/a² * exp(-Q / R / Tf(i,j)) * 100^{(BU(i,j)/28000)}

f = 1 for noble gases and =7 for iodines (ANSI/ANS-5.4-1982)

τ(i,j) = τ(i,j-1) + D'(i,j) * (t(i,j) - t(i,j-1))

g(i,j) = 1 - 4*sqrt(τ(i,j)/π) + 1.5* τ(i,j) τ(i,j)<0.1

g(i,j) = 1/(15*τ(i,j)) - (6/τ(i,j)) * {exp(-π²*τ(i,j))/π⁴ + exp(-4*π²*τ(i,j))/(16π⁴) + exp(-9*π²*τ(i,j))/(81*π⁴)} τ(i,j)>0.1

Gas gap fractions are calculated at six radial positions (0, 0.2Rp, 0.4Rp, 0.6Rp, 0.8Rp, and 1.0Rp) for each burnup step and are volumetrically weighted to obtain an overall gas gap fraction. If multiple axial nodes are considered, the volumetric weighting is then both radial and axial.

6.5.4 High Temperature Calculations for Short-Lived Nuclides

For nuclides with halflives less than one year, the fractional release F(i,j) at the end of burnup increment "j" and at radial position "i" at constant temperature and power is

$$F(i,j) = 3/(1-\exp(-\mu*\tau)) * \{ (1/\sqrt{\mu}) * [\operatorname{erf}(\sqrt{\mu*\tau}) - 2*\sqrt{\mu*\tau/\pi} * \exp(-\mu*\tau)] - [1 - (1 + \mu*\tau) * \exp(-\mu*\tau)] / \mu \}$$
 τ(i,j)<0.1

$$F(i,j) = 3 * \{ \coth(\sqrt{\mu}) / \sqrt{\mu} - 1/\mu \} - 6*\mu / (\exp(\mu*\tau) - 1) * \{ (1 - \exp(-\pi^2\tau) / (\pi^2(\pi^2 + \mu))) + (1 - \exp(-4*\pi^2\tau) / (4*\pi^2(4*\pi^2 + \mu))) + (1 - \exp(-9*\pi^2\tau) / (9*\pi^2(9*\pi^2 + \mu))) \}$$
 τ(i,j)>0.1

where

Rp = 0.48387 cm = Fuel Rod Radius (UFSAR Table 3.3-1/2)

Ap = 347.218 cm = Fuel Rod Height (UFSAR 3.1)

Vp = 176 * π * Rp² * Ap = Fuel Rod Volume

Dp = 10.96 * 0.945 gm/cc = UO₂ Fuel Rod Density (UFSAR Table 3.3-1/2)

Mp = Dp * Vp * 238/270 = Uranium Fuel Rod Mass

Q = 72300 cal/mol (ANSI/ANS-5.4-1982)

R = 1.987 cal/mol-K (ANSI/ANS-5.4-1982)

Do/a² = 0.61/sec (ANSI/ANS-5.4-1982)

λ = Decay Constant (Ref.13)

$Bu(i,j)$ = Burnup in MWD/mtu

$Tf(i,j)$ = Fuel temperature in degrees Kelvin from Interpin

pf = Radial power peaking factor

af = Axial power peaking factor

$Sp = pf * af * 2754 / 217 / Mp * 1.E+6$ = Specific power in mw/mtu

$EFPD(i,j) = EFPD(i,j-1) + (Bu(i,j) - Bu(i,j-1)) / Sp$ = Effective Full Power Days

$t(i,j) = EFPD(i,j) * 24 * 3600$ = Effective Full Power Seconds

$D'(i,j) = f * Do/a^2 * \exp(-Q / R / Tf(i,j)) * 100^{(BU(i,j)/28000)}$

$f = 1$ for noble gases and $=7$ for iodines (ANSI/ANS-5.4-1982)

$\tau(i,j) = D'(i,j) * t(i,j)$

$\mu(i,j) = \lambda / D'(i,j)$

Gas gap fractions are calculated at six radial positions (0, 0.2Rp, 0.4Rp, 0.6Rp, 0.8Rp, and 1.0Rp) for each burnup step and are volumetrically weighted to obtain an overall gas gap fraction. If multiple axial nodes are considered, the volumetric weighting is then both radial and axial.

7. REFERENCES

- (01) "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors", Regulatory Guide 1.183:
- (02) "Methods and Assumptions for Evaluating Radiological Consequences of Design Basis Accidents at Light Water Nuclear Power reactors", Regulatory Guide 1.195
- (03) TID-14844, "Calculation of Distance Factors for Power and Test Reactor Sites"
- (04) Safety Guide 25: Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors
- (05) "Approval for Calvert Cliffs Units 1 and 2 Fuel Pin Burnup Limit of 60 MWD/KG", NRC to G.C.Creel, Docket Nos. 50-317 and 50-318, 7/6/92.
- (06) "Generic Approval of CE Topical Report CEN-386-P", NRC to A.E.Scherer (CE), 6/22/92.
- (07) ANSI/ANS-5.4-1982: ANS Method for Calculating the Fractional Release of Volatile Fission Products from Oxide Fuel
- (08) NUREG/CR-2507: Background and Derivation of ANS-5.4 Standard Fission Product Release Model
- (09) Studsvik Scandpower SSP-01/430: INTERPIN-3 Studsvik CMS Fuel Performance Code
- (10) IINTERPIN Verification
- (11) INTERPIN Validation
- (12) NUREG/CR-6604 Supplement 2, 10/2002: RADTRAD A Simplified Model for Radionuclide Transport and Removal and Dose Estimation
- (13) "Chart of the Nuclides", Nuclides and Isotopes Fifteenth Edition, GE Nuclear Energy.
- (14) "Extension of Unit 1 Cycle 12 Burnup Limit to 21 GWD/MTU", CA01794.
- (15) "Calvert Cliffs Unit 2 Cycle 12 Reload Design Report and 10 CFR Safety Evaluation", CA03544.
- (16) "Calvert Cliffs Unit 1 Cycle 16 – Final Reload Design Report", CC1-FO-2001-0140.
- (17) "Unit 2 SFP Criticality Analysis with Soluble Boron and Burnup Credit but without Boraflex Credit", CA06015
- (18) "Calvert Cliffs Unit 1 Cycle 17 Physics Data for Mechanical Design, Fuel Performance, ECCS Performance, Thermal Hydraulic, Setpoint and safety Analyses (2746MWth)", CA06369
- (19) "Checklist Process for Verifying Generic Physics Input Data Used in Safety, Setpoint, and Performance Analyses for Calvert Cliffs 24-Month Cycles", CC-FE-0063 Rev.0
- (20) "Calvert Cliffs Unit 1 Cycle 17 Fuel Performance Confirmation", CN-WFE-CCAL1-03-9
- (21) BGE Drawing 12131-0552SH0001 Rev.0, "Batch 1V Rod Assembly"
- (22) BGE Drawing 12131-0505SH0001 Rev.0, "Batch 1V Tube"

- (23) BGE Drawing 12131-0511SH0001 Rev.0, "Batch 1V Fuel Rod Spring"
- (24) BGE Drawing 12131-0509SH0001 Rev.0, "Batch 1V Upper End Cap"
- (25) "Implementation of Alternate Source Terms Site Boundary and Control Room Dose Analyses for Fort Calhoun Station", Stone and Webster, January 2001
- (26) "Licensing Report for the Radiological Consequences of Accidents Using NUREG-1465 Source Term Methodology for D.C.Cook Units 1 and 2", Westinghouse Electric Company, 2/28/2000
- (27) "Control Room Habitability Source Term Calculations", CA06358
- (28) "SAS2H: A Coupled One-Dimensional Depletion and Shielding Analysis Module", NUREG/CR-0200 Rev.6.
- (29) NUREG/CR-6604 Supplement 2, 10/2002: RADTRAD A Simplified Model for Radionuclide Transport and Removal and Dose Estimation
- (30) USDOE/NRC Form 741 Nuclear Material Transaction Report
- (31) CA04950: Surveillance Capsule Withdrawal Schedule

8. DOCUMENTATION OF COMPUTER CODES

The INTERPIN computer code package was obtained from Studsvik Scandpower and calculates the steady-state performance of UO_2 , zircaloy-clad fuel operating in light water reactor cores. INTERPIN-3 models a single fuel rod and its surrounding coolant. The system is represented by discrete axial and radial nodes to allow for variations in power and coolant temperature. The program was designed to produce fuel temperature input data for CASMO and SIMULATE. INTERPIN-3 incorporates a comprehensive set of physical submodels for fuel performance analysis. The methodology has been benchmarked against approximately 130 fuel rod experiments.

The INTERPIN-3 verification package is documented in Ref.10. The combined test suite verified that the code was correctly installed on the subject PC, by comparing the computer outputs of Ref.10 with those provided from Studsvik.

The INTERPIN-3 benchmark calculations are documented in Reference 11.

9. CALCULATIONS

The following calculations were performed in support of the gas gap fraction calculations.

case01h.dat	Interpin data file for linear heat rate of 37.6935 kw/m
case01h.inp	Interpin input file for linear heat rate of 37.6935 kw/m
case01h.out	Interpin output file for linear heat rate of 37.6935 kw/m
case01l.dat	Interpin data file for linear heat rate of 30.8401 kw/m
case01l.inp	Interpin input file for linear heat rate of 30.8401 kw/m
case01l.out	Interpin output file for linear heat rate of 30.8401 kw/m
case01m.dat	Interpin data file for linear heat rate of 34.2668 kw/m
case01m.inp	Interpin input file for linear heat rate of 34.2668 kw/m
case01m.out	Interpin output file for linear heat rate of 34.2668 kw/m
case02h.dat	Interpin data file for linear heat rate of 24.8777 kw/m
case02h.inp	Interpin input file for linear heat rate of 24.8777 kw/m
case02h.out	Interpin output file for linear heat rate of 24.8777 kw/m
case02l.dat	Interpin data file for linear heat rate of 20.3545 kw/m
case02l.inp	Interpin input file for linear heat rate of 20.3545 kw/m
case02l.out	Interpin output file for linear heat rate of 20.3545 kw/m
case02m.dat	Interpin data file for linear heat rate of 22.6161 kw/m
case02m.inp	Interpin input file for linear heat rate of 22.6161 kw/m
case02m.out	Interpin output file for linear heat rate of 22.6161 kw/m
case03.dat	Interpin data file for linear heat rate of 20.6700 kw/m and VPLEN=13.5 cc
case03.inp	Interpin input file for linear heat rate of 20.6700 kw/m and VPLEN=13.5 cc
case03.out	Interpin output file for linear heat rate of 20.6700 kw/m and VPLEN=13.5 cc
case03a.dat	Interpin data file for linear heat rate of 20.6700 kw/m and VPLEN=15.0 cc
case03a.inp	Interpin input file for linear heat rate of 20.6700 kw/m and VPLEN=15.0 cc
case03a.out	Interpin output file for linear heat rate of 20.6700 kw/m and VPLEN=15.0 cc
case03b.dat	Interpin data file for linear heat rate of 20.6700 kw/m and VPLEN=12.0 cc
case03b.inp	Interpin input file for linear heat rate of 20.6700 kw/m and VPLEN=12.0 cc
case03b.out	Interpin output file for linear heat rate of 20.6700 kw/m and VPLEN=12.0 cc
FUELIN~1.XLS	Fuel Inventory Aug 2003.xls Spreadsheet of SFP assemblies by burnup
gasgap.xls	Spreadsheets of calculation tables
gasgapI1.xls	Cases A and B Iodine spreadsheet calculations
gasgapI2.xls	Case C Iodine spreadsheet calculations
gasgapK1.xls	Cases A and B Krypton spreadsheet calculations
gasgapK2.xls	Case C Krypton spreadsheet calculations
gasgapX1.xls	Cases A and B Xenon spreadsheet calculations
gasgapX2.xls	Case C Xenon spreadsheet calculations
SFPBUR~1.XLS	SFP burnup 3-04 .xls Spreadsheet of SFP assemblies by burnup

The spreadsheet of SFP assemblies by burnup and enrichment is displayed in Attachment A. The Interpin output files are displayed in Attachment C. The low temperature gas gap fraction spreadsheet is displayed in D. The Case A gas gap fraction spreadsheets are displayed in Attachment E. The Case B gas gap fraction spreadsheets are displayed in Attachment F. The Case C gas gap fraction spreadsheets are displayed in Attachment G. All files and spreadsheets are stored on the accompanying CDROM.

Note that comparison of the radial and burnup dependent fuel temperature results for cases case03, case03a, and case03b show that the fuel temperature results are insensitive to variations in plenum free volume. Thus, use of the median plenum free volume of 13.5 cc is justified.

10. RESULTS AND CONCLUSIONS

The results of the gas gap fraction calculations are displayed in Table 6.

Table 6: Results					
	F	F	F	F	F
	RG 1.183	Case A	Case B	Case C	CCNPP
I-131	0.08	0.0683	0.1315	0.1399	0.16
I-132	0.05	0.0089	0.0240	0.0372	0.10
I-133	0.05	0.0259	0.0638	0.0794	0.10
I-134	0.05	0.0056	0.0152	0.0247	0.10
I-135	0.05	0.0150	0.0391	0.0554	0.10
Xe-133	0.05	0.0242	0.0600	0.0761	0.10
Xe-133m	0.05	0.0159	0.0414	0.0579	0.10
Xe-135	0.05	0.0068	0.0184	0.0293	0.10
Xe-135m	0.05	0.0012	0.0032	0.0055	0.10
Xe-138	0.05	0.0011	0.0031	0.0053	0.10
Kr-85	0.10	0.0864	0.1412	0.1571	0.20
Kr-85m	0.05	0.0048	0.0131	0.0214	0.10
Kr-87	0.05	0.0026	0.0071	0.0119	0.10
Kr-88	0.05	0.0038	0.0105	0.0175	0.10
Case A: 6.3 kw/ft for 0-62 gwd/t					
Case B: 2754 mwth Cycle 1 pf=1.65 af=1.1/1.0/0.9 Cycle 2 pf=1.089 af=1.0					
Case C: 2754 mwth Cycle 1 pf=1.65 af=1.1/1.0/0.9 Cycle 2 pf=1.089 af=1.1 and 0.9					

The Case A gas gap fraction results, which assume a constant 6.3 kw/ft linear heat rate, are bounded by and compare well with the Regulatory Guide 1.183 limits. Thus the ANSI/ANS-5.4-1982 methodology is suitable for calculation of limiting gas gap fractions.

The Case B and Case C gas gap fraction results are in excess of the Regulatory Guide 1.183 limits but less than twice the limiting values.

The results indicate that gas gap fractions must be significantly increased for the limiting pins with burnups over 54 GWD/MTU and with linear heat generation rates in excess of 6.3 kw/ft. Doubling of the gas gap release fractions detailed in Refs.1-2 yield bounding and conservative results. All of the gas gap activity in the damaged rods is released and consists of 10% of the total noble gases other than Kr-85, 20% of the Kr-85, 10% of the total radioactive iodines except I-131, and 16% of the I-131 inventory at the time of the accident. Note that these results are similar to those proposed by Fort Calhoun Station and D.C.Cook Units 1 and 2 in Refs.25 and 26.

11. ATTACHMENTS
ATTACHMENT A
DISCHARGED FUEL ASSEMBLIES IN THE SPENT FUEL POOL

ASSM	BU	ENR	CYC 1	BU	CYC 2	BU	CYC 3	BU	CYC 4	BU	DISCH	DATE
2A063	16228	2.05	U2C1								U2C1	09/15/78
2A024	16523	2.05	U2C1								U2C1	09/15/78
2A026	16523	2.05	U2C1								U2C1	09/15/78
2A003	17230	2.05	U2C1								U2C1	09/15/78
2A034	17390	2.05	U2C1								U2C1	09/15/78
2A012	17391	2.05	U2C1								U2C1	09/15/78
2A035	17391	2.05	U2C1								U2C1	09/15/78
2A066	17391	2.05	U2C1								U2C1	09/15/78
2A067	17391	2.05	U2C1								U2C1	09/15/78
2A045	17392	2.05	U2C1								U2C1	09/15/78
1A068	18067	2.05	U1C1	18067							U1C1	12/31/76
1BT04	19507	2.45	U1C1	19507							U1C1	12/31/76
1C031	22177	2.99	U1C1	13132	U1C2						U1C2	01/22/78
2D120	24088	2.73	U2C2	11857	U2C3						U2C3	01/17/81
1F120	25584	2.73	U1C4	13277	U1C5						U1C5	04/16/82
1F123	25584	2.73	U1C4	13277	U1C5						U1C5	04/16/82
1F124	25584	2.73	U1C4	13277	U1C5						U1C5	04/16/82
1C205	25739	2.99	U1C1	16417	U1C2						U1C2	01/22/78
1G107	25974	3.03	U1C5	12880	U1C6						U1C6	09/30/83
2B066	26051	2.45	U2C1	17149	U2C2						U2C2	10/12/79
2B008	26072	2.45	U2C1	17149	U2C2						U2C2	10/12/79
1C111	26160	2.99	U1C1	17306	U1C2						U1C2	01/22/78
1F109	26284	2.73	U1C4	14241	U1C5						U1C5	04/16/82
1F116	26284	2.73	U1C4	14241	U1C5						U1C5	04/16/82
1F118	26284	2.73	U1C4	14241	U1C5						U1C5	04/16/82
1F105	26315	2.73	U1C4	13165	U1C5						U1C5	04/16/82
1F101	26353	2.73	U1C4	13203	U1C5						U1C5	04/16/82
1F106	26353	2.73	U1C4	13203	U1C5						U1C5	04/16/82
1F107	26353	2.73	U1C4	13203	U1C5						U1C5	04/16/82
1B027	26416	2.45	U1C1	18989	U1C2						U1C2	01/22/78
1B060	26416	2.45	U1C1	18989	U1C2						U1C2	01/22/78
1D024	26577	3.03	U1C2	5992	U1C3	15072	U1C4				U1C4	10/17/80
2B048	26865	2.45	U2C1	16789	U1C7						U1C7	04/05/85
2B054	26865	2.45	U2C1	16789	U1C7						U1C7	04/05/85
1BT06	26937	2.45	U1C1	19506	U1C2						U1C2	01/22/78
1F104	26997	2.73	U1C4	14206	U1C5						U1C5	04/16/82
1F114	26997	2.73	U1C4	14206	U1C5						U1C5	04/16/82
1F117	26997	2.73	U1C4	14206	U1C5						U1C5	04/16/82
2E116	27036	2.73	U2C3	12690	U2C4						U2C4	10/15/82
1F111	27061	2.73	U1C4	14301	U1C5						U1C5	04/16/82
1F122	27061	2.73	U1C4	14301	U1C5						U1C5	04/16/82
2B070	27068	2.45	U2C1	17915	U2C2						U2C2	10/12/79

2B075	27068	2.45	U2C1	17915	U2C2						U2C2	10/12/79
2B011	27118	2.45	U2C1	18180	U2C2						U2C2	10/12/79
2B064	27122	2.45	U2C1	18180	U2C2						U2C2	10/12/79
1C039	27205	2.99	U1C1	9896	U1C2	18549	U1C3				U1C3	04/20/79
1B009	27274	2.45	U1C1	19583	U1C2						U1C2	01/22/78
2B068	27309	2.45	U2C1	18479	U2C2						U2C2	10/12/79
1B002	27487	2.45	U1C1	19506	U1C2						U1C2	01/22/78
1D002	27494	3.03	U1C2	5992	U1C3	15143	U1C4				U1C4	10/17/80
1D030	27494	3.03	U1C2	5992	U1C3	15143	U1C4				U1C4	10/17/80
2B007	27764	2.45	U2C1	18009	U2C2						U2C2	10/12/79
1G145	28061	3.03	U1C5	14106	U1C6						U1C6	09/30/83
1G149	28061	3.03	U1C5	14106	U1C6						U1C6	09/30/83
1G125	28063	3.03	U1C5	14132	U1C6						U1C6	09/30/83
1G148	28063	3.03	U1C5	14132	U1C6						U1C6	09/30/83
2B058	28267	2.45	U2C1	18338	U1C7						U1C7	04/05/85
2F180	28321	3.03	U2C4	15393	U2C5						U2C5	04/20/84
2B055	28325	2.45	U2C1	18624	U2C2						U2C2	10/12/79
2E103	28396	2.73	U2C3	12799	U2C4						U2C4	10/15/82
2E105	28396	2.73	U2C3	12799	U2C4						U2C4	10/15/82
2E110	28396	2.73	U2C3	12799	U2C4						U2C4	10/15/82
2B036	28418	2.45	U2C1	18618	U2C2						U2C2	10/12/79
2E038	28429	3.03	U2C3	10768	U2C4						U2C4	10/15/82
2H106	28515	3.40	U2C6	15556	U2C7						U2C7	03/13/87
1G129	28703	3.03	U1C5	15644	U1C6						U1C6	09/30/83
1G114	28774	3.03	U1C5	15507	U1C6						U1C6	09/30/83
1G136	28774	3.03	U1C5	15507	U1C6						U1C6	09/30/83
1G119	28828	3.03	U1C5	15529	U1C6						U1C6	09/30/83
1G126	28828	3.03	U1C5	15529	U1C6						U1C6	09/30/83
1G138	28828	3.03	U1C5	15529	U1C6						U1C6	09/30/83
2E101	28888	2.73	U2C3	12808	U2C4						U2C4	10/15/82
2E102	28888	2.73	U2C3	12808	U2C4						U2C4	10/15/82
2E106	28888	2.73	U2C3	12808	U2C4						U2C4	10/15/82
2E107	28888	2.73	U2C3	12808	U2C4						U2C4	10/15/82
2E108	29067	2.73	U2C3	13121	U2C4						U2C4	10/15/82
2E111	29067	2.73	U2C3	13121	U2C4						U2C4	10/15/82
2E112	29067	2.73	U2C3	13121	U2C4						U2C4	10/15/82
1G110	29075	3.03	U1C5	15737	U1C6						U1C6	09/30/83
1G134	29075	3.03	U1C5	15737	U1C6						U1C6	09/30/83
1C003	29521	2.99	U1C1	9896	U1C2	19572	U1C3				U1C3	04/20/79
1C010	29521	2.99	U1C1	9896	U1C2	19572	U1C3				U1C3	04/20/79
1G141	29541	3.03	U1C5	15620	U1C6						U1C6	09/30/83
1G146	29541	3.03	U1C5	15620	U1C6						U1C6	09/30/83
1G151	29604	3.03	U1C5	15603	U1C6						U1C6	09/30/83
1G106	29642	3.03	U1C5	16020	U1C6						U1C6	09/30/83
1G128	29642	3.03	U1C5	16016	U1C6						U1C6	09/30/83
1G124	29677	3.03	U1C5	16016	U1C6						U1C6	09/30/83
1G135	29677	3.03	U1C5	16016	U1C6						U1C6	09/30/83
1G143	29677	3.03	U1C5	16016	U1C6						U1C6	09/30/83

2E016	29704	3.03	U2C3	12378	U2C4						U2C4	10/15/82
1D023	29709	3.03	U1C2	6181	U1C3	17593	U1C4				U1C4	10/17/80
1D038	29817	3.03	U1C2	7571	U1C3	18010	U1C4				U1C4	10/17/80
1D037	29845	3.03	U1C2	7571	U1C3	17966	U1C4				U1C4	10/17/80
1D041	29845	3.03	U1C2	7571	U1C3	17966	U1C4				U1C4	10/17/80
1D009	29852	3.03	U1C2	8173	U1C3	18715	U1C4				U1C4	10/17/80
1D013	29852	3.03	U1C2	8173	U1C3	18715	U1C4				U1C4	10/17/80
1D016	29852	3.03	U1C2	8173	U1C3	18715	U1C4				U1C4	10/17/80
1D014	29962	3.03	U1C2	8173	U1C3	18715	U1C4				U1C4	10/17/80
1D026	29962	3.03	U1C2	6724	U1C3	18224	U1C4				U1C4	10/17/80
1D108	30613	2.73	U1C2	9644	U1C3	19946	U1C4				U1C4	10/17/80
1D110	30613	2.73	U1C2	9644	U1C3	19946	U1C4				U1C4	10/17/80
1D010	30715	3.03	U1C2	8169	U1C3	19762	U1C4				U1C4	10/17/80
1D104	30732	2.73	U1C2	9665	U1C3	19982	U1C4				U1C4	10/17/80
1C001	31079	2.99	U1C1	12917	U1C2	21511	U1C3				U1C3	04/20/79
2D123	31147	2.73	U2C2	11288	U2C3	22409	U1C7				U1C7	04/05/85
2D139	31147	2.73	U2C2	11288	U2C3	22409	U1C7				U1C7	04/05/85
1D116	31329	2.73	U1C2	10087	U1C3	20804	U1C4				U1C4	10/17/80
1D121	31329	2.73	U1C2	10087	U1C3	20804	U1C4				U1C4	10/17/80
1D119	31367	2.73	U1C2	10150	U1C3	20902	U1C4				U1C4	10/17/80
1D115	31479	2.73	U1C2	10111	U1C3	20771	U1C4				U1C4	10/17/80
1D113	31507	2.73	U1C2	10124	U1C3	20750	U1C4				U1C4	10/17/80
1D122	31507	2.73	U1C2	10124	U1C3	20750	U1C4				U1C4	10/17/80
1E020	31684	3.03	U1C3	5794	U1C4	19255	U1C5				U1C5	04/16/82
1E040	31684	3.03	U1C3	5794	U1C4	19255	U1C5				U1C5	04/16/82
2D002	31701	3.03	U2C2	6651	U2C3	19316	U2C5				U2C5	04/20/84
2D028	31701	3.03	U2C2	6651	U2C3	19316	U2C5				U2C5	04/20/84
1E038	31754	3.03	U1C3	5845	U1C4	19328	U1C5				U1C5	04/16/82
2C008	31774	2.99	U2C1	9149	U2C2	20675	U2C3				U2C3	01/17/81
2C034	31810	2.99	U2C1	9501	U2C2	21047	U2C3				U2C3	01/17/81
1D006	32040	3.03	U1C2	9419	U1C3	20766	U1C4				U1C4	10/17/80
1D007	32040	3.03	U1C2	9419	U1C3	20766	U1C4				U1C4	10/17/80
1D039	32040	3.03	U1C2	9419	U1C3	20766	U1C4				U1C4	10/17/80
1E011	32148	3.03	U1C3	6486	U1C4	19562	U1C5				U1C5	04/16/82
1E016	32148	3.03	U1C3	6486	U1C4	19562	U1C5				U1C5	04/16/82
1E032	32148	3.03	U1C3	6486	U1C4	19562	U1C5				U1C5	04/16/82
1D027	32159	3.03	U1C2	9420	U1C3	20847	U1C4				U1C4	10/17/80
2D101	32374	2.73	U2C2	11080	U2C3	23184	U1C7				U1C7	04/05/85
2D102	32374	2.73	U2C2	11080	U2C3	23484	U1C7				U1C7	04/05/85
2D124	32395	2.73	U2C2	11088	U2C3	23192	U1C7				U1C7	04/05/85
2D132	32395	2.73	U2C2	11080	U2C3	23192	U1C7				U1C7	04/05/85
1E004	32537	3.03	U1C3	6509	U1C4	20015	U1C5				U1C5	04/16/82
1E017	32537	3.03	U1C3	6509	U1C4	20015	U1C5				U1C5	04/16/82
1E042	32537	3.03	U1C3	6509	U1C4	20015	U1C5				U1C5	04/16/82
2F134	32558	3.03	U2C4	19416	U2C5						U2C5	04/20/84
1E018	32613	3.03	U1C3	6576	U1C4	19999	U1C5				U1C5	04/16/82
1E030	32613	3.03	U1C3	6576	U1C4	19999	U1C5				U1C5	04/16/82
1E025	32634	3.03	U1C3	6555	U1C4	20006	U1C5				U1C5	04/16/82

1E028	32634	3.03	U1C3	6555	U1C4	20006	U1C5				U1C5	04/16/82
1E034	32634	3.03	U1C3	6555	U1C4	20006	U1C5				U1C5	04/16/82
2F146	32729	3.03	U2C4	19785	U2C5						U2C5	04/20/84
2F145	32803	3.03	U2C4	19418	U2C5						U2C5	04/20/84
1F030	33444	3.03	U1C4	8035	U1C5	21256	U1C6				U1C6	09/30/83
2C023	33580	2.99	U2C1	12409	U2C2	23283	U2C3				U2C3	01/17/81
1E002	33595	3.03	U1C3	8372	U1C4	21093	U1C5				U1C5	04/16/82
1E041	33595	3.03	U1C3	8372	U1C4	21093	U1C5				U1C5	04/16/82
1E008	33645	3.03	U1C3	8442	U1C4	21148	U1C5				U1C5	04/16/82
1E014	33645	3.03	U1C3	8442	U1C4	21148	U1C5				U1C5	04/16/82
1E027	33645	3.03	U1C3	8442	U1C4	21148	U1C5				U1C5	04/16/82
2C007	33647	2.99	U2C1	12556	U2C2	23772	U2C3				U2C3	01/17/81
2D004	33704	3.03	U2C2	6098	U2C3	19787	U1C6				U1C6	09/30/83
2D008	33704	3.03	U2C2	6098	U2C3	19787	U1C6				U1C6	09/30/83
2D023	33704	3.03	U2C2	6098	U2C3	19787	U1C6				U1C6	09/30/83
2D027	33704	3.03	U2C2	6098	U2C3	19787	U1C6				U1C6	09/30/83
2D042	33772	3.03	U2C2	10017	U2C3	22288	U2C7				U2C7	03/13/87
2D009	33789	3.03	U2C2	6103	U2C3	19806	U1C6				U1C6	09/30/83
2D020	33789	3.03	U2C2	6103	U2C3	19806	U1C6				U1C6	09/30/83
2D022	33789	3.03	U2C2	6103	U2C3	19806	U1C6				U1C6	09/30/83
2D112	33853	2.73	U2C2	11768	U2C3	23965	U2C6				U2C6	10/18/85
2D114	33853	2.73	U2C2	11768	U2C3	23965	U2C6				U2C6	10/18/85
1E001	34114	3.03	U1C3	8142	U1C4	21705	U1C5				U1C5	04/16/82
1E015	34114	3.03	U1C3	8142	U1C4	21705	U1C5				U1C5	04/16/82
1E033	34126	3.03	U1C3	8102	U1C4	21729	U1C5				U1C5	04/16/82
1E039	34126	3.03	U1C3	8102	U1C4	21729	U1C5				U1C5	04/16/82
1F007	34133	3.03	U1C4	10929	U1C5	25488	U1C7				U1C7	04/05/85
1F012	34133	3.03	U1C4	10929	U1C5	25488	U1C7				U1C7	04/05/85
2J101	34298	3.40	U2C7	16940	U2C8						U2C8	03/17/89
2J103	34298	3.40	U2C7	16940	U2C8						U2C8	03/17/89
2J110	34298	3.40	U2C7	16940	U2C8						U2C8	03/17/89
1F025	34353	3.03	U1C4	7737	U1C5	22280	U1C6				U1C6	09/30/83
1F018	34371	3.03	U1C4	7742	U1C5	22302	U1C6				U1C6	09/30/83
1F020	34371	3.03	U1C4	7742	U1C5	22302	U1C6				U1C6	09/30/83
1K017	34386	4.05	U1C8	13093	U1C9	26055	U1C10				U1C10	03/19/92
1K040	34386	4.05	U1C8	13078	U1C9	26043	U1C10				U1C10	03/19/92
1K030	34448	4.05	U1C8	11075	U1C9	24936	U1C10				U1C10	03/19/92
1K038	34503	4.05	U1C8	11073	U1C9	25089	U1C10				U1C10	03/19/92
1K046	34508	4.05	U1C8	11073	U1C9	25089	U1C10				U1C10	03/19/92
1L026	34678	4.05	U1C9	11386	U1C10						U1C10	03/19/92
1F033	34703	3.03	U1C4	9018	U1C5	23515	U1C6				U1C6	09/30/83
1F040	34703	3.03	U1C4	9018	U1C5	23515	U1C6				U1C6	09/30/83
1F041	34703	3.03	U1C4	9018	U1C5	23515	U1C6				U1C6	09/30/83
1F009	34710	3.03	U1C4	8013	U1C5	22800	U1C6				U1C6	09/30/83
1F045	34710	3.03	U1C4	8013	U1C5	22800	U1C6				U1C6	09/30/83
1F013	34716	3.03	U1C4	9030	U1C5	23534	U1C6				U1C6	09/30/83
1F015	34716	3.03	U1C4	9030	U1C5	23534	U1C6				U1C6	09/30/83
2D122	34827	2.73	U2C2	11715	U2C3	23865	U2C6				U2C6	10/18/85

2D135	34827	2.73	U2C2	11715	U2C3	23865	U2C6				U2C6	10/18/85
2D126	34859	2.73	U2C2	11857	U2C3	23889	U2C6				U2C6	10/18/85
2D128	34859	2.73	U2C2	11844	U2C3	23889	U2C6				U2C6	10/18/85
1E031	34876	3.03	U1C3	10676	U1C4	23035	U1C5				U1C5	04/16/82
1E045	34876	3.03	U1C3	10676	U1C4	23035	U1C5				U1C5	04/16/82
1E009	34892	3.03	U1C3	10702	U1C4	23058	U1C5				U1C5	04/16/82
1E104	34962	2.73	U1C3	11407	U1C4	23569	U1C7				U1C7	04/05/85
1E107	34962	2.73	U1C3	11407	U1C4	23569	U1C7				U1C7	04/05/85
1E112	34981	2.73	U1C3	11758	U1C4	23716	U1C7				U1C7	04/05/85
1E113	34981	2.73	U1C3	11758	U1C4	23716	U1C7				U1C7	04/05/85
1E117	34981	2.73	U1C3	11758	U1C4	23716	U1C7				U1C7	04/05/85
1E118	34981	2.73	U1C3	11758	U1C4	23716	U1C7				U1C7	04/05/85
1E109	35056	2.73	U1C3	11694	U1C4	23603	U1C7				U1C7	04/05/85
1E114	35056	2.73	U1C3	11694	U1C4	23603	U1C7				U1C7	04/05/85
2D110	35168	2.73	U2C2	11767	U2C3	23974	U2C6				U2C6	10/18/85
2D113	35168	2.73	U2C2	11767	U2C3	23974	U2C6				U2C6	10/18/85
2D012	35229	3.03	U2C2	8730	U2C3	20773	U2C4				U2C4	10/15/82
2D001	35235	3.03	U2C2	8771	U2C3	20773	U2C4				U2C4	10/15/82
2E009	35243	3.03	U2C3	9582	U2C4	25464	U1C8				U1C8	10/24/86
1F002	35247	3.03	U1C4	10044	U1C5	23972	U1C6				U1C6	09/30/83
1F027	35247	3.03	U1C4	10044	U1C5	23972	U1C6				U1C6	09/30/83
1F037	35247	3.03	U1C4	10044	U1C5	23972	U1C6				U1C6	09/30/83
1K006	35305	4.05	U1C8	14653	U1C9	26966	U1C10				U1C10	03/19/92
1L014	35322	4.05	U1C9	8518	U1C10	27599	U1C11				U1C11	02/09/94
1K011	35326	4.05	U1C8	14653	U1C9	26966	U1C10				U1C10	03/19/92
1L002	35328	4.05	U1C9	8523	U1C10	27602	U1C11				U1C11	02/09/94
1L013	35328	4.05	U1C9	8523	U1C10	27602	U1C11				U1C11	02/09/94
1F017	35462	3.03	U1C4	10029	U1C5	24233	U1C6				U1C6	09/30/83
1F032	35462	3.03	U1C4	10029	U1C5	24233	U1C6				U1C6	09/30/83
1F035	35462	3.03	U1C4	10029	U1C5	24233	U1C6				U1C6	09/30/83
1F039	35462	3.03	U1C4	10029	U1C5	24233	U1C6				U1C6	09/30/83
2D033	35707	3.03	U2C2	7790	U2C3	20496	U2C4				U2C4	10/15/82
2D044	35707	3.03	U2C2	7790	U2C3	20496	U2C4				U2C4	10/15/82
2D045	35707	3.03	U2C2	7790	U2C3	20496	U2C4				U2C4	10/15/82
2D036	35724	3.03	U2C2	7793	U2C3	20519	U2C4				U2C4	10/15/82
2D013	35731	3.03	U2C2	8323	U2C3	20591	U2C4				U2C4	10/15/82
2D018	35731	3.03	U2C2	8323	U2C3	20591	U2C4				U2C4	10/15/82
2D030	35731	3.03	U2C2	8323	U2C3	20591	U2C4				U2C4	10/15/82
2C208	35938	2.99	U2C1	15708	U2C2	25758	U2C3				U2C3	01/17/81
2C201	35972	2.99	U2C1	15708	U2C2	25768	U2C3				U2C3	01/17/81
2C210	35972	2.99	U2C1	15708	U2C2	25768	U2C3				U2C3	01/17/81
1E103	36102	2.73	U1C3	12009	U1C4	24410	U2C6				U2C6	10/18/85
1E110	36102	2.73	U1C3	12009	U1C4	24410	U2C6				U2C6	10/18/85
1E111	36102	2.73	U1C3	12009	U1C4	24410	U2C6				U2C6	10/18/85
1E108	36128	2.73	U1C3	12066	U1C4	24432	U2C6				U2C6	10/18/85
1E115	36128	2.73	U1C3	12066	U1C4	24432	U2C6				U2C6	10/18/85
1E116	36128	2.73	U1C3	12066	U1C4	24432	U2C6				U2C6	10/18/85
1F038	36205	3.03	U1C4	10964	U1C5	24429	U1C6				U1C6	09/30/83

2F004	36232	3.65	U2C4	10982	U2C5	24684	U2C6				U2C6	10/18/85
2F009	36232	3.65	U2C4	10982	U2C5	24684	U2C6				U2C6	10/18/85
2F011	36232	3.65	U2C4	10982	U2C5	24684	U2C6				U2C6	10/18/85
1J005	36306	4.05	U1C7	10000	U1C8	25462	U1C9				U1C9	04/08/88
2F010	36308	3.65	U2C4	10982	U2C5	24681	U2C6				U2C6	10/18/85
2F013	36308	3.65	U2C4	10982	U2C5	24681	U2C6				U2C6	10/18/85
2F029	36308	3.65	U2C4	10982	U2C5	24681	U2C6				U2C6	10/18/85
2F036	36308	3.65	U2C4	10982	U2C5	24681	U2C6				U2C6	10/18/85
1L103	36487	3.40	U1C9	14239	U1C10						U1C10	03/19/92
1L110	36487	3.40	U1C9	14239	U1C10						U1C10	03/19/92
1L111	36487	3.40	U1C9	14239	U1C10						U1C10	03/19/92
1L112	36487	3.40	U1C9	14239	U1C10						U1C10	03/19/92
1G009	36503	3.65	U1C5	9073	U1C6	23000	U1C7				U1C7	04/05/85
1G010	36503	3.65	U1C5	9073	U1C6	23000	U1C7				U1C7	04/05/85
1G011	36503	3.65	U1C5	9073	U1C6	23000	U1C7				U1C7	04/05/85
1G023	36539	3.65	U1C5	9092	U1C6	23028	U1C7				U1C7	04/05/85
1G033	36539	3.65	U1C5	9092	U1C6	23028	U1C7				U1C7	04/05/85
1L101	36625	3.40	U1C9	14275	U1C10						U1C10	03/19/92
1L108	36625	3.40	U1C9	14275	U1C10						U1C10	03/19/92
1L106	36626	3.40	U1C9	14275	U1C10						U1C10	03/19/92
1F005	36991	3.03	U1C4	12631	U1C5	25108	U1C6				U1C6	09/30/83
1F031	36991	3.03	U1C4	12631	U1C5	25108	U1C6				U1C6	09/30/83
1F047	36991	3.03	U1C4	12631	U1C5	25108	U1C6				U1C6	09/30/83
1F001	37004	3.03	U1C4	12659	U1C5	25113	U1C6				U1C6	09/30/83
1F014	37004	3.03	U1C4	12659	U1C5	25113	U1C6				U1C6	09/30/83
2E007	37247	3.03	U2C3	7977	U2C4	25375	U2C7				U2C7	03/13/87
2C109	37468	2.99	U2C1	16543	U2C2	26799	U2C3				U2C3	01/17/81
2C101	37489	2.99	U2C1	17131	U2C2	27167	U2C3				U2C3	01/17/81
2H009	37514	4.05	U2C6	15156	U2C7	30294	U2C8				U2C8	03/17/89
1H007	37565	4.00	U1C6	10226	U1C7	26355	U1C8				U1C8	10/24/86
1H010	37565	4.00	U1C6	10226	U1C7	26355	U1C8				U1C8	10/24/86
1H025	37565	4.00	U1C6	10226	U1C7	26355	U1C8				U1C8	10/24/86
1H026	37565	4.00	U1C6	10226	U1C7	26355	U1C8				U1C8	10/24/86
2E040	37732	3.03	U2C3	10766	U2C4	28423	U1C9				U1C9	04/08/88
1G029	38036	3.65	U1C5	9415	U1C6	25054	U1C7				U1C7	04/05/85
1G030	38036	3.65	U1C5	9415	U1C6	25054	U1C7				U1C7	04/05/85
1G019	38042	3.65	U1C5	9431	U1C6	25079	U1C7				U1C7	04/05/85
1G022	38042	3.65	U1C5	9431	U1C6	25079	U1C7				U1C7	04/05/85
1G031	38042	3.65	U1C5	9431	U1C6	25079	U1C7				U1C7	04/05/85
1J110	38085	3.40	U1C7	16571	U1C8	29017	U1C9				U1C9	04/08/88
2F014	38183	3.65	U2C4	10586	U2C5	25367	U2C6				U2C6	10/18/85
2F020	38183	3.65	U2C4	10586	U2C5	25367	U2C6				U2C6	10/18/85
2F037	38183	3.65	U2C4	10586	U2C5	25367	U2C6				U2C6	10/18/85
2F040	38183	3.65	U2C4	10586	U2C5	25367	U2C6				U2C6	10/18/85
1H027	38273	4.00	U1C6	11198	U1C7	27092	U1C8				U1C8	10/24/86
1H023	38327	4.00	U1C6	8915	U1C7	25822	U1C8				U1C8	10/24/86
2G008	38348	4.00	U2C5	9886	U2C6	24835	U2C7				U2C7	03/13/87
2G010	38348	4.00	U2C5	9886	U2C6	24835	U2C7				U2C7	03/13/87

1H016	38397	4.00	U1C6	8915	U1C7	25812	U1C8				U1C8	10/24/86
1H024	38397	4.00	U1C6	9815	U1C7	25812	U1C8				U1C8	10/24/86
2K105	38471	4.08	U2C8	19197	U2C9						U2C9	02/19/93
2K101	38484	4.08	U2C8	19197	U2C9						U2C9	02/19/93
2K107	38486	4.08	U2C8	19197	U2C9						U2C9	02/19/93
2K109	38486	4.08	U2C8	19197	U2C9						U2C9	02/19/93
2C212	38501	2.99	U2C1	18333	U2C2	28857	U2C3				U2C3	01/17/81
1P013	38516	4.30	U1C12	15966	U1C13	30041	U1C14				U1C14	03/10/00
1P014	38516	4.30	U1C12	15966	U1C13	30041	U1C14				U1C14	03/10/00
1P015	38533	4.30	U1C12	15966	U1C13	30041	U1C14				U1C14	03/10/00
1P016	38533	4.30	U1C12	15966	U1C13	30041	U1C14				U1C14	03/10/00
2C213	38543	2.99	U2C1	18333	U2C2	28876	U2C3				U2C3	01/17/81
2K006	38556	4.08	U2C8	15939	U2C9	31085	U2C10				U2C10	03/18/95
2J005	38644	4.05	U2C7	11484	U2C8	32154	U2C9				U2C9	02/19/93
2J010	38644	4.05	U2C7	11484	U2C8	32154	U2C9				U2C9	02/19/93
2J026	38644	4.05	U2C7	11484	U2C8	32154	U2C9				U2C9	02/19/93
2J037	38644	4.05	U2C7	11484	U2C8	32154	U2C9				U2C9	02/19/93
2J001	38655	4.05	U2C7	11482	U2C8	32168	U2C9				U2C9	02/19/93
2J002	38655	4.05	U2C7	11482	U2C8	32168	U2C9				U2C9	02/19/93
2J019	38655	4.05	U2C7	11482	U2C8	32168	U2C9				U2C9	02/19/93
2J025	38655	4.05	U2C7	11482	U2C8	32168	U2C9				U2C9	02/19/93
2K004	38656	4.08	U2C8	15939	U2C9	31085	U2C10				U2C10	03/18/95
2K012	38656	4.08	U2C8	15939	U2C9	31085	U2C10				U2C10	03/18/95
2K003	38660	4.08	U2C8	15960	U2C9	31113	U2C10				U2C10	03/18/95
2K009	38660	4.08	U2C8	15960	U2C9	31113	U2C10				U2C10	03/18/95
2K013	38660	4.08	U2C8	15960	U2C9	31113	U2C10				U2C10	03/18/95
2K015	38660	4.08	U2C8	15960	U2C9	31113	U2C10				U2C10	03/18/95
2J004	38662	4.05	U2C7	10764	U2C8	31757	U2C9				U2C9	02/19/93
2J006	38662	4.05	U2C7	10764	U2C8	31757	U2C9				U2C9	02/19/93
2J013	38662	4.05	U2C7	10764	U2C8	31757	U2C9				U2C9	02/19/93
2J021	38662	4.05	U2C7	10764	U2C8	31757	U2C9				U2C9	02/19/93
1P009	38667	4.30	U1C12	16203	U1C13	30211	U1C14				U1C14	03/10/00
1P010	38667	4.30	U1C12	16203	U1C13	30211	U1C14				U1C14	03/10/00
1P011	38667	4.30	U1C12	16203	U1C13	30211	U1C14				U1C14	03/10/00
1P012	38667	4.30	U1C12	16203	U1C13	30211	U1C14				U1C14	03/10/00
2K011	38673	4.08	U2C8	15939	U2C9	31085	U2C10				U2C10	03/18/95
2J015	38677	4.05	U2C7	10760	U2C8	31802	U2C9				U2C9	02/19/93
2J020	38677	4.05	U2C7	10760	U2C8	31802	U2C9				U2C9	02/19/93
2J030	38677	4.05	U2C7	10760	U2C8	31802	U2C9				U2C9	02/19/93
2J035	38677	4.05	U2C7	10760	U2C8	31802	U2C9				U2C9	02/19/93
1G015	38871	3.65	U1C5	10383	U1C6	25945	U1C7				U1C7	04/05/85
1G017	38871	3.65	U1C5	10383	U1C6	25945	U1C7				U1C7	04/05/85
1G032	38871	3.65	U1C5	10383	U1C6	25945	U1C7				U1C7	04/05/85
1G035	38871	3.65	U1C5	10383	U1C6	25945	U1C7				U1C7	04/05/85
1G005	38881	3.65	U1C5	10408	U1C6	25954	U1C7				U1C7	04/05/85
1G016	38881	3.65	U1C5	10408	U1C6	25954	U1C7				U1C7	04/05/85
2M001	38916	4.00	U2C10	15696	U2C11	30761	U2C12				U2C12	03/12/99
2M002	38916	4.00	U2C10	15696	U2C11	30761	U2C12				U2C12	03/12/99

2M004	38916	4.00	U2C10	15696	U2C11	30761	U2C12				U2C12	03/12/99
2M010	38916	4.00	U2C10	15696	U2C11	30761	U2C12				U2C12	03/12/99
2G044	38947	4.00	U2C5	11874	U2C6	26275	U2C7				U2C7	03/13/87
2G048	38947	4.00	U2C5	11874	U2C6	26275	U2C7				U2C7	03/13/87
2F012	38973	3.65	U2C4	10584	U2C5	26307	U2C6				U2C6	10/18/85
2F030	38973	3.65	U2C4	10584	U2C5	26307	U2C6				U2C6	10/18/85
2F038	38973	3.65	U2C4	10584	U2C5	26307	U2C6				U2C6	10/18/85
2F039	38973	3.65	U2C4	10584	U2C5	26307	U2C6				U2C6	10/18/85
2G041	39043	4.00	U2C5	9889	U2C6	25599	U2C7				U2C7	03/13/87
1N004	39052	4.20	U1C11	10699	U1C12	30924	U1C13				U1C13	04/03/98
1N005	39052	4.20	U1C11	11995	U1C12	30924	U1C13				U1C13	04/03/98
1N010	39052	4.20	U1C11	16271	U1C12	30924	U1C13				U1C13	04/03/98
1N011	39052	4.20	U1C11	17769	U1C12	30924	U1C13				U1C13	04/03/98
2M003	39089	4.00	U2C10	15723	U2C11	30927	U2C12				U2C12	03/12/99
2M005	39089	4.00	U2C10	15722	U2C11	30927	U2C12				U2C12	03/12/99
2M011	39089	4.00	U2C10	15722	U2C11	30927	U2C12				U2C12	03/12/99
2M012	39089	4.00	U2C10	15722	U2C11	30927	U2C12				U2C12	03/12/99
1G028	39136	3.65	U1C5	12581	U1C6	27197	U1C7				U1C7	04/05/85
1G039	39136	3.65	U1C5	12581	U1C6	27197	U1C7				U1C7	04/05/85
1G040	39136	3.65	U1C5	12581	U1C6	27197	U1C7				U1C7	04/05/85
1N006	39174	4.20	U1C11	16266	U1C12	31071	U1C13				U1C13	04/03/98
1N007	39174	4.20	U1C11	10694	U1C12	31071	U1C13				U1C13	04/03/98
1N008	39174	4.20	U1C11	11986	U1C12	31071	U1C13				U1C13	04/03/98
1N009	39174	4.20	U1C11	17759	U1C12	31071	U1C13				U1C13	04/03/98
2G036	39277	4.00	U2C5	9659	U2C6	25544	U2C7				U2C7	03/13/87
2G040	39277	4.00	U2C5	9659	U2C6	25544	U2C7				U2C7	03/13/87
2G003	39283	4.00	U2C5	9659	U2C6	25453	U2C7				U2C7	03/13/87
2G017	39290	4.00	U2C5	9660	U2C6	25561	U2C7				U2C7	03/13/87
2G016	39348	4.00	U2C5	9886	U2C6	24835	U2C7				U2C7	03/13/87
2J022	39503	4.05	U2C7	13115	U2C8	32717	U2C9				U2C9	02/19/93
2J033	39503	4.05	U2C7	13115	U2C8	32717	U2C9				U2C9	02/19/93
2J034	39503	4.05	U2C7	13115	U2C8	32717	U2C9				U2C9	02/19/93
2J036	39503	4.05	U2C7	13115	U2C8	32717	U2C9				U2C9	02/19/93
1H127	39510	3.55	U1C6	14238	U1C7	28888	U1C8				U1C8	10/24/86
1H131	39510	3.55	U1C6	14238	U1C7	28888	U1C8				U1C8	10/24/86
2F003	39725	3.65	U2C4	12295	U2C5	27837	U2C6				U2C6	10/18/85
2F032	39725	3.65	U2C4	12295	U2C5	27837	U2C6				U2C6	10/18/85
2F006	39726	3.65	U2C4	12294	U2C5	27805	U2C6				U2C6	10/18/85
2F007	39726	3.65	U2C4	12294	U2C5	27805	U2C6				U2C6	10/18/85
2F031	39726	3.65	U2C4	12294	U2C5	27805	U2C6				U2C6	10/18/85
1H014	39728	4.00	U1C6	12907	U1C7	27393	U1C8				U1C8	10/24/86
2G122	39730	3.55	U2C5	15668	U2C6	28495	U2C7				U2C7	03/13/87
2G125	39730	3.55	U2C5	15668	U2C6	28495	U2C7				U2C7	03/13/87
1J025	40046	4.05	U1C7	15316	U1C8	28987	U1C9				U1C9	04/08/88
1L001	40112	4.05	U1C9	9765	U1C10	33524	U1C11				U1C11	02/09/94
1L003	40112	4.05	U1C9	9765	U1C10	33524	U1C11				U1C11	02/09/94
1L029	40112	4.05	U1C9	9765	U1C10	33524	U1C11				U1C11	02/09/94
1L031	40112	4.05	U1C9	9765	U1C10	33524	U1C11				U1C11	02/09/94

1H009	40123	4.00	U1C6	13469	U1C7	27305	U1C8				U1C8	10/24/86
1L005	40125	4.05	U1C9	9800	U1C10	33531	U1C11				U1C11	02/09/94
1L011	40125	4.05	U1C9	9800	U1C10	33531	U1C11				U1C11	02/09/94
1L015	40125	4.05	U1C9	9800	U1C10	33531	U1C11				U1C11	02/09/94
1L033	40125	4.05	U1C9	9800	U1C10	33531	U1C11				U1C11	02/09/94
1H035	40143	4.00	U1C6	13473	U1C7	27303	U1C8				U1C8	10/24/86
2G028	40258	4.00	U2C5	11258	U2C6	26672	U2C7				U2C7	03/13/87
1G012	40297	3.65	U1C5	11900	U1C6	27556	U1C7				U1C7	04/05/85
1G013	40297	3.65	U1C5	11900	U1C6	27556	U1C7				U1C7	04/05/85
1G014	40297	3.65	U1C5	11900	U1C6	27556	U1C7				U1C7	04/05/85
2L001	40417	4.30	U2C9	14726	U2C10	31436	U2C11				U2C11	03/15/97
2L002	40417	4.30	U2C9	14726	U2C10	31436	U2C11				U2C11	03/15/97
2L003	40417	4.30	U2C9	14726	U2C10	31436	U2C11				U2C11	03/15/97
2L004	40417	4.30	U2C9	14726	U2C10	31436	U2C11				U2C11	03/15/97
1L019	40434	4.05	U1C9	8975	U1C10	32539	U1C11				U1C11	02/09/94
1L020	40434	4.05	U1C9	8975	U1C10	32539	U1C11				U1C11	02/09/94
1L037	40434	4.05	U1C9	8975	U1C10	32539	U1C11				U1C11	02/09/94
1L038	40434	4.05	U1C9	8975	U1C10	32539	U1C11				U1C11	02/09/94
2L013	40446	4.30	U2C9	14783	U2C10	31440	U2C11				U2C11	03/15/97
2L014	40446	4.30	U2C9	14783	U2C10	31440	U2C11				U2C11	03/15/97
2L015	40446	4.30	U2C9	14783	U2C10	31440	U2C11				U2C11	03/15/97
2L016	40446	4.30	U2C9	14783	U2C10	31440	U2C11				U2C11	03/15/97
1L012	40462	4.05	U1C9	9061	U1C10	32568	U1C11				U1C11	02/09/94
1L034	40462	4.05	U1C9	9061	U1C10	32568	U1C11				U1C11	02/09/94
1L039	40462	4.05	U1C9	9061	U1C10	32568	U1C11				U1C11	02/09/94
1L040	40462	4.05	U1C9	9061	U1C10	32568	U1C11				U1C11	02/09/94
2K001	40488	4.08	U2C8	14910	U2C9	33885	U2C10				U2C10	03/18/95
2K002	40488	4.08	U2C8	14910	U2C9	33885	U2C10				U2C10	03/18/95
2K005	40488	4.08	U2C8	14910	U2C9	33885	U2C10				U2C10	03/18/95
2K016	40488	4.08	U2C8	14910	U2C9	33885	U2C10				U2C10	03/18/95
1L006	40494	4.05	U1C9	11643	U1C10	35362	U1C11				U1C11	02/09/94
1L022	40494	4.05	U1C9	11643	U1C10	35362	U1C11				U1C11	02/09/94
1L035	40494	4.05	U1C9	11643	U1C10	35362	U1C11				U1C11	02/09/94
1L036	40494	4.05	U1C9	11643	U1C10	35362	U1C11				U1C11	02/09/94
2J011	40495	4.05	U2C7	13813	U2C8	33807	U2C9				U2C9	02/19/93
2J012	40495	4.05	U2C7	13813	U2C8	33807	U2C9				U2C9	02/19/93
2J014	40495	4.05	U2C7	13813	U2C8	33807	U2C9				U2C9	02/19/93
2J017	40495	4.05	U2C7	13813	U2C8	33807	U2C9				U2C9	02/19/93
2K010	40502	4.08	U2C8	14915	U2C9	33897	U2C10				U2C10	03/18/95
2K008	40506	4.08	U2C8	14915	U2C9	33897	U2C10				U2C10	03/18/95
2K014	40506	4.08	U2C8	14915	U2C9	33897	U2C10				U2C10	03/18/95
2K007	40508	4.08	U2C8	14915	U2C9	33897	U2C10				U2C10	03/18/95
1G024	40526	3.65	U1C5	12562	U1C6	27907	U1C7				U1C7	04/05/85
1G025	40526	3.65	U1C5	12562	U1C6	27807	U1C7				U1C7	04/05/85
1G037	40526	3.65	U1C5	12562	U1C6	27807	U1C7				U1C7	04/05/85
1G038	40526	3.65	U1C5	12562	U1C6	27807	U1C7				U1C7	04/05/85
2P003	40542	4.48	U2C12	16019	U2C13	33478	U2C14	40542			U2C14	14-Feb-03
2P004	40554	4.48	U2C12	16019	U2C13	33478	U2C14	40554			U2C14	14-Feb-03

2P017	40592	4.48	U2C12	16018	U2C13	33524	U2C14	40592			U2C14	14-Feb-03
1H003	40601	4.00	U1C6	12903	U1C7	28539	U1C8				U1C8	10/24/86
1H030	40601	4.00	U1C6	12903	U1C7	28539	U1C8				U1C8	10/24/86
2P018	40613	4.48	U2C12	16018	U2C13	33524	U2C14	40613			U2C14	14-Feb-03
1L004	40614	4.05	U1C9	11739	U1C10	35485	U1C11				U1C11	02/09/94
1L007	40614	4.05	U1C9	11739	U1C10	35485	U1C11				U1C11	02/09/94
1L021	40614	4.05	U1C9	11739	U1C10	35485	U1C11				U1C11	02/09/94
1L032	40614	4.05	U1C9	11739	U1C10	35485	U1C11				U1C11	02/09/94
2P002	40658	4.48	U2C12	16019	U2C13	33478	U2C14	40658			U2C14	14-Feb-03
2P001	40659	4.48	U2C12	16019	U2C13	33478	U2C14	40659			U2C14	14-Feb-03
2P020	40710	4.48	U2C12	16018	U2C13	33524	U2C14	40710			U2C14	14-Feb-03
2P019	40713	4.48	U2C12	16018	U2C13	33524	U2C14	40713			U2C14	14-Feb-03
2F001	40759	3.65	U2C4	14090	U2C5	28616	U2C6				U2C6	10/18/85
2F015	40759	3.65	U2C4	14090	U2C5	28616	U2C6				U2C6	10/18/85
2F026	40759	3.65	U2C4	14090	U2C5	28616	U2C6				U2C6	10/18/85
2F019	40762	3.65	U2C4	14803	U2C5	28681	U2C6				U2C6	10/18/85
2F023	40762	3.65	U2C4	14803	U2C5	28681	U2C6				U2C6	10/18/85
2F027	40762	3.65	U2C4	14803	U2C5	28681	U2C6				U2C6	10/18/85
2J109	40780	3.40	U2C7	17084	U2C8	35846	U2C13				U2C13	16-Mar-01
2J112	40780	3.40	U2C7	17084	U2C8	35846	U2C13				U2C13	16-Mar-01
2J113	40780	3.40	U2C7	17084	U2C8	35846	U2C13				U2C13	16-Mar-01
2J115	40780	3.40	U2C7	17084	U2C8	35846	U2C13				U2C13	16-Mar-01
2G032	40804	4.00	U2C5	13270	U2C6	28636	U2C7				U2C7	03/13/87
2F016	40806	3.65	U2C4	14804	U2C5	28699	U2C6				U2C6	10/18/85
2F017	40806	3.65	U2C4	14804	U2C5	28699	U2C6				U2C6	10/18/85
2F022	40806	3.65	U2C4	14804	U2C5	28699	U2C6				U2C6	10/18/85
2F025	40806	3.65	U2C4	14804	U2C5	28699	U2C6				U2C6	10/18/85
2K203	40849	4.08	U2C8	21704	U2C9						U2C9	02/19/93
2K204	40849	4.08	U2C8	21704	U2C9						U2C9	02/19/93
2K206	40849	4.08	U2C8	21704	U2C9						U2C9	02/19/93
2K210	40849	4.08	U2C8	21704	U2C9						U2C9	02/19/93
2G033	41041	4.00	U2C5	13265	U2C6	27727	U2C7				U2C7	03/13/87
2G021	41047	4.00	U2C5	13265	U2C6	27734	U2C7				U2C7	03/13/87
2F002	41199	3.65	U2C4	14092	U2C5	29066	U2C6				U2C6	10/18/85
2F018	41199	3.65	U2C4	14092	U2C5	29066	U2C6				U2C6	10/18/85
2F033	41199	3.65	U2C4	14092	U2C5	29066	U2C6				U2C6	10/18/85
1L104	41224	3.40	U1C9	14452	U1C10	34704	U1C15				U1C15	15-Feb-02
2K216	41231	4.08	U2C8	20386	U2C9						U2C9	02/19/93
2K222	41231	4.08	U2C8	20386	U2C9						U2C9	02/19/93
2K223	41231	4.08	U2C8	20386	U2C9						U2C9	02/19/93
2K228	41231	4.08	U2C8	20386	U2C9						U2C9	02/19/93
2K208	41232	4.08	U2C8	20423	U2C9						U2C9	02/19/93
2K207	41236	4.08	U2C8	20423	U2C9						U2C9	02/19/93
2K211	41236	4.08	U2C8	20423	U2C9						U2C9	02/19/93
2K213	41236	4.08	U2C8	20423	U2C9						U2C9	02/19/93
1L105	41244	3.40	U1C9	14452	U1C10	34704	U1C15				U1C15	15-Feb-02
1L107	41244	3.40	U1C9	14452	U1C10	34704	U1C15				U1C15	15-Feb-02
1L109	41246	3.40	U1C9	14452	U1C10	34704	U1C15				U1C15	15-Feb-02

1H106	41359	3.55	U1C6	14943	U1C7	29637	U1C8				U1C8	10/24/86
2G106	41368	3.55	U2C5	16985	U2C6	30445	U2C7				U2C7	03/13/87
2G107	41368	3.55	U2C5	16985	U2C6	30445	U2C7				U2C7	03/13/87
2G110	41368	3.55	U2C5	16985	U2C6	30445	U2C7				U2C7	03/13/87
2J016	41599	4.05	U2C7	13786	U2C8	33757	U2C11				U2C11	03/15/97
2J038	41599	4.05	U2C7	13786	U2C8	33757	U2C11				U2C11	03/15/97
2J039	41599	4.05	U2C7	13786	U2C8	33757	U2C11				U2C11	03/15/97
2J040	41599	4.05	U2C7	13786	U2C8	33757	U2C11				U2C11	03/15/97
1RT1	41663	4.00	U1C13	23866	U1C14	35642	U1C15				U1C15	15-Feb-02
2K115	41787	4.08	U2C8	23034	U2C9						U2C9	02/19/93
2K123	41787	4.08	U2C8	23034	U2C9						U2C9	02/19/93
2K126	41787	4.08	U2C8	23034	U2C9						U2C9	02/19/93
2K142	41787	4.08	U2C8	23034	U2C9						U2C9	02/19/93
2K103	41817	4.08	U2C8	23086	U2C9						U2C9	02/19/93
2K108	41817	4.08	U2C8	23186	U2C9						U2C9	02/19/93
2K127	41817	4.08	U2C8	23086	U2C9						U2C9	02/19/93
2K131	41817	4.08	U2C8	23086	U2C9						U2C9	02/19/93
2G022	41859	4.00	U2C5	15144	U2C6	29620	U2C7				U2C7	03/13/87
1RT3	41865	4.00	U1C13	22191	U1C14	35637	U1C15				U1C15	15-Feb-02
1H103	41915	3.55	U1C6	17151	U1C7	30468	U1C8				U1C8	10/24/86
1H112	41960	3.55	U1C6	16921	U1C7	30717	U1C8				U1C8	10/24/86
2H032	41991	4.05	U2C6	11235	U2C7	24434	U2C8				U2C8	03/17/89
1H122	42032	3.55	U1C6	16382	U1C7	30650	U1C8				U1C8	10/24/86
1H132	42038	3.55	U1C6	16340	U1C7	30619	U1C8				U1C8	10/24/86
1P005	42065	4.30	U1C12	19013	U1C13	36816	U1C14				U1C14	03/10/00
1P006	42065	4.30	U1C12	19013	U1C13	36816	U1C14				U1C14	03/10/00
1P007	42081	4.30	U1C12	19013	U1C13	36816	U1C14				U1C14	03/10/00
1P008	42081	4.30	U1C12	19013	U1C13	36816	U1C14				U1C14	03/10/00
2L117	42126	4.30	U2C9	21319	U2C10						U2C10	03/18/95
2L118	42126	4.30	U2C9	21319	U2C10						U2C10	03/18/95
2L119	42126	4.30	U2C9	21319	U2C10						U2C10	03/18/95
2L120	42126	4.30	U2C9	21319	U2C10						U2C10	03/18/95
2K201	42135	4.08	U2C8	23273	U2C9						U2C9	02/19/93
2K209	42135	4.08	U2C8	23273	U2C9						U2C9	02/19/93
2K215	42135	4.08	U2C8	23273	U2C9						U2C9	02/19/93
2K217	42135	4.08	U2C8	23273	U2C9						U2C9	02/19/93
1M012	42159	4.08	U1C10	15855	U1C11	38024	U1C12				U1C12	03/30/96
1M013	42159	4.08	U1C10	15855	U1C11	29470	U1C12				U1C12	03/30/96
1M015	42159	4.08	U1C10	15855	U1C11	36181	U1C12				U1C12	03/30/96
1M016	42159	4.08	U1C10	15855	U1C11	31692	U1C12				U1C12	03/30/96
2H111	42163	3.40	U2C6	15556	U2C7	28515	U2C8				U2C8	03/17/89
2L101	42185	4.30	U2C9	21240	U2C10						U2C10	03/18/95
2L102	42185	4.30	U2C9	21240	U2C10						U2C10	03/18/95
2L103	42185	4.30	U2C9	21240	U2C10						U2C10	03/18/95
2L104	42185	4.30	U2C9	21240	U2C10						U2C10	03/18/95
1L009	42187	4.05	U1C9	8523	U1C10	27602	U1C11	35328	U2C11		U2C11	03/15/97
1L017	42187	4.05	U1C9	11386	U1C10	34678	U2C11				U2C11	03/15/97
1L024	42187	4.05	U1C9	11386	U1C10	34678	U2C11				U2C11	03/15/97

1L025	42187	4.05	U1C9	11386	U1C10	34678	U2C11				U2C11	03/15/97
2K212	42206	4.08	U2C8	23285	U2C9						U2C9	02/19/93
2K214	42206	4.08	U2C8	23285	U2C9						U2C9	02/19/93
2K221	42206	4.08	U2C8	23285	U2C9						U2C9	02/19/93
2K224	42206	4.08	U2C8	23285	U2C9						U2C9	02/19/93
1P003	42217	4.30	U1C12	19216	U1C13	36988	U1C14				U1C14	03/10/00
1P004	42217	4.30	U1C12	19216	U1C13	36988	U1C14				U1C14	03/10/00
1M001	42217	4.08	U1C10	15832	U1C11	36175	U1C12				U1C12	03/30/96
1M007	42217	4.08	U1C10	15832	U1C11	38013	U1C12				U1C12	03/30/96
1M011	42217	4.08	U1C10	15832	U1C11	29465	U1C12				U1C12	03/30/96
1M014	42217	4.08	U1C10	15832	U1C11	31683	U1C12				U1C12	03/30/96
1P001	42218	4.30	U1C12	19216	U1C13	36988	U1C14				U1C14	03/10/00
1P002	42218	4.30	U1C12	19216	U1C13	36988	U1C14				U1C14	03/10/00
2K112	42372	4.08	U2C8	23296	U2C9						U2C9	02/19/93
2K114	42372	4.08	U2C8	23296	U2C9						U2C9	02/19/93
2K117	42372	4.08	U2C8	23296	U2C9						U2C9	02/19/93
2K124	42372	4.08	U2C8	23296	U2C9						U2C9	02/19/93
2K202	42405	4.08	U2C8	23807	U2C9						U2C9	02/19/93
2K219	42405	4.08	U2C8	23807	U2C9						U2C9	02/19/93
2K225	42405	4.08	U2C8	23807	U2C9						U2C9	02/19/93
2K226	42405	4.08	U2C8	23807	U2C9						U2C9	02/19/93
2K102	42430	4.08	U2C8	23382	U2C9						U2C9	02/19/93
2K134	42430	4.08	U2C8	23392	U2C9						U2C9	02/19/93
2K138	42430	4.08	U2C8	23382	U2C9						U2C9	02/19/93
2K143	42430	4.08	U2C8	23382	U2C9						U2C9	02/19/93
1K104	42433	3.40	U1C8	16018	U1C9	27563	U1C11				U1C11	02/09/94
2H114	42718	3.40	U2C6	15556	U2C7	28515	U2C9				U2C9	02/19/93
2K130	42719	4.08	U2C8	23635	U2C9						U2C9	02/19/93
2K125	42727	4.08	U2C8	23635	U2C9						U2C9	02/19/93
2K135	42727	4.08	U2C8	23635	U2C9						U2C9	02/19/93
2K140	42727	4.08	U2C8	23635	U2C9						U2C9	02/19/93
2K116	42774	4.08	U2C8	23706	U2C9						U2C9	02/19/93
2K120	42774	4.08	U2C8	23706	U2C9						U2C9	02/19/93
2K122	42774	4.08	U2C8	23706	U2C9						U2C9	02/19/93
2K136	42776	4.08	U2C8	23706	U2C9						U2C9	02/19/93
2K110	42780	4.08	U2C8	18976	U2C9	37156	U2C10				U2C10	03/18/95
2K111	42780	4.08	U2C8	18976	U2C9	37156	U2C10				U2C10	03/18/95
2K113	42780	4.08	U2C8	18976	U2C9	37156	U2C10				U2C10	03/18/95
2K137	42780	4.08	U2C8	18976	U2C9	42776	U2C10				U2C10	03/18/95
1K043	42865	4.05	U1C8	9927	U1C9	21340	U1C10				U1C10	03/19/92
1K024	42923	4.05	U1C8	9961	U1C9	21405	U1C10				U1C10	03/19/92
1K034	42923	4.05	U1C8	9961	U1C9	21405	U1C10				U1C10	03/19/92
2M103	43048	4.00	U2C10	18652	U2C11	37640	U2C12				U2C12	03/12/99
2M104	43048	4.00	U2C10	18652	U2C11	37640	U2C12				U2C12	03/12/99
2M105	43048	4.00	U2C10	18652	U2C11	37640	U2C12				U2C12	03/12/99
2M116	43048	4.00	U2C10	18652	U2C11	37640	U2C12				U2C12	03/12/99
2M101	43101	4.00	U2C10	18681	U2C11	37667	U2C12				U2C12	03/12/99
2M102	43101	4.00	U2C10	18681	U2C11	37667	U2C12				U2C12	03/12/99

2M106	43101	4.00	U2C10	18681	U2C11	37667	U2C12				U2C12	03/12/99
2M111	43101	4.00	U2C10	18681	U2C11	37667	U2C12				U2C12	03/12/99
1BT07	43239	2.45	U1C1	19506	U1C2	26933	U1C3	34207	U1C4		U1C4	10/17/80
2K104	43322	4.08	U2C8	18987	U2C9	37840	U2C10				U2C10	03/18/95
2K106	43322	4.08	U2C8	18987	U2C9	37840	U2C10				U2C10	03/18/95
2K139	43322	4.08	U2C8	18987	U2C9	37840	U2C10				U2C10	03/18/95
2K141	43322	4.08	U2C8	18987	U2C9	37840	U2C10				U2C10	03/18/95
1K113	43361	3.40	U1C8	15071	U1C9	26293	U1C10				U1C10	03/19/92
1K114	43361	3.40	U1C8	15071	U1C9	26293	U1C10				U1C10	03/19/92
1K118	43361	3.40	U1C8	15071	U1C9	26293	U1C10				U1C10	03/19/92
1K120	43361	3.40	U1C8	15071	U1C9	26290	U1C10				U1C10	03/19/92
2H045	43405	4.05	U2C6	10176	U2C7	25555	U2C8				U2C8	03/17/89
2H034	43443	4.05	U2C6	10179	U2C7	25556	U2C8				U2C8	03/17/89
1K117	43444	3.40	U1C8	16018	U1C9	27563	U2C12				U2C12	03/12/99
2G124	43447	3.55	U2C5	17155	U2C6	31278	U2C7				U2C7	03/13/87
2G118	43451	3.55	U2C5	17144	U2C6	31277	U2C7				U2C7	03/13/87
1K045	43466	4.05	U1C8	9614	U1C9	23379	U1C10				U1C10	03/19/92
2L321	43468	4.30	U2C9	23554	U2C10						U2C10	03/18/95
2L322	43468	4.30	U2C9	23554	U2C10						U2C10	03/18/95
2L323	43468	4.30	U2C9	23554	U2C10						U2C10	03/18/95
2L324	43468	4.30	U2C9	23554	U2C10						U2C10	03/18/95
2L301	43479	4.30	U2C9	23575	U2C10						U2C10	03/18/95
2L302	43479	4.30	U2C9	23575	U2C10						U2C10	03/18/95
2L303	43479	4.30	U2C9	23575	U2C10						U2C10	03/18/95
2L304	43479	4.30	U2C9	23575	U2C10						U2C10	03/18/95
2H027	43489	4.05	U2C6	10179	U2C7	25556	U2C8				U2C8	03/17/89
2G102	43505	3.55	U2C5	17026	U2C6	31567	U2C7				U2C7	03/13/87
1K031	43548	4.05	U1C8	9608	U1C9	23426	U1C10				U1C10	03/19/92
1K035	43548	4.05	U1C8	9608	U1C9	23426	U1C10				U1C10	03/19/92
1K044	43548	4.05	U1C8	9608	U1C9	23426	U1C10				U1C10	03/19/92
2H108	43640	3.40	U2C6	15556	U2C7	28515	U2C10				U2C10	03/18/95
1K112	43879	3.40	U1C8	15949	U1C9	27412	U1C10				U1C10	03/19/92
1K101	43884	3.40	U1C8	15950	U1C9	27413	U1C10				U1C10	03/19/92
1K115	43884	3.40	U1C8	15950	U1C9	27413	U1C10				U1C10	03/19/92
1K119	43884	3.40	U1C8	15950	U1C9	27413	U1C10				U1C10	03/19/92
2L005	43982	4.30	U2C9	15031	U2C10	36019	U2C11				U2C11	03/15/97
2L006	43982	4.30	U2C9	15031	U2C10	36019	U2C11				U2C11	03/15/97
2L007	43982	4.30	U2C9	15031	U2C10	36019	U2C11				U2C11	03/15/97
2L008	43982	4.30	U2C9	15031	U2C10	36019	U2C11				U2C11	03/15/97
2L009	43989	4.30	U2C9	15029	U2C10	36022	U2C11				U2C11	03/15/97
2L010	43989	4.30	U2C9	15029	U2C10	36022	U2C11				U2C11	03/15/97
2L011	43989	4.30	U2C9	15029	U2C10	36022	U2C11				U2C11	03/15/97
2L012	43989	4.30	U2C9	15029	U2C10	36022	U2C11				U2C11	03/15/97
1M102	44209	4.08	U1C10	25470	U1C11						U1C11	02/09/94
1M134	44209	4.08	U1C10	25470	U1C11						U1C11	02/09/94
1M135	44209	4.08	U1C10	25470	U1C11						U1C11	02/09/94
1M170	44209	4.08	U1C10	25470	U1C11						U1C11	02/09/94
2N001	44213	4.48	U2C11	19626	U2C12	35821	U2C13				U2C13	16-Mar-01

2N003	44213	4.48	U2C11	19626	U2C12	35821	U2C13				U2C13	16-Mar-01
2N010	44213	4.48	U2C11	19626	U2C12	35821	U2C13				U2C13	16-Mar-01
2N011	44213	4.48	U2C11	19626	U2C12	35821	U2C13				U2C13	16-Mar-01
2N007	44263	4.48	U2C11	19641	U2C12	35836	U2C13				U2C13	16-Mar-01
2N008	44263	4.48	U2C11	19641	U2C12	35836	U2C13				U2C13	16-Mar-01
2N009	44263	4.48	U2C11	19641	U2C12	35836	U2C13				U2C13	16-Mar-01
2N012	44263	4.48	U2C11	19641	U2C12	35836	U2C13				U2C13	16-Mar-01
2L109	44443	4.30	U2C9	17787	U2C10	38682	U2C11				U2C11	03/15/97
2L110	44443	4.30	U2C9	17787	U2C10	38682	U2C11				U2C11	03/15/97
2L111	44443	4.30	U2C9	17787	U2C10	38682	U2C11				U2C11	03/15/97
2L112	44443	4.30	U2C9	17787	U2C10	38682	U2C11				U2C11	03/15/97
2P024	44450	4.48	U2C12	22228	U2C13	44450					U2C13	16-Mar-01
1RT2	44573	4.00	U1C13	23372	U1C14						U1C14	10-Mar-00
2M201	44577	4.00	U2C10	21206	U2C11						U2C11	03/15/97
2M205	44577	4.00	U2C10	21206	U2C11						U2C11	03/15/97
2M215	44577	4.00	U2C10	21206	U2C11						U2C11	03/15/97
2M216	44577	4.00	U2C10	21206	U2C11						U2C11	03/15/97
1S230	44603	4.30	U1C14	24157	U1C15						U1C15	15-Feb-02
1S201	44608	4.30	U1C14	24157	U1C15						U1C15	15-Feb-02
1S214	44608	4.30	U1C14	24156	U1C15						U1C15	15-Feb-02
1S232	44608	4.30	U1C14	24156	U1C15						U1C15	15-Feb-02
1M143	44647	4.08	U1C10	22697	U1C11		U1C12				U1C12	03/30/96
1M146	44647	4.08	U1C10	22697	U1C11		U1C12				U1C12	03/30/96
1M173	44647	4.08	U1C10	22697	U1C11		U1C12				U1C12	03/30/96
2H107	44649	3.40	U2C6	16187	U2C7	29805	U2C8				U2C8	03/17/89
2H124	44649	3.40	U2C6	16187	U2C7	29805	U2C8				U2C8	03/17/89
1M144	44667	4.08	U1C10	22697	U1C11		U1C12				U1C12	03/30/96
1K122	44688	3.40	U1C8	16016	U1C9	28129	U1C10				U1C10	03/19/92
1K110	44690	3.40	U1C8	15976	U1C9	28129	U1C10				U1C10	03/19/92
1K116	44690	3.40	U1C8	16015	U1C9	28129	U1C10				U1C10	03/19/92
1K123	44690	3.40	U1C8	16015	U1C9	28129	U1C10				U1C10	03/19/92
1M111	44701	4.08	U1C10	22651	U1C11		U1C12				U1C12	03/30/96
1M142	44701	4.08	U1C10	22651	U1C11		U1C12				U1C12	03/30/96
1M154	44701	4.08	U1C10	22651	U1C11		U1C12				U1C12	03/30/96
1M159	44701	4.08	U1C10	22651	U1C11		U1C12				U1C12	03/30/96
2M309	44882	4.00	U2C10	24683	U2C11						U2C11	03/15/97
2M310	44882	4.00	U2C10	24683	U2C11						U2C11	03/15/97
2M316	44882	4.00	U2C10	24683	U2C11						U2C11	03/15/97
2M332	44882	4.00	U2C10	24683	U2C11						U2C11	03/15/97
2L221	44907	4.30	U2C9	23807	U2C10						U2C10	03/18/95
2L222	44907	4.30	U2C9	23807	U2C10						U2C10	03/18/95
2L223	44907	4.30	U2C9	23807	U2C10						U2C10	03/18/95
2L224	44907	4.30	U2C9	23807	U2C10						U2C10	03/18/95
1S012	44922	4.30	U1C14	23275	U1C15						U1C15	15-Feb-02
1S014	44923	4.30	U1C14	23275	U1C15						U1C15	15-Feb-02
1S002	44924	4.30	U1C14	23279	U1C15						U1C15	15-Feb-02
1S007	44924	4.30	U1C14	23277	U1C15						U1C15	15-Feb-02
2M319	44929	4.00	U2C10	24729	U2C11						U2C11	03/15/97

2M333	44929	4.00	U2C10	24729	U2C11						U2C11	03/15/97
2M339	44929	4.00	U2C10	24729	U2C11						U2C11	03/15/97
2M340	44929	4.00	U2C10	24729	U2C11						U2C11	03/15/97
2L105	45039	4.30	U2C9	18017	U2C10	39593	U2C11				U2C11	03/15/97
2L106	45039	4.30	U2C9	18017	U2C10	39593	U2C11				U2C11	03/15/97
2L107	45039	4.30	U2C9	18017	U2C10	39593	U2C11				U2C11	03/15/97
2L108	45039	4.30	U2C9	18017	U2C10	39593	U2C11				U2C11	03/15/97
2J027	45091	4.05	U2C7	9761	U2C8	26758	U2C9				U2C9	02/19/93
2J028	45091	4.05	U2C7	9761	U2C8	26758	U2C9				U2C9	02/19/93
2J029	45091	4.05	U2C7	9761	U2C8	26758	U2C9				U2C9	02/19/93
2J031	45091	4.05	U2C7	9761	U2C8	26758	U2C9				U2C9	02/19/93
2J003	45107	4.05	U2C7	9835	U2C8	26771	U2C9				U2C9	02/19/93
2J007	45107	4.05	U2C7	9835	U2C8	26771	U2C9				U2C9	02/19/93
2J024	45107	4.05	U2C7	9835	U2C8	26771	U2C9				U2C9	02/19/93
2J008	45109	4.05	U2C7	9855	U2C8	26774	U2C9				U2C9	02/19/93
1K111	45143	3.40	U1C8	16018	U1C9	27563	U1C12				U1C12	03/30/96
2L113	45159	4.30	U2C9	18020	U2C10	39736	U2C11				U2C11	03/15/97
2L114	45159	4.30	U2C9	18020	U2C10	39736	U2C11				U2C11	03/15/97
2L115	45159	4.30	U2C9	18020	U2C10	39736	U2C11				U2C11	03/15/97
2L116	45159	4.30	U2C9	18020	U2C10	39736	U2C11				U2C11	03/15/97
2L309	45263	4.30	U2C9	24081	U2C10						U2C10	03/18/95
2L310	45263	4.30	U2C9	24081	U2C10						U2C10	03/18/95
2L311	45263	4.30	U2C9	24081	U2C10						U2C10	03/18/95
2L312	45263	4.30	U2C9	24081	U2C10						U2C10	03/18/95
2H109	45271	3.40	U2C6	16687	U2C7	30464	U2C8				U2C8	03/17/89
2H115	45271	3.40	U2C6	16687	U2C7	30465	U2C8				U2C8	03/17/89
2H122	45271	3.40	U2C6	16687	U2C7	30464	U2C8				U2C8	03/17/89
2L305	45272	4.30	U2C9	24094	U2C10						U2C10	03/18/95
2L306	45272	4.30	U2C9	24094	U2C10						U2C10	03/18/95
2L307	45272	4.30	U2C9	24094	U2C10						U2C10	03/18/95
2H121	45274	3.40	U2C6	16687	U2C7	30464	U2C8				U2C8	03/17/89
2L217	45306	4.30	U2C9	24050	U2C10						U2C10	03/18/95
2L218	45306	4.30	U2C9	24050	U2C10						U2C10	03/18/95
2L219	45306	4.30	U2C9	24050	U2C10						U2C10	03/18/95
2L220	45306	4.30	U2C9	24050	U2C10						U2C10	03/18/95
1M103	45354	4.08	U1C10	26331	U1C11						U1C11	02/09/94
1M130	45354	4.08	U1C10	26331	U1C11						U1C11	02/09/94
1M131	45354	4.08	U1C10	26331	U1C11						U1C11	02/09/94
1M136	45354	4.08	U1C10	26331	U1C11						U1C11	02/09/94
2L201	45360	4.30	U2C9	24120	U2C10						U2C10	03/18/95
2L202	45360	4.30	U2C9	24120	U2C10						U2C10	03/18/95
2L203	45360	4.30	U2C9	24120	U2C10						U2C10	03/18/95
2L204	45360	4.30	U2C9	24120	U2C10						U2C10	03/18/95
2L308	45372	4.30	U2C9	24094	U2C10						U2C10	03/18/95
1K103	45429	3.40	U1C8	16018	U1C9	27563	U1C10				U1C10	03/19/92
1N213	45431	4.20	U1C11	22049	U1C12						U1C12	03/30/96
1N249	45431	4.20	U1C11	22406	U1C12						U1C12	03/30/96
1N250	45431	4.20	U1C11	22218	U1C12						U1C12	03/30/96

1N251	45431	4.20	U1C11	22127	U1C12						U1C12	03/30/96
1N214	45441	4.20	U1C11	22386	U1C12						U1C12	03/30/96
1N217	45441	4.20	U1C11	21985	U1C12						U1C12	03/30/96
1N230	45441	4.20	U1C11	22114	U1C12						U1C12	03/30/96
1N233	45441	4.20	U1C11	22178	U1C12						U1C12	03/30/96
1N239	45447	4.20	U1C11	21288	U1C12						U1C12	03/30/96
1N240	45447	4.20	U1C11	21151	U1C12						U1C12	03/30/96
1N241	45447	4.20	U1C11	22102	U1C12						U1C12	03/30/96
1N242	45447	4.20	U1C11	22149	U1C12						U1C12	03/30/96
1N215	45479	4.20	U1C11	21170	U1C12						U1C12	03/30/96
1N216	45479	4.20	U1C11	22132	U1C12						U1C12	03/30/96
1N236	45479	4.20	U1C11	21327	U1C12						U1C12	03/30/96
1N246	45479	4.20	U1C11	22160	U1C12						U1C12	03/30/96
2L313	45569	4.30	U2C9	24279	U2C10						U2C10	03/18/95
2L314	45569	4.30	U2C9	24279	U2C10						U2C10	03/18/95
2L315	45569	4.30	U2C9	24279	U2C10						U2C10	03/18/95
2L316	45569	4.30	U2C9	24279	U2C10						U2C10	03/18/95
1M104	45597	4.08	U1C10	26390	U1C11						U1C11	02/09/94
1M108	45597	4.08	U1C10	26390	U1C11						U1C11	02/09/94
1M149	45597	4.08	U1C10	26390	U1C11						U1C11	02/09/94
1M151	45601	4.08	U1C10	26390	U1C11						U1C11	02/09/94
2L325	45609	4.30	U2C9	23653	U2C10						U2C10	03/18/95
2L326	45609	4.30	U2C9	23653	U2C10						U2C10	03/18/95
2L327	45609	4.30	U2C9	23653	U2C10						U2C10	03/18/95
2L328	45609	4.30	U2C9	23653	U2C10						U2C10	03/18/95
1M124	45615	4.08	U1C10	26016	U1C11						U1C11	02/09/94
1M127	45615	4.08	U1C10	26016	U1C11						U1C11	02/09/94
1M155	45615	4.08	U1C10	26016	U1C11						U1C11	02/09/94
1M176	45615	4.08	U1C10	26016	U1C11						U1C11	02/09/94
2L317	45619	4.30	U2C9	23674	U2C10						U2C10	03/18/95
2L318	45619	4.30	U2C9	23674	U2C10						U2C10	03/18/95
2L319	45619	4.30	U2C9	23674	U2C10						U2C10	03/18/95
2L320	45619	4.30	U2C9	23674	U2C10						U2C10	03/18/95
2M302	45623	4.00	U2C10	25395	U2C11						U2C11	03/15/97
2M305	45623	4.00	U2C10	25395	U2C11						U2C11	03/15/97
2M325	45623	4.00	U2C10	25395	U2C11						U2C11	03/15/97
2M338	45623	4.00	U2C10	25395	U2C11						U2C11	03/15/97
1M132	45639	4.08	U1C10	26573	U1C11						U1C11	02/09/94
1M118	45642	4.08	U1C10	26059	U1C11						U1C11	02/09/94
1M119	45642	4.08	U1C10	26059	U1C11						U1C11	02/09/94
1M129	45642	4.08	U1C10	26573	U1C11						U1C11	02/09/94
1M147	45642	4.08	U1C10	26573	U1C11						U1C11	02/09/94
1M157	45642	4.08	U1C10	26059	U1C11						U1C11	02/09/94
1M166	45642	4.08	U1C10	26573	U1C11						U1C11	02/09/94
1M175	45642	4.08	U1C10	26059	U1C11						U1C11	02/09/94
1M120	45653	4.08	U1C10	20623	U1C11		U1C12				U1C12	03/30/96
1M139	45653	4.08	U1C10	20623	U1C11		U1C12				U1C12	03/30/96
1M160	45653	4.08	U1C10	20623	U1C11		U1C12				U1C12	03/30/96

1M167	45653	4.08	U1C10	20623	U1C11		U1C12				U1C12	03/30/96
1K109	45704	3.40	U1C8	15976	U1C9	27472	U1C10				U1C10	03/19/92
1K107	45707	3.40	U1C8	15987	U1C9	27472	U1C10				U1C10	03/19/92
1K108	45707	3.40	U1C8	15976	U1C9	27472	U1C10				U1C10	03/19/92
1K124	45707	3.40	U1C8	15976	U1C9	27472	U1C10				U1C10	03/19/92
1M145	45712	4.08	U1C10	20630	U1C11	38922	U1C14				U1C14	03/10/00
1M153	45712	4.08	U1C10	20630	U1C11	38922	U1C14				U1C14	03/10/00
1K102	45723	3.40	U1C8	15987	U1C9	27465	U1C10				U1C10	03/19/92
1K105	45723	3.40	U1C8	15987	U1C9	27465	U1C10				U1C10	03/19/92
1K106	45723	3.40	U1C8	15987	U1C9	27465	U1C10				U1C10	03/19/92
1K121	45723	3.40	U1C8	15987	U1C9	27465	U1C10				U1C10	03/19/92
1M137	45724	4.08	U1C10	20630	U1C11	38922	U1C14				U1C14	03/10/00
1M140	45724	4.08	U1C10	20630	U1C11	38922	U1C14				U1C14	03/10/00
1R221	45728	4.48	U1C13	26059	U1C14	39289	U1C15				U1C15	15-Feb-02
1R222	45728	4.48	U1C13	26138	U1C14	39289	U1C15				U1C15	15-Feb-02
1R223	45729	4.48	U1C13	26081	U1C14	39290	U1C15				U1C15	15-Feb-02
1R224	45729	4.48	U1C13	26132	U1C14	39290	U1C15				U1C15	15-Feb-02
1R207	45732	4.48	U1C13	26145	U1C14	39320	U1C15				U1C15	15-Feb-02
1R208	45732	4.48	U1C13	26095	U1C14	39320	U1C15				U1C15	15-Feb-02
1M126	45737	4.08	U1C10	26599	U1C11						U1C11	02/09/94
1M133	45737	4.08	U1C10	26599	U1C11						U1C11	02/09/94
1M165	45737	4.08	U1C10	26599	U1C11						U1C11	02/09/94
1M169	45737	4.08	U1C10	26599	U1C11						U1C11	02/09/94
2H116	45750	3.40	U2C6	15947	U2C7	30210	U2C8				U2C8	03/17/89
2H117	45750	3.40	U2C6	15947	U2C7	30210	U2C8				U2C8	03/17/89
2H118	45750	3.40	U2C6	15947	U2C7	30210	U2C8				U2C8	03/17/89
2H103	45766	3.40	U2C6	15924	U2C7	30182	U2C8				U2C8	03/17/89
2H104	45766	3.40	U2C6	15924	U2C7	30182	U2C8				U2C8	03/17/89
2H105	45766	3.40	U2C6	15924	U2C7	30182	U2C8				U2C8	03/17/89
2H123	45766	3.40	U2C6	15924	U2C7	30182	U2C8				U2C8	03/17/89
2K205	45795	4.08	U2C8	22082	U2C9	40578	U2C13				U2C13	16-Mar-01
2K218	45795	4.08	U2C8	22082	U2C9	40578	U2C13				U2C13	16-Mar-01
2K220	45795	4.08	U2C8	22082	U2C9	40578	U2C13				U2C13	16-Mar-01
2K227	45795	4.08	U2C8	22082	U2C9	40578	U2C13				U2C13	16-Mar-01
1K047	45822	4.05	U1C8	12418	U1C9	25042	U1C10				U1C10	03/19/92
1K048	45822	4.05	U1C8	12418	U1C9	25042	U1C10				U1C10	03/19/92
2L213	45888	4.30	U2C9	24521	U2C10						U2C10	03/18/95
2L214	45888	4.30	U2C9	24521	U2C10						U2C10	03/18/95
2L215	45888	4.30	U2C9	24521	U2C10						U2C10	03/18/95
2L216	45888	4.30	U2C9	24521	U2C10						U2C10	03/18/95
1M138	45933	4.08	U1C10	20953	U1C11	37253	U2C12				U2C12	03/12/99
1M128	45934	4.08	U1C10	20953	U1C11	37253	U2C12				U2C12	03/12/99
1M148	45934	4.08	U1C10	20953	U1C11	37253	U2C12				U2C12	03/12/99
1M152	45934	4.08	U1C10	20953	U1C11	37253	U2C12				U2C12	03/12/99
1R119	45980	4.48	U1C13	22959	U1C14						U1C14	03/10/00
1R120	45980	4.48	U1C13	24064	U1C14						U1C14	03/10/00
1R101	45985	4.48	U1C13	21765	U1C14						U1C14	03/10/00
1R102	45986	4.48	U1C13	24507	U1C14						U1C14	03/10/00

1R103	45992	4.48	U1C13	24076	U1C14						U1C14	03/10/00
1R104	45992	4.48	U1C13	22955	U1C14						U1C14	03/10/00
1R117	45996	4.48	U1C13	21745	U1C14						U1C14	03/10/00
1R118	45996	4.48	U1C13	24521	U1C14						U1C14	03/10/00
1N220	46052	4.20	U1C11	22234	U1C12						U1C12	03/30/96
1N222	46052	4.20	U1C11	22330	U1C12						U1C12	03/30/96
1N223	46052	4.20	U1C11	22425	U1C12						U1C12	03/30/96
1N226	46052	4.20	U1C11	22154	U1C12						U1C12	03/30/96
1R203	46056	4.48	U1C13	25718	U1C14						U1C14	03/10/00
1R204	46056	4.48	U1C13	25732	U1C14						U1C14	03/10/00
2H110	46058	3.40	U2C6	16612	U2C7	30751	U2C8				U2C8	03/17/89
2H112	46058	3.40	U2C6	16612	U2C7	30751	U2C8				U2C8	03/17/89
2H113	46058	3.40	U2C6	16612	U2C7	30751	U2C8				U2C8	03/17/89
2H120	46058	3.40	U2C6	16612	U2C7	30751	U2C8				U2C8	03/17/89
1R201	46061	4.48	U1C13	25268	U1C14						U1C14	03/10/00
1R202	46061	4.48	U1C13	25922	U1C14						U1C14	03/10/00
2L209	46121	4.30	U2C9	24980	U2C10						U2C10	03/18/95
2L210	46121	4.30	U2C9	24980	U2C10						U2C10	03/18/95
2L211	46121	4.30	U2C9	24980	U2C10						U2C10	03/18/95
2L212	46121	4.30	U2C9	24980	U2C10						U2C10	03/18/95
2L205	46148	4.30	U2C9	25000	U2C10						U2C10	03/18/95
2L206	46148	4.30	U2C9	25000	U2C10						U2C10	03/18/95
2L207	46148	4.30	U2C9	25000	U2C10						U2C10	03/18/95
2L208	46148	4.30	U2C9	25000	U2C10						U2C10	03/18/95
1N204	46156	4.20	U1C11	22346	U1C12						U1C12	03/30/96
1N212	46156	4.20	U1C11	22250	U1C12						U1C12	03/30/96
1N218	46156	4.20	U1C11	22448	U1C12						U1C12	03/30/96
1N221	46156	4.20	U1C11	22162	U1C12						U1C12	03/30/96
1M168	46215	4.08	U1C10	26845	U1C11						U1C11	02/09/94
1M101	46224	4.08	U1C10	26845	U1C11						U1C11	02/09/94
1M156	46224	4.08	U1C10	26845	U1C11						U1C11	02/09/94
1M174	46224	4.08	U1C10	26845	U1C11						U1C11	02/09/94
1R123	46232	4.48	U1C13	25589	U1C14						U1C14	03/10/00
1R124	46232	4.48	U1C13	26168	U1C14						U1C14	03/10/00
1R121	46243	4.48	U1C13	26164	U1C14						U1C14	03/10/00
1R122	46243	4.48	U1C13	25591	U1C14						U1C14	03/10/00
2LT1	46275	3.81	U2C9	22771	U2C10	41262	U2C11				U2C11	03/15/97
2LT2	46275	3.81	U2C9	22771	U2C10	41262	U2C11				U2C11	03/15/97
2LT3	46275	3.81	U2C9	22771	U2C10	41262	U2C11				U2C11	03/15/97
2LT4	46275	3.81	U2C9	22771	U2C10	41262	U2C11				U2C11	03/15/97
1M122	46283	4.08	U1C10	26914	U1C11						U1C11	02/09/94
1M125	46283	4.08	U1C10	26914	U1C11						U1C11	02/09/94
1M161	46283	4.08	U1C10	26914	U1C11						U1C11	02/09/94
1M163	46283	4.08	U1C10	26914	U1C11						U1C11	02/09/94
1K014	46307	4.05	U1C8	12416	U1C9	25748	U1C10				U1C10	03/19/92
1K027	46307	4.05	U1C8	12416	U1C9	25748	U1C10				U1C10	03/19/92
1K028	46307	4.05	U1C8	12416	U1C9	25748	U1C10				U1C10	03/19/92
1K032	46307	4.05	U1C8	12416	U1C9	25748	U1C10				U1C10	03/19/92

1M110	46332	4.08	U1C10	27065	U1C11						U1C11	02/09/94
1M113	46332	4.08	U1C10	27065	U1C11						U1C11	02/09/94
1M116	46332	4.08	U1C10	27065	U1C11						U1C11	02/09/94
1M141	46332	4.08	U1C10	27065	U1C11						U1C11	02/09/94
1M109	46342	4.08	U1C10	27072	U1C11						U1C11	02/09/94
1M114	46342	4.08	U1C10	27072	U1C11						U1C11	02/09/94
1M117	46342	4.08	U1C10	27072	U1C11						U1C11	02/09/94
1M172	46342	4.08	U1C10	27072	U1C11						U1C11	02/09/94
1P329	46428	4.30	U1C12	28632	U1C13						U1C13	04/03/98
1P330	46428	4.30	U1C12	28632	U1C13						U1C13	04/03/98
1P331	46428	4.30	U1C12	28632	U1C13						U1C13	04/03/98
1P332	46428	4.30	U1C12	28632	U1C13						U1C13	04/03/98
1N224	46457	4.20	U1C11	22317	U1C12						U1C12	03/30/96
1N225	46457	4.20	U1C11	22257	U1C12						U1C12	03/30/96
1N228	46457	4.20	U1C11	22259	U1C12						U1C12	03/30/96
1N229	46457	4.20	U1C11	22409	U1C12						U1C12	03/30/96
1N234	46512	4.20	U1C11	21864	U1C12						U1C12	03/30/96
1N237	46512	4.20	U1C11	22234	U1C12						U1C12	03/30/96
1N247	46512	4.20	U1C11	22089	U1C12						U1C12	03/30/96
1N248	46512	4.20	U1C11	22010	U1C12						U1C12	03/30/96
1N235	46518	4.20	U1C11	21873	U1C12						U1C12	03/30/96
1N243	46518	4.20	U1C11	22015	U1C12						U1C12	03/30/96
1N244	46518	4.20	U1C11	22238	U1C12						U1C12	03/30/96
1N245	46518	4.20	U1C11	22096	U1C12						U1C12	03/30/96
1N103	46523	4.20	U1C11	17414	U1C12	39792	U1C13				U1C13	04/03/98
1N105	46523	4.20	U1C11	16279	U1C12	39792	U1C13				U1C13	04/03/98
1N117	46523	4.20	U1C11	19816	U1C12	39792	U1C13				U1C13	04/03/98
1N118	46523	4.20	U1C11	20413	U1C12	39792	U1C13				U1C13	04/03/98
2J107	46575	3.40	U2C7	17081	U2C8	35816	U1C14				U1C14	03/10/00
1MT1	46603	3.85	U1C10	24025	U1C11	41428	U1C12				U1C12	03/30/96
1MT2	46603	3.85	U1C10	24025	U1C11	39777	U1C12				U1C12	03/30/96
1MT3	46603	3.85	U1C10	24025	U1C11	41685	U1C12				U1C12	03/30/96
1MT4	46603	3.85	U1C10	24025	U1C11	40853	U1C12				U1C12	03/30/96
1N106	46639	4.20	U1C11	17390	U1C12	40268	U1C13				U1C13	04/03/98
1N108	46639	4.20	U1C11	14040	U1C12	40268	U1C13				U1C13	04/03/98
1N110	46639	4.20	U1C11	17399	U1C12	40268	U1C13				U1C13	04/03/98
1N112	46639	4.20	U1C11	20717	U1C12	40268	U1C13				U1C13	04/03/98
1N102	46660	4.20	U1C11	19758	U1C12	39938	U1C13				U1C13	04/03/98
1N104	46660	4.20	U1C11	16242	U1C12	39938	U1C13				U1C13	04/03/98
1N119	46660	4.20	U1C11	20332	U1C12	39938	U1C13				U1C13	04/03/98
1N120	46660	4.20	U1C11	17374	U1C12	39938	U1C13				U1C13	04/03/98
1R212	46663	4.48	U1C13	26051	U1C14						U1C14	03/10/00
1R211	46664	4.48	U1C13	26193	U1C14						U1C14	03/10/00
1R214	46679	4.48	U1C13	26138	U1C14						U1C14	03/10/00
1R213	46680	4.48	U1C13	26114	U1C14						U1C14	03/10/00
1R210	46685	4.48	U1C13	26191	U1C14						U1C14	03/10/00
1R209	46686	4.48	U1C13	26052	U1C14						U1C14	03/10/00
1R215	46715	4.48	U1C13	26144	U1C14						U1C14	03/10/00

1R216	46716	4.48	U1C13	26149	U1C14						U1C14	03/10/00
1M106	46722	4.08	U1C10	27521	U1C11						U1C11	02/09/94
1M107	46725	4.08	U1C10	27521	U1C11						U1C11	02/09/94
1M115	46725	4.08	U1C10	27521	U1C11						U1C11	02/09/94
1M171	46725	4.08	U1C10	27251	U1C11						U1C11	02/09/94
1N101	46726	4.20	U1C11	17406	U1C12	40347	U1C13				U1C13	04/03/98
1N107	46726	4.20	U1C11	19754	U1C12	40347	U1C13				U1C13	04/03/98
1N109	46726	4.20	U1C11	14041	U1C12	40347	U1C13				U1C13	04/03/98
1N116	46726	4.20	U1C11	17392	U1C12	40347	U1C13				U1C13	04/03/98
1P349	46726	4.30	U1C12	26856	U1C13						U1C13	04/03/98
1P350	46726	4.30	U1C12	26856	U1C13						U1C13	04/03/98
1P351	46726	4.30	U1C12	26856	U1C13						U1C13	04/03/98
1P352	46726	4.30	U1C12	26856	U1C13						U1C13	04/03/98
2N401	46731	4.48	U2C11	26358	U2C12						U2C12	03/12/99
2N402	46731	4.48	U2C11	26358	U2C12						U2C12	03/12/99
2N408	46731	4.48	U2C11	26358	U2C12						U2C12	03/12/99
2N410	46731	4.48	U2C11	26358	U2C12						U2C12	03/12/99
2N412	46766	4.48	U2C11	26383	U2C12						U2C12	03/12/99
2N414	46766	4.48	U2C11	26383	U2C12						U2C12	03/12/99
2N415	46766	4.48	U2C11	26383	U2C12						U2C12	03/12/99
2N416	46766	4.48	U2C11	26383	U2C12						U2C12	03/12/99
2NT1	46796	4.00	U2C11	25673	U2C12						U2C12	03/12/99
2NT2	46796	4.00	U2C11	25673	U2C12						U2C12	03/12/99
2NT3	46796	4.00	U2C11	25673	U2C12						U2C12	03/12/99
2NT4	46796	4.00	U2C11	25673	U2C12						U2C12	03/12/99
1R003	46917	4.48	U1C13	21586	U1C14	41985	U1C15				U1C15	15-Feb-02
1R04	46917	4.48	U1C13	18816	U1C14	41985	U1C15				U1C15	15-Feb-02
1R021	46923	4.48	U1C13	17418	U1C14	42023	U1C15				U1C15	15-Feb-02
1R022	46923	4.48	U1C13	22453	U1C14	42023	U1C15				U1C15	15-Feb-02
1R023	46923	4.48	U1C13	18834	U1C14	42024	U1C15				U1C15	15-Feb-02
1R024	46923	4.48	U1C13	21609	U1C14	42024	U1C15				U1C15	15-Feb-02
1R002	46939	4.48	U1C13	22387	U1C14	42025	U1C15				U1C15	15-Feb-02
1R001	46942	4.48	U1C13	17423	U1C14	42025	U1C15				U1C15	15-Feb-02
1N227	47150	4.20	U1C11	21704	U1C12	42453	U1C13				U1C13	04/03/98
1N232	47150	4.20	U1C11	22122	U1C12	42453	U1C13				U1C13	04/03/98
1N238	47150	4.20	U1C11	22119	U1C12	42453	U1C13				U1C13	04/03/98
1N252	47150	4.20	U1C11	22344	U1C12	42453	U1C13				U1C13	03/04/98
2M202	47224	4.00	U2C10	24696	U2C11						U2C11	03/15/97
2M203	47224	4.00	U2C10	24696	U2C11						U2C11	03/15/97
2M204	47224	4.00	U2C10	24696	U2C11						U2C11	03/15/97
2M206	47224	4.00	U2C10	24696	U2C11						U2C11	03/15/97
2M006	47346	4.00	U2C10	18591	U2C11	40652	U2C12				U2C12	03/12/99
2M007	47346	4.00	U2C10	18591	U2C11	40652	U2C12				U2C12	03/12/99
2M009	47346	4.00	U2C10	18591	U2C11	40652	U2C12				U2C12	03/12/99
2J009	47376	4.05	U2C7	13086	U2C8	32139	U2C9				U2C9	02/19/93
2J018	47376	4.05	U2C7	13086	U2C8	32139	U2C9				U2C9	02/19/93
2J023	47376	4.05	U2C7	13086	U2C8	32139	U2C9				U2C9	02/19/93
2J032	47376	4.05	U2C7	13086	U2C8	32139	U2C9				U2C9	02/19/93

2R232	47415	4.48	U2C13	27141	U2C14	47415					U2C14	14-Feb-03
2M008	47436	4.00	U2C10	18591	U2C11	40652	U2C12				U2C12	03/12/99
1P317	47442	4.30	U1C12	27195	U1C13						U1C13	04/03/98
1P318	47442	4.30	U1C12	27195	U1C13						U1C13	04/03/98
1P319	47442	4.30	U1C12	27195	U1C13						U1C13	04/03/98
1P320	47442	4.30	U1C12	27195	U1C13						U1C13	04/03/98
1P313	47457	4.30	U1C12	27224	U1C13						U1C13	04/03/98
1P314	47457	4.30	U1C12	27224	U1C13						U1C13	04/03/98
1P315	47457	4.30	U1C12	27224	U1C13						U1C13	04/03/98
1P316	47457	4.30	U1C12	27224	U1C13						U1C13	04/03/98
2M217	47458	4.00	U2C10	25134	U2C11						U2C11	03/15/97
2M218	47458	4.00	U2C10	25134	U2C11						U2C11	03/15/97
2M219	47458	4.00	U2C10	25134	U2C11						U2C11	03/15/97
2M220	47458	4.00	U2C10	25134	U2C11						U2C11	03/15/97
2R224	47462	4.48	U2C13	27141	U2C14	47462					U2C14	14-Feb-03
2R229	47483	4.48	U2C13	27141	U2C14	47483					U2C14	14-Feb-03
2R210	47484	4.48	U2C13	27141	U2C14	47484					U2C14	14-Feb-03
1P111	47511	4.30	U1C12	20288	U1C13	40274	U1C14				U1C14	03/10/00
1P112	47511	4.30	U1C12	20288	U1C13	40274	U1C14				U1C14	03/10/00
1P109	47513	4.30	U1C12	20288	U1C13	40274	U1C14				U1C14	03/10/00
1P110	47513	4.30	U1C12	20288	U1C13	40274	U1C14				U1C14	03/10/00
1N202	47515	4.20	U1C11	22395	U1C12	42795	U1C13				U1C13	04/03/98
1N205	47515	4.20	U1C11	22391	U1C12	42795	U1C13				U1C13	04/03/98
1N209	47515	4.20	U1C11	22350	U1C12	42795	U1C13				U1C13	04/03/98
1N210	47515	4.20	U1C11	22346	U1C12	42795	U1C13				U1C13	04/03/98
1P105	47568	4.30	U1C12	21341	U1C13	40807	U1C14				U1C14	03/10/00
1P106	47568	4.30	U1C12	21341	U1C13	40807	U1C14				U1C14	03/10/00
1P107	47572	4.30	U1C12	21341	U1C13	40807	U1C14				U1C14	03/10/00
1P108	47572	4.30	U1C12	21341	U1C13	40807	U1C14				U1C14	03/10/00
1M105	47610	4.08	U1C10	26697	U1C11		U1C12				U1C12	03/30/96
1M121	47610	4.08	U1C10	26697	U1C11		U1C12				U1C12	03/30/96
1M123	47610	4.08	U1C10	26697	U1C11		U1C12				U1C12	03/30/96
1M158	47610	4.08	U1C10	26697	U1C11		U1C12				U1C12	03/30/96
1P103	47681	4.30	U1C12	20503	U1C13	40411	U1C14				U1C14	03/10/00
1P104	47681	4.30	U1C12	20503	U1C13	40411	U1C14				U1C14	03/10/00
1P101	47682	4.30	U1C12	20503	U1C13	40411	U1C14				U1C14	03/10/00
1P102	47682	4.30	U1C12	20503	U1C13	40411	U1C14				U1C14	03/10/00
1S217	47684	4.30	U1C14	24953	U1C15						U1C15	15-Feb-02
1S219	47684	4.30	U1C14	24952	U1C15						U1C15	15-Feb-02
1M112	47692	4.08	U1C10	26810	U1C11		U1C12				U1C12	03/30/96
1M150	47692	4.08	U1C10	26810	U1C11		U1C12				U1C12	03/30/96
1M162	47692	4.08	U1C10	26810	U1C11		U1C12				U1C12	03/30/96
1M164	47692	4.08	U1C10	26810	U1C11		U1C12				U1C12	03/30/96
1S231	47706	4.30	U1C14	25022	U1C15						U1C15	15-Feb-02
1S220	47710	4.30	U1C14	25023	U1C15						U1C15	15-Feb-02
2M207	47756	4.00	U2C10	25094	U2C11						U2C11	03/15/97
2M209	47756	4.00	U2C10	25094	U2C11						U2C11	03/15/97
2M213	47756	4.00	U2C10	25094	U2C11						U2C11	03/15/97

2M214	47756	4.00	U2C10	25094	U2C11						U2C11	03/15/97
2K118	47763	4.08	U2C8	23394	U2C9	41017	U2C10				U2C10	03/18/95
2K132	47763	4.08	U2C8	23394	U2C9	41017	U2C10				U2C10	03/18/95
2K133	47763	4.08	U2C8	23394	U2C9	41017	U2C10				U2C10	03/18/95
2K144	47763	4.08	U2C8	23394	U2C9	41017	U2C10				U2C10	03/18/95
2M208	47782	4.00	U2C10	25133	U2C11						U2C11	03/15/97
2M210	47782	4.00	U2C10	25133	U2C11						U2C11	03/15/97
2M211	47782	4.00	U2C10	25133	U2C11						U2C11	03/15/97
2M212	47782	4.00	U2C10	25133	U2C11						U2C11	03/15/97
2K119	47843	4.08	U2C8	23458	U2C9	41070	U2C10				U2C10	03/18/95
2K121	47843	4.08	U2C8	23458	U2C9	41070	U2C10				U2C10	03/18/95
2K128	47843	4.08	U2C8	23458	U2C9	41070	U2C10				U2C10	03/18/95
2K129	47843	4.08	U2C8	23458	U2C9	41070	U2C10				U2C10	03/18/95
1R225	47861	4.48	U1C13	26028	U1C14						U1C14	03/10/00
1R226	47861	4.48	U1C13	25784	U1C14						U1C14	03/10/00
1R227	47867	4.48	U1C13	25943	U1C14						U1C14	03/10/00
1R229	47867	4.48	U1C13	25941	U1C14						U1C14	03/10/00
2N607	47874	4.48	U2C11	27702	U2C12						U2C12	03/12/99
2N608	47874	4.48	U2C11	27702	U2C12						U2C12	03/12/99
2N616	47874	4.48	U2C11	27702	U2C12						U2C12	03/12/99
2N622	47874	4.48	U2C11	27702	U2C12						U2C12	03/12/99
2N606	47883	4.48	U2C11	27738	U2C12						U2C12	03/12/99
2N615	47883	4.48	U2C11	27738	U2C12						U2C12	03/12/99
2N620	47883	4.48	U2C11	27738	U2C12						U2C12	03/12/99
2N621	47883	4.48	U2C11	27738	U2C12						U2C12	03/12/99
1P341	47902	4.30	U1C12	27189	U1C13						U1C13	04/03/98
1P342	47902	4.30	U1C12	27189	U1C13						U1C13	04/03/98
1P343	47902	4.30	U1C12	27189	U1C13						U1C13	04/03/98
1P344	47902	4.30	U1C12	27189	U1C13						U1C13	04/03/98
1R016	48046	4.48	U1C13	19455	U1C14	41162	U1C15				U1C15	15-Feb-02
1R015	48048	4.48	U1C13	19438	U1C14	41162	U1C15				U1C15	15-Feb-02
1R013	48051	4.48	U1C13	15434	U1C14	41163	U1C15				U1C15	15-Feb-02
1R014	48051	4.48	U1C13	22607	U1C14	41163	U1C15				U1C15	15-Feb-02
2P249	48084	4.48	U2C12	27449	U2C13	48084					U2C13	16-Mar-01
2P250	48084	4.48	U2C12	27449	U2C13	48084					U2C13	16-Mar-01
2P251	48084	4.48	U2C12	27449	U2C13	48084					U2C13	16-Mar-01
2P252	48084	4.48	U2C12	27449	U2C13	48084					U2C13	16-Mar-01
1P345	48109	4.30	U1C12	27504	U1C13						U1C13	04/03/98
1P346	48109	4.30	U1C12	27504	U1C13						U1C13	04/03/98
1P347	48109	4.30	U1C12	27504	U1C13						U1C13	04/03/98
1P348	48109	4.30	U1C12	27504	U1C13						U1C13	04/03/98
2P108	48164	4.48	U2C12	20789	U2C13	42719	U2C14	48164			U2C14	14-Feb-03
1R109	48173	4.48	U1C13	25517	U1C14						U1C14	03/10/00
1R110	48174	4.48	U1C13	25967	U1C14						U1C14	03/10/00
1R111	48186	4.48	U1C13	26065	U1C14						U1C14	03/10/00
1R112	48186	4.48	U1C13	25227	U1C14						U1C14	03/10/00
2P107	48188	4.48	U2C12	20789	U2C13	42719	U2C14	48188			U2C14	14-Feb-03
2M303	48213	4.00	U2C10	25530	U2C11						U2C11	03/15/97

2M334	48213	4.00	U2C10	25530	U2C11						U2C11	03/15/97
2M335	48213	4.00	U2C10	25530	U2C11						U2C11	03/15/97
2M336	48213	4.00	U2C10	25530	U2C11						U2C11	03/15/97
1R125	48214	4.48	U1C13	25557	U1C14						U1C14	03/10/00
1R126	48214	4.48	U1C13	25988	U1C14						U1C14	03/10/00
2P106	48218	4.48	U2C12	20789	U2C13	42719	U2C14	48218			U2C14	14-Feb-03
1R127	48219	4.48	U1C13	25307	U1C14						U1C14	03/10/00
1R128	48219	4.48	U1C13	26073	U1C14						U1C14	03/10/00
2P201	48257	4.48	U2C12	26051	U2C13	48257					U2C13	16-Mar-01
2P202	48257	4.48	U2C12	26051	U2C13	48257					U2C13	16-Mar-01
2P203	48257	4.48	U2C12	26051	U2C13	48257					U2C13	16-Mar-01
2P204	48257	4.48	U2C12	26051	U2C13	48257					U2C13	16-Mar-01
2N404	48263	4.48	U2C11	28316	U2C12						U2C12	03/12/99
2N405	48263	4.48	U2C11	28316	U2C12						U2C12	03/12/99
2N411	48263	4.48	U2C11	28316	U2C12						U2C12	03/12/99
2N413	48263	4.48	U2C11	28316	U2C12						U2C12	03/12/99
2M301	48266	4.00	U2C10	24952	U2C11						U2C11	03/15/97
2M306	48266	4.00	U2C10	24952	U2C11						U2C11	03/15/97
2M323	48266	4.00	U2C10	24952	U2C11						U2C11	03/15/97
2M326	48266	4.00	U2C10	24952	U2C11						U2C11	03/15/97
2P105	48280	4.48	U2C12	20789	U2C13	42719	U2C14	48280			U2C14	14-Feb-03
2R212	48285	4.48	U2C13	27376	U2C14	48285					U2C14	14-Feb-03
2P217	48298	4.48	U2C12	26052	U2C13	48298					U2C13	16-Mar-01
2P218	48298	4.48	U2C12	26052	U2C13	48298					U2C13	16-Mar-01
2P219	48298	4.48	U2C12	26052	U2C13	48298					U2C13	16-Mar-01
2P220	48298	4.48	U2C12	26052	U2C13	48298					U2C13	16-Mar-01
2M324	48299	4.00	U2C10	25571	U2C11						U2C11	03/15/97
2M327	48299	4.00	U2C10	25571	U2C11						U2C11	03/15/97
2M328	48299	4.00	U2C10	25971	U2C11						U2C11	03/15/97
2M329	48299	4.00	U2C10	25971	U2C11						U2C11	03/15/97
2R226	48318	4.48	U2C13	27376	U2C14	48318					U2C14	14-Feb-03
2R202	48339	4.48	U2C13	27376	U2C14	48339					U2C14	14-Feb-03
2R213	48351	4.48	U2C13	27376	U2C14	48351					U2C14	14-Feb-03
2P221	48366	4.48	U2C12	27138	U2C13	48366					U2C13	16-Mar-01
2P222	48366	4.48	U2C12	27138	U2C13	48366					U2C13	16-Mar-01
2P223	48366	4.48	U2C12	27138	U2C13	48366					U2C13	16-Mar-01
2P224	48366	4.48	U2C12	27138	U2C13	48366					U2C13	16-Mar-01
2R220	48368	4.48	U2C13	27462	U2C14	48368					U2C14	14-Feb-03
2R208	48380	4.48	U2C13	27462	U2C14	48380					U2C14	14-Feb-03
1P321	48383	4.30	U1C12	28373	U1C13						U1C13	04/03/98
1P322	48383	4.30	U1C12	28373	U1C13						U1C13	04/03/98
1P323	48383	4.30	U1C12	28373	U1C13						U1C13	04/03/98
1P324	48383	4.30	U1C12	28373	U1C13						U1C13	04/03/98
1P325	48383	4.30	U1C12	28371	U1C13						U1C13	04/03/98
1P326	48383	4.30	U1C12	28371	U1C13						U1C13	04/03/98
1P327	48383	4.30	U1C12	28371	U1C13						U1C13	04/03/98
1P328	48383	4.30	U1C12	28371	U1C13						U1C13	04/03/98
2R231	48393	4.48	U2C13	27462	U2C14	48393					U2C14	14-Feb-03

2R209	48397	4.48	U2C13	27462	U2C14	48397					U2C14	14-Feb-03
1H038	48408	4.00	U1C6	13473	U1C7	27303	U1C8	40143	U1C9		U1C9	04/08/88
1P305	48417	4.30	U1C12	27888	U1C13						U1C13	04/03/98
1P306	48417	4.30	U1C12	27888	U1C13						U1C13	04/03/98
1P307	48417	4.30	U1C12	27888	U1C13						U1C13	04/03/98
1P308	48417	4.30	U1C12	27888	U1C13						U1C13	04/03/98
1P301	48419	4.30	U1C12	27936	U1C13						U1C13	04/03/98
1P302	48419	4.30	U1C12	27936	U1C13						U1C13	04/03/98
1P303	48419	4.30	U1C12	27936	U1C13						U1C13	04/03/98
1P304	48419	4.30	U1C12	27936	U1C13						U1C13	04/03/98
1P309	48474	4.30	U1C12	27920	U1C13						U1C13	04/03/98
1P310	48474	4.30	U1C12	27920	U1C13						U1C13	04/03/98
1P311	48474	4.30	U1C12	27920	U1C13						U1C13	04/03/98
1P312	48474	4.30	U1C12	27920	U1C13						U1C13	04/03/98
2J116	48485	3.40	U2C7	16769	U2C8	35332	U1C14				U1C14	03/10/00
2J119	48486	3.40	U2C7	16769	U2C8	35332	U1C14				U1C14	03/10/00
2J102	48495	3.40	U2C7	16769	U2C8	35332	U1C14				U1C14	03/10/00
2J108	48497	3.40	U2C7	16769	U2C8	35332	U1C14				U1C14	03/10/00
2M311	48516	4.00	U2C10	25207	U2C11						U2C11	03/15/97
2M312	48516	4.00	U2C10	25207	U2C11						U2C11	03/15/97
2M330	48516	4.00	U2C10	25207	U2C11						U2C11	03/15/97
2M331	48516	4.00	U2C10	25207	U2C11						U2C11	03/15/97
2M304	48517	4.00	U2C10	25208	U2C11						U2C11	03/15/97
2M315	48517	4.00	U2C10	25207	U2C11						U2C11	03/15/97
2M318	48517	4.00	U2C10	25208	U2C11						U2C11	03/15/97
2M321	48517	4.00	U2C10	25208	U2C11						U2C11	03/15/97
2P237	48528	4.48	U2C12	27175	U2C13	48528					U2C13	16-Mar-01
2P238	48528	4.48	U2C12	27175	U2C13	48528					U2C13	16-Mar-01
2P239	48528	4.48	U2C12	27175	U2C13	48528					U2C13	16-Mar-01
2P240	48528	4.48	U2C12	27175	U2C13	48528					U2C13	16-Mar-01
1R113	48560	4.48	U1C13	24612	U1C14						U1C14	03/10/00
1R114	48560	4.48	U1C13	25890	U1C14						U1C14	03/10/00
1R205	48581	4.48	U1C13	26075	U1C14						U1C14	03/10/00
1R206	48581	4.48	U1C13	26151	U1C14						U1C14	03/10/00
1R115	48589	4.48	U1C13	25122	U1C14						U1C14	03/10/00
1R116	48589	4.48	U1C13	25676	U1C14						U1C14	03/10/00
1R107	48590	4.48	U1C13	25703	U1C14						U1C14	03/10/00
1R108	48590	4.48	U1C13	25145	U1C14						U1C14	03/10/00
1R105	48606	4.48	U1C13	24644	U1C14						U1C14	03/10/00
1R106	48606	4.48	U1C13	25911	U1C14						U1C14	03/10/00
1P333	48681	4.30	U1C12	28285	U1C13						U1C13	04/03/98
1P334	48681	4.30	U1C12	28285	U1C13						U1C13	04/03/98
1P335	48681	4.30	U1C12	28285	U1C13						U1C13	04/03/98
1P336	48681	4.30	U1C12	28285	U1C13						U1C13	04/03/98
2M107	48722	4.00	U2C10	20776	U2C11	42714	U2C12				U2C12	03/12/99
2M109	48722	4.00	U2C10	20776	U2C11	42714	U2C12				U2C12	03/12/99
2M110	48722	4.00	U2C10	20776	U2C11	42714	U2C12				U2C12	03/12/99
2M112	48722	4.00	U2C10	20776	U2C11	42714	U2C12				U2C12	03/12/99

2J118	48748	3.40	U2C7	17081	U2C8	35816	U1C13				U1C13	04/03/98
1P337	48768	4.30	U1C12	28328	U1C13						U1C13	04/03/98
1P338	48768	4.30	U1C12	28328	U1C13						U1C13	04/03/98
1P339	48768	4.30	U1C12	28328	U1C13						U1C13	04/03/98
1P340	48768	4.30	U1C12	28328	U1C13						U1C13	04/03/98
2M308	48802	4.00	U2C10	25624	U2C11						U2C11	03/15/97
2M313	48802	4.00	U2C10	25624	U2C11						U2C11	03/15/97
2M322	48802	4.00	U2C10	25624	U2C11						U2C11	03/15/97
2M337	48802	4.00	U2C10	25624	U2C11						U2C11	03/15/97
2M307	48844	4.00	U2C10	25628	U2C11						U2C11	03/15/97
2M314	48844	4.00	U2C10	25628	U2C11						U2C11	03/15/97
2M317	48844	4.00	U2C10	25628	U2C11						U2C11	03/15/97
2M320	48844	4.00	U2C10	25628	U2C11						U2C11	03/15/97
2M108	48877	4.00	U2C10	20865	U2C11	42879	U2C12				U2C12	03/12/99
2M113	48877	4.00	U2C10	20865	U2C11	42879	U2C12				U2C12	03/12/99
2M114	48877	4.00	U2C10	20865	U2C11	42879	U2C12				U2C12	03/12/99
2M115	48877	4.00	U2C10	20865	U2C11	42879	U2C12				U2C12	03/12/99
1R230	48910	4.48	U1C13	26053	U1C14						U1C14	03/10/00
1R231	48910	4.48	U1C13	26190	U1C14						U1C14	03/10/00
1R228	48912	4.48	U1C13	26145	U1C14						U1C14	03/10/00
1R232	48912	4.48	U1C13	26119	U1C14						U1C14	03/10/00
1N201	48915	4.20	U1C11	21334	U1C12	44366	U1C13				U1C13	04/03/98
1N203	48915	4.20	U1C11	21824	U1C12	44366	U1C13				U1C13	04/03/98
1N208	48915	4.20	U1C11	21911	U1C12	44366	U1C13				U1C13	04/03/98
1N211	48915	4.20	U1C11	21929	U1C12	44366	U1C13				U1C13	04/03/98
1R219	48923	4.48	U1C13	26197	U1C14						U1C14	03/10/00
1R220	48923	4.48	U1C13	26061	U1C14						U1C14	03/10/00
1R217	48927	4.48	U1C13	26146	U1C14						U1C14	03/10/00
1R218	48927	4.48	U1C13	26131	U1C14						U1C14	03/10/00
2P016	48932	4.48	U2C12	20444	U2C13	42249	U2C14	48932			U2C14	14-Feb-03
2R221	48957	4.48	U2C13	28841	U2C14	48957					U2C14	14-Feb-03
2R205	48992	4.48	U2C13	28841	U2C14	48992					U2C14	14-Feb-03
2P013	48998	4.48	U2C12	20444	U2C13	42249	U2C14	48998			U2C14	14-Feb-03
2P257	49010	4.48	U2C12	26211	U2C13	49010					U2C13	16-Mar-01
2P258	49010	4.48	U2C12	26211	U2C13	49010					U2C13	16-Mar-01
2P259	49010	4.48	U2C12	26211	U2C13	49010					U2C13	16-Mar-01
2P260	49010	4.48	U2C12	26211	U2C13	49010					U2C13	16-Mar-01
2R225	49011	4.48	U2C13	28841	U2C14	49011					U2C14	14-Feb-03
1N111	49013	4.20	U1C11	19746	U1C12	42057	U1C15				U1C15	15-Feb-02
1S307	49013	4.30	U1C14	26927	U1C15						U1C15	15-Feb-02
1S306	49014	4.30	U1C14	26930	U1C15						U1C15	15-Feb-02
1S309	49015	4.30	U1C14	26927	U1C15						U1C15	15-Feb-02
1N113	49016	4.20	U1C11	17918	U1C12	42057	U1C15				U1C15	15-Feb-02
1N114	49016	4.20	U1C11	20680	U1C12	42057	U1C15				U1C15	15-Feb-02
1N115	49016	4.20	U1C11	17937	U1C12	42057	U1C15				U1C15	15-Feb-02
1S310	49017	4.30	U1C14	26930	U1C15						U1C15	15-Feb-02
2P015	49018	4.48	U2C12	20444	U2C13	42249	U2C14	49018			U2C14	14-Feb-03
2P014	49026	4.48	U2C12	20444	U2C13	42249	U2C14	49026			U2C14	14-Feb-03

2R207	49088	4.48	U2C13	28955	U2C14	49088					U2C14	14-Feb-03
2R211	49088	4.48	U2C13	28955	U2C14	49088					U2C14	14-Feb-03
2R201	49095	4.48	U2C13	28841	U2C14	49095					U2C14	14-Feb-03
1R010	49118	4.48	U1C13	21136	U1C14	37071	U1C15				U1C15	15-Feb-02
1R019	49122	4.48	U1C13	16867	U1C14	37068	U1C15				U1C15	15-Feb-02
1R020	49122	4.48	U1C13	18638	U1C14	37068	U1C15				U1C15	15-Feb-02
1R011	49123	4.48	U1C13	18664	U1C14	37046	U1C15				U1C15	15-Feb-02
1R012	49123	4.48	U1C13	16887	U1C14	37046	U1C15				U1C15	15-Feb-02
1R017	49123	4.48	U1C13	13948	U1C14	37069	U1C15				U1C15	15-Feb-02
1R018	49124	4.48	U1C13	21104	U1C14	37069	U1C15				U1C15	15-Feb-02
1R009	49134	4.48	U1C13	13958	U1C14	37071	U1C15				U1C15	15-Feb-02
2R230	49142	4.48	U2C13	28955	U2C14	49142					U2C14	14-Feb-03
2R206	49178	4.48	U2C13	28955	U2C14	49178					U2C14	14-Feb-03
2J106	49186	3.40	U2C7	16820	U2C8	33401	U2C10				U2C10	03/18/95
2J114	49186	3.40	U2C7	16820	U2C8	33401	U2C10				U2C10	03/18/95
2J117	49186	3.40	U2C7	16820	U2C8	33401	U2C10				U2C10	03/18/95
2J120	49186	3.40	U2C7	16820	U2C8	33401	U2C10				U2C10	03/18/95
1N206	49199	4.20	U1C11	22663	U1C12	44663	U1C13				U1C13	04/03/98
1N207	49199	4.20	U1C11	22672	U1C12	44663	U1C13				U1C13	04/03/98
1N219	49199	4.20	U1C11	22754	U1C12	44663	U1C13				U1C13	04/03/98
1N231	49199	4.20	U1C11	22756	U1C12	44663	U1C13				U1C13	04/03/98
2R326	49227	4.48	U2C13	28196	U2C14	49227					U2C14	14-Feb-03
2P011	49233	4.48	U2C12	20449	U2C13	42149	U2C14	49233			U2C14	14-Feb-03
2P009	49235	4.48	U2C12	20449	U2C13	42149	U2C14	49235			U2C14	14-Feb-03
2R310	49260	4.48	U2C13	28196	U2C14	49260					U2C14	14-Feb-03
2N002	49262	4.48	U2C11	21145	U2C12	42466	U2C13				U2C13	16-Mar-01
2N004	49262	4.48	U2C11	21145	U2C12	42466	U2C13				U2C13	16-Mar-01
2N005	49262	4.48	U2C11	21145	U2C12	42466	U2C13				U2C13	16-Mar-01
2N006	49262	4.48	U2C11	21145	U2C12	42466	U2C13				U2C13	16-Mar-01
1S210	49268	4.30	U1C14	27052	U1C15						U1C15	15-Feb-02
1S203	49269	4.30	U1C14	27052	U1C15						U1C15	15-Feb-02
1S207	49275	4.30	U1C14	26609	U1C15						U1C15	15-Feb-02
2P012	49277	4.48	U2C12	20449	U2C13	42149	U2C14	49277			U2C14	14-Feb-03
1S209	49282	4.30	U1C14	26598	U1C15						U1C15	15-Feb-02
1S229	49282	4.30	U1C14	26598	U1C15						U1C15	15-Feb-02
1S202	49285	4.30	U1C14	26609	U1C15						U1C15	15-Feb-02
1S204	49297	4.30	U1C14	27126	U1C15						U1C15	15-Feb-02
1S226	49297	4.30	U1C14	27125	U1C15						U1C15	15-Feb-02
1R007	49307	4.48	U1C13	22778	U1C14	42510	U1C15				U1C15	15-Feb-02
1R008	49307	4.48	U1C13	19412	U1C14	42510	U1C15				U1C15	15-Feb-02
1R005	49308	4.48	U1C13	19400	U1C14	42514	U1C15				U1C15	15-Feb-02
1R006	49308	4.48	U1C13	22819	U1C14	42514	U1C15				U1C15	15-Feb-02
1S205	49316	4.30	U1C14	27051	U1C15						U1C15	15-Feb-02
1S212	49316	4.30	U1C14	27051	U1C15						U1C15	15-Feb-02
1S206	49323	4.30	U1C14	27094	U1C15						U1C15	15-Feb-02
1S213	49323	4.30	U1C14	27095	U1C15						U1C15	15-Feb-02
1S221	49324	4.30	U1C14	26674	U1C15						U1C15	15-Feb-02
1S223	49325	4.30	U1C14	26674	U1C15						U1C15	15-Feb-02

1S211	49326	4.30	U1C14	26677	U1C15						U1C15	15-Feb-02
1S215	49326	4.30	U1C14	26677	U1C15						U1C15	15-Feb-02
2P010	49341	4.48	U2C12	20449	U2C13	42149	U2C14	49341			U2C14	14-Feb-03
2R329	49341	4.48	U2C13	28196	U2C14	49341					U2C14	14-Feb-03
2R330	49371	4.48	U2C13	28196	U2C14	49371					U2C14	14-Feb-03
1L023	49644	4.05	U1C9	8516	U1C10	27597	U1C11	35330	U1C12		U1C12	03/30/96
1L008	49645	4.05	U1C9	8516	U1C10	27597	U1C11	35325	U1C12		U1C12	03/30/96
1L016	49645	4.05	U1C9	8516	U1C10	27597	U1C11	35325	U1C12		U1C12	03/30/96
1L028	49645	4.05	U1C9	8516	U1C10	27597	U1C11	35327	U1C12		U1C12	03/30/96
1P207	49679	4.30	U1C12	25992	U1C13	44876	U1C14				U1C14	03/10/00
1P208	49679	4.30	U1C12	25992	U1C13	44876	U1C14				U1C14	03/10/00
1P205	49683	4.30	U1C12	25992	U1C13	44876	U1C14				U1C14	03/10/00
1P206	49683	4.30	U1C12	25992	U1C13	44876	U1C14				U1C14	03/10/00
1S312	49698	4.30	U1C14	27531	U1C15						U1C15	15-Feb-02
1S311	49699	4.30	U1C14	27531	U1C15						U1C15	15-Feb-02
1S308	49712	4.30	U1C14	27577	U1C15						U1C15	15-Feb-02
1S313	49712	4.30	U1C14	27577	U1C15						U1C15	15-Feb-02
2N202	49754	4.48	U2C11	22776	U2C12	43047	U2C13				U2C13	16-Mar-01
2N204	49754	4.48	U2C11	22776	U2C12	43047	U2C13				U2C13	16-Mar-01
2N205	49754	4.48	U2C11	22776	U2C12	43047	U2C13				U2C13	16-Mar-01
2N208	49754	4.48	U2C11	22776	U2C12	43047	U2C13				U2C13	16-Mar-01
2N201	49782	4.48	U2C11	22884	U2C12	43119	U2C13				U2C13	16-Mar-01
2N203	49782	4.48	U2C11	22884	U2C12	43119	U2C13				U2C13	16-Mar-01
2N206	49782	4.48	U2C11	22884	U2C12	43119	U2C13				U2C13	16-Mar-01
2N207	49782	4.48	U2C11	22884	U2C12	43119	U2C13				U2C13	16-Mar-01
2R313	49850	4.48	U2C13	28986	U2C14	49850					U2C14	14-Feb-03
2R314	49883	4.48	U2C13	28986	U2C14	49883					U2C14	14-Feb-03
2R304	49893	4.48	U2C13	29040	U2C14	49893					U2C14	14-Feb-03
2R316	49913	4.48	U2C13	28986	U2C14	49913					U2C14	14-Feb-03
2R323	49921	4.48	U2C13	29040	U2C14	49921					U2C14	14-Feb-03
2R315	49923	4.48	U2C13	28530	U2C14	49923					U2C14	14-Feb-03
2R324	49934	4.48	U2C13	28986	U2C14	49934					U2C14	14-Feb-03
2R340	49936	4.48	U2C13	29040	U2C14	49936					U2C14	14-Feb-03
2R325	49948	4.48	U2C13	28504	U2C14	49948					U2C14	14-Feb-03
2R335	49968	4.48	U2C13	29040	U2C14	49968					U2C14	14-Feb-03
1P201	49973	4.30	U1C12	26144	U1C13	45148	U1C14				U1C14	03/10/00
1P202	49973	4.30	U1C12	26144	U1C13	45148	U1C14				U1C14	03/10/00
1P203	49973	4.30	U1C12	26144	U1C13	45148	U1C14				U1C14	03/10/00
1P204	49973	4.30	U1C12	26144	U1C13	45148	U1C14				U1C14	03/10/00
2R320	50039	4.48	U2C13	28743	U2C14	50039					U2C14	14-Feb-03
1S222	50041	4.30	U1C14	27200	U1C15						U1C15	15-Feb-02
1S227	50043	4.30	U1C14	27198	U1C15						U1C15	15-Feb-02
1S224	50045	4.30	U1C14	27198	U1C15						U1C15	15-Feb-02
1S233	50047	4.30	U1C14	27208	U1C15						U1C15	15-Feb-02
1S234	50047	4.30	U1C14	27208	U1C15						U1C15	15-Feb-02
1S240	50047	4.30	U1C14	27200	U1C15						U1C15	15-Feb-02
1S238	50054	4.30	U1C14	27207	U1C15						U1C15	15-Feb-02
1S239	50054	4.30	U1C14	27207	U1C15						U1C15	15-Feb-02

2R308	50106	4.48	U2C13	28504	U2C14	50106					U2C14	14-Feb-03
2P225	50157	4.48	U2C12	28239	U2C13	50157					U2C13	16-Mar-01
2P226	50157	4.48	U2C12	28239	U2C13	50157					U2C13	16-Mar-01
2P227	50157	4.48	U2C12	28239	U2C13	50157					U2C13	16-Mar-01
2P228	50157	4.48	U2C12	28239	U2C13	50157					U2C13	16-Mar-01
2R332	50158	4.48	U2C13	28530	U2C14	50158					U2C14	14-Feb-03
2R311	50159	4.48	U2C13	28504	U2C14	50159					U2C14	14-Feb-03
2R312	50180	4.48	U2C13	28743	U2C14	50180					U2C14	14-Feb-03
2P233	50182	4.48	U2C12	28207	U2C13	50182					U2C13	16-Mar-01
2P234	50182	4.48	U2C12	28207	U2C13	50182					U2C13	16-Mar-01
2P235	50182	4.48	U2C12	28207	U2C13	50182					U2C13	16-Mar-01
2P236	50182	4.48	U2C12	28207	U2C13	50182					U2C13	16-Mar-01
2R328	50185	4.48	U2C13	28469	U2C14	50185					U2C14	14-Feb-03
2R305	50187	4.48	U2C13	28643	U2C14	50187					U2C14	14-Feb-03
2R331	50195	4.48	U2C13	28530	U2C14	50195					U2C14	14-Feb-03
2N603	50195	4.48	U2C11	29535	U2C12						U2C12	03/12/99
2N617	50195	4.48	U2C11	29535	U2C12						U2C12	03/12/99
2N643	50195	4.48	U2C11	29535	U2C12						U2C12	03/12/99
2N648	50195	4.48	U2C11	29535	U2C12						U2C12	03/12/99
2R327	50202	4.48	U2C13	28469	U2C14	50202					U2C14	14-Feb-03
2R309	50203	4.48	U2C13	28504	U2C14	50203					U2C14	14-Feb-03
2R318	50215	4.48	U2C13	28469	U2C14	50215					U2C14	14-Feb-03
2P023	50217	4.48	U2C12	22228	U2C13	44447	U2C14	50217			U2C14	14-Feb-03
2N605	50220	4.48	U2C11	29554	U2C12						U2C12	03/12/99
2N624	50220	4.48	U2C11	29554	U2C12						U2C12	03/12/99
2N625	50220	4.48	U2C11	29554	U2C12						U2C12	03/12/99
2N632	50220	4.48	U2C11	29554	U2C12						U2C12	03/12/99
2J105	50223	3.40	U2C7	17081	U2C8	35816	U2C11				U2C11	03/15/97
2P021	50223	4.48	U2C12	22228	U2C13	44447	U2C14	50223			U2C14	14-Feb-03
1RT4	50233	4.00	U1C13	23373	U1C14	44573	U2C14				U2C14	14-Feb-03
2P022	50235	4.48	U2C12	22228	U2C13	44447	U2C14	50235			U2C14	14-Feb-03
2R319	50242	4.48	U2C13	28469	U2C14	50242					U2C14	14-Feb-03
2R322	50246	4.48	U2C13	28643	U2C14	50246					U2C14	14-Feb-03
2R307	50253	4.48	U2C13	28643	U2C14	50253					U2C14	14-Feb-03
2P102	50257	4.48	U2C12	22933	U2C13	44676	U2C14	50257			U2C14	14-Feb-03
2P101	50261	4.48	U2C12	22933	U2C13	44676	U2C14	50261			U2C14	14-Feb-03
2R321	50261	4.48	U2C13	28743	U2C14	50261					U2C14	14-Feb-03
2R317	50264	4.48	U2C13	28530	U2C14	50264					U2C14	14-Feb-03
2R337	50277	4.48	U2C13	28643	U2C14	50277					U2C14	14-Feb-03
2R338	50279	4.48	U2C13	28698	U2C14	50279					U2C14	14-Feb-03
2R339	50291	4.48	U2C13	28698	U2C14	50291					U2C14	14-Feb-03
2R302	50294	4.48	U2C13	28698	U2C14	50294					U2C14	14-Feb-03
2R306	50302	4.48	U2C13	28743	U2C14	50302					U2C14	14-Feb-03
2P103	50305	4.48	U2C12	22933	U2C13	44676	U2C14	50305			U2C14	14-Feb-03
2R334	50345	4.48	U2C13	28698	U2C14	50345					U2C14	14-Feb-03
2P104	50357	4.48	U2C12	22933	U2C13	44676	U2C14	50357			U2C14	14-Feb-03
1F048	50365	3.03	U1C4	8035	U1C5	21256	U1C6	33464	U1C7	41642	U1C8	10/24/86
2J111	50397	3.40	U2C7	17081	U2C8	35816	U2C13				U2C13	16-Mar-01

2N403	50493	4.48	U2C11	23770	U2C12	43922	U2C13				U2C13	16-Mar-01
2N406	50493	4.48	U2C11	23770	U2C12	43922	U2C13				U2C13	16-Mar-01
2N407	50493	4.48	U2C11	23770	U2C12	43922	U2C13				U2C13	16-Mar-01
2N409	50493	4.48	U2C11	23770	U2C12	43922	U2C13				U2C13	16-Mar-01
1L010	50563	4.05	U1C9	11387	U1C10	32904	U1C11				U1C11	02/09/94
1L018	50563	4.05	U1C9	11387	U1C10	32904	U1C11				U1C11	02/09/94
1L027	50563	4.05	U1C9	11387	U1C10	32904	U1C11				U1C11	02/09/94
1L030	50563	4.05	U1C9	11387	U1C10	32904	U1C11				U1C11	02/09/94
2N601	50563	4.48	U2C11	29555	U2C12						U2C12	03/12/99
2N635	50563	4.48	U2C11	29555	U2C12						U2C12	03/12/99
2N640	50563	4.48	U2C11	29555	U2C12						U2C12	03/12/99
1L102	50572	3.40	U1C9	14275	U1C10	36626	U2C14				U2C14	14-Feb-03
1S303	50603	4.30	U1C14	27566	U1C15						U1C15	15-Feb-02
1S316	50603	4.30	U1C14	27566	U1C15						U1C15	15-Feb-02
1S304	50610	4.30	U1C14	27580	U1C15						U1C15	15-Feb-02
1S315	50610	4.30	U1C14	27580	U1C15						U1C15	15-Feb-02
1S301	50618	4.30	U1C14	27557	U1C15						U1C15	15-Feb-02
1S302	50619	4.30	U1C14	27557	U1C15						U1C15	15-Feb-02
1S305	50620	4.30	U1C14	27560	U1C15						U1C15	15-Feb-02
1S314	50620	4.30	U1C14	27560	U1C15						U1C15	15-Feb-02
2P008	50641	4.48	U2C12	22200	U2C13	44396	U2C14	50641			U2C14	14-Feb-03
2N626	50654	4.48	U2C11	29653	U2C12						U2C12	03/12/99
2N629	50654	4.48	U2C11	29555	U2C12						U2C12	03/12/99
2N630	50654	4.48	U2C11	29653	U2C12						U2C12	03/12/99
2N631	50654	4.48	U2C11	29653	U2C12						U2C12	03/12/99
2N636	50654	4.48	U2C11	29653	U2C12						U2C12	03/12/99
2P205	50665	4.48	U2C12	27632	U2C13	50665					U2C13	16-Mar-01
2P206	50665	4.48	U2C12	27632	U2C13	50665					U2C13	16-Mar-01
2P207	50665	4.48	U2C12	27632	U2C13	50665					U2C13	16-Mar-01
2P208	50665	4.48	U2C12	27632	U2C13	50665					U2C13	16-Mar-01
2P213	50688	4.48	U2C12	27590	U2C13	50688					U2C13	16-Mar-01
2P214	50688	4.48	U2C12	27590	U2C13	50688					U2C13	16-Mar-01
2P215	50688	4.48	U2C12	27590	U2C13	50688					U2C13	16-Mar-01
2P216	50688	4.48	U2C12	27590	U2C13	50688					U2C13	16-Mar-01
2P005	50692	4.48	U2C12	22200	U2C13	44396	U2C14	50692			U2C14	14-Feb-03
1S237	50695	4.30	U1C14	27590	U1C15						U1C15	15-Feb-02
1S235	50696	4.30	U1C14	27590	U1C15						U1C15	15-Feb-02
1S236	50696	4.30	U1C14	27593	U1C15						U1C15	15-Feb-02
1S225	50697	4.30	U1C14	27593	U1C15						U1C15	15-Feb-02
2P006	50697	4.48	U2C12	22200	U2C13	44396	U2C14	50697			U2C14	14-Feb-03
2P007	50697	4.48	U2C12	22200	U2C13	44396	U2C14	50697			U2C14	14-Feb-03
2N613	50712	4.48	U2C11	29041	U2C12						U2C12	03/12/99
2N619	50712	4.48	U2C11	29041	U2C12						U2C12	03/12/99
2N627	50712	4.48	U2C11	29041	U2C12						U2C12	03/12/99
2N638	50712	4.48	U2C11	29041	U2C12						U2C12	03/12/99
2P253	50758	4.48	U2C12	27840	U2C13	50758					U2C13	16-Mar-01
2P254	50758	4.48	U2C12	27840	U2C13	50758					U2C13	16-Mar-01
2P255	50758	4.48	U2C12	27840	U2C13	50758					U2C13	16-Mar-01

2P256	50758	4.48	U2C12	27840	U2C13	50758					U2C13	16-Mar-01
2R301	50767	4.48	U2C13	29265	U2C14	50767					U2C14	14-Feb-03
2P245	50767	4.48	U2C12	27877	U2C13	50767					U2C13	16-Mar-01
2P246	50767	4.48	U2C12	27877	U2C13	50767					U2C13	16-Mar-01
2P247	50767	4.48	U2C12	27877	U2C13	50767					U2C13	16-Mar-01
2P248	50767	4.48	U2C12	27877	U2C13	50767					U2C13	16-Mar-01
2N614	50771	4.48	U2C11	28616	U2C12						U2C12	03/12/99
2N645	50771	4.48	U2C11	28616	U2C12						U2C12	03/12/99
2N646	50771	4.48	U2C11	28616	U2C12						U2C12	03/12/99
2N647	50771	4.48	U2C11	28616	U2C12						U2C12	03/12/99
2R333	50787	4.48	U2C13	29265	U2C14	50787					U2C14	14-Feb-03
2N612	50799	4.48	U2C11	29143	U2C12						U2C12	03/12/99
2N633	50799	4.48	U2C11	29143	U2C12						U2C12	03/12/99
2N634	50799	4.48	U2C11	29143	U2C12						U2C12	03/12/99
2N642	50799	4.48	U2C11	29143	U2C12						U2C12	03/12/99
2P241	50810	4.48	U2C12	28087	U2C13	50810					U2C13	16-Mar-01
2P242	50810	4.48	U2C12	28087	U2C13	50810					U2C13	16-Mar-01
2P243	50810	4.48	U2C12	28087	U2C13	50810					U2C13	16-Mar-01
2P244	50810	4.48	U2C12	28087	U2C13	50810					U2C13	16-Mar-01
2R303	50871	4.48	U2C13	29265	U2C14	50871					U2C14	14-Feb-03
2R336	50881	4.48	U2C13	29265	U2C14	50881					U2C14	14-Feb-03
2P209	50924	4.48	U2C12	27880	U2C13	50924					U2C13	16-Mar-01
2P210	50924	4.48	U2C12	27880	U2C13	50924					U2C13	16-Mar-01
2P211	50924	4.48	U2C12	27880	U2C13	50924					U2C13	16-Mar-01
2P212	50924	4.48	U2C12	27880	U2C13	50924					U2C13	16-Mar-01
2P229	50975	4.48	U2C12	28003	U2C13	50975					U2C13	16-Mar-01
2P230	50975	4.48	U2C12	28003	U2C13	50975					U2C13	16-Mar-01
2P231	50975	4.48	U2C12	28003	U2C13	50975					U2C13	16-Mar-01
2P232	50975	4.48	U2C12	28003	U2C13	50975					U2C13	16-Mar-01
2J104	51030	3.40	U2C7	16940	U2C8	34298	U1C15				U1C15	15-Feb-02
1N001	51059	4.20	U1C11	17523	U1C12	32189	U2C12				U2C12	03/12/99
1N002	51059	4.20	U1C11	17527	U1C12	32189	U2C12				U2C12	03/12/99
1N003	51059	4.20	U1C11	14305	U1C12	32189	U2C12				U2C12	03/12/99
1N012	51059	4.20	U1C11	19717	U1C12	32189	U2C12				U2C12	03/12/99
2N602	51232	4.48	U2C11	29447	U2C12						U2C12	03/12/99
2N609	51232	4.48	U2C11	29447	U2C12						U2C12	03/12/99
2N610	51232	4.48	U2C11	29447	U2C12						U2C12	03/12/99
2N637	51232	4.48	U2C11	29447	U2C12						U2C12	03/12/99
2N618	51281	4.48	U2C11	29507	U2C12						U2C12	03/12/99
2N639	51281	4.48	U2C11	29507	U2C12						U2C12	03/12/99
2N641	51281	4.48	U2C11	29507	U2C12						U2C12	03/12/99
2N644	51281	4.48	U2C11	29507	U2C12						U2C12	03/12/99
2N604	51312	4.48	U2C11	29366	U2C12						U2C12	03/12/99
2N611	51312	4.48	U2C11	29366	U2C12						U2C12	03/12/99
2N623	51312	4.48	U2C11	29366	U2C12						U2C12	03/12/99
2N628	51312	4.48	U2C11	29366	U2C12						U2C12	03/12/99
1M002	51347	4.08	U1C10	17357	U1C11	31981	U1C12				U1C12	03/30/96
1M004	51347	4.08	U1C10	17357	U1C11	29591	U1C12				U1C12	03/30/96

1M008	51347	4.08	U1C10	17357	U1C11	31454	U1C12				U1C12	03/30/96
1M010	51347	4.08	U1C10	17357	U1C11	30730	U1C12				U1C12	03/30/96
1M009	51362	4.08	U1C10	17361	U1C11	29636	U1C12				U1C12	03/30/96
1M003	51370	4.08	U1C10	17361	U1C11	31478	U1C12				U1C12	03/30/96
1M005	51370	4.08	U1C10	17361	U1C11	30740	U1C12				U1C12	03/30/96
1M006	51370	4.08	U1C10	17361	U1C11	31966	U1C12				U1C12	03/30/96
1G004	57113	3.65	U1C5	11979	U1C6	26637	U1C7	36492	U1C8	48806	U1C9	04/08/88
1G008	57113	3.65	U1C5	11979	U1C6	26637	U1C7	36492	U1C8	48806	U1C9	04/08/88
1G006	57133	3.65	U1C5	11979	U1C6	26637	U1C7	36492	U1C8	48806	U1C9	04/08/88
1G003	57162	3.65	U1C5	11991	U1C6	26646	U1C7	36511	U1C8	48834	U1C9	04/08/88
	57162	1444		29653								

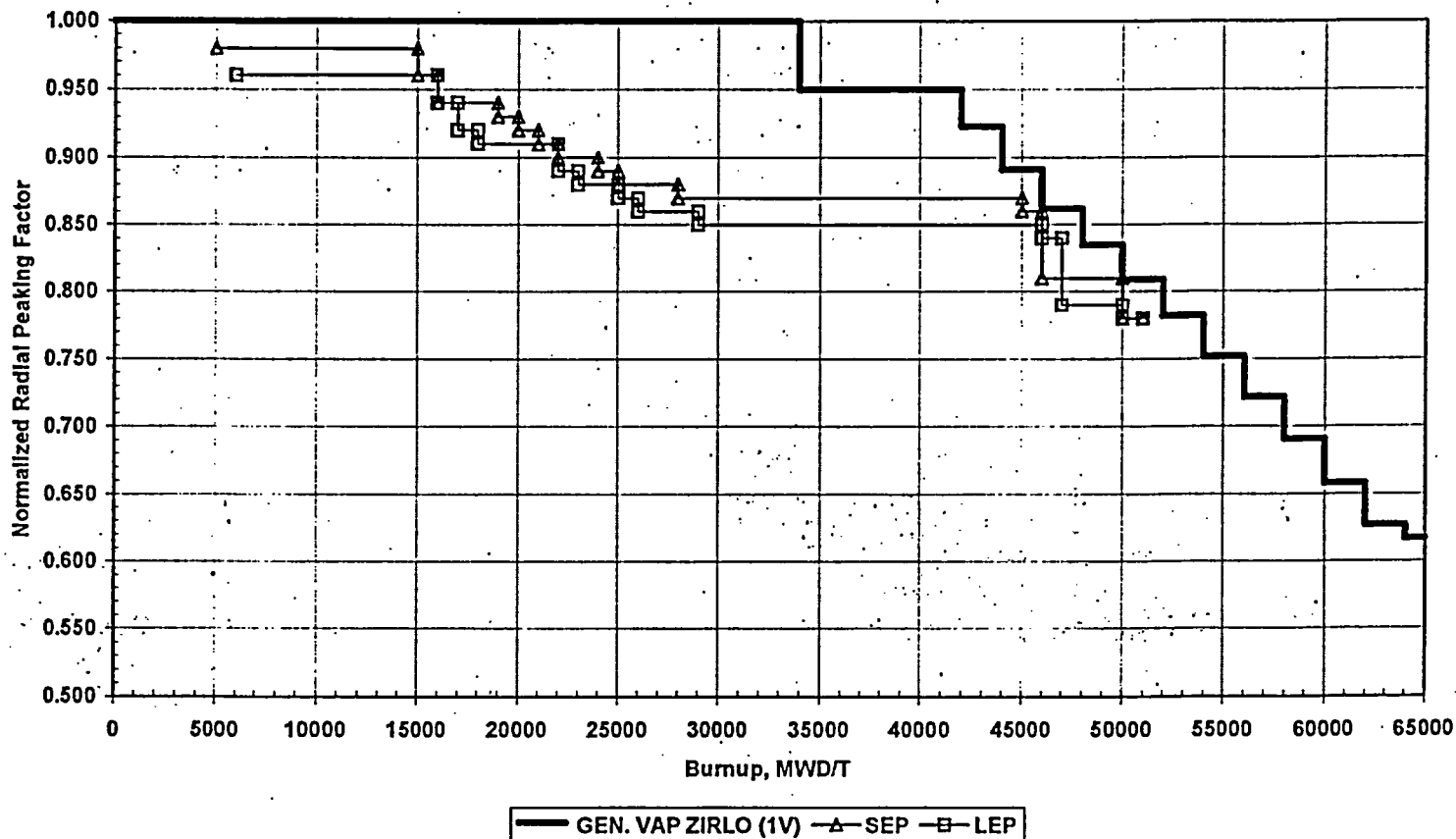
ATTACHMENT B
RADIAL FALLOFF CURVE

CA06421 Rev.0
Page 51 of 307

Westinghouse Non-Proprietary Class 3

Attachment to CCAL-05-202
Page 3 of 3

Calvert Cliffs Unit 1 Cycle 17
Comparison of Radial Falloff Curves
for VAP Pellet (1V UO₂ with ZIRLO clad) with Generic Data (1V ZIRLO)
[fuel in 2nd cycle]



ATTACHMENT C
INTERPIN OUTPUT FILES

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 1
** RUN TIME: 15.07.14.** DATE: 04/04/22 REFERENCE POWER = 0.00 KW/M
TITLE:

LISTING OF INPUT

ECHO OF INPUT CARDS FOR CASE 1

'TIT' * CALVERT - FUEL TEMP CALCULATION CASE 01H /
'COR' 559.82 2250 /
'ROD' 0.49276 0.5588 347.218 380 13.5 /
'PEL' 10.3572 0.48387 /
'POW' 37.6935 /
'PRO' 1 /
'WAT' 2 'SQR' 0.40546 1.4732 /
'TAB' 00 04 08 12 16 20 24 28 32 36 /
'DEP' 00 04 08 12 16 20 24 28 32 36 /
'AVE' 16 /
'END' /

END OF INPUT CARD ECHO

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 2
** RUN TIME: 15.07.14.** DATE: 04/04/22 REFERENCE POWER = 37.69 KW/M
TITLE: *

INPUT SUMMARY FOR CASE 1

SYSTEM DESCRIPTORS

COOLANT INLET TEMPERATURE 559.8 K (548.0 DEGREES FAHRENHEIT)
AVERAGE CORE PRESSURE 2250.0 PSI
NOMINAL LINEAR POWER RATE 37.7 KW/M (11.5 KW/FT)
NOMINAL POWER DENSITY 56.1 W/GU

FUEL PELLET DESCRIPTORS

PELLET INNER RADIUS 0.0000 CM
PELLET OUTER RADIUS 0.4839 CM THEORETICAL DENSITY 94.50 PERCENT
DISH RADIUS 0.0000 CM DISH RELATIVE VOLUME 0.0000 PERCENT
CHAMFER RADIUS 0.4839 CM CHAMFER RELATIVE VOLUME 0.0000 PERCENT
GRAIN SIZE 10.00 MICRONS GRAIN STANDARD DEVIATION 20.0000 PERCENT
OPEN POROSITY 5.00 PERCENT RESINTERING POROSITY 0.2000 PERCENT

FUEL ROD DESCRIPTORS

NO. OF NODES: 1 (ALL NODES ARE IDENTICAL)

FUEL LENGTH 347.218 CM
CLAD INNER RADIUS 0.4928 CM CLAD OUTER RADIUS 0.5588 CM
PLENUM LENGTH 52.083 CM PLENUM VOLUME 13.50 CM**3
FILL GAS HELIUM FILL GAS PRESSURE 367.43 PSI

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 3
** RUN TIME: 15.07.14.** DATE: 04/04/22 REFERENCE POWER = 37.69 KW/M
TITLE: *

FUEL TEMPERATURE DATA FOR CASMO

AVERAGE EXPOSURE REQUESTED AVE = 16.0 GWD/MT

FUEL TEMPERATURE FOR CASMO TFU =1183.5 K

TABLE FIT OF TFU VERSUS POWER FOR SIMULATE 'SEG.TFU' CARD

SEGT FU(1,N) = 0.0
SEGT FU(2,N) = 0.0
SEGT FU(3,N) = 0.0
SEGT FU(4,N) = 37.69

FUEL TEMPERATURE VERSUS EXPOSURE FOR SIMULATE 'TAB.TFU' CARD

EXPOSURE (GWD/MT)	0.0	4.0	8.0	12.0	16.0	20.0	24.0	28.0	32.0	36.0
DELTA TFU (K)										
POW 0.50	625.7	469.4	474.4	482.5	502.8	533.8	557.4	583.2	621.0	668.1
POW 1.00	613.2	531.1	542.1	554.3	579.0	611.8	635.3	661.0	696.6	737.7
POW 1.50	585.8	588.0	602.1	616.9	642.9	673.1	692.8	714.6	742.7	772.2
POW 2.00	609.6	621.6	636.1	650.4	673.2	696.4	710.1	726.4	748.2	770.8
POW 2.50	606.4	617.4	627.8	637.3	650.4	662.0	666.8	674.0	679.3	682.0

SIMULATE-3 INPUT CARDS

'COM' *

'SEG.TFU', 0, 0.0, 0.0, 0.0, 37.69/

'COM' EXPOSURE IN GWD/MT

'TAB.TFU' 1, 0, 'EXP', 10, 'POW', 5
0.0 4.0 8.0 12.0 16.0 20.0 24.0 28.0 32.0 36.0
0.50, 625.7 469.4 474.4 482.5 502.8 533.8 557.4 583.2 621.0 668.1
1.00, 613.2 531.1 542.1 554.3 579.0 611.8 635.3 661.0 696.6 737.7
1.50, 585.8 588.0 602.1 616.9 642.9 673.1 692.8 714.6 742.7 772.2
2.00, 609.6 621.6 636.1 650.4 673.2 696.4 710.1 726.4 748.2 770.8
2.50, 606.4 617.4 627.8 637.3 650.4 662.0 666.8 674.0 679.3 682.0
/

INTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 4
** RUN TIME: 15.07.14. ** DATE: 04/04/22 REFERENCE POWER = 37.69 KW/M
TITLE: *

AVERAGE FUEL TEMPERATURE (KELVIN) VS RELATIVE POWER

EXPOSURE GWD/MT	0.5	1.0	1.5	2.0	2.5
--------------------	-----	-----	-----	-----	-----

0.0	887.4	1202.6	1482.9	1838.1	2149.7
4.0	809.3	1120.5	1486.1	1862.1	2177.1
8.0	811.8	1131.4	1507.3	1891.0	2203.2
12.0	815.8	1143.7	1529.5	1919.7	2226.9
16.0	826.0	1168.4	1568.5	1965.2	2259.7
20.0	841.5	1201.2	1613.8	2011.8	2288.7
24.0	853.3	1224.6	1643.4	2039.2	2300.6
28.0	866.2	1250.4	1676.0	2071.7	2318.8
32.0	885.1	1286.0	1718.1	2115.3	2332.1
36.0	908.6	1327.1	1762.4	2160.5	2338.8

NOTE: RELATIVE POWER OF 1.0 = 37.69 KW/M (11.49 KW/FT)
INTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 5
** RUN TIME: 15.07.14. ** DATE: 04/04/22 REFERENCE POWER = 37.69 KW/M
TITLE: *

AVERAGE FUEL TEMPERATURE (FAHRENHEIT) VS RELATIVE POWER

EXPOSURE GWD/MT	RELATIVE POWER
--------------------	----------------

0.5 1.0 1.5 2.0 2.5

0.0 1138.0 1705.3 2209.8 2849.3 3410.0
4.0 997.3 1557.5 2215.6 2892.4 3459.4
8.0 1001.8 1577.2 2253.8 2944.5 3506.4
12.0 1009.1 1599.3 2293.7 2996.1 3549.1
16.0 1027.4 1643.7 2364.0 3078.0 3608.1
20.0 1055.3 1702.7 2445.4 3161.9 3660.3
24.0 1076.5 1745.0 2498.7 3211.2 3681.7
28.0 1099.8 1791.3 2557.4 3269.7 3714.5
32.0 1133.8 1855.3 2633.2 3348.1 3738.3
36.0 1176.1 1929.4 2712.9 3429.6 3750.4

NOTE: RELATIVE POWER OF 1.0 = 37.69 KW/M (11.49 KW/FT)
I I N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 6
** RUN TIME: 15.07.14.** DATE: 04/04/22 REFERENCE POWER = 37.69 KW/M
TITLE: *

CENTRAL FUEL TEMPERATURE (KELVIN) VS RELATIVE POWER

EXPOSURE RELATIVE POWER
GWD/MT
0.5 1.0 1.5 2.0 2.5

0.0 1087.9 1718.6 2338.8 2945.4 3153.2
4.0 998.7 1625.2 2361.8 2982.2 3128.2
8.0 1004.7 1648.1 2401.1 3015.3 3095.8
12.0 1012.6 1673.0 2441.3 3045.6 3052.6
16.0 1029.9 1719.1 2507.7 3086.7 2965.2
20.0 1053.0 1773.8 2576.3 3118.2 2854.6
24.0 1072.3 1817.8 2628.2 3135.5 2739.6
28.0 1092.5 1863.3 2679.8 3147.1 2575.2
32.0 1119.9 1920.5 2738.4 3151.2 2375.3
36.0 1153.3 1984.9 2797.2 3142.1 2123.2

NOTE: RELATIVE POWER OF 1.0 = 37.69 KW/M (11.49 KW/FT)
I I N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7
** RUN TIME: 15.07.14.** DATE: 04/04/22 REFERENCE POWER = 37.69 KW/M
TITLE: *

CENTRAL FUEL TEMPERATURE (FAHRENHEIT) VS RELATIVE POWER

EXPOSURE RELATIVE POWER
GWD/MT
0.5 1.0 1.5 2.0 2.5

0.0 1498.8 2634.2 3750.4 4842.2 5216.3
4.0 1338.2 2465.9 3791.9 4908.5 5171.3
8.0 1349.0 2507.2 3862.6 4968.2 5113.1
12.0 1363.3 2552.0 3934.9 5022.6 5035.4
16.0 1394.4 2635.0 4054.4 5096.6 4877.9
20.0 1436.0 2733.4 4177.9 5153.3 4678.9
24.0 1470.8 2812.7 4271.4 5184.5 4472.0
28.0 1507.1 2894.5 4364.2 5205.3 4175.9
32.0 1556.5 2997.5 4469.7 5212.7 3816.2
36.0 1616.6 3113.4 4575.6 5196.3 3362.3

NOTE: RELATIVE POWER OF 1.0 = 37.69 KW/M (11.49 KW/FT)
I I N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7A
** RUN TIME: 15.07.14.** DATE: 04/04/22 REFERENCE POWER = 37.69 KW/M
TITLE: *

RADIAL TEMPERATURE PROFILE (KELVIN) AT RELATIVE POWER 1.00

EXPOSURE FRACTION OF PELLET RADIUS CLAD RADII POWER
GWD/MT 0.0 0.2 0.4 0.6 0.8 1.0 INNER OUTER KW/M KW/FT

0.0	1718.6	1662.8	1519.1	1305.9	1045.0	770.3	666.5	622.2	37.7	11.5
4.0	1625.2	1534.8	1321.7	1045.4	771.5	702.1	666.5	622.2	37.7	11.5
8.0	1648.1	1554.9	1335.0	1049.9	767.2	700.0	666.5	622.2	37.7	11.5
12.0	1673.0	1577.3	1351.4	1058.1	766.5	699.2	666.5	622.2	37.7	11.5
16.0	1719.1	1619.5	1384.0	1077.8	772.9	704.0	666.5	622.2	37.7	11.5
20.0	1773.8	1670.3	1425.5	1106.3	786.6	715.1	666.5	622.2	37.7	11.5
24.0	1817.8	1710.8	1457.2	1126.0	793.2	719.2	666.5	622.2	37.7	11.5
28.0	1863.3	1753.0	1491.3	1148.5	802.3	725.5	666.5	622.2	37.7	11.5
32.0	1920.5	1806.8	1536.4	1180.8	819.1	738.6	666.5	622.2	37.7	11.5
36.0	1984.9	1867.5	1587.5	1218.0	839.7	755.7	666.5	622.2	37.7	11.5

INTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7B
 ** RUN TIME: 15.07.14.** DATE: 04/04/22 REFERENCE POWER = 37.69 KW/M
 TITLE: *

RADIAL TEMPERATURE PROFILE (FAHRENHEIT) AT RELATIVE POWER 1.00

EXPOSURE	FRACTION OF PELLETT RADIUS					CLAD RADII		POWER	
GWD/MT	0.0	0.2	0.4	0.6	0.8	1.0	INNER	OUTER	KW/M KW/FT

0.0	2634.2	2533.6	2275.0	1891.2	1421.6	927.1	740.4	660.5	37.7	11.5
4.0	2465.9	2303.3	1919.7	1422.3	929.3	804.4	740.4	660.5	37.7	11.5
8.0	2507.2	2339.5	1943.7	1430.5	921.6	800.6	740.4	660.5	37.7	11.5
12.0	2552.0	2379.8	1973.2	1445.1	920.3	799.1	740.4	660.5	37.7	11.5
16.0	2635.0	2455.6	2031.7	1480.7	931.8	807.7	740.4	660.5	37.7	11.5
20.0	2733.4	2547.2	2106.6	1532.0	956.5	827.7	740.4	660.5	37.7	11.5
24.0	2812.7	2620.0	2163.6	1567.4	968.4	835.2	740.4	660.5	37.7	11.5
28.0	2894.5	2696.0	2224.9	1607.8	984.8	846.4	740.4	660.5	37.7	11.5
32.0	2997.5	2792.9	2306.2	1666.1	1015.0	870.1	740.4	660.5	37.7	11.5
36.0	3113.4	2902.0	2398.2	1733.0	1052.0	900.9	740.4	660.5	37.7	11.5

INTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 8
 ** RUN TIME: 15.07.14.** DATE: 04/04/22 REFERENCE POWER = 37.69 KW/M
 TITLE: *

GAP CONDUCTANCE (KW/M**2/K) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	6.6	12.0	34.8	55.3	77.8
4.0	25.4	34.8	48.0	67.1	88.6
8.0	27.8	37.1	51.4	72.6	95.5
12.0	28.6	38.0	53.3	76.3	99.9
16.0	25.0	33.1	46.7	66.9	85.5
20.0	18.9	25.5	36.9	54.5	68.9
24.0	16.6	23.5	36.9	60.6	76.9
28.0	14.4	21.0	34.8	58.8	61.8
32.0	11.5	17.2	29.3	46.2	48.6
36.0	9.1	13.9	24.5	35.6	37.4

NOTE: RELATIVE POWER OF 1.0 = 37.69 KW/M (11.49 KW/FT)

INTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 9
 ** RUN TIME: 15.07.14.** DATE: 04/04/22 REFERENCE POWER = 37.69 KW/M
 TITLE: *

GAP CONDUCTANCE (BTU/HR/FT**2/F) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	1166.4	2104.8	6125.9	9737.8	13701.3
-----	--------	--------	--------	--------	---------

4.0	4479.9	6133.9	8460.1	11811.9	15597.3
8.0	4896.0	6527.8	9053.7	12789.4	16822.3
12.0	5036.0	6692.0	9382.3	13445.2	17591.7
16.0	4397.1	5835.2	8216.8	11783.7	15064.2
20.0	3332.8	4498.7	6506.3	9592.7	12128.6
24.0	2924.9	4146.0	6505.1	10676.1	13541.0
28.0	2537.2	3705.5	6127.0	10358.3	10882.8
32.0	2033.4	3030.3	5159.3	8137.7	8553.0
36.0	1602.6	2448.0	4311.9	6268.7	6590.2

NOTE: RELATIVE POWER OF 1.0 = 37.69 KW/M (11.49 KW/FT)
 I I N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 10
 ** RUN TIME: 15.07.14.** DATE: 04/04/22 REFERENCE POWER = 37.69 KW/M
 TITLE: *

THERMAL GAP (CM RADIAL) VS RELATIVE POWER

EXPOSURE GWD/MT	RELATIVE POWER				
	0.5	1.0	1.5	2.0	2.5

0.0	0.00630	0.00398	0.00157	0.00000	0.00000
4.0	0.00158	0.00000	0.00000	0.00000	0.00000
8.0	0.00085	0.00000	0.00000	0.00000	0.00000
12.0	0.00032	0.00000	0.00000	0.00000	0.00000
16.0	0.00000	0.00000	0.00000	0.00000	0.00000
20.0	0.00000	0.00000	0.00000	0.00000	0.00000
24.0	0.00000	0.00000	0.00000	0.00000	0.00000
28.0	0.00000	0.00000	0.00000	0.00000	0.00000
32.0	0.00000	0.00000	0.00000	0.00000	0.00000
36.0	0.00000	0.00000	0.00000	0.00000	0.00000

NOTE: RELATIVE POWER OF 1.0 = 37.69 KW/M (11.49 KW/FT)

FISSION GAS RELEASE

EXPOSURE	0.0	4.0	8.0	12.0	16.0	20.0	24.0	28.0	32.0	36.0
PERCENT	0.3	0.3	0.5	0.6	1.3	3.2	5.1	6.5	8.6	11.8

***** END OF OUTPUT *****
 TOTAL CPU TIME 0 SECONDS

11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 1
** RUN TIME: 15.11.30.** DATE: 04/04/22 REFERENCE POWER = 0.00 KW/M
TITLE:

LISTING OF INPUT

ECHO OF INPUT CARDS FOR CASE 1

'TIT' * CALVERT - FUEL TEMP CALCULATION CASE 01L /
'COR' 559.82 2250 /
'ROD' 0.49276 0.5588 347.218 380 13.5 /
'PEL' 10.3572 0.48387 /
'POW' 30.8401 /
'PRO' 1 /
'WAT' 2 'SQR' 0.40546 1.4732 /
'TAB' 00 04 08 12 16 20 24 28 32 36 /
'DEP' 00 04 08 12 16 20 24 28 32 36 /
'AVE' 16 /
'END' /

END OF INPUT CARD ECHO

11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 2
** RUN TIME: 15.11.30.** DATE: 04/04/22 REFERENCE POWER = 30.84 KW/M
TITLE: *

INPUT SUMMARY FOR CASE 1

SYSTEM DESCRIPTORS

COOLANT INLET TEMPERATURE 559.8 K (548.0 DEGREES FAHRENHEIT)
AVERAGE CORE PRESSURE 2250.0 PSI
NOMINAL LINEAR POWER RATE 30.8 KW/M (9.4 KW/FT)
NOMINAL POWER DENSITY 45.9 W/GU

FUEL PELLET DESCRIPTORS

PELLET INNER RADIUS 0.0000 CM
PELLET OUTER RADIUS 0.4839 CM THEORETICAL DENSITY 94.50 PERCENT
DISH RADIUS 0.0000 CM DISH RELATIVE VOLUME 0.0000 PERCENT
CHAMFER RADIUS 0.4839 CM CHAMFER RELATIVE VOLUME 0.0000 PERCENT
GRAIN SIZE 10.00 MICRONS GRAIN STANDARD DEVIATION 20.0000 PERCENT
OPEN POROSITY 5.00 PERCENT RESINTERING POROSITY 0.2000 PERCENT

FUEL ROD DESCRIPTORS

NO. OF NODES: 1 (ALL NODES ARE IDENTICAL)

FUEL LENGTH 347.218 CM
CLAD INNER RADIUS 0.4928 CM CLAD OUTER RADIUS 0.5588 CM
PLENUM LENGTH 52.083 CM PLENUM VOLUME 13.50 CM**3
FILL GAS HELIUM FILL GAS PRESSURE 367.43 PSI

11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 3
** RUN TIME: 15.11.30.** DATE: 04/04/22 REFERENCE POWER = 30.84 KW/M
TITLE: *

FUEL TEMPERATURE DATA FOR CASMO

AVERAGE EXPOSURE REQUESTED AVE = 16.0 GWD/MT

FUEL TEMPERATURE FOR CASMO TFU =1041.5 K

TABLE FIT OF TFU VERSUS POWER FOR SIMULATE 'SEG.TFU' CARD

SEGTUFU(1,N) = 0.0
SEGTUFU(2,N) = 0.0
SEGTUFU(3,N) = 0.0
SEGTUFU(4,N) = 30.84

FUEL TEMPERATURE VERSUS EXPOSURE FOR SIMULATE 'TAB.TFU' CARD

EXPOSURE (GWD/MT)	0.0	4.0	8.0	12.0	16.0	20.0	24.0	28.0	32.0	36.0
DELTA TFU (K)										
POW 0.50	512.8	414.4	400.6	395.7	400.4	410.0	420.7	433.6	453.7	471.8
POW 1.00	508.0	420.6	427.7	437.4	448.5	461.8	476.1	492.4	515.4	535.1
POW 1.50	490.0	459.8	471.8	484.9	499.9	516.2	533.4	552.2	576.3	595.3
POW 2.00	485.4	492.3	506.4	521.1	537.8	555.0	572.8	591.4	613.3	629.3
POW 2.50	499.9	510.7	524.5	538.4	553.7	568.7	583.5	598.0	613.8	624.0

SIMULATE-3 INPUT CARDS

'COM' *

'SEG.TFU', 0, 0.0, 0.0, 0.0, 30.84/

'COM' EXPOSURE IN GWD/MT

'TAB.TFU' 1, 0, 'EXP', 10, 'POW', 5
0.0 4.0 8.0 12.0 16.0 20.0 24.0 28.0 32.0 36.0
0.50, 512.8 414.4 400.6 395.7 400.4 410.0 420.7 433.6 453.7 471.8
1.00, 508.0 420.6 427.7 437.4 448.5 461.8 476.1 492.4 515.4 535.1
1.50, 490.0 459.8 471.8 484.9 499.9 516.2 533.4 552.2 576.3 595.3
2.00, 485.4 492.3 506.4 521.1 537.8 555.0 572.8 591.4 613.3 629.3
2.50, 499.9 510.7 524.5 538.4 553.7 568.7 583.5 598.0 613.8 624.0
/

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 4
** RUN TIME: 15.11.30. ** DATE: 04/04/22 REFERENCE POWER = 30.84 KW/M
TITLE: *

AVERAGE FUEL TEMPERATURE (KELVIN) VS RELATIVE POWER

EXPOSURE GWD/MT	0.5	1.0	1.5	2.0	2.5
--------------------	-----	-----	-----	-----	-----

0.0	828.3	1092.0	1331.1	1578.9	1869.9
4.0	779.1	1004.6	1285.8	1592.8	1897.0
8.0	772.2	1011.7	1303.8	1620.9	1931.5
12.0	769.8	1021.4	1323.5	1650.4	1966.3
16.0	772.1	1032.5	1346.0	1683.7	2004.5
20.0	776.9	1045.8	1370.4	1718.2	2042.1
24.0	782.3	1060.1	1396.2	1753.8	2079.0
28.0	788.7	1076.4	1424.4	1791.0	2115.3
32.0	798.7	1099.4	1460.5	1834.9	2154.7
36.0	807.8	1119.1	1489.1	1866.8	2180.3

NOTE: RELATIVE POWER OF 1.0 = 30.84 KW/M (9.40 KW/FT)

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 5
** RUN TIME: 15.11.30. ** DATE: 04/04/22 REFERENCE POWER = 30.84 KW/M
TITLE: *

AVERAGE FUEL TEMPERATURE (FAHRENHEIT) VS RELATIVE POWER

EXPOSURE GWD/MT	0.5	1.0	1.5	2.0	2.5
--------------------	-----	-----	-----	-----	-----

0.0	1031.5	1506.2	1936.7	2382.6	2906.5
4.0	943.0	1348.9	1855.0	2407.7	2955.3

8.0	930.6	1361.7	1887.4	2458.3	3017.4
12.0	926.2	1379.2	1922.9	2511.3	3080.0
16.0	930.4	1399.1	1963.3	2571.3	3148.7
20.0	939.1	1423.0	2007.3	2633.4	3216.3
24.0	948.7	1448.7	2053.8	2697.5	3282.7
28.0	960.3	1478.2	2104.5	2764.4	3348.2
32.0	978.3	1519.6	2169.5	2843.3	3419.1
36.0	994.7	1555.0	2221.0	2900.8	3465.1

NOTE: RELATIVE POWER OF 1.0 = 30.84 KW/M (9.40 KW/FT)
 I I N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 6
 ** RUN TIME: 15.11.30.** DATE: 04/04/22 REFERENCE POWER = 30.84 KW/M
 TITLE: *

CENTRAL FUEL TEMPERATURE (KELVIN) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	984.0	1484.5	2003.6	2523.2	2989.2
4.0	930.5	1383.8	1964.5	2562.8	3028.7
8.0	925.6	1401.1	2001.8	2612.0	3064.5
12.0	926.1	1422.6	2042.6	2663.2	3096.7
16.0	933.5	1449.1	2092.2	2723.3	3127.3
20.0	943.5	1477.8	2142.4	2780.5	3147.5
24.0	954.4	1508.6	2195.1	2837.2	3157.3
28.0	966.3	1541.3	2248.8	2890.7	3154.6
32.0	982.5	1582.5	2310.9	2945.6	3137.4
36.0	997.5	1619.2	2362.8	2986.6	3110.4

NOTE: RELATIVE POWER OF 1.0 = 30.84 KW/M (9.40 KW/FT)
 I I N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7
 ** RUN TIME: 15.11.30.** DATE: 04/04/22 REFERENCE POWER = 30.84 KW/M
 TITLE: *

CENTRAL FUEL TEMPERATURE (FAHRENHEIT) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	1311.9	2212.6	3147.1	4082.4	4921.2
4.0	1215.6	2031.5	3076.8	4153.6	4992.2
8.0	1206.7	2062.6	3143.9	4242.3	5056.7
12.0	1207.6	2101.2	3217.3	4334.4	5114.7
16.0	1220.9	2149.1	3306.5	4442.6	5169.8
20.0	1238.9	2200.6	3396.9	4545.4	5206.1
24.0	1258.5	2256.1	3491.8	4647.6	5223.7
28.0	1280.0	2315.0	3588.4	4743.8	5219.0
32.0	1309.1	2389.1	3700.2	4842.6	5188.0
36.0	1336.1	2455.2	3793.6	4916.4	5139.4

NOTE: RELATIVE POWER OF 1.0 = 30.84 KW/M (9.40 KW/FT)
 I I N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7A
 ** RUN TIME: 15.11.30.** DATE: 04/04/22 REFERENCE POWER = 30.84 KW/M
 TITLE: *

RADIAL TEMPERATURE PROFILE (KELVIN) AT RELATIVE POWER 1.00

EXPOSURE	FRACTION OF PELLET RADIUS						CLAD RADII	POWER		
GWD/MT	0.0	0.2	0.4	0.6	0.8	1.0	INNER	OUTER	KW/M	KW/FT

0.0	1484.5	1443.1	1335.8	1174.6	974.4	757.1	647.5	610.8	30.8	9.4
4.0	1383.8	1323.0	1175.8	977.2	765.7	683.0	647.5	610.8	30.8	9.4
8.0	1401.1	1337.6	1184.4	978.0	759.1	679.5	647.5	610.8	30.8	9.4

12.0	1422.6	1356.5	1197.2	982.9	756.1	677.6	647.5	610.8	30.8	9.4
16.0	1449.1	1380.1	1213.7	990.2	754.3	675.0	647.5	610.8	30.8	9.4
20.0	1477.8	1406.0	1233.0	1000.6	755.3	674.2	647.5	610.8	30.8	9.4
24.0	1508.6	1433.8	1253.7	1011.9	757.0	674.0	647.5	610.8	30.8	9.4
28.0	1541.3	1463.7	1276.9	1025.8	761.0	675.6	647.5	610.8	30.8	9.4
32.0	1582.5	1501.9	1307.6	1046.5	770.5	681.9	647.5	610.8	30.8	9.4
36.0	1619.2	1535.8	1334.7	1064.0	777.7	686.1	647.5	610.8	30.8	9.4

11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7B
 ** RUN TIME: 15.11.30.** DATE: 04/04/22 REFERENCE POWER = 30.84 KW/M
 TITLE: *

RADIAL TEMPERATURE PROFILE (FAHRENHEIT) AT RELATIVE POWER 1.00

EXPOSURE	FRACTION OF PELLET RADIUS					CLAD RADII		POWER	
GWD/MT	0.0	0.2	0.4	0.6	0.8	1.0	INNER	OUTER	KW/M KW/FT

0.0	2212.6	2138.2	1945.0	1654.9	1294.6	903.3	706.2	640.1	30.8	9.4
4.0	2031.5	1921.9	1657.1	1299.5	918.9	770.0	706.2	640.1	30.8	9.4
8.0	2062.6	1948.3	1672.5	1300.9	907.0	763.6	706.2	640.1	30.8	9.4
12.0	2101.2	1982.3	1695.6	1309.8	901.7	760.3	706.2	640.1	30.8	9.4
16.0	2149.1	2024.8	1725.3	1323.0	898.3	755.5	706.2	640.1	30.8	9.4
20.0	2200.6	2071.4	1760.0	1341.7	900.1	754.2	706.2	640.1	30.8	9.4
24.0	2256.1	2121.5	1797.3	1362.1	903.1	753.9	706.2	640.1	30.8	9.4
28.0	2315.0	2175.3	1838.9	1387.1	910.3	756.7	706.2	640.1	30.8	9.4
32.0	2389.1	2244.0	1894.4	1424.2	927.4	768.1	706.2	640.1	30.8	9.4
36.0	2455.2	2305.1	1943.0	1455.8	940.4	775.6	706.2	640.1	30.8	9.4

11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 8
 ** RUN TIME: 15.11.30.** DATE: 04/04/22 REFERENCE POWER = 30.84 KW/M
 TITLE: *

GAP CONDUCTANCE (KW/M**2/K) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	6.2	9.3	18.1	40.4	57.4
4.0	14.0	28.6	39.6	53.6	72.6
8.0	19.2	31.8	42.6	57.7	78.2
12.0	25.0	33.7	45.0	61.3	83.6
16.0	28.9	37.0	49.3	68.0	94.0
20.0	29.8	38.0	51.1	71.7	99.8
24.0	30.0	38.3	52.0	73.9	103.2
28.0	28.3	36.1	49.4	70.6	97.9
32.0	23.1	29.5	40.4	57.6	78.6
36.0	20.0	26.3	37.7	57.4	82.3

NOTE: RELATIVE POWER OF 1.0 = 30.84 KW/M (9.40 KW/FT)

11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 9
 ** RUN TIME: 15.11.30.** DATE: 04/04/22 REFERENCE POWER = 30.84 KW/M
 TITLE: *

GAP CONDUCTANCE (BTU/HR/FT**2/F) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	1083.5	1631.1	3196.2	7112.9	10100.3
4.0	2465.3	5036.4	6976.7	9447.4	12777.0
8.0	3387.7	5594.8	7500.1	10154.0	13774.1
12.0	4404.0	5934.6	7917.9	10788.4	14715.2
16.0	5098.3	6509.6	8680.3	11982.8	16553.2
20.0	5239.4	6688.6	9006.9	12619.6	17573.4

24.0 5275.1 6739.3 9162.3 13008.1 18173.6
28.0 4981.3 6364.2 8699.4 12427.0 17239.7
32.0 4062.4 5194.2 7113.5 10146.3 13838.9
36.0 3524.3 4628.8 6639.1 10107.6 14491.4

NOTE: RELATIVE POWER OF 1.0 = 30.84 KW/M (9.40 KW/FT)
INTERPIN-3 ** STUDDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 10
** RUN TIME: 15.11.30.** DATE: 04/04/22 REFERENCE POWER = 30.84 KW/M
TITLE: *

THERMAL GAP (CM RADIAL) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	0.00667	0.00485	0.00289	0.00075	0.00000
4.0	0.00311	0.00157	0.00000	0.00000	0.00000
8.0	0.00237	0.00073	0.00000	0.00000	0.00000
12.0	0.00184	0.00012	0.00000	0.00000	0.00000
16.0	0.00090	0.00000	0.00000	0.00000	0.00000
20.0	0.00053	0.00000	0.00000	0.00000	0.00000
24.0	0.00016	0.00000	0.00000	0.00000	0.00000
28.0	0.00000	0.00000	0.00000	0.00000	0.00000
32.0	0.00000	0.00000	0.00000	0.00000	0.00000
36.0	0.00000	0.00000	0.00000	0.00000	0.00000

NOTE: RELATIVE POWER OF 1.0 = 30.84 KW/M (9.40 KW/FT)

FISSION GAS RELEASE

EXPOSURE	0.0	4.0	8.0	12.0	16.0	20.0	24.0	28.0	32.0	36.0
PERCENT	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.8	1.5	2.6

***** END OF OUTPUT *****
TOTAL CPU TIME 0 SECONDS

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 1
** RUN TIME: 15.13.12.** DATE: 04/04/22 REFERENCE POWER = 0.00 KW/M
TITLE:

LISTING OF INPUT

ECHO OF INPUT CARDS FOR CASE 1

'TIT' * CALVERT - FUEL TEMP CALCULATION CASE 01M /
'COR' 559.82 2250 /
'ROD' 0.49276 0.5588 347.218 380 13.5 /
'PEL' 10.3572 0.48387 /
'POW' 34.2668 /
'PRO' 1 /
'WAT' 2 'SQR' 0.40546 1.4732 /
'TAB' 00 04 08 12 16 20 24 28 32 36 /
'DEP' 00 04 08 12 16 20 24 28 32 36 /
'AVE' 16 /
'END' /

END OF INPUT CARD ECHO

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 2
** RUN TIME: 15.13.12.** DATE: 04/04/22 REFERENCE POWER = 34.27 KW/M
TITLE: *

INPUT SUMMARY FOR CASE 1

SYSTEM DESCRIPTORS

COOLANT INLET TEMPERATURE 559.8 K (548.0 DEGREES FAHRENHEIT)
AVERAGE CORE PRESSURE 2250.0 PSI
NOMINAL LINEAR POWER RATE 34.3 KW/M (10.4 KW/FT)
NOMINAL POWER DENSITY 51.0 W/GU

FUEL PELLET DESCRIPTORS

PELLET INNER RADIUS 0.0000 CM
PELLET OUTER RADIUS 0.4839 CM THEORETICAL DENSITY 94.50 PERCENT
DISH RADIUS 0.0000 CM DISH RELATIVE VOLUME 0.0000 PERCENT
CHAMFER RADIUS 0.4839 CM CHAMFER RELATIVE VOLUME 0.0000 PERCENT
GRAIN SIZE 10.00 MICRONS GRAIN STANDARD DEVIATION 20.0000 PERCENT
OPEN POROSITY 5.00 PERCENT RESINTERING POROSITY 0.2000 PERCENT

FUEL ROD DESCRIPTORS

NO. OF NODES: 1 (ALL NODES ARE IDENTICAL)

FUEL LENGTH 347.218 CM
CLAD INNER RADIUS 0.4928 CM CLAD OUTER RADIUS 0.5588 CM
PLENUM LENGTH 52.083 CM PLENUM VOLUME 13.50 CM**3
FILL GAS HELIUM FILL GAS PRESSURE 367.43 PSI

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 3
** RUN TIME: 15.13.12.** DATE: 04/04/22 REFERENCE POWER = 34.27 KW/M
TITLE: *

FUEL TEMPERATURE DATA FOR CASMO

AVERAGE EXPOSURE REQUESTED AVE = 16.0 GWD/MT

FUEL TEMPERATURE FOR CASMO TFU =1111.2 K

TABLE FIT OF TFU VERSUS POWER FOR SIMULATE 'SEG.TFU' CARD

SEGTUFU(1,N) = 0.0
SEGTUFU(2,N) = 0.0
SEGTUFU(3,N) = 0.0
SEGTUFU(4,N) = 34.27

FUEL TEMPERATURE VERSUS EXPOSURE FOR SIMULATE 'TAB.TFU' CARD

EXPOSURE (GWD/MT)	0.0	4.0	8.0	12.0	16.0	20.0	24.0	28.0	32.0	36.0
DELTA TFU (K)										
POW 0.50	569.7	436.6	431.0	437.8	448.4	463.3	488.3	507.5	527.9	553.1
POW 1.00	561.9	473.6	484.3	495.8	511.0	529.9	558.1	578.8	599.4	624.7
POW 1.50	535.2	521.4	536.0	550.5	568.9	590.0	618.3	637.9	655.7	677.4
POW 2.00	548.2	556.7	572.8	588.2	606.8	626.9	651.3	667.1	680.1	695.7
POW 2.50	556.9	567.4	581.3	594.0	608.2	622.4	637.8	646.5	653.6	663.4

SIMULATE-3 INPUT CARDS

'COM' *

'SEG.TFU', 0, 0.0, 0.0, 0.0, 34.27/

'COM' EXPOSURE IN GWD/MT

'TAB.TFU' 1, 0, 'EXP', 10, 'POW', 5
0.0 4.0 8.0 12.0 16.0 20.0 24.0 28.0 32.0 36.0
0.50, 569.7 436.6 431.0 437.8 448.4 463.3 488.3 507.5 527.9 553.1
1.00, 561.9 473.6 484.3 495.8 511.0 529.9 558.1 578.8 599.4 624.7
1.50, 535.2 521.4 536.0 550.5 568.9 590.0 618.3 637.9 655.7 677.4
2.00, 548.2 556.7 572.8 588.2 606.8 626.9 651.3 667.1 680.1 695.7
2.50, 556.9 567.4 581.3 594.0 608.2 622.4 637.8 646.5 653.6 663.4

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 4
** RUN TIME: 15.13.12. ** DATE: 04/04/22 REFERENCE POWER = 34.27 KW/M
TITLE: *

AVERAGE FUEL TEMPERATURE (KELVIN) VS RELATIVE POWER

EXPOSURE GWD/MT	0.5	1.0	1.5	2.0	2.5
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0.0	858.1	1148.6	1403.0	1710.0	2019.2
4.0	791.6	1060.3	1382.2	1727.1	2045.4
8.0	788.8	1071.0	1404.1	1759.2	2080.3
12.0	792.1	1082.5	1425.9	1789.9	2111.9
16.0	797.5	1097.7	1453.5	1827.2	2147.5
20.0	804.9	1116.6	1485.1	1867.4	2183.0
24.0	817.4	1144.8	1527.5	1916.1	2221.5
28.0	827.0	1165.5	1556.9	1947.8	2243.3
32.0	837.2	1186.1	1583.7	1973.8	2261.0
36.0	849.8	1211.4	1616.2	2005.0	2285.4

NOTE: RELATIVE POWER OF 1.0 = 34.27 KW/M (10.44 KW/FT)
INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 5
** RUN TIME: 15.13.12. ** DATE: 04/04/22 REFERENCE POWER = 34.27 KW/M
TITLE: *

AVERAGE FUEL TEMPERATURE (FAHRENHEIT) VS RELATIVE POWER

EXPOSURE GWD/MT	0.5	1.0	1.5	2.0	2.5
--------------------	-----	-----	-----	-----	-----

0.0	1085.2	1608.1	2065.9	2618.7	3175.2
4.0	965.4	1449.1	2028.5	2649.3	3222.3

8.0	960.4	1468.3	2068.0	2707.1	3285.1
12.0	966.4	1489.1	2107.2	2762.4	3342.0
16.0	976.0	1516.5	2156.8	2829.6	3406.2
20.0	989.4	1550.5	2213.9	2902.0	3470.0
24.0	1012.0	1601.3	2290.1	2989.6	3539.3
28.0	1029.2	1638.5	2343.1	3046.6	3578.6
32.0	1047.5	1675.6	2391.3	3093.5	3610.3
36.0	1070.3	1721.1	2449.8	3149.6	3654.4

NOTE: RELATIVE POWER OF 1.0 = 34.27 KW/M (10.44 KW/FT)
 11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 6
 ** RUN TIME: 15.13.12.** DATE: 04/04/22 REFERENCE POWER = 34.27 KW/M
 TITLE: *

CENTRAL FUEL TEMPERATURE (KELVIN) VS RELATIVE POWER

EXPOSURE GWD/MT	RELATIVE POWER				
	0.5	1.0	1.5	2.0	2.5

0.0	1036.1	1603.2	2167.8	2755.0	3134.6
4.0	961.3	1500.9	2160.0	2793.1	3149.8
8.0	961.4	1524.2	2203.4	2841.8	3158.8
12.0	969.0	1548.9	2246.6	2887.4	3158.5
16.0	980.2	1582.0	2302.2	2941.4	3144.3
20.0	993.5	1618.8	2360.2	2991.9	3113.5
24.0	1013.2	1667.9	2430.2	3043.2	3058.7
28.0	1029.0	1706.4	2482.4	3076.5	2999.2
32.0	1045.9	1745.3	2531.5	3103.0	2923.9
36.0	1065.7	1789.8	2585.2	3127.0	2812.5

NOTE: RELATIVE POWER OF 1.0 = 34.27 KW/M (10.44 KW/FT)
 11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7
 ** RUN TIME: 15.13.12.** DATE: 04/04/22 REFERENCE POWER = 34.27 KW/M
 TITLE: *

CENTRAL FUEL TEMPERATURE (FAHRENHEIT) VS RELATIVE POWER

EXPOSURE GWD/MT	RELATIVE POWER				
	0.5	1.0	1.5	2.0	2.5

0.0	1405.6	2426.4	3442.7	4499.7	5182.8
4.0	1271.0	2242.2	3428.6	4568.3	5210.2
8.0	1271.2	2284.2	3506.6	4655.9	5226.5
12.0	1284.7	2328.6	3584.5	4737.8	5225.9
16.0	1304.9	2388.1	3684.5	4835.2	5200.4
20.0	1329.0	2454.4	3789.0	4925.9	5144.9
24.0	1364.3	2542.8	3915.0	5018.3	5046.3
28.0	1392.8	2612.1	4008.9	5078.3	4939.1
32.0	1423.2	2682.2	4097.3	5125.9	4803.7
36.0	1458.8	2762.3	4194.0	5169.3	4603.1

NOTE: RELATIVE POWER OF 1.0 = 34.27 KW/M (10.44 KW/FT)
 11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7A
 ** RUN TIME: 15.13.12.** DATE: 04/04/22 REFERENCE POWER = 34.27 KW/M
 TITLE: *

RADIAL TEMPERATURE PROFILE (KELVIN) AT RELATIVE POWER 1.00

EXPOSURE GWD/MT	FRACTION OF PELLET RADIUS						CLAD RADII		POWER	
	0.0	0.2	0.4	0.6	0.8	1.0	INNER	OUTER	KW/M	KW/FT

0.0	1603.2	1554.6	1429.1	1241.8	1011.2	764.8	657.1	616.5	34.3	10.4
4.0	1500.9	1426.0	1247.2	1011.1	768.8	691.8	657.1	616.5	34.3	10.4
8.0	1524.2	1446.3	1260.4	1015.0	763.9	689.2	657.1	616.5	34.3	10.4

12.0	1548.9	1468.2	1275.9	1022.0	762.1	687.7	657.1	616.5	34.3	10.4
16.0	1582.0	1497.9	1297.4	1032.9	762.3	687.0	657.1	616.5	34.3	10.4
20.0	1618.8	1531.5	1323.2	1048.2	766.3	689.1	657.1	616.5	34.3	10.4
24.0	1667.9	1577.0	1359.9	1072.9	777.9	697.8	657.1	616.5	34.3	10.4
28.0	1706.4	1612.4	1388.0	1090.6	784.3	701.7	657.1	616.5	34.3	10.4
32.0	1745.3	1648.2	1416.0	1108.1	790.2	705.0	657.1	616.5	34.3	10.4
36.0	1789.8	1689.5	1449.5	1130.6	800.1	711.9	657.1	616.5	34.3	10.4

1 I N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7B
 ** RUN TIME: 15.13.12.** DATE: 04/04/22 REFERENCE POWER = 34.27 KW/M
 TITLE: *

RADIAL TEMPERATURE PROFILE (FAHRENHEIT) AT RELATIVE POWER 1.00

EXPOSURE	FRACTION OF PELLET RADIUS					CLAD RADII		POWER	
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GWD/MT	0.0	0.2	0.4	0.6	0.8	1.0	INNER	OUTER	KW/M	KW/FT
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0.0	2426.4	2338.9	2112.9	1775.9	1360.7	917.2	723.3	650.3	34.3	10.4
4.0	2242.2	2107.3	1785.6	1360.5	924.5	785.8	723.3	650.3	34.3	10.4
8.0	2284.2	2143.9	1809.3	1367.7	915.5	781.2	723.3	650.3	34.3	10.4
12.0	2328.6	2183.4	1837.2	1380.3	912.3	778.5	723.3	650.3	34.3	10.4
16.0	2388.1	2236.8	1876.0	1399.9	912.8	777.1	723.3	650.3	34.3	10.4
20.0	2454.4	2297.2	1922.4	1427.3	920.0	781.1	723.3	650.3	34.3	10.4
24.0	2542.8	2379.1	1988.5	1471.8	940.9	796.7	723.3	650.3	34.3	10.4
28.0	2612.1	2443.0	2039.0	1503.7	952.4	803.6	723.3	650.3	34.3	10.4
32.0	2682.2	2507.4	2089.5	1535.2	962.9	809.6	723.3	650.3	34.3	10.4
36.0	2762.3	2581.8	2149.7	1575.6	980.9	822.0	723.3	650.3	34.3	10.4

1 I N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 8
 ** RUN TIME: 15.13.12.** DATE: 04/04/22 REFERENCE POWER = 34.27 KW/M
 TITLE: *

GAP CONDUCTANCE (KW/M**2/K) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
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GWD/MT

0.5	1.0	1.5	2.0	2.5
-----	-----	-----	-----	-----

0.0	6.4	10.5	25.4	47.7	67.7
4.0	19.9	32.5	44.2	61.0	82.5
8.0	26.2	35.1	47.4	65.8	89.2
12.0	28.0	36.7	50.1	70.4	95.7
16.0	28.8	37.7	51.9	74.1	100.6
20.0	26.9	35.1	48.7	70.0	94.0
24.0	21.1	27.7	38.5	55.4	73.1
28.0	18.7	25.3	36.9	56.8	77.0
32.0	16.7	23.5	37.1	64.4	84.8
36.0	14.2	20.6	34.0	63.7	67.7

NOTE: RELATIVE POWER OF 1.0 = 34.27 KW/M (10.44 KW/FT)

1 I N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 9
 ** RUN TIME: 15.13.12.** DATE: 04/04/22 REFERENCE POWER = 34.27 KW/M
 TITLE: *

GAP CONDUCTANCE (BTU/HR/FT**2/F) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
----------	----------------	--	--	--	--

GWD/MT

0.5	1.0	1.5	2.0	2.5
-----	-----	-----	-----	-----

0.0	1123.3	1843.4	4465.2	8394.5	11917.1
4.0	3505.4	5722.6	7786.5	10736.8	14534.0
8.0	4620.9	6172.8	8354.4	11595.0	15713.5
12.0	4929.2	6470.9	8815.7	12394.7	16857.7
16.0	5072.6	6638.5	9139.9	13043.3	17720.3
20.0	4732.8	6188.6	8575.9	12323.5	16557.1

24.0 3720.7 4869.9 6779.1 9754.6 12871.0
28.0 3299.8 4448.6 6504.9 10000.7 13553.3
32.0 2941.3 4140.7 6539.7 11339.9 14938.6
36.0 2507.0 3622.1 5996.1 11210.9 11915.0

NOTE: RELATIVE POWER OF 1.0 = 34.27 KW/M (10.44 KW/FT)
11 N T E R P I N - 3 ** STUDEVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 10
** RUN TIME: 15.13.12.** DATE: 04/04/22 REFERENCE POWER = 34.27 KW/M
TITLE: *

THERMAL GAP (CM RADIAL) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	0.00649	0.00441	0.00226	0.00000	0.00000
4.0	0.00229	0.00040	0.00000	0.00000	0.00000
8.0	0.00152	0.00000	0.00000	0.00000	0.00000
12.0	0.00098	0.00000	0.00000	0.00000	0.00000
16.0	0.00051	0.00000	0.00000	0.00000	0.00000
20.0	0.00008	0.00000	0.00000	0.00000	0.00000
24.0	0.00000	0.00000	0.00000	0.00000	0.00000
28.0	0.00000	0.00000	0.00000	0.00000	0.00000
32.0	0.00000	0.00000	0.00000	0.00000	0.00000
36.0	0.00000	0.00000	0.00000	0.00000	0.00000

NOTE: RELATIVE POWER OF 1.0 = 34.27 KW/M (10.44 KW/FT)

FISSION GAS RELEASE

EXPOSURE	0.0	4.0	8.0	12.0	16.0	20.0	24.0	28.0	32.0	36.0
PERCENT	0.3	0.3	0.3	0.4	0.5	0.9	2.0	3.2	4.8	6.4

***** END OF OUTPUT *****
TOTAL CPU TIME 1 SECONDS

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 1
** RUN TIME: 15.15.05.** DATE: 04/04/22 REFERENCE POWER = 0.00 KW/M
TITLE:

LISTING OF INPUT

ECHO OF INPUT CARDS FOR CASE 1

TIT* CALVERT - FUEL TEMP CALCULATION CASE 02H /
'COR' 559.82 2250 /
'ROD' 0.49276 0.5588 347.218 380 13.5 /
'PEL' 10.3572 0.48387 /
'POW' 24.8777 /
'PRO' 1 /
'WAT' 2 'SQR' 0.40546 1.4732 /
'TAB' 00 36 40 44 48 52 56 58 60 62 /
'DEP' 00 36 40 44 48 52 56 58 60 62 /
'AVE' 48 /
'END' /

END OF INPUT CARD ECHO

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 2
** RUN TIME: 15.15.05.** DATE: 04/04/22 REFERENCE POWER = 24.88 KW/M
TITLE: *

INPUT SUMMARY FOR CASE 1

SYSTEM DESCRIPTORS

COOLANT INLET TEMPERATURE 559.8 K (548.0 DEGREES FAHRENHEIT)
AVERAGE CORE PRESSURE 2250.0 PSI
NOMINAL LINEAR POWER RATE 24.9 KW/M (7.6 KW/FT)
NOMINAL POWER DENSITY 37.0 W/GU

FUEL PELLET DESCRIPTORS

PELLET INNER RADIUS 0.0000 CM
PELLET OUTER RADIUS 0.4839 CM THEORETICAL DENSITY 94.50 PERCENT
DISH RADIUS 0.0000 CM DISH RELATIVE VOLUME 0.0000 PERCENT
CHAMFER RADIUS 0.4839 CM CHAMFER RELATIVE VOLUME 0.0000 PERCENT
GRAIN SIZE 10.00 MICRONS GRAIN STANDARD DEVIATION 20.0000 PERCENT
OPEN POROSITY 5.00 PERCENT RESINTERING POROSITY 0.2000 PERCENT

FUEL ROD DESCRIPTORS

NO. OF NODES: 1 (ALL NODES ARE IDENTICAL)

FUEL LENGTH 347.218 CM
CLAD INNER RADIUS 0.4928 CM CLAD OUTER RADIUS 0.5588 CM
PLENUM LENGTH 52.083 CM PLENUM VOLUME 13.50 CM**3
FILL GAS HELIUM FILL GAS PRESSURE 367.43 PSI

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 3
** RUN TIME: 15.15.05.** DATE: 04/04/22 REFERENCE POWER = 24.88 KW/M
TITLE: *

FUEL TEMPERATURE DATA FOR CASMO

AVERAGE EXPOSURE REQUESTED AVE = 48.0 GWD/MT

FUEL TEMPERATURE FOR CASMO TFU =2590.3 K

TABLE FIT OF TFU VERSUS POWER FOR SIMULATE 'SEG.TFU' CARD

SEGT FU(1,N) = 0.0
SEGT FU(2,N) = 0.0
SEGT FU(3,N) = 0.0
SEGT FU(4,N) = 24.88

FUEL TEMPERATURE VERSUS EXPOSURE FOR SIMULATE 'TAB.TFU' CARD

EXPOSURE (GWD/MT)	0.0	36.0	40.0	44.0	48.0	52.0	56.0	58.0	60.0	62.0
DELTA TFU (K)										
POW 0.50	412.3	364.3	369.8	380.8	401.6	415.7	434.9	452.5	460.8	475.6
POW 1.00	413.0	409.1	417.0	430.7	453.2	467.5	486.1	502.9	510.6	524.2
POW 1.50	405.0	455.0	465.0	480.7	502.9	515.9	531.6	545.8	551.4	562.4
POW 2.00	390.4	493.2	504.5	520.6	540.6	550.8	562.3	572.7	575.8	583.6
POW 2.50	392.0	515.1	525.8	540.0	555.4	561.9	569.0	576.2	579.9	584.9

SIMULATE-3 INPUT CARDS

'COM' *

'SEG.TFU', 0, 0.0, 0.0, 0.0, 24.88/

'COM' EXPOSURE IN GWD/MT

'TAB.TFU' 1, 0, 'EXP', 10, 'POW', 5
0.0 36.0 40.0 44.0 48.0 52.0 56.0 58.0 60.0 62.0
0.50, 412.3 364.3 369.8 380.8 401.6 415.7 434.9 452.5 460.8 475.6
1.00, 413.0 409.1 417.0 430.7 453.2 467.5 486.1 502.9 510.6 524.2
1.50, 405.0 455.0 465.0 480.7 502.9 515.9 531.6 545.8 551.4 562.4
2.00, 390.4 493.2 504.5 520.6 540.6 550.8 562.3 572.7 575.8 583.6
2.50, 392.0 515.1 525.8 540.0 555.4 561.9 569.0 576.2 579.9 584.9
/

1 I N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 4
** RUN TIME: 15.15.05 ** DATE: 04/04/22 REFERENCE POWER = 24.88 KW/M
TITLE: *

AVERAGE FUEL TEMPERATURE (KELVIN) VS RELATIVE POWER

EXPOSURE GWD/MT	0.5	1.0	1.5	2.0	2.5
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0.0	775.7	992.3	1196.5	1379.7	1588.7
36.0	751.7	988.5	1271.6	1585.2	1896.2
40.0	754.5	996.4	1286.6	1607.8	1923.0
44.0	760.0	1010.0	1310.1	1640.1	1958.6
48.0	770.4	1032.5	1343.5	1680.1	1997.2
52.0	777.4	1046.8	1362.9	1700.4	2013.4
56.0	787.0	1065.5	1386.5	1723.4	2031.1
58.0	795.8	1082.3	1407.8	1744.3	2049.0
60.0	800.0	1089.9	1416.2	1750.4	2058.4
62.0	807.4	1103.5	1432.7	1766.0	2070.9

NOTE: RELATIVE POWER OF 1.0 = 24.88 KW/M (7.58 KW/FT)
1 I N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 5
** RUN TIME: 15.15.05 ** DATE: 04/04/22 REFERENCE POWER = 24.88 KW/M
TITLE: *

AVERAGE FUEL TEMPERATURE (FAHRENHEIT) VS RELATIVE POWER

EXPOSURE GWD/MT	0.5	1.0	1.5	2.0	2.5
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0.0	936.9	1326.8	1694.4	2024.1	2400.3
36.0	893.7	1319.8	1829.4	2394.0	2953.8

40.0	898.6	1334.1	1856.6	2434.7	3002.0
44.0	908.5	1358.6	1898.7	2492.8	3066.0
48.0	927.3	1399.1	1958.9	2564.8	3135.5
52.0	940.0	1424.9	1993.8	2601.3	3164.7
56.0	957.3	1458.4	2036.3	2642.8	3196.6
58.0	973.1	1488.7	2074.6	2680.4	3228.8
60.0	980.6	1502.5	2089.8	2691.4	3245.8
62.0	993.9	1527.0	2119.5	2719.5	3268.3

NOTE: RELATIVE POWER OF 1.0 = 24.88 KW/M (7.58 KW/FT)
 11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 6
 ** RUN TIME: 15.15.05.** DATE: 04/04/22 REFERENCE POWER = 24.88 KW/M
 TITLE: *

CENTRAL FUEL TEMPERATURE (KELVIN) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	893.7	1286.5	1705.8	2115.8	2540.9
36.0	898.8	1368.3	1953.2	2568.3	3031.5
40.0	904.8	1385.9	1985.4	2609.9	3059.3
44.0	914.7	1412.9	2031.5	2665.2	3090.4
48.0	931.0	1452.7	2091.9	2729.3	3117.2
52.0	943.1	1481.3	2133.1	2769.7	3128.7
56.0	956.6	1511.0	2171.8	2803.1	3135.1
58.0	968.6	1537.1	2205.3	2831.3	3139.3
60.0	974.1	1548.5	2218.3	2840.0	3140.5
62.0	984.7	1570.8	2246.1	2862.8	3141.1

NOTE: RELATIVE POWER OF 1.0 = 24.88 KW/M (7.58 KW/FT)
 11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7
 ** RUN TIME: 15.15.05.** DATE: 04/04/22 REFERENCE POWER = 24.88 KW/M
 TITLE: *

CENTRAL FUEL TEMPERATURE (FAHRENHEIT) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	1149.3	1856.3	2611.1	3349.0	4114.1
36.0	1158.4	2003.5	3056.4	4163.5	4997.4
40.0	1169.2	2035.1	3114.3	4238.3	5047.3
44.0	1187.1	2083.8	3197.2	4338.0	5103.3
48.0	1216.5	2155.4	3306.1	4453.3	5151.5
52.0	1238.2	2206.9	3380.2	4526.0	5172.2
56.0	1262.4	2260.3	3449.9	4586.2	5183.9
58.0	1284.1	2307.3	3510.2	4637.0	5191.3
60.0	1294.0	2328.0	3533.5	4652.5	5193.5
62.0	1313.0	2368.0	3583.6	4693.7	5194.5

NOTE: RELATIVE POWER OF 1.0 = 24.88 KW/M (7.58 KW/FT)
 11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7A
 ** RUN TIME: 15.15.05.** DATE: 04/04/22 REFERENCE POWER = 24.88 KW/M
 TITLE: *

RADIAL TEMPERATURE PROFILE (KELVIN) AT RELATIVE POWER 1.00

EXPOSURE	FRACTION OF PELLET RADIUS						CLAD RADII		POWER	
GWD/MT	0.0	0.2	0.4	0.6	0.8	1.0	INNER	OUTER	KW/M	KW/FT

0.0	1286.5	1256.3	1177.2	1057.1	905.5	736.3	630.8	601.0	24.9	7.6
36.0	1368.3	1310.6	1168.7	971.7	752.3	654.5	630.8	601.0	24.9	7.6
40.0	1385.9	1326.8	1181.3	979.2	753.8	653.3	630.8	601.0	24.9	7.6

44.0	1412.9	1351.7	1201.2	992.0	758.8	655.2	630.8	601.0	24.9	7.6
48.0	1452.7	1388.9	1231.9	1013.6	770.1	661.9	630.8	601.0	24.9	7.6
52.0	1481.3	1415.3	1252.9	1027.2	775.6	664.1	630.8	601.0	24.9	7.6
56.0	1511.0	1443.5	1277.2	1045.7	786.7	671.5	630.8	601.0	24.9	7.6
58.0	1537.1	1468.3	1298.8	1062.3	797.4	679.2	630.8	601.0	24.9	7.6
60.0	1548.5	1479.5	1308.9	1070.7	803.0	682.7	630.8	601.0	24.9	7.6
62.0	1570.8	1501.5	1329.9	1089.1	816.6	688.0	630.8	601.0	24.9	7.6

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7B
 ** RUN TIME: 15.15.05 ** DATE: 04/04/22 REFERENCE POWER = 24.88 KW/M
 TITLE: *

RADIAL TEMPERATURE PROFILE (FAHRENHEIT) AT RELATIVE POWER 1.00

EXPOSURE	FRACTION OF PELLETT RADIUS						CLAD RADII		POWER	
----------	----------------------------	--	--	--	--	--	------------	--	-------	--

GWD/MT	0.0	0.2	0.4	0.6	0.8	1.0	INNER	OUTER	KW/M	KW/FT
--------	-----	-----	-----	-----	-----	-----	-------	-------	------	-------

0.0	1856.3	1802.0	1659.6	1443.4	1170.5	866.0	676.1	622.4	24.9	7.6
36.0	2003.5	1899.7	1644.3	1289.6	894.7	718.7	676.1	622.4	24.9	7.6
40.0	2035.1	1928.8	1667.0	1303.1	897.4	716.6	676.1	622.4	24.9	7.6
44.0	2083.8	1973.7	1702.7	1326.2	906.5	719.9	676.1	622.4	24.9	7.6
48.0	2155.4	2040.6	1758.1	1365.2	926.8	732.1	676.1	622.4	24.9	7.6
52.0	2206.9	2088.1	1795.8	1389.6	936.8	735.9	676.1	622.4	24.9	7.6
56.0	2260.3	2138.9	1839.6	1422.8	956.7	749.2	676.1	622.4	24.9	7.6
58.0	2307.3	2183.6	1878.4	1452.7	975.9	763.2	676.1	622.4	24.9	7.6
60.0	2328.0	2203.6	1896.6	1467.8	986.1	769.5	676.1	622.4	24.9	7.6
62.0	2368.0	2243.3	1934.5	1501.0	1010.5	778.9	676.1	622.4	24.9	7.6

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 8
 ** RUN TIME: 15.15.05 ** DATE: 04/04/22 REFERENCE POWER = 24.88 KW/M
 TITLE: *

GAP CONDUCTANCE (KW/M**2/K) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
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GWD/MT	0.5	1.0	1.5	2.0	2.5
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0.0	5.8	7.8	11.8	22.6	41.0
36.0	27.8	34.6	45.2	62.1	87.5
40.0	29.2	36.4	47.8	66.4	94.4
44.0	27.1	33.7	44.3	61.7	87.2
48.0	20.6	26.3	36.1	53.5	81.7
52.0	18.4	24.6	36.8	63.7	127.9
56.0	14.7	20.1	31.4	59.5	146.8
58.0	12.3	16.9	26.6	51.4	122.7
60.0	11.4	15.8	25.4	51.8	110.3
62.0	10.2	14.3	23.6	50.5	116.9

NOTE: RELATIVE POWER OF 1.0 = 24.88 KW/M (7.58 KW/FT)

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 9
 ** RUN TIME: 15.15.05 ** DATE: 04/04/22 REFERENCE POWER = 24.88 KW/M
 TITLE: *

GAP CONDUCTANCE (BTU/HR/FT**2/F) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
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GWD/MT	0.5	1.0	1.5	2.0	2.5
--------	-----	-----	-----	-----	-----

0.0	1020.5	1366.3	2078.6	3979.7	7216.1
36.0	4898.8	6096.1	7963.2	10937.7	15401.2
40.0	5146.5	6407.1	8420.4	11691.4	16622.4
44.0	4767.0	5926.3	7801.9	10858.8	15363.4
48.0	3634.8	4636.9	6361.2	9419.9	14380.1
52.0	3248.9	4339.0	6473.9	11217.4	22519.3

56.0 2596.4 3548.2 5525.7 10476.6 25845.2
58.0 2162.0 2978.6 4691.6 9053.2 21613.1
60.0 2001.8 2778.3 4467.9 9117.2 19416.3
62.0 1788.3 2523.7 4154.8 8896.0 20591.9

NOTE: RELATIVE POWER OF 1.0 = 24.88 KW/M (7.58 KW/FT)
11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 10
** RUN TIME: 15.15.05 ** DATE: 04/04/22 REFERENCE POWER = 24.88 KW/M
TITLE: *

THERMAL GAP (CM RADIAL) VS RELATIVE POWER

EXPOSURE GWD/MT	RELATIVE POWER
0.5 1.0 1.5 2.0 2.5	

0.0	0.00698	0.00557	0.00402	0.00246	0.00066
36.0	0.00042	0.00000	0.00000	0.00000	0.00000
40.0	0.00015	0.00000	0.00000	0.00000	0.00000
44.0	0.00000	0.00000	0.00000	0.00000	0.00000
48.0	0.00000	0.00000	0.00000	0.00000	0.00000
52.0	0.00000	0.00000	0.00000	0.00000	0.00000
56.0	0.00000	0.00000	0.00000	0.00000	0.00000
58.0	0.00000	0.00000	0.00000	0.00000	0.00000
60.0	0.00000	0.00000	0.00000	0.00000	0.00000
62.0	0.00000	0.00000	0.00000	0.00000	0.00000

NOTE: RELATIVE POWER OF 1.0 = 24.88 KW/M (7.58 KW/FT)

FISSION GAS RELEASE

EXPOSURE	0.0	36.0	40.0	44.0	48.0	52.0	56.0	58.0	60.0	62.0
PERCENT	0.3	0.4	0.4	0.6	1.5	2.5	3.8	5.0	6.0	6.9

***** END OF OUTPUT *****
TOTAL CPU TIME 0 SECONDS

11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 1
** RUN TIME: 15.16.45.** DATE: 04/04/22 REFERENCE POWER = 0.00 KW/M
TITLE:

LISTING OF INPUT

ECHO OF INPUT CARDS FOR CASE 1

'TIT' * CALVERT - FUEL TEMP CALCULATION CASE 02L /
'COR' 559.82 2250 /
'ROD' 0.49276 0.5588 347.218 380 13.5 /
'PEL' 10.3572 0.48387 /
'POW' 20.3545 /
'PRO' 1 /
'WAT' 2 'SQR' 0.40546 1.4732 /
'TAB' 00 36 40 44 48 52 56 58 60 62 /
'DEP' 00 36 40 44 48 52 56 58 60 62 /
'AVE' 48 /
'END' /

END OF INPUT CARD ECHO

11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 2
** RUN TIME: 15.16.45.** DATE: 04/04/22 REFERENCE POWER = 20.35 KW/M
TITLE: *

INPUT SUMMARY FOR CASE 1

SYSTEM DESCRIPTORS

COOLANT INLET TEMPERATURE 559.8 K (548.0 DEGREES FAHRENHEIT)
AVERAGE CORE PRESSURE 2250.0 PSI
NOMINAL LINEAR POWER RATE 20.4 KW/M (6.2 KW/FT)
NOMINAL POWER DENSITY 30.3 W/GU

FUEL PELLET DESCRIPTORS

PELLET INNER RADIUS 0.0000 CM
PELLET OUTER RADIUS 0.4839 CM THEORETICAL DENSITY 94.50 PERCENT
DISH RADIUS 0.0000 CM DISH RELATIVE VOLUME 0.0000 PERCENT
CHAMFER RADIUS 0.4839 CM CHAMFER RELATIVE VOLUME 0.0000 PERCENT
GRAIN SIZE 10.00 MICRONS GRAIN STANDARD DEVIATION 20.0000 PERCENT
OPEN POROSITY 5.00 PERCENT RESINTERING POROSITY 0.2000 PERCENT

FUEL ROD DESCRIPTORS

NO. OF NODES: 1 (ALL NODES ARE IDENTICAL)

FUEL LENGTH 347.218 CM
CLAD INNER RADIUS 0.4928 CM CLAD OUTER RADIUS 0.5588 CM
PLENUM LENGTH 52.083 CM PLENUM VOLUME 13.50 CM**3
FILL GAS HELIUM FILL GAS PRESSURE 367.43 PSI

11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 3
** RUN TIME: 15.16.45.** DATE: 04/04/22 REFERENCE POWER = 20.35 KW/M
TITLE: *

FUEL TEMPERATURE DATA FOR CASMO

AVERAGE EXPOSURE REQUESTED AVE = 48.0 GWD/MT

FUEL TEMPERATURE FOR CASMO TFU =1049.8 K

TABLE FIT OF TFU VERSUS POWER FOR SIMULATE 'SEG.TFU' CARD

SEGTFU(1,N) = 0.0
SEGTFU(2,N) = 0.0
SEGTFU(3,N) = 0.0
SEGTFU(4,N) = 20.35

FUEL TEMPERATURE VERSUS EXPOSURE FOR SIMULATE 'TAB.TFU' CARD

EXPOSURE (GWD/MT)	0.0	36.0	40.0	44.0	48.0	52.0	56.0	58.0	60.0	62.0
DELTA TFU (K)										
POW 0.50	334.9	295.0	298.2	304.5	312.4	319.1	325.9	329.7	332.8	336.2
POW 1.00	337.2	323.9	329.8	339.0	348.7	357.6	366.6	371.6	375.8	380.3
POW 1.50	335.0	357.1	365.1	376.9	388.5	399.4	410.4	416.6	421.7	427.2
POW 2.00	328.1	388.4	398.1	411.8	424.6	436.9	449.1	455.9	461.6	467.6
POW 2.50	318.1	413.4	423.9	438.2	451.1	463.5	475.6	482.3	487.8	493.6

SIMULATE-3 INPUT CARDS

'COM' *

'SEG.TFU', 0, 0.0, 0.0, 0.0, 20.35/

'COM' EXPOSURE IN GWD/MT

TAB.TFU' 1, 0, 'EXP', 10, 'POW', 5
0.0 36.0 40.0 44.0 48.0 52.0 56.0 58.0 60.0 62.0
0.50, 334.9 295.0 298.2 304.5 312.4 319.1 325.9 329.7 332.8 336.2
1.00, 337.2 323.9 329.8 339.0 348.7 357.6 366.6 371.6 375.8 380.3
1.50, 335.0 357.1 365.1 376.9 388.5 399.4 410.4 416.6 421.7 427.2
2.00, 328.1 388.4 398.1 411.8 424.6 436.9 449.1 455.9 461.6 467.6
2.50, 318.1 413.4 423.9 438.2 451.1 463.5 475.6 482.3 487.8 493.6
/

INTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 4
** RUN TIME: 15.16.45 ** DATE: 04/04/22 REFERENCE POWER = 20.35 KW/M
TITLE: *

AVERAGE FUEL TEMPERATURE (KELVIN) VS RELATIVE POWER

EXPOSURE GWD/MT	0.5	1.0	1.5	2.0	2.5
--------------------	-----	-----	-----	-----	-----

0.0	735.3	913.0	1086.3	1248.0	1394.9
36.0	715.3	899.7	1119.3	1368.5	1633.2
40.0	716.9	905.6	1131.5	1388.0	1659.5
44.0	720.1	914.8	1149.1	1415.3	1695.1
48.0	724.0	924.5	1166.5	1440.9	1727.5
52.0	727.3	933.4	1182.9	1465.5	1758.4
56.0	730.7	942.4	1199.4	1490.0	1788.8
58.0	732.6	947.4	1208.7	1503.6	1805.4
60.0	734.2	951.6	1216.4	1514.9	1819.2
62.0	735.9	956.1	1224.6	1526.9	1833.6

NOTE: RELATIVE POWER OF 1.0 = 20.35 KW/M (6.20 KW/FT)
INTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 5
** RUN TIME: 15.16.45 ** DATE: 04/04/22 REFERENCE POWER = 20.35 KW/M
TITLE: *

AVERAGE FUEL TEMPERATURE (FAHRENHEIT) VS RELATIVE POWER

EXPOSURE GWD/MT	0.5	1.0	1.5	2.0	2.5
--------------------	-----	-----	-----	-----	-----

0.0	864.1	1183.9	1495.9	1787.0	2051.4
36.0	828.2	1160.0	1555.4	2004.0	2480.4

40.0	831.0	1170.7	1577.2	2039.0	2527.7
44.0	836.7	1187.2	1609.0	2088.1	2591.8
48.0	843.8	1204.7	1640.3	2134.3	2650.0
52.0	849.8	1220.7	1669.9	2178.5	2705.7
56.0	855.9	1236.8	1699.6	2222.6	2760.4
58.0	859.3	1245.9	1716.2	2247.1	2790.3
60.0	862.2	1253.5	1730.1	2267.5	2815.1
62.0	865.3	1261.6	1744.9	2289.1	2841.1

NOTE: RELATIVE POWER OF 1.0 = 20.35 KW/M (6.20 KW/FT)
 11NTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 6
 ** RUN TIME: 15.16.45.** DATE: 04/04/22 REFERENCE POWER = 20.35 KW/M
 TITLE: *

CENTRAL FUEL TEMPERATURE (KELVIN) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	825.4	1134.3	1472.9	1818.0	2150.4
36.0	829.4	1187.9	1642.5	2156.4	2657.0
40.0	833.6	1201.7	1670.0	2197.4	2703.3
44.0	840.7	1222.7	1710.2	2255.2	2765.5
48.0	848.0	1242.9	1746.9	2306.0	2817.4
52.0	854.7	1262.0	1782.4	2355.0	2865.4
56.0	861.4	1281.0	1817.5	2402.5	2909.6
58.0	865.4	1292.5	1838.5	2430.5	2934.6
60.0	868.4	1301.0	1854.1	2451.2	2952.4
62.0	871.7	1310.3	1871.1	2473.4	2970.9

NOTE: RELATIVE POWER OF 1.0 = 20.35 KW/M (6.20 KW/FT)
 11NTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7
 ** RUN TIME: 15.16.45.** DATE: 04/04/22 REFERENCE POWER = 20.35 KW/M
 TITLE: *

CENTRAL FUEL TEMPERATURE (FAHRENHEIT) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	1026.4	1582.3	2191.8	2813.1	3411.3
36.0	1033.5	1678.7	2497.1	3422.2	4323.1
40.0	1041.1	1703.7	2546.6	3495.9	4406.5
44.0	1053.8	1741.5	2618.9	3599.9	4518.6
48.0	1067.1	1777.8	2685.1	3691.5	4611.9
52.0	1079.1	1812.2	2748.9	3779.6	4698.3
56.0	1091.2	1846.4	2812.0	3865.0	4777.9
58.0	1098.4	1867.0	2849.9	3915.6	4822.9
60.0	1103.7	1882.4	2878.0	3952.7	4854.9
62.0	1109.6	1899.2	2908.6	3992.7	4888.3

NOTE: RELATIVE POWER OF 1.0 = 20.35 KW/M (6.20 KW/FT)
 11NTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7A
 ** RUN TIME: 15.16.45.** DATE: 04/04/22 REFERENCE POWER = 20.35 KW/M
 TITLE: *

RADIAL TEMPERATURE PROFILE (KELVIN) AT RELATIVE POWER 1.00

EXPOSURE	FRACTION OF PELLET RADIUS						CLAD RADII	POWER		
GWD/MT	0.0	0.2	0.4	0.6	0.8	1.0	INNER	OUTER	KW/M	KW/FT

0.0	1134.3	1112.3	1054.0	964.0	848.3	715.4	618.1	593.5	20.4	6.2
36.0	1187.9	1148.1	1047.8	903.5	734.0	638.3	618.1	593.5	20.4	6.2
40.0	1201.7	1160.8	1057.8	909.4	735.0	636.8	618.1	593.5	20.4	6.2

44.0	1222.7	1180.1	1072.8	918.3	737.2	635.5	618.1	593.5	20.4	6.2
48.0	1242.9	1198.8	1087.9	928.3	741.2	636.0	618.1	593.5	20.4	6.2
52.0	1262.0	1216.5	1101.9	937.2	744.2	635.7	618.1	593.5	20.4	6.2
56.0	1281.0	1234.1	1116.0	946.3	747.4	635.6	618.1	593.5	20.4	6.2
58.0	1292.5	1244.6	1124.1	951.2	748.9	635.6	618.1	593.5	20.4	6.2
60.0	1301.0	1252.5	1130.6	955.5	750.6	635.6	618.1	593.5	20.4	6.2
62.0	1310.3	1261.2	1137.6	960.1	752.3	635.7	618.1	593.5	20.4	6.2

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7B
 ** RUN TIME: 15.16.45.** DATE: 04/04/22 REFERENCE POWER = 20.35 KW/M
 TITLE: *

RADIAL TEMPERATURE PROFILE (FAHRENHEIT) AT RELATIVE POWER 1.00

EXPOSURE	FRACTION OF PELLET RADIUS						CLAD RADII		POWER	
GWD/MT	0.0	0.2	0.4	0.6	0.8	1.0	INNER	OUTER	KW/M	KW/FT

0.0	1582.3	1542.7	1437.8	1275.8	1067.5	828.3	653.2	608.9	20.4	6.2
36.0	1678.7	1607.1	1426.6	1166.8	861.9	689.6	653.2	608.9	20.4	6.2
40.0	1703.7	1630.1	1444.6	1177.5	863.7	686.8	653.2	608.9	20.4	6.2
44.0	1741.5	1664.8	1471.6	1193.6	867.5	684.5	653.2	608.9	20.4	6.2
48.0	1777.8	1698.4	1498.7	1211.5	874.7	685.3	653.2	608.9	20.4	6.2
52.0	1812.2	1730.2	1524.1	1227.6	880.1	684.9	653.2	608.9	20.4	6.2
56.0	1846.4	1762.0	1549.4	1243.9	885.9	684.7	653.2	608.9	20.4	6.2
58.0	1867.0	1780.8	1564.0	1252.7	888.7	684.6	653.2	608.9	20.4	6.2
60.0	1882.4	1795.2	1575.7	1260.5	891.6	684.7	653.2	608.9	20.4	6.2
62.0	1899.2	1810.7	1588.3	1268.8	894.7	684.8	653.2	608.9	20.4	6.2

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 8
 ** RUN TIME: 15.16.45.** DATE: 04/04/22 REFERENCE POWER = 20.35 KW/M
 TITLE: *

GAP CONDUCTANCE (KW/M**2/K) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	5.5	6.9	9.2	13.7	24.6
36.0	26.2	33.1	41.8	54.4	72.9
40.0	29.2	35.9	45.2	58.9	79.6
44.0	31.8	38.5	48.6	64.2	88.4
48.0	30.7	37.5	47.7	63.6	88.4
52.0	31.2	38.0	48.6	65.5	92.3
56.0	31.3	38.2	49.1	66.8	95.1
58.0	31.4	38.3	49.4	67.5	96.7
60.0	31.4	38.2	49.4	67.8	97.6
62.0	31.3	38.1	49.3	68.0	98.2

NOTE: RELATIVE POWER OF 1.0 = 20.35 KW/M (6.20 KW/FT)

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 9
 ** RUN TIME: 15.16.45.** DATE: 04/04/22 REFERENCE POWER = 20.35 KW/M
 TITLE: *

GAP CONDUCTANCE (BTU/HR/FT**2/F) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	977.4	1211.5	1618.5	2405.3	4324.3
36.0	4614.0	5835.4	7367.6	9574.8	12836.1
40.0	5149.8	6319.6	7953.9	10378.0	14020.2
44.0	5608.1	6787.3	8555.0	11298.6	15570.0
48.0	5412.6	6604.2	8403.8	11208.6	15576.5
52.0	5489.2	6692.9	8562.3	11538.3	16246.5

56.0 5514.3 6724.7 8646.7 11761.1 16745.1
58.0 5532.0 6747.1 8698.0 11895.0 17035.5
60.0 5532.6 6735.7 8701.4 11945.7 17183.3
62.0 5514.7 6712.2 8688.0 11975.7 17292.3

NOTE: RELATIVE POWER OF 1.0 = 20.35 KW/M (6.20 KW/FT)
I N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 10
** RUN TIME: 15.16.45.** DATE: 04/04/22 REFERENCE POWER = 20.35 KW/M
TITLE: *

THERMAL GAP (CM RADIAL) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	0.00721	0.00612	0.00488	0.00359	0.00232
36.0	0.00172	0.00051	0.00000	0.00000	0.00000
40.0	0.00130	0.00006	0.00000	0.00000	0.00000
44.0	0.00065	0.00000	0.00000	0.00000	0.00000
48.0	0.00080	0.00000	0.00000	0.00000	0.00000
52.0	0.00052	0.00000	0.00000	0.00000	0.00000
56.0	0.00024	0.00000	0.00000	0.00000	0.00000
58.0	0.00007	0.00000	0.00000	0.00000	0.00000
60.0	0.00000	0.00000	0.00000	0.00000	0.00000
62.0	0.00000	0.00000	0.00000	0.00000	0.00000

NOTE: RELATIVE POWER OF 1.0 = 20.35 KW/M (6.20 KW/FT)

FISSION GAS RELEASE

EXPOSURE	0.0	36.0	40.0	44.0	48.0	52.0	56.0	58.0	60.0	62.0
PERCENT	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4

***** END OF OUTPUT *****
TOTAL CPU TIME 0 SECONDS

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 1
** RUN TIME: 15.18.06.** DATE: 04/04/22 REFERENCE POWER = 0.00 KW/M
TITLE:

LISTING OF INPUT

ECHO OF INPUT CARDS FOR CASE 1

'TIT' * CALVERT - FUEL TEMP CALCULATION CASE 02M /
'COR' 559.82 2250 /
'ROD' 0.49276 0.5588 347.218 380 13.5 /
'PEL' 10.3572 0.48387 /
'POW' 22.6161 /
'PRO' 1 /
'WAT' 2 'SQR' 0.40546 1.4732 /
'TAB' 00 36 40 44 48 52 56 58 60 62 /
'DEP' 00 36 40 44 48 52 56 58 60 62 /
'AVE' 48 /
'END' /

END OF INPUT CARD ECHO

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 2
** RUN TIME: 15.18.06.** DATE: 04/04/22 REFERENCE POWER = 22.62 KW/M
TITLE: *

INPUT SUMMARY FOR CASE 1

SYSTEM DESCRIPTORS

COOLANT INLET TEMPERATURE 559.8 K (548.0 DEGREES FAHRENHEIT)
AVERAGE CORE PRESSURE 2250.0 PSI
NOMINAL LINEAR POWER RATE 22.6 KW/M (6.9 KW/FT)
NOMINAL POWER DENSITY 33.7 W/GU

FUEL PELLET DESCRIPTORS

PELLET INNER RADIUS 0.0000 CM
PELLET OUTER RADIUS 0.4839 CM THEORETICAL DENSITY 94.50 PERCENT
DISH RADIUS 0.0000 CM DISH RELATIVE VOLUME 0.0000 PERCENT
CHAMFER RADIUS 0.4839 CM CHAMFER RELATIVE VOLUME 0.0000 PERCENT
GRAIN SIZE 10.00 MICRONS GRAIN STANDARD DEVIATION 20.0000 PERCENT
OPEN POROSITY 5.00 PERCENT RESINTERING POROSITY 0.2000 PERCENT

FUEL ROD DESCRIPTORS

NO. OF NODES: 1 (ALL NODES ARE IDENTICAL)

FUEL LENGTH 347.218 CM
CLAD INNER RADIUS 0.4928 CM CLAD OUTER RADIUS 0.5588 CM
PLENUM LENGTH 52.083 CM PLENUM VOLUME 13.50 CM**3
FILL GAS HELIUM FILL GAS PRESSURE 367.43 PSI

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 3
** RUN TIME: 15.18.06.** DATE: 04/04/22 REFERENCE POWER = 22.62 KW/M
TITLE: *

FUEL TEMPERATURE DATA FOR CASMO

AVERAGE EXPOSURE REQUESTED AVE = 48.0 GWD/MT

FUEL TEMPERATURE FOR CASMO TFU =1218.0 K

TABLE FIT OF TFU VERSUS POWER FOR SIMULATE 'SEG.TFU' CARD

SEGT FU(1,N) = 0.0
SEGT FU(2,N) = 0.0
SEGT FU(3,N) = 0.0
SEGT FU(4,N) = 22.62

FUEL TEMPERATURE VERSUS EXPOSURE FOR SIMULATE 'TAB.TFU' CARD

EXPOSURE (GWD/MT)	0.0	36.0	40.0	44.0	48.0	52.0	56.0	58.0	60.0	62.0
DELTA TFU (K)										
POW 0.50	373.8	328.4	334.3	341.7	348.1	359.0	374.4	380.3	386.1	393.7
POW 1.00	375.6	366.0	374.5	384.3	392.6	406.5	423.8	430.1	436.0	443.4
POW 1.50	370.8	406.1	417.0	428.8	438.9	455.1	473.0	479.2	484.3	490.6
POW 2.00	360.3	441.3	453.8	466.8	477.7	494.9	511.6	516.9	520.8	525.3
POW 2.50	351.5	465.8	478.6	491.2	501.6	517.5	531.3	535.3	537.6	540.3

SIMULATE-3 INPUT CARDS

'COM' *

'SEG.TFU', 0, 0.0, 0.0, 0.0, 22.62/

'COM' EXPOSURE IN GWD/MT

'TAB.TFU' 1, 0, 'EXP', 10, 'POW', 5
0.0 36.0 40.0 44.0 48.0 52.0 56.0 58.0 60.0 62.0
0.50, 373.8 328.4 334.3 341.7 348.1 359.0 374.4 380.3 386.1 393.7
1.00, 375.6 366.0 374.5 384.3 392.6 406.5 423.8 430.1 436.0 443.4
1.50, 370.8 406.1 417.0 428.8 438.9 455.1 473.0 479.2 484.3 490.6
2.00, 360.3 441.3 453.8 466.8 477.7 494.9 511.6 516.9 520.8 525.3
2.50, 351.5 465.8 478.6 491.2 501.6 517.5 531.3 535.3 537.6 540.3

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 4
** RUN TIME: 15.18.06 ** DATE: 04/04/22 REFERENCE POWER = 22.62 KW/M
TITLE: *

AVERAGE FUEL TEMPERATURE (KELVIN) VS RELATIVE POWER

EXPOSURE GWD/MT	0.5	1.0	1.5	2.0	2.5
--------------------	-----	-----	-----	-----	-----

0.0	755.6	953.1	1142.7	1316.0	1482.9
36.0	732.9	943.6	1195.5	1477.8	1768.8
40.0	735.8	952.1	1211.9	1502.9	1800.6
44.0	739.5	961.9	1229.7	1528.9	1832.1
48.0	742.7	970.2	1244.7	1550.7	1858.2
52.0	748.2	984.0	1269.1	1585.0	1898.0
56.0	755.9	1001.3	1295.9	1618.5	1932.5
58.0	758.9	1007.7	1305.1	1629.1	1942.4
60.0	761.8	1013.5	1312.9	1636.8	1948.3
62.0	765.5	1020.9	1322.3	1645.8	1954.8

NOTE: RELATIVE POWER OF 1.0 = 22.62 KW/M (6.89 KW/FT)
INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 5
** RUN TIME: 15.18.06 ** DATE: 04/04/22 REFERENCE POWER = 22.62 KW/M
TITLE: *

AVERAGE FUEL TEMPERATURE (FAHRENHEIT) VS RELATIVE POWER

EXPOSURE GWD/MT	0.5	1.0	1.5	2.0	2.5
--------------------	-----	-----	-----	-----	-----

0.0	900.7	1256.3	1597.4	1909.4	2209.8
36.0	859.8	1239.1	1692.5	2200.7	2724.4

40.0	865.1	1254.4	1722.0	2245.7	2781.6
44.0	871.8	1272.0	1754.0	2292.6	2838.4
48.0	877.5	1287.0	1781.1	2331.8	2885.3
52.0	887.3	1311.8	1824.9	2393.7	2957.0
56.0	901.2	1343.0	1873.1	2453.8	3019.1
58.0	906.6	1354.5	1889.9	2473.0	3036.9
60.0	911.8	1365.0	1903.8	2486.8	3047.5
62.0	918.5	1378.3	1920.8	2503.1	3059.3

NOTE: RELATIVE POWER OF 1.0 = 22.62 KW/M (6.89 KW/FT)
11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 6
** RUN TIME: 15.18.06 ** DATE: 04/04/22 REFERENCE POWER = 22.62 KW/M
TITLE: *

CENTRAL FUEL TEMPERATURE (KELVIN) VS RELATIVE POWER

EXPOSURE GWD/MT	RELATIVE POWER				
	0.5	1.0	1.5	2.0	2.5

0.0	859.6	1210.9	1591.0	1969.7	2339.0
36.0	863.7	1278.4	1799.7	2365.9	2867.4
40.0	870.3	1297.6	1835.6	2415.0	2913.1
44.0	878.0	1319.3	1874.7	2466.2	2956.9
48.0	884.1	1336.4	1905.3	2505.3	2988.1
52.0	894.3	1364.6	1954.4	2566.0	3031.5
56.0	906.4	1395.3	2003.0	2619.7	3063.0
58.0	911.5	1407.7	2021.8	2639.2	3072.8
60.0	916.3	1419.2	2038.2	2655.1	3079.7
62.0	922.1	1432.4	2056.2	2671.4	3086.1

NOTE: RELATIVE POWER OF 1.0 = 22.62 KW/M (6.89 KW/FT)
11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7
** RUN TIME: 15.18.06 ** DATE: 04/04/22 REFERENCE POWER = 22.62 KW/M
TITLE: *

CENTRAL FUEL TEMPERATURE (FAHRENHEIT) VS RELATIVE POWER

EXPOSURE GWD/MT	RELATIVE POWER				
	0.5	1.0	1.5	2.0	2.5

0.0	1087.9	1720.2	2404.4	3086.0	3750.8
36.0	1095.3	1841.7	2780.0	3799.3	4701.8
40.0	1107.1	1876.4	2844.7	3887.6	4784.2
44.0	1121.0	1915.4	2915.1	3979.7	4863.1
48.0	1131.9	1946.2	2970.1	4050.2	4919.1
52.0	1150.3	1996.9	3058.6	4159.4	4997.3
56.0	1172.2	2052.2	3146.1	4256.0	5054.0
58.0	1181.2	2074.4	3179.8	4291.2	5071.7
60.0	1190.0	2095.2	3209.4	4319.8	5084.1
62.0	1200.4	2118.9	3241.7	4349.2	5095.6

NOTE: RELATIVE POWER OF 1.0 = 22.62 KW/M (6.89 KW/FT)
11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7A
** RUN TIME: 15.18.06 ** DATE: 04/04/22 REFERENCE POWER = 22.62 KW/M
TITLE: *

RADIAL TEMPERATURE PROFILE (KELVIN) AT RELATIVE POWER 1.00

EXPOSURE GWD/MT	FRACTION OF PELLET RADIUS						CLAD RADII		POWER	
	0.0	0.2	0.4	0.6	0.8	1.0	INNER	OUTER	KW/M	KW/FT

0.0	1210.9	1184.8	1116.1	1011.1	877.5	726.5	624.5	597.2	22.6	6.9
36.0	1278.4	1229.7	1108.7	937.9	743.0	645.3	624.5	597.2	22.6	6.9
40.0	1297.6	1247.4	1122.5	946.2	744.8	643.9	624.5	597.2	22.6	6.9

44.0	1319.3	1267.2	1137.8	955.3	747.4	643.8	624.5	597.2	22.6	6.9
48.0	1336.4	1283.1	1150.5	963.4	750.2	644.0	624.5	597.2	22.6	6.9
52.0	1364.6	1309.2	1171.4	977.0	755.3	645.0	624.5	597.2	22.6	6.9
56.0	1395.3	1337.9	1195.2	994.0	764.6	650.5	624.5	597.2	22.6	6.9
58.0	1407.7	1349.4	1204.6	1000.3	767.4	651.3	624.5	597.2	22.6	6.9
60.0	1419.2	1360.1	1213.3	1006.1	769.7	651.9	624.5	597.2	22.6	6.9
62.0	1432.4	1372.5	1223.7	1013.5	773.6	653.9	624.5	597.2	22.6	6.9

INTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7B
 ** RUN TIME: 15.18.06.** DATE: 04/04/22 REFERENCE POWER = 22.62 KW/M
 TITLE: *

RADIAL TEMPERATURE PROFILE (FAHRENHEIT) AT RELATIVE POWER 1.00

EXPOSURE FRACTION OF PELLET RADIUS CLAD RADII POWER

GWD/MT 0.0 0.2 0.4 0.6 0.8 1.0 INNER OUTER KW/M KW/FT

0.0	1720.2	1673.2	1549.6	1360.6	1120.1	848.2	664.7	615.6	22.6	6.9
36.0	1841.7	1754.1	1536.3	1228.9	878.0	702.2	664.7	615.6	22.6	6.9
40.0	1876.4	1786.0	1561.2	1243.7	881.2	699.6	664.7	615.6	22.6	6.9
44.0	1915.4	1821.6	1588.7	1260.2	885.9	699.4	664.7	615.6	22.6	6.9
48.0	1946.2	1850.1	1611.5	1274.8	890.9	699.8	664.7	615.6	22.6	6.9
52.0	1996.9	1897.1	1649.1	1299.2	900.2	701.5	664.7	615.6	22.6	6.9
56.0	2052.2	1948.8	1692.0	1329.8	916.9	711.4	664.7	615.6	22.6	6.9
58.0	2074.4	1969.6	1708.9	1341.2	921.9	713.0	664.7	615.6	22.6	6.9
60.0	2095.2	1988.9	1724.6	1351.6	926.1	714.1	664.7	615.6	22.6	6.9
62.0	2118.9	2011.1	1743.2	1364.9	933.0	717.6	664.7	615.6	22.6	6.9

INTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 8
 ** RUN TIME: 15.18.06.** DATE: 04/04/22 REFERENCE POWER = 22.62 KW/M
 TITLE: *

GAP CONDUCTANCE (KW/M**2/K) VS RELATIVE POWER

EXPOSURE RELATIVE POWER

GWD/MT
0.5 1.0 1.5 2.0 2.5

0.0	5.7	7.3	10.4	17.2	34.9
36.0	29.0	35.7	45.8	61.2	85.0
40.0	31.2	38.3	49.3	66.7	93.7
44.0	31.4	38.5	49.9	68.2	96.9
48.0	31.1	38.2	49.6	68.3	97.7
52.0	29.6	36.4	47.5	65.8	94.2
56.0	23.1	28.7	38.0	53.9	79.2
58.0	21.9	27.7	38.1	57.2	92.0
60.0	20.8	27.1	39.1	64.5	124.2
62.0	19.0	25.3	38.3	69.5	171.9

NOTE: RELATIVE POWER OF 1.0 = 22.62 KW/M (6.89 KW/FT)

INTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 9
 ** RUN TIME: 15.18.06.** DATE: 04/04/22 REFERENCE POWER = 22.62 KW/M
 TITLE: *

GAP CONDUCTANCE (BTU/HR/FT**2/F) VS RELATIVE POWER

EXPOSURE RELATIVE POWER

GWD/MT
0.5 1.0 1.5 2.0 2.5

0.0	998.4	1285.1	1825.9	3029.0	6143.7
36.0	5113.9	6294.6	8057.2	10783.2	14968.2
40.0	5487.5	6747.8	8687.1	11747.9	16502.5
44.0	5523.0	6788.4	8792.1	12013.3	17066.8
48.0	5475.5	6724.5	8741.1	12026.3	17200.6
52.0	5206.7	6404.2	8363.1	11579.9	16589.7

56.0 4068.6 5046.2 6696.4 9485.8 13954.0
58.0 3858.9 4884.6 6709.9 10070.5 16200.8
60.0 3670.0 4773.7 6892.6 11357.6 21875.1
62.0 3349.9 4461.2 6740.7 12233.7 30272.7

NOTE: RELATIVE POWER OF 1.0 = 22.62 KW/M (6.89 KW/FT)
INTERPIN - 3 ** STUDEVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 10
** RUN TIME: 15.18.06 ** DATE: 04/04/22 REFERENCE POWER = 22.62 KW/M
TITLE: *

THERMAL GAP (CM RADIAL) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	0.00709	0.00584	0.00444	0.00301	0.00155
36.0	0.00078	0.00000	0.00000	0.00000	0.00000
40.0	0.00052	0.00000	0.00000	0.00000	0.00000
44.0	0.00022	0.00000	0.00000	0.00000	0.00000
48.0	0.00000	0.00000	0.00000	0.00000	0.00000
52.0	0.00000	0.00000	0.00000	0.00000	0.00000
56.0	0.00000	0.00000	0.00000	0.00000	0.00000
58.0	0.00000	0.00000	0.00000	0.00000	0.00000
60.0	0.00000	0.00000	0.00000	0.00000	0.00000
62.0	0.00000	0.00000	0.00000	0.00000	0.00000

NOTE: RELATIVE POWER OF 1.0 = 22.62 KW/M (6.89 KW/FT)

FISSION GAS RELEASE

EXPOSURE	0.0	36.0	40.0	44.0	48.0	52.0	56.0	58.0	60.0	62.0
PERCENT	0.3	0.3	0.3	0.4	0.4	0.5	1.1	1.5	2.0	2.7

***** END OF OUTPUT *****
TOTAL CPU TIME 0 SECONDS

1 I N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 1
** RUN TIME: 15.19.40.** DATE: 04/04/22 REFERENCE POWER = 0.00 KW/M
TITLE:

LISTING OF INPUT

ECHO OF INPUT CARDS FOR CASE 1

'TIT' * CALVERT - FUEL TEMP CALCULATION CASE 03 /
'COR' 559.82 2250 /
'ROD' 0.49276 0.5588 347.218 380 13.5 /
'PEL' 10.3572 0.48387 /
'POW' 20.6700 /
'PRO' 1 /
'WAT' 2 'SQR' 0.40546 1.4732 /
'TAB' 00 07 14 21 28 35 42 49 56 62 /
'DEP' 00 07 14 21 28 35 42 49 56 62 /
'AVE' 28 /
'END' /

END OF INPUT CARD ECHO

1 I N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 2
** RUN TIME: 15.19.40.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
TITLE: *

INPUT SUMMARY FOR CASE 1

SYSTEM DESCRIPTORS

COOLANT INLET TEMPERATURE 559.8 K (548.0 DEGREES FAHRENHEIT)
AVERAGE CORE PRESSURE 2250.0 PSI
NOMINAL LINEAR POWER RATE 20.7 KW/M (6.3 KW/FT)
NOMINAL POWER DENSITY 30.8 W/GU

FUEL PELLET DESCRIPTORS

PELLET INNER RADIUS 0.0000 CM
PELLET OUTER RADIUS 0.4839 CM THEORETICAL DENSITY 94.50 PERCENT
DISH RADIUS 0.0000 CM DISH RELATIVE VOLUME 0.0000 PERCENT
CHAMFER RADIUS 0.4839 CM CHAMFER RELATIVE VOLUME 0.0000 PERCENT
GRAIN SIZE 10.00 MICRONS GRAIN STANDARD DEVIATION 20.0000 PERCENT
OPEN POROSITY 5.00 PERCENT RESINTERING POROSITY 0.2000 PERCENT

FUEL ROD DESCRIPTORS

NO. OF NODES: 1 (ALL NODES ARE IDENTICAL)

FUEL LENGTH 347.218 CM
CLAD INNER RADIUS 0.4928 CM CLAD OUTER RADIUS 0.5588 CM
PLENUM LENGTH 52.083 CM PLENUM VOLUME 13.50 CM**3
FILL GAS HELIUM FILL GAS PRESSURE 367.43 PSI

1 I N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 3
** RUN TIME: 15.19.40.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
TITLE: *

FUEL TEMPERATURE DATA FOR CASMO

AVERAGE EXPOSURE REQUESTED AVE = 28.0 GWD/MT

FUEL TEMPERATURE FOR CASMO TFU = 902.3 K

TABLE FIT OF TFU VERSUS POWER FOR SIMULATE 'SEG.TFU' CARD

SEGTUFU(1,N) = 0.0
SEGTUFU(2,N) = 0.0
SEGTUFU(3,N) = 0.0
SEGTUFU(4,N) = 20.67

FUEL TEMPERATURE VERSUS EXPOSURE FOR SIMULATE 'TAB.TFU' CARD

EXPOSURE (GWD/MT)	0.0	7.0	14.0	21.0	28.0	35.0	42.0	49.0	56.0	62.0
DELTA TFU (K)										
POW 0.50	340.4	309.1	302.5	298.0	295.0	296.7	304.8	318.2	330.2	340.8
POW 1.00	342.6	312.6	307.2	303.7	312.7	326.4	338.9	356.7	372.4	386.4
POW 1.50	340.1	311.7	309.6	324.2	342.0	360.1	376.3	398.2	417.5	434.5
POW 2.00	332.8	312.0	329.8	349.2	370.6	391.8	410.7	435.3	456.7	475.3
POW 2.50	322.2	327.6	349.2	370.9	394.2	416.8	436.6	461.5	482.7	500.5

SIMULATE-3 INPUT CARDS

'COM' *

'SEG.TFU', 0, 0.0, 0.0, 0.0, 20.67/

'COM' EXPOSURE IN GWD/MT

'TAB.TFU' 1, 0, 'EXP', 10, 'POW', 5
0.0 7.0 14.0 21.0 28.0 35.0 42.0 49.0 56.0 62.0
0.50, 340.4 309.1 302.5 298.0 295.0 296.7 304.8 318.2 330.2 340.8
1.00, 342.6 312.6 307.2 303.7 312.7 326.4 338.9 356.7 372.4 386.4
1.50, 340.1 311.7 309.6 324.2 342.0 360.1 376.3 398.2 417.5 434.5
2.00, 332.8 312.0 329.8 349.2 370.6 391.8 410.7 435.3 456.7 475.3
2.50, 322.2 327.6 349.2 370.9 394.2 416.8 436.6 461.5 482.7 500.5
/

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 4
** RUN TIME: 15.19.40. ** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
TITLE: *

AVERAGE FUEL TEMPERATURE (KELVIN) VS RELATIVE POWER

EXPOSURE GWD/MT	0.5	1.0	1.5	2.0	2.5
--------------------	-----	-----	-----	-----	-----

0.0	738.1	918.7	1094.3	1257.8	1405.9
7.0	722.5	888.7	1051.7	1216.2	1419.4
14.0	719.2	883.3	1048.6	1251.9	1473.3
21.0	716.9	879.7	1070.4	1290.6	1527.5
28.0	715.4	888.7	1097.2	1333.4	1585.8
35.0	716.3	902.5	1124.3	1375.8	1642.3
42.0	720.3	914.9	1148.6	1413.6	1691.9
49.0	727.0	932.7	1181.4	1462.8	1754.1
56.0	733.0	948.5	1210.4	1505.7	1807.1
62.0	738.3	962.5	1235.9	1542.8	1851.5

NOTE: RELATIVE POWER OF 1.0 = 20.67 KW/M (6.30 KW/FT)
INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 5
** RUN TIME: 15.19.40. ** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
TITLE: *

AVERAGE FUEL TEMPERATURE (FAHRENHEIT) VS RELATIVE POWER

EXPOSURE GWD/MT	0.5	1.0	1.5	2.0	2.5
--------------------	-----	-----	-----	-----	-----

0.0	869.2	1194.2	1510.4	1804.7	2071.2
7.0	841.1	1140.2	1433.7	1729.7	2095.5

14.0	835.1	1130.5	1428.0	1794.1	2192.6
21.0	831.1	1124.1	1467.3	1863.6	2290.1
28.0	828.4	1140.2	1515.5	1940.7	2395.1
35.0	829.9	1165.0	1564.4	2017.0	2496.7
42.0	837.1	1187.5	1608.2	2085.0	2586.0
49.0	849.2	1219.4	1667.2	2173.6	2698.1
56.0	860.0	1247.8	1719.4	2250.8	2793.4
62.0	869.6	1273.0	1765.2	2317.6	2873.4

NOTE: RELATIVE POWER OF 1.0 = 20.67 KW/M (6.30 KW/FT)
 11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 6
 ** RUN TIME: 15.19.40.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
 TITLE: *

CENTRAL FUEL TEMPERATURE (KELVIN) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	830.3	1145.1	1489.7	1839.7	2175.3
7.0	817.0	1120.2	1456.7	1817.8	2232.5
14.0	818.6	1127.2	1476.9	1899.8	2343.6
21.0	821.3	1136.3	1529.4	1985.2	2451.9
28.0	825.2	1162.1	1590.8	2078.4	2564.6
35.0	831.4	1193.5	1652.0	2168.6	2668.1
42.0	840.9	1222.2	1707.3	2248.5	2755.0
49.0	854.7	1261.3	1779.7	2349.0	2855.5
56.0	866.4	1294.5	1840.6	2430.7	2929.7
62.0	876.9	1324.3	1894.7	2500.8	2986.9

NOTE: RELATIVE POWER OF 1.0 = 20.67 KW/M (6.30 KW/FT)
 11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7
 ** RUN TIME: 15.19.40.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
 TITLE: *

CENTRAL FUEL TEMPERATURE (FAHRENHEIT) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	1035.1	1601.8	2222.1	2852.1	3456.1
7.0	1011.2	1556.9	2162.6	2812.6	3559.1
14.0	1014.1	1569.6	2199.1	2960.3	3759.1
21.0	1018.9	1585.9	2293.5	3113.9	3954.1
28.0	1025.9	1632.3	2404.1	3281.7	4156.9
35.0	1037.2	1688.9	2514.2	3444.0	4343.1
42.0	1054.1	1740.6	2613.7	3587.9	4499.5
49.0	1079.0	1811.0	2744.1	3768.7	4680.5
56.0	1100.1	1870.7	2853.7	3915.8	4814.1
62.0	1119.0	1924.4	2951.0	4042.1	4917.0

NOTE: RELATIVE POWER OF 1.0 = 20.67 KW/M (6.30 KW/FT)
 11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7A
 ** RUN TIME: 15.19.40.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
 TITLE: *

RADIAL TEMPERATURE PROFILE (KELVIN) AT RELATIVE POWER 1.00

EXPOSURE	FRACTION OF PELLET RADIUS						CLAD RADII	POWER		
GWD/MT	0.0	0.2	0.4	0.6	0.8	1.0	INNER	OUTER	KW/M	KW/FT

0.0	1145.1	1122.5	1062.8	970.7	852.5	717.0	619.0	594.0	20.7	6.3
7.0	1120.2	1089.2	1010.9	897.9	764.6	681.2	619.0	594.0	20.7	6.3
14.0	1127.2	1093.9	1009.9	888.8	746.6	663.0	619.0	594.0	20.7	6.3

21.0	1136.3	1100.8	1011.5	883.0	732.4	647.4	619.0	594.0	20.7	6.3
28.0	1162.1	1124.0	1028.3	890.8	730.0	641.0	619.0	594.0	20.7	6.3
35.0	1193.5	1152.8	1050.5	903.8	732.4	638.8	619.0	594.0	20.7	6.3
42.0	1222.2	1179.1	1070.8	915.7	734.9	636.9	619.0	594.0	20.7	6.3
49.0	1261.3	1215.1	1099.1	933.2	740.3	636.2	619.0	594.0	20.7	6.3
56.0	1294.5	1245.8	1123.7	949.0	745.8	635.9	619.0	594.0	20.7	6.3
62.0	1324.3	1273.4	1145.6	962.9	750.6	636.1	619.0	594.0	20.7	6.3

INTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7B
 ** RUN TIME: 15.19.40. ** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
 TITLE: *

RADIAL TEMPERATURE PROFILE (FAHRENHEIT) AT RELATIVE POWER 1.00

EXPOSURE	FRACTION OF PELLETT RADIUS					CLAD RADII		POWER	
GWD/MT	0.0	0.2	0.4	0.6	0.8	1.0	INNER	OUTER	KW/M KW/FT

0.0	1601.8	1561.2	1453.6	1287.9	1075.1	831.3	654.8	609.8	20.7	6.3
7.0	1556.9	1501.1	1360.2	1156.8	916.9	766.7	654.8	609.8	20.7	6.3
14.0	1569.6	1509.6	1358.4	1140.5	884.4	734.1	654.8	609.8	20.7	6.3
21.0	1585.9	1522.1	1361.3	1130.1	859.0	705.9	654.8	609.8	20.7	6.3
28.0	1632.3	1563.8	1391.5	1144.0	854.5	694.5	654.8	609.8	20.7	6.3
35.0	1688.9	1615.6	1431.5	1167.4	859.0	690.5	654.8	609.8	20.7	6.3
42.0	1740.6	1663.0	1468.1	1188.9	863.4	687.0	654.8	609.8	20.7	6.3
49.0	1811.0	1727.7	1518.9	1220.3	873.2	685.7	654.8	609.8	20.7	6.3
56.0	1870.7	1783.1	1563.3	1248.9	883.0	685.3	654.8	609.8	20.7	6.3
62.0	1924.4	1832.7	1602.7	1273.9	891.7	685.5	654.8	609.8	20.7	6.3

INTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 8
 ** RUN TIME: 15.19.40. ** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
 TITLE: *

GAP CONDUCTANCE (KW/M**2/K) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	5.6	6.9	9.3	14.1	26.1
7.0	8.1	10.9	17.3	32.7	42.8
14.0	10.4	15.4	29.6	39.4	50.4
21.0	13.7	24.0	35.0	44.9	57.8
28.0	19.5	30.9	39.2	50.3	65.7
35.0	27.5	34.3	43.1	55.9	74.5
42.0	31.5	38.0	47.8	62.9	86.1
49.0	32.7	39.6	50.4	67.7	95.3
56.0	33.1	40.1	51.6	70.7	101.6
62.0	32.9	39.8	51.7	71.7	104.5

NOTE: RELATIVE POWER OF 1.0 = 20.67 KW/M (6.30 KW/FT)

INTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 9
 ** RUN TIME: 15.19.40. ** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
 TITLE: *

GAP CONDUCTANCE (BTU/HR/FT**2/F) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	980.3	1221.4	1645.3	2479.5	4595.3
7.0	1428.0	1925.4	3054.5	5758.0	7546.2
14.0	1830.6	2718.4	5210.8	6938.4	8882.3
21.0	2409.3	4217.9	6164.8	7900.6	10179.4
28.0	3433.0	5433.5	6912.1	8857.5	11578.2
35.0	4836.0	6037.5	7597.2	9841.8	13126.3

42.0 5540.5 6699.7 8426.5 11082.1 15164.1
49.0 5762.5 6969.6 8874.9 11929.0 16779.9
56.0 5833.5 7066.8 9092.2 12445.6 17889.9
62.0 5788.5 7018.0 9102.1 12631.2 18407.5

NOTE: RELATIVE POWER OF 1.0 = 20.67 KW/M (6.30 KW/FT)
INTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 10
** RUN TIME: 15.19.40. ** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
TITLE: *

THERMAL GAP (CM RADIAL) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT					
	0.5	1.0	1.5	2.0	2.5

0.0	0.00719	0.00608	0.00482	0.00350	0.00222
7.0	0.00504	0.00401	0.00282	0.00149	0.00000
14.0	0.00402	0.00298	0.00176	0.00013	0.00000
21.0	0.00316	0.00212	0.00070	0.00000	0.00000
28.0	0.00238	0.00125	0.00000	0.00000	0.00000
35.0	0.00164	0.00042	0.00000	0.00000	0.00000
42.0	0.00070	0.00000	0.00000	0.00000	0.00000
49.0	0.00015	0.00000	0.00000	0.00000	0.00000
56.0	0.00000	0.00000	0.00000	0.00000	0.00000
62.0	0.00000	0.00000	0.00000	0.00000	0.00000

NOTE: RELATIVE POWER OF 1.0 = 20.67 KW/M (6.30 KW/FT)

FISSION GAS RELEASE

EXPOSURE	0.0	7.0	14.0	21.0	28.0	35.0	42.0	49.0	56.0	62.0
PERCENT	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4

***** END OF OUTPUT *****
TOTAL CPU TIME 0 SECONDS

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 1
** RUN TIME: 15.21.13.** DATE: 04/04/22 REFERENCE POWER = 0.00 KW/M
TITLE:

LISTING OF INPUT

ECHO OF INPUT CARDS FOR CASE 1

TIT* CALVERT - FUEL TEMP CALCULATION CASE 03A /
'COR' 559.82 2250 /
'ROD' 0.49276 0.5588 347.218 380 15.0 /
'PEL' 10.3572 0.48387 /
'POW' 20.6700 /
'PRO' 1 /
'WAT' 2 'SQR' 0.40546 1.4732 /
'TAB' 00 07 14 21 28 35 42 49 56 62 /
'DEP' 00 07 14 21 28 35 42 49 56 62 /
'AVE' 28 /
'END' /

END OF INPUT CARD ECHO

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 2
** RUN TIME: 15.21.13.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
TITLE: *

INPUT SUMMARY FOR CASE 1

SYSTEM DESCRIPTORS

COOLANT INLET TEMPERATURE 559.8 K (548.0 DEGREES FAHRENHEIT)
AVERAGE CORE PRESSURE 2250.0 PSI
NOMINAL LINEAR POWER RATE 20.7 KW/M (6.3 KW/FT)
NOMINAL POWER DENSITY 30.8 W/GU

FUEL PELLET DESCRIPTORS

PELLET INNER RADIUS 0.0000 CM
PELLET OUTER RADIUS 0.4839 CM THEORETICAL DENSITY 94.50 PERCENT
DISH RADIUS 0.0000 CM DISH RELATIVE VOLUME 0.0000 PERCENT
CHAMFER RADIUS 0.4839 CM CHAMFER RELATIVE VOLUME 0.0000 PERCENT
GRAIN SIZE 10.00 MICRONS GRAIN STANDARD DEVIATION 20.0000 PERCENT
OPEN POROSITY 5.00 PERCENT RESINTERING POROSITY 0.2000 PERCENT

FUEL ROD DESCRIPTORS

NO. OF NODES: 1 (ALL NODES ARE IDENTICAL)

FUEL LENGTH 347.218 CM
CLAD INNER RADIUS 0.4928 CM CLAD OUTER RADIUS 0.5588 CM
PLENUM LENGTH 52.083 CM PLENUM VOLUME 15.00 CM**3
FILL GAS HELIUM FILL GAS PRESSURE 367.43 PSI

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 3
** RUN TIME: 15.21.13.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
TITLE: *

FUEL TEMPERATURE DATA FOR CASMO

AVERAGE EXPOSURE REQUESTED AVE = 28.0 GWD/MT

FUEL TEMPERATURE FOR CASMO TFU = 902.3 K

TABLE FIT OF TFU VERSUS POWER FOR SIMULATE 'SEG.TFU' CARD

SEGT FU(1,N) = 0.0
SEGT FU(2,N) = 0.0
SEGT FU(3,N) = 0.0
SEGT FU(4,N) = 20.67

FUEL TEMPERATURE VERSUS EXPOSURE FOR SIMULATE 'TAB.TFU' CARD

EXPOSURE (GWD/MT)	0.0	7.0	14.0	21.0	28.0	35.0	42.0	49.0	56.0	62.0
DELTA TFU (K)										
POW 0.50	340.3	309.1	302.4	298.0	295.0	296.7	304.7	318.2	330.2	340.9
POW 1.00	342.6	312.6	307.1	303.7	312.6	326.4	338.9	356.7	372.5	386.6
POW 1.50	340.1	311.7	309.6	324.2	342.0	360.1	376.3	398.2	417.6	434.6
POW 2.00	332.7	311.9	329.8	349.2	370.6	391.8	410.7	435.3	456.8	475.4
POW 2.50	322.2	327.6	349.2	370.8	394.2	416.8	436.6	461.5	482.7	500.6

SIMULATE-3 INPUT CARDS

'COM' *

'SEG.TFU', 0, 0.0, 0.0, 0.0, 20.67/

'COM' EXPOSURE IN GWD/MT

'TAB.TFU' 1, 0, 'EXP', 10, 'POW', 5
0.0 7.0 14.0 21.0 28.0 35.0 42.0 49.0 56.0 62.0
0.50, 340.3 309.1 302.4 298.0 295.0 296.7 304.7 318.2 330.2 340.9
1.00, 342.6 312.6 307.1 303.7 312.6 326.4 338.9 356.7 372.5 386.6
1.50, 340.1 311.7 309.6 324.2 342.0 360.1 376.3 398.2 417.6 434.6
2.00, 332.7 311.9 329.8 349.2 370.6 391.8 410.7 435.3 456.8 475.4
2.50, 322.2 327.6 349.2 370.8 394.2 416.8 436.6 461.5 482.7 500.6
/

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 4
** RUN TIME: 15.21.13. ** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
TITLE: *

AVERAGE FUEL TEMPERATURE (KELVIN) VS RELATIVE POWER

EXPOSURE GWD/MT	0.5	1.0	1.5	2.0	2.5
--------------------	-----	-----	-----	-----	-----

0.0	738.1	918.6	1094.2	1257.7	1405.7
7.0	722.5	888.6	1051.6	1216.1	1419.4
14.0	719.1	883.2	1048.5	1251.9	1473.3
21.0	716.9	879.7	1070.4	1290.5	1527.5
28.0	715.4	888.7	1097.2	1333.4	1585.8
35.0	716.3	902.5	1124.3	1375.8	1642.3
42.0	720.3	914.9	1148.6	1413.6	1691.9
49.0	727.0	932.7	1181.5	1462.8	1754.2
56.0	733.0	948.5	1210.5	1505.8	1807.2
62.0	738.4	962.6	1236.1	1543.0	1851.7

NOTE: RELATIVE POWER OF 1.0 = 20.67 KW/M (6.30 KW/FT)
INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 5
** RUN TIME: 15.21.13. ** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
TITLE: *

AVERAGE FUEL TEMPERATURE (FAHRENHEIT) VS RELATIVE POWER

EXPOSURE GWD/MT	0.5	1.0	1.5	2.0	2.5
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0.0	869.2	1194.1	1510.2	1804.4	2070.9
7.0	841.0	1140.1	1433.5	1729.6	2095.5

14.0	835.1	1130.3	1427.9	1794.0	2192.6
21.0	831.1	1124.0	1467.3	1863.6	2290.0
28.0	828.3	1140.2	1515.5	1940.7	2395.0
35.0	829.9	1165.0	1564.4	2017.0	2496.7
42.0	837.1	1187.5	1608.1	2085.0	2585.9
49.0	849.2	1219.5	1667.2	2173.6	2698.1
56.0	860.1	1248.0	1719.5	2251.0	2793.5
62.0	869.7	1273.3	1765.6	2318.0	2873.7

NOTE: RELATIVE POWER OF 1.0 = 20.67 KW/M (6.30 KW/FT)
 I I N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 6
 ** RUN TIME: 15.21.13.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
 TITLE: *

CENTRAL FUEL TEMPERATURE (KELVIN) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	830.2	1145.0	1489.6	1839.6	2175.1
7.0	817.0	1120.1	1456.5	1817.7	2232.4
14.0	818.6	1127.1	1476.8	1899.8	2343.6
21.0	821.3	1136.2	1529.4	1985.2	2451.9
28.0	825.1	1162.0	1590.8	2078.4	2564.6
35.0	831.4	1193.5	1652.0	2168.5	2668.0
42.0	840.8	1222.2	1707.3	2248.5	2754.9
49.0	854.7	1261.4	1779.8	2349.0	2855.5
56.0	866.4	1294.6	1840.7	2430.8	2929.8
62.0	877.0	1324.5	1894.9	2501.0	2987.0

NOTE: RELATIVE POWER OF 1.0 = 20.67 KW/M (6.30 KW/FT)
 I I N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7
 ** RUN TIME: 15.21.13.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
 TITLE: *

CENTRAL FUEL TEMPERATURE (FAHRENHEIT) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	1035.0	1601.7	2221.8	2851.8	3455.7
7.0	1011.2	1556.8	2162.4	2812.5	3559.0
14.0	1014.0	1569.4	2198.9	2960.2	3759.1
21.0	1018.9	1585.8	2293.5	3113.9	3954.0
28.0	1025.9	1632.3	2404.1	3281.7	4156.8
35.0	1037.2	1688.9	2514.2	3444.0	4343.1
42.0	1054.1	1740.6	2613.7	3587.8	4499.5
49.0	1079.1	1811.0	2744.2	3768.8	4680.5
56.0	1100.1	1870.8	2853.9	3916.0	4814.2
62.0	1119.1	1924.7	2951.4	4042.5	4917.2

NOTE: RELATIVE POWER OF 1.0 = 20.67 KW/M (6.30 KW/FT)
 I I N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7A
 ** RUN TIME: 15.21.13.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
 TITLE: *

RADIAL TEMPERATURE PROFILE (KELVIN) AT RELATIVE POWER 1.00

EXPOSURE	FRACTION OF PELLET RADIUS						CLAD RADII		POWER	
GWD/MT	0.0	0.2	0.4	0.6	0.8	1.0	INNER	OUTER	KW/M	KW/FT

0.0	1145.0	1122.5	1062.7	970.6	852.4	717.0	619.0	594.0	20.7	6.3
7.0	1120.1	1089.1	1010.8	897.8	764.5	681.1	619.0	594.0	20.7	6.3
14.0	1127.1	1093.8	1009.8	888.8	746.5	663.0	619.0	594.0	20.7	6.3

21.0	1136.2	1100.8	1011.4	883.0	732.4	647.4	619.0	594.0	20.7	6.3
28.0	1162.0	1124.0	1028.2	890.8	729.9	641.0	619.0	594.0	20.7	6.3
35.0	1193.5	1152.8	1050.5	903.8	732.4	638.8	619.0	594.0	20.7	6.3
42.0	1222.2	1179.1	1070.8	915.7	734.9	636.9	619.0	594.0	20.7	6.3
49.0	1261.4	1215.1	1099.1	933.2	740.3	636.2	619.0	594.0	20.7	6.3
56.0	1294.6	1245.9	1123.8	949.1	745.8	636.0	619.0	594.0	20.7	6.3
62.0	1324.5	1273.5	1145.7	963.1	750.7	636.2	619.0	594.0	20.7	6.3

11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7B
 ** RUN TIME: 15.21.13.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
 TITLE: *

RADIAL TEMPERATURE PROFILE (FAHRENHEIT) AT RELATIVE POWER 1.00

EXPOSURE	FRACTION OF PELLET RADIUS						CLAD RADII		POWER	
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GWD/MT	0.0	0.2	0.4	0.6	0.8	1.0	INNER	OUTER	KW/M	KW/FT
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0.0	1601.7	1561.0	1453.5	1287.7	1074.9	831.2	654.8	609.8	20.7	6.3
7.0	1556.8	1501.0	1360.1	1156.7	916.8	766.6	654.8	609.8	20.7	6.3
14.0	1569.4	1509.4	1358.2	1140.4	884.3	734.0	654.8	609.8	20.7	6.3
21.0	1585.8	1522.0	1361.2	1130.0	858.9	705.8	654.8	609.8	20.7	6.3
28.0	1632.3	1563.7	1391.4	1144.0	854.5	694.4	654.8	609.8	20.7	6.3
35.0	1688.9	1615.6	1431.5	1167.4	859.0	690.5	654.8	609.8	20.7	6.3
42.0	1740.6	1663.0	1468.1	1188.9	863.4	687.0	654.8	609.8	20.7	6.3
49.0	1811.0	1727.8	1519.0	1220.4	873.2	685.8	654.8	609.8	20.7	6.3
56.0	1870.8	1783.2	1563.4	1249.0	883.1	685.4	654.8	609.8	20.7	6.3
62.0	1924.7	1832.9	1602.9	1274.1	891.9	685.7	654.8	609.8	20.7	6.3

11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 8
 ** RUN TIME: 15.21.13.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
 TITLE: *

GAP CONDUCTANCE (KW/M**2/K) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
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GWD/MT	0.5	1.0	1.5	2.0	2.5
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0.0	5.6	6.9	9.3	14.1	26.1
7.0	8.1	10.9	17.4	32.7	42.9
14.0	10.4	15.5	29.6	39.4	50.5
21.0	13.7	24.0	35.0	44.9	57.8
28.0	19.5	30.9	39.3	50.3	65.8
35.0	27.4	34.3	43.1	55.9	74.6
42.0	31.5	38.0	47.9	62.9	86.2
49.0	32.7	39.5	50.3	67.7	95.2
56.0	33.0	40.0	51.5	70.4	101.2
62.0	32.7	39.6	51.3	71.2	103.7

NOTE: RELATIVE POWER OF 1.0 = 20.67 KW/M (6.30 KW/FT)

11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 9
 ** RUN TIME: 15.21.13.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
 TITLE: *

GAP CONDUCTANCE (BTU/HR/FT**2/F) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
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GWD/MT	0.5	1.0	1.5	2.0	2.5
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0.0	980.8	1222.1	1646.5	2481.7	4602.4
7.0	1429.0	1927.4	3059.3	5762.5	7551.5
14.0	1832.3	2722.4	5218.1	6943.1	8888.9
21.0	2409.6	4222.8	6166.5	7903.4	10185.8
28.0	3439.2	5437.5	6912.6	8860.6	11585.0
35.0	4833.5	6037.6	7597.9	9844.2	13132.3

42.0 5547.1 6700.8 8428.5 11085.6 15174.4
49.0 5756.3 6961.7 8864.9 11917.8 16765.1
56.0 5815.3 7044.5 9061.3 12400.5 17819.8
62.0 5752.3 6974.5 9040.0 12539.0 18256.2

NOTE: RELATIVE POWER OF 1.0 = 20.67 KW/M (6.30 KW/FT)
INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 10
** RUN TIME: 15.21.13. ** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
TITLE: *

THERMAL GAP (CM RADIAL) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	0.00719	0.00608	0.00482	0.00350	0.00222
7.0	0.00504	0.00400	0.00282	0.00149	0.00000
14.0	0.00401	0.00298	0.00175	0.00012	0.00000
21.0	0.00316	0.00211	0.00070	0.00000	0.00000
28.0	0.00237	0.00125	0.00000	0.00000	0.00000
35.0	0.00164	0.00042	0.00000	0.00000	0.00000
42.0	0.00069	0.00000	0.00000	0.00000	0.00000
49.0	0.00014	0.00000	0.00000	0.00000	0.00000
56.0	0.00000	0.00000	0.00000	0.00000	0.00000
62.0	0.00000	0.00000	0.00000	0.00000	0.00000

NOTE: RELATIVE POWER OF 1.0 = 20.67 KW/M (6.30 KW/FT)

FISSION GAS RELEASE

EXPOSURE	0.0	7.0	14.0	21.0	28.0	35.0	42.0	49.0	56.0	62.0
PERCENT	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4

***** END OF OUTPUT *****
TOTAL CPU TIME 0 SECONDS

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 1
** RUN TIME: 15.22.33.** DATE: 04/04/22 REFERENCE POWER = 0.00 KW/M
TITLE:

LISTING OF INPUT

ECHO OF INPUT CARDS FOR CASE 1

'TIT' * CALVERT - FUEL TEMP CALCULATION CASE 03B /
'COR' 559.82 2250 /
'ROD' 0.49276 0.5588 347.218 380 12.0 /
'PEL' 10.3572 0.48387 /
'POW' 20.6700 /
'PRO' 1 /
'WAT' 2 'SQR' 0.40546 1.4732 /
'TAB' 00 07 14 21 28 35 42 49 56 62 /
'DEP' 00 07 14 21 28 35 42 49 56 62 /
'AVE' 28 /
'END' /

END OF INPUT CARD ECHO

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 2
** RUN TIME: 15.22.33.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
TITLE: *

INPUT SUMMARY FOR CASE 1

SYSTEM DESCRIPTORS

COOLANT INLET TEMPERATURE 559.8 K (548.0 DEGREES FAHRENHEIT)
AVERAGE CORE PRESSURE 2250.0 PSI
NOMINAL LINEAR POWER RATE 20.7 KW/M (6.3 KW/FT)
NOMINAL POWER DENSITY 30.8 W/GU

FUEL PELLET DESCRIPTORS

PELLET INNER RADIUS 0.0000 CM
PELLET OUTER RADIUS 0.4839 CM THEORETICAL DENSITY 94.50 PERCENT
DISH RADIUS 0.0000 CM DISH RELATIVE VOLUME 0.0000 PERCENT
CHAMFER RADIUS 0.4839 CM CHAMFER RELATIVE VOLUME 0.0000 PERCENT
GRAIN SIZE 10.00 MICRONS GRAIN STANDARD DEVIATION 20.0000 PERCENT
OPEN POROSITY 5.00 PERCENT RESINTERING POROSITY 0.2000 PERCENT

FUEL ROD DESCRIPTORS

NO. OF NODES: 1 (ALL NODES ARE IDENTICAL)

FUEL LENGTH 347.218 CM
CLAD INNER RADIUS 0.4928 CM CLAD OUTER RADIUS 0.5588 CM
PLENUM LENGTH 52.083 CM PLENUM VOLUME 12.00 CM**3
FILL GAS HELIUM FILL GAS PRESSURE 367.43 PSI

INTERPIN - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 3
** RUN TIME: 15.22.33.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
TITLE: *

FUEL TEMPERATURE DATA FOR CASMO

AVERAGE EXPOSURE REQUESTED AVE = 28.0 GWD/MT

FUEL TEMPERATURE FOR CASMO TFU = 902.3 K

TABLE FIT OF TFU VERSUS POWER FOR SIMULATE 'SEG.TFU' CARD

SEGT FU(1,N) = 0.0
SEGT FU(2,N) = 0.0
SEGT FU(3,N) = 0.0
SEGT FU(4,N) = 20.67

FUEL TEMPERATURE VERSUS EXPOSURE FOR SIMULATE 'TAB.TFU' CARD

EXPOSURE (GWD/MT)	0.0	7.0	14.0	21.0	28.0	35.0	42.0	49.0	56.0	62.0
DELTA TFU (K)										
POW 0.50	340.5	309.2	302.6	298.2	295.2	296.7	304.7	318.1	330.0	340.6
POW 1.00	342.7	312.7	307.3	303.8	312.7	326.4	338.9	356.6	372.3	386.3
POW 1.50	340.2	311.8	309.7	324.2	342.0	360.1	376.3	398.2	417.4	434.4
POW 2.00	332.9	312.0	329.9	349.2	370.6	391.8	410.7	435.2	456.6	475.1
POW 2.50	322.3	327.6	349.2	370.9	394.2	416.8	436.6	461.5	482.6	500.4

SIMULATE-3 INPUT CARDS

'COM' *

'SEG.TFU', 0, 0.0, 0.0, 0.0, 20.67/

'COM' EXPOSURE IN GWD/MT

'TAB.TFU' 1, 0, 'EXP', 10, 'POW', 5
0.0 7.0 14.0 21.0 28.0 35.0 42.0 49.0 56.0 62.0
0.50, 340.5 309.2 302.6 298.2 295.2 296.7 304.7 318.1 330.0 340.6
1.00, 342.7 312.7 307.3 303.8 312.7 326.4 338.9 356.6 372.3 386.3
1.50, 340.2 311.8 309.7 324.2 342.0 360.1 376.3 398.2 417.4 434.4
2.00, 332.9 312.0 329.9 349.2 370.6 391.8 410.7 435.2 456.6 475.1
2.50, 322.3 327.6 349.2 370.9 394.2 416.8 436.6 461.5 482.6 500.4
/

INTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 4
** RUN TIME: 15.22.33. ** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
TITLE: *

AVERAGE FUEL TEMPERATURE (KELVIN) VS RELATIVE POWER

EXPOSURE GWD/MT	0.5	1.0	1.5	2.0	2.5
--------------------	-----	-----	-----	-----	-----

0.0	738.2	918.8	1094.5	1258.0	1406.1
7.0	722.5	888.8	1051.9	1216.2	1419.4
14.0	719.2	883.4	1048.6	1252.0	1473.4
21.0	717.0	879.9	1070.4	1290.6	1527.5
28.0	715.5	888.7	1097.2	1333.4	1585.9
35.0	716.3	902.5	1124.3	1375.8	1642.3
42.0	720.3	914.9	1148.6	1413.5	1691.9
49.0	727.0	932.6	1181.4	1462.7	1754.1
56.0	732.9	948.3	1210.3	1505.5	1806.9
62.0	738.2	962.3	1235.7	1542.5	1851.3

NOTE: RELATIVE POWER OF 1.0 = 20.67 KW/M (6.30 KW/FT)
INTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 5
** RUN TIME: 15.22.33. ** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
TITLE: *

AVERAGE FUEL TEMPERATURE (FAHRENHEIT) VS RELATIVE POWER

EXPOSURE GWD/MT	0.5	1.0	1.5	2.0	2.5
--------------------	-----	-----	-----	-----	-----

0.0	869.3	1194.4	1510.6	1804.9	2071.5
7.0	841.2	1140.4	1434.0	1729.8	2095.6

14.0	835.2	1130.6	1428.1	1794.1	2192.7
21.0	831.2	1124.3	1467.3	1863.6	2290.1
28.0	828.5	1140.3	1515.5	1940.8	2395.1
35.0	829.9	1165.1	1564.4	2017.0	2496.8
42.0	837.1	1187.4	1608.1	2085.0	2586.0
49.0	849.2	1219.3	1667.0	2173.4	2697.9
56.0	859.9	1247.6	1719.1	2250.5	2793.1
62.0	869.4	1272.7	1764.8	2317.2	2873.0

NOTE: RELATIVE POWER OF 1.0 = 20.67 KW/M (6.30 KW/FT)
11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 6
** RUN TIME: 15.22.33.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
TITLE: *

CENTRAL FUEL TEMPERATURE (KELVIN) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	830.3	1145.2	1489.9	1839.9	2175.5
7.0	817.1	1120.3	1456.9	1817.9	2232.5
14.0	818.6	1127.3	1477.0	1899.8	2343.7
21.0	821.3	1136.4	1529.4	1985.2	2451.9
28.0	825.3	1162.1	1590.9	2078.4	2564.6
35.0	831.5	1193.5	1652.0	2168.6	2668.1
42.0	840.8	1222.2	1707.2	2248.4	2755.0
49.0	854.7	1261.3	1779.7	2348.9	2855.5
56.0	866.3	1294.3	1840.4	2430.5	2929.6
62.0	876.8	1324.1	1894.4	2500.6	2986.7

NOTE: RELATIVE POWER OF 1.0 = 20.67 KW/M (6.30 KW/FT)
11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7
** RUN TIME: 15.22.33.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
TITLE: *

CENTRAL FUEL TEMPERATURE (FAHRENHEIT) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	1035.1	1602.0	2222.3	2852.5	3456.5
7.0	1011.3	1557.1	2163.0	2812.8	3559.2
14.0	1014.1	1569.8	2199.2	2960.3	3759.2
21.0	1019.0	1586.2	2293.6	3113.9	3954.1
28.0	1026.1	1632.3	2404.2	3281.8	4157.0
35.0	1037.2	1688.9	2514.2	3444.0	4343.1
42.0	1054.1	1740.5	2613.6	3587.8	4499.5
49.0	1079.0	1810.9	2744.0	3768.6	4680.4
56.0	1099.9	1870.4	2853.4	3915.5	4813.9
62.0	1118.8	1924.0	2950.5	4041.6	4916.7

NOTE: RELATIVE POWER OF 1.0 = 20.67 KW/M (6.30 KW/FT)
11 N T E R P I N - 3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7A
** RUN TIME: 15.22.33.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
TITLE: *

RADIAL TEMPERATURE PROFILE (KELVIN) AT RELATIVE POWER 1.00

EXPOSURE	FRACTION OF PELLET RADIUS						CLAD RADII	POWER		
GWD/MT	0.0	0.2	0.4	0.6	0.8	1.0	INNER	OUTER	KW/M	KW/FT

0.0	1145.2	1122.6	1062.9	970.8	852.6	717.1	619.0	594.0	20.7	6.3
7.0	1120.3	1089.3	1011.0	898.0	764.7	681.3	619.0	594.0	20.7	6.3
14.0	1127.3	1094.0	1010.0	888.9	746.7	663.1	619.0	594.0	20.7	6.3

21.0	1136.4	1101.0	1011.6	883.2	732.6	647.5	619.0	594.0	20.7	6.3
28.0	1162.1	1124.0	1028.3	890.8	730.0	641.0	619.0	594.0	20.7	6.3
35.0	1193.5	1152.8	1050.5	903.8	732.4	638.8	619.0	594.0	20.7	6.3
42.0	1222.2	1179.1	1070.8	915.7	734.8	636.8	619.0	594.0	20.7	6.3
49.0	1261.3	1215.0	1099.0	933.1	740.3	636.1	619.0	594.0	20.7	6.3
56.0	1294.3	1245.7	1123.6	948.9	745.7	635.8	619.0	594.0	20.7	6.3
62.0	1324.1	1273.2	1145.4	962.7	750.4	635.9	619.0	594.0	20.7	6.3

INTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 7B
 ** RUN TIME: 15.22.33.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
 TITLE: *

RADIAL TEMPERATURE PROFILE (FAHRENHEIT) AT RELATIVE POWER 1.00

EXPOSURE FRACTION OF PELLET RADIUS CLAD RADII POWER

GWD/MT 0.0 0.2 0.4 0.6 0.8 1.0 INNER OUTER KW/M KW/FT

0.0	1602.0	1561.4	1453.8	1288.0	1075.2	831.4	654.8	609.8	20.7	6.3
7.0	1557.1	1501.3	1360.4	1157.0	917.0	766.9	654.8	609.8	20.7	6.3
14.0	1569.8	1509.8	1358.6	1140.7	884.6	734.2	654.8	609.8	20.7	6.3
21.0	1586.2	1522.3	1361.6	1130.3	859.2	706.1	654.8	609.8	20.7	6.3
28.0	1632.3	1563.8	1391.5	1144.0	854.5	694.5	654.8	609.8	20.7	6.3
35.0	1688.9	1615.7	1431.5	1167.4	859.0	690.5	654.8	609.8	20.7	6.3
42.0	1740.5	1662.9	1468.0	1188.8	863.3	686.9	654.8	609.8	20.7	6.3
49.0	1810.9	1727.6	1518.8	1220.2	873.1	685.6	654.8	609.8	20.7	6.3
56.0	1870.4	1782.8	1563.1	1248.7	882.8	685.1	654.8	609.8	20.7	6.3
62.0	1924.0	1832.3	1602.3	1273.5	891.4	685.3	654.8	609.8	20.7	6.3

INTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 8
 ** RUN TIME: 15.22.33.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
 TITLE: *

GAP CONDUCTANCE (KW/M**2/K) VS RELATIVE POWER

EXPOSURE RELATIVE POWER

GWD/MT

0.5 1.0 1.5 2.0 2.5

0.0	5.6	6.9	9.3	14.1	26.0
7.0	8.1	10.9	17.3	32.7	42.8
14.0	10.4	15.4	29.6	39.4	50.4
21.0	13.7	23.9	35.0	44.8	57.7
28.0	19.4	30.8	39.2	50.3	65.7
35.0	27.4	34.3	43.1	55.9	74.5
42.0	31.5	38.1	47.9	63.0	86.2
49.0	32.8	39.7	50.5	67.9	95.6
56.0	33.3	40.3	51.9	71.1	102.2
62.0	33.1	40.2	52.1	72.4	105.6

NOTE: RELATIVE POWER OF 1.0 = 20.67 KW/M (6.30 KW/FT)

INTERPIN-3 ** STUDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 9
 ** RUN TIME: 15.22.33.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
 TITLE: *

GAP CONDUCTANCE (BTU/HR/FT**2/F) VS RELATIVE POWER

EXPOSURE RELATIVE POWER

GWD/MT

0.5 1.0 1.5 2.0 2.5

0.0	979.7	1220.5	1644.0	2476.7	4587.0
7.0	1426.6	1923.1	3048.8	5752.3	7540.7
14.0	1828.4	2713.5	5204.3	6932.9	8874.5
21.0	2404.0	4201.4	6159.7	7894.7	10170.0
28.0	3420.7	5431.5	6906.3	8850.4	11565.7
35.0	4825.0	6036.6	7595.5	9838.4	13117.5

42.0 5552.6 6709.3 8437.4 11095.0 15177.1
49.0 5776.5 6989.6 8900.4 11964.2 16828.7
56.0 5866.5 7106.0 9143.4 12519.8 18006.2
62.0 5832.6 7075.1 9180.3 12752.0 18605.9

NOTE: RELATIVE POWER OF 1.0 = 20.67 KW/M (6.30 KW/FT)
INTERPIN-3 ** STUDDSVIK CMS ** 3.03 CREATED 01/04/18 ** PAGE 10
** RUN TIME: 15.22.33.** DATE: 04/04/22 REFERENCE POWER = 20.67 KW/M
TITLE: *

THERMAL GAP (CM RADIAL) VS RELATIVE POWER

EXPOSURE	RELATIVE POWER				
GWD/MT	0.5	1.0	1.5	2.0	2.5

0.0	0.00719	0.00608	0.00482	0.00351	0.00222
7.0	0.00504	0.00401	0.00283	0.00149	0.00000
14.0	0.00402	0.00299	0.00176	0.00013	0.00000
21.0	0.00317	0.00212	0.00071	0.00000	0.00000
28.0	0.00239	0.00126	0.00000	0.00000	0.00000
35.0	0.00165	0.00043	0.00000	0.00000	0.00000
42.0	0.00070	0.00000	0.00000	0.00000	0.00000
49.0	0.00015	0.00000	0.00000	0.00000	0.00000
56.0	0.00000	0.00000	0.00000	0.00000	0.00000
62.0	0.00000	0.00000	0.00000	0.00000	0.00000

NOTE: RELATIVE POWER OF 1.0 = 20.67 KW/M (6.30 KW/FT)

FISSION GAS RELEASE

EXPOSURE	0.0	7.0	14.0	21.0	28.0	35.0	42.0	49.0	56.0	62.0
PERCENT	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4

***** END OF OUTPUT *****
TOTAL CPU TIME 0 SECONDS

**ATTACHMENT D
LOW TEMPERATURE GAS GAP FRACTION RESULTS**

Gas Gap Fractions: I, Xe, Kr Low Temperature					
Power factor				1.65	
Axial factor				1.10	
Assembly Power = $(2700 * 1.02 * pf * af / 217) =$				23.03460829	MW/assm
Specific Power = $(2700 * 1.02 * pf * af / 217 / 0.410372) =$				56.1310428	MW/MTU
$V_{fuel} = 176 * \pi * (0.96774/2)^2 * (347.218) =$				44949.18256	cc
$M_{fuel} = (10.96) * (0.945) * V_{fuel} * (238/270) =$				410371.65	gm
BU				62000.00	mwd/t
	DECAY				
	CONSTANT	F			
	1/SEC				
I-131	9.976E-07	0.0002			
I-132	8.425E-05	0.0000			
I-133	9.211E-06	0.0000			
I-134	2.200E-04	0.0000			
I-135	2.912E-05	0.0000			
XE-131M	6.815E-07	0.0003			
XE-133M	3.663E-06	0.0001			
XE-133	1.528E-06	0.0001			
XE-135M	7.380E-04	0.0000			
XE-135	2.115E-05	0.0000			
XE-138	8.151E-04	0.0000			
KR-83M	1.052E-04	0.0000			
KR-85M	4.297E-05	0.0000			
KR-85	2.054E-09	0.0043			
KR-87	1.514E-04	0.0000			
KR-88	6.731E-05	0.0000			

ATTACHMENT E
CASE A GAS GAP FRACTION RESULTS

Gas Gap Fractions: I-131											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=					44949.18	cc					
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=					410371.65	gm					
Q	72300	cal/mol									
R	1.987	cal/mol-K									
Do/a2	0.61	1/sec									
lambda	9.9760E-07	1/sec									
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1145.1	1.00	1.00	30.9262	0.00	0.000E+00	6.766E-14	0.0000E+00	1.4743E+07	0.0000	0.0000
7000	1120.2	1.00	1.00	30.9262	226.35	1.956E+07	1.056E-13	2.0649E-06	9.4482E+06	1.0000	0.0010
14000	1127.2	1.00	1.00	30.9262	452.69	3.911E+07	4.085E-13	1.5978E-05	2.4420E+06	1.0000	0.0019
21000	1136.3	1.00	1.00	30.9262	679.04	5.867E+07	1.673E-12	9.8150E-05	5.9631E+05	1.0000	0.0039
28000	1162.1	1.00	1.00	30.9262	905.38	7.822E+07	1.077E-11	8.4252E-04	9.2624E+04	1.0000	0.0098
35000	1193.5	1.00	1.00	30.9262	1131.73	9.778E+07	7.762E-11	7.5901E-03	1.2852E+04	1.0000	0.0262
42000	1222.2	1.00	1.00	30.9262	1358.07	1.173E+08	5.022E-10	5.8931E-02	1.9863E+03	1.0000	0.0658
49000	1261.3	1.00	1.00	30.9262	1584.42	1.369E+08	3.997E-09	5.4714E-01	2.4960E+02	1.0000	0.1779
56000	1294.5	1.00	1.00	30.9262	1810.76	1.564E+08	2.649E-08	4.1440E+00	3.7663E+01	1.0000	0.4092
62000	1324.3	1.00	1.00	30.9262	2004.77	1.732E+08	1.338E-07	2.3168E+01	7.4584E+00	1.0000	0.7056
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1122.5	1.00	1.00	30.9262	0.00	0.000E+00	3.569E-14	0.0000E+00	2.7954E+07	0.0000	0.0000
7000	1089.2	1.00	1.00	30.9262	226.35	1.956E+07	4.189E-14	8.1921E-07	2.3815E+07	1.0000	0.0006
14000	1093.9	1.00	1.00	30.9262	452.69	3.911E+07	1.529E-13	5.9808E-06	6.5240E+06	1.0000	0.0012
21000	1100.8	1.00	1.00	30.9262	679.04	5.867E+07	5.957E-13	3.4946E-05	1.6748E+06	1.0000	0.0023
28000	1124	1.00	1.00	30.9262	905.38	7.822E+07	3.726E-12	2.9150E-04	2.6771E+05	1.0000	0.0058
35000	1152.8	1.00	1.00	30.9262	1131.73	9.778E+07	2.646E-11	2.5869E-03	3.7707E+04	1.0000	0.0154
42000	1179.1	1.00	1.00	30.9262	1358.07	1.173E+08	1.692E-10	1.9848E-02	5.8975E+03	1.0000	0.0386
49000	1215.1	1.00	1.00	30.9262	1584.42	1.369E+08	1.335E-09	1.8270E-01	7.4748E+02	1.0000	0.1057
56000	1245.8	1.00	1.00	30.9262	1810.76	1.564E+08	8.828E-09	1.3811E+00	1.1301E+02	1.0000	0.2557
62000	1273.4	1.00	1.00	30.9262	2004.77	1.732E+08	4.460E-08	7.7253E+00	2.2368E+01	1.0000	0.5003
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1062.8	1.00	1.00	30.9262	0.00	0.000E+00	5.777E-15	0.0000E+00	1.7268E+08	0.0000	0.0000
7000	1010.9	1.00	1.00	30.9262	226.35	1.956E+07	3.150E-15	6.1609E-08	3.1667E+08	1.0000	0.0002
14000	1009.9	1.00	1.00	30.9262	452.69	3.911E+07	9.613E-15	3.7600E-07	1.0377E+08	1.0000	0.0003
21000	1011.5	1.00	1.00	30.9262	679.04	5.867E+07	3.218E-14	1.8881E-06	3.0998E+07	1.0000	0.0005

28000	1028.3	1.00	1.00	30.9262	905.38	7.822E+07	1.832E-13	1.4329E-05	5.4461E+06	1.0000	0.0013
35000	1050.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.224E-12	1.1964E-04	8.1532E+05	1.0000	0.0033
42000	1070.8	1.00	1.00	30.9262	1358.07	1.173E+08	7.461E-12	8.7547E-04	1.3371E+05	1.0000	0.0082
49000	1099.1	1.00	1.00	30.9262	1584.42	1.369E+08	5.660E-11	7.7477E-03	1.7627E+04	1.0000	0.0224
56000	1123.7	1.00	1.00	30.9262	1810.76	1.564E+08	3.694E-10	5.7799E-02	2.7003E+03	1.0000	0.0566
62000	1145.6	1.00	1.00	30.9262	2004.77	1.732E+08	1.841E-09	3.1881E-01	5.4201E+02	1.0000	0.1233
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	970.7	1.00	1.00	30.9262	0.00	0.000E+00	2.244E-16	0.0000E+00	4.4461E+09	0.0000	0.0000
7000	897.9	1.00	1.00	30.9262	226.35	1.956E+07	3.397E-17	6.6429E-10	2.9369E+10	1.0000	0.0000
14000	888.8	1.00	1.00	30.9262	452.69	3.911E+07	7.094E-17	2.7746E-09	1.4063E+10	1.0000	0.0000
21000	883	1.00	1.00	30.9262	679.04	5.867E+07	1.714E-16	1.0058E-08	5.8192E+09	1.0000	0.0000
28000	890.8	1.00	1.00	30.9262	905.38	7.822E+07	7.777E-16	6.0834E-08	1.2828E+09	1.0000	0.0001
35000	903.8	1.00	1.00	30.9262	1131.73	9.778E+07	4.425E-15	4.3273E-07	2.2542E+08	1.0000	0.0002
42000	915.7	1.00	1.00	30.9262	1358.07	1.173E+08	2.361E-14	2.7709E-06	4.2245E+07	1.0000	0.0005
49000	933.2	1.00	1.00	30.9262	1584.42	1.369E+08	1.573E-13	2.1537E-05	6.3410E+06	1.0000	0.0012
56000	949	1.00	1.00	30.9262	1810.76	1.564E+08	9.522E-13	1.4897E-04	1.0477E+06	1.0000	0.0029
62000	962.9	1.00	1.00	30.9262	2004.77	1.732E+08	4.443E-12	7.6958E-04	2.2453E+05	1.0000	0.0063
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	852.5	1.00	1.00	30.9262	0.00	0.000E+00	1.241E-18	0.0000E+00	8.0379E+11	0.0000	0.0000
7000	764.6	1.00	1.00	30.9262	226.35	1.956E+07	2.903E-20	5.6767E-13	3.4367E+13	1.0000	0.0000
14000	746.6	1.00	1.00	30.9262	452.69	3.911E+07	2.914E-20	1.1398E-12	3.4232E+13	1.0000	0.0000
21000	732.4	1.00	1.00	30.9262	679.04	5.867E+07	3.582E-20	2.1017E-12	2.7848E+13	1.0000	0.0000
28000	730	1.00	1.00	30.9262	905.38	7.822E+07	9.621E-20	7.5260E-12	1.0369E+13	1.0000	0.0000
35000	732.4	1.00	1.00	30.9262	1131.73	9.778E+07	3.582E-19	3.5028E-11	2.7848E+12	1.0000	0.0000
42000	734.9	1.00	1.00	30.9262	1358.07	1.173E+08	1.341E-18	1.5739E-10	7.4371E+11	1.0000	0.0000
49000	740.3	1.00	1.00	30.9262	1584.42	1.369E+08	6.087E-18	8.3327E-10	1.6389E+11	1.0000	0.0000
56000	745.8	1.00	1.00	30.9262	1810.76	1.564E+08	2.766E-17	4.3271E-09	3.6069E+10	1.0000	0.0000
62000	750.6	1.00	1.00	30.9262	2004.77	1.732E+08	1.014E-16	1.7558E-08	9.8415E+09	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	717.0	1.00	1.00	30.9262	0.00	0.000E+00	3.897E-22	0.0000E+00	2.5599E+15	0.0000	0.0000
7000	681.2	1.00	1.00	30.9262	226.35	1.956E+07	8.560E-23	1.6739E-15	1.1655E+16	1.0000	0.0000
14000	663.0	1.00	1.00	30.9262	452.69	3.911E+07	6.247E-23	2.4432E-15	1.5970E+16	1.0000	0.0000
21000	647.4	1.00	1.00	30.9262	679.04	5.867E+07	5.264E-23	3.0883E-15	1.8952E+16	1.0000	0.0000
28000	641.0	1.00	1.00	30.9262	905.38	7.822E+07	9.497E-23	7.4293E-15	1.0504E+16	1.0000	0.0000
35000	638.8	1.00	1.00	30.9262	1131.73	9.778E+07	2.470E-22	2.4152E-14	4.0389E+15	1.0000	0.0000
42000	636.9	1.00	1.00	30.9262	1358.07	1.173E+08	6.590E-22	7.7328E-14	1.5138E+15	1.0000	0.0000
49000	636.2	1.00	1.00	30.9262	1584.42	1.369E+08	1.957E-21	2.6791E-13	5.0975E+14	1.0000	0.0000
56000	635.9	1.00	1.00	30.9262	1810.76	1.564E+08	6.024E-21	9.4245E-13	1.6561E+14	1.0000	0.0000
62000	636.1	1.00	1.00	30.9262	2004.77	1.732E+08	1.645E-20	2.8500E-12	6.0630E+13	1.0000	0.0000

Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
7000	0.0010	0.0006	0.0002	0.0000	0.0000	0.0000	0.0001				
14000	0.0019	0.0012	0.0003	0.0000	0.0000	0.0000	0.0002				
21000	0.0039	0.0023	0.0005	0.0000	0.0000	0.0000	0.0003				
28000	0.0098	0.0058	0.0013	0.0001	0.0000	0.0000	0.0008				
35000	0.0262	0.0154	0.0033	0.0002	0.0000	0.0000	0.0021				
42000	0.0658	0.0386	0.0082	0.0005	0.0000	0.0000	0.0052				
49000	0.1779	0.1057	0.0224	0.0012	0.0000	0.0000	0.0141				
56000	0.4092	0.2557	0.0566	0.0029	0.0000	0.0000	0.0343				
62000	0.7056	0.5003	0.1233	0.0063	0.0000	0.0000	0.0683				

Gas Gap Fractions: I-132											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300		cal/mol								
R	1.987		cal/mol-K								
Do/a2	0.61		1/sec								
lambda	8.4250E-05		1/sec								
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1145.1	1.00	1.00	30.9262	0.00	0.000E+00	6.766E-14	0.0000E+00	1.2451E+09	0.0000	0.0000
7000	1120.2	1.00	1.00	30.9262	226.35	1.956E+07	1.056E-13	2.0649E-06	7.9793E+08	1.0000	0.0001
14000	1127.2	1.00	1.00	30.9262	452.69	3.911E+07	4.085E-13	1.5978E-05	2.0623E+08	1.0000	0.0002
21000	1136.3	1.00	1.00	30.9262	679.04	5.867E+07	1.673E-12	9.8150E-05	5.0360E+07	1.0000	0.0004
28000	1162.1	1.00	1.00	30.9262	905.38	7.822E+07	1.077E-11	8.4252E-04	7.8223E+06	1.0000	0.0011
35000	1193.5	1.00	1.00	30.9262	1131.73	9.778E+07	7.762E-11	7.5901E-03	1.0854E+06	1.0000	0.0029
42000	1222.2	1.00	1.00	30.9262	1358.07	1.173E+08	5.022E-10	5.8931E-02	1.6775E+05	1.0000	0.0073
49000	1261.3	1.00	1.00	30.9262	1584.42	1.369E+08	3.997E-09	5.4714E-01	2.1079E+04	1.0000	0.0205
56000	1294.5	1.00	1.00	30.9262	1810.76	1.564E+08	2.649E-08	4.1440E+00	3.1807E+03	1.0000	0.0523
62000	1324.3	1.00	1.00	30.9262	2004.77	1.732E+08	1.338E-07	2.3168E+01	6.2988E+02	1.0000	0.1148
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1122.5	1.00	1.00	30.9262	0.00	0.000E+00	3.569E-14	0.0000E+00	2.3608E+09	0.0000	0.0000
7000	1089.2	1.00	1.00	30.9262	226.35	1.956E+07	4.189E-14	8.1921E-07	2.0112E+09	1.0000	0.0001
14000	1093.9	1.00	1.00	30.9262	452.69	3.911E+07	1.529E-13	5.9808E-06	5.5097E+08	1.0000	0.0001
21000	1100.8	1.00	1.00	30.9262	679.04	5.867E+07	5.957E-13	3.4946E-05	1.4144E+08	1.0000	0.0003
28000	1124	1.00	1.00	30.9262	905.38	7.822E+07	3.726E-12	2.9150E-04	2.2608E+07	1.0000	0.0006
35000	1152.8	1.00	1.00	30.9262	1131.73	9.778E+07	2.646E-11	2.5869E-03	3.1845E+06	1.0000	0.0017
42000	1179.1	1.00	1.00	30.9262	1358.07	1.173E+08	1.692E-10	1.9848E-02	4.9806E+05	1.0000	0.0042
49000	1215.1	1.00	1.00	30.9262	1584.42	1.369E+08	1.335E-09	1.8270E-01	6.3127E+04	1.0000	0.0119
56000	1245.8	1.00	1.00	30.9262	1810.76	1.564E+08	8.828E-09	1.3811E+00	9.5440E+03	1.0000	0.0304
62000	1273.4	1.00	1.00	30.9262	2004.77	1.732E+08	4.460E-08	7.7253E+00	1.8890E+03	1.0000	0.0674
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1062.8	1.00	1.00	30.9262	0.00	0.000E+00	5.777E-15	0.0000E+00	1.4583E+10	0.0000	0.0000
7000	1010.9	1.00	1.00	30.9262	226.35	1.956E+07	3.150E-15	6.1609E-08	2.6743E+10	1.0000	0.0000
14000	1009.9	1.00	1.00	30.9262	452.69	3.911E+07	9.613E-15	3.7600E-07	8.7638E+09	1.0000	0.0000
21000	1011.5	1.00	1.00	30.9262	679.04	5.867E+07	3.218E-14	1.8881E-06	2.6178E+09	1.0000	0.0001
28000	1028.3	1.00	1.00	30.9262	905.38	7.822E+07	1.832E-13	1.4329E-05	4.5994E+08	1.0000	0.0001
35000	1050.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.224E-12	1.1964E-04	6.8856E+07	1.0000	0.0004
42000	1070.8	1.00	1.00	30.9262	1358.07	1.173E+08	7.461E-12	8.7547E-04	1.1292E+07	1.0000	0.0009

49000	1099.1	1.00	1.00	30.9262	1584.42	1.369E+08	5.660E-11	7.7477E-03	1.4886E+06	1.0000	0.0025
56000	1123.7	1.00	1.00	30.9262	1810.76	1.564E+08	3.694E-10	5.7799E-02	2.2805E+05	1.0000	0.0063
62000	1145.6	1.00	1.00	30.9262	2004.77	1.732E+08	1.841E-09	3.1881E-01	4.5774E+04	1.0000	0.0140
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	970.7	1.00	1.00	30.9262	0.00	0.000E+00	2.244E-16	0.0000E+00	3.7548E+11	0.0000	0.0000
7000	897.9	1.00	1.00	30.9262	226.35	1.956E+07	3.397E-17	6.6429E-10	2.4803E+12	1.0000	0.0000
14000	888.8	1.00	1.00	30.9262	452.69	3.911E+07	7.094E-17	2.7746E-09	1.1877E+12	1.0000	0.0000
21000	883	1.00	1.00	30.9262	679.04	5.867E+07	1.714E-16	1.0058E-08	4.9144E+11	1.0000	0.0000
28000	890.8	1.00	1.00	30.9262	905.38	7.822E+07	7.777E-16	6.0834E-08	1.0834E+11	1.0000	0.0000
35000	903.8	1.00	1.00	30.9262	1131.73	9.778E+07	4.425E-15	4.3273E-07	1.9037E+10	1.0000	0.0000
42000	915.7	1.00	1.00	30.9262	1358.07	1.173E+08	2.361E-14	2.7709E-06	3.5677E+09	1.0000	0.0001
49000	933.2	1.00	1.00	30.9262	1584.42	1.369E+08	1.573E-13	2.1537E-05	5.3551E+08	1.0000	0.0001
56000	949	1.00	1.00	30.9262	1810.76	1.564E+08	9.522E-13	1.4897E-04	8.8479E+07	1.0000	0.0003
62000	962.9	1.00	1.00	30.9262	2004.77	1.732E+08	4.443E-12	7.6958E-04	1.8962E+07	1.0000	0.0007
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	852.5	1.00	1.00	30.9262	0.00	0.000E+00	1.241E-18	0.0000E+00	6.7882E+13	0.0000	0.0000
7000	764.6	1.00	1.00	30.9262	226.35	1.956E+07	2.903E-20	5.6767E-13	2.9024E+15	1.0000	0.0000
14000	746.6	1.00	1.00	30.9262	452.69	3.911E+07	2.914E-20	1.1398E-12	2.8910E+15	1.0000	0.0000
21000	732.4	1.00	1.00	30.9262	679.04	5.867E+07	3.582E-20	2.1017E-12	2.3519E+15	1.0000	0.0000
28000	730	1.00	1.00	30.9262	905.38	7.822E+07	9.621E-20	7.5260E-12	8.7569E+14	1.0000	0.0000
35000	732.4	1.00	1.00	30.9262	1131.73	9.778E+07	3.582E-19	3.5028E-11	2.3519E+14	1.0000	0.0000
42000	734.9	1.00	1.00	30.9262	1358.07	1.173E+08	1.341E-18	1.5739E-10	6.2808E+13	1.0000	0.0000
49000	740.3	1.00	1.00	30.9262	1584.42	1.369E+08	6.087E-18	8.3327E-10	1.3841E+13	1.0000	0.0000
56000	745.8	1.00	1.00	30.9262	1810.76	1.564E+08	2.766E-17	4.3271E-09	3.0461E+12	1.0000	0.0000
62000	750.6	1.00	1.00	30.9262	2004.77	1.732E+08	1.014E-16	1.7558E-08	8.3115E+11	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	717.0	1.00	1.00	30.9262	0.00	0.000E+00	3.897E-22	0.0000E+00	2.1619E+17	0.0000	0.0000
7000	681.2	1.00	1.00	30.9262	226.35	1.956E+07	8.560E-23	1.6739E-15	9.8428E+17	1.0000	0.0000
14000	663.0	1.00	1.00	30.9262	452.69	3.911E+07	6.247E-23	2.4432E-15	1.3487E+18	1.0000	0.0000
21000	647.4	1.00	1.00	30.9262	679.04	5.867E+07	5.264E-23	3.0883E-15	1.6005E+18	1.0000	0.0000
28000	641.0	1.00	1.00	30.9262	905.38	7.822E+07	9.497E-23	7.4293E-15	8.8709E+17	1.0000	0.0000
35000	638.8	1.00	1.00	30.9262	1131.73	9.778E+07	2.470E-22	2.4152E-14	3.4109E+17	1.0000	0.0000
42000	636.9	1.00	1.00	30.9262	1358.07	1.173E+08	6.590E-22	7.7328E-14	1.2784E+17	1.0000	0.0000
49000	636.2	1.00	1.00	30.9262	1584.42	1.369E+08	1.957E-21	2.6791E-13	4.3050E+16	1.0000	0.0000
56000	635.9	1.00	1.00	30.9262	1810.76	1.564E+08	6.024E-21	9.4245E-13	1.3986E+16	1.0000	0.0000
62000	636.1	1.00	1.00	30.9262	2004.77	1.732E+08	1.645E-20	2.8500E-12	5.1204E+15	1.0000	0.0000

Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
7000	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000				
14000	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000				
21000	0.0004	0.0003	0.0001	0.0000	0.0000	0.0000	0.0000				
28000	0.0011	0.0006	0.0001	0.0000	0.0000	0.0000	0.0001				
35000	0.0029	0.0017	0.0004	0.0000	0.0000	0.0000	0.0002				
42000	0.0073	0.0042	0.0009	0.0001	0.0000	0.0000	0.0006				
49000	0.0205	0.0119	0.0025	0.0001	0.0000	0.0000	0.0016				
56000	0.0523	0.0304	0.0063	0.0003	0.0000	0.0000	0.0040				
62000	0.1148	0.0674	0.0140	0.0007	0.0000	0.0000	0.0089				

Gas Gap Fractions: I-133											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300		cal/mol								
R	1.987		cal/mol-K								
Do/a2	0.61		1/sec								
lambda	9.2110E-06		1/sec								
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1145.1	1.00	1.00	30.9262	0.00	0.000E+00	6.766E-14	0.0000E+00	1.3613E+08	0.0000	0.0000
7000	1120.2	1.00	1.00	30.9262	226.35	1.956E+07	1.056E-13	2.0649E-06	8.7237E+07	1.0000	0.0003
14000	1127.2	1.00	1.00	30.9262	452.69	3.911E+07	4.085E-13	1.5978E-05	2.2547E+07	1.0000	0.0006
21000	1136.3	1.00	1.00	30.9262	679.04	5.867E+07	1.673E-12	9.8150E-05	5.5058E+06	1.0000	0.0013
28000	1162.1	1.00	1.00	30.9262	905.38	7.822E+07	1.077E-11	8.4252E-04	8.5521E+05	1.0000	0.0032
35000	1193.5	1.00	1.00	30.9262	1131.73	9.778E+07	7.762E-11	7.5901E-03	1.1866E+05	1.0000	0.0087
42000	1222.2	1.00	1.00	30.9262	1358.07	1.173E+08	5.022E-10	5.8931E-02	1.8340E+04	1.0000	0.0220
49000	1261.3	1.00	1.00	30.9262	1584.42	1.369E+08	3.997E-09	5.4714E-01	2.3046E+03	1.0000	0.0612
56000	1294.5	1.00	1.00	30.9262	1810.76	1.564E+08	2.649E-08	4.1440E+00	3.4775E+02	1.0000	0.1522
62000	1324.3	1.00	1.00	30.9262	2004.77	1.732E+08	1.338E-07	2.3168E+01	6.8865E+01	1.0000	0.3179
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1122.5	1.00	1.00	30.9262	0.00	0.000E+00	3.569E-14	0.0000E+00	2.5810E+08	0.0000	0.0000
7000	1089.2	1.00	1.00	30.9262	226.35	1.956E+07	4.189E-14	8.1921E-07	2.1989E+08	1.0000	0.0002
14000	1093.9	1.00	1.00	30.9262	452.69	3.911E+07	1.529E-13	5.9808E-06	6.0237E+07	1.0000	0.0004
21000	1100.8	1.00	1.00	30.9262	679.04	5.867E+07	5.957E-13	3.4946E-05	1.5464E+07	1.0000	0.0008
28000	1124	1.00	1.00	30.9262	905.38	7.822E+07	3.726E-12	2.9150E-04	2.4718E+06	1.0000	0.0019
35000	1152.8	1.00	1.00	30.9262	1131.73	9.778E+07	2.646E-11	2.5869E-03	3.4816E+05	1.0000	0.0051
42000	1179.1	1.00	1.00	30.9262	1358.07	1.173E+08	1.692E-10	1.9848E-02	5.4452E+04	1.0000	0.0128
49000	1215.1	1.00	1.00	30.9262	1584.42	1.369E+08	1.335E-09	1.8270E-01	6.9016E+03	1.0000	0.0357
56000	1245.8	1.00	1.00	30.9262	1810.76	1.564E+08	8.828E-09	1.3811E+00	1.0434E+03	1.0000	0.0900
62000	1273.4	1.00	1.00	30.9262	2004.77	1.732E+08	4.460E-08	7.7253E+00	2.0652E+02	1.0000	0.1942
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1062.8	1.00	1.00	30.9262	0.00	0.000E+00	5.777E-15	0.0000E+00	1.5944E+09	0.0000	0.0000
7000	1010.9	1.00	1.00	30.9262	226.35	1.956E+07	3.150E-15	6.1609E-08	2.9238E+09	1.0000	0.0001
14000	1009.9	1.00	1.00	30.9262	452.69	3.911E+07	9.613E-15	3.7600E-07	9.5814E+08	1.0000	0.0001
21000	1011.5	1.00	1.00	30.9262	679.04	5.867E+07	3.218E-14	1.8881E-06	2.8621E+08	1.0000	0.0002
28000	1028.3	1.00	1.00	30.9262	905.38	7.822E+07	1.832E-13	1.4329E-05	5.0285E+07	1.0000	0.0004
35000	1050.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.224E-12	1.1964E-04	7.5280E+06	1.0000	0.0011
42000	1070.8	1.00	1.00	30.9262	1358.07	1.173E+08	7.461E-12	8.7547E-04	1.2345E+06	1.0000	0.0027

49000	1099.1	1.00	1.00	30.9262	1584.42	1.369E+08	5.660E-11	7.7477E-03	1.6275E+05	1.0000	0.0074
56000	1123.7	1.00	1.00	30.9262	1810.76	1.564E+08	3.694E-10	5.7799E-02	2.4932E+04	1.0000	0.0189
62000	1145.6	1.00	1.00	30.9262	2004.77	1.732E+08	1.841E-09	3.1881E-01	5.0044E+03	1.0000	0.0418
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	970.7	1.00	1.00	30.9262	0.00	0.000E+00	2.244E-16	0.0000E+00	4.1051E+10	0.0000	0.0000
7000	897.9	1.00	1.00	30.9262	226.35	1.956E+07	3.397E-17	6.6429E-10	2.7117E+11	1.0000	0.0000
14000	888.8	1.00	1.00	30.9262	452.69	3.911E+07	7.094E-17	2.7746E-09	1.2985E+11	1.0000	0.0000
21000	883	1.00	1.00	30.9262	679.04	5.867E+07	1.714E-16	1.0058E-08	5.3729E+10	1.0000	0.0000
28000	890.8	1.00	1.00	30.9262	905.38	7.822E+07	7.777E-16	6.0834E-08	1.1844E+10	1.0000	0.0000
35000	903.8	1.00	1.00	30.9262	1131.73	9.778E+07	4.425E-15	4.3273E-07	2.0814E+09	1.0000	0.0001
42000	915.7	1.00	1.00	30.9262	1358.07	1.173E+08	2.361E-14	2.7709E-06	3.9006E+08	1.0000	0.0002
49000	933.2	1.00	1.00	30.9262	1584.42	1.369E+08	1.573E-13	2.1537E-05	5.8547E+07	1.0000	0.0004
56000	949	1.00	1.00	30.9262	1810.76	1.564E+08	9.522E-13	1.4897E-04	9.6734E+06	1.0000	0.0010
62000	962.9	1.00	1.00	30.9262	2004.77	1.732E+08	4.443E-12	7.6958E-04	2.0731E+06	1.0000	0.0021
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	852.5	1.00	1.00	30.9262	0.00	0.000E+00	1.241E-18	0.0000E+00	7.4215E+12	0.0000	0.0000
7000	764.6	1.00	1.00	30.9262	226.35	1.956E+07	2.903E-20	5.6767E-13	3.1732E+14	1.0000	0.0000
14000	746.6	1.00	1.00	30.9262	452.69	3.911E+07	2.914E-20	1.1398E-12	3.1607E+14	1.0000	0.0000
21000	732.4	1.00	1.00	30.9262	679.04	5.867E+07	3.582E-20	2.1017E-12	2.5713E+14	1.0000	0.0000
28000	730	1.00	1.00	30.9262	905.38	7.822E+07	9.621E-20	7.5260E-12	9.5738E+13	1.0000	0.0000
35000	732.4	1.00	1.00	30.9262	1131.73	9.778E+07	3.582E-19	3.5028E-11	2.5713E+13	1.0000	0.0000
42000	734.9	1.00	1.00	30.9262	1358.07	1.173E+08	1.341E-18	1.5739E-10	6.8668E+12	1.0000	0.0000
49000	740.3	1.00	1.00	30.9262	1584.42	1.369E+08	6.087E-18	8.3327E-10	1.5132E+12	1.0000	0.0000
56000	745.8	1.00	1.00	30.9262	1810.76	1.564E+08	2.766E-17	4.3271E-09	3.3303E+11	1.0000	0.0000
62000	750.6	1.00	1.00	30.9262	2004.77	1.732E+08	1.014E-16	1.7558E-08	9.0869E+10	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	717.0	1.00	1.00	30.9262	0.00	0.000E+00	3.897E-22	0.0000E+00	2.3636E+16	0.0000	0.0000
7000	681.2	1.00	1.00	30.9262	226.35	1.956E+07	8.560E-23	1.6739E-15	1.0761E+17	1.0000	0.0000
14000	663.0	1.00	1.00	30.9262	452.69	3.911E+07	6.247E-23	2.4432E-15	1.4746E+17	1.0000	0.0000
21000	647.4	1.00	1.00	30.9262	679.04	5.867E+07	5.264E-23	3.0883E-15	1.7498E+17	1.0000	0.0000
28000	641.0	1.00	1.00	30.9262	905.38	7.822E+07	9.497E-23	7.4293E-15	9.6985E+16	1.0000	0.0000
35000	638.8	1.00	1.00	30.9262	1131.73	9.778E+07	2.470E-22	2.4152E-14	3.7291E+16	1.0000	0.0000
42000	636.9	1.00	1.00	30.9262	1358.07	1.173E+08	6.590E-22	7.7328E-14	1.3977E+16	1.0000	0.0000
49000	636.2	1.00	1.00	30.9262	1584.42	1.369E+08	1.957E-21	2.6791E-13	4.7066E+15	1.0000	0.0000
56000	635.9	1.00	1.00	30.9262	1810.76	1.564E+08	6.024E-21	9.4245E-13	1.5291E+15	1.0000	0.0000
62000	636.1	1.00	1.00	30.9262	2004.77	1.732E+08	1.645E-20	2.8500E-12	5.5981E+14	1.0000	0.0000

Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
7000	0.0003	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000				
14000	0.0006	0.0004	0.0001	0.0000	0.0000	0.0000	0.0001				
21000	0.0013	0.0008	0.0002	0.0000	0.0000	0.0000	0.0001				
28000	0.0032	0.0019	0.0004	0.0000	0.0000	0.0000	0.0003				
35000	0.0087	0.0051	0.0011	0.0001	0.0000	0.0000	0.0007				
42000	0.0220	0.0128	0.0027	0.0002	0.0000	0.0000	0.0017				
49000	0.0612	0.0357	0.0074	0.0004	0.0000	0.0000	0.0047				
56000	0.1522	0.0900	0.0189	0.0010	0.0000	0.0000	0.0120				
62000	0.3179	0.1942	0.0418	0.0021	0.0000	0.0000	0.0259				

Gas Gap Fractions: I-134												
$V_{fuel}=176 \cdot \pi \cdot (0.96774/2)^2 \cdot (347.218) =$						44949.18	cc					
$M_{fuel}=(10.96) \cdot (0.945) \cdot V_{fuel} \cdot (238/270) =$						410371.65	gm					
Q	72300			cal/mol								
R	1.987			cal/mol-K								
Do/a2	0.61			1/sec								
lambda	2.2000E-04			1/sec								
r=0.0												
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F	
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu		
0	1145.1	1.00	1.00	30.9262	0.00	0.000E+00	6.766E-14	0.0000E+00	3.2514E+09	0.0000	0.0000	
7000	1120.2	1.00	1.00	30.9262	226.35	1.956E+07	1.056E-13	2.0649E-06	2.0836E+09	1.0000	0.0001	
14000	1127.2	1.00	1.00	30.9262	452.69	3.911E+07	4.085E-13	1.5978E-05	5.3853E+08	1.0000	0.0001	
21000	1136.3	1.00	1.00	30.9262	679.04	5.867E+07	1.673E-12	9.8150E-05	1.3150E+08	1.0000	0.0003	
28000	1162.1	1.00	1.00	30.9262	905.38	7.822E+07	1.077E-11	8.4252E-04	2.0426E+07	1.0000	0.0007	
35000	1193.5	1.00	1.00	30.9262	1131.73	9.778E+07	7.762E-11	7.5901E-03	2.8342E+06	1.0000	0.0018	
42000	1222.2	1.00	1.00	30.9262	1358.07	1.173E+08	5.022E-10	5.8931E-02	4.3804E+05	1.0000	0.0045	
49000	1261.3	1.00	1.00	30.9262	1584.42	1.369E+08	3.997E-09	5.4714E-01	5.5043E+04	1.0000	0.0127	
56000	1294.5	1.00	1.00	30.9262	1810.76	1.564E+08	2.649E-08	4.1440E+00	8.3058E+03	1.0000	0.0326	
62000	1324.3	1.00	1.00	30.9262	2004.77	1.732E+08	1.338E-07	2.3168E+01	1.6448E+03	1.0000	0.0721	
r=0.2												
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F	
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu		
0	1122.5	1.00	1.00	30.9262	0.00	0.000E+00	3.569E-14	0.0000E+00	6.1647E+09	0.0000	0.0000	
7000	1089.2	1.00	1.00	30.9262	226.35	1.956E+07	4.189E-14	8.1921E-07	5.2519E+09	1.0000	0.0000	
14000	1093.9	1.00	1.00	30.9262	452.69	3.911E+07	1.529E-13	5.9808E-06	1.4387E+09	1.0000	0.0001	
21000	1100.8	1.00	1.00	30.9262	679.04	5.867E+07	5.957E-13	3.4946E-05	3.6934E+08	1.0000	0.0002	
28000	1124	1.00	1.00	30.9262	905.38	7.822E+07	3.726E-12	2.9150E-04	5.9037E+07	1.0000	0.0004	
35000	1152.8	1.00	1.00	30.9262	1131.73	9.778E+07	2.646E-11	2.5869E-03	8.3155E+06	1.0000	0.0010	
42000	1179.1	1.00	1.00	30.9262	1358.07	1.173E+08	1.692E-10	1.9848E-02	1.3006E+06	1.0000	0.0026	
49000	1215.1	1.00	1.00	30.9262	1584.42	1.369E+08	1.335E-09	1.8270E-01	1.6484E+05	1.0000	0.0074	
56000	1245.8	1.00	1.00	30.9262	1810.76	1.564E+08	8.828E-09	1.3811E+00	2.4922E+04	1.0000	0.0189	
62000	1273.4	1.00	1.00	30.9262	2004.77	1.732E+08	4.460E-08	7.7253E+00	4.9327E+03	1.0000	0.0421	
r=0.4												
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F	
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu		
0	1062.8	1.00	1.00	30.9262	0.00	0.000E+00	5.777E-15	0.0000E+00	3.8080E+10	0.0000	0.0000	
7000	1010.9	1.00	1.00	30.9262	226.35	1.956E+07	3.150E-15	6.1609E-08	6.9834E+10	1.0000	0.0000	
14000	1009.9	1.00	1.00	30.9262	452.69	3.911E+07	9.613E-15	3.7600E-07	2.2885E+10	1.0000	0.0000	
21000	1011.5	1.00	1.00	30.9262	679.04	5.867E+07	3.218E-14	1.8881E-06	6.8359E+09	1.0000	0.0000	
28000	1028.3	1.00	1.00	30.9262	905.38	7.822E+07	1.832E-13	1.4329E-05	1.2010E+09	1.0000	0.0001	
35000	1050.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.224E-12	1.1964E-04	1.7980E+08	1.0000	0.0002	
42000	1070.8	1.00	1.00	30.9262	1358.07	1.173E+08	7.461E-12	8.7547E-04	2.9486E+07	1.0000	0.0006	

49000	1099.1	1.00	1.00	30.9262	1584.42	1.369E+08	5.660E-11	7.7477E-03	3.8872E+06	1.0000	0.0015
56000	1123.7	1.00	1.00	30.9262	1810.76	1.564E+08	3.694E-10	5.7799E-02	5.9549E+05	1.0000	0.0039
62000	1145.6	1.00	1.00	30.9262	2004.77	1.732E+08	1.841E-09	3.1881E-01	1.1953E+05	1.0000	0.0087
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	970.7	1.00	1.00	30.9262	0.00	0.000E+00	2.244E-16	0.0000E+00	9.8049E+11	0.0000	0.0000
7000	897.9	1.00	1.00	30.9262	226.35	1.956E+07	3.397E-17	6.6429E-10	6.4767E+12	1.0000	0.0000
14000	888.8	1.00	1.00	30.9262	452.69	3.911E+07	7.094E-17	2.7746E-09	3.1013E+12	1.0000	0.0000
21000	883	1.00	1.00	30.9262	679.04	5.867E+07	1.714E-16	1.0058E-08	1.2833E+12	1.0000	0.0000
28000	890.8	1.00	1.00	30.9262	905.38	7.822E+07	7.777E-16	6.0834E-08	2.8289E+11	1.0000	0.0000
35000	903.8	1.00	1.00	30.9262	1131.73	9.778E+07	4.425E-15	4.3273E-07	4.9712E+10	1.0000	0.0000
42000	915.7	1.00	1.00	30.9262	1358.07	1.173E+08	2.361E-14	2.7709E-06	9.3163E+09	1.0000	0.0000
49000	933.2	1.00	1.00	30.9262	1584.42	1.369E+08	1.573E-13	2.1537E-05	1.3984E+09	1.0000	0.0001
56000	949	1.00	1.00	30.9262	1810.76	1.564E+08	9.522E-13	1.4897E-04	2.3104E+08	1.0000	0.0002
62000	962.9	1.00	1.00	30.9262	2004.77	1.732E+08	4.443E-12	7.6958E-04	4.9516E+07	1.0000	0.0004
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	852.5	1.00	1.00	30.9262	0.00	0.000E+00	1.241E-18	0.0000E+00	1.7726E+14	0.0000	0.0000
7000	764.6	1.00	1.00	30.9262	226.35	1.956E+07	2.903E-20	5.6767E-13	7.5790E+15	1.0000	0.0000
14000	746.6	1.00	1.00	30.9262	452.69	3.911E+07	2.914E-20	1.1398E-12	7.5491E+15	1.0000	0.0000
21000	732.4	1.00	1.00	30.9262	679.04	5.867E+07	3.582E-20	2.1017E-12	6.1414E+15	1.0000	0.0000
28000	730	1.00	1.00	30.9262	905.38	7.822E+07	9.621E-20	7.5260E-12	2.2867E+15	1.0000	0.0000
35000	732.4	1.00	1.00	30.9262	1131.73	9.778E+07	3.582E-19	3.5028E-11	6.1414E+14	1.0000	0.0000
42000	734.9	1.00	1.00	30.9262	1358.07	1.173E+08	1.341E-18	1.5739E-10	1.6401E+14	1.0000	0.0000
49000	740.3	1.00	1.00	30.9262	1584.42	1.369E+08	6.087E-18	8.3327E-10	3.6143E+13	1.0000	0.0000
56000	745.8	1.00	1.00	30.9262	1810.76	1.564E+08	2.766E-17	4.3271E-09	7.9543E+12	1.0000	0.0000
62000	750.6	1.00	1.00	30.9262	2004.77	1.732E+08	1.014E-16	1.7558E-08	2.1703E+12	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	717.0	1.00	1.00	30.9262	0.00	0.000E+00	3.897E-22	0.0000E+00	5.6453E+17	0.0000	0.0000
7000	681.2	1.00	1.00	30.9262	226.35	1.956E+07	8.560E-23	1.6739E-15	2.5702E+18	1.0000	0.0000
14000	663.0	1.00	1.00	30.9262	452.69	3.911E+07	6.247E-23	2.4432E-15	3.5219E+18	1.0000	0.0000
21000	647.4	1.00	1.00	30.9262	679.04	5.867E+07	5.264E-23	3.0883E-15	4.1794E+18	1.0000	0.0000
28000	641.0	1.00	1.00	30.9262	905.38	7.822E+07	9.497E-23	7.4293E-15	2.3164E+18	1.0000	0.0000
35000	638.8	1.00	1.00	30.9262	1131.73	9.778E+07	2.470E-22	2.4152E-14	8.9069E+17	1.0000	0.0000
42000	636.9	1.00	1.00	30.9262	1358.07	1.173E+08	6.590E-22	7.7328E-14	3.3383E+17	1.0000	0.0000
49000	636.2	1.00	1.00	30.9262	1584.42	1.369E+08	1.957E-21	2.6791E-13	1.1241E+17	1.0000	0.0000
56000	635.9	1.00	1.00	30.9262	1810.76	1.564E+08	6.024E-21	9.4245E-13	3.6521E+16	1.0000	0.0000
62000	636.1	1.00	1.00	30.9262	2004.77	1.732E+08	1.645E-20	2.8500E-12	1.3371E+16	1.0000	0.0000

Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
7000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
14000	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000				
21000	0.0003	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000				
28000	0.0007	0.0004	0.0001	0.0000	0.0000	0.0000	0.0001				
35000	0.0018	0.0010	0.0002	0.0000	0.0000	0.0000	0.0001				
42000	0.0045	0.0026	0.0006	0.0000	0.0000	0.0000	0.0004				
49000	0.0127	0.0074	0.0015	0.0001	0.0000	0.0000	0.0010				
56000	0.0326	0.0189	0.0039	0.0002	0.0000	0.0000	0.0025				
62000	0.0721	0.0421	0.0087	0.0004	0.0000	0.0000	0.0056				

Gas Gap Fractions: I-135												
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc					
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm					
Q	72300		cal/mol									
R	1.987		cal/mol-K									
Do/a2	0.61		1/sec									
lambda	2.9120E-05		1/sec									
r=0.0												
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F	
mwd/t	deg-K			mw/mtu		sec	1/sec			tau*mu		
0	1145.1	1.00	1.00	30.9262	0.00	0.000E+00	6.766E-14	0.0000E+00	4.3036E+08	0.0000	0.0000	
7000	1120.2	1.00	1.00	30.9262	226.35	1.956E+07	1.056E-13	2.0649E-06	2.7579E+08	1.0000	0.0002	
14000	1127.2	1.00	1.00	30.9262	452.69	3.911E+07	4.085E-13	1.5978E-05	7.1282E+07	1.0000	0.0004	
21000	1136.3	1.00	1.00	30.9262	679.04	5.867E+07	1.673E-12	9.8150E-05	1.7406E+07	1.0000	0.0007	
28000	1162.1	1.00	1.00	30.9262	905.38	7.822E+07	1.077E-11	8.4252E-04	2.7037E+06	1.0000	0.0018	
35000	1193.5	1.00	1.00	30.9262	1131.73	9.778E+07	7.762E-11	7.5901E-03	3.7515E+05	1.0000	0.0049	
42000	1222.2	1.00	1.00	30.9262	1358.07	1.173E+08	5.022E-10	5.8931E-02	5.7981E+04	1.0000	0.0124	
49000	1261.3	1.00	1.00	30.9262	1584.42	1.369E+08	3.997E-09	5.4714E-01	7.2857E+03	1.0000	0.0347	
56000	1294.5	1.00	1.00	30.9262	1810.76	1.564E+08	2.649E-08	4.1440E+00	1.0994E+03	1.0000	0.0877	
62000	1324.3	1.00	1.00	30.9262	2004.77	1.732E+08	1.338E-07	2.3168E+01	2.1771E+02	1.0000	0.1895	
r=0.2												
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F	
mwd/t	deg-K			mw/mtu		sec	1/sec			tau*mu		
0	1122.5	1.00	1.00	30.9262	0.00	0.000E+00	3.569E-14	0.0000E+00	8.1598E+08	0.0000	0.0000	
7000	1089.2	1.00	1.00	30.9262	226.35	1.956E+07	4.189E-14	8.1921E-07	6.9516E+08	1.0000	0.0001	
14000	1093.9	1.00	1.00	30.9262	452.69	3.911E+07	1.529E-13	5.9808E-06	1.9044E+08	1.0000	0.0002	
21000	1100.8	1.00	1.00	30.9262	679.04	5.867E+07	5.957E-13	3.4946E-05	4.8887E+07	1.0000	0.0004	
28000	1124	1.00	1.00	30.9262	905.38	7.822E+07	3.726E-12	2.9150E-04	7.8144E+06	1.0000	0.0011	
35000	1152.8	1.00	1.00	30.9262	1131.73	9.778E+07	2.646E-11	2.5869E-03	1.1007E+06	1.0000	0.0029	
42000	1179.1	1.00	1.00	30.9262	1358.07	1.173E+08	1.692E-10	1.9848E-02	1.7215E+05	1.0000	0.0072	
49000	1215.1	1.00	1.00	30.9262	1584.42	1.369E+08	1.335E-09	1.8270E-01	2.1819E+04	1.0000	0.0202	
56000	1245.8	1.00	1.00	30.9262	1810.76	1.564E+08	8.828E-09	1.3811E+00	3.2988E+03	1.0000	0.0513	
62000	1273.4	1.00	1.00	30.9262	2004.77	1.732E+08	4.460E-08	7.7253E+00	6.5291E+02	1.0000	0.1128	
r=0.4												
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F	
mwd/t	deg-K			mw/mtu		sec	1/sec			tau*mu		
0	1062.8	1.00	1.00	30.9262	0.00	0.000E+00	5.777E-15	0.0000E+00	5.0405E+09	0.0000	0.0000	
7000	1010.9	1.00	1.00	30.9262	226.35	1.956E+07	3.150E-15	6.1609E-08	9.2435E+09	1.0000	0.0000	
14000	1009.9	1.00	1.00	30.9262	452.69	3.911E+07	9.613E-15	3.7600E-07	3.0291E+09	1.0000	0.0001	
21000	1011.5	1.00	1.00	30.9262	679.04	5.867E+07	3.218E-14	1.8881E-06	9.0482E+08	1.0000	0.0001	
28000	1028.3	1.00	1.00	30.9262	905.38	7.822E+07	1.832E-13	1.4329E-05	1.5897E+08	1.0000	0.0002	
35000	1050.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.224E-12	1.1964E-04	2.3799E+07	1.0000	0.0006	
42000	1070.8	1.00	1.00	30.9262	1358.07	1.173E+08	7.461E-12	8.7547E-04	3.9029E+06	1.0000	0.0015	

49000	1099.1	1.00	1.00	30.9262	1584.42	1.369E+08	5.660E-11	7.7477E-03	5.1452E+05	1.0000	0.0042
56000	1123.7	1.00	1.00	30.9262	1810.76	1.564E+08	3.694E-10	5.7799E-02	7.8822E+04	1.0000	0.0106
62000	1145.6	1.00	1.00	30.9262	2004.77	1.732E+08	1.841E-09	3.1881E-01	1.5821E+04	1.0000	0.0237
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/t	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	970.7	1.00	1.00	30.9262	0.00	0.000E+00	2.244E-16	0.0000E+00	1.2978E+11	0.0000	0.0000
7000	897.9	1.00	1.00	30.9262	226.35	1.956E+07	3.397E-17	6.6429E-10	8.5727E+11	1.0000	0.0000
14000	888.8	1.00	1.00	30.9262	452.69	3.911E+07	7.094E-17	2.7746E-09	4.1050E+11	1.0000	0.0000
21000	883	1.00	1.00	30.9262	679.04	5.867E+07	1.714E-16	1.0058E-08	1.6986E+11	1.0000	0.0000
28000	890.8	1.00	1.00	30.9262	905.38	7.822E+07	7.777E-16	6.0834E-08	3.7445E+10	1.0000	0.0000
35000	903.8	1.00	1.00	30.9262	1131.73	9.778E+07	4.425E-15	4.3273E-07	6.5801E+09	1.0000	0.0000
42000	915.7	1.00	1.00	30.9262	1358.07	1.173E+08	2.361E-14	2.7709E-06	1.2331E+09	1.0000	0.0001
49000	933.2	1.00	1.00	30.9262	1584.42	1.369E+08	1.573E-13	2.1537E-05	1.8509E+08	1.0000	0.0002
56000	949	1.00	1.00	30.9262	1810.76	1.564E+08	9.522E-13	1.4897E-04	3.0582E+07	1.0000	0.0005
62000	962.9	1.00	1.00	30.9262	2004.77	1.732E+08	4.443E-12	7.6958E-04	6.5541E+06	1.0000	0.0012
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/t	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	852.5	1.00	1.00	30.9262	0.00	0.000E+00	1.241E-18	0.0000E+00	2.3463E+13	0.0000	0.0000
7000	764.6	1.00	1.00	30.9262	226.35	1.956E+07	2.903E-20	5.6767E-13	1.0032E+15	1.0000	0.0000
14000	746.6	1.00	1.00	30.9262	452.69	3.911E+07	2.914E-20	1.1398E-12	9.9923E+14	1.0000	0.0000
21000	732.4	1.00	1.00	30.9262	679.04	5.867E+07	3.582E-20	2.1017E-12	8.1290E+14	1.0000	0.0000
28000	730	1.00	1.00	30.9262	905.38	7.822E+07	9.621E-20	7.5260E-12	3.0267E+14	1.0000	0.0000
35000	732.4	1.00	1.00	30.9262	1131.73	9.778E+07	3.582E-19	3.5028E-11	8.1290E+13	1.0000	0.0000
42000	734.9	1.00	1.00	30.9262	1358.07	1.173E+08	1.341E-18	1.5739E-10	2.1709E+13	1.0000	0.0000
49000	740.3	1.00	1.00	30.9262	1584.42	1.369E+08	6.087E-18	8.3327E-10	4.7840E+12	1.0000	0.0000
56000	745.8	1.00	1.00	30.9262	1810.76	1.564E+08	2.766E-17	4.3271E-09	1.0529E+12	1.0000	0.0000
62000	750.6	1.00	1.00	30.9262	2004.77	1.732E+08	1.014E-16	1.7558E-08	2.8728E+11	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/t	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	717.0	1.00	1.00	30.9262	0.00	0.000E+00	3.897E-22	0.0000E+00	7.4724E+16	0.0000	0.0000
7000	681.2	1.00	1.00	30.9262	226.35	1.956E+07	8.560E-23	1.6739E-15	3.4020E+17	1.0000	0.0000
14000	663.0	1.00	1.00	30.9262	452.69	3.911E+07	6.247E-23	2.4432E-15	4.6617E+17	1.0000	0.0000
21000	647.4	1.00	1.00	30.9262	679.04	5.867E+07	5.264E-23	3.0883E-15	5.5320E+17	1.0000	0.0000
28000	641.0	1.00	1.00	30.9262	905.38	7.822E+07	9.497E-23	7.4293E-15	3.0661E+17	1.0000	0.0000
35000	638.8	1.00	1.00	30.9262	1131.73	9.778E+07	2.470E-22	2.4152E-14	1.1789E+17	1.0000	0.0000
42000	636.9	1.00	1.00	30.9262	1358.07	1.173E+08	6.590E-22	7.7328E-14	4.4187E+16	1.0000	0.0000
49000	636.2	1.00	1.00	30.9262	1584.42	1.369E+08	1.957E-21	2.6791E-13	1.4880E+16	1.0000	0.0000
56000	635.9	1.00	1.00	30.9262	1810.76	1.564E+08	6.024E-21	9.4245E-13	4.8340E+15	1.0000	0.0000
62000	636.1	1.00	1.00	30.9262	2004.77	1.732E+08	1.645E-20	2.8500E-12	1.7698E+15	1.0000	0.0000
Burnup	F	F	F	F	F	F					

mwd/t	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
7000	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000				
14000	0.0004	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000				
21000	0.0007	0.0004	0.0001	0.0000	0.0000	0.0000	0.0001				
28000	0.0018	0.0011	0.0002	0.0000	0.0000	0.0000	0.0001				
35000	0.0049	0.0029	0.0006	0.0000	0.0000	0.0000	0.0004				
42000	0.0124	0.0072	0.0015	0.0001	0.0000	0.0000	0.0010				
49000	0.0347	0.0202	0.0042	0.0002	0.0000	0.0000	0.0027				
56000	0.0877	0.0513	0.0106	0.0005	0.0000	0.0000	0.0068				
62000	0.1895	0.1128	0.0237	0.0012	0.0000	0.0000	0.0150				

Gas Gap Fractions: Xe-133												
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc					
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm					
Q	72300	cal/mol										
R	1.987	cal/mol-K										
Do/a2	0.61	1/sec										
lambda	1.5280E-06	1/sec										
r=0.0												
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F	
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu		
0	1145.1	1.00	1.00	30.9262	0.00	0.000E+00	9.666E-15	0.0000E+00	1.5808E+08	0.0000	0.0000	
7000	1120.2	1.00	1.00	30.9262	226.35	1.956E+07	1.508E-14	2.9498E-07	1.0130E+08	1.0000	0.0003	
14000	1127.2	1.00	1.00	30.9262	452.69	3.911E+07	5.836E-14	2.2826E-06	2.6182E+07	1.0000	0.0006	
21000	1136.3	1.00	1.00	30.9262	679.04	5.867E+07	2.390E-13	1.4021E-05	6.3935E+06	1.0000	0.0012	
28000	1162.1	1.00	1.00	30.9262	905.38	7.822E+07	1.539E-12	1.2036E-04	9.9309E+05	1.0000	0.0030	
35000	1193.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.109E-11	1.0843E-03	1.3779E+05	1.0000	0.0081	
42000	1222.2	1.00	1.00	30.9262	1358.07	1.173E+08	7.175E-11	8.4187E-03	2.1297E+04	1.0000	0.0204	
49000	1261.3	1.00	1.00	30.9262	1584.42	1.369E+08	5.710E-10	7.8163E-02	2.6761E+03	1.0000	0.0569	
56000	1294.5	1.00	1.00	30.9262	1810.76	1.564E+08	3.784E-09	5.9200E-01	4.0381E+02	1.0000	0.1419	
62000	1324.3	1.00	1.00	30.9262	2004.77	1.732E+08	1.911E-08	3.3097E+00	7.9967E+01	1.0000	0.2980	
r=0.2												
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F	
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu		
0	1122.5	1.00	1.00	30.9262	0.00	0.000E+00	5.098E-15	0.0000E+00	2.9972E+08	0.0000	0.0000	
7000	1089.2	1.00	1.00	30.9262	226.35	1.956E+07	5.984E-15	1.1703E-07	2.5534E+08	1.0000	0.0002	
14000	1093.9	1.00	1.00	30.9262	452.69	3.911E+07	2.184E-14	8.5440E-07	6.9948E+07	1.0000	0.0004	
21000	1100.8	1.00	1.00	30.9262	679.04	5.867E+07	8.509E-14	4.9923E-06	1.7957E+07	1.0000	0.0007	
28000	1124	1.00	1.00	30.9262	905.38	7.822E+07	5.324E-13	4.1643E-05	2.8703E+06	1.0000	0.0018	
35000	1152.8	1.00	1.00	30.9262	1131.73	9.778E+07	3.780E-12	3.6956E-04	4.0429E+05	1.0000	0.0047	
42000	1179.1	1.00	1.00	30.9262	1358.07	1.173E+08	2.417E-11	2.8355E-03	6.3231E+04	1.0000	0.0119	
49000	1215.1	1.00	1.00	30.9262	1584.42	1.369E+08	1.907E-10	2.6100E-02	8.0143E+03	1.0000	0.0331	
56000	1245.8	1.00	1.00	30.9262	1810.76	1.564E+08	1.261E-09	1.9729E-01	1.2117E+03	1.0000	0.0837	
62000	1273.4	1.00	1.00	30.9262	2004.77	1.732E+08	6.371E-09	1.1036E+00	2.3982E+02	1.0000	0.1812	
r=0.4												
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F	
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu		
0	1062.8	1.00	1.00	30.9262	0.00	0.000E+00	8.253E-16	0.0000E+00	1.8514E+09	0.0000	0.0000	
7000	1010.9	1.00	1.00	30.9262	226.35	1.956E+07	4.500E-16	8.8012E-09	3.3952E+09	1.0000	0.0001	
14000	1009.9	1.00	1.00	30.9262	452.69	3.911E+07	1.373E-15	5.3715E-08	1.1126E+09	1.0000	0.0001	
21000	1011.5	1.00	1.00	30.9262	679.04	5.867E+07	4.598E-15	2.6973E-07	3.3235E+08	1.0000	0.0002	
28000	1028.3	1.00	1.00	30.9262	905.38	7.822E+07	2.617E-14	2.0470E-06	5.8392E+07	1.0000	0.0004	
35000	1050.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.748E-13	1.7092E-05	8.7417E+06	1.0000	0.0010	
42000	1070.8	1.00	1.00	30.9262	1358.07	1.173E+08	1.066E-12	1.2507E-04	1.4336E+06	1.0000	0.0025	

49000	1099.1	1.00	1.00	30.9262	1584.42	1.369E+08	8.085E-12	1.1068E-03	1.8899E+05	1.0000	0.0069
56000	1123.7	1.00	1.00	30.9262	1810.76	1.564E+08	5.278E-11	8.2570E-03	2.8952E+04	1.0000	0.0175
62000	1145.6	1.00	1.00	30.9262	2004.77	1.732E+08	2.629E-10	4.5544E-02	5.8113E+03	1.0000	0.0388
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	970.7	1.00	1.00	30.9262	0.00	0.000E+00	3.205E-17	0.0000E+00	4.7670E+10	0.0000	0.0000
7000	897.9	1.00	1.00	30.9262	226.35	1.956E+07	4.853E-18	9.4898E-11	3.1488E+11	1.0000	0.0000
14000	888.8	1.00	1.00	30.9262	452.69	3.911E+07	1.013E-17	3.9637E-10	1.5078E+11	1.0000	0.0000
21000	883	1.00	1.00	30.9262	679.04	5.867E+07	2.449E-17	1.4368E-09	6.2392E+10	1.0000	0.0000
28000	890.8	1.00	1.00	30.9262	905.38	7.822E+07	1.111E-16	8.6905E-09	1.3754E+10	1.0000	0.0000
35000	903.8	1.00	1.00	30.9262	1131.73	9.778E+07	6.322E-16	6.1818E-08	2.4169E+09	1.0000	0.0001
42000	915.7	1.00	1.00	30.9262	1358.07	1.173E+08	3.374E-15	3.9584E-07	4.5294E+08	1.0000	0.0001
49000	933.2	1.00	1.00	30.9262	1584.42	1.369E+08	2.248E-14	3.0767E-06	6.7986E+07	1.0000	0.0004
56000	949	1.00	1.00	30.9262	1810.76	1.564E+08	1.360E-13	2.1282E-05	1.1233E+07	1.0000	0.0009
62000	962.9	1.00	1.00	30.9262	2004.77	1.732E+08	6.347E-13	1.0994E-04	2.4074E+06	1.0000	0.0019
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	852.5	1.00	1.00	30.9262	0.00	0.000E+00	1.773E-19	0.0000E+00	8.6180E+12	0.0000	0.0000
7000	764.6	1.00	1.00	30.9262	226.35	1.956E+07	4.147E-21	8.1095E-14	3.6848E+14	1.0000	0.0000
14000	746.6	1.00	1.00	30.9262	452.69	3.911E+07	4.163E-21	1.6283E-13	3.6702E+14	1.0000	0.0000
21000	732.4	1.00	1.00	30.9262	679.04	5.867E+07	5.118E-21	3.0024E-13	2.9858E+14	1.0000	0.0000
28000	730	1.00	1.00	30.9262	905.38	7.822E+07	1.374E-20	1.0751E-12	1.1117E+14	1.0000	0.0000
35000	732.4	1.00	1.00	30.9262	1131.73	9.778E+07	5.118E-20	5.0039E-12	2.9858E+13	1.0000	0.0000
42000	734.9	1.00	1.00	30.9262	1358.07	1.173E+08	1.916E-19	2.2485E-11	7.9738E+12	1.0000	0.0000
49000	740.3	1.00	1.00	30.9262	1584.42	1.369E+08	8.696E-19	1.1904E-10	1.7572E+12	1.0000	0.0000
56000	745.8	1.00	1.00	30.9262	1810.76	1.564E+08	3.951E-18	6.1816E-10	3.8672E+11	1.0000	0.0000
62000	750.6	1.00	1.00	30.9262	2004.77	1.732E+08	1.448E-17	2.5083E-09	1.0552E+11	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	717.0	1.00	1.00	30.9262	0.00	0.000E+00	5.567E-23	0.0000E+00	2.7447E+16	0.0000	0.0000
7000	681.2	1.00	1.00	30.9262	226.35	1.956E+07	1.223E-23	2.3913E-16	1.2496E+17	1.0000	0.0000
14000	663.0	1.00	1.00	30.9262	452.69	3.911E+07	8.924E-24	3.4903E-16	1.7123E+17	1.0000	0.0000
21000	647.4	1.00	1.00	30.9262	679.04	5.867E+07	7.520E-24	4.4118E-16	2.0319E+17	1.0000	0.0000
28000	641.0	1.00	1.00	30.9262	905.38	7.822E+07	1.357E-23	1.0613E-15	1.1262E+17	1.0000	0.0000
35000	638.8	1.00	1.00	30.9262	1131.73	9.778E+07	3.529E-23	3.4503E-15	4.3303E+16	1.0000	0.0000
42000	636.9	1.00	1.00	30.9262	1358.07	1.173E+08	9.415E-23	1.1047E-14	1.6230E+16	1.0000	0.0000
49000	636.2	1.00	1.00	30.9262	1584.42	1.369E+08	2.796E-22	3.8272E-14	5.4654E+15	1.0000	0.0000
56000	635.9	1.00	1.00	30.9262	1810.76	1.564E+08	8.606E-22	1.3464E-13	1.7756E+15	1.0000	0.0000
62000	636.1	1.00	1.00	30.9262	2004.77	1.732E+08	2.351E-21	4.0714E-13	6.5006E+14	1.0000	0.0000

Bumup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
7000	0.0003	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000				
14000	0.0006	0.0004	0.0001	0.0000	0.0000	0.0000	0.0001				
21000	0.0012	0.0007	0.0002	0.0000	0.0000	0.0000	0.0001				
28000	0.0030	0.0018	0.0004	0.0000	0.0000	0.0000	0.0002				
35000	0.0081	0.0047	0.0010	0.0001	0.0000	0.0000	0.0006				
42000	0.0204	0.0119	0.0025	0.0001	0.0000	0.0000	0.0016				
49000	0.0569	0.0331	0.0069	0.0004	0.0000	0.0000	0.0044				
56000	0.1419	0.0837	0.0175	0.0009	0.0000	0.0000	0.0111				
62000	0.2980	0.1812	0.0388	0.0019	0.0000	0.0000	0.0242				

Gas Gap Fractions: Xe-133m											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300	cal/mol									
R	1.987	cal/mol-K									
Do/a2	0.61	1/sec									
lambda	3.6630E-06	1/sec									
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1145.1	1.00	1.00	30.9262	0.00	0.000E+00	9.666E-15	0.0000E+00	3.7895E+08	0.0000	0.0000
7000	1120.2	1.00	1.00	30.9262	226.35	1.956E+07	1.508E-14	2.9498E-07	2.4284E+08	1.0000	0.0002
14000	1127.2	1.00	1.00	30.9262	452.69	3.911E+07	5.836E-14	2.2826E-06	6.2766E+07	1.0000	0.0004
21000	1136.3	1.00	1.00	30.9262	679.04	5.867E+07	2.390E-13	1.4021E-05	1.5327E+07	1.0000	0.0008
28000	1162.1	1.00	1.00	30.9262	905.38	7.822E+07	1.539E-12	1.2036E-04	2.3807E+06	1.0000	0.0019
35000	1193.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.109E-11	1.0843E-03	3.3033E+05	1.0000	0.0052
42000	1222.2	1.00	1.00	30.9262	1358.07	1.173E+08	7.175E-11	8.4187E-03	5.1054E+04	1.0000	0.0132
49000	1261.3	1.00	1.00	30.9262	1584.42	1.369E+08	5.710E-10	7.8163E-02	6.4153E+03	1.0000	0.0370
56000	1294.5	1.00	1.00	30.9262	1810.76	1.564E+08	3.784E-09	5.9200E-01	9.6804E+02	1.0000	0.0933
62000	1324.3	1.00	1.00	30.9262	2004.77	1.732E+08	1.911E-08	3.3097E+00	1.9170E+02	1.0000	0.2010
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1122.5	1.00	1.00	30.9262	0.00	0.000E+00	5.098E-15	0.0000E+00	7.1850E+08	0.0000	0.0000
7000	1089.2	1.00	1.00	30.9262	226.35	1.956E+07	5.984E-15	1.1703E-07	6.1211E+08	1.0000	0.0001
14000	1093.9	1.00	1.00	30.9262	452.69	3.911E+07	2.184E-14	8.5440E-07	1.6768E+08	1.0000	0.0002
21000	1100.8	1.00	1.00	30.9262	679.04	5.867E+07	8.509E-14	4.9923E-06	4.3047E+07	1.0000	0.0005
28000	1124	1.00	1.00	30.9262	905.38	7.822E+07	5.324E-13	4.1643E-05	6.8808E+06	1.0000	0.0011
35000	1152.8	1.00	1.00	30.9262	1131.73	9.778E+07	3.780E-12	3.6956E-04	9.6918E+05	1.0000	0.0030
42000	1179.1	1.00	1.00	30.9262	1358.07	1.173E+08	2.417E-11	2.8355E-03	1.5158E+05	1.0000	0.0077
49000	1215.1	1.00	1.00	30.9262	1584.42	1.369E+08	1.907E-10	2.6100E-02	1.9212E+04	1.0000	0.0215
56000	1245.8	1.00	1.00	30.9262	1810.76	1.564E+08	1.261E-09	1.9729E-01	2.9047E+03	1.0000	0.0546
62000	1273.4	1.00	1.00	30.9262	2004.77	1.732E+08	6.371E-09	1.1036E+00	5.7490E+02	1.0000	0.1199
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1062.8	1.00	1.00	30.9262	0.00	0.000E+00	8.253E-16	0.0000E+00	4.4383E+09	0.0000	0.0000
7000	1010.9	1.00	1.00	30.9262	226.35	1.956E+07	4.500E-16	8.8012E-09	8.1391E+09	1.0000	0.0000
14000	1009.9	1.00	1.00	30.9262	452.69	3.911E+07	1.373E-15	5.3715E-08	2.6672E+09	1.0000	0.0001
21000	1011.5	1.00	1.00	30.9262	679.04	5.867E+07	4.598E-15	2.6973E-07	7.9672E+08	1.0000	0.0001
28000	1028.3	1.00	1.00	30.9262	905.38	7.822E+07	2.617E-14	2.0470E-06	1.3998E+08	1.0000	0.0003
35000	1050.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.748E-13	1.7092E-05	2.0956E+07	1.0000	0.0007
42000	1070.8	1.00	1.00	30.9262	1358.07	1.173E+08	1.066E-12	1.2507E-04	3.4366E+06	1.0000	0.0016

49000	1099.1	1.00	1.00	30.9262	1584.42	1.369E+08	8.085E-12	1.1068E-03	4.5305E+05	1.0000	0.0045
56000	1123.7	1.00	1.00	30.9262	1810.76	1.564E+08	5.278E-11	8.2570E-03	6.9405E+04	1.0000	0.0113
62000	1145.6	1.00	1.00	30.9262	2004.77	1.732E+08	2.629E-10	4.5544E-02	1.3931E+04	1.0000	0.0252
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	970.7	1.00	1.00	30.9262	0.00	0.000E+00	3.205E-17	0.0000E+00	1.1428E+11	0.0000	0.0000
7000	897.9	1.00	1.00	30.9262	226.35	1.956E+07	4.853E-18	9.4898E-11	7.5485E+11	1.0000	0.0000
14000	888.8	1.00	1.00	30.9262	452.69	3.911E+07	1.013E-17	3.9637E-10	3.6146E+11	1.0000	0.0000
21000	883	1.00	1.00	30.9262	679.04	5.867E+07	2.449E-17	1.4368E-09	1.4957E+11	1.0000	0.0000
28000	890.8	1.00	1.00	30.9262	905.38	7.822E+07	1.111E-16	8.6905E-09	3.2971E+10	1.0000	0.0000
35000	903.8	1.00	1.00	30.9262	1131.73	9.778E+07	6.322E-16	6.1818E-08	5.7939E+09	1.0000	0.0000
42000	915.7	1.00	1.00	30.9262	1358.07	1.173E+08	3.374E-15	3.9584E-07	1.0858E+09	1.0000	0.0001
49000	933.2	1.00	1.00	30.9262	1584.42	1.369E+08	2.248E-14	3.0767E-06	1.6298E+08	1.0000	0.0002
56000	949	1.00	1.00	30.9262	1810.76	1.564E+08	1.360E-13	2.1282E-05	2.6928E+07	1.0000	0.0006
62000	962.9	1.00	1.00	30.9262	2004.77	1.732E+08	6.347E-13	1.0994E-04	5.7711E+06	1.0000	0.0012
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	852.5	1.00	1.00	30.9262	0.00	0.000E+00	1.773E-19	0.0000E+00	2.0659E+13	0.0000	0.0000
7000	764.6	1.00	1.00	30.9262	226.35	1.956E+07	4.147E-21	8.1095E-14	8.8334E+14	1.0000	0.0000
14000	746.6	1.00	1.00	30.9262	452.69	3.911E+07	4.163E-21	1.6283E-13	8.7985E+14	1.0000	0.0000
21000	732.4	1.00	1.00	30.9262	679.04	5.867E+07	5.118E-21	3.0024E-13	7.1578E+14	1.0000	0.0000
28000	730	1.00	1.00	30.9262	905.38	7.822E+07	1.374E-20	1.0751E-12	2.6651E+14	1.0000	0.0000
35000	732.4	1.00	1.00	30.9262	1131.73	9.778E+07	5.118E-20	5.0039E-12	7.1578E+13	1.0000	0.0000
42000	734.9	1.00	1.00	30.9262	1358.07	1.173E+08	1.916E-19	2.2485E-11	1.9115E+13	1.0000	0.0000
49000	740.3	1.00	1.00	30.9262	1584.42	1.369E+08	8.696E-19	1.1904E-10	4.2124E+12	1.0000	0.0000
56000	745.8	1.00	1.00	30.9262	1810.76	1.564E+08	3.951E-18	6.1816E-10	9.2707E+11	1.0000	0.0000
62000	750.6	1.00	1.00	30.9262	2004.77	1.732E+08	1.448E-17	2.5083E-09	2.5295E+11	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	717.0	1.00	1.00	30.9262	0.00	0.000E+00	5.567E-23	0.0000E+00	6.5796E+16	0.0000	0.0000
7000	681.2	1.00	1.00	30.9262	226.35	1.956E+07	1.223E-23	2.3913E-16	2.9956E+17	1.0000	0.0000
14000	663.0	1.00	1.00	30.9262	452.69	3.911E+07	8.924E-24	3.4903E-16	4.1048E+17	1.0000	0.0000
21000	647.4	1.00	1.00	30.9262	679.04	5.867E+07	7.520E-24	4.4118E-16	4.8711E+17	1.0000	0.0000
28000	641.0	1.00	1.00	30.9262	905.38	7.822E+07	1.357E-23	1.0613E-15	2.6998E+17	1.0000	0.0000
35000	638.8	1.00	1.00	30.9262	1131.73	9.778E+07	3.529E-23	3.4503E-15	1.0381E+17	1.0000	0.0000
42000	636.9	1.00	1.00	30.9262	1358.07	1.173E+08	9.415E-23	1.1047E-14	3.8908E+16	1.0000	0.0000
49000	636.2	1.00	1.00	30.9262	1584.42	1.369E+08	2.796E-22	3.8272E-14	1.3102E+16	1.0000	0.0000
56000	635.9	1.00	1.00	30.9262	1810.76	1.564E+08	8.606E-22	1.3464E-13	4.2565E+15	1.0000	0.0000
62000	636.1	1.00	1.00	30.9262	2004.77	1.732E+08	2.351E-21	4.0714E-13	1.5584E+15	1.0000	0.0000
Burnup	F	F	F	F	F	F					

mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
7000	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000				
14000	0.0004	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000				
21000	0.0008	0.0005	0.0001	0.0000	0.0000	0.0000	0.0001				
28000	0.0019	0.0011	0.0003	0.0000	0.0000	0.0000	0.0002				
35000	0.0052	0.0030	0.0007	0.0000	0.0000	0.0000	0.0004				
42000	0.0132	0.0077	0.0016	0.0001	0.0000	0.0000	0.0010				
49000	0.0370	0.0215	0.0045	0.0002	0.0000	0.0000	0.0029				
56000	0.0933	0.0546	0.0113	0.0006	0.0000	0.0000	0.0073				
62000	0.2010	0.1199	0.0252	0.0012	0.0000	0.0000	0.0159				

Gas Gap Fractions: Xe-135												
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc					
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm					
Q	72300			cal/mol								
R	1.987			cal/mol-K								
Do/a2	0.61			1/sec								
lambda	2.1150E-05			1/sec								
r=0.0												
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F	
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu		
0	1145.1	1.00	1.00	30.9262	0.00	0.000E+00	9.666E-15	0.0000E+00	2.1880E+09	0.0000	0.0000	
7000	1120.2	1.00	1.00	30.9262	226.35	1.956E+07	1.508E-14	2.9498E-07	1.4022E+09	1.0000	0.0001	
14000	1127.2	1.00	1.00	30.9262	452.69	3.911E+07	5.836E-14	2.2826E-06	3.6241E+08	1.0000	0.0002	
21000	1136.3	1.00	1.00	30.9262	679.04	5.867E+07	2.390E-13	1.4021E-05	8.8496E+07	1.0000	0.0003	
28000	1162.1	1.00	1.00	30.9262	905.38	7.822E+07	1.539E-12	1.2036E-04	1.3746E+07	1.0000	0.0008	
35000	1193.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.109E-11	1.0843E-03	1.9073E+06	1.0000	0.0022	
42000	1222.2	1.00	1.00	30.9262	1358.07	1.173E+08	7.175E-11	8.4187E-03	2.9478E+05	1.0000	0.0055	
49000	1261.3	1.00	1.00	30.9262	1584.42	1.369E+08	5.710E-10	7.8163E-02	3.7042E+04	1.0000	0.0155	
56000	1294.5	1.00	1.00	30.9262	1810.76	1.564E+08	3.784E-09	5.9200E-01	5.5894E+03	1.0000	0.0396	
62000	1324.3	1.00	1.00	30.9262	2004.77	1.732E+08	1.911E-08	3.3097E+00	1.1069E+03	1.0000	0.0875	
r=0.2												
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F	
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu		
0	1122.5	1.00	1.00	30.9262	0.00	0.000E+00	5.098E-15	0.0000E+00	4.1486E+09	0.0000	0.0000	
7000	1089.2	1.00	1.00	30.9262	226.35	1.956E+07	5.984E-15	1.1703E-07	3.5343E+09	1.0000	0.0001	
14000	1093.9	1.00	1.00	30.9262	452.69	3.911E+07	2.184E-14	8.5440E-07	9.6820E+08	1.0000	0.0001	
21000	1100.8	1.00	1.00	30.9262	679.04	5.867E+07	8.509E-14	4.9923E-06	2.4855E+08	1.0000	0.0002	
28000	1124	1.00	1.00	30.9262	905.38	7.822E+07	5.324E-13	4.1643E-05	3.9729E+07	1.0000	0.0005	
35000	1152.8	1.00	1.00	30.9262	1131.73	9.778E+07	3.780E-12	3.6956E-04	5.5960E+06	1.0000	0.0013	
42000	1179.1	1.00	1.00	30.9262	1358.07	1.173E+08	2.417E-11	2.8355E-03	8.7522E+05	1.0000	0.0032	
49000	1215.1	1.00	1.00	30.9262	1584.42	1.369E+08	1.907E-10	2.6100E-02	1.1093E+05	1.0000	0.0090	
56000	1245.8	1.00	1.00	30.9262	1810.76	1.564E+08	1.261E-09	1.9729E-01	1.6771E+04	1.0000	0.0230	
62000	1273.4	1.00	1.00	30.9262	2004.77	1.732E+08	6.371E-09	1.1036E+00	3.3195E+03	1.0000	0.0512	
r=0.4												
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F	
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu		
0	1062.8	1.00	1.00	30.9262	0.00	0.000E+00	8.253E-16	0.0000E+00	2.5626E+10	0.0000	0.0000	
7000	1010.9	1.00	1.00	30.9262	226.35	1.956E+07	4.500E-16	8.8012E-09	4.6995E+10	1.0000	0.0000	
14000	1009.9	1.00	1.00	30.9262	452.69	3.911E+07	1.373E-15	5.3715E-08	1.5400E+10	1.0000	0.0000	
21000	1011.5	1.00	1.00	30.9262	679.04	5.867E+07	4.598E-15	2.6973E-07	4.6002E+09	1.0000	0.0000	
28000	1028.3	1.00	1.00	30.9262	905.38	7.822E+07	2.617E-14	2.0470E-06	8.0824E+08	1.0000	0.0001	
35000	1050.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.748E-13	1.7092E-05	1.2100E+08	1.0000	0.0003	
42000	1070.8	1.00	1.00	30.9262	1358.07	1.173E+08	1.066E-12	1.2507E-04	1.9843E+07	1.0000	0.0007	
49000	1099.1	1.00	1.00	30.9262	1584.42	1.369E+08	8.085E-12	1.1068E-03	2.6159E+06	1.0000	0.0019	

56000	1123.7	1.00	1.00	30.9262	1810.76	1.564E+08	5.278E-11	8.2570E-03	4.0074E+05	1.0000	0.0047
62000	1145.6	1.00	1.00	30.9262	2004.77	1.732E+08	2.629E-10	4.5544E-02	8.0437E+04	1.0000	0.0105
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	970.7	1.00	1.00	30.9262	0.00	0.000E+00	3.205E-17	0.0000E+00	6.5983E+11	0.0000	0.0000
7000	897.9	1.00	1.00	30.9262	226.35	1.956E+07	4.853E-18	9.4898E-11	4.3585E+12	1.0000	0.0000
14000	888.8	1.00	1.00	30.9262	452.69	3.911E+07	1.013E-17	3.9637E-10	2.0870E+12	1.0000	0.0000
21000	883	1.00	1.00	30.9262	679.04	5.867E+07	2.449E-17	1.4368E-09	8.6360E+11	1.0000	0.0000
28000	890.8	1.00	1.00	30.9262	905.38	7.822E+07	1.111E-16	8.6905E-09	1.9037E+11	1.0000	0.0000
35000	903.8	1.00	1.00	30.9262	1131.73	9.778E+07	6.322E-16	6.1818E-08	3.3454E+10	1.0000	0.0000
42000	915.7	1.00	1.00	30.9262	1358.07	1.173E+08	3.374E-15	3.9584E-07	6.2694E+09	1.0000	0.0000
49000	933.2	1.00	1.00	30.9262	1584.42	1.369E+08	2.248E-14	3.0767E-06	9.4104E+08	1.0000	0.0001
56000	949	1.00	1.00	30.9262	1810.76	1.564E+08	1.360E-13	2.1282E-05	1.5548E+08	1.0000	0.0002
62000	962.9	1.00	1.00	30.9262	2004.77	1.732E+08	6.347E-13	1.0994E-04	3.3322E+07	1.0000	0.0005
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	852.5	1.00	1.00	30.9262	0.00	0.000E+00	1.773E-19	0.0000E+00	1.1929E+14	0.0000	0.0000
7000	764.6	1.00	1.00	30.9262	226.35	1.956E+07	4.147E-21	8.1095E-14	5.1003E+15	1.0000	0.0000
14000	746.6	1.00	1.00	30.9262	452.69	3.911E+07	4.163E-21	1.6283E-13	5.0802E+15	1.0000	0.0000
21000	732.4	1.00	1.00	30.9262	679.04	5.867E+07	5.118E-21	3.0024E-13	4.1329E+15	1.0000	0.0000
28000	730	1.00	1.00	30.9262	905.38	7.822E+07	1.374E-20	1.0751E-12	1.5388E+15	1.0000	0.0000
35000	732.4	1.00	1.00	30.9262	1131.73	9.778E+07	5.118E-20	5.0039E-12	4.1329E+14	1.0000	0.0000
42000	734.9	1.00	1.00	30.9262	1358.07	1.173E+08	1.916E-19	2.2485E-11	1.1037E+14	1.0000	0.0000
49000	740.3	1.00	1.00	30.9262	1584.42	1.369E+08	8.696E-19	1.1904E-10	2.4322E+13	1.0000	0.0000
56000	745.8	1.00	1.00	30.9262	1810.76	1.564E+08	3.951E-18	6.1816E-10	5.3529E+12	1.0000	0.0000
62000	750.6	1.00	1.00	30.9262	2004.77	1.732E+08	1.448E-17	2.5083E-09	1.4605E+12	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	717.0	1.00	1.00	30.9262	0.00	0.000E+00	5.567E-23	0.0000E+00	3.7991E+17	0.0000	0.0000
7000	681.2	1.00	1.00	30.9262	226.35	1.956E+07	1.223E-23	2.3913E-16	1.7296E+18	1.0000	0.0000
14000	663.0	1.00	1.00	30.9262	452.69	3.911E+07	8.924E-24	3.4903E-16	2.3701E+18	1.0000	0.0000
21000	647.4	1.00	1.00	30.9262	679.04	5.867E+07	7.520E-24	4.4118E-16	2.8125E+18	1.0000	0.0000
28000	641.0	1.00	1.00	30.9262	905.38	7.822E+07	1.357E-23	1.0613E-15	1.5589E+18	1.0000	0.0000
35000	638.8	1.00	1.00	30.9262	1131.73	9.778E+07	3.529E-23	3.4503E-15	5.9939E+17	1.0000	0.0000
42000	636.9	1.00	1.00	30.9262	1358.07	1.173E+08	9.415E-23	1.1047E-14	2.2465E+17	1.0000	0.0000
49000	636.2	1.00	1.00	30.9262	1584.42	1.369E+08	2.796E-22	3.8272E-14	7.5650E+16	1.0000	0.0000
56000	635.9	1.00	1.00	30.9262	1810.76	1.564E+08	8.606E-22	1.3464E-13	2.4577E+16	1.0000	0.0000
62000	636.1	1.00	1.00	30.9262	2004.77	1.732E+08	2.351E-21	4.0714E-13	8.9979E+15	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
	0.01	0.08	0.16	0.24	0.32	0.19					

0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
7000	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000				
14000	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000				
21000	0.0003	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000				
28000	0.0008	0.0005	0.0001	0.0000	0.0000	0.0000	0.0001				
35000	0.0022	0.0013	0.0003	0.0000	0.0000	0.0000	0.0002				
42000	0.0055	0.0032	0.0007	0.0000	0.0000	0.0000	0.0004				
49000	0.0155	0.0090	0.0019	0.0001	0.0000	0.0000	0.0012				
56000	0.0396	0.0230	0.0047	0.0002	0.0000	0.0000	0.0031				
62000	0.0875	0.0512	0.0105	0.0005	0.0000	0.0000	0.0068				

Gas Gap Fractions: Xe-135m											
$V_{fuel}=176 \cdot \pi \cdot (0.96774/2)^2 \cdot (347.218)=$					44949.18	cc					
$M_{fuel}=(10.96) \cdot (0.945) \cdot V_{fuel} \cdot (238/270)=$					410371.65	gm					
Q	72300			cal/mol							
R	1.987			cal/mol-K							
Do/a2	0.61			1/sec							
lambda	7.3800E-04			1/sec							
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1145.1	1.00	1.00	30.9262	0.00	0.000E+00	9.666E-15	0.0000E+00	7.6348E+10	0.0000	0.0000
7000	1120.2	1.00	1.00	30.9262	226.35	1.956E+07	1.508E-14	2.9498E-07	4.8927E+10	1.0000	0.0000
14000	1127.2	1.00	1.00	30.9262	452.69	3.911E+07	5.836E-14	2.2826E-06	1.2646E+10	1.0000	0.0000
21000	1136.3	1.00	1.00	30.9262	679.04	5.867E+07	2.390E-13	1.4021E-05	3.0880E+09	1.0000	0.0001
28000	1162.1	1.00	1.00	30.9262	905.38	7.822E+07	1.539E-12	1.2036E-04	4.7965E+08	1.0000	0.0001
35000	1193.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.109E-11	1.0843E-03	6.6552E+07	1.0000	0.0004
42000	1222.2	1.00	1.00	30.9262	1358.07	1.173E+08	7.175E-11	8.4187E-03	1.0286E+07	1.0000	0.0009
49000	1261.3	1.00	1.00	30.9262	1584.42	1.369E+08	5.710E-10	7.8163E-02	1.2925E+06	1.0000	0.0026
56000	1294.5	1.00	1.00	30.9262	1810.76	1.564E+08	3.784E-09	5.9200E-01	1.9504E+05	1.0000	0.0068
62000	1324.3	1.00	1.00	30.9262	2004.77	1.732E+08	1.911E-08	3.3097E+00	3.8623E+04	1.0000	0.0152
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1122.5	1.00	1.00	30.9262	0.00	0.000E+00	5.098E-15	0.0000E+00	1.4476E+11	0.0000	0.0000
7000	1089.2	1.00	1.00	30.9262	226.35	1.956E+07	5.984E-15	1.1703E-07	1.2332E+11	1.0000	0.0000
14000	1093.9	1.00	1.00	30.9262	452.69	3.911E+07	2.184E-14	8.5440E-07	3.3784E+10	1.0000	0.0000
21000	1100.8	1.00	1.00	30.9262	679.04	5.867E+07	8.509E-14	4.9923E-06	8.6728E+09	1.0000	0.0000
28000	1124	1.00	1.00	30.9262	905.38	7.822E+07	5.324E-13	4.1643E-05	1.3863E+09	1.0000	0.0001
35000	1152.8	1.00	1.00	30.9262	1131.73	9.778E+07	3.780E-12	3.6956E-04	1.9526E+08	1.0000	0.0002
42000	1179.1	1.00	1.00	30.9262	1358.07	1.173E+08	2.417E-11	2.8355E-03	3.0540E+07	1.0000	0.0005
49000	1215.1	1.00	1.00	30.9262	1584.42	1.369E+08	1.907E-10	2.6100E-02	3.8708E+06	1.0000	0.0015
56000	1245.8	1.00	1.00	30.9262	1810.76	1.564E+08	1.261E-09	1.9729E-01	5.8522E+05	1.0000	0.0039
62000	1273.4	1.00	1.00	30.9262	2004.77	1.732E+08	6.371E-09	1.1036E+00	1.1583E+05	1.0000	0.0088
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1062.8	1.00	1.00	30.9262	0.00	0.000E+00	8.253E-16	0.0000E+00	8.9420E+11	0.0000	0.0000
7000	1010.9	1.00	1.00	30.9262	226.35	1.956E+07	4.500E-16	8.8012E-09	1.6398E+12	1.0000	0.0000
14000	1009.9	1.00	1.00	30.9262	452.69	3.911E+07	1.373E-15	5.3715E-08	5.3737E+11	1.0000	0.0000
21000	1011.5	1.00	1.00	30.9262	679.04	5.867E+07	4.598E-15	2.6973E-07	1.6052E+11	1.0000	0.0000
28000	1028.3	1.00	1.00	30.9262	905.38	7.822E+07	2.617E-14	2.0470E-06	2.8202E+10	1.0000	0.0000
35000	1050.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.748E-13	1.7092E-05	4.2221E+09	1.0000	0.0000
42000	1070.8	1.00	1.00	30.9262	1358.07	1.173E+08	1.066E-12	1.2507E-04	6.9239E+08	1.0000	0.0001

49000	1099.1	1.00	1.00	30.9262	1584.42	1.369E+08	8.085E-12	1.1068E-03	9.1278E+07	1.0000	0.0003
56000	1123.7	1.00	1.00	30.9262	1810.76	1.564E+08	5.278E-11	8.2570E-03	1.3983E+07	1.0000	0.0008
62000	1145.6	1.00	1.00	30.9262	2004.77	1.732E+08	2.629E-10	4.5544E-02	2.8067E+06	1.0000	0.0018
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	970.7	1.00	1.00	30.9262	0.00	0.000E+00	3.205E-17	0.0000E+00	2.3024E+13	0.0000	0.0000
7000	897.9	1.00	1.00	30.9262	226.35	1.956E+07	4.853E-18	9.4898E-11	1.5208E+14	1.0000	0.0000
14000	888.8	1.00	1.00	30.9262	452.69	3.911E+07	1.013E-17	3.9637E-10	7.2824E+13	1.0000	0.0000
21000	883	1.00	1.00	30.9262	679.04	5.867E+07	2.449E-17	1.4368E-09	3.0134E+13	1.0000	0.0000
28000	890.8	1.00	1.00	30.9262	905.38	7.822E+07	1.111E-16	8.6905E-09	6.6429E+12	1.0000	0.0000
35000	903.8	1.00	1.00	30.9262	1131.73	9.778E+07	6.322E-16	6.1818E-08	1.1673E+12	1.0000	0.0000
42000	915.7	1.00	1.00	30.9262	1358.07	1.173E+08	3.374E-15	3.9584E-07	2.1876E+11	1.0000	0.0000
49000	933.2	1.00	1.00	30.9262	1584.42	1.369E+08	2.248E-14	3.0767E-06	3.2836E+10	1.0000	0.0000
56000	949	1.00	1.00	30.9262	1810.76	1.564E+08	1.360E-13	2.1282E-05	5.4253E+09	1.0000	0.0000
62000	962.9	1.00	1.00	30.9262	2004.77	1.732E+08	6.347E-13	1.0994E-04	1.1627E+09	1.0000	0.0001
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	852.5	1.00	1.00	30.9262	0.00	0.000E+00	1.773E-19	0.0000E+00	4.1623E+15	0.0000	0.0000
7000	764.6	1.00	1.00	30.9262	226.35	1.956E+07	4.147E-21	8.1095E-14	1.7797E+17	1.0000	0.0000
14000	746.6	1.00	1.00	30.9262	452.69	3.911E+07	4.163E-21	1.6283E-13	1.7727E+17	1.0000	0.0000
21000	732.4	1.00	1.00	30.9262	679.04	5.867E+07	5.118E-21	3.0024E-13	1.4421E+17	1.0000	0.0000
28000	730	1.00	1.00	30.9262	905.38	7.822E+07	1.374E-20	1.0751E-12	5.3695E+16	1.0000	0.0000
35000	732.4	1.00	1.00	30.9262	1131.73	9.778E+07	5.118E-20	5.0039E-12	1.4421E+16	1.0000	0.0000
42000	734.9	1.00	1.00	30.9262	1358.07	1.173E+08	1.916E-19	2.2485E-11	3.8512E+15	1.0000	0.0000
49000	740.3	1.00	1.00	30.9262	1584.42	1.369E+08	8.696E-19	1.1904E-10	8.4869E+14	1.0000	0.0000
56000	745.8	1.00	1.00	30.9262	1810.76	1.564E+08	3.951E-18	6.1816E-10	1.8678E+14	1.0000	0.0000
62000	750.6	1.00	1.00	30.9262	2004.77	1.732E+08	1.448E-17	2.5083E-09	5.0964E+13	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	717.0	1.00	1.00	30.9262	0.00	0.000E+00	5.567E-23	0.0000E+00	1.3256E+19	0.0000	0.0000
7000	681.2	1.00	1.00	30.9262	226.35	1.956E+07	1.223E-23	2.3913E-16	6.0354E+19	1.0000	0.0000
14000	663.0	1.00	1.00	30.9262	452.69	3.911E+07	8.924E-24	3.4903E-16	8.2701E+19	1.0000	0.0000
21000	647.4	1.00	1.00	30.9262	679.04	5.867E+07	7.520E-24	4.4118E-16	9.8139E+19	1.0000	0.0000
28000	641.0	1.00	1.00	30.9262	905.38	7.822E+07	1.357E-23	1.0613E-15	5.4394E+19	1.0000	0.0000
35000	638.8	1.00	1.00	30.9262	1131.73	9.778E+07	3.529E-23	3.4503E-15	2.0915E+19	1.0000	0.0000
42000	636.9	1.00	1.00	30.9262	1358.07	1.173E+08	9.415E-23	1.1047E-14	7.8389E+18	1.0000	0.0000
49000	636.2	1.00	1.00	30.9262	1584.42	1.369E+08	2.796E-22	3.8272E-14	2.6397E+18	1.0000	0.0000
56000	635.9	1.00	1.00	30.9262	1810.76	1.564E+08	8.606E-22	1.3464E-13	8.5757E+17	1.0000	0.0000
62000	636.1	1.00	1.00	30.9262	2004.77	1.732E+08	2.351E-21	4.0714E-13	3.1397E+17	1.0000	0.0000

Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
7000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
14000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
21000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
28000	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000				
35000	0.0004	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000				
42000	0.0009	0.0005	0.0001	0.0000	0.0000	0.0000	0.0001				
49000	0.0026	0.0015	0.0003	0.0000	0.0000	0.0000	0.0002				
56000	0.0068	0.0039	0.0008	0.0000	0.0000	0.0000	0.0005				
62000	0.0152	0.0088	0.0018	0.0001	0.0000	0.0000	0.0012				

Gas Gap Fractions: Xe-138												
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc					
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm					
Q	72300		cal/mol									
R	1.987		cal/mol-K									
Do/a2	0.61		1/sec									
lambda	8.1510E-04		1/sec									
r=0.0												
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F	
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu		
0	1145.1	1.00	1.00	30.9262	0.00	0.000E+00	9.666E-15	0.0000E+00	8.4324E+10	0.0000	0.0000	
7000	1120.2	1.00	1.00	30.9262	226.35	1.956E+07	1.508E-14	2.9498E-07	5.4038E+10	1.0000	0.0000	
14000	1127.2	1.00	1.00	30.9262	452.69	3.911E+07	5.836E-14	2.2826E-06	1.3967E+10	1.0000	0.0000	
21000	1136.3	1.00	1.00	30.9262	679.04	5.867E+07	2.390E-13	1.4021E-05	3.4106E+09	1.0000	0.0001	
28000	1162.1	1.00	1.00	30.9262	905.38	7.822E+07	1.539E-12	1.2036E-04	5.2976E+08	1.0000	0.0001	
35000	1193.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.109E-11	1.0843E-03	7.3505E+07	1.0000	0.0003	
42000	1222.2	1.00	1.00	30.9262	1358.07	1.173E+08	7.175E-11	8.4187E-03	1.1361E+07	1.0000	0.0009	
49000	1261.3	1.00	1.00	30.9262	1584.42	1.369E+08	5.710E-10	7.8163E-02	1.4275E+06	1.0000	0.0025	
56000	1294.5	1.00	1.00	30.9262	1810.76	1.564E+08	3.784E-09	5.9200E-01	2.1541E+05	1.0000	0.0064	
62000	1324.3	1.00	1.00	30.9262	2004.77	1.732E+08	1.911E-08	3.3097E+00	4.2658E+04	1.0000	0.0145	
r=0.2												
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F	
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu		
0	1122.5	1.00	1.00	30.9262	0.00	0.000E+00	5.098E-15	0.0000E+00	1.5988E+11	0.0000	0.0000	
7000	1089.2	1.00	1.00	30.9262	226.35	1.956E+07	5.984E-15	1.1703E-07	1.3621E+11	1.0000	0.0000	
14000	1093.9	1.00	1.00	30.9262	452.69	3.911E+07	2.184E-14	8.5440E-07	3.7313E+10	1.0000	0.0000	
21000	1100.8	1.00	1.00	30.9262	679.04	5.867E+07	8.509E-14	4.9923E-06	9.5789E+09	1.0000	0.0000	
28000	1124	1.00	1.00	30.9262	905.38	7.822E+07	5.324E-13	4.1643E-05	1.5311E+09	1.0000	0.0001	
35000	1152.8	1.00	1.00	30.9262	1131.73	9.778E+07	3.780E-12	3.6956E-04	2.1566E+08	1.0000	0.0002	
42000	1179.1	1.00	1.00	30.9262	1358.07	1.173E+08	2.417E-11	2.8355E-03	3.3730E+07	1.0000	0.0005	
49000	1215.1	1.00	1.00	30.9262	1584.42	1.369E+08	1.907E-10	2.6100E-02	4.2752E+06	1.0000	0.0015	
56000	1245.8	1.00	1.00	30.9262	1810.76	1.564E+08	1.261E-09	1.9729E-01	6.4635E+05	1.0000	0.0037	
62000	1273.4	1.00	1.00	30.9262	2004.77	1.732E+08	6.371E-09	1.1036E+00	1.2793E+05	1.0000	0.0084	
r=0.4												
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F	
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu		
0	1062.8	1.00	1.00	30.9262	0.00	0.000E+00	8.253E-16	0.0000E+00	9.8762E+11	0.0000	0.0000	
7000	1010.9	1.00	1.00	30.9262	226.35	1.956E+07	4.500E-16	8.8012E-09	1.8111E+12	1.0000	0.0000	
14000	1009.9	1.00	1.00	30.9262	452.69	3.911E+07	1.373E-15	5.3715E-08	5.9352E+11	1.0000	0.0000	
21000	1011.5	1.00	1.00	30.9262	679.04	5.867E+07	4.598E-15	2.6973E-07	1.7729E+11	1.0000	0.0000	
28000	1028.3	1.00	1.00	30.9262	905.38	7.822E+07	2.617E-14	2.0470E-06	3.1149E+10	1.0000	0.0000	
35000	1050.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.748E-13	1.7092E-05	4.6632E+09	1.0000	0.0000	
42000	1070.8	1.00	1.00	30.9262	1358.07	1.173E+08	1.066E-12	1.2507E-04	7.6472E+08	1.0000	0.0001	

49000	1099.1	1.00	1.00	30.9262	1584.42	1.369E+08	8.085E-12	1.1068E-03	1.0081E+08	1.0000	0.0003
56000	1123.7	1.00	1.00	30.9262	1810.76	1.564E+08	5.278E-11	8.2570E-03	1.5444E+07	1.0000	0.0008
62000	1145.6	1.00	1.00	30.9262	2004.77	1.732E+08	2.629E-10	4.5544E-02	3.1000E+06	1.0000	0.0017
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	970.7	1.00	1.00	30.9262	0.00	0.000E+00	3.205E-17	0.0000E+00	2.5429E+13	0.0000	0.0000
7000	897.9	1.00	1.00	30.9262	226.35	1.956E+07	4.853E-18	9.4898E-11	1.6797E+14	1.0000	0.0000
14000	888.8	1.00	1.00	30.9262	452.69	3.911E+07	1.013E-17	3.9637E-10	8.0432E+13	1.0000	0.0000
21000	883	1.00	1.00	30.9262	679.04	5.867E+07	2.449E-17	1.4368E-09	3.3282E+13	1.0000	0.0000
28000	890.8	1.00	1.00	30.9262	905.38	7.822E+07	1.111E-16	8.6905E-09	7.3369E+12	1.0000	0.0000
35000	903.8	1.00	1.00	30.9262	1131.73	9.778E+07	6.322E-16	6.1818E-08	1.2893E+12	1.0000	0.0000
42000	915.7	1.00	1.00	30.9262	1358.07	1.173E+08	3.374E-15	3.9584E-07	2.4162E+11	1.0000	0.0000
49000	933.2	1.00	1.00	30.9262	1584.42	1.369E+08	2.248E-14	3.0767E-06	3.6267E+10	1.0000	0.0000
56000	949	1.00	1.00	30.9262	1810.76	1.564E+08	1.360E-13	2.1282E-05	5.9921E+09	1.0000	0.0000
62000	962.9	1.00	1.00	30.9262	2004.77	1.732E+08	6.347E-13	1.0994E-04	1.2842E+09	1.0000	0.0001
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	852.5	1.00	1.00	30.9262	0.00	0.000E+00	1.773E-19	0.0000E+00	4.5972E+15	0.0000	0.0000
7000	764.6	1.00	1.00	30.9262	226.35	1.956E+07	4.147E-21	8.1095E-14	1.9656E+17	1.0000	0.0000
14000	746.6	1.00	1.00	30.9262	452.69	3.911E+07	4.163E-21	1.6283E-13	1.9579E+17	1.0000	0.0000
21000	732.4	1.00	1.00	30.9262	679.04	5.867E+07	5.118E-21	3.0024E-13	1.5928E+17	1.0000	0.0000
28000	730	1.00	1.00	30.9262	905.38	7.822E+07	1.374E-20	1.0751E-12	5.9305E+16	1.0000	0.0000
35000	732.4	1.00	1.00	30.9262	1131.73	9.778E+07	5.118E-20	5.0039E-12	1.5928E+16	1.0000	0.0000
42000	734.9	1.00	1.00	30.9262	1358.07	1.173E+08	1.916E-19	2.2485E-11	4.2536E+15	1.0000	0.0000
49000	740.3	1.00	1.00	30.9262	1584.42	1.369E+08	8.696E-19	1.1904E-10	9.3736E+14	1.0000	0.0000
56000	745.8	1.00	1.00	30.9262	1810.76	1.564E+08	3.951E-18	6.1816E-10	2.0629E+14	1.0000	0.0000
62000	750.6	1.00	1.00	30.9262	2004.77	1.732E+08	1.448E-17	2.5083E-09	5.6288E+13	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	717.0	1.00	1.00	30.9262	0.00	0.000E+00	5.567E-23	0.0000E+00	1.4641E+19	0.0000	0.0000
7000	681.2	1.00	1.00	30.9262	226.35	1.956E+07	1.223E-23	2.3913E-16	6.6659E+19	1.0000	0.0000
14000	663.0	1.00	1.00	30.9262	452.69	3.911E+07	8.924E-24	3.4903E-16	9.1341E+19	1.0000	0.0000
21000	647.4	1.00	1.00	30.9262	679.04	5.867E+07	7.520E-24	4.4118E-16	1.0839E+20	1.0000	0.0000
28000	641.0	1.00	1.00	30.9262	905.38	7.822E+07	1.357E-23	1.0613E-15	6.0077E+19	1.0000	0.0000
35000	638.8	1.00	1.00	30.9262	1131.73	9.778E+07	3.529E-23	3.4503E-15	2.3100E+19	1.0000	0.0000
42000	636.9	1.00	1.00	30.9262	1358.07	1.173E+08	9.415E-23	1.1047E-14	8.6578E+18	1.0000	0.0000
49000	636.2	1.00	1.00	30.9262	1584.42	1.369E+08	2.796E-22	3.8272E-14	2.9155E+18	1.0000	0.0000
56000	635.9	1.00	1.00	30.9262	1810.76	1.564E+08	8.606E-22	1.3464E-13	9.4717E+17	1.0000	0.0000
62000	636.1	1.00	1.00	30.9262	2004.77	1.732E+08	2.351E-21	4.0714E-13	3.4677E+17	1.0000	0.0000
Burnup	F	F	F	F	F	F					

mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
7000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
14000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
21000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
28000	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000				
35000	0.0003	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000				
42000	0.0009	0.0005	0.0001	0.0000	0.0000	0.0000	0.0001				
49000	0.0025	0.0015	0.0003	0.0000	0.0000	0.0000	0.0002				
56000	0.0064	0.0037	0.0008	0.0000	0.0000	0.0000	0.0005				
62000	0.0145	0.0084	0.0017	0.0001	0.0000	0.0000	0.0011				

Gas Gap Fractions: Kr-85										
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc			
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm			
Q	72300		cal/mol							
R	1.987		cal/mol-K							
Do/a2	0.61		1/sec							
lambda	2.0540E-09		1/sec							
r=0.0										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	1145.1	1.00	1.00	30.9262	0.00	0.000E+00	9.666E-15	0.0000E+00	1.0000E+00	0.0000
7000	1120.2	1.00	1.00	30.9262	226.35	1.956E+07	1.508E-14	2.9498E-07	9.9877E-01	0.0012
14000	1127.2	1.00	1.00	30.9262	452.69	3.911E+07	5.836E-14	1.4363E-06	9.9730E-01	0.0027
21000	1136.3	1.00	1.00	30.9262	679.04	5.867E+07	2.390E-13	6.1101E-06	9.9443E-01	0.0056
28000	1162.1	1.00	1.00	30.9262	905.38	7.822E+07	1.539E-12	3.6200E-05	9.8648E-01	0.0135
35000	1193.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.109E-11	2.5306E-04	9.6448E-01	0.0355
42000	1222.2	1.00	1.00	30.9262	1358.07	1.173E+08	7.175E-11	1.6562E-03	9.1064E-01	0.0894
49000	1261.3	1.00	1.00	30.9262	1584.42	1.369E+08	5.710E-10	1.2822E-02	7.6369E-01	0.2363
56000	1294.5	1.00	1.00	30.9262	1810.76	1.564E+08	3.784E-09	8.6822E-02	4.6527E-01	0.5347
62000	1324.3	1.00	1.00	30.9262	2004.77	1.732E+08	1.911E-08	4.0712E-01	1.6103E-01	0.8390
r=0.2										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	1122.5	1.00	1.00	30.9262	0.00	0.000E+00	5.098E-15	0.0000E+00	1.0000E+00	0.0000
7000	1089.2	1.00	1.00	30.9262	226.35	1.956E+07	5.984E-15	1.1703E-07	9.9923E-01	0.0008
14000	1093.9	1.00	1.00	30.9262	452.69	3.911E+07	2.184E-14	5.4423E-07	9.9834E-01	0.0017
21000	1100.8	1.00	1.00	30.9262	679.04	5.867E+07	8.509E-14	2.2083E-06	9.9665E-01	0.0034
28000	1124	1.00	1.00	30.9262	905.38	7.822E+07	5.324E-13	1.2619E-05	9.9200E-01	0.0080
35000	1152.8	1.00	1.00	30.9262	1131.73	9.778E+07	3.780E-12	8.6532E-05	9.7914E-01	0.0209
42000	1179.1	1.00	1.00	30.9262	1358.07	1.173E+08	2.417E-11	5.5911E-04	9.4748E-01	0.0525
49000	1215.1	1.00	1.00	30.9262	1584.42	1.369E+08	1.907E-10	4.2877E-03	8.5866E-01	0.1413
56000	1245.8	1.00	1.00	30.9262	1810.76	1.564E+08	1.261E-09	2.8950E-02	6.5945E-01	0.3406
62000	1273.4	1.00	1.00	30.9262	2004.77	1.732E+08	6.371E-09	1.3575E-01	3.7213E-01	0.6279
r=0.4										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	1062.8	1.00	1.00	30.9262	0.00	0.000E+00	8.253E-16	0.0000E+00	1.0000E+00	0.0000
7000	1010.9	1.00	1.00	30.9262	226.35	1.956E+07	4.500E-16	8.8012E-09	9.9979E-01	0.0002
14000	1009.9	1.00	1.00	30.9262	452.69	3.911E+07	1.373E-15	3.5659E-08	9.9957E-01	0.0004
21000	1011.5	1.00	1.00	30.9262	679.04	5.867E+07	4.598E-15	1.2557E-07	9.9920E-01	0.0008
28000	1028.3	1.00	1.00	30.9262	905.38	7.822E+07	2.617E-14	6.3732E-07	9.9820E-01	0.0018
35000	1050.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.748E-13	4.0557E-06	9.9546E-01	0.0045
42000	1070.8	1.00	1.00	30.9262	1358.07	1.173E+08	1.066E-12	2.4900E-05	9.8878E-01	0.0112

49000	1099.1	1.00	1.00	30.9262	1584.42	1.369E+08	8.085E-12	1.8302E-04	9.6974E-01	0.0303
56000	1123.7	1.00	1.00	30.9262	1810.76	1.564E+08	5.278E-11	1.2151E-03	9.2315E-01	0.0768
62000	1145.6	1.00	1.00	30.9262	2004.77	1.732E+08	2.629E-10	5.6226E-03	8.3921E-01	0.1608
r=0.6										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	970.7	1.00	1.00	30.9262	0.00	0.000E+00	3.205E-17	0.0000E+00	1.0000E+00	0.0000
7000	897.9	1.00	1.00	30.9262	226.35	1.956E+07	4.853E-18	9.4898E-11	9.9998E-01	0.0000
14000	888.8	1.00	1.00	30.9262	452.69	3.911E+07	1.013E-17	2.9308E-10	9.9996E-01	0.0000
21000	883	1.00	1.00	30.9262	679.04	5.867E+07	2.449E-17	7.7202E-10	9.9994E-01	0.0001
28000	890.8	1.00	1.00	30.9262	905.38	7.822E+07	1.111E-16	2.9447E-09	9.9988E-01	0.0001
35000	903.8	1.00	1.00	30.9262	1131.73	9.778E+07	6.322E-16	1.5308E-08	9.9972E-01	0.0003
42000	915.7	1.00	1.00	30.9262	1358.07	1.173E+08	3.374E-15	8.1281E-08	9.9936E-01	0.0006
49000	933.2	1.00	1.00	30.9262	1584.42	1.369E+08	2.248E-14	5.2081E-07	9.9837E-01	0.0016
56000	949	1.00	1.00	30.9262	1810.76	1.564E+08	1.360E-13	3.1810E-06	9.9598E-01	0.0040
62000	962.9	1.00	1.00	30.9262	2004.77	1.732E+08	6.347E-13	1.3820E-05	9.9163E-01	0.0084
r=0.8										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	852.5	1.00	1.00	30.9262	0.00	0.000E+00	1.773E-19	0.0000E+00	1.0000E+00	0.0000
7000	764.6	1.00	1.00	30.9262	226.35	1.956E+07	4.147E-21	8.1095E-14	1.0000E+00	0.0000
14000	746.6	1.00	1.00	30.9262	452.69	3.911E+07	4.163E-21	1.6251E-13	1.0000E+00	0.0000
21000	732.4	1.00	1.00	30.9262	679.04	5.867E+07	5.118E-21	2.6259E-13	1.0000E+00	0.0000
28000	730	1.00	1.00	30.9262	905.38	7.822E+07	1.374E-20	5.3138E-13	1.0000E+00	0.0000
35000	732.4	1.00	1.00	30.9262	1131.73	9.778E+07	5.118E-20	1.5322E-12	1.0000E+00	0.0000
42000	734.9	1.00	1.00	30.9262	1358.07	1.173E+08	1.916E-19	5.2797E-12	9.9999E-01	0.0000
49000	740.3	1.00	1.00	30.9262	1584.42	1.369E+08	8.696E-19	2.2285E-11	9.9999E-01	0.0000
56000	745.8	1.00	1.00	30.9262	1810.76	1.564E+08	3.951E-18	9.9555E-11	9.9998E-01	0.0000
62000	750.6	1.00	1.00	30.9262	2004.77	1.732E+08	1.448E-17	3.4229E-10	9.9996E-01	0.0000
r=1.0										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	717.0	1.00	1.00	30.9262	0.00	0.000E+00	5.567E-23	0.0000E+00	1.0000E+00	0.0000
7000	681.2	1.00	1.00	30.9262	226.35	1.956E+07	1.223E-23	2.3913E-16	1.0000E+00	0.0000
14000	663.0	1.00	1.00	30.9262	452.69	3.911E+07	8.924E-24	4.1365E-16	1.0000E+00	0.0000
21000	647.4	1.00	1.00	30.9262	679.04	5.867E+07	7.520E-24	5.6071E-16	1.0000E+00	0.0000
28000	641.0	1.00	1.00	30.9262	905.38	7.822E+07	1.357E-23	8.2604E-16	1.0000E+00	0.0000
35000	638.8	1.00	1.00	30.9262	1131.73	9.778E+07	3.529E-23	1.5161E-15	1.0000E+00	0.0000
42000	636.9	1.00	1.00	30.9262	1358.07	1.173E+08	9.415E-23	3.3572E-15	1.0000E+00	0.0000
49000	636.2	1.00	1.00	30.9262	1584.42	1.369E+08	2.796E-22	8.8247E-15	1.0000E+00	0.0000
56000	635.9	1.00	1.00	30.9262	1810.76	1.564E+08	8.606E-22	2.5654E-14	1.0000E+00	0.0000
62000	636.1	1.00	1.00	30.9262	2004.77	1.732E+08	2.351E-21	6.5055E-14	1.0000E+00	0.0000

Burnup	F	F	F	F	F	F				
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0				
	0.01	0.08	0.16	0.24	0.32	0.19				
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
7000	0.0012	0.0008	0.0002	0.0000	0.0000	0.0000	0.0001			
14000	0.0027	0.0017	0.0004	0.0000	0.0000	0.0000	0.0002			
21000	0.0056	0.0034	0.0008	0.0001	0.0000	0.0000	0.0005			
28000	0.0135	0.0080	0.0018	0.0001	0.0000	0.0000	0.0011			
35000	0.0355	0.0209	0.0045	0.0003	0.0000	0.0000	0.0028			
42000	0.0894	0.0525	0.0112	0.0006	0.0000	0.0000	0.0070			
49000	0.2363	0.1413	0.0303	0.0016	0.0000	0.0000	0.0189			
56000	0.5347	0.3406	0.0768	0.0040	0.0000	0.0000	0.0459			
62000	0.8390	0.6279	0.1608	0.0084	0.0000	0.0000	0.0864			

Gas Gap Fractions: Kr-85m											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300	cal/mol									
R	1.987	cal/mol-K									
Do/a2	0.61	1/sec									
lambda	4.2970E-05	1/sec									
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1145.1	1.00	1.00	30.9262	0.00	0.000E+00	9.666E-15	0.0000E+00	4.4454E+09	0.0000	0.0000
7000	1120.2	1.00	1.00	30.9262	226.35	1.956E+07	1.508E-14	2.9498E-07	2.8488E+09	1.0000	0.0001
14000	1127.2	1.00	1.00	30.9262	452.69	3.911E+07	5.836E-14	2.2826E-06	7.3630E+08	1.0000	0.0001
21000	1136.3	1.00	1.00	30.9262	679.04	5.867E+07	2.390E-13	1.4021E-05	1.7980E+08	1.0000	0.0002
28000	1162.1	1.00	1.00	30.9262	905.38	7.822E+07	1.539E-12	1.2036E-04	2.7927E+07	1.0000	0.0006
35000	1193.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.109E-11	1.0843E-03	3.8750E+06	1.0000	0.0015
42000	1222.2	1.00	1.00	30.9262	1358.07	1.173E+08	7.175E-11	8.4187E-03	5.9890E+05	1.0000	0.0039
49000	1261.3	1.00	1.00	30.9262	1584.42	1.369E+08	5.710E-10	7.8163E-02	7.5257E+04	1.0000	0.0109
56000	1294.5	1.00	1.00	30.9262	1810.76	1.564E+08	3.784E-09	5.9200E-01	1.1356E+04	1.0000	0.0279
62000	1324.3	1.00	1.00	30.9262	2004.77	1.732E+08	1.911E-08	3.3097E+00	2.2488E+03	1.0000	0.0619
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1122.5	1.00	1.00	30.9262	0.00	0.000E+00	5.098E-15	0.0000E+00	8.4285E+09	0.0000	0.0000
7000	1089.2	1.00	1.00	30.9262	226.35	1.956E+07	5.984E-15	1.1703E-07	7.1805E+09	1.0000	0.0000
14000	1093.9	1.00	1.00	30.9262	452.69	3.911E+07	2.184E-14	8.5440E-07	1.9671E+09	1.0000	0.0001
21000	1100.8	1.00	1.00	30.9262	679.04	5.867E+07	8.509E-14	4.9923E-06	5.0497E+08	1.0000	0.0001
28000	1124	1.00	1.00	30.9262	905.38	7.822E+07	5.324E-13	4.1643E-05	8.0717E+07	1.0000	0.0003
35000	1152.8	1.00	1.00	30.9262	1131.73	9.778E+07	3.780E-12	3.6956E-04	1.1369E+07	1.0000	0.0009
42000	1179.1	1.00	1.00	30.9262	1358.07	1.173E+08	2.417E-11	2.8355E-03	1.7782E+06	1.0000	0.0022
49000	1215.1	1.00	1.00	30.9262	1584.42	1.369E+08	1.907E-10	2.6100E-02	2.2538E+05	1.0000	0.0063
56000	1245.8	1.00	1.00	30.9262	1810.76	1.564E+08	1.261E-09	1.9729E-01	3.4074E+04	1.0000	0.0162
62000	1273.4	1.00	1.00	30.9262	2004.77	1.732E+08	6.371E-09	1.1036E+00	6.7441E+03	1.0000	0.0361
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1062.8	1.00	1.00	30.9262	0.00	0.000E+00	8.253E-16	0.0000E+00	5.2065E+10	0.0000	0.0000
7000	1010.9	1.00	1.00	30.9262	226.35	1.956E+07	4.500E-16	8.8012E-09	9.5479E+10	1.0000	0.0000
14000	1009.9	1.00	1.00	30.9262	452.69	3.911E+07	1.373E-15	5.3715E-08	3.1289E+10	1.0000	0.0000
21000	1011.5	1.00	1.00	30.9262	679.04	5.867E+07	4.598E-15	2.6973E-07	9.3462E+09	1.0000	0.0000
28000	1028.3	1.00	1.00	30.9262	905.38	7.822E+07	2.617E-14	2.0470E-06	1.6421E+09	1.0000	0.0001
35000	1050.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.748E-13	1.7092E-05	2.4583E+08	1.0000	0.0002
42000	1070.8	1.00	1.00	30.9262	1358.07	1.173E+08	1.066E-12	1.2507E-04	4.0314E+07	1.0000	0.0005

49000	1099.1	1.00	1.00	30.9262	1584.42	1.369E+08	8.085E-12	1.1068E-03	5.3146E+06	1.0000	0.0013
56000	1123.7	1.00	1.00	30.9262	1810.76	1.564E+08	5.278E-11	8.2570E-03	8.1418E+05	1.0000	0.0033
62000	1145.6	1.00	1.00	30.9262	2004.77	1.732E+08	2.629E-10	4.5544E-02	1.6342E+05	1.0000	0.0074
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	970.7	1.00	1.00	30.9262	0.00	0.000E+00	3.205E-17	0.0000E+00	1.3406E+12	0.0000	0.0000
7000	897.9	1.00	1.00	30.9262	226.35	1.956E+07	4.853E-18	9.4898E-11	8.8551E+12	1.0000	0.0000
14000	888.8	1.00	1.00	30.9262	452.69	3.911E+07	1.013E-17	3.9637E-10	4.2402E+12	1.0000	0.0000
21000	883	1.00	1.00	30.9262	679.04	5.867E+07	2.449E-17	1.4368E-09	1.7546E+12	1.0000	0.0000
28000	890.8	1.00	1.00	30.9262	905.38	7.822E+07	1.111E-16	8.6905E-09	3.8678E+11	1.0000	0.0000
35000	903.8	1.00	1.00	30.9262	1131.73	9.778E+07	6.322E-16	6.1818E-08	6.7968E+10	1.0000	0.0000
42000	915.7	1.00	1.00	30.9262	1358.07	1.173E+08	3.374E-15	3.9584E-07	1.2737E+10	1.0000	0.0000
49000	933.2	1.00	1.00	30.9262	1584.42	1.369E+08	2.248E-14	3.0767E-06	1.9119E+09	1.0000	0.0001
56000	949	1.00	1.00	30.9262	1810.76	1.564E+08	1.360E-13	2.1282E-05	3.1589E+08	1.0000	0.0002
62000	962.9	1.00	1.00	30.9262	2004.77	1.732E+08	6.347E-13	1.0994E-04	6.7700E+07	1.0000	0.0004
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	852.5	1.00	1.00	30.9262	0.00	0.000E+00	1.773E-19	0.0000E+00	2.4235E+14	0.0000	0.0000
7000	764.6	1.00	1.00	30.9262	226.35	1.956E+07	4.147E-21	8.1095E-14	1.0362E+16	1.0000	0.0000
14000	746.6	1.00	1.00	30.9262	452.69	3.911E+07	4.163E-21	1.6283E-13	1.0321E+16	1.0000	0.0000
21000	732.4	1.00	1.00	30.9262	679.04	5.867E+07	5.118E-21	3.0024E-13	8.3967E+15	1.0000	0.0000
28000	730	1.00	1.00	30.9262	905.38	7.822E+07	1.374E-20	1.0751E-12	3.1264E+15	1.0000	0.0000
35000	732.4	1.00	1.00	30.9262	1131.73	9.778E+07	5.118E-20	5.0039E-12	8.3967E+14	1.0000	0.0000
42000	734.9	1.00	1.00	30.9262	1358.07	1.173E+08	1.916E-19	2.2485E-11	2.2424E+14	1.0000	0.0000
49000	740.3	1.00	1.00	30.9262	1584.42	1.369E+08	8.696E-19	1.1904E-10	4.9415E+13	1.0000	0.0000
56000	745.8	1.00	1.00	30.9262	1810.76	1.564E+08	3.951E-18	6.1816E-10	1.0875E+13	1.0000	0.0000
62000	750.6	1.00	1.00	30.9262	2004.77	1.732E+08	1.448E-17	2.5083E-09	2.9674E+12	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	717.0	1.00	1.00	30.9262	0.00	0.000E+00	5.567E-23	0.0000E+00	7.7185E+17	0.0000	0.0000
7000	681.2	1.00	1.00	30.9262	226.35	1.956E+07	1.223E-23	2.3913E-16	3.5141E+18	1.0000	0.0000
14000	663.0	1.00	1.00	30.9262	452.69	3.911E+07	8.924E-24	3.4903E-16	4.8153E+18	1.0000	0.0000
21000	647.4	1.00	1.00	30.9262	679.04	5.867E+07	7.520E-24	4.4118E-16	5.7141E+18	1.0000	0.0000
28000	641.0	1.00	1.00	30.9262	905.38	7.822E+07	1.357E-23	1.0613E-15	3.1671E+18	1.0000	0.0000
35000	638.8	1.00	1.00	30.9262	1131.73	9.778E+07	3.529E-23	3.4503E-15	1.2178E+18	1.0000	0.0000
42000	636.9	1.00	1.00	30.9262	1358.07	1.173E+08	9.415E-23	1.1047E-14	4.5642E+17	1.0000	0.0000
49000	636.2	1.00	1.00	30.9262	1584.42	1.369E+08	2.796E-22	3.8272E-14	1.5370E+17	1.0000	0.0000
56000	635.9	1.00	1.00	30.9262	1810.76	1.564E+08	8.606E-22	1.3464E-13	4.9932E+16	1.0000	0.0000
62000	636.1	1.00	1.00	30.9262	2004.77	1.732E+08	2.351E-21	4.0714E-13	1.8281E+16	1.0000	0.0000

Bumup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
7000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
14000	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000				
21000	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000				
28000	0.0006	0.0003	0.0001	0.0000	0.0000	0.0000	0.0000				
35000	0.0015	0.0009	0.0002	0.0000	0.0000	0.0000	0.0001				
42000	0.0039	0.0022	0.0005	0.0000	0.0000	0.0000	0.0003				
49000	0.0109	0.0063	0.0013	0.0001	0.0000	0.0000	0.0008				
56000	0.0279	0.0162	0.0033	0.0002	0.0000	0.0000	0.0021				
62000	0.0619	0.0361	0.0074	0.0004	0.0000	0.0000	0.0048				

Gas Gap Fractions: Kr-87											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=					44949.18	cc					
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=					410371.65	gm					
Q	72300	cal/mol									
R	1.987	cal/mol-K									
Do/a2	0.61	1/sec									
lambda	1.5140E-04	1/sec									
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1145.1	1.00	1.00	30.9262	0.00	0.000E+00	9.666E-15	0.0000E+00	1.5663E+10	0.0000	0.0000
7000	1120.2	1.00	1.00	30.9262	226.35	1.956E+07	1.508E-14	2.9498E-07	1.0037E+10	1.0000	0.0000
14000	1127.2	1.00	1.00	30.9262	452.69	3.911E+07	5.836E-14	2.2826E-06	2.5943E+09	1.0000	0.0001
21000	1136.3	1.00	1.00	30.9262	679.04	5.867E+07	2.390E-13	1.4021E-05	6.3349E+08	1.0000	0.0001
28000	1162.1	1.00	1.00	30.9262	905.38	7.822E+07	1.539E-12	1.2036E-04	9.8399E+07	1.0000	0.0003
35000	1193.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.109E-11	1.0843E-03	1.3653E+07	1.0000	0.0008
42000	1222.2	1.00	1.00	30.9262	1358.07	1.173E+08	7.175E-11	8.4187E-03	2.1102E+06	1.0000	0.0021
49000	1261.3	1.00	1.00	30.9262	1584.42	1.369E+08	5.710E-10	7.8163E-02	2.6516E+05	1.0000	0.0058
56000	1294.5	1.00	1.00	30.9262	1810.76	1.564E+08	3.784E-09	5.9200E-01	4.0011E+04	1.0000	0.0149
62000	1324.3	1.00	1.00	30.9262	2004.77	1.732E+08	1.911E-08	3.3097E+00	7.9235E+03	1.0000	0.0333
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1122.5	1.00	1.00	30.9262	0.00	0.000E+00	5.098E-15	0.0000E+00	2.9697E+10	0.0000	0.0000
7000	1089.2	1.00	1.00	30.9262	226.35	1.956E+07	5.984E-15	1.1703E-07	2.5300E+10	1.0000	0.0000
14000	1093.9	1.00	1.00	30.9262	452.69	3.911E+07	2.184E-14	8.5440E-07	6.9307E+09	1.0000	0.0000
21000	1100.8	1.00	1.00	30.9262	679.04	5.867E+07	8.509E-14	4.9923E-06	1.7792E+09	1.0000	0.0001
28000	1124	1.00	1.00	30.9262	905.38	7.822E+07	5.324E-13	4.1643E-05	2.8440E+08	1.0000	0.0002
35000	1152.8	1.00	1.00	30.9262	1131.73	9.778E+07	3.780E-12	3.6956E-04	4.0058E+07	1.0000	0.0005
42000	1179.1	1.00	1.00	30.9262	1358.07	1.173E+08	2.417E-11	2.8355E-03	6.2652E+06	1.0000	0.0012
49000	1215.1	1.00	1.00	30.9262	1584.42	1.369E+08	1.907E-10	2.6100E-02	7.9408E+05	1.0000	0.0034
56000	1245.8	1.00	1.00	30.9262	1810.76	1.564E+08	1.261E-09	1.9729E-01	1.2006E+05	1.0000	0.0086
62000	1273.4	1.00	1.00	30.9262	2004.77	1.732E+08	6.371E-09	1.1036E+00	2.3762E+04	1.0000	0.0193
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1062.8	1.00	1.00	30.9262	0.00	0.000E+00	8.253E-16	0.0000E+00	1.8344E+11	0.0000	0.0000
7000	1010.9	1.00	1.00	30.9262	226.35	1.956E+07	4.500E-16	8.8012E-09	3.3641E+11	1.0000	0.0000
14000	1009.9	1.00	1.00	30.9262	452.69	3.911E+07	1.373E-15	5.3715E-08	1.1024E+11	1.0000	0.0000
21000	1011.5	1.00	1.00	30.9262	679.04	5.867E+07	4.598E-15	2.6973E-07	3.2930E+10	1.0000	0.0000
28000	1028.3	1.00	1.00	30.9262	905.38	7.822E+07	2.617E-14	2.0470E-06	5.7857E+09	1.0000	0.0000
35000	1050.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.748E-13	1.7092E-05	8.6616E+08	1.0000	0.0001
42000	1070.8	1.00	1.00	30.9262	1358.07	1.173E+08	1.066E-12	1.2507E-04	1.4204E+08	1.0000	0.0003

49000	1099.1	1.00	1.00	30.9262	1584.42	1.369E+08	8.085E-12	1.1068E-03	1.8726E+07	1.0000	0.0007
56000	1123.7	1.00	1.00	30.9262	1810.76	1.564E+08	5.278E-11	8.2570E-03	2.8687E+06	1.0000	0.0018
62000	1145.6	1.00	1.00	30.9262	2004.77	1.732E+08	2.629E-10	4.5544E-02	5.7580E+05	1.0000	0.0039
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	970.7	1.00	1.00	30.9262	0.00	0.000E+00	3.205E-17	0.0000E+00	4.7233E+12	0.0000	0.0000
7000	897.9	1.00	1.00	30.9262	226.35	1.956E+07	4.853E-18	9.4898E-11	3.1200E+13	1.0000	0.0000
14000	888.8	1.00	1.00	30.9262	452.69	3.911E+07	1.013E-17	3.9637E-10	1.4940E+13	1.0000	0.0000
21000	883	1.00	1.00	30.9262	679.04	5.867E+07	2.449E-17	1.4368E-09	6.1820E+12	1.0000	0.0000
28000	890.8	1.00	1.00	30.9262	905.38	7.822E+07	1.111E-16	8.6905E-09	1.3628E+12	1.0000	0.0000
35000	903.8	1.00	1.00	30.9262	1131.73	9.778E+07	6.322E-16	6.1818E-08	2.3948E+11	1.0000	0.0000
42000	915.7	1.00	1.00	30.9262	1358.07	1.173E+08	3.374E-15	3.9584E-07	4.4879E+10	1.0000	0.0000
49000	933.2	1.00	1.00	30.9262	1584.42	1.369E+08	2.248E-14	3.0767E-06	6.7363E+09	1.0000	0.0000
56000	949	1.00	1.00	30.9262	1810.76	1.564E+08	1.360E-13	2.1282E-05	1.1130E+09	1.0000	0.0001
62000	962.9	1.00	1.00	30.9262	2004.77	1.732E+08	6.347E-13	1.0994E-04	2.3853E+08	1.0000	0.0002
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	852.5	1.00	1.00	30.9262	0.00	0.000E+00	1.773E-19	0.0000E+00	8.5390E+14	0.0000	0.0000
7000	764.6	1.00	1.00	30.9262	226.35	1.956E+07	4.147E-21	8.1095E-14	3.6510E+16	1.0000	0.0000
14000	746.6	1.00	1.00	30.9262	452.69	3.911E+07	4.163E-21	1.6283E-13	3.6366E+16	1.0000	0.0000
21000	732.4	1.00	1.00	30.9262	679.04	5.867E+07	5.118E-21	3.0024E-13	2.9585E+16	1.0000	0.0000
28000	730	1.00	1.00	30.9262	905.38	7.822E+07	1.374E-20	1.0751E-12	1.1015E+16	1.0000	0.0000
35000	732.4	1.00	1.00	30.9262	1131.73	9.778E+07	5.118E-20	5.0039E-12	2.9585E+15	1.0000	0.0000
42000	734.9	1.00	1.00	30.9262	1358.07	1.173E+08	1.916E-19	2.2485E-11	7.9008E+14	1.0000	0.0000
49000	740.3	1.00	1.00	30.9262	1584.42	1.369E+08	8.696E-19	1.1904E-10	1.7411E+14	1.0000	0.0000
56000	745.8	1.00	1.00	30.9262	1810.76	1.564E+08	3.951E-18	6.1816E-10	3.8318E+13	1.0000	0.0000
62000	750.6	1.00	1.00	30.9262	2004.77	1.732E+08	1.448E-17	2.5083E-09	1.0455E+13	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	717.0	1.00	1.00	30.9262	0.00	0.000E+00	5.567E-23	0.0000E+00	2.7195E+18	0.0000	0.0000
7000	681.2	1.00	1.00	30.9262	226.35	1.956E+07	1.223E-23	2.3913E-16	1.2381E+19	1.0000	0.0000
14000	663.0	1.00	1.00	30.9262	452.69	3.911E+07	8.924E-24	3.4903E-16	1.6966E+19	1.0000	0.0000
21000	647.4	1.00	1.00	30.9262	679.04	5.867E+07	7.520E-24	4.4118E-16	2.0133E+19	1.0000	0.0000
28000	641.0	1.00	1.00	30.9262	905.38	7.822E+07	1.357E-23	1.0613E-15	1.1159E+19	1.0000	0.0000
35000	638.8	1.00	1.00	30.9262	1131.73	9.778E+07	3.529E-23	3.4503E-15	4.2907E+18	1.0000	0.0000
42000	636.9	1.00	1.00	30.9262	1358.07	1.173E+08	9.415E-23	1.1047E-14	1.6081E+18	1.0000	0.0000
49000	636.2	1.00	1.00	30.9262	1584.42	1.369E+08	2.796E-22	3.8272E-14	5.4153E+17	1.0000	0.0000
56000	635.9	1.00	1.00	30.9262	1810.76	1.564E+08	8.606E-22	1.3464E-13	1.7593E+17	1.0000	0.0000
62000	636.1	1.00	1.00	30.9262	2004.77	1.732E+08	2.351E-21	4.0714E-13	6.4410E+16	1.0000	0.0000

Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
7000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
14000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
21000	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000				
28000	0.0003	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000				
35000	0.0008	0.0005	0.0001	0.0000	0.0000	0.0000	0.0001				
42000	0.0021	0.0012	0.0003	0.0000	0.0000	0.0000	0.0002				
49000	0.0058	0.0034	0.0007	0.0000	0.0000	0.0000	0.0004				
56000	0.0149	0.0086	0.0018	0.0001	0.0000	0.0000	0.0011				
62000	0.0333	0.0193	0.0039	0.0002	0.0000	0.0000	0.0026				

Gas Gap Fractions: Kr-88											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300	cal/mol									
R	1.987	cal/mol-K									
Do/a2	0.61	1/sec									
lambda	6.7310E-05	1/sec									
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1145.1	1.00	1.00	30.9262	0.00	0.000E+00	9.666E-15	0.0000E+00	6.9634E+09	0.0000	0.0000
7000	1120.2	1.00	1.00	30.9262	226.35	1.956E+07	1.508E-14	2.9498E-07	4.4624E+09	1.0000	0.0000
14000	1127.2	1.00	1.00	30.9262	452.69	3.911E+07	5.836E-14	2.2826E-06	1.1534E+09	1.0000	0.0001
21000	1136.3	1.00	1.00	30.9262	679.04	5.867E+07	2.390E-13	1.4021E-05	2.8164E+08	1.0000	0.0002
28000	1162.1	1.00	1.00	30.9262	905.38	7.822E+07	1.539E-12	1.2036E-04	4.3747E+07	1.0000	0.0005
35000	1193.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.109E-11	1.0843E-03	6.0700E+06	1.0000	0.0012
42000	1222.2	1.00	1.00	30.9262	1358.07	1.173E+08	7.175E-11	8.4187E-03	9.3815E+05	1.0000	0.0031
49000	1261.3	1.00	1.00	30.9262	1584.42	1.369E+08	5.710E-10	7.8163E-02	1.1789E+05	1.0000	0.0087
56000	1294.5	1.00	1.00	30.9262	1810.76	1.564E+08	3.784E-09	5.9200E-01	1.7788E+04	1.0000	0.0223
62000	1324.3	1.00	1.00	30.9262	2004.77	1.732E+08	1.911E-08	3.3097E+00	3.5226E+03	1.0000	0.0497
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1122.5	1.00	1.00	30.9262	0.00	0.000E+00	5.098E-15	0.0000E+00	1.3203E+10	0.0000	0.0000
7000	1089.2	1.00	1.00	30.9262	226.35	1.956E+07	5.984E-15	1.1703E-07	1.1248E+10	1.0000	0.0000
14000	1093.9	1.00	1.00	30.9262	452.69	3.911E+07	2.184E-14	8.5440E-07	3.0813E+09	1.0000	0.0001
21000	1100.8	1.00	1.00	30.9262	679.04	5.867E+07	8.509E-14	4.9923E-06	7.9101E+08	1.0000	0.0001
28000	1124	1.00	1.00	30.9262	905.38	7.822E+07	5.324E-13	4.1643E-05	1.2644E+08	1.0000	0.0003
35000	1152.8	1.00	1.00	30.9262	1131.73	9.778E+07	3.780E-12	3.6956E-04	1.7809E+07	1.0000	0.0007
42000	1179.1	1.00	1.00	30.9262	1358.07	1.173E+08	2.417E-11	2.8355E-03	2.7854E+06	1.0000	0.0018
49000	1215.1	1.00	1.00	30.9262	1584.42	1.369E+08	1.907E-10	2.6100E-02	3.5304E+05	1.0000	0.0050
56000	1245.8	1.00	1.00	30.9262	1810.76	1.564E+08	1.261E-09	1.9729E-01	5.3375E+04	1.0000	0.0129
62000	1273.4	1.00	1.00	30.9262	2004.77	1.732E+08	6.371E-09	1.1036E+00	1.0564E+04	1.0000	0.0289
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1062.8	1.00	1.00	30.9262	0.00	0.000E+00	8.253E-16	0.0000E+00	8.1556E+10	0.0000	0.0000
7000	1010.9	1.00	1.00	30.9262	226.35	1.956E+07	4.500E-16	8.8012E-09	1.4956E+11	1.0000	0.0000
14000	1009.9	1.00	1.00	30.9262	452.69	3.911E+07	1.373E-15	5.3715E-08	4.9012E+10	1.0000	0.0000
21000	1011.5	1.00	1.00	30.9262	679.04	5.867E+07	4.598E-15	2.6973E-07	1.4640E+10	1.0000	0.0000
28000	1028.3	1.00	1.00	30.9262	905.38	7.822E+07	2.617E-14	2.0470E-06	2.5722E+09	1.0000	0.0001
35000	1050.5	1.00	1.00	30.9262	1131.73	9.778E+07	1.748E-13	1.7092E-05	3.8508E+08	1.0000	0.0002
42000	1070.8	1.00	1.00	30.9262	1358.07	1.173E+08	1.066E-12	1.2507E-04	6.3150E+07	1.0000	0.0004

49000	1099.1	1.00	1.00	30.9262	1584.42	1.369E+08	8.085E-12	1.1068E-03	8.3251E+06	1.0000	0.0010
56000	1123.7	1.00	1.00	30.9262	1810.76	1.564E+08	5.278E-11	8.2570E-03	1.2754E+06	1.0000	0.0027
62000	1145.6	1.00	1.00	30.9262	2004.77	1.732E+08	2.629E-10	4.5544E-02	2.5599E+05	1.0000	0.0059
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	970.7	1.00	1.00	30.9262	0.00	0.000E+00	3.205E-17	0.0000E+00	2.0999E+12	0.0000	0.0000
7000	897.9	1.00	1.00	30.9262	226.35	1.956E+07	4.853E-18	9.4898E-11	1.3871E+13	1.0000	0.0000
14000	888.8	1.00	1.00	30.9262	452.69	3.911E+07	1.013E-17	3.9637E-10	6.6420E+12	1.0000	0.0000
21000	883	1.00	1.00	30.9262	679.04	5.867E+07	2.449E-17	1.4368E-09	2.7484E+12	1.0000	0.0000
28000	890.8	1.00	1.00	30.9262	905.38	7.822E+07	1.111E-16	8.6905E-09	6.0587E+11	1.0000	0.0000
35000	903.8	1.00	1.00	30.9262	1131.73	9.778E+07	6.322E-16	6.1818E-08	1.0647E+11	1.0000	0.0000
42000	915.7	1.00	1.00	30.9262	1358.07	1.173E+08	3.374E-15	3.9584E-07	1.9952E+10	1.0000	0.0000
49000	933.2	1.00	1.00	30.9262	1584.42	1.369E+08	2.248E-14	3.0767E-06	2.9949E+09	1.0000	0.0001
56000	949	1.00	1.00	30.9262	1810.76	1.564E+08	1.360E-13	2.1282E-05	4.9482E+08	1.0000	0.0001
62000	962.9	1.00	1.00	30.9262	2004.77	1.732E+08	6.347E-13	1.0994E-04	1.0605E+08	1.0000	0.0003
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	852.5	1.00	1.00	30.9262	0.00	0.000E+00	1.773E-19	0.0000E+00	3.7963E+14	0.0000	0.0000
7000	764.6	1.00	1.00	30.9262	226.35	1.956E+07	4.147E-21	8.1095E-14	1.6232E+16	1.0000	0.0000
14000	746.6	1.00	1.00	30.9262	452.69	3.911E+07	4.163E-21	1.6283E-13	1.6168E+16	1.0000	0.0000
21000	732.4	1.00	1.00	30.9262	679.04	5.867E+07	5.118E-21	3.0024E-13	1.3153E+16	1.0000	0.0000
28000	730	1.00	1.00	30.9262	905.38	7.822E+07	1.374E-20	1.0751E-12	4.8973E+15	1.0000	0.0000
35000	732.4	1.00	1.00	30.9262	1131.73	9.778E+07	5.118E-20	5.0039E-12	1.3153E+15	1.0000	0.0000
42000	734.9	1.00	1.00	30.9262	1358.07	1.173E+08	1.916E-19	2.2485E-11	3.5126E+14	1.0000	0.0000
49000	740.3	1.00	1.00	30.9262	1584.42	1.369E+08	8.696E-19	1.1904E-10	7.7406E+13	1.0000	0.0000
56000	745.8	1.00	1.00	30.9262	1810.76	1.564E+08	3.951E-18	6.1816E-10	1.7035E+13	1.0000	0.0000
62000	750.6	1.00	1.00	30.9262	2004.77	1.732E+08	1.448E-17	2.5083E-09	4.6482E+12	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	717.0	1.00	1.00	30.9262	0.00	0.000E+00	5.567E-23	0.0000E+00	1.2091E+18	0.0000	0.0000
7000	681.2	1.00	1.00	30.9262	226.35	1.956E+07	1.223E-23	2.3913E-16	5.5046E+18	1.0000	0.0000
14000	663.0	1.00	1.00	30.9262	452.69	3.911E+07	8.924E-24	3.4903E-16	7.5428E+18	1.0000	0.0000
21000	647.4	1.00	1.00	30.9262	679.04	5.867E+07	7.520E-24	4.4118E-16	8.9509E+18	1.0000	0.0000
28000	641.0	1.00	1.00	30.9262	905.38	7.822E+07	1.357E-23	1.0613E-15	4.9611E+18	1.0000	0.0000
35000	638.8	1.00	1.00	30.9262	1131.73	9.778E+07	3.529E-23	3.4503E-15	1.9076E+18	1.0000	0.0000
42000	636.9	1.00	1.00	30.9262	1358.07	1.173E+08	9.415E-23	1.1047E-14	7.1495E+17	1.0000	0.0000
49000	636.2	1.00	1.00	30.9262	1584.42	1.369E+08	2.796E-22	3.8272E-14	2.4076E+17	1.0000	0.0000
56000	635.9	1.00	1.00	30.9262	1810.76	1.564E+08	8.606E-22	1.3464E-13	7.8216E+16	1.0000	0.0000
62000	636.1	1.00	1.00	30.9262	2004.77	1.732E+08	2.351E-21	4.0714E-13	2.8636E+16	1.0000	0.0000

Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
7000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
14000	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000				
21000	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000				
28000	0.0005	0.0003	0.0001	0.0000	0.0000	0.0000	0.0000				
35000	0.0012	0.0007	0.0002	0.0000	0.0000	0.0000	0.0001				
42000	0.0031	0.0018	0.0004	0.0000	0.0000	0.0000	0.0002				
49000	0.0087	0.0050	0.0010	0.0001	0.0000	0.0000	0.0007				
56000	0.0223	0.0129	0.0027	0.0001	0.0000	0.0000	0.0017				
62000	0.0497	0.0289	0.0059	0.0003	0.0000	0.0000	0.0038				

ATTACHMENT F
CASE B GAS GAP FRACTION RESULTS

Gas Gap Fractions: I-131											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300			cal/mol							
R	1.987			cal/mol-K							
Do/a2	0.61			1/sec							
lambda	9.9760E-07			1/sec							
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	2.726E-09	0.0000E+00	3.6601E+02	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	1.559E-09	9.5966E-03	6.4004E+02	1.0000	0.1135
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	4.107E-09	5.0579E-02	2.4288E+02	1.0000	0.1801
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.102E-08	2.0346E-01	9.0567E+01	1.0000	0.2821
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	6.087E-09	1.5365E-01	1.6390E+02	1.0000	0.2160
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	1.982E-08	6.3465E-01	5.0326E+01	1.0000	0.3633
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	7.417E-08	2.8771E+00	1.3450E+01	1.0000	0.5960
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	2.386E-08	1.1052E+00	4.1803E+01	1.0000	0.3922
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	8.519E-08	4.5866E+00	1.1710E+01	1.0000	0.6224
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	2.770E-07	1.6996E+01	3.6018E+00	1.0000	0.8205
40000	1297.6	1.089	1.00	33.6787	829.01	7.163E+07	2.039E-09	1.4602E-01	4.8934E+02	1.0000	0.1295
44000	1319.3	1.089	1.00	33.6787	947.78	8.189E+07	6.243E-09	5.1120E-01	1.5980E+02	1.0000	0.2185
48000	1336.4	1.089	1.00	33.6787	1066.55	9.215E+07	1.715E-08	1.5807E+00	5.8158E+01	1.0000	0.3418
52000	1364.6	1.089	1.00	33.6787	1185.32	1.024E+08	5.813E-08	5.9535E+00	1.7161E+01	1.0000	0.5497
56000	1395.3	1.089	1.00	33.6787	1304.09	1.127E+08	2.018E-07	2.2738E+01	4.9434E+00	1.0000	0.7744
58000	1407.7	1.089	1.00	33.6787	1363.47	1.178E+08	3.528E-07	4.1564E+01	2.8275E+00	1.0000	0.8511
60000	1419.2	1.089	1.00	33.6787	1422.86	1.229E+08	6.045E-07	7.4311E+01	1.6504E+00	1.0000	0.9048
62000	1432.4	1.089	1.00	33.6787	1482.24	1.281E+08	1.064E-06	1.3623E+02	9.3781E-01	1.0000	0.9426
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.339E-09	0.0000E+00	7.4482E+02	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	4.169E-10	2.5669E-03	2.3929E+03	1.0000	0.0599
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.094E-09	1.3466E-02	9.1224E+02	1.0000	0.0960
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	2.944E-09	5.4373E-02	3.3889E+02	1.0000	0.1541
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	1.673E-09	4.2237E-02	5.9623E+02	1.0000	0.1178
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	5.504E-09	1.7623E-01	1.8124E+02	1.0000	0.2063
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	2.109E-08	8.1816E-01	4.7296E+01	1.0000	0.3728
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	6.826E-09	3.1616E-01	1.4614E+02	1.0000	0.2276
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	2.480E-08	1.3354E+00	4.0222E+01	1.0000	0.3984
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	8.174E-08	5.0162E+00	1.2204E+01	1.0000	0.6145
40000	1247.4	1.089	1.00	33.6787	829.01	7.163E+07	6.596E-10	4.7242E-02	1.5125E+03	1.0000	0.0752

44000	1267.2	1.089	1.00	33.6787	947.78	8.189E+07	2.009E-09	1.6449E-01	4.9665E+02	1.0000	0.1286
48000	1283.1	1.089	1.00	33.6787	1066.55	9.215E+07	5.535E-09	5.1009E-01	1.8022E+02	1.0000	0.2068
52000	1309.2	1.089	1.00	33.6787	1185.32	1.024E+08	1.881E-08	1.9264E+00	5.3035E+01	1.0000	0.3554
56000	1337.9	1.089	1.00	33.6787	1304.09	1.127E+08	6.592E-08	7.4277E+00	1.5133E+01	1.0000	0.5736
58000	1349.4	1.089	1.00	33.6787	1363.47	1.178E+08	1.155E-07	1.3605E+01	8.6378E+00	1.0000	0.6792
60000	1360.1	1.089	1.00	33.6787	1422.86	1.229E+08	1.984E-07	2.4390E+01	5.0283E+00	1.0000	0.7718
62000	1372.5	1.089	1.00	33.6787	1482.24	1.281E+08	3.510E-07	4.4957E+01	2.8418E+00	1.0000	0.8505
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	1.690E-10	0.0000E+00	5.9026E+03	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	9.120E-12	5.6150E-05	1.0939E+05	1.0000	0.0090
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	2.316E-11	2.8524E-04	4.3068E+04	1.0000	0.0144
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	6.225E-11	1.1499E-03	1.6025E+04	1.0000	0.0235
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	3.919E-11	9.8933E-04	2.5455E+04	1.0000	0.0187
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.307E-10	4.1857E-03	7.6307E+03	1.0000	0.0339
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	5.302E-10	2.0564E-02	1.8817E+03	1.0000	0.0676
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	1.798E-10	8.3272E-03	5.5485E+03	1.0000	0.0397
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	6.777E-10	3.6489E-02	1.4720E+03	1.0000	0.0762
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	2.302E-09	1.4128E-01	4.3332E+02	1.0000	0.1372
40000	1122.5	1.089	1.00	33.6787	829.01	7.163E+07	2.568E-11	1.8396E-03	3.8842E+04	1.0000	0.0151
44000	1137.8	1.089	1.00	33.6787	947.78	8.189E+07	7.668E-11	6.2791E-03	1.3010E+04	1.0000	0.0261
48000	1150.5	1.089	1.00	33.6787	1066.55	9.215E+07	2.107E-10	1.9418E-02	4.7343E+03	1.0000	0.0430
52000	1171.4	1.089	1.00	33.6787	1185.32	1.024E+08	7.153E-10	7.3253E-02	1.3947E+03	1.0000	0.0782
56000	1195.2	1.089	1.00	33.6787	1304.09	1.127E+08	2.563E-09	2.8883E-01	3.8916E+02	1.0000	0.1444
58000	1204.6	1.089	1.00	33.6787	1363.47	1.178E+08	4.517E-09	5.3213E-01	2.2085E+02	1.0000	0.1883
60000	1213.3	1.089	1.00	33.6787	1422.86	1.229E+08	7.794E-09	9.5819E-01	1.2799E+02	1.0000	0.2417
62000	1223.7	1.089	1.00	33.6787	1482.24	1.281E+08	1.397E-08	1.7896E+00	7.1389E+01	1.0000	0.3130
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	3.385E-12	0.0000E+00	2.9468E+05	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	6.309E-15	3.8844E-08	1.5813E+08	1.0000	0.0002
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	1.414E-14	1.7412E-07	7.0550E+07	1.0000	0.0004
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	3.571E-14	6.5964E-07	2.7934E+07	1.0000	0.0006
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	2.980E-14	7.5217E-07	3.3480E+07	1.0000	0.0005
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	9.620E-14	3.0801E-06	1.0370E+07	1.0000	0.0009
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	4.130E-13	1.6021E-05	2.4153E+06	1.0000	0.0019
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	1.680E-13	7.7827E-06	5.9366E+06	1.0000	0.0012
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	6.544E-13	3.5233E-05	1.5244E+06	1.0000	0.0024
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	2.238E-12	1.3735E-04	4.4569E+05	1.0000	0.0045
40000	946.2	1.089	1.00	33.6787	829.01	7.163E+07	6.118E-14	4.3820E-06	1.6306E+07	1.0000	0.0007
44000	955.3	1.089	1.00	33.6787	947.78	8.189E+07	1.704E-13	1.3952E-05	5.8554E+06	1.0000	0.0012
48000	963.4	1.089	1.00	33.6787	1066.55	9.215E+07	4.531E-13	4.1753E-05	2.2017E+06	1.0000	0.0020
52000	977.0	1.089	1.00	33.6787	1185.32	1.024E+08	1.480E-12	1.5156E-04	6.7409E+05	1.0000	0.0036

56000	994.0	1.089	1.00	33.6787	1304.09	1.127E+08	5.402E-12	6.0870E-04	1.8466E+05	1.0000	0.0070
58000	1000.3	1.089	1.00	33.6787	1363.47	1.178E+08	9.453E-12	1.1136E-03	1.0553E+05	1.0000	0.0092
60000	1006.1	1.089	1.00	33.6787	1422.86	1.229E+08	1.620E-11	1.9914E-03	6.1584E+04	1.0000	0.0120
62000	1013.5	1.089	1.00	33.6787	1482.24	1.281E+08	2.931E-11	3.7537E-03	3.4035E+04	1.0000	0.0162
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	3.224E-15	0.0000E+00	3.0939E+08	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	2.712E-20	1.6701E-13	3.6778E+13	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	4.020E-20	4.9508E-13	2.4813E+13	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	7.433E-20	1.3730E-12	1.3421E+13	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.105E-19	2.7891E-12	9.0292E+12	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	2.737E-19	8.7620E-12	3.6452E+12	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.073E-18	4.1607E-11	9.3004E+11	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	7.329E-19	3.3943E-11	1.3612E+12	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	2.551E-18	1.3737E-10	3.9100E+11	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	7.627E-18	4.6805E-10	1.3079E+11	1.0000	0.0000
40000	744.8	1.089	1.00	33.6787	829.01	7.163E+07	1.864E-18	1.3353E-10	5.3511E+11	1.0000	0.0000
44000	747.4	1.089	1.00	33.6787	947.78	8.189E+07	4.266E-18	3.4935E-10	2.3384E+11	1.0000	0.0000
48000	750.2	1.089	1.00	33.6787	1066.55	9.215E+07	9.878E-18	9.1026E-10	1.0099E+11	1.0000	0.0000
52000	755.3	1.089	1.00	33.6787	1185.32	1.024E+08	2.646E-17	2.7100E-09	3.7700E+10	1.0000	0.0000
56000	764.6	1.089	1.00	33.6787	1304.09	1.127E+08	9.179E-17	1.0343E-08	1.0868E+10	1.0000	0.0000
58000	767.4	1.089	1.00	33.6787	1363.47	1.178E+08	1.517E-16	1.7875E-08	6.5748E+09	1.0000	0.0000
60000	769.7	1.089	1.00	33.6787	1422.86	1.229E+08	2.429E-16	2.9864E-08	4.1067E+09	1.0000	0.0000
62000	773.6	1.089	1.00	33.6787	1482.24	1.281E+08	4.284E-16	5.4860E-08	2.3288E+09	1.0000	0.0001
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.305E-20	0.0000E+00	7.6421E+13	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	2.563E-22	1.5779E-15	3.8926E+15	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	4.236E-22	5.2157E-15	2.3553E+15	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	7.705E-22	1.4233E-14	1.2947E+15	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	5.904E-22	1.4904E-14	1.6897E+15	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.340E-21	4.2889E-14	7.4471E+14	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	4.996E-21	1.9378E-13	1.9969E+14	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	1.738E-21	8.0516E-14	5.7384E+14	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	5.521E-21	2.9722E-13	1.8071E+14	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	1.478E-20	9.0673E-13	6.7515E+13	1.0000	0.0000
40000	643.9	1.089	1.00	33.6787	829.01	7.163E+07	8.826E-22	6.3219E-14	1.1303E+15	1.0000	0.0000
44000	643.8	1.089	1.00	33.6787	947.78	8.189E+07	1.689E-21	1.3832E-13	5.9058E+14	1.0000	0.0000
48000	644.0	1.089	1.00	33.6787	1066.55	9.215E+07	3.319E-21	3.0585E-13	3.0057E+14	1.0000	0.0000
52000	645.0	1.089	1.00	33.6787	1185.32	1.024E+08	6.995E-21	7.1635E-13	1.4262E+14	1.0000	0.0000
56000	650.5	1.089	1.00	33.6787	1304.09	1.127E+08	2.176E-20	2.4516E-12	4.5848E+13	1.0000	0.0000
58000	651.3	1.089	1.00	33.6787	1363.47	1.178E+08	3.238E-20	3.8150E-12	3.0805E+13	1.0000	0.0000
60000	651.9	1.089	1.00	33.6787	1422.86	1.229E+08	4.737E-20	5.8237E-12	2.1059E+13	1.0000	0.0000
62000	653.9	1.089	1.00	33.6787	1482.24	1.281E+08	7.808E-20	9.9989E-12	1.2777E+13	1.0000	0.0000

Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.1135	0.0599	0.0090	0.0002	0.0000	0.0000	0.0074				
8000	0.1801	0.0960	0.0144	0.0004	0.0000	0.0000	0.0119				
12000	0.2821	0.1541	0.0235	0.0006	0.0000	0.0000	0.0190				
16000	0.2160	0.1178	0.0187	0.0005	0.0000	0.0000	0.0147				
20000	0.3633	0.2063	0.0339	0.0009	0.0000	0.0000	0.0258				
24000	0.5960	0.3728	0.0676	0.0019	0.0000	0.0000	0.0471				
28000	0.3922	0.2276	0.0397	0.0012	0.0000	0.0000	0.0288				
32000	0.6224	0.3984	0.0762	0.0024	0.0000	0.0000	0.0509				
36000	0.8205	0.6145	0.1372	0.0045	0.0000	0.0000	0.0804				
40000	0.1295	0.0752	0.0151	0.0007	0.0000	0.0000	0.0099				
44000	0.2185	0.1286	0.0261	0.0012	0.0000	0.0000	0.0169				
48000	0.3418	0.2068	0.0430	0.0020	0.0000	0.0000	0.0273				
52000	0.5497	0.3554	0.0782	0.0036	0.0000	0.0000	0.0473				
56000	0.7744	0.5736	0.1444	0.0070	0.0000	0.0000	0.0784				
58000	0.8511	0.6792	0.1883	0.0092	0.0000	0.0000	0.0952				
60000	0.9048	0.7718	0.2417	0.0120	0.0000	0.0000	0.1124				
62000	0.9426	0.8505	0.3130	0.0162	0.0001	0.0000	0.1315				

Gas Gap Fractions: I-132											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300		cal/mol								
R	1.987		cal/mol-K								
Do/a2	0.61		1/sec								
lambda	8.4250E-05		1/sec								
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	2.726E-09	0.0000E+00	3.0910E+04	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	1.559E-09	9.5966E-03	5.4053E+04	1.0000	0.0128
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	4.107E-09	5.0579E-02	2.0512E+04	1.0000	0.0208
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.102E-08	2.0346E-01	7.6486E+03	1.0000	0.0339
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	6.087E-09	1.5365E-01	1.3842E+04	1.0000	0.0253
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	1.982E-08	6.3465E-01	4.2502E+03	1.0000	0.0453
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	7.417E-08	2.8771E+00	1.1359E+03	1.0000	0.0864
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	2.386E-08	1.1052E+00	3.5304E+03	1.0000	0.0496
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	8.519E-08	4.5866E+00	9.8898E+02	1.0000	0.0924
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	2.770E-07	1.6996E+01	3.0419E+02	1.0000	0.1621
40000	1297.6	1.089	1.00	33.6787	829.01	7.163E+07	2.039E-09	1.4602E-01	4.1326E+04	1.0000	0.0147
44000	1319.3	1.089	1.00	33.6787	947.78	8.189E+07	6.243E-09	5.1120E-01	1.3496E+04	1.0000	0.0256
48000	1336.4	1.089	1.00	33.6787	1066.55	9.215E+07	1.715E-08	1.5807E+00	4.9116E+03	1.0000	0.0422
52000	1364.6	1.089	1.00	33.6787	1185.32	1.024E+08	5.813E-08	5.9535E+00	1.4493E+03	1.0000	0.0767
56000	1395.3	1.089	1.00	33.6787	1304.09	1.127E+08	2.018E-07	2.2738E+01	4.1748E+02	1.0000	0.1396
58000	1407.7	1.089	1.00	33.6787	1363.47	1.178E+08	3.528E-07	4.1564E+01	2.3879E+02	1.0000	0.1816
60000	1419.2	1.089	1.00	33.6787	1422.86	1.229E+08	6.045E-07	7.4311E+01	1.3938E+02	1.0000	0.2326
62000	1432.4	1.089	1.00	33.6787	1482.24	1.281E+08	1.064E-06	1.3623E+02	7.9200E+01	1.0000	0.2992
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.339E-09	0.0000E+00	6.2902E+04	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	4.169E-10	2.5669E-03	2.0208E+05	1.0000	0.0067
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.094E-09	1.3466E-02	7.7041E+04	1.0000	0.0108
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	2.944E-09	5.4373E-02	2.8621E+04	1.0000	0.0176
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	1.673E-09	4.2237E-02	5.0353E+04	1.0000	0.0133
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	5.504E-09	1.7623E-01	1.5306E+04	1.0000	0.0241
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	2.109E-08	8.1816E-01	3.9943E+03	1.0000	0.0467
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	6.826E-09	3.1616E-01	1.2342E+04	1.0000	0.0268
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	2.480E-08	1.3354E+00	3.3968E+03	1.0000	0.0506
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	8.174E-08	5.0162E+00	1.0307E+03	1.0000	0.0905
40000	1247.4	1.089	1.00	33.6787	829.01	7.163E+07	6.596E-10	4.7242E-02	1.2774E+05	1.0000	0.0084
44000	1267.2	1.089	1.00	33.6787	947.78	8.189E+07	2.009E-09	1.6449E-01	4.1943E+04	1.0000	0.0146
48000	1283.1	1.089	1.00	33.6787	1066.55	9.215E+07	5.535E-09	5.1009E-01	1.5220E+04	1.0000	0.0241

52000	1309.2	1.089	1.00	33.6787	1185.32	1.024E+08	1.881E-08	1.9264E+00	4.4789E+03	1.0000	0.0442
56000	1337.9	1.089	1.00	33.6787	1304.09	1.127E+08	6.592E-08	7.4277E+00	1.2780E+03	1.0000	0.0816
58000	1349.4	1.089	1.00	33.6787	1363.47	1.178E+08	1.155E-07	1.3605E+01	7.2949E+02	1.0000	0.1070
60000	1360.1	1.089	1.00	33.6787	1422.86	1.229E+08	1.984E-07	2.4390E+01	4.2465E+02	1.0000	0.1385
62000	1372.5	1.089	1.00	33.6787	1482.24	1.281E+08	3.510E-07	4.4957E+01	2.4000E+02	1.0000	0.1812
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	1.690E-10	0.0000E+00	4.9849E+05	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	9.120E-12	5.6150E-05	9.2383E+06	1.0000	0.0010
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	2.316E-11	2.8524E-04	3.6372E+06	1.0000	0.0016
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	6.225E-11	1.1499E-03	1.3533E+06	1.0000	0.0026
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	3.919E-11	9.8933E-04	2.1497E+06	1.0000	0.0020
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.307E-10	4.1857E-03	6.4444E+05	1.0000	0.0037
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	5.302E-10	2.0564E-02	1.5892E+05	1.0000	0.0075
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	1.798E-10	8.3272E-03	4.6858E+05	1.0000	0.0044
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	6.777E-10	3.6489E-02	1.2431E+05	1.0000	0.0085
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	2.302E-09	1.4128E-01	3.6595E+04	1.0000	0.0156
40000	1122.5	1.089	1.00	33.6787	829.01	7.163E+07	2.568E-11	1.8396E-03	3.2803E+06	1.0000	0.0017
44000	1137.8	1.089	1.00	33.6787	947.78	8.189E+07	7.668E-11	6.2791E-03	1.0987E+06	1.0000	0.0029
48000	1150.5	1.089	1.00	33.6787	1066.55	9.215E+07	2.107E-10	1.9418E-02	3.9982E+05	1.0000	0.0047
52000	1171.4	1.089	1.00	33.6787	1185.32	1.024E+08	7.153E-10	7.3253E-02	1.1779E+05	1.0000	0.0087
56000	1195.2	1.089	1.00	33.6787	1304.09	1.127E+08	2.563E-09	2.8883E-01	3.2866E+04	1.0000	0.0165
58000	1204.6	1.089	1.00	33.6787	1363.47	1.178E+08	4.517E-09	5.3213E-01	1.8652E+04	1.0000	0.0218
60000	1213.3	1.089	1.00	33.6787	1422.86	1.229E+08	7.794E-09	9.5819E-01	1.0809E+04	1.0000	0.0286
62000	1223.7	1.089	1.00	33.6787	1482.24	1.281E+08	1.397E-08	1.7896E+00	6.0290E+03	1.0000	0.0381
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	3.385E-12	0.0000E+00	2.4886E+07	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	6.309E-15	3.8844E-08	1.3354E+10	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	1.414E-14	1.7412E-07	5.9581E+09	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	3.571E-14	6.5964E-07	2.3591E+09	1.0000	0.0001
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	2.980E-14	7.5217E-07	2.8275E+09	1.0000	0.0001
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	9.620E-14	3.0801E-06	8.7575E+08	1.0000	0.0001
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	4.130E-13	1.6021E-05	2.0398E+08	1.0000	0.0002
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	1.680E-13	7.7827E-06	5.0137E+08	1.0000	0.0001
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	6.544E-13	3.5233E-05	1.2874E+08	1.0000	0.0003
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	2.238E-12	1.3735E-04	3.7640E+07	1.0000	0.0005
40000	946.2	1.089	1.00	33.6787	829.01	7.163E+07	6.118E-14	4.3820E-06	1.3771E+09	1.0000	0.0001
44000	955.3	1.089	1.00	33.6787	947.78	8.189E+07	1.704E-13	1.3952E-05	4.9450E+08	1.0000	0.0001
48000	963.4	1.089	1.00	33.6787	1066.55	9.215E+07	4.531E-13	4.1753E-05	1.8594E+08	1.0000	0.0002
52000	977.0	1.089	1.00	33.6787	1185.32	1.024E+08	1.480E-12	1.5156E-04	5.6929E+07	1.0000	0.0004
56000	994.0	1.089	1.00	33.6787	1304.09	1.127E+08	5.402E-12	6.0870E-04	1.5595E+07	1.0000	0.0008
58000	1000.3	1.089	1.00	33.6787	1363.47	1.178E+08	9.453E-12	1.1136E-03	8.9127E+06	1.0000	0.0010

60000	1006.1	1.089	1.00	33.6787	1422.86	1.229E+08	1.620E-11	1.9914E-03	5.2009E+06	1.0000	0.0013
62000	1013.5	1.089	1.00	33.6787	1482.24	1.281E+08	2.931E-11	3.7537E-03	2.8744E+06	1.0000	0.0018
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	3.224E-15	0.0000E+00	2.6129E+10	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	2.712E-20	1.6701E-13	3.1060E+15	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	4.020E-20	4.9508E-13	2.0955E+15	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	7.433E-20	1.3730E-12	1.1334E+15	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.105E-19	2.7891E-12	7.6254E+14	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	2.737E-19	8.7620E-12	3.0785E+14	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.073E-18	4.1607E-11	7.8544E+13	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	7.329E-19	3.3943E-11	1.1496E+14	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	2.551E-18	1.3737E-10	3.3021E+13	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	7.627E-18	4.6805E-10	1.1046E+13	1.0000	0.0000
40000	744.8	1.089	1.00	33.6787	829.01	7.163E+07	1.864E-18	1.3353E-10	4.5191E+13	1.0000	0.0000
44000	747.4	1.089	1.00	33.6787	947.78	8.189E+07	4.266E-18	3.4935E-10	1.9748E+13	1.0000	0.0000
48000	750.2	1.089	1.00	33.6787	1066.55	9.215E+07	9.878E-18	9.1026E-10	8.5291E+12	1.0000	0.0000
52000	755.3	1.089	1.00	33.6787	1185.32	1.024E+08	2.646E-17	2.7100E-09	3.1839E+12	1.0000	0.0000
56000	764.6	1.089	1.00	33.6787	1304.09	1.127E+08	9.179E-17	1.0343E-08	9.1783E+11	1.0000	0.0000
58000	767.4	1.089	1.00	33.6787	1363.47	1.178E+08	1.517E-16	1.7875E-08	5.5526E+11	1.0000	0.0000
60000	769.7	1.089	1.00	33.6787	1422.86	1.229E+08	2.429E-16	2.9864E-08	3.4682E+11	1.0000	0.0000
62000	773.6	1.089	1.00	33.6787	1482.24	1.281E+08	4.284E-16	5.4860E-08	1.9667E+11	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.305E-20	0.0000E+00	6.4540E+15	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	2.563E-22	1.5779E-15	3.2874E+17	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	4.236E-22	5.2157E-15	1.9891E+17	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	7.705E-22	1.4233E-14	1.0934E+17	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	5.904E-22	1.4904E-14	1.4270E+17	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.340E-21	4.2889E-14	6.2893E+16	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	4.996E-21	1.9378E-13	1.6865E+16	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	1.738E-21	8.0516E-14	4.8462E+16	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	5.521E-21	2.9722E-13	1.5261E+16	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	1.478E-20	9.0673E-13	5.7018E+15	1.0000	0.0000
40000	643.9	1.089	1.00	33.6787	829.01	7.163E+07	8.826E-22	6.3219E-14	9.5454E+16	1.0000	0.0000
44000	643.8	1.089	1.00	33.6787	947.78	8.189E+07	1.689E-21	1.3832E-13	4.9876E+16	1.0000	0.0000
48000	644.0	1.089	1.00	33.6787	1066.55	9.215E+07	3.319E-21	3.0585E-13	2.5384E+16	1.0000	0.0000
52000	645.0	1.089	1.00	33.6787	1185.32	1.024E+08	6.995E-21	7.1635E-13	1.2045E+16	1.0000	0.0000
56000	650.5	1.089	1.00	33.6787	1304.09	1.127E+08	2.176E-20	2.4516E-12	3.8720E+15	1.0000	0.0000
58000	651.3	1.089	1.00	33.6787	1363.47	1.178E+08	3.238E-20	3.8150E-12	2.6016E+15	1.0000	0.0000
60000	651.9	1.089	1.00	33.6787	1422.86	1.229E+08	4.737E-20	5.8237E-12	1.7785E+15	1.0000	0.0000
62000	653.9	1.089	1.00	33.6787	1482.24	1.281E+08	7.808E-20	9.9989E-12	1.0791E+15	1.0000	0.0000
Burnup	F	F	F	F	F	F					

mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0128	0.0067	0.0010	0.0000	0.0000	0.0000	0.0008				
8000	0.0208	0.0108	0.0016	0.0000	0.0000	0.0000	0.0013				
12000	0.0339	0.0176	0.0026	0.0001	0.0000	0.0000	0.0022				
16000	0.0253	0.0133	0.0020	0.0001	0.0000	0.0000	0.0017				
20000	0.0453	0.0241	0.0037	0.0001	0.0000	0.0000	0.0030				
24000	0.0864	0.0467	0.0075	0.0002	0.0000	0.0000	0.0059				
28000	0.0496	0.0268	0.0044	0.0001	0.0000	0.0000	0.0034				
32000	0.0924	0.0506	0.0085	0.0003	0.0000	0.0000	0.0064				
36000	0.1621	0.0905	0.0156	0.0005	0.0000	0.0000	0.0115				
40000	0.0147	0.0084	0.0017	0.0001	0.0000	0.0000	0.0011				
44000	0.0256	0.0146	0.0029	0.0001	0.0000	0.0000	0.0019				
48000	0.0422	0.0241	0.0047	0.0002	0.0000	0.0000	0.0032				
52000	0.0767	0.0442	0.0087	0.0004	0.0000	0.0000	0.0058				
56000	0.1396	0.0816	0.0165	0.0008	0.0000	0.0000	0.0107				
58000	0.1816	0.1070	0.0218	0.0010	0.0000	0.0000	0.0141				
60000	0.2326	0.1385	0.0286	0.0013	0.0000	0.0000	0.0183				
62000	0.2992	0.1812	0.0381	0.0018	0.0000	0.0000	0.0240				

Gas Gap Fractions: I-133											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300	cal/mol									
R	1.987	cal/mol-K									
Do/a2	0.61	1/sec									
lambda	9.2110E-06	1/sec									
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	2.726E-09	0.0000E+00	3.3794E+03	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	1.559E-09	9.5966E-03	5.9096E+03	1.0000	0.0385
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	4.107E-09	5.0579E-02	2.2425E+03	1.0000	0.0620
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.102E-08	2.0346E-01	8.3622E+02	1.0000	0.1002
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	6.087E-09	1.5365E-01	1.5133E+03	1.0000	0.0751
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	1.982E-08	6.3465E-01	4.6467E+02	1.0000	0.1327
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	7.417E-08	2.8771E+00	1.2418E+02	1.0000	0.2451
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	2.386E-08	1.1052E+00	3.8598E+02	1.0000	0.1449
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	8.519E-08	4.5866E+00	1.0812E+02	1.0000	0.2608
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	2.770E-07	1.6996E+01	3.3256E+01	1.0000	0.4300
40000	1297.6	1.089	1.00	33.6787	829.01	7.163E+07	2.039E-09	1.4602E-01	4.5181E+03	1.0000	0.0440
44000	1319.3	1.089	1.00	33.6787	947.78	8.189E+07	6.243E-09	5.1120E-01	1.4755E+03	1.0000	0.0761
48000	1336.4	1.089	1.00	33.6787	1066.55	9.215E+07	1.715E-08	1.5807E+00	5.3698E+02	1.0000	0.1239
52000	1364.6	1.089	1.00	33.6787	1185.32	1.024E+08	5.813E-08	5.9535E+00	1.5845E+02	1.0000	0.2194
56000	1395.3	1.089	1.00	33.6787	1304.09	1.127E+08	2.018E-07	2.2738E+01	4.5643E+01	1.0000	0.3783
58000	1407.7	1.089	1.00	33.6787	1363.47	1.178E+08	3.528E-07	4.1564E+01	2.6107E+01	1.0000	0.4723
60000	1419.2	1.089	1.00	33.6787	1422.86	1.229E+08	6.045E-07	7.4311E+01	1.5238E+01	1.0000	0.5723
62000	1432.4	1.089	1.00	33.6787	1482.24	1.281E+08	1.064E-06	1.3623E+02	8.6589E+00	1.0000	0.6787
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.339E-09	0.0000E+00	6.8771E+03	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	4.169E-10	2.5669E-03	2.2094E+04	1.0000	0.0200
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.094E-09	1.3466E-02	8.4228E+03	1.0000	0.0323
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	2.944E-09	5.4373E-02	3.1291E+03	1.0000	0.0527
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	1.673E-09	4.2237E-02	5.5051E+03	1.0000	0.0399
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	5.504E-09	1.7623E-01	1.6734E+03	1.0000	0.0715
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	2.109E-08	8.1816E-01	4.3669E+02	1.0000	0.1367
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	6.826E-09	3.1616E-01	1.3493E+03	1.0000	0.0794
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	2.480E-08	1.3354E+00	3.7137E+02	1.0000	0.1476
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	8.174E-08	5.0162E+00	1.1268E+02	1.0000	0.2560
40000	1247.4	1.089	1.00	33.6787	829.01	7.163E+07	6.596E-10	4.7242E-02	1.3965E+04	1.0000	0.0252
44000	1267.2	1.089	1.00	33.6787	947.78	8.189E+07	2.009E-09	1.6449E-01	4.5856E+03	1.0000	0.0436
48000	1283.1	1.089	1.00	33.6787	1066.55	9.215E+07	5.535E-09	5.1009E-01	1.6640E+03	1.0000	0.0717

52000	1309.2	1.089	1.00	33.6787	1185.32	1.024E+08	1.881E-08	1.9264E+00	4.8968E+02	1.0000	0.1294
56000	1337.9	1.089	1.00	33.6787	1304.09	1.127E+08	6.592E-08	7.4277E+00	1.3972E+02	1.0000	0.2323
58000	1349.4	1.089	1.00	33.6787	1363.47	1.178E+08	1.155E-07	1.3605E+01	7.9754E+01	1.0000	0.2983
60000	1360.1	1.089	1.00	33.6787	1422.86	1.229E+08	1.984E-07	2.4390E+01	4.6427E+01	1.0000	0.3757
62000	1372.5	1.089	1.00	33.6787	1482.24	1.281E+08	3.510E-07	4.4957E+01	2.6239E+01	1.0000	0.4714
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	1.690E-10	0.0000E+00	5.4500E+04	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	9.120E-12	5.6150E-05	1.0100E+06	1.0000	0.0030
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	2.316E-11	2.8524E-04	3.9765E+05	1.0000	0.0047
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	6.225E-11	1.1499E-03	1.4796E+05	1.0000	0.0078
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	3.919E-11	9.8933E-04	2.3503E+05	1.0000	0.0062
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.307E-10	4.1857E-03	7.0456E+04	1.0000	0.0113
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	5.302E-10	2.0564E-02	1.7374E+04	1.0000	0.0226
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	1.798E-10	8.3272E-03	5.1230E+04	1.0000	0.0132
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	6.777E-10	3.6489E-02	1.3591E+04	1.0000	0.0255
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	2.302E-09	1.4128E-01	4.0009E+03	1.0000	0.0467
40000	1122.5	1.089	1.00	33.6787	829.01	7.163E+07	2.568E-11	1.8396E-03	3.5864E+05	1.0000	0.0050
44000	1137.8	1.089	1.00	33.6787	947.78	8.189E+07	7.668E-11	6.2791E-03	1.2012E+05	1.0000	0.0086
48000	1150.5	1.089	1.00	33.6787	1066.55	9.215E+07	2.107E-10	1.9418E-02	4.3713E+04	1.0000	0.0143
52000	1171.4	1.089	1.00	33.6787	1185.32	1.024E+08	7.153E-10	7.3253E-02	1.2877E+04	1.0000	0.0262
56000	1195.2	1.089	1.00	33.6787	1304.09	1.127E+08	2.563E-09	2.8883E-01	3.5932E+03	1.0000	0.0492
58000	1204.6	1.089	1.00	33.6787	1363.47	1.178E+08	4.517E-09	5.3213E-01	2.0392E+03	1.0000	0.0650
60000	1213.3	1.089	1.00	33.6787	1422.86	1.229E+08	7.794E-09	9.5819E-01	1.1818E+03	1.0000	0.0847
62000	1223.7	1.089	1.00	33.6787	1482.24	1.281E+08	1.397E-08	1.7896E+00	6.5914E+02	1.0000	0.1123
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	3.385E-12	0.0000E+00	2.7208E+06	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	6.309E-15	3.8844E-08	1.4600E+09	1.0000	0.0001
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	1.414E-14	1.7412E-07	6.5140E+08	1.0000	0.0001
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	3.571E-14	6.5964E-07	2.5792E+08	1.0000	0.0002
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	2.980E-14	7.5217E-07	3.0913E+08	1.0000	0.0002
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	9.620E-14	3.0801E-06	9.5745E+07	1.0000	0.0003
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	4.130E-13	1.6021E-05	2.2301E+07	1.0000	0.0006
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	1.680E-13	7.7827E-06	5.4814E+07	1.0000	0.0004
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	6.544E-13	3.5233E-05	1.4075E+07	1.0000	0.0008
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	2.238E-12	1.3735E-04	4.1152E+06	1.0000	0.0015
40000	946.2	1.089	1.00	33.6787	829.01	7.163E+07	6.118E-14	4.3820E-06	1.5056E+08	1.0000	0.0002
44000	955.3	1.089	1.00	33.6787	947.78	8.189E+07	1.704E-13	1.3952E-05	5.4064E+07	1.0000	0.0004
48000	963.4	1.089	1.00	33.6787	1066.55	9.215E+07	4.531E-13	4.1753E-05	2.0329E+07	1.0000	0.0007
52000	977.0	1.089	1.00	33.6787	1185.32	1.024E+08	1.480E-12	1.5156E-04	6.2240E+06	1.0000	0.0012
56000	994.0	1.089	1.00	33.6787	1304.09	1.127E+08	5.402E-12	6.0870E-04	1.7050E+06	1.0000	0.0023
58000	1000.3	1.089	1.00	33.6787	1363.47	1.178E+08	9.453E-12	1.1136E-03	9.7442E+05	1.0000	0.0030
60000	1006.1	1.089	1.00	33.6787	1422.86	1.229E+08	1.620E-11	1.9914E-03	5.6861E+05	1.0000	0.0040

62000	1013.5	1.089	1.00	33.6787	1482.24	1.281E+08	2.931E-11	3.7537E-03	3.1425E+05	1.0000	0.0053
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	3.224E-15	0.0000E+00	2.8566E+09	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	2.712E-20	1.6701E-13	3.3958E+14	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	4.020E-20	4.9508E-13	2.2910E+14	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	7.433E-20	1.3730E-12	1.2392E+14	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.105E-19	2.7891E-12	8.3368E+13	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	2.737E-19	8.7620E-12	3.3657E+13	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.073E-18	4.1607E-11	8.5872E+12	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	7.329E-19	3.3943E-11	1.2568E+13	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	2.551E-18	1.3737E-10	3.6101E+12	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	7.627E-18	4.6805E-10	1.2076E+12	1.0000	0.0000
40000	744.8	1.089	1.00	33.6787	829.01	7.163E+07	1.864E-18	1.3353E-10	4.9407E+12	1.0000	0.0000
44000	747.4	1.089	1.00	33.6787	947.78	8.189E+07	4.266E-18	3.4935E-10	2.1591E+12	1.0000	0.0000
48000	750.2	1.089	1.00	33.6787	1066.55	9.215E+07	9.878E-18	9.1026E-10	9.3248E+11	1.0000	0.0000
52000	755.3	1.089	1.00	33.6787	1185.32	1.024E+08	2.646E-17	2.7100E-09	3.4809E+11	1.0000	0.0000
56000	764.6	1.089	1.00	33.6787	1304.09	1.127E+08	9.179E-17	1.0343E-08	1.0035E+11	1.0000	0.0000
58000	767.4	1.089	1.00	33.6787	1363.47	1.178E+08	1.517E-16	1.7875E-08	6.0706E+10	1.0000	0.0000
60000	769.7	1.089	1.00	33.6787	1422.86	1.229E+08	2.429E-16	2.9864E-08	3.7918E+10	1.0000	0.0000
62000	773.6	1.089	1.00	33.6787	1482.24	1.281E+08	4.284E-16	5.4860E-08	2.1502E+10	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.305E-20	0.0000E+00	7.0561E+14	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	2.563E-22	1.5779E-15	3.5941E+16	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	4.236E-22	5.2157E-15	2.1747E+16	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	7.705E-22	1.4233E-14	1.1954E+16	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	5.904E-22	1.4904E-14	1.5601E+16	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.340E-21	4.2889E-14	6.8760E+15	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	4.996E-21	1.9378E-13	1.8438E+15	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	1.738E-21	8.0516E-14	5.2984E+15	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	5.521E-21	2.9722E-13	1.6685E+15	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	1.478E-20	9.0673E-13	6.2338E+14	1.0000	0.0000
40000	643.9	1.089	1.00	33.6787	829.01	7.163E+07	8.826E-22	6.3219E-14	1.0436E+16	1.0000	0.0000
44000	643.8	1.089	1.00	33.6787	947.78	8.189E+07	1.689E-21	1.3832E-13	5.4529E+15	1.0000	0.0000
48000	644.0	1.089	1.00	33.6787	1066.55	9.215E+07	3.319E-21	3.0585E-13	2.7752E+15	1.0000	0.0000
52000	645.0	1.089	1.00	33.6787	1185.32	1.024E+08	6.995E-21	7.1635E-13	1.3168E+15	1.0000	0.0000
56000	650.5	1.089	1.00	33.6787	1304.09	1.127E+08	2.176E-20	2.4516E-12	4.2332E+14	1.0000	0.0000
58000	651.3	1.089	1.00	33.6787	1363.47	1.178E+08	3.238E-20	3.8150E-12	2.8443E+14	1.0000	0.0000
60000	651.9	1.089	1.00	33.6787	1422.86	1.229E+08	4.737E-20	5.8237E-12	1.9444E+14	1.0000	0.0000
62000	653.9	1.089	1.00	33.6787	1482.24	1.281E+08	7.808E-20	9.9989E-12	1.1797E+14	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0385	0.0200	0.0030	0.0001	0.0000	0.0000	0.0025				
8000	0.0620	0.0323	0.0047	0.0001	0.0000	0.0000	0.0040				
12000	0.1002	0.0527	0.0078	0.0002	0.0000	0.0000	0.0065				
16000	0.0751	0.0399	0.0062	0.0002	0.0000	0.0000	0.0050				
20000	0.1327	0.0715	0.0113	0.0003	0.0000	0.0000	0.0089				
24000	0.2451	0.1367	0.0226	0.0006	0.0000	0.0000	0.0172				
28000	0.1449	0.0794	0.0132	0.0004	0.0000	0.0000	0.0100				
32000	0.2608	0.1476	0.0255	0.0008	0.0000	0.0000	0.0187				
36000	0.4300	0.2560	0.0467	0.0015	0.0000	0.0000	0.0326				
40000	0.0440	0.0252	0.0050	0.0002	0.0000	0.0000	0.0033				
44000	0.0761	0.0436	0.0086	0.0004	0.0000	0.0000	0.0057				
48000	0.1239	0.0717	0.0143	0.0007	0.0000	0.0000	0.0094				
52000	0.2194	0.1294	0.0262	0.0012	0.0000	0.0000	0.0170				
56000	0.3783	0.2323	0.0492	0.0023	0.0000	0.0000	0.0308				
58000	0.4723	0.2983	0.0650	0.0030	0.0000	0.0000	0.0397				
60000	0.5723	0.3757	0.0847	0.0040	0.0000	0.0000	0.0503				
62000	0.6787	0.4714	0.1123	0.0053	0.0000	0.0000	0.0638				

Gas Gap Fractions: I-134											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300		cal/mol								
R	1.987		cal/mol-K								
Do/a2	0.61		1/sec								
lambda	2.2000E-04		1/sec								
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	2.726E-09	0.0000E+00	8.0715E+04	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	1.559E-09	9.5966E-03	1.4115E+05	1.0000	0.0080
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	4.107E-09	5.0579E-02	5.3562E+04	1.0000	0.0129
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.102E-08	2.0346E-01	1.9973E+04	1.0000	0.0211
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	6.087E-09	1.5365E-01	3.6145E+04	1.0000	0.0157
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	1.982E-08	6.3465E-01	1.1098E+04	1.0000	0.0282
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	7.417E-08	2.8771E+00	2.9660E+03	1.0000	0.0541
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	2.386E-08	1.1052E+00	9.2189E+03	1.0000	0.0309
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	8.519E-08	4.5866E+00	2.5825E+03	1.0000	0.0579
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	2.770E-07	1.6996E+01	7.9431E+02	1.0000	0.1027
40000	1297.6	1.089	1.00	33.6787	829.01	7.163E+07	2.039E-09	1.4602E-01	1.0791E+05	1.0000	0.0091
44000	1319.3	1.089	1.00	33.6787	947.78	8.189E+07	6.243E-09	5.1120E-01	3.5241E+04	1.0000	0.0159
48000	1336.4	1.089	1.00	33.6787	1066.55	9.215E+07	1.715E-08	1.5807E+00	1.2825E+04	1.0000	0.0263
52000	1364.6	1.089	1.00	33.6787	1185.32	1.024E+08	5.813E-08	5.9535E+00	3.7844E+03	1.0000	0.0480
56000	1395.3	1.089	1.00	33.6787	1304.09	1.127E+08	2.018E-07	2.2738E+01	1.0902E+03	1.0000	0.0881
58000	1407.7	1.089	1.00	33.6787	1363.47	1.178E+08	3.528E-07	4.1564E+01	6.2355E+02	1.0000	0.1153
60000	1419.2	1.089	1.00	33.6787	1422.86	1.229E+08	6.045E-07	7.4311E+01	3.6395E+02	1.0000	0.1490
62000	1432.4	1.089	1.00	33.6787	1482.24	1.281E+08	1.064E-06	1.3623E+02	2.0681E+02	1.0000	0.1941
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.339E-09	0.0000E+00	1.6426E+05	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	4.169E-10	2.5669E-03	5.2770E+05	1.0000	0.0041
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.094E-09	1.3466E-02	2.0118E+05	1.0000	0.0067
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	2.944E-09	5.4373E-02	7.4736E+04	1.0000	0.0109
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	1.673E-09	4.2237E-02	1.3149E+05	1.0000	0.0083
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	5.504E-09	1.7623E-01	3.9968E+04	1.0000	0.0149
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	2.109E-08	8.1816E-01	1.0430E+04	1.0000	0.0291
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	6.826E-09	3.1616E-01	3.2228E+04	1.0000	0.0166
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	2.480E-08	1.3354E+00	8.8701E+03	1.0000	0.0315
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	8.174E-08	5.0162E+00	2.6913E+03	1.0000	0.0567
40000	1247.4	1.089	1.00	33.6787	829.01	7.163E+07	6.596E-10	4.7242E-02	3.3356E+05	1.0000	0.0052
44000	1267.2	1.089	1.00	33.6787	947.78	8.189E+07	2.009E-09	1.6449E-01	1.0953E+05	1.0000	0.0090
48000	1283.1	1.089	1.00	33.6787	1066.55	9.215E+07	5.535E-09	5.1009E-01	3.9744E+04	1.0000	0.0150

52000	1309.2	1.089	1.00	33.6787	1185.32	1.024E+08	1.881E-08	1.9264E+00	1.1696E+04	1.0000	0.0275
56000	1337.9	1.089	1.00	33.6787	1304.09	1.127E+08	6.592E-08	7.4277E+00	3.3372E+03	1.0000	0.0510
58000	1349.4	1.089	1.00	33.6787	1363.47	1.178E+08	1.155E-07	1.3605E+01	1.9049E+03	1.0000	0.0672
60000	1360.1	1.089	1.00	33.6787	1422.86	1.229E+08	1.984E-07	2.4390E+01	1.1089E+03	1.0000	0.0874
62000	1372.5	1.089	1.00	33.6787	1482.24	1.281E+08	3.510E-07	4.4957E+01	6.2670E+02	1.0000	0.1151
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	1.690E-10	0.0000E+00	1.3017E+06	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	9.120E-12	5.6150E-05	2.4124E+07	1.0000	0.0006
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	2.316E-11	2.8524E-04	9.4976E+06	1.0000	0.0010
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	6.225E-11	1.1499E-03	3.5339E+06	1.0000	0.0016
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	3.919E-11	9.8933E-04	5.6135E+06	1.0000	0.0013
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.307E-10	4.1857E-03	1.6828E+06	1.0000	0.0023
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	5.302E-10	2.0564E-02	4.1497E+05	1.0000	0.0046
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	1.798E-10	8.3272E-03	1.2236E+06	1.0000	0.0027
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	6.777E-10	3.6489E-02	3.2462E+05	1.0000	0.0053
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	2.302E-09	1.4128E-01	9.5560E+04	1.0000	0.0097
40000	1122.5	1.089	1.00	33.6787	829.01	7.163E+07	2.568E-11	1.8396E-03	8.5658E+06	1.0000	0.0010
44000	1137.8	1.089	1.00	33.6787	947.78	8.189E+07	7.668E-11	6.2791E-03	2.8691E+06	1.0000	0.0018
48000	1150.5	1.089	1.00	33.6787	1066.55	9.215E+07	2.107E-10	1.9418E-02	1.0441E+06	1.0000	0.0029
52000	1171.4	1.089	1.00	33.6787	1185.32	1.024E+08	7.153E-10	7.3253E-02	3.0757E+05	1.0000	0.0054
56000	1195.2	1.089	1.00	33.6787	1304.09	1.127E+08	2.563E-09	2.8883E-01	8.5822E+04	1.0000	0.0102
58000	1204.6	1.089	1.00	33.6787	1363.47	1.178E+08	4.517E-09	5.3213E-01	4.8704E+04	1.0000	0.0135
60000	1213.3	1.089	1.00	33.6787	1422.86	1.229E+08	7.794E-09	9.5819E-01	2.8226E+04	1.0000	0.0178
62000	1223.7	1.089	1.00	33.6787	1482.24	1.281E+08	1.397E-08	1.7896E+00	1.5743E+04	1.0000	0.0237
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	3.385E-12	0.0000E+00	6.4985E+07	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	6.309E-15	3.8844E-08	3.4871E+10	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	1.414E-14	1.7412E-07	1.5558E+10	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	3.571E-14	6.5964E-07	6.1603E+09	1.0000	0.0000
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	2.980E-14	7.5217E-07	7.3834E+09	1.0000	0.0000
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	9.620E-14	3.0801E-06	2.2868E+09	1.0000	0.0001
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	4.130E-13	1.6021E-05	5.3265E+08	1.0000	0.0001
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	1.680E-13	7.7827E-06	1.3092E+09	1.0000	0.0001
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	6.544E-13	3.5233E-05	3.3618E+08	1.0000	0.0002
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	2.238E-12	1.3735E-04	9.8289E+07	1.0000	0.0003
40000	946.2	1.089	1.00	33.6787	829.01	7.163E+07	6.118E-14	4.3820E-06	3.5961E+09	1.0000	0.0001
44000	955.3	1.089	1.00	33.6787	947.78	8.189E+07	1.704E-13	1.3952E-05	1.2913E+09	1.0000	0.0001
48000	963.4	1.089	1.00	33.6787	1066.55	9.215E+07	4.531E-13	4.1753E-05	4.8554E+08	1.0000	0.0001
52000	977.0	1.089	1.00	33.6787	1185.32	1.024E+08	1.480E-12	1.5156E-04	1.4866E+08	1.0000	0.0002
56000	994.0	1.089	1.00	33.6787	1304.09	1.127E+08	5.402E-12	6.0870E-04	4.0723E+07	1.0000	0.0005
58000	1000.3	1.089	1.00	33.6787	1363.47	1.178E+08	9.453E-12	1.1136E-03	2.3273E+07	1.0000	0.0006
60000	1006.1	1.089	1.00	33.6787	1422.86	1.229E+08	1.620E-11	1.9914E-03	1.3581E+07	1.0000	0.0008

62000	1013.5	1.089	1.00	33.6787	1482.24	1.281E+08	2.931E-11	3.7537E-03	7.5057E+06	1.0000	0.0011
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	3.224E-15	0.0000E+00	6.8229E+10	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	2.712E-20	1.6701E-13	8.1107E+15	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	4.020E-20	4.9508E-13	5.4720E+15	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	7.433E-20	1.3730E-12	2.9596E+15	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.105E-19	2.7891E-12	1.9912E+15	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	2.737E-19	8.7620E-12	8.0388E+14	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.073E-18	4.1607E-11	2.0510E+14	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	7.329E-19	3.3943E-11	3.0018E+14	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	2.551E-18	1.3737E-10	8.6226E+13	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	7.627E-18	4.6805E-10	2.8844E+13	1.0000	0.0000
40000	744.8	1.089	1.00	33.6787	829.01	7.163E+07	1.864E-18	1.3353E-10	1.1801E+14	1.0000	0.0000
44000	747.4	1.089	1.00	33.6787	947.78	8.189E+07	4.266E-18	3.4935E-10	5.1568E+13	1.0000	0.0000
48000	750.2	1.089	1.00	33.6787	1066.55	9.215E+07	9.878E-18	9.1026E-10	2.2272E+13	1.0000	0.0000
52000	755.3	1.089	1.00	33.6787	1185.32	1.024E+08	2.646E-17	2.7100E-09	8.3140E+12	1.0000	0.0000
56000	764.6	1.089	1.00	33.6787	1304.09	1.127E+08	9.179E-17	1.0343E-08	2.3967E+12	1.0000	0.0000
58000	767.4	1.089	1.00	33.6787	1363.47	1.178E+08	1.517E-16	1.7875E-08	1.4499E+12	1.0000	0.0000
60000	769.7	1.089	1.00	33.6787	1422.86	1.229E+08	2.429E-16	2.9864E-08	9.0564E+11	1.0000	0.0000
62000	773.6	1.089	1.00	33.6787	1482.24	1.281E+08	4.284E-16	5.4860E-08	5.1357E+11	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.305E-20	0.0000E+00	1.6853E+16	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	2.563E-22	1.5779E-15	8.5843E+17	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	4.236E-22	5.2157E-15	5.1941E+17	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	7.705E-22	1.4233E-14	2.8551E+17	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	5.904E-22	1.4904E-14	3.7262E+17	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.340E-21	4.2889E-14	1.6423E+17	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	4.996E-21	1.9378E-13	4.4038E+16	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	1.738E-21	8.0516E-14	1.2655E+17	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	5.521E-21	2.9722E-13	3.9851E+16	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	1.478E-20	9.0673E-13	1.4889E+16	1.0000	0.0000
40000	643.9	1.089	1.00	33.6787	829.01	7.163E+07	8.826E-22	6.3219E-14	2.4926E+17	1.0000	0.0000
44000	643.8	1.089	1.00	33.6787	947.78	8.189E+07	1.689E-21	1.3832E-13	1.3024E+17	1.0000	0.0000
48000	644.0	1.089	1.00	33.6787	1066.55	9.215E+07	3.319E-21	3.0585E-13	6.6284E+16	1.0000	0.0000
52000	645.0	1.089	1.00	33.6787	1185.32	1.024E+08	6.995E-21	7.1635E-13	3.1452E+16	1.0000	0.0000
56000	650.5	1.089	1.00	33.6787	1304.09	1.127E+08	2.176E-20	2.4516E-12	1.0111E+16	1.0000	0.0000
58000	651.3	1.089	1.00	33.6787	1363.47	1.178E+08	3.238E-20	3.8150E-12	6.7935E+15	1.0000	0.0000
60000	651.9	1.089	1.00	33.6787	1422.86	1.229E+08	4.737E-20	5.8237E-12	4.6441E+15	1.0000	0.0000
62000	653.9	1.089	1.00	33.6787	1482.24	1.281E+08	7.808E-20	9.9989E-12	2.8178E+15	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0080	0.0041	0.0006	0.0000	0.0000	0.0000	0.0005				
8000	0.0129	0.0067	0.0010	0.0000	0.0000	0.0000	0.0008				
12000	0.0211	0.0109	0.0016	0.0000	0.0000	0.0000	0.0013				
16000	0.0157	0.0083	0.0013	0.0000	0.0000	0.0000	0.0010				
20000	0.0282	0.0149	0.0023	0.0001	0.0000	0.0000	0.0019				
24000	0.0541	0.0291	0.0046	0.0001	0.0000	0.0000	0.0036				
28000	0.0309	0.0166	0.0027	0.0001	0.0000	0.0000	0.0021				
32000	0.0579	0.0315	0.0053	0.0002	0.0000	0.0000	0.0040				
36000	0.1027	0.0567	0.0097	0.0003	0.0000	0.0000	0.0072				
40000	0.0091	0.0052	0.0010	0.0001	0.0000	0.0000	0.0007				
44000	0.0159	0.0090	0.0018	0.0001	0.0000	0.0000	0.0012				
48000	0.0263	0.0150	0.0029	0.0001	0.0000	0.0000	0.0020				
52000	0.0480	0.0275	0.0054	0.0002	0.0000	0.0000	0.0036				
56000	0.0881	0.0510	0.0102	0.0005	0.0000	0.0000	0.0067				
58000	0.1153	0.0672	0.0135	0.0006	0.0000	0.0000	0.0088				
60000	0.1490	0.0874	0.0178	0.0008	0.0000	0.0000	0.0115				
62000	0.1941	0.1151	0.0237	0.0011	0.0000	0.0000	0.0152				

Gas Gap Fractions: I-135											
Vfuel=176*PI*(0.96774/2)*2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300			cal/mol							
R	1.987			cal/mol-K							
Do/a2	0.61			1/sec							
lambda	2.912E-5			1/sec							
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	2.726E-09	0.0000E+00	1.0684E+04	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	1.559E-09	9.5966E-03	1.8683E+04	1.0000	0.0218
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	4.107E-09	5.0579E-02	7.0897E+03	1.0000	0.0352
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.102E-08	2.0346E-01	2.6437E+03	1.0000	0.0572
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	6.087E-09	1.5365E-01	4.7843E+03	1.0000	0.0427
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	1.982E-08	6.3465E-01	1.4690E+03	1.0000	0.0762
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	7.417E-08	2.8771E+00	3.9259E+02	1.0000	0.1438
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	2.386E-08	1.1052E+00	1.2202E+03	1.0000	0.0834
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	8.519E-08	4.5866E+00	3.4183E+02	1.0000	0.1535
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	2.770E-07	1.6996E+01	1.0514E+02	1.0000	0.2640
40000	1297.6	1.089	1.00	33.6787	829.01	7.163E+07	2.039E-09	1.4602E-01	1.4284E+04	1.0000	0.0249
44000	1319.3	1.089	1.00	33.6787	947.78	8.189E+07	6.243E-09	5.1120E-01	4.6647E+03	1.0000	0.0433
48000	1336.4	1.089	1.00	33.6787	1066.55	9.215E+07	1.715E-08	1.5807E+00	1.6976E+03	1.0000	0.0710
52000	1364.6	1.089	1.00	33.6787	1185.32	1.024E+08	5.813E-08	5.9535E+00	5.0092E+02	1.0000	0.1281
56000	1395.3	1.089	1.00	33.6787	1304.09	1.127E+08	2.018E-07	2.2738E+01	1.4430E+02	1.0000	0.2290
58000	1407.7	1.089	1.00	33.6787	1363.47	1.178E+08	3.528E-07	4.1564E+01	8.2535E+01	1.0000	0.2939
60000	1419.2	1.089	1.00	33.6787	1422.86	1.229E+08	6.045E-07	7.4311E+01	4.8174E+01	1.0000	0.3700
62000	1432.4	1.089	1.00	33.6787	1482.24	1.281E+08	1.064E-06	1.3623E+02	2.7375E+01	1.0000	0.4638
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.339E-09	0.0000E+00	2.1741E+04	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	4.169E-10	2.5669E-03	6.9848E+04	1.0000	0.0113
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.094E-09	1.3466E-02	2.6628E+04	1.0000	0.0183
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	2.944E-09	5.4373E-02	9.8923E+03	1.0000	0.0299
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	1.673E-09	4.2237E-02	1.7404E+04	1.0000	0.0226
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	5.504E-09	1.7623E-01	5.2903E+03	1.0000	0.0407
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	2.109E-08	8.1816E-01	1.3806E+03	1.0000	0.0786
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	6.826E-09	3.1616E-01	4.2659E+03	1.0000	0.0452
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	2.480E-08	1.3354E+00	1.1741E+03	1.0000	0.0850
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	8.174E-08	5.0162E+00	3.5623E+02	1.0000	0.1505
40000	1247.4	1.089	1.00	33.6787	829.01	7.163E+07	6.596E-10	4.7242E-02	4.4151E+04	1.0000	0.0142
44000	1267.2	1.089	1.00	33.6787	947.78	8.189E+07	2.009E-09	1.6449E-01	1.4497E+04	1.0000	0.0247
48000	1283.1	1.089	1.00	33.6787	1066.55	9.215E+07	5.535E-09	5.1009E-01	5.2606E+03	1.0000	0.0408
52000	1309.2	1.089	1.00	33.6787	1185.32	1.024E+08	1.881E-08	1.9264E+00	1.5481E+03	1.0000	0.0743

56000	1337.9	1.089	1.00	33.6787	1304.09	1.127E+08	6.592E-08	7.4277E+00	4.4173E+02	1.0000	0.1359
58000	1349.4	1.089	1.00	33.6787	1363.47	1.178E+08	1.155E-07	1.3605E+01	2.5214E+02	1.0000	0.1770
60000	1360.1	1.089	1.00	33.6787	1422.86	1.229E+08	1.984E-07	2.4390E+01	1.4677E+02	1.0000	0.2272
62000	1372.5	1.089	1.00	33.6787	1482.24	1.281E+08	3.510E-07	4.4957E+01	8.2952E+01	1.0000	0.2932
r=0.4											
Bumup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	1.690E-10	0.0000E+00	1.7230E+05	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	9.120E-12	5.6150E-05	3.1931E+06	1.0000	0.0017
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	2.316E-11	2.8524E-04	1.2571E+06	1.0000	0.0027
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	6.225E-11	1.1499E-03	4.6776E+05	1.0000	0.0044
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	3.919E-11	9.8933E-04	7.4303E+05	1.0000	0.0035
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.307E-10	4.1857E-03	2.2274E+05	1.0000	0.0063
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	5.302E-10	2.0564E-02	5.4927E+04	1.0000	0.0127
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	1.798E-10	8.3272E-03	1.6196E+05	1.0000	0.0074
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	6.777E-10	3.6489E-02	4.2967E+04	1.0000	0.0144
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	2.302E-09	1.4128E-01	1.2649E+04	1.0000	0.0264
40000	1122.5	1.089	1.00	33.6787	829.01	7.163E+07	2.568E-11	1.8396E-03	1.1338E+06	1.0000	0.0028
44000	1137.8	1.089	1.00	33.6787	947.78	8.189E+07	7.668E-11	6.2791E-03	3.7977E+05	1.0000	0.0049
48000	1150.5	1.089	1.00	33.6787	1066.55	9.215E+07	2.107E-10	1.9418E-02	1.3819E+05	1.0000	0.0080
52000	1171.4	1.089	1.00	33.6787	1185.32	1.024E+08	7.153E-10	7.3253E-02	4.0711E+04	1.0000	0.0148
56000	1195.2	1.089	1.00	33.6787	1304.09	1.127E+08	2.563E-09	2.8883E-01	1.1360E+04	1.0000	0.0279
58000	1204.6	1.089	1.00	33.6787	1363.47	1.178E+08	4.517E-09	5.3213E-01	6.4467E+03	1.0000	0.0369
60000	1213.3	1.089	1.00	33.6787	1422.86	1.229E+08	7.794E-09	9.5819E-01	3.7361E+03	1.0000	0.0483
62000	1223.7	1.089	1.00	33.6787	1482.24	1.281E+08	1.397E-08	1.7896E+00	2.0838E+03	1.0000	0.0643
r=0.6											
Bumup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	3.385E-12	0.0000E+00	8.6017E+06	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	6.309E-15	3.8844E-08	4.6157E+09	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	1.414E-14	1.7412E-07	2.0594E+09	1.0000	0.0001
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	3.571E-14	6.5964E-07	8.1540E+08	1.0000	0.0001
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	2.980E-14	7.5217E-07	9.7730E+08	1.0000	0.0001
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	9.620E-14	3.0801E-06	3.0269E+08	1.0000	0.0002
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	4.130E-13	1.6021E-05	7.0504E+07	1.0000	0.0004
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	1.680E-13	7.7827E-06	1.7329E+08	1.0000	0.0002
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	6.544E-13	3.5233E-05	4.4499E+07	1.0000	0.0004
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	2.238E-12	1.3735E-04	1.3010E+07	1.0000	0.0008
40000	946.2	1.089	1.00	33.6787	829.01	7.163E+07	6.118E-14	4.3820E-06	4.7599E+08	1.0000	0.0001
44000	955.3	1.089	1.00	33.6787	947.78	8.189E+07	1.704E-13	1.3952E-05	1.7092E+08	1.0000	0.0002
48000	963.4	1.089	1.00	33.6787	1066.55	9.215E+07	4.531E-13	4.1753E-05	6.4268E+07	1.0000	0.0004
52000	977.0	1.089	1.00	33.6787	1185.32	1.024E+08	1.480E-12	1.5156E-04	1.9677E+07	1.0000	0.0007
56000	994.0	1.089	1.00	33.6787	1304.09	1.127E+08	5.402E-12	6.0870E-04	5.3903E+06	1.0000	0.0013
58000	1000.3	1.089	1.00	33.6787	1363.47	1.178E+08	9.453E-12	1.1136E-03	3.0806E+06	1.0000	0.0017
60000	1006.1	1.089	1.00	33.6787	1422.86	1.229E+08	1.620E-11	1.9914E-03	1.7976E+06	1.0000	0.0022
62000	1013.5	1.089	1.00	33.6787	1482.24	1.281E+08	2.931E-11	3.7537E-03	9.9349E+05	1.0000	0.0030

r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	3.224E-15	0.0000E+00	9.0310E+09	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	2.712E-20	1.6701E-13	1.0736E+15	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	4.020E-20	4.9508E-13	7.2429E+14	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	7.433E-20	1.3730E-12	3.9175E+14	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.105E-19	2.7891E-12	2.6356E+14	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	2.737E-19	8.7620E-12	1.0640E+14	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.073E-18	4.1607E-11	2.7148E+13	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	7.329E-19	3.3943E-11	3.9733E+13	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	2.551E-18	1.3737E-10	1.1413E+13	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	7.627E-18	4.6805E-10	3.8178E+12	1.0000	0.0000
40000	744.8	1.089	1.00	33.6787	829.01	7.163E+07	1.864E-18	1.3353E-10	1.5620E+13	1.0000	0.0000
44000	747.4	1.089	1.00	33.6787	947.78	8.189E+07	4.266E-18	3.4935E-10	6.8258E+12	1.0000	0.0000
48000	750.2	1.089	1.00	33.6787	1066.55	9.215E+07	9.878E-18	9.1026E-10	2.9480E+12	1.0000	0.0000
52000	755.3	1.089	1.00	33.6787	1185.32	1.024E+08	2.646E-17	2.7100E-09	1.1005E+12	1.0000	0.0000
56000	764.6	1.089	1.00	33.6787	1304.09	1.127E+08	9.179E-17	1.0343E-08	3.1724E+11	1.0000	0.0000
58000	767.4	1.089	1.00	33.6787	1363.47	1.178E+08	1.517E-16	1.7875E-08	1.9192E+11	1.0000	0.0000
60000	769.7	1.089	1.00	33.6787	1422.86	1.229E+08	2.429E-16	2.9864E-08	1.1987E+11	1.0000	0.0000
62000	773.6	1.089	1.00	33.6787	1482.24	1.281E+08	4.284E-16	5.4860E-08	6.7978E+10	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.305E-20	0.0000E+00	2.2307E+15	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	2.563E-22	1.5779E-15	1.1362E+17	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	4.236E-22	5.2157E-15	6.8751E+16	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	7.705E-22	1.4233E-14	3.7792E+16	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	5.904E-22	1.4904E-14	4.9321E+16	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.340E-21	4.2889E-14	2.1738E+16	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	4.996E-21	1.9378E-13	5.8290E+15	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	1.738E-21	8.0516E-14	1.6750E+16	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	5.521E-21	2.9722E-13	5.2749E+15	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	1.478E-20	9.0673E-13	1.9708E+15	1.0000	0.0000
40000	643.9	1.089	1.00	33.6787	829.01	7.163E+07	8.826E-22	6.3219E-14	3.2992E+16	1.0000	0.0000
44000	643.8	1.089	1.00	33.6787	947.78	8.189E+07	1.689E-21	1.3832E-13	1.7239E+16	1.0000	0.0000
48000	644.0	1.089	1.00	33.6787	1066.55	9.215E+07	3.319E-21	3.0585E-13	8.7736E+15	1.0000	0.0000
52000	645.0	1.089	1.00	33.6787	1185.32	1.024E+08	6.995E-21	7.1635E-13	4.1631E+15	1.0000	0.0000
56000	650.5	1.089	1.00	33.6787	1304.09	1.127E+08	2.176E-20	2.4516E-12	1.3383E+15	1.0000	0.0000
58000	651.3	1.089	1.00	33.6787	1363.47	1.178E+08	3.238E-20	3.8150E-12	8.9921E+14	1.0000	0.0000
60000	651.9	1.089	1.00	33.6787	1422.86	1.229E+08	4.737E-20	5.8237E-12	6.1471E+14	1.0000	0.0000
62000	653.9	1.089	1.00	33.6787	1482.24	1.281E+08	7.808E-20	9.9989E-12	3.7297E+14	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0218	0.0113	0.0017	0.0000	0.0000	0.0000	0.0014				

8000	0.0352	0.0183	0.0027	0.0001	0.0000	0.0000	0.0023				
12000	0.0572	0.0299	0.0044	0.0001	0.0000	0.0000	0.0037				
16000	0.0427	0.0226	0.0035	0.0001	0.0000	0.0000	0.0028				
20000	0.0762	0.0407	0.0063	0.0002	0.0000	0.0000	0.0051				
24000	0.1438	0.0786	0.0127	0.0004	0.0000	0.0000	0.0098				
28000	0.0834	0.0452	0.0074	0.0002	0.0000	0.0000	0.0057				
32000	0.1535	0.0850	0.0144	0.0004	0.0000	0.0000	0.0107				
36000	0.2640	0.1505	0.0264	0.0008	0.0000	0.0000	0.0191				
40000	0.0249	0.0142	0.0028	0.0001	0.0000	0.0000	0.0019				
44000	0.0433	0.0247	0.0049	0.0002	0.0000	0.0000	0.0032				
48000	0.0710	0.0408	0.0080	0.0004	0.0000	0.0000	0.0054				
52000	0.1281	0.0743	0.0148	0.0007	0.0000	0.0000	0.0098				
56000	0.2290	0.1359	0.0279	0.0013	0.0000	0.0000	0.0179				
58000	0.2939	0.1770	0.0369	0.0017	0.0000	0.0000	0.0234				
60000	0.3700	0.2272	0.0483	0.0022	0.0000	0.0000	0.0301				
62000	0.4638	0.2932	0.0643	0.0030	0.0000	0.0000	0.0391				

Gas Gap Fractions: Xe-133											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=					44949.18	cc					
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=					410371.65	gm					
Q	72300		cal/mol								
R	1.987		cal/mol-K								
Do/a2	0.61		1/sec								
lambda	1.5280E-06		1/sec								
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	3.9242E+03	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	6.8624E+03	1.0000	0.0358
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	2.6041E+03	1.0000	0.0576
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	9.7103E+02	1.0000	0.0932
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	1.7573E+03	1.0000	0.0699
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	5.3958E+02	1.0000	0.1236
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	1.4420E+02	1.0000	0.2290
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	4.4821E+02	1.0000	0.1350
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	1.2556E+02	1.0000	0.2438
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	3.8618E+01	1.0000	0.4051
40000	1297.6	1.089	1.00	33.6787	829.01	7.163E+07	2.912E-10	2.0860E-02	5.2465E+03	1.0000	0.0408
44000	1319.3	1.089	1.00	33.6787	947.78	8.189E+07	8.918E-10	7.3029E-02	1.7134E+03	1.0000	0.0707
48000	1336.4	1.089	1.00	33.6787	1066.55	9.215E+07	2.450E-09	2.2581E-01	6.2355E+02	1.0000	0.1153
52000	1364.6	1.089	1.00	33.6787	1185.32	1.024E+08	8.305E-09	8.5050E-01	1.8399E+02	1.0000	0.2049
56000	1395.3	1.089	1.00	33.6787	1304.09	1.127E+08	2.883E-08	3.2483E+00	5.3001E+01	1.0000	0.3555
58000	1407.7	1.089	1.00	33.6787	1363.47	1.178E+08	5.040E-08	5.9377E+00	3.0316E+01	1.0000	0.4459
60000	1419.2	1.089	1.00	33.6787	1422.86	1.229E+08	8.635E-08	1.0616E+01	1.7695E+01	1.0000	0.5440
62000	1432.4	1.089	1.00	33.6787	1482.24	1.281E+08	1.520E-07	1.9462E+01	1.0055E+01	1.0000	0.6511
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	7.9858E+03	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	2.5656E+04	1.0000	0.0186
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	9.7808E+03	1.0000	0.0300
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	3.6335E+03	1.0000	0.0489
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	6.3926E+03	1.0000	0.0371
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	1.9432E+03	1.0000	0.0665
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	5.0710E+02	1.0000	0.1273
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	1.5669E+03	1.0000	0.0739
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	4.3125E+02	1.0000	0.1375
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	1.3085E+02	1.0000	0.2393
40000	1247.4	1.089	1.00	33.6787	829.01	7.163E+07	9.422E-11	6.7488E-03	1.6217E+04	1.0000	0.0234
44000	1267.2	1.089	1.00	33.6787	947.78	8.189E+07	2.870E-10	2.3498E-02	5.3249E+03	1.0000	0.0405
48000	1283.1	1.089	1.00	33.6787	1066.55	9.215E+07	7.908E-10	7.2870E-02	1.9323E+03	1.0000	0.0667

52000	1309.2	1.089	1.00	33.6787	1185.32	1.024E+08	2.687E-09	2.7520E-01	5.6863E+02	1.0000	0.1205
56000	1337.9	1.089	1.00	33.6787	1304.09	1.127E+08	9.418E-09	1.0611E+00	1.6225E+02	1.0000	0.2170
58000	1349.4	1.089	1.00	33.6787	1363.47	1.178E+08	1.650E-08	1.9436E+00	9.2612E+01	1.0000	0.2793
60000	1360.1	1.089	1.00	33.6787	1422.86	1.229E+08	2.834E-08	3.4843E+00	5.3912E+01	1.0000	0.3529
62000	1372.5	1.089	1.00	33.6787	1482.24	1.281E+08	5.015E-08	6.4225E+00	3.0469E+01	1.0000	0.4450
r=0.4											
Bumup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	6.3286E+04	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	1.1729E+06	1.0000	0.0028
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	4.6176E+05	1.0000	0.0044
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	1.7181E+05	1.0000	0.0072
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	2.7292E+05	1.0000	0.0057
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	8.1815E+04	1.0000	0.0105
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	2.0175E+04	1.0000	0.0210
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	5.9489E+04	1.0000	0.0122
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	1.5782E+04	1.0000	0.0237
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	4.6460E+03	1.0000	0.0434
40000	1122.5	1.089	1.00	33.6787	829.01	7.163E+07	3.669E-12	2.6280E-04	4.1645E+05	1.0000	0.0046
44000	1137.8	1.089	1.00	33.6787	947.78	8.189E+07	1.095E-11	8.9701E-04	1.3949E+05	1.0000	0.0080
48000	1150.5	1.089	1.00	33.6787	1066.55	9.215E+07	3.010E-11	2.7739E-03	5.0760E+04	1.0000	0.0133
52000	1171.4	1.089	1.00	33.6787	1185.32	1.024E+08	1.022E-10	1.0465E-02	1.4954E+04	1.0000	0.0243
56000	1195.2	1.089	1.00	33.6787	1304.09	1.127E+08	3.662E-10	4.1262E-02	4.1725E+03	1.0000	0.0457
58000	1204.6	1.089	1.00	33.6787	1363.47	1.178E+08	6.453E-10	7.6018E-02	2.3679E+03	1.0000	0.0604
60000	1213.3	1.089	1.00	33.6787	1422.86	1.229E+08	1.113E-09	1.3688E-01	1.3723E+03	1.0000	0.0788
62000	1223.7	1.089	1.00	33.6787	1482.24	1.281E+08	1.996E-09	2.5566E-01	7.6541E+02	1.0000	0.1045
r=0.6											
Bumup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	3.1595E+06	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	1.6954E+09	1.0000	0.0001
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	7.5642E+08	1.0000	0.0001
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	2.9950E+08	1.0000	0.0002
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	3.5897E+08	1.0000	0.0002
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	1.1118E+08	1.0000	0.0003
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	2.5897E+07	1.0000	0.0006
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	6.3651E+07	1.0000	0.0004
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	1.6345E+07	1.0000	0.0007
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	4.7786E+06	1.0000	0.0014
40000	946.2	1.089	1.00	33.6787	829.01	7.163E+07	8.740E-15	6.2600E-07	1.7483E+08	1.0000	0.0002
44000	955.3	1.089	1.00	33.6787	947.78	8.189E+07	2.434E-14	1.9931E-06	6.2780E+07	1.0000	0.0004
48000	963.4	1.089	1.00	33.6787	1066.55	9.215E+07	6.473E-14	5.9648E-06	2.3606E+07	1.0000	0.0006
52000	977.0	1.089	1.00	33.6787	1185.32	1.024E+08	2.114E-13	2.1652E-05	7.2274E+06	1.0000	0.0011
56000	994.0	1.089	1.00	33.6787	1304.09	1.127E+08	7.718E-13	8.6957E-05	1.9799E+06	1.0000	0.0021
58000	1000.3	1.089	1.00	33.6787	1363.47	1.178E+08	1.350E-12	1.5908E-04	1.1315E+06	1.0000	0.0028
60000	1006.1	1.089	1.00	33.6787	1422.86	1.229E+08	2.314E-12	2.8449E-04	6.6028E+05	1.0000	0.0037

62000	1013.5	1.089	1.00	33.6787	1482.24	1.281E+08	4.187E-12	5.3625E-04	3.6492E+05	1.0000	0.0050
r=0.8											
Burnup	Tfuel	pf	af	sp pow	FFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	3.3172E+09	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	3.9433E+14	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	2.6604E+14	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	1.4389E+14	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	9.6808E+13	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	3.9083E+13	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	9.9716E+12	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	1.4594E+13	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	4.1922E+12	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	1.4023E+12	1.0000	0.0000
40000	744.8	1.089	1.00	33.6787	829.01	7.163E+07	2.663E-19	1.9076E-11	5.7373E+12	1.0000	0.0000
44000	747.4	1.089	1.00	33.6787	947.78	8.189E+07	6.095E-19	4.9907E-11	2.5072E+12	1.0000	0.0000
48000	750.2	1.089	1.00	33.6787	1066.55	9.215E+07	1.411E-18	1.3004E-10	1.0828E+12	1.0000	0.0000
52000	755.3	1.089	1.00	33.6787	1185.32	1.024E+08	3.780E-18	3.8714E-10	4.0421E+11	1.0000	0.0000
56000	764.6	1.089	1.00	33.6787	1304.09	1.127E+08	1.311E-17	1.4775E-09	1.1652E+11	1.0000	0.0000
58000	767.4	1.089	1.00	33.6787	1363.47	1.178E+08	2.168E-17	2.5535E-09	7.0493E+10	1.0000	0.0000
60000	769.7	1.089	1.00	33.6787	1422.86	1.229E+08	3.470E-17	4.2662E-09	4.4031E+10	1.0000	0.0000
62000	773.6	1.089	1.00	33.6787	1482.24	1.281E+08	6.120E-17	7.8372E-09	2.4969E+10	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	FFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	8.1937E+14	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	4.1735E+16	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	2.5253E+16	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	1.3881E+16	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	1.8116E+16	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	7.9846E+15	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	2.1410E+15	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	6.1526E+15	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	1.9375E+15	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	7.2388E+14	1.0000	0.0000
40000	643.9	1.089	1.00	33.6787	829.01	7.163E+07	1.261E-22	9.0313E-15	1.2118E+16	1.0000	0.0000
44000	643.8	1.089	1.00	33.6787	947.78	8.189E+07	2.413E-22	1.9761E-14	6.3320E+15	1.0000	0.0000
48000	644.0	1.089	1.00	33.6787	1066.55	9.215E+07	4.742E-22	4.3693E-14	3.2226E+15	1.0000	0.0000
52000	645.0	1.089	1.00	33.6787	1185.32	1.024E+08	9.993E-22	1.0234E-13	1.5291E+15	1.0000	0.0000
56000	650.5	1.089	1.00	33.6787	1304.09	1.127E+08	3.108E-21	3.5023E-13	4.9157E+14	1.0000	0.0000
58000	651.3	1.089	1.00	33.6787	1363.47	1.178E+08	4.626E-21	5.4500E-13	3.3029E+14	1.0000	0.0000
60000	651.9	1.089	1.00	33.6787	1422.86	1.229E+08	6.767E-21	8.3195E-13	2.2579E+14	1.0000	0.0000
62000	653.9	1.089	1.00	33.6787	1482.24	1.281E+08	1.115E-20	1.4284E-12	1.3699E+14	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0358	0.0186	0.0028	0.0001	0.0000	0.0000	0.0023				
8000	0.0576	0.0300	0.0044	0.0001	0.0000	0.0000	0.0037				
12000	0.0932	0.0489	0.0072	0.0002	0.0000	0.0000	0.0060				
16000	0.0699	0.0371	0.0057	0.0002	0.0000	0.0000	0.0046				
20000	0.1236	0.0665	0.0105	0.0003	0.0000	0.0000	0.0083				
24000	0.2290	0.1273	0.0210	0.0006	0.0000	0.0000	0.0160				
28000	0.1350	0.0739	0.0122	0.0004	0.0000	0.0000	0.0093				
32000	0.2438	0.1375	0.0237	0.0007	0.0000	0.0000	0.0174				
36000	0.4051	0.2393	0.0434	0.0014	0.0000	0.0000	0.0305				
40000	0.0408	0.0234	0.0046	0.0002	0.0000	0.0000	0.0031				
44000	0.0707	0.0405	0.0080	0.0004	0.0000	0.0000	0.0053				
48000	0.1153	0.0667	0.0133	0.0006	0.0000	0.0000	0.0088				
52000	0.2049	0.1205	0.0243	0.0011	0.0000	0.0000	0.0159				
56000	0.3555	0.2170	0.0457	0.0021	0.0000	0.0000	0.0287				
58000	0.4459	0.2793	0.0604	0.0028	0.0000	0.0000	0.0371				
60000	0.5440	0.3529	0.0788	0.0037	0.0000	0.0000	0.0472				
62000	0.6511	0.4450	0.1045	0.0050	0.0000	0.0000	0.0600				

Gas Gap Fractions: Xe-133m											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300	cal/mol									
R	1.987	cal/mol-K									
Do/a2	0.61	1/sec									
lambda	3.6630E-06	1/sec									
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	9.4074E+03	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	1.6451E+04	1.0000	0.0232
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	6.2426E+03	1.0000	0.0375
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	2.3278E+03	1.0000	0.0609
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	4.2127E+03	1.0000	0.0455
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	1.2935E+03	1.0000	0.0811
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	3.4569E+02	1.0000	0.1527
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	1.0745E+03	1.0000	0.0887
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	3.0099E+02	1.0000	0.1630
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	9.2577E+01	1.0000	0.2794
40000	1297.6	1.089	1.00	33.6787	829.01	7.163E+07	2.912E-10	2.0860E-02	1.2577E+04	1.0000	0.0265
44000	1319.3	1.089	1.00	33.6787	947.78	8.189E+07	8.918E-10	7.3029E-02	4.1074E+03	1.0000	0.0461
48000	1336.4	1.089	1.00	33.6787	1066.55	9.215E+07	2.450E-09	2.2581E-01	1.4948E+03	1.0000	0.0756
52000	1364.6	1.089	1.00	33.6787	1185.32	1.024E+08	8.305E-09	8.5050E-01	4.4107E+02	1.0000	0.1360
56000	1395.3	1.089	1.00	33.6787	1304.09	1.127E+08	2.883E-08	3.2483E+00	1.2706E+02	1.0000	0.2425
58000	1407.7	1.089	1.00	33.6787	1363.47	1.178E+08	5.040E-08	5.9377E+00	7.2674E+01	1.0000	0.3106
60000	1419.2	1.089	1.00	33.6787	1422.86	1.229E+08	8.635E-08	1.0616E+01	4.2419E+01	1.0000	0.3899
62000	1432.4	1.089	1.00	33.6787	1482.24	1.281E+08	1.520E-07	1.9462E+01	2.4104E+01	1.0000	0.4867
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	1.9144E+04	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	6.1503E+04	1.0000	0.0120
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	2.3447E+04	1.0000	0.0195
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	8.7105E+03	1.0000	0.0318
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	1.5325E+04	1.0000	0.0240
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	4.6583E+03	1.0000	0.0433
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	1.2156E+03	1.0000	0.0836
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	3.7562E+03	1.0000	0.0482
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	1.0338E+03	1.0000	0.0904
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	3.1367E+02	1.0000	0.1598
40000	1247.4	1.089	1.00	33.6787	829.01	7.163E+07	9.422E-11	6.7488E-03	3.8876E+04	1.0000	0.0151
44000	1267.2	1.089	1.00	33.6787	947.78	8.189E+07	2.870E-10	2.3498E-02	1.2765E+04	1.0000	0.0263
48000	1283.1	1.089	1.00	33.6787	1066.55	9.215E+07	7.908E-10	7.2870E-02	4.6321E+03	1.0000	0.0434

52000	1309.2	1.089	1.00	33.6787	1185.32	1.024E+08	2.687E-09	2.7520E-01	1.3631E+03	1.0000	0.0791
56000	1337.9	1.089	1.00	33.6787	1304.09	1.127E+08	9.418E-09	1.0611E+00	3.8895E+02	1.0000	0.1444
58000	1349.4	1.089	1.00	33.6787	1363.47	1.178E+08	1.650E-08	1.9436E+00	2.2201E+02	1.0000	0.1878
60000	1360.1	1.089	1.00	33.6787	1422.86	1.229E+08	2.834E-08	3.4843E+00	1.2924E+02	1.0000	0.2407
62000	1372.5	1.089	1.00	33.6787	1482.24	1.281E+08	5.015E-08	6.4225E+00	7.3041E+01	1.0000	0.3100
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	1.5171E+05	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	2.8116E+06	1.0000	0.0018
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	1.1070E+06	1.0000	0.0028
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	4.1187E+05	1.0000	0.0047
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	6.5426E+05	1.0000	0.0037
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	1.9613E+05	1.0000	0.0068
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	4.8365E+04	1.0000	0.0136
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	1.4261E+05	1.0000	0.0079
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	3.7834E+04	1.0000	0.0153
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	1.1138E+04	1.0000	0.0282
40000	1122.5	1.089	1.00	33.6787	829.01	7.163E+07	3.669E-12	2.6280E-04	9.9835E+05	1.0000	0.0030
44000	1137.8	1.089	1.00	33.6787	947.78	8.189E+07	1.095E-11	8.9701E-04	3.3440E+05	1.0000	0.0052
48000	1150.5	1.089	1.00	33.6787	1066.55	9.215E+07	3.010E-11	2.7739E-03	1.2168E+05	1.0000	0.0086
52000	1171.4	1.089	1.00	33.6787	1185.32	1.024E+08	1.022E-10	1.0465E-02	3.5847E+04	1.0000	0.0158
56000	1195.2	1.089	1.00	33.6787	1304.09	1.127E+08	3.662E-10	4.1262E-02	1.0003E+04	1.0000	0.0297
58000	1204.6	1.089	1.00	33.6787	1363.47	1.178E+08	6.453E-10	7.6018E-02	5.6765E+03	1.0000	0.0393
60000	1213.3	1.089	1.00	33.6787	1422.86	1.229E+08	1.113E-09	1.3688E-01	3.2897E+03	1.0000	0.0514
62000	1223.7	1.089	1.00	33.6787	1482.24	1.281E+08	1.996E-09	2.5566E-01	1.8349E+03	1.0000	0.0684
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	7.5740E+06	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	4.0642E+09	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	1.8133E+09	1.0000	0.0001
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	7.1799E+08	1.0000	0.0001
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	8.6054E+08	1.0000	0.0001
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	2.6653E+08	1.0000	0.0002
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	6.2081E+07	1.0000	0.0004
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	1.5259E+08	1.0000	0.0002
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	3.9182E+07	1.0000	0.0005
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	1.1456E+07	1.0000	0.0009
40000	946.2	1.089	1.00	33.6787	829.01	7.163E+07	8.740E-15	6.2600E-07	4.1912E+08	1.0000	0.0001
44000	955.3	1.089	1.00	33.6787	947.78	8.189E+07	2.434E-14	1.9931E-06	1.5050E+08	1.0000	0.0002
48000	963.4	1.089	1.00	33.6787	1066.55	9.215E+07	6.473E-14	5.9648E-06	5.6590E+07	1.0000	0.0004
52000	977.0	1.089	1.00	33.6787	1185.32	1.024E+08	2.114E-13	2.1652E-05	1.7326E+07	1.0000	0.0007
56000	994.0	1.089	1.00	33.6787	1304.09	1.127E+08	7.718E-13	8.6957E-05	4.7463E+06	1.0000	0.0014
58000	1000.3	1.089	1.00	33.6787	1363.47	1.178E+08	1.350E-12	1.5908E-04	2.7125E+06	1.0000	0.0018
60000	1006.1	1.089	1.00	33.6787	1422.86	1.229E+08	2.314E-12	2.8449E-04	1.5829E+06	1.0000	0.0024

62000	1013.5	1.089	1.00	33.6787	1482.24	1.281E+08	4.187E-12	5.3625E-04	8.7479E+05	1.0000	0.0032
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	7.9521E+09	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	9.4530E+14	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	6.3776E+14	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	3.4495E+14	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	2.3207E+14	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	9.3692E+13	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	2.3904E+13	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	3.4986E+13	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	1.0050E+13	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	3.3617E+12	1.0000	0.0000
40000	744.8	1.089	1.00	33.6787	829.01	7.163E+07	2.663E-19	1.9076E-11	1.3754E+13	1.0000	0.0000
44000	747.4	1.089	1.00	33.6787	947.78	8.189E+07	6.095E-19	4.9907E-11	6.0103E+12	1.0000	0.0000
48000	750.2	1.089	1.00	33.6787	1066.55	9.215E+07	1.411E-18	1.3004E-10	2.5958E+12	1.0000	0.0000
52000	755.3	1.089	1.00	33.6787	1185.32	1.024E+08	3.780E-18	3.8714E-10	9.6899E+11	1.0000	0.0000
56000	764.6	1.089	1.00	33.6787	1304.09	1.127E+08	1.311E-17	1.4775E-09	2.7934E+11	1.0000	0.0000
58000	767.4	1.089	1.00	33.6787	1363.47	1.178E+08	2.168E-17	2.5535E-09	1.6899E+11	1.0000	0.0000
60000	769.7	1.089	1.00	33.6787	1422.86	1.229E+08	3.470E-17	4.2662E-09	1.0555E+11	1.0000	0.0000
62000	773.6	1.089	1.00	33.6787	1482.24	1.281E+08	6.120E-17	7.8372E-09	5.9856E+10	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	1.9642E+15	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	1.0005E+17	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	6.0537E+16	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	3.3277E+16	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	4.3429E+16	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	1.9141E+16	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	5.1326E+15	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	1.4749E+16	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	4.6447E+15	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	1.7353E+15	1.0000	0.0000
40000	643.9	1.089	1.00	33.6787	829.01	7.163E+07	1.261E-22	9.0313E-15	2.9051E+16	1.0000	0.0000
44000	643.8	1.089	1.00	33.6787	947.78	8.189E+07	2.413E-22	1.9761E-14	1.5179E+16	1.0000	0.0000
48000	644.0	1.089	1.00	33.6787	1066.55	9.215E+07	4.742E-22	4.3693E-14	7.7254E+15	1.0000	0.0000
52000	645.0	1.089	1.00	33.6787	1185.32	1.024E+08	9.993E-22	1.0234E-13	3.6657E+15	1.0000	0.0000
56000	650.5	1.089	1.00	33.6787	1304.09	1.127E+08	3.108E-21	3.5023E-13	1.1784E+15	1.0000	0.0000
58000	651.3	1.089	1.00	33.6787	1363.47	1.178E+08	4.626E-21	5.4500E-13	7.9178E+14	1.0000	0.0000
60000	651.9	1.089	1.00	33.6787	1422.86	1.229E+08	6.767E-21	8.3195E-13	5.4127E+14	1.0000	0.0000
62000	653.9	1.089	1.00	33.6787	1482.24	1.281E+08	1.115E-20	1.4284E-12	3.2841E+14	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0232	0.0120	0.0018	0.0000	0.0000	0.0000	0.0015				
8000	0.0375	0.0195	0.0028	0.0001	0.0000	0.0000	0.0024				
12000	0.0609	0.0318	0.0047	0.0001	0.0000	0.0000	0.0039				
16000	0.0455	0.0240	0.0037	0.0001	0.0000	0.0000	0.0030				
20000	0.0811	0.0433	0.0068	0.0002	0.0000	0.0000	0.0054				
24000	0.1527	0.0836	0.0136	0.0004	0.0000	0.0000	0.0105				
28000	0.0887	0.0482	0.0079	0.0002	0.0000	0.0000	0.0061				
32000	0.1630	0.0904	0.0153	0.0005	0.0000	0.0000	0.0114				
36000	0.2794	0.1598	0.0282	0.0009	0.0000	0.0000	0.0203				
40000	0.0265	0.0151	0.0030	0.0001	0.0000	0.0000	0.0020				
44000	0.0461	0.0263	0.0052	0.0002	0.0000	0.0000	0.0035				
48000	0.0756	0.0434	0.0086	0.0004	0.0000	0.0000	0.0057				
52000	0.1360	0.0791	0.0158	0.0007	0.0000	0.0000	0.0104				
56000	0.2425	0.1444	0.0297	0.0014	0.0000	0.0000	0.0191				
58000	0.3106	0.1878	0.0393	0.0018	0.0000	0.0000	0.0249				
60000	0.3899	0.2407	0.0514	0.0024	0.0000	0.0000	0.0320				
62000	0.4867	0.3100	0.0684	0.0032	0.0000	0.0000	0.0414				

Gas Gap Fractions: Xe-135											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300		cal/mol								
R	1.987		cal/mol-K								
Do/a2	0.61		1/sec								
lambda	2.1150E-05		1/sec								
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	5.4318E+04	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	9.4986E+04	1.0000	0.0097
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	3.6045E+04	1.0000	0.0157
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	1.3441E+04	1.0000	0.0257
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	2.4324E+04	1.0000	0.0191
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	7.4687E+03	1.0000	0.0343
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	1.9960E+03	1.0000	0.0656
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	6.2039E+03	1.0000	0.0376
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	1.7379E+03	1.0000	0.0702
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	5.3454E+02	1.0000	0.1241
40000	1297.6	1.089	1.00	33.6787	829.01	7.163E+07	2.912E-10	2.0860E-02	7.2621E+04	1.0000	0.0111
44000	1319.3	1.089	1.00	33.6787	947.78	8.189E+07	8.918E-10	7.3029E-02	2.3716E+04	1.0000	0.0194
48000	1336.4	1.089	1.00	33.6787	1066.55	9.215E+07	2.450E-09	2.2581E-01	8.6309E+03	1.0000	0.0319
52000	1364.6	1.089	1.00	33.6787	1185.32	1.024E+08	8.305E-09	8.5050E-01	2.5467E+03	1.0000	0.0583
56000	1395.3	1.089	1.00	33.6787	1304.09	1.127E+08	2.883E-08	3.2483E+00	7.3363E+02	1.0000	0.1067
58000	1407.7	1.089	1.00	33.6787	1363.47	1.178E+08	5.040E-08	5.9377E+00	4.1962E+02	1.0000	0.1393
60000	1419.2	1.089	1.00	33.6787	1422.86	1.229E+08	8.635E-08	1.0616E+01	2.4493E+02	1.0000	0.1794
62000	1432.4	1.089	1.00	33.6787	1482.24	1.281E+08	1.520E-07	1.9462E+01	1.3918E+02	1.0000	0.2327
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	1.1054E+05	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	3.5512E+05	1.0000	0.0050
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	1.3538E+05	1.0000	0.0081
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	5.0294E+04	1.0000	0.0133
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	8.8485E+04	1.0000	0.0101
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	2.6897E+04	1.0000	0.0182
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	7.0191E+03	1.0000	0.0354
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	2.1688E+04	1.0000	0.0202
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	5.9692E+03	1.0000	0.0383
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	1.8111E+03	1.0000	0.0688
40000	1247.4	1.089	1.00	33.6787	829.01	7.163E+07	9.422E-11	6.7488E-03	2.2447E+05	1.0000	0.0063
44000	1267.2	1.089	1.00	33.6787	947.78	8.189E+07	2.870E-10	2.3498E-02	7.3706E+04	1.0000	0.0110
48000	1283.1	1.089	1.00	33.6787	1066.55	9.215E+07	7.908E-10	7.2870E-02	2.6746E+04	1.0000	0.0182

52000	1309.2	1.089	1.00	33.6787	1185.32	1.024E+08	2.687E-09	2.7520E-01	7.8707E+03	1.0000	0.0334
56000	1337.9	1.089	1.00	33.6787	1304.09	1.127E+08	9.418E-09	1.0611E+00	2.2458E+03	1.0000	0.0620
58000	1349.4	1.089	1.00	33.6787	1363.47	1.178E+08	1.650E-08	1.9436E+00	1.2819E+03	1.0000	0.0815
60000	1360.1	1.089	1.00	33.6787	1422.86	1.229E+08	2.834E-08	3.4843E+00	7.4622E+02	1.0000	0.1058
62000	1372.5	1.089	1.00	33.6787	1482.24	1.281E+08	5.015E-08	6.4225E+00	4.2174E+02	1.0000	0.1390
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	8.7598E+05	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	1.6234E+07	1.0000	0.0007
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	6.3915E+06	1.0000	0.0012
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	2.3781E+06	1.0000	0.0019
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	3.7777E+06	1.0000	0.0015
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	1.1325E+06	1.0000	0.0028
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	2.7926E+05	1.0000	0.0057
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	8.2343E+05	1.0000	0.0033
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	2.1845E+05	1.0000	0.0064
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	6.4308E+04	1.0000	0.0118
40000	1122.5	1.089	1.00	33.6787	829.01	7.163E+07	3.669E-12	2.6280E-04	5.7644E+06	1.0000	0.0012
44000	1137.8	1.089	1.00	33.6787	947.78	8.189E+07	1.095E-11	8.9701E-04	1.9308E+06	1.0000	0.0022
48000	1150.5	1.089	1.00	33.6787	1066.55	9.215E+07	3.010E-11	2.7739E-03	7.0260E+05	1.0000	0.0036
52000	1171.4	1.089	1.00	33.6787	1185.32	1.024E+08	1.022E-10	1.0465E-02	2.0698E+05	1.0000	0.0066
56000	1195.2	1.089	1.00	33.6787	1304.09	1.127E+08	3.662E-10	4.1262E-02	5.7754E+04	1.0000	0.0124
58000	1204.6	1.089	1.00	33.6787	1363.47	1.178E+08	6.453E-10	7.6018E-02	3.2776E+04	1.0000	0.0165
60000	1213.3	1.089	1.00	33.6787	1422.86	1.229E+08	1.113E-09	1.3688E-01	1.8995E+04	1.0000	0.0216
62000	1223.7	1.089	1.00	33.6787	1482.24	1.281E+08	1.996E-09	2.5566E-01	1.0595E+04	1.0000	0.0289
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	4.3732E+07	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	2.3467E+10	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	1.0470E+10	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	4.1456E+09	1.0000	0.0000
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	4.9687E+09	1.0000	0.0000
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	1.5389E+09	1.0000	0.0001
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	3.5845E+08	1.0000	0.0002
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	8.8103E+08	1.0000	0.0001
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	2.2624E+08	1.0000	0.0002
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	6.6144E+07	1.0000	0.0004
40000	946.2	1.089	1.00	33.6787	829.01	7.163E+07	8.740E-15	6.2600E-07	2.4200E+09	1.0000	0.0001
44000	955.3	1.089	1.00	33.6787	947.78	8.189E+07	2.434E-14	1.9931E-06	8.6897E+08	1.0000	0.0001
48000	963.4	1.089	1.00	33.6787	1066.55	9.215E+07	6.473E-14	5.9648E-06	3.2675E+08	1.0000	0.0002
52000	977.0	1.089	1.00	33.6787	1185.32	1.024E+08	2.114E-13	2.1652E-05	1.0004E+08	1.0000	0.0003
56000	994.0	1.089	1.00	33.6787	1304.09	1.127E+08	7.718E-13	8.6957E-05	2.7405E+07	1.0000	0.0006
58000	1000.3	1.089	1.00	33.6787	1363.47	1.178E+08	1.350E-12	1.5908E-04	1.5662E+07	1.0000	0.0008
60000	1006.1	1.089	1.00	33.6787	1422.86	1.229E+08	2.314E-12	2.8449E-04	9.1394E+06	1.0000	0.0010

62000	1013.5	1.089	1.00	33.6787	1482.24	1.281E+08	4.187E-12	5.3625E-04	5.0510E+06	1.0000	0.0013
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	4.5915E+10	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	5.4581E+15	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	3.6824E+15	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	1.9917E+15	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	1.3400E+15	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	5.4098E+14	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	1.3802E+14	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	2.0201E+14	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	5.8026E+13	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	1.9410E+13	1.0000	0.0000
40000	744.8	1.089	1.00	33.6787	829.01	7.163E+07	2.663E-19	1.9076E-11	7.9413E+13	1.0000	0.0000
44000	747.4	1.089	1.00	33.6787	947.78	8.189E+07	6.095E-19	4.9907E-11	3.4703E+13	1.0000	0.0000
48000	750.2	1.089	1.00	33.6787	1066.55	9.215E+07	1.411E-18	1.3004E-10	1.4988E+13	1.0000	0.0000
52000	755.3	1.089	1.00	33.6787	1185.32	1.024E+08	3.780E-18	3.8714E-10	5.5949E+12	1.0000	0.0000
56000	764.6	1.089	1.00	33.6787	1304.09	1.127E+08	1.311E-17	1.4775E-09	1.6129E+12	1.0000	0.0000
58000	767.4	1.089	1.00	33.6787	1363.47	1.178E+08	2.168E-17	2.5535E-09	9.7574E+11	1.0000	0.0000
60000	769.7	1.089	1.00	33.6787	1422.86	1.229E+08	3.470E-17	4.2662E-09	6.0946E+11	1.0000	0.0000
62000	773.6	1.089	1.00	33.6787	1482.24	1.281E+08	6.120E-17	7.8372E-09	3.4561E+11	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	1.1341E+16	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	5.7768E+17	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	3.4954E+17	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	1.9214E+17	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	2.5076E+17	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	1.1052E+17	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	2.9636E+16	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	8.5161E+16	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	2.6818E+16	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	1.0020E+16	1.0000	0.0000
40000	643.9	1.089	1.00	33.6787	829.01	7.163E+07	1.261E-22	9.0313E-15	1.6774E+17	1.0000	0.0000
44000	643.8	1.089	1.00	33.6787	947.78	8.189E+07	2.413E-22	1.9761E-14	8.7646E+16	1.0000	0.0000
48000	644.0	1.089	1.00	33.6787	1066.55	9.215E+07	4.742E-22	4.3693E-14	4.4606E+16	1.0000	0.0000
52000	645.0	1.089	1.00	33.6787	1185.32	1.024E+08	9.993E-22	1.0234E-13	2.1166E+16	1.0000	0.0000
56000	650.5	1.089	1.00	33.6787	1304.09	1.127E+08	3.108E-21	3.5023E-13	6.8041E+15	1.0000	0.0000
58000	651.3	1.089	1.00	33.6787	1363.47	1.178E+08	4.626E-21	5.4500E-13	4.5717E+15	1.0000	0.0000
60000	651.9	1.089	1.00	33.6787	1422.86	1.229E+08	6.767E-21	8.3195E-13	3.1253E+15	1.0000	0.0000
62000	653.9	1.089	1.00	33.6787	1482.24	1.281E+08	1.115E-20	1.4284E-12	1.8962E+15	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0097	0.0050	0.0007	0.0000	0.0000	0.0000	0.0006				
8000	0.0157	0.0081	0.0012	0.0000	0.0000	0.0000	0.0010				
12000	0.0257	0.0133	0.0019	0.0000	0.0000	0.0000	0.0016				
16000	0.0191	0.0101	0.0015	0.0000	0.0000	0.0000	0.0013				
20000	0.0343	0.0182	0.0028	0.0001	0.0000	0.0000	0.0023				
24000	0.0656	0.0354	0.0057	0.0002	0.0000	0.0000	0.0044				
28000	0.0376	0.0202	0.0033	0.0001	0.0000	0.0000	0.0025				
32000	0.0702	0.0383	0.0064	0.0002	0.0000	0.0000	0.0048				
36000	0.1241	0.0688	0.0118	0.0004	0.0000	0.0000	0.0087				
40000	0.0111	0.0063	0.0012	0.0001	0.0000	0.0000	0.0008				
44000	0.0194	0.0110	0.0022	0.0001	0.0000	0.0000	0.0014				
48000	0.0319	0.0182	0.0036	0.0002	0.0000	0.0000	0.0024				
52000	0.0583	0.0334	0.0066	0.0003	0.0000	0.0000	0.0044				
56000	0.1067	0.0620	0.0124	0.0006	0.0000	0.0000	0.0082				
58000	0.1393	0.0815	0.0165	0.0008	0.0000	0.0000	0.0107				
60000	0.1794	0.1058	0.0216	0.0010	0.0000	0.0000	0.0140				
62000	0.2327	0.1390	0.0289	0.0013	0.0000	0.0000	0.0184				

Gas Gap Fractions: Xe-135m											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300			cal/mol							
R	1.987			cal/mol-K							
Do/a2	0.61			1/sec							
lambda	7.3800E-04			1/sec							
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	1.8953E+06	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	3.3144E+06	1.0000	0.0016
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	1.2577E+06	1.0000	0.0027
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	4.6899E+05	1.0000	0.0044
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	8.4876E+05	1.0000	0.0033
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	2.6061E+05	1.0000	0.0059
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	6.9648E+04	1.0000	0.0113
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	2.1648E+05	1.0000	0.0064
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	6.0641E+04	1.0000	0.0121
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	1.8652E+04	1.0000	0.0218
40000	1297.6	1.089	1.00	33.6787	829.01	7.163E+07	2.912E-10	2.0860E-02	2.5340E+06	1.0000	0.0019
44000	1319.3	1.089	1.00	33.6787	947.78	8.189E+07	8.918E-10	7.3029E-02	8.2753E+05	1.0000	0.0033
48000	1336.4	1.089	1.00	33.6787	1066.55	9.215E+07	2.450E-09	2.2581E-01	3.0117E+05	1.0000	0.0055
52000	1364.6	1.089	1.00	33.6787	1185.32	1.024E+08	8.305E-09	8.5050E-01	8.8865E+04	1.0000	0.0100
56000	1395.3	1.089	1.00	33.6787	1304.09	1.127E+08	2.883E-08	3.2483E+00	2.5599E+04	1.0000	0.0186
58000	1407.7	1.089	1.00	33.6787	1363.47	1.178E+08	5.040E-08	5.9377E+00	1.4642E+04	1.0000	0.0246
60000	1419.2	1.089	1.00	33.6787	1422.86	1.229E+08	8.635E-08	1.0616E+01	8.5463E+03	1.0000	0.0321
62000	1432.4	1.089	1.00	33.6787	1482.24	1.281E+08	1.520E-07	1.9462E+01	4.8564E+03	1.0000	0.0424
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	3.8570E+06	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	1.2391E+07	1.0000	0.0009
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	4.7240E+06	1.0000	0.0014
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	1.7549E+06	1.0000	0.0023
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	3.0875E+06	1.0000	0.0017
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	9.3852E+05	1.0000	0.0031
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	2.4492E+05	1.0000	0.0060
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	7.5678E+05	1.0000	0.0034
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	2.0829E+05	1.0000	0.0066
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	6.3197E+04	1.0000	0.0119
40000	1247.4	1.089	1.00	33.6787	829.01	7.163E+07	9.422E-11	6.7488E-03	7.8325E+06	1.0000	0.0011
44000	1267.2	1.089	1.00	33.6787	947.78	8.189E+07	2.870E-10	2.3498E-02	2.5719E+06	1.0000	0.0019
48000	1283.1	1.089	1.00	33.6787	1066.55	9.215E+07	7.908E-10	7.2870E-02	9.3326E+05	1.0000	0.0031
52000	1309.2	1.089	1.00	33.6787	1185.32	1.024E+08	2.687E-09	2.7520E-01	2.7464E+05	1.0000	0.0057

56000	1337.9	1.089	1.00	33.6787	1304.09	1.127E+08	9.418E-09	1.0611E+00	7.8364E+04	1.0000	0.0107
58000	1349.4	1.089	1.00	33.6787	1363.47	1.178E+08	1.650E-08	1.9436E+00	4.4730E+04	1.0000	0.0141
60000	1360.1	1.089	1.00	33.6787	1422.86	1.229E+08	2.834E-08	3.4843E+00	2.6038E+04	1.0000	0.0185
62000	1372.5	1.089	1.00	33.6787	1482.24	1.281E+08	5.015E-08	6.4225E+00	1.4716E+04	1.0000	0.0245
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	3.0566E+07	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	5.6647E+08	1.0000	0.0001
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	2.2302E+08	1.0000	0.0002
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	8.2982E+07	1.0000	0.0003
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	1.3182E+08	1.0000	0.0003
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	3.9515E+07	1.0000	0.0005
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	9.7443E+06	1.0000	0.0010
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	2.8732E+07	1.0000	0.0006
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	7.6226E+06	1.0000	0.0011
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	2.2439E+06	1.0000	0.0020
40000	1122.5	1.089	1.00	33.6787	829.01	7.163E+07	3.669E-12	2.6280E-04	2.0114E+08	1.0000	0.0002
44000	1137.8	1.089	1.00	33.6787	947.78	8.189E+07	1.095E-11	8.9701E-04	6.7372E+07	1.0000	0.0004
48000	1150.5	1.089	1.00	33.6787	1066.55	9.215E+07	3.010E-11	2.7739E-03	2.4516E+07	1.0000	0.0006
52000	1171.4	1.089	1.00	33.6787	1185.32	1.024E+08	1.022E-10	1.0465E-02	7.2223E+06	1.0000	0.0011
56000	1195.2	1.089	1.00	33.6787	1304.09	1.127E+08	3.662E-10	4.1262E-02	2.0153E+06	1.0000	0.0021
58000	1204.6	1.089	1.00	33.6787	1363.47	1.178E+08	6.453E-10	7.6018E-02	1.1437E+06	1.0000	0.0028
60000	1213.3	1.089	1.00	33.6787	1422.86	1.229E+08	1.113E-09	1.3688E-01	6.6279E+05	1.0000	0.0037
62000	1223.7	1.089	1.00	33.6787	1482.24	1.281E+08	1.996E-09	2.5566E-01	3.6968E+05	1.0000	0.0049
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	1.5260E+09	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	8.1884E+11	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	3.6534E+11	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	1.4466E+11	1.0000	0.0000
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	1.7338E+11	1.0000	0.0000
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	5.3699E+10	1.0000	0.0000
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	1.2508E+10	1.0000	0.0000
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	3.0742E+10	1.0000	0.0000
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	7.8942E+09	1.0000	0.0000
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	2.3080E+09	1.0000	0.0001
40000	946.2	1.089	1.00	33.6787	829.01	7.163E+07	8.740E-15	6.2600E-07	8.4442E+10	1.0000	0.0000
44000	955.3	1.089	1.00	33.6787	947.78	8.189E+07	2.434E-14	1.9931E-06	3.0322E+10	1.0000	0.0000
48000	963.4	1.089	1.00	33.6787	1066.55	9.215E+07	6.473E-14	5.9648E-06	1.1401E+10	1.0000	0.0000
52000	977.0	1.089	1.00	33.6787	1185.32	1.024E+08	2.114E-13	2.1652E-05	3.4907E+09	1.0000	0.0001
56000	994.0	1.089	1.00	33.6787	1304.09	1.127E+08	7.718E-13	8.6957E-05	9.5626E+08	1.0000	0.0001
58000	1000.3	1.089	1.00	33.6787	1363.47	1.178E+08	1.350E-12	1.5908E-04	5.4650E+08	1.0000	0.0001
60000	1006.1	1.089	1.00	33.6787	1422.86	1.229E+08	2.314E-12	2.8449E-04	3.1891E+08	1.0000	0.0002
62000	1013.5	1.089	1.00	33.6787	1482.24	1.281E+08	4.187E-12	5.3625E-04	1.7625E+08	1.0000	0.0002

r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	1.6021E+12	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	1.9045E+17	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	1.2849E+17	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	6.9498E+16	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	4.6757E+16	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	1.8877E+16	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	4.8161E+15	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	7.0488E+15	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	2.0248E+15	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	6.7730E+14	1.0000	0.0000
40000	744.8	1.089	1.00	33.6787	829.01	7.163E+07	2.663E-19	1.9076E-11	2.7710E+15	1.0000	0.0000
44000	747.4	1.089	1.00	33.6787	947.78	8.189E+07	6.095E-19	4.9907E-11	1.2109E+15	1.0000	0.0000
48000	750.2	1.089	1.00	33.6787	1066.55	9.215E+07	1.411E-18	1.3004E-10	5.2298E+14	1.0000	0.0000
52000	755.3	1.089	1.00	33.6787	1185.32	1.024E+08	3.780E-18	3.8714E-10	1.9523E+14	1.0000	0.0000
56000	764.6	1.089	1.00	33.6787	1304.09	1.127E+08	1.311E-17	1.4775E-09	5.6279E+13	1.0000	0.0000
58000	767.4	1.089	1.00	33.6787	1363.47	1.178E+08	2.168E-17	2.5535E-09	3.4047E+13	1.0000	0.0000
60000	769.7	1.089	1.00	33.6787	1422.86	1.229E+08	3.470E-17	4.2662E-09	2.1266E+13	1.0000	0.0000
62000	773.6	1.089	1.00	33.6787	1482.24	1.281E+08	6.120E-17	7.8372E-09	1.2059E+13	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	3.9574E+17	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	2.0157E+19	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	1.2197E+19	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	6.7044E+18	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	8.7498E+18	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	3.8564E+18	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	1.0341E+18	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	2.9716E+18	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	9.3578E+17	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	3.4962E+17	1.0000	0.0000
40000	643.9	1.089	1.00	33.6787	829.01	7.163E+07	1.261E-22	9.0313E-15	5.8530E+18	1.0000	0.0000
44000	643.8	1.089	1.00	33.6787	947.78	8.189E+07	2.413E-22	1.9761E-14	3.0583E+18	1.0000	0.0000
48000	644.0	1.089	1.00	33.6787	1066.55	9.215E+07	4.742E-22	4.3693E-14	1.5565E+18	1.0000	0.0000
52000	645.0	1.089	1.00	33.6787	1185.32	1.024E+08	9.993E-22	1.0234E-13	7.3855E+17	1.0000	0.0000
56000	650.5	1.089	1.00	33.6787	1304.09	1.127E+08	3.108E-21	3.5023E-13	2.3742E+17	1.0000	0.0000
58000	651.3	1.089	1.00	33.6787	1363.47	1.178E+08	4.626E-21	5.4500E-13	1.5952E+17	1.0000	0.0000
60000	651.9	1.089	1.00	33.6787	1422.86	1.229E+08	6.767E-21	8.3195E-13	1.0905E+17	1.0000	0.0000
62000	653.9	1.089	1.00	33.6787	1482.24	1.281E+08	1.115E-20	1.4284E-12	6.6166E+16	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0016	0.0009	0.0001	0.0000	0.0000	0.0000	0.0001				

8000	0.0027	0.0014	0.0002	0.0000	0.0000	0.0000	0.0002				
12000	0.0044	0.0023	0.0003	0.0000	0.0000	0.0000	0.0003				
16000	0.0033	0.0017	0.0003	0.0000	0.0000	0.0000	0.0002				
20000	0.0059	0.0031	0.0005	0.0000	0.0000	0.0000	0.0004				
24000	0.0113	0.0060	0.0010	0.0000	0.0000	0.0000	0.0008				
28000	0.0064	0.0034	0.0006	0.0000	0.0000	0.0000	0.0004				
32000	0.0121	0.0066	0.0011	0.0000	0.0000	0.0000	0.0008				
36000	0.0218	0.0119	0.0020	0.0001	0.0000	0.0000	0.0015				
40000	0.0019	0.0011	0.0002	0.0000	0.0000	0.0000	0.0001				
44000	0.0033	0.0019	0.0004	0.0000	0.0000	0.0000	0.0002				
48000	0.0055	0.0031	0.0006	0.0000	0.0000	0.0000	0.0004				
52000	0.0100	0.0057	0.0011	0.0001	0.0000	0.0000	0.0007				
56000	0.0186	0.0107	0.0021	0.0001	0.0000	0.0000	0.0014				
58000	0.0246	0.0141	0.0028	0.0001	0.0000	0.0000	0.0019				
60000	0.0321	0.0185	0.0037	0.0002	0.0000	0.0000	0.0024				
62000	0.0424	0.0245	0.0049	0.0002	0.0000	0.0000	0.0032				

Gas Gap Fractions: Xe-138											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300	cal/mol									
R	1.987	cal/mol-K									
Do/a2	0.61	1/sec									
lambda	8.1510E-04	1/sec									
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	2.0934E+06	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	3.6607E+06	1.0000	0.0016
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	1.3891E+06	1.0000	0.0025
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	5.1799E+05	1.0000	0.0042
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	9.3743E+05	1.0000	0.0031
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	2.8784E+05	1.0000	0.0056
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	7.6924E+04	1.0000	0.0108
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	2.3909E+05	1.0000	0.0061
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	6.6977E+04	1.0000	0.0115
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	2.0601E+04	1.0000	0.0208
40000	1297.6	1.089	1.00	33.6787	829.01	7.163E+07	2.912E-10	2.0860E-02	2.7987E+06	1.0000	0.0018
44000	1319.3	1.089	1.00	33.6787	947.78	8.189E+07	8.918E-10	7.3029E-02	9.1398E+05	1.0000	0.0031
48000	1336.4	1.089	1.00	33.6787	1066.55	9.215E+07	2.450E-09	2.2581E-01	3.3263E+05	1.0000	0.0052
52000	1364.6	1.089	1.00	33.6787	1185.32	1.024E+08	8.305E-09	8.5050E-01	9.8149E+04	1.0000	0.0095
56000	1395.3	1.089	1.00	33.6787	1304.09	1.127E+08	2.883E-08	3.2483E+00	2.8273E+04	1.0000	0.0177
58000	1407.7	1.089	1.00	33.6787	1363.47	1.178E+08	5.040E-08	5.9377E+00	1.6172E+04	1.0000	0.0234
60000	1419.2	1.089	1.00	33.6787	1422.86	1.229E+08	8.635E-08	1.0616E+01	9.4392E+03	1.0000	0.0306
62000	1432.4	1.089	1.00	33.6787	1482.24	1.281E+08	1.520E-07	1.9462E+01	5.3637E+03	1.0000	0.0404
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	4.2600E+06	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	1.3686E+07	1.0000	0.0008
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	5.2175E+06	1.0000	0.0013
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	1.9383E+06	1.0000	0.0022
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	3.4101E+06	1.0000	0.0016
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	1.0366E+06	1.0000	0.0029
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	2.7051E+05	1.0000	0.0058
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	8.3584E+05	1.0000	0.0033
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	2.3005E+05	1.0000	0.0062
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	6.9800E+04	1.0000	0.0113
40000	1247.4	1.089	1.00	33.6787	829.01	7.163E+07	9.422E-11	6.7488E-03	8.6508E+06	1.0000	0.0010
44000	1267.2	1.089	1.00	33.6787	947.78	8.189E+07	2.870E-10	2.3498E-02	2.8405E+06	1.0000	0.0018
48000	1283.1	1.089	1.00	33.6787	1066.55	9.215E+07	7.908E-10	7.2870E-02	1.0308E+06	1.0000	0.0030

52000	1309.2	1.089	1.00	33.6787	1185.32	1.024E+08	2.687E-09	2.7520E-01	3.0333E+05	1.0000	0.0054
56000	1337.9	1.089	1.00	33.6787	1304.09	1.127E+08	9.418E-09	1.0611E+00	8.6551E+04	1.0000	0.0102
58000	1349.4	1.089	1.00	33.6787	1363.47	1.178E+08	1.650E-08	1.9436E+00	4.9403E+04	1.0000	0.0134
60000	1360.1	1.089	1.00	33.6787	1422.86	1.229E+08	2.834E-08	3.4843E+00	2.8759E+04	1.0000	0.0176
62000	1372.5	1.089	1.00	33.6787	1482.24	1.281E+08	5.015E-08	6.4225E+00	1.6253E+04	1.0000	0.0233
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mwd/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	3.3760E+07	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	6.2565E+08	1.0000	0.0001
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	2.4632E+08	1.0000	0.0002
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	9.1651E+07	1.0000	0.0003
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	1.4559E+08	1.0000	0.0002
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	4.3644E+07	1.0000	0.0005
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	1.0762E+07	1.0000	0.0009
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	3.1734E+07	1.0000	0.0005
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	8.4189E+06	1.0000	0.0010
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	2.4784E+06	1.0000	0.0019
40000	1122.5	1.089	1.00	33.6787	829.01	7.163E+07	3.669E-12	2.6280E-04	2.2215E+08	1.0000	0.0002
44000	1137.8	1.089	1.00	33.6787	947.78	8.189E+07	1.095E-11	8.9701E-04	7.4411E+07	1.0000	0.0003
48000	1150.5	1.089	1.00	33.6787	1066.55	9.215E+07	3.010E-11	2.7739E-03	2.7078E+07	1.0000	0.0006
52000	1171.4	1.089	1.00	33.6787	1185.32	1.024E+08	1.022E-10	1.0465E-02	7.9768E+06	1.0000	0.0011
56000	1195.2	1.089	1.00	33.6787	1304.09	1.127E+08	3.662E-10	4.1262E-02	2.2258E+06	1.0000	0.0020
58000	1204.6	1.089	1.00	33.6787	1363.47	1.178E+08	6.453E-10	7.6018E-02	1.2631E+06	1.0000	0.0027
60000	1213.3	1.089	1.00	33.6787	1422.86	1.229E+08	1.113E-09	1.3688E-01	7.3203E+05	1.0000	0.0035
62000	1223.7	1.089	1.00	33.6787	1482.24	1.281E+08	1.996E-09	2.5566E-01	4.0830E+05	1.0000	0.0047
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mwd/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	1.6854E+09	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	9.0439E+11	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	4.0351E+11	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	1.5977E+11	1.0000	0.0000
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	1.9149E+11	1.0000	0.0000
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	5.9309E+10	1.0000	0.0000
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	1.3814E+10	1.0000	0.0000
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	3.3954E+10	1.0000	0.0000
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	8.7190E+09	1.0000	0.0000
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	2.5491E+09	1.0000	0.0001
40000	946.2	1.089	1.00	33.6787	829.01	7.163E+07	8.740E-15	6.2600E-07	9.3264E+10	1.0000	0.0000
44000	955.3	1.089	1.00	33.6787	947.78	8.189E+07	2.434E-14	1.9931E-06	3.3489E+10	1.0000	0.0000
48000	963.4	1.089	1.00	33.6787	1066.55	9.215E+07	6.473E-14	5.9648E-06	1.2593E+10	1.0000	0.0000
52000	977.0	1.089	1.00	33.6787	1185.32	1.024E+08	2.114E-13	2.1652E-05	3.8554E+09	1.0000	0.0000
56000	994.0	1.089	1.00	33.6787	1304.09	1.127E+08	7.718E-13	8.6957E-05	1.0562E+09	1.0000	0.0001
58000	1000.3	1.089	1.00	33.6787	1363.47	1.178E+08	1.350E-12	1.5908E-04	6.0360E+08	1.0000	0.0001
60000	1006.1	1.089	1.00	33.6787	1422.86	1.229E+08	2.314E-12	2.8449E-04	3.5222E+08	1.0000	0.0002

62000	1013.5	1.089	1.00	33.6787	1482.24	1.281E+08	4.187E-12	5.3625E-04	1.9466E+08	1.0000	0.0002
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mwd/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	1.7695E+12	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	2.1035E+17	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	1.4192E+17	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	7.6758E+16	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	5.1642E+16	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	2.0849E+16	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	5.3193E+15	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	7.7852E+15	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	2.2363E+15	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	7.4806E+14	1.0000	0.0000
40000	744.8	1.089	1.00	33.6787	829.01	7.163E+07	2.663E-19	1.9076E-11	3.0605E+15	1.0000	0.0000
44000	747.4	1.089	1.00	33.6787	947.78	8.189E+07	6.095E-19	4.9907E-11	1.3374E+15	1.0000	0.0000
48000	750.2	1.089	1.00	33.6787	1066.55	9.215E+07	1.411E-18	1.3004E-10	5.7762E+14	1.0000	0.0000
52000	755.3	1.089	1.00	33.6787	1185.32	1.024E+08	3.780E-18	3.8714E-10	2.1562E+14	1.0000	0.0000
56000	764.6	1.089	1.00	33.6787	1304.09	1.127E+08	1.311E-17	1.4775E-09	6.2158E+13	1.0000	0.0000
58000	767.4	1.089	1.00	33.6787	1363.47	1.178E+08	2.168E-17	2.5535E-09	3.7604E+13	1.0000	0.0000
60000	769.7	1.089	1.00	33.6787	1422.86	1.229E+08	3.470E-17	4.2662E-09	2.3488E+13	1.0000	0.0000
62000	773.6	1.089	1.00	33.6787	1482.24	1.281E+08	6.120E-17	7.8372E-09	1.3319E+13	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mwd/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	4.3708E+17	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	2.2263E+19	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	1.3471E+19	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	7.4048E+18	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	9.6639E+18	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	4.2593E+18	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	1.1421E+18	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	3.2820E+18	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	1.0335E+18	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	3.8615E+17	1.0000	0.0000
40000	643.9	1.089	1.00	33.6787	829.01	7.163E+07	1.261E-22	9.0313E-15	6.4645E+18	1.0000	0.0000
44000	643.8	1.089	1.00	33.6787	947.78	8.189E+07	2.413E-22	1.9761E-14	3.3778E+18	1.0000	0.0000
48000	644.0	1.089	1.00	33.6787	1066.55	9.215E+07	4.742E-22	4.3693E-14	1.7191E+18	1.0000	0.0000
52000	645.0	1.089	1.00	33.6787	1185.32	1.024E+08	9.993E-22	1.0234E-13	8.1571E+17	1.0000	0.0000
56000	650.5	1.089	1.00	33.6787	1304.09	1.127E+08	3.108E-21	3.5023E-13	2.6222E+17	1.0000	0.0000
58000	651.3	1.089	1.00	33.6787	1363.47	1.178E+08	4.626E-21	5.4500E-13	1.7619E+17	1.0000	0.0000
60000	651.9	1.089	1.00	33.6787	1422.86	1.229E+08	6.767E-21	8.3195E-13	1.2045E+17	1.0000	0.0000
62000	653.9	1.089	1.00	33.6787	1482.24	1.281E+08	1.115E-20	1.4284E-12	7.3079E+16	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0016	0.0008	0.0001	0.0000	0.0000	0.0000	0.0001				
8000	0.0025	0.0013	0.0002	0.0000	0.0000	0.0000	0.0002				
12000	0.0042	0.0022	0.0003	0.0000	0.0000	0.0000	0.0003				
16000	0.0031	0.0016	0.0002	0.0000	0.0000	0.0000	0.0002				
20000	0.0056	0.0029	0.0005	0.0000	0.0000	0.0000	0.0004				
24000	0.0108	0.0058	0.0009	0.0000	0.0000	0.0000	0.0007				
28000	0.0061	0.0033	0.0005	0.0000	0.0000	0.0000	0.0004				
32000	0.0115	0.0062	0.0010	0.0000	0.0000	0.0000	0.0008				
36000	0.0208	0.0113	0.0019	0.0001	0.0000	0.0000	0.0014				
40000	0.0018	0.0010	0.0002	0.0000	0.0000	0.0000	0.0001				
44000	0.0031	0.0018	0.0003	0.0000	0.0000	0.0000	0.0002				
48000	0.0052	0.0030	0.0006	0.0000	0.0000	0.0000	0.0004				
52000	0.0095	0.0054	0.0011	0.0000	0.0000	0.0000	0.0007				
56000	0.0177	0.0102	0.0020	0.0001	0.0000	0.0000	0.0013				
58000	0.0234	0.0134	0.0027	0.0001	0.0000	0.0000	0.0018				
60000	0.0306	0.0176	0.0035	0.0002	0.0000	0.0000	0.0023				
62000	0.0404	0.0233	0.0047	0.0002	0.0000	0.0000	0.0031				

Gas Gap Fractions: Kr-85										
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc			
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm			
Q	72300	cal/mol								
R	1.987	cal/mol-K								
Do/a2	0.61	1/sec								
lambda	2.0540E-09	1/sec								
r=0.0										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	1.0000E+00	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	9.1850E-01	0.0815
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	4.9837E-03	8.4816E-01	0.1518
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	1.4672E-02	7.4865E-01	0.2514
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.0561E-02	7.0724E-01	0.2928
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	3.9740E-02	6.0973E-01	0.3903
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	1.1151E-01	4.1367E-01	0.5863
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.3716E-01	3.6994E-01	0.6301
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	2.2874E-01	2.6328E-01	0.7367
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	5.2649E-01	1.2598E-01	0.8740
40000	1297.6	1.089	1.00	33.6787	829.01	7.163E+07	2.912E-10	5.2948E-01	1.2528E-01	0.8747
44000	1319.3	1.089	1.00	33.6787	947.78	8.189E+07	8.918E-10	5.3863E-01	1.2321E-01	0.8768
48000	1336.4	1.089	1.00	33.6787	1066.55	9.215E+07	2.450E-09	5.6378E-01	1.1783E-01	0.8822
52000	1364.6	1.089	1.00	33.6787	1185.32	1.024E+08	8.305E-09	6.4900E-01	1.0257E-01	0.8974
56000	1395.3	1.089	1.00	33.6787	1304.09	1.127E+08	2.883E-08	9.4484E-01	7.0553E-02	0.9294
58000	1407.7	1.089	1.00	33.6787	1363.47	1.178E+08	5.040E-08	1.2034E+00	5.5396E-02	0.9446
60000	1419.2	1.089	1.00	33.6787	1422.86	1.229E+08	8.635E-08	1.6465E+00	4.0490E-02	0.9595
62000	1432.4	1.089	1.00	33.6787	1482.24	1.281E+08	1.520E-07	2.4262E+00	2.7478E-02	0.9725
r=0.2										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	1.0000E+00	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	9.5733E-01	0.0427
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.3286E-03	9.1973E-01	0.0803
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	3.9178E-03	8.6462E-01	0.1354
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	5.5366E-03	8.4038E-01	0.1596
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	1.0862E-02	7.8109E-01	0.2189
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	3.1270E-02	6.4783E-01	0.3522
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	3.8608E-02	6.1448E-01	0.3855
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	6.5272E-02	5.2134E-01	0.4787
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	1.5315E-01	3.4653E-01	0.6535
40000	1247.4	1.089	1.00	33.6787	829.01	7.163E+07	9.422E-11	1.5412E-01	3.4520E-01	0.6548
44000	1267.2	1.089	1.00	33.6787	947.78	8.189E+07	2.870E-10	1.5706E-01	3.4119E-01	0.6588
48000	1283.1	1.089	1.00	33.6787	1066.55	9.215E+07	7.908E-10	1.6518E-01	3.3053E-01	0.6695

52000	1309.2	1.089	1.00	33.6787	1185.32	1.024E+08	2.687E-09	1.9275E-01	2.9818E-01	0.7018
56000	1337.9	1.089	1.00	33.6787	1304.09	1.127E+08	9.418E-09	2.8939E-01	2.1813E-01	0.7819
58000	1349.4	1.089	1.00	33.6787	1363.47	1.178E+08	1.650E-08	3.7404E-01	1.7413E-01	0.8259
60000	1360.1	1.089	1.00	33.6787	1422.86	1.229E+08	2.834E-08	5.1947E-01	1.2763E-01	0.8724
62000	1372.5	1.089	1.00	33.6787	1482.24	1.281E+08	5.015E-08	7.7678E-01	8.5788E-02	0.9142
r=0.4										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	1.0000E+00	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	9.9362E-01	0.0064
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	2.8396E-05	9.8802E-01	0.0120
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	8.3153E-05	9.7955E-01	0.0205
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.2107E-04	9.7535E-01	0.0247
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	2.4756E-04	9.6486E-01	0.0351
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	7.6050E-04	9.3891E-01	0.0611
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	9.5379E-04	9.3173E-01	0.0683
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	1.6824E-03	9.0996E-01	0.0900
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	4.1573E-03	8.6073E-01	0.1393
40000	1122.5	1.089	1.00	33.6787	829.01	7.163E+07	3.669E-12	4.1950E-03	8.6013E-01	0.1399
44000	1137.8	1.089	1.00	33.6787	947.78	8.189E+07	1.095E-11	4.3074E-03	8.5835E-01	0.1417
48000	1150.5	1.089	1.00	33.6787	1066.55	9.215E+07	3.010E-11	4.6163E-03	8.5359E-01	0.1464
52000	1171.4	1.089	1.00	33.6787	1185.32	1.024E+08	1.022E-10	5.6649E-03	8.3864E-01	0.1614
56000	1195.2	1.089	1.00	33.6787	1304.09	1.127E+08	3.662E-10	9.4228E-03	7.9507E-01	0.2049
58000	1204.6	1.089	1.00	33.6787	1363.47	1.178E+08	6.453E-10	1.2734E-02	7.6444E-01	0.2356
60000	1213.3	1.089	1.00	33.6787	1422.86	1.229E+08	1.113E-09	1.8447E-02	7.2116E-01	0.2788
62000	1223.7	1.089	1.00	33.6787	1482.24	1.281E+08	1.996E-09	2.8689E-02	6.6079E-01	0.3392
r=0.6										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	1.0000E+00	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	9.9983E-01	0.0002
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	1.7987E-08	9.9970E-01	0.0003
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	4.9398E-08	9.9950E-01	0.0005
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	7.8227E-08	9.9937E-01	0.0006
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	1.7131E-07	9.9907E-01	0.0009
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	5.7092E-07	9.9830E-01	0.0017
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	7.5157E-07	9.9804E-01	0.0020
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	1.4551E-06	9.9728E-01	0.0027
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	3.8613E-06	9.9557E-01	0.0044
40000	946.2	1.089	1.00	33.6787	829.01	7.163E+07	8.740E-15	3.9510E-06	9.9552E-01	0.0045
44000	955.3	1.089	1.00	33.6787	947.78	8.189E+07	2.434E-14	4.2008E-06	9.9538E-01	0.0046
48000	963.4	1.089	1.00	33.6787	1066.55	9.215E+07	6.473E-14	4.8650E-06	9.9503E-01	0.0050
52000	977.0	1.089	1.00	33.6787	1185.32	1.024E+08	2.114E-13	7.0345E-06	9.9403E-01	0.0060
56000	994.0	1.089	1.00	33.6787	1304.09	1.127E+08	7.718E-13	1.4954E-05	9.9130E-01	0.0087
58000	1000.3	1.089	1.00	33.6787	1363.47	1.178E+08	1.350E-12	2.1883E-05	9.8948E-01	0.0105
60000	1006.1	1.089	1.00	33.6787	1422.86	1.229E+08	2.314E-12	3.3756E-05	9.8694E-01	0.0131

62000	1013.5	1.089	1.00	33.6787	1482.24	1.281E+08	4.187E-12	5.5241E-05	9.8331E-01	0.0167
r=0.8										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	1.0000E+00	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	1.0000E+00	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	5.9221E-14	1.0000E+00	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.2460E-13	1.0000E+00	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	2.3150E-13	1.0000E+00	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	4.9629E-13	1.0000E+00	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	1.5341E-12	1.0000E+00	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	2.3220E-12	1.0000E+00	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	5.0649E-12	9.9999E-01	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	1.3265E-11	9.9999E-01	0.0000
40000	744.8	1.089	1.00	33.6787	829.01	7.163E+07	2.663E-19	1.5998E-11	9.9999E-01	0.0000
44000	747.4	1.089	1.00	33.6787	947.78	8.189E+07	6.095E-19	2.2252E-11	9.9999E-01	0.0000
48000	750.2	1.089	1.00	33.6787	1066.55	9.215E+07	1.411E-18	3.6732E-11	9.9999E-01	0.0000
52000	755.3	1.089	1.00	33.6787	1185.32	1.024E+08	3.780E-18	7.5524E-11	9.9998E-01	0.0000
56000	764.6	1.089	1.00	33.6787	1304.09	1.127E+08	1.311E-17	2.1009E-10	9.9997E-01	0.0000
58000	767.4	1.089	1.00	33.6787	1363.47	1.178E+08	2.168E-17	3.2130E-10	9.9996E-01	0.0000
60000	769.7	1.089	1.00	33.6787	1422.86	1.229E+08	3.470E-17	4.9936E-10	9.9995E-01	0.0001
62000	773.6	1.089	1.00	33.6787	1482.24	1.281E+08	6.120E-17	8.1335E-10	9.9994E-01	0.0001
r=1.0										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	1.0000E+00	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	1.0000E+00	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	5.9797E-16	1.0000E+00	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	1.2757E-15	1.0000E+00	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	1.8470E-15	1.0000E+00	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	3.1431E-15	1.0000E+00	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	7.9765E-15	1.0000E+00	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	9.8454E-15	1.0000E+00	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	1.5780E-14	1.0000E+00	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	3.1665E-14	1.0000E+00	0.0000
40000	643.9	1.089	1.00	33.6787	829.01	7.163E+07	1.261E-22	3.2959E-14	1.0000E+00	0.0000
44000	643.8	1.089	1.00	33.6787	947.78	8.189E+07	2.413E-22	3.5435E-14	1.0000E+00	0.0000
48000	644.0	1.089	1.00	33.6787	1066.55	9.215E+07	4.742E-22	4.0301E-14	1.0000E+00	0.0000
52000	645.0	1.089	1.00	33.6787	1185.32	1.024E+08	9.993E-22	5.0555E-14	1.0000E+00	0.0000
56000	650.5	1.089	1.00	33.6787	1304.09	1.127E+08	3.108E-21	8.2452E-14	1.0000E+00	0.0000
58000	651.3	1.089	1.00	33.6787	1363.47	1.178E+08	4.626E-21	1.0619E-13	1.0000E+00	0.0000
60000	651.9	1.089	1.00	33.6787	1422.86	1.229E+08	6.767E-21	1.4091E-13	1.0000E+00	0.0000
62000	653.9	1.089	1.00	33.6787	1482.24	1.281E+08	1.115E-20	1.9814E-13	1.0000E+00	0.0000
Burnup	F	F	F	F	F	F				
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0				

	0.01	0.08	0.16	0.24	0.32	0.19				
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
4000	0.0815	0.0427	0.0064	0.0002	0.0000	0.0000	0.0053			
8000	0.1518	0.0803	0.0120	0.0003	0.0000	0.0000	0.0099			
12000	0.2514	0.1354	0.0205	0.0005	0.0000	0.0000	0.0167			
16000	0.2928	0.1596	0.0247	0.0006	0.0000	0.0000	0.0198			
20000	0.3903	0.2189	0.0351	0.0009	0.0000	0.0000	0.0273			
24000	0.5863	0.3522	0.0611	0.0017	0.0000	0.0000	0.0442			
28000	0.6301	0.3855	0.0683	0.0020	0.0000	0.0000	0.0485			
32000	0.7367	0.4787	0.0900	0.0027	0.0000	0.0000	0.0607			
36000	0.8740	0.6535	0.1393	0.0044	0.0000	0.0000	0.0844			
40000	0.8747	0.6548	0.1399	0.0045	0.0000	0.0000	0.0846			
44000	0.8768	0.6588	0.1417	0.0046	0.0000	0.0000	0.0852			
48000	0.8822	0.6695	0.1464	0.0050	0.0000	0.0000	0.0870			
52000	0.8974	0.7018	0.1614	0.0060	0.0000	0.0000	0.0924			
56000	0.9294	0.7819	0.2049	0.0087	0.0000	0.0000	0.1067			
58000	0.9446	0.8259	0.2356	0.0105	0.0000	0.0000	0.1157			
60000	0.9595	0.8724	0.2788	0.0131	0.0001	0.0000	0.1271			
62000	0.9725	0.9142	0.3392	0.0167	0.0001	0.0000	0.1412			

Gas Gap Fractions: Kr-85m											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300	cal/mol									
R	1.987	cal/mol-K									
Do/a2	0.61	1/sec									
lambda	4.2970E-05	1/sec									
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	1.1036E+05	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	1.9298E+05	1.0000	0.0068
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	7.3231E+04	1.0000	0.0110
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	2.7307E+04	1.0000	0.0180
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	4.9419E+04	1.0000	0.0134
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	1.5174E+04	1.0000	0.0242
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	4.0552E+03	1.0000	0.0464
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	1.2604E+04	1.0000	0.0265
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	3.5308E+03	1.0000	0.0496
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	1.0860E+03	1.0000	0.0883
40000	1297.6	1.089	1.00	33.6787	829.01	7.163E+07	2.912E-10	2.0860E-02	1.4754E+05	1.0000	0.0078
44000	1319.3	1.089	1.00	33.6787	947.78	8.189E+07	8.918E-10	7.3029E-02	4.8183E+04	1.0000	0.0136
48000	1336.4	1.089	1.00	33.6787	1066.55	9.215E+07	2.450E-09	2.2581E-01	1.7535E+04	1.0000	0.0225
52000	1364.6	1.089	1.00	33.6787	1185.32	1.024E+08	8.305E-09	8.5050E-01	5.1741E+03	1.0000	0.0411
56000	1395.3	1.089	1.00	33.6787	1304.09	1.127E+08	2.883E-08	3.2483E+00	1.4905E+03	1.0000	0.0757
58000	1407.7	1.089	1.00	33.6787	1363.47	1.178E+08	5.040E-08	5.9377E+00	8.5253E+02	1.0000	0.0992
60000	1419.2	1.089	1.00	33.6787	1422.86	1.229E+08	8.635E-08	1.0616E+01	4.9761E+02	1.0000	0.1285
62000	1432.4	1.089	1.00	33.6787	1482.24	1.281E+08	1.520E-07	1.9462E+01	2.8276E+02	1.0000	0.1678
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	2.2457E+05	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	7.2148E+05	1.0000	0.0035
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	2.7505E+05	1.0000	0.0057
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	1.0218E+05	1.0000	0.0094
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	1.7977E+05	1.0000	0.0071
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	5.4645E+04	1.0000	0.0128
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	1.4260E+04	1.0000	0.0249
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	4.4063E+04	1.0000	0.0142
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	1.2127E+04	1.0000	0.0270
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	3.6797E+03	1.0000	0.0486
40000	1247.4	1.089	1.00	33.6787	829.01	7.163E+07	9.422E-11	6.7488E-03	4.5605E+05	1.0000	0.0044
44000	1267.2	1.089	1.00	33.6787	947.78	8.189E+07	2.870E-10	2.3498E-02	1.4975E+05	1.0000	0.0077
48000	1283.1	1.089	1.00	33.6787	1066.55	9.215E+07	7.908E-10	7.2870E-02	5.4339E+04	1.0000	0.0128

52000	1309.2	1.089	1.00	33.6787	1185.32	1.024E+08	2.687E-09	2.7520E-01	1.5991E+04	1.0000	0.0235
56000	1337.9	1.089	1.00	33.6787	1304.09	1.127E+08	9.418E-09	1.0611E+00	4.5628E+03	1.0000	0.0438
58000	1349.4	1.089	1.00	33.6787	1363.47	1.178E+08	1.650E-08	1.9436E+00	2.6044E+03	1.0000	0.0576
60000	1360.1	1.089	1.00	33.6787	1422.86	1.229E+08	2.834E-08	3.4843E+00	1.5161E+03	1.0000	0.0751
62000	1372.5	1.089	1.00	33.6787	1482.24	1.281E+08	5.015E-08	6.4225E+00	8.5684E+02	1.0000	0.0990
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	1.7797E+06	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	3.2983E+07	1.0000	0.0005
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	1.2985E+07	1.0000	0.0008
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	4.8316E+06	1.0000	0.0014
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	7.6750E+06	1.0000	0.0011
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	2.3008E+06	1.0000	0.0020
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	5.6736E+05	1.0000	0.0040
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	1.6729E+06	1.0000	0.0023
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	4.4382E+05	1.0000	0.0045
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	1.3065E+05	1.0000	0.0083
40000	1122.5	1.089	1.00	33.6787	829.01	7.163E+07	3.669E-12	2.6280E-04	1.1711E+07	1.0000	0.0009
44000	1137.8	1.089	1.00	33.6787	947.78	8.189E+07	1.095E-11	8.9701E-04	3.9227E+06	1.0000	0.0015
48000	1150.5	1.089	1.00	33.6787	1066.55	9.215E+07	3.010E-11	2.7739E-03	1.4275E+06	1.0000	0.0025
52000	1171.4	1.089	1.00	33.6787	1185.32	1.024E+08	1.022E-10	1.0465E-02	4.2052E+05	1.0000	0.0046
56000	1195.2	1.089	1.00	33.6787	1304.09	1.127E+08	3.662E-10	4.1262E-02	1.1734E+05	1.0000	0.0087
58000	1204.6	1.089	1.00	33.6787	1363.47	1.178E+08	6.453E-10	7.6018E-02	6.6590E+04	1.0000	0.0116
60000	1213.3	1.089	1.00	33.6787	1422.86	1.229E+08	1.113E-09	1.3688E-01	3.8591E+04	1.0000	0.0152
62000	1223.7	1.089	1.00	33.6787	1482.24	1.281E+08	1.996E-09	2.5566E-01	2.1525E+04	1.0000	0.0203
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	8.8850E+07	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	4.7677E+10	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	2.1272E+10	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	8.4226E+09	1.0000	0.0000
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	1.0095E+10	1.0000	0.0000
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	3.1266E+09	1.0000	0.0001
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	7.2826E+08	1.0000	0.0001
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	1.7900E+09	1.0000	0.0001
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	4.5964E+08	1.0000	0.0001
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	1.3438E+08	1.0000	0.0003
40000	946.2	1.089	1.00	33.6787	829.01	7.163E+07	8.740E-15	6.2600E-07	4.9166E+09	1.0000	0.0000
44000	955.3	1.089	1.00	33.6787	947.78	8.189E+07	2.434E-14	1.9931E-06	1.7655E+09	1.0000	0.0001
48000	963.4	1.089	1.00	33.6787	1066.55	9.215E+07	6.473E-14	5.9648E-06	6.6385E+08	1.0000	0.0001
52000	977.0	1.089	1.00	33.6787	1185.32	1.024E+08	2.114E-13	2.1652E-05	2.0325E+08	1.0000	0.0002
56000	994.0	1.089	1.00	33.6787	1304.09	1.127E+08	7.718E-13	8.6957E-05	5.5678E+07	1.0000	0.0004
58000	1000.3	1.089	1.00	33.6787	1363.47	1.178E+08	1.350E-12	1.5908E-04	3.1820E+07	1.0000	0.0005
60000	1006.1	1.089	1.00	33.6787	1422.86	1.229E+08	2.314E-12	2.8449E-04	1.8568E+07	1.0000	0.0007

62000	1013.5	1.089	1.00	33.6787	1482.24	1.281E+08	4.187E-12	5.3625E-04	1.0262E+07	1.0000	0.0009
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	9.3284E+10	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	1.1089E+16	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	7.4814E+15	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	4.0465E+15	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	2.7224E+15	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	1.0991E+15	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	2.8042E+14	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	4.1042E+14	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	1.1789E+14	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	3.9436E+13	1.0000	0.0000
40000	744.8	1.089	1.00	33.6787	829.01	7.163E+07	2.663E-19	1.9076E-11	1.6134E+14	1.0000	0.0000
44000	747.4	1.089	1.00	33.6787	947.78	8.189E+07	6.095E-19	4.9907E-11	7.0506E+13	1.0000	0.0000
48000	750.2	1.089	1.00	33.6787	1066.55	9.215E+07	1.411E-18	1.3004E-10	3.0451E+13	1.0000	0.0000
52000	755.3	1.089	1.00	33.6787	1185.32	1.024E+08	3.780E-18	3.8714E-10	1.1367E+13	1.0000	0.0000
56000	764.6	1.089	1.00	33.6787	1304.09	1.127E+08	1.311E-17	1.4775E-09	3.2768E+12	1.0000	0.0000
58000	767.4	1.089	1.00	33.6787	1363.47	1.178E+08	2.168E-17	2.5535E-09	1.9824E+12	1.0000	0.0000
60000	769.7	1.089	1.00	33.6787	1422.86	1.229E+08	3.470E-17	4.2662E-09	1.2382E+12	1.0000	0.0000
62000	773.6	1.089	1.00	33.6787	1482.24	1.281E+08	6.120E-17	7.8372E-09	7.0216E+11	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	2.3042E+16	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	1.1737E+18	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	7.1015E+17	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	3.9036E+17	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	5.0945E+17	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	2.2454E+17	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	6.0210E+16	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	1.7302E+17	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	5.4486E+16	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	2.0357E+16	1.0000	0.0000
40000	643.9	1.089	1.00	33.6787	829.01	7.163E+07	1.261E-22	9.0313E-15	3.4079E+17	1.0000	0.0000
44000	643.8	1.089	1.00	33.6787	947.78	8.189E+07	2.413E-22	1.9761E-14	1.7807E+17	1.0000	0.0000
48000	644.0	1.089	1.00	33.6787	1066.55	9.215E+07	4.742E-22	4.3693E-14	9.0625E+16	1.0000	0.0000
52000	645.0	1.089	1.00	33.6787	1185.32	1.024E+08	9.993E-22	1.0234E-13	4.3002E+16	1.0000	0.0000
56000	650.5	1.089	1.00	33.6787	1304.09	1.127E+08	3.108E-21	3.5023E-13	1.3824E+16	1.0000	0.0000
58000	651.3	1.089	1.00	33.6787	1363.47	1.178E+08	4.626E-21	5.4500E-13	9.2882E+15	1.0000	0.0000
60000	651.9	1.089	1.00	33.6787	1422.86	1.229E+08	6.767E-21	8.3195E-13	6.3496E+15	1.0000	0.0000
62000	653.9	1.089	1.00	33.6787	1482.24	1.281E+08	1.115E-20	1.4284E-12	3.8525E+15	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0068	0.0035	0.0005	0.0000	0.0000	0.0000	0.0004				
8000	0.0110	0.0057	0.0008	0.0000	0.0000	0.0000	0.0007				
12000	0.0180	0.0094	0.0014	0.0000	0.0000	0.0000	0.0012				
16000	0.0134	0.0071	0.0011	0.0000	0.0000	0.0000	0.0009				
20000	0.0242	0.0128	0.0020	0.0001	0.0000	0.0000	0.0016				
24000	0.0464	0.0249	0.0040	0.0001	0.0000	0.0000	0.0031				
28000	0.0265	0.0142	0.0023	0.0001	0.0000	0.0000	0.0018				
32000	0.0496	0.0270	0.0045	0.0001	0.0000	0.0000	0.0034				
36000	0.0883	0.0486	0.0083	0.0003	0.0000	0.0000	0.0062				
40000	0.0078	0.0044	0.0009	0.0000	0.0000	0.0000	0.0006				
44000	0.0136	0.0077	0.0015	0.0001	0.0000	0.0000	0.0010				
48000	0.0225	0.0128	0.0025	0.0001	0.0000	0.0000	0.0017				
52000	0.0411	0.0235	0.0046	0.0002	0.0000	0.0000	0.0031				
56000	0.0757	0.0438	0.0087	0.0004	0.0000	0.0000	0.0058				
58000	0.0992	0.0576	0.0116	0.0005	0.0000	0.0000	0.0076				
60000	0.1285	0.0751	0.0152	0.0007	0.0000	0.0000	0.0099				
62000	0.1678	0.0990	0.0203	0.0009	0.0000	0.0000	0.0131				

Gas Gap Fractions: Kr-87											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300			cal/mol							
R	1.987			cal/mol-K							
Do/a2	0.61			1/sec							
lambda	1.5140E-04			1/sec							
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	3.8883E+05	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	6.7995E+05	1.0000	0.0036
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	2.5802E+05	1.0000	0.0059
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	9.6214E+04	1.0000	0.0096
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	1.7412E+05	1.0000	0.0072
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	5.3464E+04	1.0000	0.0129
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	1.4288E+04	1.0000	0.0249
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	4.4410E+04	1.0000	0.0142
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	1.2441E+04	1.0000	0.0267
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	3.8264E+03	1.0000	0.0477
40000	1297.6	1.089	1.00	33.6787	829.01	7.163E+07	2.912E-10	2.0860E-02	5.1985E+05	1.0000	0.0042
44000	1319.3	1.089	1.00	33.6787	947.78	8.189E+07	8.918E-10	7.3029E-02	1.6977E+05	1.0000	0.0073
48000	1336.4	1.089	1.00	33.6787	1066.55	9.215E+07	2.450E-09	2.2581E-01	6.1784E+04	1.0000	0.0120
52000	1364.6	1.089	1.00	33.6787	1185.32	1.024E+08	8.305E-09	8.5050E-01	1.8231E+04	1.0000	0.0221
56000	1395.3	1.089	1.00	33.6787	1304.09	1.127E+08	2.883E-08	3.2483E+00	5.2516E+03	1.0000	0.0408
58000	1407.7	1.089	1.00	33.6787	1363.47	1.178E+08	5.040E-08	5.9377E+00	3.0038E+03	1.0000	0.0537
60000	1419.2	1.089	1.00	33.6787	1422.86	1.229E+08	8.635E-08	1.0616E+01	1.7533E+03	1.0000	0.0699
62000	1432.4	1.089	1.00	33.6787	1482.24	1.281E+08	1.520E-07	1.9462E+01	9.9628E+02	1.0000	0.0920
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	7.9126E+05	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	2.5421E+06	1.0000	0.0019
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	9.6912E+05	1.0000	0.0030
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	3.6002E+05	1.0000	0.0050
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	6.3341E+05	1.0000	0.0038
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	1.9254E+05	1.0000	0.0068
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	5.0245E+04	1.0000	0.0133
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	1.5525E+05	1.0000	0.0076
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	4.2730E+04	1.0000	0.0144
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	1.2965E+04	1.0000	0.0261
40000	1247.4	1.089	1.00	33.6787	829.01	7.163E+07	9.422E-11	6.7488E-03	1.6068E+06	1.0000	0.0024
44000	1267.2	1.089	1.00	33.6787	947.78	8.189E+07	2.870E-10	2.3498E-02	5.2761E+05	1.0000	0.0041
48000	1283.1	1.089	1.00	33.6787	1066.55	9.215E+07	7.908E-10	7.2870E-02	1.9146E+05	1.0000	0.0068
52000	1309.2	1.089	1.00	33.6787	1185.32	1.024E+08	2.687E-09	2.7520E-01	5.6342E+04	1.0000	0.0126

56000	1337.9	1.089	1.00	33.6787	1304.09	1.127E+08	9.418E-09	1.0611E+00	1.6076E+04	1.0000	0.0235
58000	1349.4	1.089	1.00	33.6787	1363.47	1.178E+08	1.650E-08	1.9436E+00	9.1764E+03	1.0000	0.0310
60000	1360.1	1.089	1.00	33.6787	1422.86	1.229E+08	2.834E-08	3.4843E+00	5.3418E+03	1.0000	0.0405
62000	1372.5	1.089	1.00	33.6787	1482.24	1.281E+08	5.015E-08	6.4225E+00	3.0190E+03	1.0000	0.0536
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	6.2706E+06	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	1.1621E+08	1.0000	0.0003
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	4.5753E+07	1.0000	0.0004
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	1.7024E+07	1.0000	0.0007
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	2.7042E+07	1.0000	0.0006
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	8.1065E+06	1.0000	0.0011
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	1.9990E+06	1.0000	0.0021
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	5.8944E+06	1.0000	0.0012
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	1.5638E+06	1.0000	0.0024
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	4.6034E+05	1.0000	0.0044
40000	1122.5	1.089	1.00	33.6787	829.01	7.163E+07	3.669E-12	2.6280E-04	4.1264E+07	1.0000	0.0005
44000	1137.8	1.089	1.00	33.6787	947.78	8.189E+07	1.095E-11	8.9701E-04	1.3821E+07	1.0000	0.0008
48000	1150.5	1.089	1.00	33.6787	1066.55	9.215E+07	3.010E-11	2.7739E-03	5.0295E+06	1.0000	0.0013
52000	1171.4	1.089	1.00	33.6787	1185.32	1.024E+08	1.022E-10	1.0465E-02	1.4816E+06	1.0000	0.0025
56000	1195.2	1.089	1.00	33.6787	1304.09	1.127E+08	3.662E-10	4.1262E-02	4.1343E+05	1.0000	0.0047
58000	1204.6	1.089	1.00	33.6787	1363.47	1.178E+08	6.453E-10	7.6018E-02	2.3462E+05	1.0000	0.0062
60000	1213.3	1.089	1.00	33.6787	1422.86	1.229E+08	1.113E-09	1.3688E-01	1.3597E+05	1.0000	0.0081
62000	1223.7	1.089	1.00	33.6787	1482.24	1.281E+08	1.996E-09	2.5566E-01	7.5840E+04	1.0000	0.0109
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	3.1305E+08	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	1.6798E+11	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	7.4949E+10	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	2.9676E+10	1.0000	0.0000
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	3.5568E+10	1.0000	0.0000
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	1.1016E+10	1.0000	0.0000
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	2.5659E+09	1.0000	0.0001
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	6.3068E+09	1.0000	0.0000
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	1.6195E+09	1.0000	0.0001
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	4.7348E+08	1.0000	0.0001
40000	946.2	1.089	1.00	33.6787	829.01	7.163E+07	8.740E-15	6.2600E-07	1.7323E+10	1.0000	0.0000
44000	955.3	1.089	1.00	33.6787	947.78	8.189E+07	2.434E-14	1.9931E-06	6.2205E+09	1.0000	0.0000
48000	963.4	1.089	1.00	33.6787	1066.55	9.215E+07	6.473E-14	5.9648E-06	2.3390E+09	1.0000	0.0001
52000	977.0	1.089	1.00	33.6787	1185.32	1.024E+08	2.114E-13	2.1652E-05	7.1612E+08	1.0000	0.0001
56000	994.0	1.089	1.00	33.6787	1304.09	1.127E+08	7.718E-13	8.6957E-05	1.9618E+08	1.0000	0.0002
58000	1000.3	1.089	1.00	33.6787	1363.47	1.178E+08	1.350E-12	1.5908E-04	1.1211E+08	1.0000	0.0003
60000	1006.1	1.089	1.00	33.6787	1422.86	1.229E+08	2.314E-12	2.8449E-04	6.5423E+07	1.0000	0.0004
62000	1013.5	1.089	1.00	33.6787	1482.24	1.281E+08	4.187E-12	5.3625E-04	3.6157E+07	1.0000	0.0005

r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	3.2868E+11	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	3.9071E+16	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	2.6360E+16	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	1.4257E+16	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	9.5922E+15	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	3.8725E+15	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	9.8803E+14	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	1.4461E+15	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	4.1538E+14	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	1.3895E+14	1.0000	0.0000
40000	744.8	1.089	1.00	33.6787	829.01	7.163E+07	2.663E-19	1.9076E-11	5.6847E+14	1.0000	0.0000
44000	747.4	1.089	1.00	33.6787	947.78	8.189E+07	6.095E-19	4.9907E-11	2.4842E+14	1.0000	0.0000
48000	750.2	1.089	1.00	33.6787	1066.55	9.215E+07	1.411E-18	1.3004E-10	1.0729E+14	1.0000	0.0000
52000	755.3	1.089	1.00	33.6787	1185.32	1.024E+08	3.780E-18	3.8714E-10	4.0051E+13	1.0000	0.0000
56000	764.6	1.089	1.00	33.6787	1304.09	1.127E+08	1.311E-17	1.4775E-09	1.1546E+13	1.0000	0.0000
58000	767.4	1.089	1.00	33.6787	1363.47	1.178E+08	2.168E-17	2.5535E-09	6.9847E+12	1.0000	0.0000
60000	769.7	1.089	1.00	33.6787	1422.86	1.229E+08	3.470E-17	4.2662E-09	4.3627E+12	1.0000	0.0000
62000	773.6	1.089	1.00	33.6787	1482.24	1.281E+08	6.120E-17	7.8372E-09	2.4740E+12	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	8.1186E+16	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	4.1353E+18	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	2.5021E+18	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	1.3754E+18	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	1.7950E+18	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	7.9114E+17	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	2.1214E+17	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	6.0962E+17	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	1.9197E+17	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	7.1725E+16	1.0000	0.0000
40000	643.9	1.089	1.00	33.6787	829.01	7.163E+07	1.261E-22	9.0313E-15	1.2007E+18	1.0000	0.0000
44000	643.8	1.089	1.00	33.6787	947.78	8.189E+07	2.413E-22	1.9761E-14	6.2740E+17	1.0000	0.0000
48000	644.0	1.089	1.00	33.6787	1066.55	9.215E+07	4.742E-22	4.3693E-14	3.1931E+17	1.0000	0.0000
52000	645.0	1.089	1.00	33.6787	1185.32	1.024E+08	9.993E-22	1.0234E-13	1.5151E+17	1.0000	0.0000
56000	650.5	1.089	1.00	33.6787	1304.09	1.127E+08	3.108E-21	3.5023E-13	4.8707E+16	1.0000	0.0000
58000	651.3	1.089	1.00	33.6787	1363.47	1.178E+08	4.626E-21	5.4500E-13	3.2726E+16	1.0000	0.0000
60000	651.9	1.089	1.00	33.6787	1422.86	1.229E+08	6.767E-21	8.3195E-13	2.2372E+16	1.0000	0.0000
62000	653.9	1.089	1.00	33.6787	1482.24	1.281E+08	1.115E-20	1.4284E-12	1.3574E+16	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0036	0.0019	0.0003	0.0000	0.0000	0.0000	0.0002				

8000	0.0059	0.0030	0.0004	0.0000	0.0000	0.0000	0.0004				
12000	0.0096	0.0050	0.0007	0.0000	0.0000	0.0000	0.0006				
16000	0.0072	0.0038	0.0006	0.0000	0.0000	0.0000	0.0005				
20000	0.0129	0.0068	0.0011	0.0000	0.0000	0.0000	0.0009				
24000	0.0249	0.0133	0.0021	0.0001	0.0000	0.0000	0.0017				
28000	0.0142	0.0076	0.0012	0.0000	0.0000	0.0000	0.0010				
32000	0.0267	0.0144	0.0024	0.0001	0.0000	0.0000	0.0018				
36000	0.0477	0.0261	0.0044	0.0001	0.0000	0.0000	0.0033				
40000	0.0042	0.0024	0.0005	0.0000	0.0000	0.0000	0.0003				
44000	0.0073	0.0041	0.0008	0.0000	0.0000	0.0000	0.0005				
48000	0.0120	0.0068	0.0013	0.0001	0.0000	0.0000	0.0009				
52000	0.0221	0.0126	0.0025	0.0001	0.0000	0.0000	0.0016				
56000	0.0408	0.0235	0.0047	0.0002	0.0000	0.0000	0.0031				
58000	0.0537	0.0310	0.0062	0.0003	0.0000	0.0000	0.0041				
60000	0.0699	0.0405	0.0081	0.0004	0.0000	0.0000	0.0053				
62000	0.0920	0.0536	0.0109	0.0005	0.0000	0.0000	0.0071				

Gas Gap Fractions: Kr-88											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300		cal/mol								
R	1.987		cal/mol-K								
Do/a2	0.61		1/sec								
lambda	6.7310E-05		1/sec								
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	1.7287E+05	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	3.0229E+05	1.0000	0.0054
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	1.1471E+05	1.0000	0.0088
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	4.2775E+04	1.0000	0.0144
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	7.7412E+04	1.0000	0.0107
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	2.3769E+04	1.0000	0.0193
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	6.3523E+03	1.0000	0.0372
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	1.9744E+04	1.0000	0.0212
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	5.5309E+03	1.0000	0.0398
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	1.7012E+03	1.0000	0.0710
40000	1297.6	1.089	1.00	33.6787	829.01	7.163E+07	2.912E-10	2.0860E-02	2.3112E+05	1.0000	0.0062
44000	1319.3	1.089	1.00	33.6787	947.78	8.189E+07	8.918E-10	7.3029E-02	7.5476E+04	1.0000	0.0109
48000	1336.4	1.089	1.00	33.6787	1066.55	9.215E+07	2.450E-09	2.2581E-01	2.7468E+04	1.0000	0.0180
52000	1364.6	1.089	1.00	33.6787	1185.32	1.024E+08	8.305E-09	8.5050E-01	8.1050E+03	1.0000	0.0330
56000	1395.3	1.089	1.00	33.6787	1304.09	1.127E+08	2.883E-08	3.2483E+00	2.3348E+03	1.0000	0.0608
58000	1407.7	1.089	1.00	33.6787	1363.47	1.178E+08	5.040E-08	5.9377E+00	1.3354E+03	1.0000	0.0798
60000	1419.2	1.089	1.00	33.6787	1422.86	1.229E+08	8.635E-08	1.0616E+01	7.7948E+02	1.0000	0.1036
62000	1432.4	1.089	1.00	33.6787	1482.24	1.281E+08	1.520E-07	1.9462E+01	4.4293E+02	1.0000	0.1358
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	3.5178E+05	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	1.1302E+06	1.0000	0.0028
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	4.3085E+05	1.0000	0.0046
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	1.6006E+05	1.0000	0.0075
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	2.8160E+05	1.0000	0.0056
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	8.5599E+04	1.0000	0.0102
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	2.2338E+04	1.0000	0.0199
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	6.9023E+04	1.0000	0.0114
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	1.8997E+04	1.0000	0.0216
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	5.7640E+03	1.0000	0.0390
40000	1247.4	1.089	1.00	33.6787	829.01	7.163E+07	9.422E-11	6.7488E-03	7.1437E+05	1.0000	0.0035
44000	1267.2	1.089	1.00	33.6787	947.78	8.189E+07	2.870E-10	2.3498E-02	2.3457E+05	1.0000	0.0062
48000	1283.1	1.089	1.00	33.6787	1066.55	9.215E+07	7.908E-10	7.2870E-02	8.5118E+04	1.0000	0.0102

52000	1309.2	1.089	1.00	33.6787	1185.32	1.024E+08	2.687E-09	2.7520E-01	2.5049E+04	1.0000	0.0188
56000	1337.9	1.089	1.00	33.6787	1304.09	1.127E+08	9.418E-09	1.0611E+00	7.1473E+03	1.0000	0.0351
58000	1349.4	1.089	1.00	33.6787	1363.47	1.178E+08	1.650E-08	1.9436E+00	4.0797E+03	1.0000	0.0462
60000	1360.1	1.089	1.00	33.6787	1422.86	1.229E+08	2.834E-08	3.4843E+00	2.3749E+03	1.0000	0.0603
62000	1372.5	1.089	1.00	33.6787	1482.24	1.281E+08	5.015E-08	6.4225E+00	1.3422E+03	1.0000	0.0797
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	2.7878E+06	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	5.1665E+07	1.0000	0.0004
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	2.0341E+07	1.0000	0.0007
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	7.5685E+06	1.0000	0.0011
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	1.2022E+07	1.0000	0.0009
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	3.6040E+06	1.0000	0.0016
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	8.8874E+05	1.0000	0.0032
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	2.6206E+06	1.0000	0.0019
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	6.9522E+05	1.0000	0.0036
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	2.0466E+05	1.0000	0.0066
40000	1122.5	1.089	1.00	33.6787	829.01	7.163E+07	3.669E-12	2.6280E-04	1.8345E+07	1.0000	0.0007
44000	1137.8	1.089	1.00	33.6787	947.78	8.189E+07	1.095E-11	8.9701E-04	6.1447E+06	1.0000	0.0012
48000	1150.5	1.089	1.00	33.6787	1066.55	9.215E+07	3.010E-11	2.7739E-03	2.2360E+06	1.0000	0.0020
52000	1171.4	1.089	1.00	33.6787	1185.32	1.024E+08	1.022E-10	1.0465E-02	6.5872E+05	1.0000	0.0037
56000	1195.2	1.089	1.00	33.6787	1304.09	1.127E+08	3.662E-10	4.1262E-02	1.8380E+05	1.0000	0.0070
58000	1204.6	1.089	1.00	33.6787	1363.47	1.178E+08	6.453E-10	7.6018E-02	1.0431E+05	1.0000	0.0093
60000	1213.3	1.089	1.00	33.6787	1422.86	1.229E+08	1.113E-09	1.3688E-01	6.0451E+04	1.0000	0.0122
62000	1223.7	1.089	1.00	33.6787	1482.24	1.281E+08	1.996E-09	2.5566E-01	3.3717E+04	1.0000	0.0162
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	1.3918E+08	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	7.4683E+10	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	3.3321E+10	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	1.3193E+10	1.0000	0.0000
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	1.5813E+10	1.0000	0.0000
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	4.8976E+09	1.0000	0.0000
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	1.1408E+09	1.0000	0.0001
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	2.8039E+09	1.0000	0.0001
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	7.2000E+08	1.0000	0.0001
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	2.1050E+08	1.0000	0.0002
40000	946.2	1.089	1.00	33.6787	829.01	7.163E+07	8.740E-15	6.2600E-07	7.7016E+09	1.0000	0.0000
44000	955.3	1.089	1.00	33.6787	947.78	8.189E+07	2.434E-14	1.9931E-06	2.7655E+09	1.0000	0.0001
48000	963.4	1.089	1.00	33.6787	1066.55	9.215E+07	6.473E-14	5.9648E-06	1.0399E+09	1.0000	0.0001
52000	977.0	1.089	1.00	33.6787	1185.32	1.024E+08	2.114E-13	2.1652E-05	3.1837E+08	1.0000	0.0002
56000	994.0	1.089	1.00	33.6787	1304.09	1.127E+08	7.718E-13	8.6957E-05	8.7216E+07	1.0000	0.0003
58000	1000.3	1.089	1.00	33.6787	1363.47	1.178E+08	1.350E-12	1.5908E-04	4.9844E+07	1.0000	0.0004
60000	1006.1	1.089	1.00	33.6787	1422.86	1.229E+08	2.314E-12	2.8449E-04	2.9086E+07	1.0000	0.0006

62000	1013.5	1.089	1.00	33.6787	1482.24	1.281E+08	4.187E-12	5.3625E-04	1.6075E+07	1.0000	0.0007
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	1.4612E+11	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	1.7370E+16	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	1.1719E+16	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	6.3386E+15	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	4.2645E+15	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	1.7217E+15	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	4.3926E+14	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	6.4289E+14	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	1.8467E+14	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	6.1774E+13	1.0000	0.0000
40000	744.8	1.089	1.00	33.6787	829.01	7.163E+07	2.663E-19	1.9076E-11	2.5273E+14	1.0000	0.0000
44000	747.4	1.089	1.00	33.6787	947.78	8.189E+07	6.095E-19	4.9907E-11	1.1044E+14	1.0000	0.0000
48000	750.2	1.089	1.00	33.6787	1066.55	9.215E+07	1.411E-18	1.3004E-10	4.7699E+13	1.0000	0.0000
52000	755.3	1.089	1.00	33.6787	1185.32	1.024E+08	3.780E-18	3.8714E-10	1.7806E+13	1.0000	0.0000
56000	764.6	1.089	1.00	33.6787	1304.09	1.127E+08	1.311E-17	1.4775E-09	5.1330E+12	1.0000	0.0000
58000	767.4	1.089	1.00	33.6787	1363.47	1.178E+08	2.168E-17	2.5535E-09	3.1053E+12	1.0000	0.0000
60000	769.7	1.089	1.00	33.6787	1422.86	1.229E+08	3.470E-17	4.2662E-09	1.9396E+12	1.0000	0.0000
62000	773.6	1.089	1.00	33.6787	1482.24	1.281E+08	6.120E-17	7.8372E-09	1.0999E+12	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	3.6094E+16	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	1.8385E+18	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	1.1124E+18	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	6.1148E+17	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	7.9803E+17	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	3.5173E+17	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	9.4315E+16	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	2.7103E+17	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	8.5349E+16	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	3.1888E+16	1.0000	0.0000
40000	643.9	1.089	1.00	33.6787	829.01	7.163E+07	1.261E-22	9.0313E-15	5.3383E+17	1.0000	0.0000
44000	643.8	1.089	1.00	33.6787	947.78	8.189E+07	2.413E-22	1.9761E-14	2.7893E+17	1.0000	0.0000
48000	644.0	1.089	1.00	33.6787	1066.55	9.215E+07	4.742E-22	4.3693E-14	1.4196E+17	1.0000	0.0000
52000	645.0	1.089	1.00	33.6787	1185.32	1.024E+08	9.993E-22	1.0234E-13	6.7360E+16	1.0000	0.0000
56000	650.5	1.089	1.00	33.6787	1304.09	1.127E+08	3.108E-21	3.5023E-13	2.1654E+16	1.0000	0.0000
58000	651.3	1.089	1.00	33.6787	1363.47	1.178E+08	4.626E-21	5.4500E-13	1.4549E+16	1.0000	0.0000
60000	651.9	1.089	1.00	33.6787	1422.86	1.229E+08	6.767E-21	8.3195E-13	9.9462E+15	1.0000	0.0000
62000	653.9	1.089	1.00	33.6787	1482.24	1.281E+08	1.115E-20	1.4284E-12	6.0347E+15	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0054	0.0028	0.0004	0.0000	0.0000	0.0000	0.0003				
8000	0.0088	0.0046	0.0007	0.0000	0.0000	0.0000	0.0006				
12000	0.0144	0.0075	0.0011	0.0000	0.0000	0.0000	0.0009				
16000	0.0107	0.0056	0.0009	0.0000	0.0000	0.0000	0.0007				
20000	0.0193	0.0102	0.0016	0.0000	0.0000	0.0000	0.0013				
24000	0.0372	0.0199	0.0032	0.0001	0.0000	0.0000	0.0025				
28000	0.0212	0.0114	0.0019	0.0001	0.0000	0.0000	0.0014				
32000	0.0398	0.0216	0.0036	0.0001	0.0000	0.0000	0.0027				
36000	0.0710	0.0390	0.0066	0.0002	0.0000	0.0000	0.0049				
40000	0.0062	0.0035	0.0007	0.0000	0.0000	0.0000	0.0005				
44000	0.0109	0.0062	0.0012	0.0001	0.0000	0.0000	0.0008				
48000	0.0180	0.0102	0.0020	0.0001	0.0000	0.0000	0.0013				
52000	0.0330	0.0188	0.0037	0.0002	0.0000	0.0000	0.0025				
56000	0.0608	0.0351	0.0070	0.0003	0.0000	0.0000	0.0046				
58000	0.0798	0.0462	0.0093	0.0004	0.0000	0.0000	0.0061				
60000	0.1036	0.0603	0.0122	0.0006	0.0000	0.0000	0.0079				
62000	0.1358	0.0797	0.0162	0.0007	0.0000	0.0000	0.0105				

ATTACHMENT G
CASE C GAS GAP FRACTION RESULTS

Gas Gap Fractions: I-131											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300		cal/mol								
R	1.987		cal/mol-K								
Do/a2	0.61		1/sec								
lambda	9.9760E-07		1/sec								
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	2.726E-09	0.0000E+00	3.6601E+02	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	1.559E-09	9.5966E-03	6.4004E+02	1.0000	0.1135
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	4.107E-09	5.0579E-02	2.4288E+02	1.0000	0.1801
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.102E-08	2.0346E-01	9.0567E+01	1.0000	0.2821
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	6.087E-09	1.5365E-01	1.6390E+02	1.0000	0.2160
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	1.982E-08	6.3465E-01	5.0326E+01	1.0000	0.3633
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	7.417E-08	2.8771E+00	1.3450E+01	1.0000	0.5960
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	2.386E-08	1.1052E+00	4.1803E+01	1.0000	0.3922
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	8.519E-08	4.5866E+00	1.1710E+01	1.0000	0.6224
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	2.770E-07	1.6996E+01	3.6018E+00	1.0000	0.8205
40000	1385.9	1.089	1.10	37.0465	818.21	7.069E+07	1.217E-08	8.6028E-01	8.1978E+01	1.0000	0.2947
44000	1412.9	1.089	1.10	37.0465	926.19	8.002E+07	3.880E-08	3.1051E+00	2.5709E+01	1.0000	0.4750
48000	1452.7	1.089	1.10	37.0465	1034.16	8.935E+07	1.517E-07	1.3555E+01	6.5758E+00	1.0000	0.7276
52000	1481.3	1.089	1.10	37.0465	1142.13	9.868E+07	4.751E-07	4.6879E+01	2.1000E+00	1.0000	0.8832
56000	1511.0	1.089	1.10	37.0465	1250.10	1.080E+08	1.486E-06	1.6055E+02	6.7113E-01	1.0000	0.9579
58000	1537.1	1.089	1.10	37.0465	1304.09	1.127E+08	3.109E-06	3.5027E+02	3.2090E-01	1.0000	0.9792
60000	1548.5	1.089	1.10	37.0465	1358.08	1.173E+08	5.142E-06	6.0335E+02	1.9401E-01	1.0000	0.9873
62000	1570.8	1.089	1.10	37.0465	1412.06	1.220E+08	9.974E-06	1.2168E+03	1.0002E-01	1.0000	0.9934
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.339E-09	0.0000E+00	7.4482E+02	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	4.169E-10	2.5669E-03	2.3929E+03	1.0000	0.0599
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.094E-09	1.3466E-02	9.1224E+02	1.0000	0.0960
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	2.944E-09	5.4373E-02	3.3889E+02	1.0000	0.1541
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	1.673E-09	4.2237E-02	5.9623E+02	1.0000	0.1178
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	5.504E-09	1.7623E-01	1.8124E+02	1.0000	0.2063
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	2.109E-08	8.1816E-01	4.7296E+01	1.0000	0.3728
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	6.826E-09	3.1616E-01	1.4614E+02	1.0000	0.2276
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	2.480E-08	1.3354E+00	4.0222E+01	1.0000	0.3984
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	8.174E-08	5.0162E+00	1.2204E+01	1.0000	0.6145

40000	1326.8	1.089	1.10	37.0465	818.21	7.069E+07	3.779E-09	2.6714E-01	2.6399E+02	1.0000	0.1733
44000	1351.7	1.089	1.10	37.0465	926.19	8.002E+07	1.209E-08	9.6759E-01	8.2504E+01	1.0000	0.2939
48000	1388.9	1.089	1.10	37.0465	1034.16	8.935E+07	4.801E-08	4.2896E+00	2.0780E+01	1.0000	0.5139
52000	1415.3	1.089	1.10	37.0465	1142.13	9.868E+07	1.511E-07	1.4911E+01	6.6023E+00	1.0000	0.7269
56000	1443.5	1.089	1.10	37.0465	1250.10	1.080E+08	4.821E-07	5.2067E+01	2.0694E+00	1.0000	0.8846
58000	1468.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.025E-06	1.1553E+02	9.7295E-01	1.0000	0.9406
60000	1479.5	1.089	1.10	37.0465	1358.08	1.173E+08	1.719E-06	2.0167E+02	5.8045E-01	1.0000	0.9633
62000	1501.5	1.089	1.10	37.0465	1412.06	1.220E+08	3.424E-06	4.1775E+02	2.9134E-01	1.0000	0.9811
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	1.690E-10	0.0000E+00	5.9026E+03	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	9.120E-12	5.6150E-05	1.0939E+05	1.0000	0.0090
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	2.316E-11	2.8524E-04	4.3068E+04	1.0000	0.0144
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	6.225E-11	1.1499E-03	1.6025E+04	1.0000	0.0235
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	3.919E-11	9.8933E-04	2.5455E+04	1.0000	0.0187
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.307E-10	4.1857E-03	7.6307E+03	1.0000	0.0339
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	5.302E-10	2.0564E-02	1.8817E+03	1.0000	0.0676
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	1.798E-10	8.3272E-03	5.5485E+03	1.0000	0.0397
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	6.777E-10	3.6489E-02	1.4720E+03	1.0000	0.0762
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	2.302E-09	1.4128E-01	4.3332E+02	1.0000	0.1372
40000	1181.3	1.089	1.10	37.0465	818.21	7.069E+07	1.289E-10	9.1153E-03	7.7369E+03	1.0000	0.0337
44000	1201.2	1.089	1.10	37.0465	926.19	8.002E+07	4.147E-10	3.3184E-02	2.4057E+03	1.0000	0.0599
48000	1231.9	1.089	1.10	37.0465	1034.16	8.935E+07	1.703E-09	1.5219E-01	5.8570E+02	1.0000	0.1188
52000	1252.9	1.089	1.10	37.0465	1142.13	9.868E+07	5.395E-09	5.3240E-01	1.8491E+02	1.0000	0.2044
56000	1277.2	1.089	1.10	37.0465	1250.10	1.080E+08	1.810E-08	1.9550E+00	5.5115E+01	1.0000	0.3497
58000	1298.8	1.089	1.10	37.0465	1304.09	1.127E+08	4.039E-08	4.5513E+00	2.4697E+01	1.0000	0.4823
60000	1308.9	1.089	1.10	37.0465	1358.08	1.173E+08	6.967E-08	8.1751E+00	1.4319E+01	1.0000	0.5841
62000	1329.9	1.089	1.10	37.0465	1412.06	1.220E+08	1.502E-07	1.8320E+01	6.6436E+00	1.0000	0.7259
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	3.385E-12	0.0000E+00	2.9468E+05	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	6.309E-15	3.8844E-08	1.5813E+08	1.0000	0.0002
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	1.414E-14	1.7412E-07	7.0550E+07	1.0000	0.0004
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	3.571E-14	6.5964E-07	2.7934E+07	1.0000	0.0006
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	2.980E-14	7.5217E-07	3.3480E+07	1.0000	0.0005
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	9.620E-14	3.0801E-06	1.0370E+07	1.0000	0.0009
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	4.130E-13	1.6021E-05	2.4153E+06	1.0000	0.0019
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	1.680E-13	7.7827E-06	5.9366E+06	1.0000	0.0012
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	6.544E-13	3.5233E-05	1.5244E+06	1.0000	0.0024
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	2.238E-12	1.3735E-04	4.4569E+05	1.0000	0.0045
40000	979.2	1.089	1.10	37.0465	818.21	7.069E+07	2.236E-13	1.5806E-05	4.4619E+06	1.0000	0.0014
44000	992.0	1.089	1.10	37.0465	926.19	8.002E+07	6.972E-13	5.5795E-05	1.4308E+06	1.0000	0.0025
48000	1013.6	1.089	1.10	37.0465	1034.16	8.935E+07	2.941E-12	2.6283E-04	3.3915E+05	1.0000	0.0051
52000	1027.2	1.089	1.10	37.0465	1142.13	9.868E+07	9.135E-12	9.0142E-04	1.0921E+05	1.0000	0.0091

56000	1045.7	1.089	1.10	37.0465	1250.10	1.080E+08	3.300E-11	3.5648E-03	3.0226E+04	1.0000	0.0172
58000	1062.3	1.089	1.10	37.0465	1304.09	1.127E+08	7.899E-11	8.9002E-03	1.2629E+04	1.0000	0.0265
60000	1070.7	1.089	1.10	37.0465	1358.08	1.173E+08	1.436E-10	1.6849E-02	6.9473E+03	1.0000	0.0356
62000	1089.1	1.089	1.10	37.0465	1412.06	1.220E+08	3.543E-10	4.3223E-02	2.8158E+03	1.0000	0.0555
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	3.224E-15	0.0000E+00	3.0939E+08	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	2.712E-20	1.6701E-13	3.6778E+13	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	4.020E-20	4.9508E-13	2.4813E+13	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	7.433E-20	1.3730E-12	1.3421E+13	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.105E-19	2.7891E-12	9.0292E+12	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	2.737E-19	8.7620E-12	3.6452E+12	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.073E-18	4.1607E-11	9.3004E+11	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	7.329E-19	3.3943E-11	1.3612E+12	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	2.551E-18	1.3737E-10	3.9100E+11	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	7.627E-18	4.6805E-10	1.3079E+11	1.0000	0.0000
40000	753.8	1.089	1.10	37.0465	818.21	7.069E+07	3.341E-18	2.3617E-10	2.9862E+11	1.0000	0.0000
44000	758.8	1.089	1.10	37.0465	926.19	8.002E+07	8.865E-18	7.0942E-10	1.1253E+11	1.0000	0.0000
48000	770.1	1.089	1.10	37.0465	1034.16	8.935E+07	3.459E-17	3.0909E-09	2.8838E+10	1.0000	0.0000
52000	775.6	1.089	1.10	37.0465	1142.13	9.868E+07	9.337E-17	9.2139E-09	1.0684E+10	1.0000	0.0000
56000	786.7	1.089	1.10	37.0465	1250.10	1.080E+08	3.495E-16	3.7745E-08	2.8546E+09	1.0000	0.0001
58000	797.4	1.089	1.10	37.0465	1304.09	1.127E+08	9.032E-16	1.0177E-07	1.1045E+09	1.0000	0.0001
60000	803.0	1.089	1.10	37.0465	1358.08	1.173E+08	1.725E-15	2.0244E-07	5.7822E+08	1.0000	0.0001
62000	816.6	1.089	1.10	37.0465	1412.06	1.220E+08	5.099E-15	6.2206E-07	1.9565E+08	1.0000	0.0002
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.305E-20	0.0000E+00	7.6421E+13	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	2.563E-22	1.5779E-15	3.8926E+15	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	4.236E-22	5.2157E-15	2.3553E+15	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	7.705E-22	1.4233E-14	1.2947E+15	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	5.904E-22	1.4904E-14	1.6897E+15	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.340E-21	4.2889E-14	7.4471E+14	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	4.996E-21	1.9378E-13	1.9969E+14	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	1.738E-21	8.0516E-14	5.7384E+14	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	5.521E-21	2.9722E-13	1.8071E+14	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	1.478E-20	9.0673E-13	6.7515E+13	1.0000	0.0000
40000	653.3	1.089	1.10	37.0465	818.21	7.069E+07	1.990E-21	1.4069E-13	5.0126E+14	1.0000	0.0000
44000	655.2	1.089	1.10	37.0465	926.19	8.002E+07	4.516E-21	3.6138E-13	2.2090E+14	1.0000	0.0000
48000	661.9	1.089	1.10	37.0465	1034.16	8.935E+07	1.530E-20	1.3668E-12	6.5216E+13	1.0000	0.0000
52000	664.1	1.089	1.10	37.0465	1142.13	9.868E+07	3.543E-20	3.4965E-12	2.8154E+13	1.0000	0.0000
56000	671.5	1.089	1.10	37.0465	1250.10	1.080E+08	1.251E-19	1.3515E-11	7.9727E+12	1.0000	0.0000
58000	679.2	1.089	1.10	37.0465	1304.09	1.127E+08	3.214E-19	3.6209E-11	3.1043E+12	1.0000	0.0000
60000	682.7	1.089	1.10	37.0465	1358.08	1.173E+08	5.877E-19	6.8956E-11	1.6975E+12	1.0000	0.0000
62000	688.0	1.089	1.10	37.0465	1412.06	1.220E+08	1.231E-18	1.5020E-10	8.1031E+11	1.0000	0.0000

Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.1135	0.0599	0.0090	0.0002	0.0000	0.0000	0.0074				
8000	0.1801	0.0960	0.0144	0.0004	0.0000	0.0000	0.0119				
12000	0.2821	0.1541	0.0235	0.0006	0.0000	0.0000	0.0190				
16000	0.2160	0.1178	0.0187	0.0005	0.0000	0.0000	0.0147				
20000	0.3633	0.2063	0.0339	0.0009	0.0000	0.0000	0.0258				
24000	0.5960	0.3728	0.0676	0.0019	0.0000	0.0000	0.0471				
28000	0.3922	0.2276	0.0397	0.0012	0.0000	0.0000	0.0288				
32000	0.6224	0.3984	0.0762	0.0024	0.0000	0.0000	0.0509				
36000	0.8205	0.6145	0.1372	0.0045	0.0000	0.0000	0.0804				
40000	0.2947	0.1733	0.0337	0.0014	0.0000	0.0000	0.0225				
44000	0.4750	0.2939	0.0599	0.0025	0.0000	0.0000	0.0385				
48000	0.7276	0.5139	0.1188	0.0051	0.0000	0.0000	0.0686				
52000	0.8832	0.7269	0.2044	0.0091	0.0000	0.0000	0.1019				
56000	0.9579	0.8846	0.3497	0.0172	0.0001	0.0000	0.1404				
58000	0.9792	0.9406	0.4823	0.0265	0.0001	0.0000	0.1686				
60000	0.9873	0.9633	0.5841	0.0356	0.0001	0.0000	0.1890				
62000	0.9934	0.9811	0.7259	0.0555	0.0002	0.0000	0.2179				

Gas Gap Fractions: I-131											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=					44949.18	cc					
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=					410371.65	gm					
Q	72300		cal/mol								
R	1.987		cal/mol-K								
Do/a2	0.61		1/sec								
lambda	9.9760E-07		1/sec								
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	2.726E-09	0.0000E+00	3.6601E+02	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	1.559E-09	9.5966E-03	6.4004E+02	1.0000	0.1135
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	4.107E-09	5.0579E-02	2.4288E+02	1.0000	0.1801
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.102E-08	2.0346E-01	9.0567E+01	1.0000	0.2821
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	6.087E-09	1.5365E-01	1.6390E+02	1.0000	0.2160
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	1.982E-08	6.3465E-01	5.0326E+01	1.0000	0.3633
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	7.417E-08	2.8771E+00	1.3450E+01	1.0000	0.5960
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	2.386E-08	1.1052E+00	4.1803E+01	1.0000	0.3922
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	8.519E-08	4.5866E+00	1.1710E+01	1.0000	0.6224
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	2.770E-07	1.6996E+01	3.6018E+00	1.0000	0.8205
40000	1201.7	1.089	0.90	30.3108	842.21	7.277E+07	2.175E-10	1.5828E-02	4.5864E+03	1.0000	0.0436
44000	1222.7	1.089	0.90	30.3108	974.17	8.417E+07	7.064E-10	5.9457E-02	1.4122E+03	1.0000	0.0777
48000	1242.9	1.089	0.90	30.3108	1106.14	9.557E+07	2.212E-09	2.1142E-01	4.5097E+02	1.0000	0.1346
52000	1262.0	1.089	0.90	30.3108	1238.11	1.070E+08	6.652E-09	7.1158E-01	1.4997E+02	1.0000	0.2250
56000	1281.0	1.089	0.90	30.3108	1370.07	1.184E+08	1.970E-08	2.3316E+00	5.0648E+01	1.0000	0.3623
58000	1292.5	1.089	0.90	30.3108	1436.06	1.241E+08	3.524E-08	4.3721E+00	2.8310E+01	1.0000	0.4579
60000	1301.0	1.089	0.90	30.3108	1502.04	1.298E+08	5.885E-08	7.6373E+00	1.6952E+01	1.0000	0.5521
62000	1310.3	1.089	0.90	30.3108	1568.02	1.355E+08	9.973E-08	1.3511E+01	1.0003E+01	1.0000	0.6520
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.339E-09	0.0000E+00	7.4482E+02	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	4.169E-10	2.5669E-03	2.3929E+03	1.0000	0.0599
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.094E-09	1.3466E-02	9.1224E+02	1.0000	0.0960
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	2.944E-09	5.4373E-02	3.3889E+02	1.0000	0.1541
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	1.673E-09	4.2237E-02	5.9623E+02	1.0000	0.1178
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	5.504E-09	1.7623E-01	1.8124E+02	1.0000	0.2063
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	2.109E-08	8.1816E-01	4.7296E+01	1.0000	0.3728
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	6.826E-09	3.1616E-01	1.4614E+02	1.0000	0.2276
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	2.480E-08	1.3354E+00	4.0222E+01	1.0000	0.3984
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	8.174E-08	5.0162E+00	1.2204E+01	1.0000	0.6145
40000	1160.8	1.089	0.90	30.3108	842.21	7.277E+07	7.484E-11	5.4460E-03	1.3329E+04	1.0000	0.0258
44000	1180.1	1.089	0.90	30.3108	974.17	8.417E+07	2.413E-10	2.0307E-02	4.1348E+03	1.0000	0.0459
48000	1198.8	1.089	0.90	30.3108	1106.14	9.557E+07	7.535E-10	7.2015E-02	1.3239E+03	1.0000	0.0802

52000	1216.5	1.089	0.90	30.3108	1238.11	1.070E+08	2.263E-09	2.4204E-01	4.4091E+02	1.0000	0.1361
56000	1234.1	1.089	0.90	30.3108	1370.07	1.184E+08	6.692E-09	7.9221E-01	1.4906E+02	1.0000	0.2256
58000	1244.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.193E-08	1.4796E+00	8.3655E+01	1.0000	0.2921
60000	1252.5	1.089	0.90	30.3108	1502.04	1.298E+08	1.993E-08	2.5858E+00	5.0067E+01	1.0000	0.3641
62000	1261.2	1.089	0.90	30.3108	1568.02	1.355E+08	3.383E-08	4.5831E+00	2.9489E+01	1.0000	0.4507
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	1.690E-10	0.0000E+00	5.9026E+03	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	9.120E-12	5.6150E-05	1.0939E+05	1.0000	0.0090
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	2.316E-11	2.8524E-04	4.3068E+04	1.0000	0.0144
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	6.225E-11	1.1499E-03	1.6025E+04	1.0000	0.0235
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	3.919E-11	9.8933E-04	2.5455E+04	1.0000	0.0187
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.307E-10	4.1857E-03	7.6307E+03	1.0000	0.0339
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	5.302E-10	2.0564E-02	1.8817E+03	1.0000	0.0676
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	1.798E-10	8.3272E-03	5.5485E+03	1.0000	0.0397
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	6.777E-10	3.6489E-02	1.4720E+03	1.0000	0.0762
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	2.302E-09	1.4128E-01	4.3332E+02	1.0000	0.1372
40000	1057.8	1.089	0.90	30.3108	842.21	7.277E+07	3.537E-12	2.5735E-04	2.8208E+05	1.0000	0.0056
44000	1072.8	1.089	0.90	30.3108	974.17	8.417E+07	1.105E-11	9.2966E-04	9.0319E+04	1.0000	0.0099
48000	1087.9	1.089	0.90	30.3108	1106.14	9.557E+07	3.415E-11	3.2634E-03	2.9216E+04	1.0000	0.0174
52000	1101.9	1.089	0.90	30.3108	1238.11	1.070E+08	1.008E-10	1.0787E-02	9.8934E+03	1.0000	0.0299
56000	1116.0	1.089	0.90	30.3108	1370.07	1.184E+08	2.955E-10	3.4976E-02	3.3763E+03	1.0000	0.0507
58000	1124.1	1.089	0.90	30.3108	1436.06	1.241E+08	5.193E-10	6.4430E-02	1.9211E+03	1.0000	0.0669
60000	1130.6	1.089	0.90	30.3108	1502.04	1.298E+08	8.691E-10	1.1279E-01	1.1478E+03	1.0000	0.0859
62000	1137.6	1.089	0.90	30.3108	1568.02	1.355E+08	1.472E-09	1.9944E-01	6.7766E+02	1.0000	0.1108
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	3.385E-12	0.0000E+00	2.9468E+05	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	6.309E-15	3.8844E-08	1.5813E+08	1.0000	0.0002
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	1.414E-14	1.7412E-07	7.0550E+07	1.0000	0.0004
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	3.571E-14	6.5964E-07	2.7934E+07	1.0000	0.0006
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	2.980E-14	7.5217E-07	3.3480E+07	1.0000	0.0005
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	9.620E-14	3.0801E-06	1.0370E+07	1.0000	0.0009
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	4.130E-13	1.6021E-05	2.4153E+06	1.0000	0.0019
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	1.680E-13	7.7827E-06	5.9366E+06	1.0000	0.0012
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	6.544E-13	3.5233E-05	1.5244E+06	1.0000	0.0024
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	2.238E-12	1.3735E-04	4.4569E+05	1.0000	0.0045
40000	909.4	1.089	0.90	30.3108	842.21	7.277E+07	1.291E-14	9.3908E-07	7.7301E+07	1.0000	0.0003
44000	918.3	1.089	0.90	30.3108	974.17	8.417E+07	3.672E-14	3.0906E-06	2.7168E+07	1.0000	0.0006
48000	928.3	1.089	0.90	30.3108	1106.14	9.557E+07	1.086E-13	1.0383E-05	9.1827E+06	1.0000	0.0010
52000	937.2	1.089	0.90	30.3108	1238.11	1.070E+08	3.043E-13	3.2556E-05	3.2779E+06	1.0000	0.0017
56000	946.3	1.089	0.90	30.3108	1370.07	1.184E+08	8.535E-13	1.0104E-04	1.1688E+06	1.0000	0.0028
58000	951.2	1.089	0.90	30.3108	1436.06	1.241E+08	1.446E-12	1.7938E-04	6.9001E+05	1.0000	0.0036
60000	955.5	1.089	0.90	30.3108	1502.04	1.298E+08	2.386E-12	3.0968E-04	4.1806E+05	1.0000	0.0046

62000	960.1	1.089	0.90	30.3108	1568.02	1.355E+08	3.979E-12	5.3912E-04	2.5069E+05	1.0000	0.0060
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	3.224E-15	0.0000E+00	3.0939E+08	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	2.712E-20	1.6701E-13	3.6778E+13	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	4.020E-20	4.9508E-13	2.4813E+13	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	7.433E-20	1.3730E-12	1.3421E+13	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.105E-19	2.7891E-12	9.0292E+12	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	2.737E-19	8.7620E-12	3.6452E+12	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.073E-18	4.1607E-11	9.3004E+11	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	7.329E-19	3.3943E-11	1.3612E+12	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	2.551E-18	1.3737E-10	3.9100E+11	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	7.627E-18	4.6805E-10	1.3079E+11	1.0000	0.0000
40000	735.0	1.089	0.90	30.3108	842.21	7.277E+07	9.719E-19	7.0722E-11	1.0264E+12	1.0000	0.0000
44000	737.2	1.089	0.90	30.3108	974.17	8.417E+07	2.175E-18	1.8308E-10	4.5862E+11	1.0000	0.0000
48000	741.2	1.089	0.90	30.3108	1106.14	9.557E+07	5.481E-18	5.2386E-10	1.8200E+11	1.0000	0.0000
52000	744.2	1.089	0.90	30.3108	1238.11	1.070E+08	1.290E-17	1.3798E-09	7.7340E+10	1.0000	0.0000
56000	747.4	1.089	0.90	30.3108	1370.07	1.184E+08	3.070E-17	3.6345E-09	3.2492E+10	1.0000	0.0000
58000	748.9	1.089	0.90	30.3108	1436.06	1.241E+08	4.703E-17	5.8354E-09	2.1211E+10	1.0000	0.0000
60000	750.6	1.089	0.90	30.3108	1502.04	1.298E+08	7.295E-17	9.4674E-09	1.3675E+10	1.0000	0.0000
62000	752.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.131E-16	1.5323E-08	8.8204E+09	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.305E-20	0.0000E+00	7.6421E+13	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	2.563E-22	1.5779E-15	3.8926E+15	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	4.236E-22	5.2157E-15	2.3553E+15	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	7.705E-22	1.4233E-14	1.2947E+15	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	5.904E-22	1.4904E-14	1.6897E+15	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.340E-21	4.2889E-14	7.4471E+14	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	4.996E-21	1.9378E-13	1.9969E+14	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	1.738E-21	8.0516E-14	5.7384E+14	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	5.521E-21	2.9722E-13	1.8071E+14	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	1.478E-20	9.0673E-13	6.7515E+13	1.0000	0.0000
40000	636.8	1.089	0.90	30.3108	842.21	7.277E+07	4.701E-22	3.4204E-14	2.1223E+15	1.0000	0.0000
44000	635.5	1.089	0.90	30.3108	974.17	8.417E+07	8.074E-22	6.7959E-14	1.2355E+15	1.0000	0.0000
48000	636.0	1.089	0.90	30.3108	1106.14	9.557E+07	1.631E-21	1.5584E-13	6.1178E+14	1.0000	0.0000
52000	635.7	1.089	0.90	30.3108	1238.11	1.070E+08	3.064E-21	3.2781E-13	3.2554E+14	1.0000	0.0000
56000	635.6	1.089	0.90	30.3108	1370.07	1.184E+08	5.863E-21	6.9408E-13	1.7014E+14	1.0000	0.0000
58000	635.6	1.089	0.90	30.3108	1436.06	1.241E+08	8.147E-21	1.0109E-12	1.2245E+14	1.0000	0.0000
60000	635.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.132E-20	1.4691E-12	8.8123E+13	1.0000	0.0000
62000	635.7	1.089	0.90	30.3108	1568.02	1.355E+08	1.587E-20	2.1503E-12	6.2852E+13	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.1135	0.0599	0.0090	0.0002	0.0000	0.0000	0.0074				
8000	0.1801	0.0960	0.0144	0.0004	0.0000	0.0000	0.0119				
12000	0.2821	0.1541	0.0235	0.0006	0.0000	0.0000	0.0190				
16000	0.2160	0.1178	0.0187	0.0005	0.0000	0.0000	0.0147				
20000	0.3633	0.2063	0.0339	0.0009	0.0000	0.0000	0.0258				
24000	0.5960	0.3728	0.0676	0.0019	0.0000	0.0000	0.0471				
28000	0.3922	0.2276	0.0397	0.0012	0.0000	0.0000	0.0288				
32000	0.6224	0.3984	0.0762	0.0024	0.0000	0.0000	0.0509				
36000	0.8205	0.6145	0.1372	0.0045	0.0000	0.0000	0.0804				
40000	0.0436	0.0258	0.0056	0.0003	0.0000	0.0000	0.0035				
44000	0.0777	0.0459	0.0099	0.0006	0.0000	0.0000	0.0062				
48000	0.1346	0.0802	0.0174	0.0010	0.0000	0.0000	0.0108				
52000	0.2250	0.1361	0.0299	0.0017	0.0000	0.0000	0.0183				
56000	0.3623	0.2256	0.0507	0.0028	0.0000	0.0000	0.0305				
58000	0.4579	0.2921	0.0669	0.0036	0.0000	0.0000	0.0395				
60000	0.5521	0.3641	0.0859	0.0046	0.0000	0.0000	0.0495				
62000	0.6520	0.4507	0.1108	0.0060	0.0000	0.0000	0.0618				

Gas Gap Fractions: I-132											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300			cal/mol							
R	1.987			cal/mol-K							
Do/a2	0.61			1/sec							
lambda	8.4250E-05			1/sec							
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	2.726E-09	0.0000E+00	3.0910E+04	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	1.559E-09	9.5966E-03	5.4053E+04	1.0000	0.0128
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	4.107E-09	5.0579E-02	2.0512E+04	1.0000	0.0208
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.102E-08	2.0346E-01	7.6486E+03	1.0000	0.0339
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	6.087E-09	1.5365E-01	1.3842E+04	1.0000	0.0253
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	1.982E-08	6.3465E-01	4.2502E+03	1.0000	0.0453
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	7.417E-08	2.8771E+00	1.1359E+03	1.0000	0.0864
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	2.386E-08	1.1052E+00	3.5304E+03	1.0000	0.0496
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	8.519E-08	4.5866E+00	9.8898E+02	1.0000	0.0924
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	2.770E-07	1.6996E+01	3.0419E+02	1.0000	0.1621
40000	1385.9	1.089	1.10	37.0465	818.21	7.069E+07	1.217E-08	8.6028E-01	6.9232E+03	1.0000	0.0356
44000	1412.9	1.089	1.10	37.0465	926.19	8.002E+07	3.880E-08	3.1051E+00	2.1712E+03	1.0000	0.0630
48000	1452.7	1.089	1.10	37.0465	1034.16	8.935E+07	1.517E-07	1.3555E+01	5.5535E+02	1.0000	0.1219
52000	1481.3	1.089	1.10	37.0465	1142.13	9.868E+07	4.751E-07	4.6879E+01	1.7735E+02	1.0000	0.2084
56000	1511.0	1.089	1.10	37.0465	1250.10	1.080E+08	1.486E-06	1.6055E+02	5.6679E+01	1.0000	0.3456
58000	1537.1	1.089	1.10	37.0465	1304.09	1.127E+08	3.109E-06	3.5027E+02	2.7101E+01	1.0000	0.4656
60000	1548.5	1.089	1.10	37.0465	1358.08	1.173E+08	5.142E-06	6.0335E+02	1.6385E+01	1.0000	0.5585
62000	1570.8	1.089	1.10	37.0465	1412.06	1.220E+08	9.974E-06	1.2168E+03	8.4471E+00	1.0000	0.6832
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.339E-09	0.0000E+00	6.2902E+04	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	4.169E-10	2.5669E-03	2.0208E+05	1.0000	0.0067
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.094E-09	1.3466E-02	7.7041E+04	1.0000	0.0108
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	2.944E-09	5.4373E-02	2.8621E+04	1.0000	0.0176
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	1.673E-09	4.2237E-02	5.0353E+04	1.0000	0.0133
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	5.504E-09	1.7623E-01	1.5306E+04	1.0000	0.0241
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	2.109E-08	8.1816E-01	3.9943E+03	1.0000	0.0467
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	6.826E-09	3.1616E-01	1.2342E+04	1.0000	0.0268
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	2.480E-08	1.3354E+00	3.3968E+03	1.0000	0.0506
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	8.174E-08	5.0162E+00	1.0307E+03	1.0000	0.0905
40000	1326.8	1.089	1.10	37.0465	818.21	7.069E+07	3.779E-09	2.6714E-01	2.2295E+04	1.0000	0.0200
44000	1351.7	1.089	1.10	37.0465	926.19	8.002E+07	1.209E-08	9.6759E-01	6.9677E+03	1.0000	0.0355
48000	1388.9	1.089	1.10	37.0465	1034.16	8.935E+07	4.801E-08	4.2896E+00	1.7549E+03	1.0000	0.0699
52000	1415.3	1.089	1.10	37.0465	1142.13	9.868E+07	1.511E-07	1.4911E+01	5.5758E+02	1.0000	0.1217

56000	1443.5	1.089	1.10	37.0465	1250.10	1.080E+08	4.821E-07	5.2067E+01	1.7477E+02	1.0000	0.2098
58000	1468.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.025E-06	1.1553E+02	8.2168E+01	1.0000	0.2944
60000	1479.5	1.089	1.10	37.0465	1358.08	1.173E+08	1.719E-06	2.0167E+02	4.9020E+01	1.0000	0.3673
62000	1501.5	1.089	1.10	37.0465	1412.06	1.220E+08	3.424E-06	4.1775E+02	2.4605E+01	1.0000	0.4829
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	1.690E-10	0.0000E+00	4.9849E+05	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	9.120E-12	5.6150E-05	9.2383E+06	1.0000	0.0010
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	2.316E-11	2.8524E-04	3.6372E+06	1.0000	0.0016
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	6.225E-11	1.1499E-03	1.3533E+06	1.0000	0.0026
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	3.919E-11	9.8933E-04	2.1497E+06	1.0000	0.0020
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.307E-10	4.1857E-03	6.4444E+05	1.0000	0.0037
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	5.302E-10	2.0564E-02	1.5892E+05	1.0000	0.0075
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	1.798E-10	8.3272E-03	4.6858E+05	1.0000	0.0044
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	6.777E-10	3.6489E-02	1.2431E+05	1.0000	0.0085
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	2.302E-09	1.4128E-01	3.6595E+04	1.0000	0.0156
40000	1181.3	1.089	1.10	37.0465	818.21	7.069E+07	1.289E-10	9.1153E-03	6.5340E+05	1.0000	0.0037
44000	1201.2	1.089	1.10	37.0465	926.19	8.002E+07	4.147E-10	3.3184E-02	2.0316E+05	1.0000	0.0066
48000	1231.9	1.089	1.10	37.0465	1034.16	8.935E+07	1.703E-09	1.5219E-01	4.9464E+04	1.0000	0.0134
52000	1252.9	1.089	1.10	37.0465	1142.13	9.868E+07	5.395E-09	5.3240E-01	1.5616E+04	1.0000	0.0238
56000	1277.2	1.089	1.10	37.0465	1250.10	1.080E+08	1.810E-08	1.9550E+00	4.6546E+03	1.0000	0.0433
58000	1298.8	1.089	1.10	37.0465	1304.09	1.127E+08	4.039E-08	4.5513E+00	2.0857E+03	1.0000	0.0643
60000	1308.9	1.089	1.10	37.0465	1358.08	1.173E+08	6.967E-08	8.1751E+00	1.2092E+03	1.0000	0.0838
62000	1329.9	1.089	1.10	37.0465	1412.06	1.220E+08	1.502E-07	1.8320E+01	5.6107E+02	1.0000	0.1213
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	3.385E-12	0.0000E+00	2.4886E+07	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	6.309E-15	3.8844E-08	1.3354E+10	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	1.414E-14	1.7412E-07	5.9581E+09	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	3.571E-14	6.5964E-07	2.3591E+09	1.0000	0.0001
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	2.980E-14	7.5217E-07	2.8275E+09	1.0000	0.0001
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	9.620E-14	3.0801E-06	8.7575E+08	1.0000	0.0001
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	4.130E-13	1.6021E-05	2.0398E+08	1.0000	0.0002
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	1.680E-13	7.7827E-06	5.0137E+08	1.0000	0.0001
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	6.544E-13	3.5233E-05	1.2874E+08	1.0000	0.0003
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	2.238E-12	1.3735E-04	3.7640E+07	1.0000	0.0005
40000	979.2	1.089	1.10	37.0465	818.21	7.069E+07	2.236E-13	1.5806E-05	3.7682E+08	1.0000	0.0002
44000	992.0	1.089	1.10	37.0465	926.19	8.002E+07	6.972E-13	5.5795E-05	1.2083E+08	1.0000	0.0003
48000	1013.6	1.089	1.10	37.0465	1034.16	8.935E+07	2.941E-12	2.6283E-04	2.8642E+07	1.0000	0.0006
52000	1027.2	1.089	1.10	37.0465	1142.13	9.868E+07	9.135E-12	9.0142E-04	9.2230E+06	1.0000	0.0010
56000	1045.7	1.089	1.10	37.0465	1250.10	1.080E+08	3.300E-11	3.5648E-03	2.5527E+06	1.0000	0.0019
58000	1062.3	1.089	1.10	37.0465	1304.09	1.127E+08	7.899E-11	8.9002E-03	1.0666E+06	1.0000	0.0029
60000	1070.7	1.089	1.10	37.0465	1358.08	1.173E+08	1.436E-10	1.6849E-02	5.8672E+05	1.0000	0.0039
62000	1089.1	1.089	1.10	37.0465	1412.06	1.220E+08	3.543E-10	4.3223E-02	2.3781E+05	1.0000	0.0061

r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	3.224E-15	0.0000E+00	2.6129E+10	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	2.712E-20	1.6701E-13	3.1060E+15	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	4.020E-20	4.9508E-13	2.0955E+15	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	7.433E-20	1.3730E-12	1.1334E+15	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.105E-19	2.7891E-12	7.6254E+14	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	2.737E-19	8.7620E-12	3.0785E+14	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.073E-18	4.1607E-11	7.8544E+13	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	7.329E-19	3.3943E-11	1.1496E+14	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	2.551E-18	1.3737E-10	3.3021E+13	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	7.627E-18	4.6805E-10	1.1046E+13	1.0000	0.0000
40000	753.8	1.089	1.10	37.0465	818.21	7.069E+07	3.341E-18	2.3617E-10	2.5219E+13	1.0000	0.0000
44000	758.8	1.089	1.10	37.0465	926.19	8.002E+07	8.865E-18	7.0942E-10	9.5034E+12	1.0000	0.0000
48000	770.1	1.089	1.10	37.0465	1034.16	8.935E+07	3.459E-17	3.0909E-09	2.4355E+12	1.0000	0.0000
52000	775.6	1.089	1.10	37.0465	1142.13	9.868E+07	9.337E-17	9.2139E-09	9.0231E+11	1.0000	0.0000
56000	786.7	1.089	1.10	37.0465	1250.10	1.080E+08	3.495E-16	3.7745E-08	2.4108E+11	1.0000	0.0000
58000	797.4	1.089	1.10	37.0465	1304.09	1.127E+08	9.032E-16	1.0177E-07	9.3276E+10	1.0000	0.0000
60000	803.0	1.089	1.10	37.0465	1358.08	1.173E+08	1.725E-15	2.0244E-07	4.8832E+10	1.0000	0.0000
62000	816.6	1.089	1.10	37.0465	1412.06	1.220E+08	5.099E-15	6.2206E-07	1.6524E+10	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.305E-20	0.0000E+00	6.4540E+15	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	2.563E-22	1.5779E-15	3.2874E+17	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	4.236E-22	5.2157E-15	1.9891E+17	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	7.705E-22	1.4233E-14	1.0934E+17	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	5.904E-22	1.4904E-14	1.4270E+17	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.340E-21	4.2889E-14	6.2893E+16	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	4.996E-21	1.9378E-13	1.6865E+16	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	1.738E-21	8.0516E-14	4.8462E+16	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	5.521E-21	2.9722E-13	1.5261E+16	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	1.478E-20	9.0673E-13	5.7018E+15	1.0000	0.0000
40000	653.3	1.089	1.10	37.0465	818.21	7.069E+07	1.990E-21	1.4069E-13	4.2333E+16	1.0000	0.0000
44000	655.2	1.089	1.10	37.0465	926.19	8.002E+07	4.516E-21	3.6138E-13	1.8656E+16	1.0000	0.0000
48000	661.9	1.089	1.10	37.0465	1034.16	8.935E+07	1.530E-20	1.3668E-12	5.5076E+15	1.0000	0.0000
52000	664.1	1.089	1.10	37.0465	1142.13	9.868E+07	3.543E-20	3.4965E-12	2.3777E+15	1.0000	0.0000
56000	671.5	1.089	1.10	37.0465	1250.10	1.080E+08	1.251E-19	1.3515E-11	6.7332E+14	1.0000	0.0000
58000	679.2	1.089	1.10	37.0465	1304.09	1.127E+08	3.214E-19	3.6209E-11	2.6216E+14	1.0000	0.0000
60000	682.7	1.089	1.10	37.0465	1358.08	1.173E+08	5.877E-19	6.8956E-11	1.4336E+14	1.0000	0.0000
62000	688.0	1.089	1.10	37.0465	1412.06	1.220E+08	1.231E-18	1.5020E-10	6.8433E+13	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0128	0.0067	0.0010	0.0000	0.0000	0.0000	0.0008				

8000	0.0208	0.0108	0.0016	0.0000	0.0000	0.0000	0.0013				
12000	0.0339	0.0176	0.0026	0.0001	0.0000	0.0000	0.0022				
16000	0.0253	0.0133	0.0020	0.0001	0.0000	0.0000	0.0017				
20000	0.0453	0.0241	0.0037	0.0001	0.0000	0.0000	0.0030				
24000	0.0864	0.0467	0.0075	0.0002	0.0000	0.0000	0.0059				
28000	0.0496	0.0268	0.0044	0.0001	0.0000	0.0000	0.0034				
32000	0.0924	0.0506	0.0085	0.0003	0.0000	0.0000	0.0064				
36000	0.1621	0.0905	0.0156	0.0005	0.0000	0.0000	0.0115				
40000	0.0356	0.0200	0.0037	0.0002	0.0000	0.0000	0.0026				
44000	0.0630	0.0355	0.0066	0.0003	0.0000	0.0000	0.0046				
48000	0.1219	0.0699	0.0134	0.0006	0.0000	0.0000	0.0091				
52000	0.2084	0.1217	0.0238	0.0010	0.0000	0.0000	0.0159				
56000	0.3456	0.2098	0.0433	0.0019	0.0000	0.0000	0.0276				
58000	0.4656	0.2944	0.0643	0.0029	0.0000	0.0000	0.0392				
60000	0.5585	0.3673	0.0838	0.0039	0.0000	0.0000	0.0493				
62000	0.6832	0.4829	0.1213	0.0061	0.0000	0.0000	0.0664				

Gas Gap Fractions: I-132											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300		cal/mol								
R	1.987		cal/mol-K								
Do/a2	0.61		1/sec								
lambda	8.4250E-05		1/sec								
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	2.726E-09	0.0000E+00	3.0910E+04	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	1.559E-09	9.5966E-03	5.4053E+04	1.0000	0.0128
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	4.107E-09	5.0579E-02	2.0512E+04	1.0000	0.0208
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.102E-08	2.0346E-01	7.6486E+03	1.0000	0.0339
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	6.087E-09	1.5365E-01	1.3842E+04	1.0000	0.0253
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	1.982E-08	6.3465E-01	4.2502E+03	1.0000	0.0453
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	7.417E-08	2.8771E+00	1.1359E+03	1.0000	0.0864
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	2.386E-08	1.1052E+00	3.5304E+03	1.0000	0.0496
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	8.519E-08	4.5866E+00	9.8898E+02	1.0000	0.0924
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	2.770E-07	1.6996E+01	3.0419E+02	1.0000	0.1621
40000	1201.7	1.089	0.90	30.3108	842.21	7.277E+07	2.175E-10	1.5828E-02	3.8734E+05	1.0000	0.0048
44000	1222.7	1.089	0.90	30.3108	974.17	8.417E+07	7.064E-10	5.9457E-02	1.1927E+05	1.0000	0.0087
48000	1242.9	1.089	0.90	30.3108	1106.14	9.557E+07	2.212E-09	2.1142E-01	3.8085E+04	1.0000	0.0153
52000	1262.0	1.089	0.90	30.3108	1238.11	1.070E+08	6.652E-09	7.1158E-01	1.2665E+04	1.0000	0.0264
56000	1281.0	1.089	0.90	30.3108	1370.07	1.184E+08	1.970E-08	2.3316E+00	4.2774E+03	1.0000	0.0452
58000	1292.5	1.089	0.90	30.3108	1436.06	1.241E+08	3.524E-08	4.3721E+00	2.3909E+03	1.0000	0.0601
60000	1301.0	1.089	0.90	30.3108	1502.04	1.298E+08	5.885E-08	7.6373E+00	1.4316E+03	1.0000	0.0772
62000	1310.3	1.089	0.90	30.3108	1568.02	1.355E+08	9.973E-08	1.3511E+01	8.4480E+02	1.0000	0.0997
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.339E-09	0.0000E+00	6.2902E+04	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	4.169E-10	2.5669E-03	2.0208E+05	1.0000	0.0067
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.094E-09	1.3466E-02	7.7041E+04	1.0000	0.0108
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	2.944E-09	5.4373E-02	2.8621E+04	1.0000	0.0176
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	1.673E-09	4.2237E-02	5.0353E+04	1.0000	0.0133
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	5.504E-09	1.7623E-01	1.5306E+04	1.0000	0.0241
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	2.109E-08	8.1816E-01	3.9943E+03	1.0000	0.0467
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	6.826E-09	3.1616E-01	1.2342E+04	1.0000	0.0268
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	2.480E-08	1.3354E+00	3.3968E+03	1.0000	0.0506
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	8.174E-08	5.0162E+00	1.0307E+03	1.0000	0.0905
40000	1160.8	1.089	0.90	30.3108	842.21	7.277E+07	7.484E-11	5.4460E-03	1.1257E+06	1.0000	0.0028
44000	1180.1	1.089	0.90	30.3108	974.17	8.417E+07	2.413E-10	2.0307E-02	3.4919E+05	1.0000	0.0051
48000	1198.8	1.089	0.90	30.3108	1106.14	9.557E+07	7.535E-10	7.2015E-02	1.1181E+05	1.0000	0.0089

52000	1216.5	1.089	0.90	30.3108	1238.11	1.070E+08	2.263E-09	2.4204E-01	3.7236E+04	1.0000	0.0155
56000	1234.1	1.089	0.90	30.3108	1370.07	1.184E+08	6.692E-09	7.9221E-01	1.2589E+04	1.0000	0.0265
58000	1244.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.193E-08	1.4796E+00	7.0649E+03	1.0000	0.0353
60000	1252.5	1.089	0.90	30.3108	1502.04	1.298E+08	1.993E-08	2.5858E+00	4.2283E+03	1.0000	0.0454
62000	1261.2	1.089	0.90	30.3108	1568.02	1.355E+08	3.383E-08	4.5831E+00	2.4904E+03	1.0000	0.0589
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	1.690E-10	0.0000E+00	4.9849E+05	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	9.120E-12	5.6150E-05	9.2383E+06	1.0000	0.0010
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	2.316E-11	2.8524E-04	3.6372E+06	1.0000	0.0016
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	6.225E-11	1.1499E-03	1.3533E+06	1.0000	0.0026
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	3.919E-11	9.8933E-04	2.1497E+06	1.0000	0.0020
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.307E-10	4.1857E-03	6.4444E+05	1.0000	0.0037
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	5.302E-10	2.0564E-02	1.5892E+05	1.0000	0.0075
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	1.798E-10	8.3272E-03	4.6858E+05	1.0000	0.0044
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	6.777E-10	3.6489E-02	1.2431E+05	1.0000	0.0085
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	2.302E-09	1.4128E-01	3.6595E+04	1.0000	0.0156
40000	1057.8	1.089	0.90	30.3108	842.21	7.277E+07	3.537E-12	2.5735E-04	2.3822E+07	1.0000	0.0006
44000	1072.8	1.089	0.90	30.3108	974.17	8.417E+07	1.105E-11	9.2966E-04	7.6277E+06	1.0000	0.0011
48000	1087.9	1.089	0.90	30.3108	1106.14	9.557E+07	3.415E-11	3.2634E-03	2.4673E+06	1.0000	0.0019
52000	1101.9	1.089	0.90	30.3108	1238.11	1.070E+08	1.008E-10	1.0787E-02	8.3552E+05	1.0000	0.0033
56000	1116.0	1.089	0.90	30.3108	1370.07	1.184E+08	2.955E-10	3.4976E-02	2.8514E+05	1.0000	0.0056
58000	1124.1	1.089	0.90	30.3108	1436.06	1.241E+08	5.193E-10	6.4430E-02	1.6224E+05	1.0000	0.0074
60000	1130.6	1.089	0.90	30.3108	1502.04	1.298E+08	8.691E-10	1.1279E-01	9.6936E+04	1.0000	0.0096
62000	1137.6	1.089	0.90	30.3108	1568.02	1.355E+08	1.472E-09	1.9944E-01	5.7230E+04	1.0000	0.0125
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	3.385E-12	0.0000E+00	2.4886E+07	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	6.309E-15	3.8844E-08	1.3354E+10	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	1.414E-14	1.7412E-07	5.9581E+09	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	3.571E-14	6.5964E-07	2.3591E+09	1.0000	0.0001
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	2.980E-14	7.5217E-07	2.8275E+09	1.0000	0.0001
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	9.620E-14	3.0801E-06	8.7575E+08	1.0000	0.0001
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	4.130E-13	1.6021E-05	2.0398E+08	1.0000	0.0002
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	1.680E-13	7.7827E-06	5.0137E+08	1.0000	0.0001
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	6.544E-13	3.5233E-05	1.2874E+08	1.0000	0.0003
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	2.238E-12	1.3735E-04	3.7640E+07	1.0000	0.0005
40000	909.4	1.089	0.90	30.3108	842.21	7.277E+07	1.291E-14	9.3908E-07	6.5283E+09	1.0000	0.0000
44000	918.3	1.089	0.90	30.3108	974.17	8.417E+07	3.672E-14	3.0906E-06	2.2944E+09	1.0000	0.0001
48000	928.3	1.089	0.90	30.3108	1106.14	9.557E+07	1.086E-13	1.0383E-05	7.7550E+08	1.0000	0.0001
52000	937.2	1.089	0.90	30.3108	1238.11	1.070E+08	3.043E-13	3.2556E-05	2.7683E+08	1.0000	0.0002
56000	946.3	1.089	0.90	30.3108	1370.07	1.184E+08	8.535E-13	1.0104E-04	9.8708E+07	1.0000	0.0003
58000	951.2	1.089	0.90	30.3108	1436.06	1.241E+08	1.446E-12	1.7938E-04	5.8273E+07	1.0000	0.0004
60000	955.5	1.089	0.90	30.3108	1502.04	1.298E+08	2.386E-12	3.0968E-04	3.5306E+07	1.0000	0.0005

62000	960.1	1.089	0.90	30.3108	1568.02	1.355E+08	3.979E-12	5.3912E-04	2.1172E+07	1.0000	0.0007
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	3.224E-15	0.0000E+00	2.6129E+10	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	2.712E-20	1.6701E-13	3.1060E+15	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	4.020E-20	4.9508E-13	2.0955E+15	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	7.433E-20	1.3730E-12	1.1334E+15	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.105E-19	2.7891E-12	7.6254E+14	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	2.737E-19	8.7620E-12	3.0785E+14	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.073E-18	4.1607E-11	7.8544E+13	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	7.329E-19	3.3943E-11	1.1496E+14	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	2.551E-18	1.3737E-10	3.3021E+13	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	7.627E-18	4.6805E-10	1.1046E+13	1.0000	0.0000
40000	735.0	1.089	0.90	30.3108	842.21	7.277E+07	9.719E-19	7.0722E-11	8.6686E+13	1.0000	0.0000
44000	737.2	1.089	0.90	30.3108	974.17	8.417E+07	2.175E-18	1.8308E-10	3.8732E+13	1.0000	0.0000
48000	741.2	1.089	0.90	30.3108	1106.14	9.557E+07	5.481E-18	5.2386E-10	1.5370E+13	1.0000	0.0000
52000	744.2	1.089	0.90	30.3108	1238.11	1.070E+08	1.290E-17	1.3798E-09	6.5315E+12	1.0000	0.0000
56000	747.4	1.089	0.90	30.3108	1370.07	1.184E+08	3.070E-17	3.6345E-09	2.7440E+12	1.0000	0.0000
58000	748.9	1.089	0.90	30.3108	1436.06	1.241E+08	4.703E-17	5.8354E-09	1.7914E+12	1.0000	0.0000
60000	750.6	1.089	0.90	30.3108	1502.04	1.298E+08	7.295E-17	9.4674E-09	1.1549E+12	1.0000	0.0000
62000	752.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.131E-16	1.5323E-08	7.4491E+11	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.305E-20	0.0000E+00	6.4540E+15	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	2.563E-22	1.5779E-15	3.2874E+17	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	4.236E-22	5.2157E-15	1.9891E+17	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	7.705E-22	1.4233E-14	1.0934E+17	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	5.904E-22	1.4904E-14	1.4270E+17	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.340E-21	4.2889E-14	6.2893E+16	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	4.996E-21	1.9378E-13	1.6865E+16	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	1.738E-21	8.0516E-14	4.8462E+16	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	5.521E-21	2.9722E-13	1.5261E+16	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	1.478E-20	9.0673E-13	5.7018E+15	1.0000	0.0000
40000	636.8	1.089	0.90	30.3108	842.21	7.277E+07	4.701E-22	3.4204E-14	1.7923E+17	1.0000	0.0000
44000	635.5	1.089	0.90	30.3108	974.17	8.417E+07	8.074E-22	6.7959E-14	1.0434E+17	1.0000	0.0000
48000	636.0	1.089	0.90	30.3108	1106.14	9.557E+07	1.631E-21	1.5584E-13	5.1666E+16	1.0000	0.0000
52000	635.7	1.089	0.90	30.3108	1238.11	1.070E+08	3.064E-21	3.2781E-13	2.7493E+16	1.0000	0.0000
56000	635.6	1.089	0.90	30.3108	1370.07	1.184E+08	5.863E-21	6.9408E-13	1.4369E+16	1.0000	0.0000
58000	635.6	1.089	0.90	30.3108	1436.06	1.241E+08	8.147E-21	1.0109E-12	1.0341E+16	1.0000	0.0000
60000	635.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.132E-20	1.4691E-12	7.4422E+15	1.0000	0.0000
62000	635.7	1.089	0.90	30.3108	1568.02	1.355E+08	1.587E-20	2.1503E-12	5.3080E+15	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0128	0.0067	0.0010	0.0000	0.0000	0.0000	0.0008				
8000	0.0208	0.0108	0.0016	0.0000	0.0000	0.0000	0.0013				
12000	0.0339	0.0176	0.0026	0.0001	0.0000	0.0000	0.0022				
16000	0.0253	0.0133	0.0020	0.0001	0.0000	0.0000	0.0017				
20000	0.0453	0.0241	0.0037	0.0001	0.0000	0.0000	0.0030				
24000	0.0864	0.0467	0.0075	0.0002	0.0000	0.0000	0.0059				
28000	0.0496	0.0268	0.0044	0.0001	0.0000	0.0000	0.0034				
32000	0.0924	0.0506	0.0085	0.0003	0.0000	0.0000	0.0064				
36000	0.1621	0.0905	0.0156	0.0005	0.0000	0.0000	0.0115				
40000	0.0048	0.0028	0.0006	0.0000	0.0000	0.0000	0.0004				
44000	0.0087	0.0051	0.0011	0.0001	0.0000	0.0000	0.0007				
48000	0.0153	0.0089	0.0019	0.0001	0.0000	0.0000	0.0012				
52000	0.0264	0.0155	0.0033	0.0002	0.0000	0.0000	0.0021				
56000	0.0452	0.0265	0.0056	0.0003	0.0000	0.0000	0.0035				
58000	0.0601	0.0353	0.0074	0.0004	0.0000	0.0000	0.0047				
60000	0.0772	0.0454	0.0096	0.0005	0.0000	0.0000	0.0061				
62000	0.0997	0.0589	0.0125	0.0007	0.0000	0.0000	0.0079				

Gas Gap Fractions: I-133											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300		cal/mol								
R	1.987		cal/mol-K								
Do/a2	0.61		1/sec								
lambda	9.2110E-06		1/sec								
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	2.726E-09	0.0000E+00	3.3794E+03	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	1.559E-09	9.5966E-03	5.9096E+03	1.0000	0.0385
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	4.107E-09	5.0579E-02	2.2425E+03	1.0000	0.0620
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.102E-08	2.0346E-01	8.3622E+02	1.0000	0.1002
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	6.087E-09	1.5365E-01	1.5133E+03	1.0000	0.0751
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	1.982E-08	6.3465E-01	4.6467E+02	1.0000	0.1327
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	7.417E-08	2.8771E+00	1.2418E+02	1.0000	0.2451
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	2.386E-08	1.1052E+00	3.8598E+02	1.0000	0.1449
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	8.519E-08	4.5866E+00	1.0812E+02	1.0000	0.2608
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	2.770E-07	1.6996E+01	3.3256E+01	1.0000	0.4300
40000	1385.9	1.089	1.10	37.0465	818.21	7.069E+07	1.217E-08	8.6028E-01	7.5691E+02	1.0000	0.1051
44000	1412.9	1.089	1.10	37.0465	926.19	8.002E+07	3.880E-08	3.1051E+00	2.3738E+02	1.0000	0.1821
48000	1452.7	1.089	1.10	37.0465	1034.16	8.935E+07	1.517E-07	1.3555E+01	6.0716E+01	1.0000	0.3356
52000	1481.3	1.089	1.10	37.0465	1142.13	9.868E+07	4.751E-07	4.6879E+01	1.9389E+01	1.0000	0.5268
56000	1511.0	1.089	1.10	37.0465	1250.10	1.080E+08	1.486E-06	1.6055E+02	6.1967E+00	1.0000	0.7377
58000	1537.1	1.089	1.10	37.0465	1304.09	1.127E+08	3.109E-06	3.5027E+02	2.9629E+00	1.0000	0.8455
60000	1548.5	1.089	1.10	37.0465	1358.08	1.173E+08	5.142E-06	6.0335E+02	1.7913E+00	1.0000	0.8979
62000	1570.8	1.089	1.10	37.0465	1412.06	1.220E+08	9.974E-06	1.2168E+03	9.2351E-01	1.0000	0.9434
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.339E-09	0.0000E+00	6.8771E+03	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	4.169E-10	2.5669E-03	2.2094E+04	1.0000	0.0200
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.094E-09	1.3466E-02	8.4228E+03	1.0000	0.0323
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	2.944E-09	5.4373E-02	3.1291E+03	1.0000	0.0527
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	1.673E-09	4.2237E-02	5.5051E+03	1.0000	0.0399
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	5.504E-09	1.7623E-01	1.6734E+03	1.0000	0.0715
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	2.109E-08	8.1816E-01	4.3669E+02	1.0000	0.1367
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	6.826E-09	3.1616E-01	1.3493E+03	1.0000	0.0794
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	2.480E-08	1.3354E+00	3.7137E+02	1.0000	0.1476
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	8.174E-08	5.0162E+00	1.1268E+02	1.0000	0.2560
40000	1326.8	1.089	1.10	37.0465	818.21	7.069E+07	3.779E-09	2.6714E-01	2.4375E+03	1.0000	0.0595
44000	1351.7	1.089	1.10	37.0465	926.19	8.002E+07	1.209E-08	9.6759E-01	7.6178E+02	1.0000	0.1048
48000	1388.9	1.089	1.10	37.0465	1034.16	8.935E+07	4.801E-08	4.2896E+00	1.9186E+02	1.0000	0.2009

52000	1415.3	1.089	1.10	37.0465	1142.13	9.868E+07	1.511E-07	1.4911E+01	6.0960E+01	1.0000	0.3350
56000	1443.5	1.089	1.10	37.0465	1250.10	1.080E+08	4.821E-07	5.2067E+01	1.9107E+01	1.0000	0.5295
58000	1468.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.025E-06	1.1553E+02	8.9834E+00	1.0000	0.6720
60000	1479.5	1.089	1.10	37.0465	1358.08	1.173E+08	1.719E-06	2.0167E+02	5.3593E+00	1.0000	0.7616
62000	1501.5	1.089	1.10	37.0465	1412.06	1.220E+08	3.424E-06	4.1775E+02	2.6900E+00	1.0000	0.8569
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	1.690E-10	0.0000E+00	5.4500E+04	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	9.120E-12	5.6150E-05	1.0100E+06	1.0000	0.0030
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	2.316E-11	2.8524E-04	3.9765E+05	1.0000	0.0047
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	6.225E-11	1.1499E-03	1.4796E+05	1.0000	0.0078
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	3.919E-11	9.8933E-04	2.3503E+05	1.0000	0.0062
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.307E-10	4.1857E-03	7.0456E+04	1.0000	0.0113
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	5.302E-10	2.0564E-02	1.7374E+04	1.0000	0.0226
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	1.798E-10	8.3272E-03	5.1230E+04	1.0000	0.0132
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	6.777E-10	3.6489E-02	1.3591E+04	1.0000	0.0255
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	2.302E-09	1.4128E-01	4.0009E+03	1.0000	0.0467
40000	1181.3	1.089	1.10	37.0465	818.21	7.069E+07	1.289E-10	9.1153E-03	7.1436E+04	1.0000	0.0112
44000	1201.2	1.089	1.10	37.0465	926.19	8.002E+07	4.147E-10	3.3184E-02	2.2212E+04	1.0000	0.0200
48000	1231.9	1.089	1.10	37.0465	1034.16	8.935E+07	1.703E-09	1.5219E-01	5.4078E+03	1.0000	0.0402
52000	1252.9	1.089	1.10	37.0465	1142.13	9.868E+07	5.395E-09	5.3240E-01	1.7073E+03	1.0000	0.0708
56000	1277.2	1.089	1.10	37.0465	1250.10	1.080E+08	1.810E-08	1.9550E+00	5.0888E+02	1.0000	0.1271
58000	1298.8	1.089	1.10	37.0465	1304.09	1.127E+08	4.039E-08	4.5513E+00	2.2803E+02	1.0000	0.1855
60000	1308.9	1.089	1.10	37.0465	1358.08	1.173E+08	6.967E-08	8.1751E+00	1.3221E+02	1.0000	0.2382
62000	1329.9	1.089	1.10	37.0465	1412.06	1.220E+08	1.502E-07	1.8320E+01	6.1341E+01	1.0000	0.3341
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	3.385E-12	0.0000E+00	2.7208E+06	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	6.309E-15	3.8844E-08	1.4600E+09	1.0000	0.0001
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	1.414E-14	1.7412E-07	6.5140E+08	1.0000	0.0001
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	3.571E-14	6.5964E-07	2.5792E+08	1.0000	0.0002
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	2.980E-14	7.5217E-07	3.0913E+08	1.0000	0.0002
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	9.620E-14	3.0801E-06	9.5745E+07	1.0000	0.0003
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	4.130E-13	1.6021E-05	2.2301E+07	1.0000	0.0006
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	1.680E-13	7.7827E-06	5.4814E+07	1.0000	0.0004
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	6.544E-13	3.5233E-05	1.4075E+07	1.0000	0.0008
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	2.238E-12	1.3735E-04	4.1152E+06	1.0000	0.0015
40000	979.2	1.089	1.10	37.0465	818.21	7.069E+07	2.236E-13	1.5806E-05	4.1197E+07	1.0000	0.0005
44000	992.0	1.089	1.10	37.0465	926.19	8.002E+07	6.972E-13	5.5795E-05	1.3211E+07	1.0000	0.0008
48000	1013.6	1.089	1.10	37.0465	1034.16	8.935E+07	2.941E-12	2.6283E-04	3.1314E+06	1.0000	0.0017
52000	1027.2	1.089	1.10	37.0465	1142.13	9.868E+07	9.135E-12	9.0142E-04	1.0083E+06	1.0000	0.0030
56000	1045.7	1.089	1.10	37.0465	1250.10	1.080E+08	3.300E-11	3.5648E-03	2.7908E+05	1.0000	0.0057
58000	1062.3	1.089	1.10	37.0465	1304.09	1.127E+08	7.899E-11	8.9002E-03	1.1661E+05	1.0000	0.0088
60000	1070.7	1.089	1.10	37.0465	1358.08	1.173E+08	1.436E-10	1.6849E-02	6.4145E+04	1.0000	0.0118

62000	1089.1	1.089	1.10	37.0465	1412.06	1.220E+08	3.543E-10	4.3223E-02	2.5999E+04	1.0000	0.0185
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	3.224E-15	0.0000E+00	2.8566E+09	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	2.712E-20	1.6701E-13	3.3958E+14	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	4.020E-20	4.9508E-13	2.2910E+14	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	7.433E-20	1.3730E-12	1.2392E+14	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.105E-19	2.7891E-12	8.3368E+13	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	2.737E-19	8.7620E-12	3.3657E+13	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.073E-18	4.1607E-11	8.5872E+12	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	7.329E-19	3.3943E-11	1.2568E+13	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	2.551E-18	1.3737E-10	3.6101E+12	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	7.627E-18	4.6805E-10	1.2076E+12	1.0000	0.0000
40000	753.8	1.089	1.10	37.0465	818.21	7.069E+07	3.341E-18	2.3617E-10	2.7572E+12	1.0000	0.0000
44000	758.8	1.089	1.10	37.0465	926.19	8.002E+07	8.865E-18	7.0942E-10	1.0390E+12	1.0000	0.0000
48000	770.1	1.089	1.10	37.0465	1034.16	8.935E+07	3.459E-17	3.0909E-09	2.6627E+11	1.0000	0.0000
52000	775.6	1.089	1.10	37.0465	1142.13	9.868E+07	9.337E-17	9.2139E-09	9.8649E+10	1.0000	0.0000
56000	786.7	1.089	1.10	37.0465	1250.10	1.080E+08	3.495E-16	3.7745E-08	2.6357E+10	1.0000	0.0000
58000	797.4	1.089	1.10	37.0465	1304.09	1.127E+08	9.032E-16	1.0177E-07	1.0198E+10	1.0000	0.0000
60000	803.0	1.089	1.10	37.0465	1358.08	1.173E+08	1.725E-15	2.0244E-07	5.3388E+09	1.0000	0.0000
62000	816.6	1.089	1.10	37.0465	1412.06	1.220E+08	5.099E-15	6.2206E-07	1.8065E+09	1.0000	0.0001
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.305E-20	0.0000E+00	7.0561E+14	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	2.563E-22	1.5779E-15	3.5941E+16	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	4.236E-22	5.2157E-15	2.1747E+16	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	7.705E-22	1.4233E-14	1.1954E+16	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	5.904E-22	1.4904E-14	1.5601E+16	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.340E-21	4.2889E-14	6.8760E+15	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	4.996E-21	1.9378E-13	1.8438E+15	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	1.738E-21	8.0516E-14	5.2984E+15	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	5.521E-21	2.9722E-13	1.6685E+15	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	1.478E-20	9.0673E-13	6.2338E+14	1.0000	0.0000
40000	653.3	1.089	1.10	37.0465	818.21	7.069E+07	1.990E-21	1.4069E-13	4.6282E+15	1.0000	0.0000
44000	655.2	1.089	1.10	37.0465	926.19	8.002E+07	4.516E-21	3.6138E-13	2.0396E+15	1.0000	0.0000
48000	661.9	1.089	1.10	37.0465	1034.16	8.935E+07	1.530E-20	1.3668E-12	6.0215E+14	1.0000	0.0000
52000	664.1	1.089	1.10	37.0465	1142.13	9.868E+07	3.543E-20	3.4965E-12	2.5995E+14	1.0000	0.0000
56000	671.5	1.089	1.10	37.0465	1250.10	1.080E+08	1.251E-19	1.3515E-11	7.3613E+13	1.0000	0.0000
58000	679.2	1.089	1.10	37.0465	1304.09	1.127E+08	3.214E-19	3.6209E-11	2.8662E+13	1.0000	0.0000
60000	682.7	1.089	1.10	37.0465	1358.08	1.173E+08	5.877E-19	6.8956E-11	1.5674E+13	1.0000	0.0000
62000	688.0	1.089	1.10	37.0465	1412.06	1.220E+08	1.231E-18	1.5020E-10	7.4817E+12	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0385	0.0200	0.0030	0.0001	0.0000	0.0000	0.0025				
8000	0.0620	0.0323	0.0047	0.0001	0.0000	0.0000	0.0040				
12000	0.1002	0.0527	0.0078	0.0002	0.0000	0.0000	0.0065				
16000	0.0751	0.0399	0.0062	0.0002	0.0000	0.0000	0.0050				
20000	0.1327	0.0715	0.0113	0.0003	0.0000	0.0000	0.0089				
24000	0.2451	0.1367	0.0226	0.0006	0.0000	0.0000	0.0172				
28000	0.1449	0.0794	0.0132	0.0004	0.0000	0.0000	0.0100				
32000	0.2608	0.1476	0.0255	0.0008	0.0000	0.0000	0.0187				
36000	0.4300	0.2560	0.0467	0.0015	0.0000	0.0000	0.0326				
40000	0.1051	0.0595	0.0112	0.0005	0.0000	0.0000	0.0077				
44000	0.1821	0.1048	0.0200	0.0008	0.0000	0.0000	0.0136				
48000	0.3356	0.2009	0.0402	0.0017	0.0000	0.0000	0.0263				
52000	0.5268	0.3350	0.0708	0.0030	0.0000	0.0000	0.0441				
56000	0.7377	0.5295	0.1271	0.0057	0.0000	0.0000	0.0714				
58000	0.8455	0.6720	0.1855	0.0088	0.0000	0.0000	0.0940				
60000	0.8979	0.7616	0.2382	0.0118	0.0000	0.0000	0.1109				
62000	0.9434	0.8569	0.3341	0.0185	0.0001	0.0000	0.1359				

Gas Gap Fractions: I-133											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300		cal/mol								
R	1.987		cal/mol-K								
Do/a2	0.61		1/sec								
lambda	9.2110E-06		1/sec								
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	2.726E-09	0.0000E+00	3.3794E+03	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	1.559E-09	9.5966E-03	5.9096E+03	1.0000	0.0385
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	4.107E-09	5.0579E-02	2.2425E+03	1.0000	0.0620
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.102E-08	2.0346E-01	8.3622E+02	1.0000	0.1002
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	6.087E-09	1.5365E-01	1.5133E+03	1.0000	0.0751
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	1.982E-08	6.3465E-01	4.6467E+02	1.0000	0.1327
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	7.417E-08	2.8771E+00	1.2418E+02	1.0000	0.2451
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	2.386E-08	1.1052E+00	3.8598E+02	1.0000	0.1449
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	8.519E-08	4.5866E+00	1.0812E+02	1.0000	0.2608
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	2.770E-07	1.6996E+01	3.3256E+01	1.0000	0.4300
40000	1201.7	1.089	0.90	30.3108	842.21	7.277E+07	2.175E-10	1.5828E-02	4.2347E+04	1.0000	0.0145
44000	1222.7	1.089	0.90	30.3108	974.17	8.417E+07	7.064E-10	5.9457E-02	1.3039E+04	1.0000	0.0260
48000	1242.9	1.089	0.90	30.3108	1106.14	9.557E+07	2.212E-09	2.1142E-01	4.1638E+03	1.0000	0.0458
52000	1262.0	1.089	0.90	30.3108	1238.11	1.070E+08	6.652E-09	7.1158E-01	1.3847E+03	1.0000	0.0785
56000	1281.0	1.089	0.90	30.3108	1370.07	1.184E+08	1.970E-08	2.3316E+00	4.6764E+02	1.0000	0.1323
58000	1292.5	1.089	0.90	30.3108	1436.06	1.241E+08	3.524E-08	4.3721E+00	2.6140E+02	1.0000	0.1741
60000	1301.0	1.089	0.90	30.3108	1502.04	1.298E+08	5.885E-08	7.6373E+00	1.5652E+02	1.0000	0.2206
62000	1310.3	1.089	0.90	30.3108	1568.02	1.355E+08	9.973E-08	1.3511E+01	9.2362E+01	1.0000	0.2797
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.339E-09	0.0000E+00	6.8771E+03	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	4.169E-10	2.5669E-03	2.2094E+04	1.0000	0.0200
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.094E-09	1.3466E-02	8.4228E+03	1.0000	0.0323
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	2.944E-09	5.4373E-02	3.1291E+03	1.0000	0.0527
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	1.673E-09	4.2237E-02	5.5051E+03	1.0000	0.0399
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	5.504E-09	1.7623E-01	1.6734E+03	1.0000	0.0715
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	2.109E-08	8.1816E-01	4.3669E+02	1.0000	0.1367
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	6.826E-09	3.1616E-01	1.3493E+03	1.0000	0.0794
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	2.480E-08	1.3354E+00	3.7137E+02	1.0000	0.1476
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	8.174E-08	5.0162E+00	1.1268E+02	1.0000	0.2560
40000	1160.8	1.089	0.90	30.3108	842.21	7.277E+07	7.484E-11	5.4460E-03	1.2307E+05	1.0000	0.0085
44000	1180.1	1.089	0.90	30.3108	974.17	8.417E+07	2.413E-10	2.0307E-02	3.8177E+04	1.0000	0.0153
48000	1198.8	1.089	0.90	30.3108	1106.14	9.557E+07	7.535E-10	7.2015E-02	1.2224E+04	1.0000	0.0269

52000	1216.5	1.089	0.90	30.3108	1238.11	1.070E+08	2.263E-09	2.4204E-01	4.0710E+03	1.0000	0.0463
56000	1234.1	1.089	0.90	30.3108	1370.07	1.184E+08	6.692E-09	7.9221E-01	1.3763E+03	1.0000	0.0787
58000	1244.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.193E-08	1.4796E+00	7.7240E+02	1.0000	0.1041
60000	1252.5	1.089	0.90	30.3108	1502.04	1.298E+08	1.993E-08	2.5858E+00	4.6227E+02	1.0000	0.1330
62000	1261.2	1.089	0.90	30.3108	1568.02	1.355E+08	3.383E-08	4.5831E+00	2.7228E+02	1.0000	0.1708
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	1.690E-10	0.0000E+00	5.4500E+04	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	9.120E-12	5.6150E-05	1.0100E+06	1.0000	0.0030
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	2.316E-11	2.8524E-04	3.9765E+05	1.0000	0.0047
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	6.225E-11	1.1499E-03	1.4796E+05	1.0000	0.0078
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	3.919E-11	9.8933E-04	2.3503E+05	1.0000	0.0062
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.307E-10	4.1857E-03	7.0456E+04	1.0000	0.0113
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	5.302E-10	2.0564E-02	1.7374E+04	1.0000	0.0226
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	1.798E-10	8.3272E-03	5.1230E+04	1.0000	0.0132
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	6.777E-10	3.6489E-02	1.3591E+04	1.0000	0.0255
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	2.302E-09	1.4128E-01	4.0009E+03	1.0000	0.0467
40000	1057.8	1.089	0.90	30.3108	842.21	7.277E+07	3.537E-12	2.5735E-04	2.6045E+06	1.0000	0.0019
44000	1072.8	1.089	0.90	30.3108	974.17	8.417E+07	1.105E-11	9.2966E-04	8.3393E+05	1.0000	0.0033
48000	1087.9	1.089	0.90	30.3108	1106.14	9.557E+07	3.415E-11	3.2634E-03	2.6975E+05	1.0000	0.0058
52000	1101.9	1.089	0.90	30.3108	1238.11	1.070E+08	1.008E-10	1.0787E-02	9.1347E+04	1.0000	0.0099
56000	1116.0	1.089	0.90	30.3108	1370.07	1.184E+08	2.955E-10	3.4976E-02	3.1174E+04	1.0000	0.0169
58000	1124.1	1.089	0.90	30.3108	1436.06	1.241E+08	5.193E-10	6.4430E-02	1.7738E+04	1.0000	0.0224
60000	1130.6	1.089	0.90	30.3108	1502.04	1.298E+08	8.691E-10	1.1279E-01	1.0598E+04	1.0000	0.0289
62000	1137.6	1.089	0.90	30.3108	1568.02	1.355E+08	1.472E-09	1.9944E-01	6.2569E+03	1.0000	0.0374
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	3.385E-12	0.0000E+00	2.7208E+06	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	6.309E-15	3.8844E-08	1.4600E+09	1.0000	0.0001
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	1.414E-14	1.7412E-07	6.5140E+08	1.0000	0.0001
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	3.571E-14	6.5964E-07	2.5792E+08	1.0000	0.0002
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	2.980E-14	7.5217E-07	3.0913E+08	1.0000	0.0002
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	9.620E-14	3.0801E-06	9.5745E+07	1.0000	0.0003
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	4.130E-13	1.6021E-05	2.2301E+07	1.0000	0.0006
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	1.680E-13	7.7827E-06	5.4814E+07	1.0000	0.0004
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	6.544E-13	3.5233E-05	1.4075E+07	1.0000	0.0008
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	2.238E-12	1.3735E-04	4.1152E+06	1.0000	0.0015
40000	909.4	1.089	0.90	30.3108	842.21	7.277E+07	1.291E-14	9.3908E-07	7.1373E+08	1.0000	0.0001
44000	918.3	1.089	0.90	30.3108	974.17	8.417E+07	3.672E-14	3.0906E-06	2.5085E+08	1.0000	0.0002
48000	928.3	1.089	0.90	30.3108	1106.14	9.557E+07	1.086E-13	1.0383E-05	8.4785E+07	1.0000	0.0003
52000	937.2	1.089	0.90	30.3108	1238.11	1.070E+08	3.043E-13	3.2556E-05	3.0265E+07	1.0000	0.0005
56000	946.3	1.089	0.90	30.3108	1370.07	1.184E+08	8.535E-13	1.0104E-04	1.0792E+07	1.0000	0.0009
58000	951.2	1.089	0.90	30.3108	1436.06	1.241E+08	1.446E-12	1.7938E-04	6.3710E+06	1.0000	0.0012
60000	955.5	1.089	0.90	30.3108	1502.04	1.298E+08	2.386E-12	3.0968E-04	3.8600E+06	1.0000	0.0015

62000	960.1	1.089	0.90	30.3108	1568.02	1.355E+08	3.979E-12	5.3912E-04	2.3147E+06	1.0000	0.0020
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	3.224E-15	0.0000E+00	2.8566E+09	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	2.712E-20	1.6701E-13	3.3958E+14	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	4.020E-20	4.9508E-13	2.2910E+14	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	7.433E-20	1.3730E-12	1.2392E+14	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.105E-19	2.7891E-12	8.3368E+13	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	2.737E-19	8.7620E-12	3.3657E+13	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.073E-18	4.1607E-11	8.5872E+12	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	7.329E-19	3.3943E-11	1.2568E+13	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	2.551E-18	1.3737E-10	3.6101E+12	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	7.627E-18	4.6805E-10	1.2076E+12	1.0000	0.0000
40000	735.0	1.089	0.90	30.3108	842.21	7.277E+07	9.719E-19	7.0722E-11	9.4773E+12	1.0000	0.0000
44000	737.2	1.089	0.90	30.3108	974.17	8.417E+07	2.175E-18	1.8308E-10	4.2346E+12	1.0000	0.0000
48000	741.2	1.089	0.90	30.3108	1106.14	9.557E+07	5.481E-18	5.2386E-10	1.6804E+12	1.0000	0.0000
52000	744.2	1.089	0.90	30.3108	1238.11	1.070E+08	1.290E-17	1.3798E-09	7.1409E+11	1.0000	0.0000
56000	747.4	1.089	0.90	30.3108	1370.07	1.184E+08	3.070E-17	3.6345E-09	3.0000E+11	1.0000	0.0000
58000	748.9	1.089	0.90	30.3108	1436.06	1.241E+08	4.703E-17	5.8354E-09	1.9585E+11	1.0000	0.0000
60000	750.6	1.089	0.90	30.3108	1502.04	1.298E+08	7.295E-17	9.4674E-09	1.2626E+11	1.0000	0.0000
62000	752.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.131E-16	1.5323E-08	8.1440E+10	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.305E-20	0.0000E+00	7.0561E+14	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	2.563E-22	1.5779E-15	3.5941E+16	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	4.236E-22	5.2157E-15	2.1747E+16	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	7.705E-22	1.4233E-14	1.1954E+16	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	5.904E-22	1.4904E-14	1.5601E+16	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.340E-21	4.2889E-14	6.8760E+15	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	4.996E-21	1.9378E-13	1.8438E+15	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	1.738E-21	8.0516E-14	5.2984E+15	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	5.521E-21	2.9722E-13	1.6685E+15	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	1.478E-20	9.0673E-13	6.2338E+14	1.0000	0.0000
40000	636.8	1.089	0.90	30.3108	842.21	7.277E+07	4.701E-22	3.4204E-14	1.9596E+16	1.0000	0.0000
44000	635.5	1.089	0.90	30.3108	974.17	8.417E+07	8.074E-22	6.7959E-14	1.1408E+16	1.0000	0.0000
48000	636.0	1.089	0.90	30.3108	1106.14	9.557E+07	1.631E-21	1.5584E-13	5.6487E+15	1.0000	0.0000
52000	635.7	1.089	0.90	30.3108	1238.11	1.070E+08	3.064E-21	3.2781E-13	3.0058E+15	1.0000	0.0000
56000	635.6	1.089	0.90	30.3108	1370.07	1.184E+08	5.863E-21	6.9408E-13	1.5709E+15	1.0000	0.0000
58000	635.6	1.089	0.90	30.3108	1436.06	1.241E+08	8.147E-21	1.0109E-12	1.1306E+15	1.0000	0.0000
60000	635.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.132E-20	1.4691E-12	8.1365E+14	1.0000	0.0000
62000	635.7	1.089	0.90	30.3108	1568.02	1.355E+08	1.587E-20	2.1503E-12	5.8032E+14	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0385	0.0200	0.0030	0.0001	0.0000	0.0000	0.0025				
8000	0.0620	0.0323	0.0047	0.0001	0.0000	0.0000	0.0040				
12000	0.1002	0.0527	0.0078	0.0002	0.0000	0.0000	0.0065				
16000	0.0751	0.0399	0.0062	0.0002	0.0000	0.0000	0.0050				
20000	0.1327	0.0715	0.0113	0.0003	0.0000	0.0000	0.0089				
24000	0.2451	0.1367	0.0226	0.0006	0.0000	0.0000	0.0172				
28000	0.1449	0.0794	0.0132	0.0004	0.0000	0.0000	0.0100				
32000	0.2608	0.1476	0.0255	0.0008	0.0000	0.0000	0.0187				
36000	0.4300	0.2560	0.0467	0.0015	0.0000	0.0000	0.0326				
40000	0.0145	0.0085	0.0019	0.0001	0.0000	0.0000	0.0012				
44000	0.0260	0.0153	0.0033	0.0002	0.0000	0.0000	0.0021				
48000	0.0458	0.0269	0.0058	0.0003	0.0000	0.0000	0.0036				
52000	0.0785	0.0463	0.0099	0.0005	0.0000	0.0000	0.0062				
56000	0.1323	0.0787	0.0169	0.0009	0.0000	0.0000	0.0105				
58000	0.1741	0.1041	0.0224	0.0012	0.0000	0.0000	0.0139				
60000	0.2206	0.1330	0.0289	0.0015	0.0000	0.0000	0.0178				
62000	0.2797	0.1708	0.0374	0.0020	0.0000	0.0000	0.0229				

Gas Gap Fractions: I-134											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300			cal/mol							
R	1.987			cal/mol-K							
Do/a2	0.61			1/sec							
lambda	2.2000E-04			1/sec							
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	2.726E-09	0.0000E+00	8.0715E+04	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	1.559E-09	9.5966E-03	1.4115E+05	1.0000	0.0080
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	4.107E-09	5.0579E-02	5.3562E+04	1.0000	0.0129
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.102E-08	2.0346E-01	1.9973E+04	1.0000	0.0211
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	6.087E-09	1.5365E-01	3.6145E+04	1.0000	0.0157
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	1.982E-08	6.3465E-01	1.1098E+04	1.0000	0.0282
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	7.417E-08	2.8771E+00	2.9660E+03	1.0000	0.0541
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	2.386E-08	1.1052E+00	9.2189E+03	1.0000	0.0309
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	8.519E-08	4.5866E+00	2.5825E+03	1.0000	0.0579
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	2.770E-07	1.6996E+01	7.9431E+02	1.0000	0.1027
40000	1385.9	1.089	1.10	37.0465	818.21	7.069E+07	1.217E-08	8.6028E-01	1.8078E+04	1.0000	0.0221
44000	1412.9	1.089	1.10	37.0465	926.19	8.002E+07	3.880E-08	3.1051E+00	5.6696E+03	1.0000	0.0393
48000	1452.7	1.089	1.10	37.0465	1034.16	8.935E+07	1.517E-07	1.3555E+01	1.4502E+03	1.0000	0.0767
52000	1481.3	1.089	1.10	37.0465	1142.13	9.868E+07	4.751E-07	4.6879E+01	4.6310E+02	1.0000	0.1329
56000	1511.0	1.089	1.10	37.0465	1250.10	1.080E+08	1.486E-06	1.6055E+02	1.4800E+02	1.0000	0.2263
58000	1537.1	1.089	1.10	37.0465	1304.09	1.127E+08	3.109E-06	3.5027E+02	7.0768E+01	1.0000	0.3142
60000	1548.5	1.089	1.10	37.0465	1358.08	1.173E+08	5.142E-06	6.0335E+02	4.2785E+01	1.0000	0.3885
62000	1570.8	1.089	1.10	37.0465	1412.06	1.220E+08	9.974E-06	1.2168E+03	2.2058E+01	1.0000	0.5029
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.339E-09	0.0000E+00	1.6426E+05	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	4.169E-10	2.5669E-03	5.2770E+05	1.0000	0.0041
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.094E-09	1.3466E-02	2.0118E+05	1.0000	0.0067
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	2.944E-09	5.4373E-02	7.4736E+04	1.0000	0.0109
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	1.673E-09	4.2237E-02	1.3149E+05	1.0000	0.0083
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	5.504E-09	1.7623E-01	3.9968E+04	1.0000	0.0149
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	2.109E-08	8.1816E-01	1.0430E+04	1.0000	0.0291
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	6.826E-09	3.1616E-01	3.2228E+04	1.0000	0.0166
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	2.480E-08	1.3354E+00	8.8701E+03	1.0000	0.0315
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	8.174E-08	5.0162E+00	2.6913E+03	1.0000	0.0567
40000	1326.8	1.089	1.10	37.0465	818.21	7.069E+07	3.779E-09	2.6714E-01	5.8218E+04	1.0000	0.0124
44000	1351.7	1.089	1.10	37.0465	926.19	8.002E+07	1.209E-08	9.6759E-01	1.8195E+04	1.0000	0.0221
48000	1388.9	1.089	1.10	37.0465	1034.16	8.935E+07	4.801E-08	4.2896E+00	4.5825E+03	1.0000	0.0437
52000	1415.3	1.089	1.10	37.0465	1142.13	9.868E+07	1.511E-07	1.4911E+01	1.4560E+03	1.0000	0.0766

56000	1443.5	1.089	1.10	37.0465	1250.10	1.080E+08	4.821E-07	5.2067E+01	4.5637E+02	1.0000	0.1339
58000	1468.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.025E-06	1.1553E+02	2.1456E+02	1.0000	0.1908
60000	1479.5	1.089	1.10	37.0465	1358.08	1.173E+08	1.719E-06	2.0167E+02	1.2801E+02	1.0000	0.2417
62000	1501.5	1.089	1.10	37.0465	1412.06	1.220E+08	3.424E-06	4.1775E+02	6.4250E+01	1.0000	0.3276
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	1.690E-10	0.0000E+00	1.3017E+06	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	9.120E-12	5.6150E-05	2.4124E+07	1.0000	0.0006
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	2.316E-11	2.8524E-04	9.4976E+06	1.0000	0.0010
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	6.225E-11	1.1499E-03	3.5339E+06	1.0000	0.0016
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	3.919E-11	9.8933E-04	5.6135E+06	1.0000	0.0013
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.307E-10	4.1857E-03	1.6828E+06	1.0000	0.0023
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	5.302E-10	2.0564E-02	4.1497E+05	1.0000	0.0046
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	1.798E-10	8.3272E-03	1.2236E+06	1.0000	0.0027
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	6.777E-10	3.6489E-02	3.2462E+05	1.0000	0.0053
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	2.302E-09	1.4128E-01	9.5560E+04	1.0000	0.0097
40000	1181.3	1.089	1.10	37.0465	818.21	7.069E+07	1.289E-10	9.1153E-03	1.7062E+06	1.0000	0.0023
44000	1201.2	1.089	1.10	37.0465	926.19	8.002E+07	4.147E-10	3.3184E-02	5.3052E+05	1.0000	0.0041
48000	1231.9	1.089	1.10	37.0465	1034.16	8.935E+07	1.703E-09	1.5219E-01	1.2916E+05	1.0000	0.0083
52000	1252.9	1.089	1.10	37.0465	1142.13	9.868E+07	5.395E-09	5.3240E-01	4.0777E+04	1.0000	0.0148
56000	1277.2	1.089	1.10	37.0465	1250.10	1.080E+08	1.810E-08	1.9550E+00	1.2154E+04	1.0000	0.0270
58000	1298.8	1.089	1.10	37.0465	1304.09	1.127E+08	4.039E-08	4.5513E+00	5.4464E+03	1.0000	0.0401
60000	1308.9	1.089	1.10	37.0465	1358.08	1.173E+08	6.967E-08	8.1751E+00	3.1577E+03	1.0000	0.0524
62000	1329.9	1.089	1.10	37.0465	1412.06	1.220E+08	1.502E-07	1.8320E+01	1.4651E+03	1.0000	0.0763
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	3.385E-12	0.0000E+00	6.4985E+07	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	6.309E-15	3.8844E-08	3.4871E+10	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	1.414E-14	1.7412E-07	1.5558E+10	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	3.571E-14	6.5964E-07	6.1603E+09	1.0000	0.0000
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	2.980E-14	7.5217E-07	7.3834E+09	1.0000	0.0000
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	9.620E-14	3.0801E-06	2.2868E+09	1.0000	0.0001
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	4.130E-13	1.6021E-05	5.3265E+08	1.0000	0.0001
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	1.680E-13	7.7827E-06	1.3092E+09	1.0000	0.0001
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	6.544E-13	3.5233E-05	3.3618E+08	1.0000	0.0002
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	2.238E-12	1.3735E-04	9.8289E+07	1.0000	0.0003
40000	979.2	1.089	1.10	37.0465	818.21	7.069E+07	2.236E-13	1.5806E-05	9.8398E+08	1.0000	0.0001
44000	992.0	1.089	1.10	37.0465	926.19	8.002E+07	6.972E-13	5.5795E-05	3.1553E+08	1.0000	0.0002
48000	1013.6	1.089	1.10	37.0465	1034.16	8.935E+07	2.941E-12	2.6283E-04	7.4792E+07	1.0000	0.0003
52000	1027.2	1.089	1.10	37.0465	1142.13	9.868E+07	9.135E-12	9.0142E-04	2.4084E+07	1.0000	0.0006
56000	1045.7	1.089	1.10	37.0465	1250.10	1.080E+08	3.300E-11	3.5648E-03	6.6657E+06	1.0000	0.0012
58000	1062.3	1.089	1.10	37.0465	1304.09	1.127E+08	7.899E-11	8.9002E-03	2.7851E+06	1.0000	0.0018
60000	1070.7	1.089	1.10	37.0465	1358.08	1.173E+08	1.436E-10	1.6849E-02	1.5321E+06	1.0000	0.0024
62000	1089.1	1.089	1.10	37.0465	1412.06	1.220E+08	3.543E-10	4.3223E-02	6.2098E+05	1.0000	0.0038

r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	3.224E-15	0.0000E+00	6.8229E+10	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	2.712E-20	1.6701E-13	8.1107E+15	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	4.020E-20	4.9508E-13	5.4720E+15	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	7.433E-20	1.3730E-12	2.9596E+15	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.105E-19	2.7891E-12	1.9912E+15	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	2.737E-19	8.7620E-12	8.0388E+14	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.073E-18	4.1607E-11	2.0510E+14	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	7.329E-19	3.3943E-11	3.0018E+14	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	2.551E-18	1.3737E-10	8.6226E+13	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	7.627E-18	4.6805E-10	2.8844E+13	1.0000	0.0000
40000	753.8	1.089	1.10	37.0465	818.21	7.069E+07	3.341E-18	2.3617E-10	6.5854E+13	1.0000	0.0000
44000	758.8	1.089	1.10	37.0465	926.19	8.002E+07	8.865E-18	7.0942E-10	2.4816E+13	1.0000	0.0000
48000	770.1	1.089	1.10	37.0465	1034.16	8.935E+07	3.459E-17	3.0909E-09	6.3597E+12	1.0000	0.0000
52000	775.6	1.089	1.10	37.0465	1142.13	9.868E+07	9.337E-17	9.2139E-09	2.3562E+12	1.0000	0.0000
56000	786.7	1.089	1.10	37.0465	1250.10	1.080E+08	3.495E-16	3.7745E-08	6.2953E+11	1.0000	0.0000
58000	797.4	1.089	1.10	37.0465	1304.09	1.127E+08	9.032E-16	1.0177E-07	2.4357E+11	1.0000	0.0000
60000	803.0	1.089	1.10	37.0465	1358.08	1.173E+08	1.725E-15	2.0244E-07	1.2751E+11	1.0000	0.0000
62000	816.6	1.089	1.10	37.0465	1412.06	1.220E+08	5.099E-15	6.2206E-07	4.3148E+10	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.305E-20	0.0000E+00	1.6853E+16	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	2.563E-22	1.5779E-15	8.5843E+17	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	4.236E-22	5.2157E-15	5.1941E+17	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	7.705E-22	1.4233E-14	2.8551E+17	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	5.904E-22	1.4904E-14	3.7262E+17	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.340E-21	4.2889E-14	1.6423E+17	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	4.996E-21	1.9378E-13	4.4038E+16	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	1.738E-21	8.0516E-14	1.2655E+17	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	5.521E-21	2.9722E-13	3.9851E+16	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	1.478E-20	9.0673E-13	1.4889E+16	1.0000	0.0000
40000	653.3	1.089	1.10	37.0465	818.21	7.069E+07	1.990E-21	1.4069E-13	1.1054E+17	1.0000	0.0000
44000	655.2	1.089	1.10	37.0465	926.19	8.002E+07	4.516E-21	3.6138E-13	4.8716E+16	1.0000	0.0000
48000	661.9	1.089	1.10	37.0465	1034.16	8.935E+07	1.530E-20	1.3668E-12	1.4382E+16	1.0000	0.0000
52000	664.1	1.089	1.10	37.0465	1142.13	9.868E+07	3.543E-20	3.4965E-12	6.2089E+15	1.0000	0.0000
56000	671.5	1.089	1.10	37.0465	1250.10	1.080E+08	1.251E-19	1.3515E-11	1.7582E+15	1.0000	0.0000
58000	679.2	1.089	1.10	37.0465	1304.09	1.127E+08	3.214E-19	3.6209E-11	6.8458E+14	1.0000	0.0000
60000	682.7	1.089	1.10	37.0465	1358.08	1.173E+08	5.877E-19	6.8956E-11	3.7436E+14	1.0000	0.0000
62000	688.0	1.089	1.10	37.0465	1412.06	1.220E+08	1.231E-18	1.5020E-10	1.7870E+14	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0080	0.0041	0.0006	0.0000	0.0000	0.0000	0.0005				

8000	0.0129	0.0067	0.0010	0.0000	0.0000	0.0000	0.0008				
12000	0.0211	0.0109	0.0016	0.0000	0.0000	0.0000	0.0013				
16000	0.0157	0.0083	0.0013	0.0000	0.0000	0.0000	0.0010				
20000	0.0282	0.0149	0.0023	0.0001	0.0000	0.0000	0.0019				
24000	0.0541	0.0291	0.0046	0.0001	0.0000	0.0000	0.0036				
28000	0.0309	0.0166	0.0027	0.0001	0.0000	0.0000	0.0021				
32000	0.0579	0.0315	0.0053	0.0002	0.0000	0.0000	0.0040				
36000	0.1027	0.0567	0.0097	0.0003	0.0000	0.0000	0.0072				
40000	0.0221	0.0124	0.0023	0.0001	0.0000	0.0000	0.0016				
44000	0.0393	0.0221	0.0041	0.0002	0.0000	0.0000	0.0029				
48000	0.0767	0.0437	0.0083	0.0003	0.0000	0.0000	0.0057				
52000	0.1329	0.0766	0.0148	0.0006	0.0000	0.0000	0.0100				
56000	0.2263	0.1339	0.0270	0.0012	0.0000	0.0000	0.0176				
58000	0.3142	0.1908	0.0401	0.0018	0.0000	0.0000	0.0253				
60000	0.3885	0.2417	0.0524	0.0024	0.0000	0.0000	0.0322				
62000	0.5029	0.3276	0.0763	0.0038	0.0000	0.0000	0.0444				

Gas Gap Fractions: I-134											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300										
R	1.987										
Do/a2	0.61										
lambda	2.2000E-04										
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	2.726E-09	0.0000E+00	8.0715E+04	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	1.559E-09	9.5966E-03	1.4115E+05	1.0000	0.0080
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	4.107E-09	5.0579E-02	5.3562E+04	1.0000	0.0129
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.102E-08	2.0346E-01	1.9973E+04	1.0000	0.0211
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	6.087E-09	1.5365E-01	3.6145E+04	1.0000	0.0157
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	1.982E-08	6.3465E-01	1.1098E+04	1.0000	0.0282
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	7.417E-08	2.8771E+00	2.9660E+03	1.0000	0.0541
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	2.386E-08	1.1052E+00	9.2189E+03	1.0000	0.0309
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	8.519E-08	4.5866E+00	2.5825E+03	1.0000	0.0579
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	2.770E-07	1.6996E+01	7.9431E+02	1.0000	0.1027
40000	1201.7	1.089	0.90	30.3108	842.21	7.277E+07	2.175E-10	1.5828E-02	1.0114E+06	1.0000	0.0030
44000	1222.7	1.089	0.90	30.3108	974.17	8.417E+07	7.064E-10	5.9457E-02	3.1144E+05	1.0000	0.0054
48000	1242.9	1.089	0.90	30.3108	1106.14	9.557E+07	2.212E-09	2.1142E-01	9.9451E+04	1.0000	0.0095
52000	1262.0	1.089	0.90	30.3108	1238.11	1.070E+08	6.652E-09	7.1158E-01	3.3073E+04	1.0000	0.0164
56000	1281.0	1.089	0.90	30.3108	1370.07	1.184E+08	1.970E-08	2.3316E+00	1.1169E+04	1.0000	0.0281
58000	1292.5	1.089	0.90	30.3108	1436.06	1.241E+08	3.524E-08	4.3721E+00	6.2433E+03	1.0000	0.0375
60000	1301.0	1.089	0.90	30.3108	1502.04	1.298E+08	5.885E-08	7.6373E+00	3.7383E+03	1.0000	0.0483
62000	1310.3	1.089	0.90	30.3108	1568.02	1.355E+08	9.973E-08	1.3511E+01	2.2060E+03	1.0000	0.0625
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.339E-09	0.0000E+00	1.6426E+05	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	4.169E-10	2.5669E-03	5.2770E+05	1.0000	0.0041
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.094E-09	1.3466E-02	2.0118E+05	1.0000	0.0067
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	2.944E-09	5.4373E-02	7.4736E+04	1.0000	0.0109
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	1.673E-09	4.2237E-02	1.3149E+05	1.0000	0.0083
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	5.504E-09	1.7623E-01	3.9968E+04	1.0000	0.0149
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	2.109E-08	8.1816E-01	1.0430E+04	1.0000	0.0291
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	6.826E-09	3.1616E-01	3.2228E+04	1.0000	0.0166
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	2.480E-08	1.3354E+00	8.8701E+03	1.0000	0.0315
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	8.174E-08	5.0162E+00	2.6913E+03	1.0000	0.0567
40000	1160.8	1.089	0.90	30.3108	842.21	7.277E+07	7.484E-11	5.4460E-03	2.9395E+06	1.0000	0.0017
44000	1180.1	1.089	0.90	30.3108	974.17	8.417E+07	2.413E-10	2.0307E-02	9.1184E+05	1.0000	0.0031
48000	1198.8	1.089	0.90	30.3108	1106.14	9.557E+07	7.535E-10	7.2015E-02	2.9196E+05	1.0000	0.0055

52000	1216.5	1.089	0.90	30.3108	1238.11	1.070E+08	2.263E-09	2.4204E-01	9.7233E+04	1.0000	0.0096
56000	1234.1	1.089	0.90	30.3108	1370.07	1.184E+08	6.692E-09	7.9221E-01	3.2873E+04	1.0000	0.0165
58000	1244.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.193E-08	1.4796E+00	1.8448E+04	1.0000	0.0219
60000	1252.5	1.089	0.90	30.3108	1502.04	1.298E+08	1.993E-08	2.5858E+00	1.1041E+04	1.0000	0.0283
62000	1261.2	1.089	0.90	30.3108	1568.02	1.355E+08	3.383E-08	4.5831E+00	6.5032E+03	1.0000	0.0367
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	1.690E-10	0.0000E+00	1.3017E+06	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	9.120E-12	5.6150E-05	2.4124E+07	1.0000	0.0006
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	2.316E-11	2.8524E-04	9.4976E+06	1.0000	0.0010
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	6.225E-11	1.1499E-03	3.5339E+06	1.0000	0.0016
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	3.919E-11	9.8933E-04	5.6135E+06	1.0000	0.0013
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.307E-10	4.1857E-03	1.6828E+06	1.0000	0.0023
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	5.302E-10	2.0564E-02	4.1497E+05	1.0000	0.0046
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	1.798E-10	8.3272E-03	1.2236E+06	1.0000	0.0027
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	6.777E-10	3.6489E-02	3.2462E+05	1.0000	0.0053
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	2.302E-09	1.4128E-01	9.5560E+04	1.0000	0.0097
40000	1057.8	1.089	0.90	30.3108	842.21	7.277E+07	3.537E-12	2.5735E-04	6.2207E+07	1.0000	0.0004
44000	1072.8	1.089	0.90	30.3108	974.17	8.417E+07	1.105E-11	9.2966E-04	1.9918E+07	1.0000	0.0007
48000	1087.9	1.089	0.90	30.3108	1106.14	9.557E+07	3.415E-11	3.2634E-03	6.4429E+06	1.0000	0.0012
52000	1101.9	1.089	0.90	30.3108	1238.11	1.070E+08	1.008E-10	1.0787E-02	2.1818E+06	1.0000	0.0020
56000	1116.0	1.089	0.90	30.3108	1370.07	1.184E+08	2.955E-10	3.4976E-02	7.4457E+05	1.0000	0.0035
58000	1124.1	1.089	0.90	30.3108	1436.06	1.241E+08	5.193E-10	6.4430E-02	4.2366E+05	1.0000	0.0046
60000	1130.6	1.089	0.90	30.3108	1502.04	1.298E+08	8.691E-10	1.1279E-01	2.5313E+05	1.0000	0.0060
62000	1137.6	1.089	0.90	30.3108	1568.02	1.355E+08	1.472E-09	1.9944E-01	1.4944E+05	1.0000	0.0077
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	3.385E-12	0.0000E+00	6.4985E+07	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	6.309E-15	3.8844E-08	3.4871E+10	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	1.414E-14	1.7412E-07	1.5558E+10	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	3.571E-14	6.5964E-07	6.1603E+09	1.0000	0.0000
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	2.980E-14	7.5217E-07	7.3834E+09	1.0000	0.0000
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	9.620E-14	3.0801E-06	2.2868E+09	1.0000	0.0001
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	4.130E-13	1.6021E-05	5.3265E+08	1.0000	0.0001
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	1.680E-13	7.7827E-06	1.3092E+09	1.0000	0.0001
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	6.544E-13	3.5233E-05	3.3618E+08	1.0000	0.0002
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	2.238E-12	1.3735E-04	9.8289E+07	1.0000	0.0003
40000	909.4	1.089	0.90	30.3108	842.21	7.277E+07	1.291E-14	9.3908E-07	1.7047E+10	1.0000	0.0000
44000	918.3	1.089	0.90	30.3108	974.17	8.417E+07	3.672E-14	3.0906E-06	5.9913E+09	1.0000	0.0000
48000	928.3	1.089	0.90	30.3108	1106.14	9.557E+07	1.086E-13	1.0383E-05	2.0250E+09	1.0000	0.0001
52000	937.2	1.089	0.90	30.3108	1238.11	1.070E+08	3.043E-13	3.2556E-05	7.2288E+08	1.0000	0.0001
56000	946.3	1.089	0.90	30.3108	1370.07	1.184E+08	8.535E-13	1.0104E-04	2.5775E+08	1.0000	0.0002
58000	951.2	1.089	0.90	30.3108	1436.06	1.241E+08	1.446E-12	1.7938E-04	1.5217E+08	1.0000	0.0002
60000	955.5	1.089	0.90	30.3108	1502.04	1.298E+08	2.386E-12	3.0968E-04	9.2194E+07	1.0000	0.0003

62000	960.1	1.089	0.90	30.3108	1568.02	1.355E+08	3.979E-12	5.3912E-04	5.5285E+07	1.0000	0.0004
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	3.224E-15	0.0000E+00	6.8229E+10	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	2.712E-20	1.6701E-13	8.1107E+15	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	4.020E-20	4.9508E-13	5.4720E+15	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	7.433E-20	1.3730E-12	2.9596E+15	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.105E-19	2.7891E-12	1.9912E+15	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	2.737E-19	8.7620E-12	8.0388E+14	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.073E-18	4.1607E-11	2.0510E+14	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	7.329E-19	3.3943E-11	3.0018E+14	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	2.551E-18	1.3737E-10	8.6226E+13	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	7.627E-18	4.6805E-10	2.8844E+13	1.0000	0.0000
40000	735.0	1.089	0.90	30.3108	842.21	7.277E+07	9.719E-19	7.0722E-11	2.2636E+14	1.0000	0.0000
44000	737.2	1.089	0.90	30.3108	974.17	8.417E+07	2.175E-18	1.8308E-10	1.0114E+14	1.0000	0.0000
48000	741.2	1.089	0.90	30.3108	1106.14	9.557E+07	5.481E-18	5.2386E-10	4.0135E+13	1.0000	0.0000
52000	744.2	1.089	0.90	30.3108	1238.11	1.070E+08	1.290E-17	1.3798E-09	1.7056E+13	1.0000	0.0000
56000	747.4	1.089	0.90	30.3108	1370.07	1.184E+08	3.070E-17	3.6345E-09	7.1654E+12	1.0000	0.0000
58000	748.9	1.089	0.90	30.3108	1436.06	1.241E+08	4.703E-17	5.8354E-09	4.6777E+12	1.0000	0.0000
60000	750.6	1.089	0.90	30.3108	1502.04	1.298E+08	7.295E-17	9.4674E-09	3.0157E+12	1.0000	0.0000
62000	752.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.131E-16	1.5323E-08	1.9452E+12	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.305E-20	0.0000E+00	1.6853E+16	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	2.563E-22	1.5779E-15	8.5843E+17	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	4.236E-22	5.2157E-15	5.1941E+17	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	7.705E-22	1.4233E-14	2.8551E+17	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	5.904E-22	1.4904E-14	3.7262E+17	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.340E-21	4.2889E-14	1.6423E+17	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	4.996E-21	1.9378E-13	4.4038E+16	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	1.738E-21	8.0516E-14	1.2655E+17	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	5.521E-21	2.9722E-13	3.9851E+16	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	1.478E-20	9.0673E-13	1.4889E+16	1.0000	0.0000
40000	636.8	1.089	0.90	30.3108	842.21	7.277E+07	4.701E-22	3.4204E-14	4.6803E+17	1.0000	0.0000
44000	635.5	1.089	0.90	30.3108	974.17	8.417E+07	8.074E-22	6.7959E-14	2.7247E+17	1.0000	0.0000
48000	636.0	1.089	0.90	30.3108	1106.14	9.557E+07	1.631E-21	1.5584E-13	1.3492E+17	1.0000	0.0000
52000	635.7	1.089	0.90	30.3108	1238.11	1.070E+08	3.064E-21	3.2781E-13	7.1791E+16	1.0000	0.0000
56000	635.6	1.089	0.90	30.3108	1370.07	1.184E+08	5.863E-21	6.9408E-13	3.7521E+16	1.0000	0.0000
58000	635.6	1.089	0.90	30.3108	1436.06	1.241E+08	8.147E-21	1.0109E-12	2.7003E+16	1.0000	0.0000
60000	635.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.132E-20	1.4691E-12	1.9434E+16	1.0000	0.0000
62000	635.7	1.089	0.90	30.3108	1568.02	1.355E+08	1.587E-20	2.1503E-12	1.3861E+16	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0080	0.0041	0.0006	0.0000	0.0000	0.0000	0.0005				
8000	0.0129	0.0067	0.0010	0.0000	0.0000	0.0000	0.0008				
12000	0.0211	0.0109	0.0016	0.0000	0.0000	0.0000	0.0013				
16000	0.0157	0.0083	0.0013	0.0000	0.0000	0.0000	0.0010				
20000	0.0282	0.0149	0.0023	0.0001	0.0000	0.0000	0.0019				
24000	0.0541	0.0291	0.0046	0.0001	0.0000	0.0000	0.0036				
28000	0.0309	0.0166	0.0027	0.0001	0.0000	0.0000	0.0021				
32000	0.0579	0.0315	0.0053	0.0002	0.0000	0.0000	0.0040				
36000	0.1027	0.0567	0.0097	0.0003	0.0000	0.0000	0.0072				
40000	0.0030	0.0017	0.0004	0.0000	0.0000	0.0000	0.0002				
44000	0.0054	0.0031	0.0007	0.0000	0.0000	0.0000	0.0004				
48000	0.0095	0.0055	0.0012	0.0001	0.0000	0.0000	0.0007				
52000	0.0164	0.0096	0.0020	0.0001	0.0000	0.0000	0.0013				
56000	0.0281	0.0165	0.0035	0.0002	0.0000	0.0000	0.0022				
58000	0.0375	0.0219	0.0046	0.0002	0.0000	0.0000	0.0029				
60000	0.0483	0.0283	0.0060	0.0003	0.0000	0.0000	0.0038				
62000	0.0625	0.0367	0.0077	0.0004	0.0000	0.0000	0.0049				

Gas Gap Fractions: I-135											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300		cal/mol								
R	1.987		cal/mol-K								
Do/a2	0.61		1/sec								
lambda	2.9120E-05		1/sec								
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	2.726E-09	0.0000E+00	1.0684E+04	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	1.559E-09	9.5966E-03	1.8683E+04	1.0000	0.0218
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	4.107E-09	5.0579E-02	7.0897E+03	1.0000	0.0352
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.102E-08	2.0346E-01	2.6437E+03	1.0000	0.0572
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	6.087E-09	1.5365E-01	4.7843E+03	1.0000	0.0427
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	1.982E-08	6.3465E-01	1.4690E+03	1.0000	0.0762
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	7.417E-08	2.8771E+00	3.9259E+02	1.0000	0.1438
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	2.386E-08	1.1052E+00	1.2202E+03	1.0000	0.0834
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	8.519E-08	4.5866E+00	3.4183E+02	1.0000	0.1535
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	2.770E-07	1.6996E+01	1.0514E+02	1.0000	0.2640
40000	1385.9	1.089	1.10	37.0465	818.21	7.069E+07	1.217E-08	8.6028E-01	2.3929E+03	1.0000	0.0601
44000	1412.9	1.089	1.10	37.0465	926.19	8.002E+07	3.880E-08	3.1051E+00	7.5045E+02	1.0000	0.1055
48000	1452.7	1.089	1.10	37.0465	1034.16	8.935E+07	1.517E-07	1.3555E+01	1.9195E+02	1.0000	0.2009
52000	1481.3	1.089	1.10	37.0465	1142.13	9.868E+07	4.751E-07	4.6879E+01	6.1298E+01	1.0000	0.3342
56000	1511.0	1.089	1.10	37.0465	1250.10	1.080E+08	1.486E-06	1.6055E+02	1.9590E+01	1.0000	0.5249
58000	1537.1	1.089	1.10	37.0465	1304.09	1.127E+08	3.109E-06	3.5027E+02	9.3671E+00	1.0000	0.6643
60000	1548.5	1.089	1.10	37.0465	1358.08	1.173E+08	5.142E-06	6.0335E+02	5.6632E+00	1.0000	0.7527
62000	1570.8	1.089	1.10	37.0465	1412.06	1.220E+08	9.974E-06	1.2168E+03	2.9196E+00	1.0000	0.8473
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.339E-09	0.0000E+00	2.1741E+04	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	4.169E-10	2.5669E-03	6.9848E+04	1.0000	0.0113
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.094E-09	1.3466E-02	2.6628E+04	1.0000	0.0183
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	2.944E-09	5.4373E-02	9.8923E+03	1.0000	0.0299
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	1.673E-09	4.2237E-02	1.7404E+04	1.0000	0.0226
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	5.504E-09	1.7623E-01	5.2903E+03	1.0000	0.0407
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	2.109E-08	8.1816E-01	1.3806E+03	1.0000	0.0786
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	6.826E-09	3.1616E-01	4.2659E+03	1.0000	0.0452
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	2.480E-08	1.3354E+00	1.1741E+03	1.0000	0.0850
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	8.174E-08	5.0162E+00	3.5623E+02	1.0000	0.1505
40000	1326.8	1.089	1.10	37.0465	818.21	7.069E+07	3.779E-09	2.6714E-01	7.7060E+03	1.0000	0.0338
44000	1351.7	1.089	1.10	37.0465	926.19	8.002E+07	1.209E-08	9.6759E-01	2.4083E+03	1.0000	0.0599
48000	1388.9	1.089	1.10	37.0465	1034.16	8.935E+07	4.801E-08	4.2896E+00	6.0656E+02	1.0000	0.1169

52000	1415.3	1.089	1.10	37.0465	1142.13	9.868E+07	1.511E-07	1.4911E+01	1.9272E+02	1.0000	0.2005
56000	1443.5	1.089	1.10	37.0465	1250.10	1.080E+08	4.821E-07	5.2067E+01	6.0407E+01	1.0000	0.3363
58000	1468.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.025E-06	1.1553E+02	2.8401E+01	1.0000	0.4573
60000	1479.5	1.089	1.10	37.0465	1358.08	1.173E+08	1.719E-06	2.0167E+02	1.6943E+01	1.0000	0.5522
62000	1501.5	1.089	1.10	37.0465	1412.06	1.220E+08	3.424E-06	4.1775E+02	8.5044E+00	1.0000	0.6820
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	1.690E-10	0.0000E+00	1.7230E+05	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	9.120E-12	5.6150E-05	3.1931E+06	1.0000	0.0017
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	2.316E-11	2.8524E-04	1.2571E+06	1.0000	0.0027
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	6.225E-11	1.1499E-03	4.6776E+05	1.0000	0.0044
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	3.919E-11	9.8933E-04	7.4303E+05	1.0000	0.0035
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.307E-10	4.1857E-03	2.2274E+05	1.0000	0.0063
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	5.302E-10	2.0564E-02	5.4927E+04	1.0000	0.0127
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	1.798E-10	8.3272E-03	1.6196E+05	1.0000	0.0074
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	6.777E-10	3.6489E-02	4.2967E+04	1.0000	0.0144
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	2.302E-09	1.4128E-01	1.2649E+04	1.0000	0.0264
40000	1181.3	1.089	1.10	37.0465	818.21	7.069E+07	1.289E-10	9.1153E-03	2.2584E+05	1.0000	0.0063
44000	1201.2	1.089	1.10	37.0465	926.19	8.002E+07	4.147E-10	3.3184E-02	7.0221E+04	1.0000	0.0113
48000	1231.9	1.089	1.10	37.0465	1034.16	8.935E+07	1.703E-09	1.5219E-01	1.7096E+04	1.0000	0.0228
52000	1252.9	1.089	1.10	37.0465	1142.13	9.868E+07	5.395E-09	5.3240E-01	5.3974E+03	1.0000	0.0403
56000	1277.2	1.089	1.10	37.0465	1250.10	1.080E+08	1.810E-08	1.9550E+00	1.6088E+03	1.0000	0.0729
58000	1298.8	1.089	1.10	37.0465	1304.09	1.127E+08	4.039E-08	4.5513E+00	7.2090E+02	1.0000	0.1076
60000	1308.9	1.089	1.10	37.0465	1358.08	1.173E+08	6.967E-08	8.1751E+00	4.1796E+02	1.0000	0.1396
62000	1329.9	1.089	1.10	37.0465	1412.06	1.220E+08	1.502E-07	1.8320E+01	1.9393E+02	1.0000	0.2000
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	3.385E-12	0.0000E+00	8.6017E+06	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	6.309E-15	3.8844E-08	4.6157E+09	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	1.414E-14	1.7412E-07	2.0594E+09	1.0000	0.0001
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	3.571E-14	6.5964E-07	8.1540E+08	1.0000	0.0001
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	2.980E-14	7.5217E-07	9.7730E+08	1.0000	0.0001
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	9.620E-14	3.0801E-06	3.0269E+08	1.0000	0.0002
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	4.130E-13	1.6021E-05	7.0504E+07	1.0000	0.0004
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	1.680E-13	7.7827E-06	1.7329E+08	1.0000	0.0002
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	6.544E-13	3.5233E-05	4.4499E+07	1.0000	0.0004
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	2.238E-12	1.3735E-04	1.3010E+07	1.0000	0.0008
40000	979.2	1.089	1.10	37.0465	818.21	7.069E+07	2.236E-13	1.5806E-05	1.3024E+08	1.0000	0.0003
44000	992.0	1.089	1.10	37.0465	926.19	8.002E+07	6.972E-13	5.5795E-05	4.1764E+07	1.0000	0.0005
48000	1013.6	1.089	1.10	37.0465	1034.16	8.935E+07	2.941E-12	2.6283E-04	9.8997E+06	1.0000	0.0010
52000	1027.2	1.089	1.10	37.0465	1142.13	9.868E+07	9.135E-12	9.0142E-04	3.1878E+06	1.0000	0.0017
56000	1045.7	1.089	1.10	37.0465	1250.10	1.080E+08	3.300E-11	3.5648E-03	8.8229E+05	1.0000	0.0032
58000	1062.3	1.089	1.10	37.0465	1304.09	1.127E+08	7.899E-11	8.9002E-03	3.6865E+05	1.0000	0.0049
60000	1070.7	1.089	1.10	37.0465	1358.08	1.173E+08	1.436E-10	1.6849E-02	2.0279E+05	1.0000	0.0066

62000	1089.1	1.089	1.10	37.0465	1412.06	1.220E+08	3.543E-10	4.3223E-02	8.2195E+04	1.0000	0.0104
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	3.224E-15	0.0000E+00	9.0310E+09	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	2.712E-20	1.6701E-13	1.0736E+15	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	4.020E-20	4.9508E-13	7.2429E+14	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	7.433E-20	1.3730E-12	3.9175E+14	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.105E-19	2.7891E-12	2.6356E+14	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	2.737E-19	8.7620E-12	1.0640E+14	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.073E-18	4.1607E-11	2.7148E+13	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	7.329E-19	3.3943E-11	3.9733E+13	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	2.551E-18	1.3737E-10	1.1413E+13	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	7.627E-18	4.6805E-10	3.8178E+12	1.0000	0.0000
40000	753.8	1.089	1.10	37.0465	818.21	7.069E+07	3.341E-18	2.3617E-10	8.7167E+12	1.0000	0.0000
44000	758.8	1.089	1.10	37.0465	926.19	8.002E+07	8.865E-18	7.0942E-10	3.2847E+12	1.0000	0.0000
48000	770.1	1.089	1.10	37.0465	1034.16	8.935E+07	3.459E-17	3.0909E-09	8.4179E+11	1.0000	0.0000
52000	775.6	1.089	1.10	37.0465	1142.13	9.868E+07	9.337E-17	9.2139E-09	3.1187E+11	1.0000	0.0000
56000	786.7	1.089	1.10	37.0465	1250.10	1.080E+08	3.495E-16	3.7745E-08	8.3327E+10	1.0000	0.0000
58000	797.4	1.089	1.10	37.0465	1304.09	1.127E+08	9.032E-16	1.0177E-07	3.2240E+10	1.0000	0.0000
60000	803.0	1.089	1.10	37.0465	1358.08	1.173E+08	1.725E-15	2.0244E-07	1.6878E+10	1.0000	0.0000
62000	816.6	1.089	1.10	37.0465	1412.06	1.220E+08	5.099E-15	6.2206E-07	5.7112E+09	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.305E-20	0.0000E+00	2.2307E+15	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	2.563E-22	1.5779E-15	1.1362E+17	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	4.236E-22	5.2157E-15	6.8751E+16	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	7.705E-22	1.4233E-14	3.7792E+16	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	5.904E-22	1.4904E-14	4.9321E+16	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.340E-21	4.2889E-14	2.1738E+16	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	4.996E-21	1.9378E-13	5.8290E+15	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	1.738E-21	8.0516E-14	1.6750E+16	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	5.521E-21	2.9722E-13	5.2749E+15	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	1.478E-20	9.0673E-13	1.9708E+15	1.0000	0.0000
40000	653.3	1.089	1.10	37.0465	818.21	7.069E+07	1.990E-21	1.4069E-13	1.4632E+16	1.0000	0.0000
44000	655.2	1.089	1.10	37.0465	926.19	8.002E+07	4.516E-21	3.6138E-13	6.4482E+15	1.0000	0.0000
48000	661.9	1.089	1.10	37.0465	1034.16	8.935E+07	1.530E-20	1.3668E-12	1.9036E+15	1.0000	0.0000
52000	664.1	1.089	1.10	37.0465	1142.13	9.868E+07	3.543E-20	3.4965E-12	8.2183E+14	1.0000	0.0000
56000	671.5	1.089	1.10	37.0465	1250.10	1.080E+08	1.251E-19	1.3515E-11	2.3272E+14	1.0000	0.0000
58000	679.2	1.089	1.10	37.0465	1304.09	1.127E+08	3.214E-19	3.6209E-11	9.0613E+13	1.0000	0.0000
60000	682.7	1.089	1.10	37.0465	1358.08	1.173E+08	5.877E-19	6.8956E-11	4.9551E+13	1.0000	0.0000
62000	688.0	1.089	1.10	37.0465	1412.06	1.220E+08	1.231E-18	1.5020E-10	2.3653E+13	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0218	0.0113	0.0017	0.0000	0.0000	0.0000	0.0014				
8000	0.0352	0.0183	0.0027	0.0001	0.0000	0.0000	0.0023				
12000	0.0572	0.0299	0.0044	0.0001	0.0000	0.0000	0.0037				
16000	0.0427	0.0226	0.0035	0.0001	0.0000	0.0000	0.0028				
20000	0.0762	0.0407	0.0063	0.0002	0.0000	0.0000	0.0051				
24000	0.1438	0.0786	0.0127	0.0004	0.0000	0.0000	0.0098				
28000	0.0834	0.0452	0.0074	0.0002	0.0000	0.0000	0.0057				
32000	0.1535	0.0850	0.0144	0.0004	0.0000	0.0000	0.0107				
36000	0.2640	0.1505	0.0264	0.0008	0.0000	0.0000	0.0191				
40000	0.0601	0.0338	0.0063	0.0003	0.0000	0.0000	0.0044				
44000	0.1055	0.0599	0.0113	0.0005	0.0000	0.0000	0.0078				
48000	0.2009	0.1169	0.0228	0.0010	0.0000	0.0000	0.0152				
52000	0.3342	0.2005	0.0403	0.0017	0.0000	0.0000	0.0262				
56000	0.5249	0.3363	0.0729	0.0032	0.0000	0.0000	0.0446				
58000	0.6643	0.4573	0.1076	0.0049	0.0000	0.0000	0.0616				
60000	0.7527	0.5522	0.1396	0.0066	0.0000	0.0000	0.0756				
62000	0.8473	0.6820	0.2000	0.0104	0.0000	0.0000	0.0975				

Gas Gap Fractions: I-135											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300	cal/mol									
R	1.987	cal/mol-K									
Do/a2	0.61	1/sec									
lambda	2.9120E-05	1/sec									
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	2.726E-09	0.0000E+00	1.0684E+04	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	1.559E-09	9.5966E-03	1.8683E+04	1.0000	0.0218
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	4.107E-09	5.0579E-02	7.0897E+03	1.0000	0.0352
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.102E-08	2.0346E-01	2.6437E+03	1.0000	0.0572
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	6.087E-09	1.5365E-01	4.7843E+03	1.0000	0.0427
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	1.982E-08	6.3465E-01	1.4690E+03	1.0000	0.0762
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	7.417E-08	2.8771E+00	3.9259E+02	1.0000	0.1438
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	2.386E-08	1.1052E+00	1.2202E+03	1.0000	0.0834
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	8.519E-08	4.5866E+00	3.4183E+02	1.0000	0.1535
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	2.770E-07	1.6996E+01	1.0514E+02	1.0000	0.2640
40000	1201.7	1.089	0.90	30.3108	842.21	7.277E+07	2.175E-10	1.5828E-02	1.3388E+05	1.0000	0.0082
44000	1222.7	1.089	0.90	30.3108	974.17	8.417E+07	7.064E-10	5.9457E-02	4.1223E+04	1.0000	0.0147
48000	1242.9	1.089	0.90	30.3108	1106.14	9.557E+07	2.212E-09	2.1142E-01	1.3164E+04	1.0000	0.0259
52000	1262.0	1.089	0.90	30.3108	1238.11	1.070E+08	6.652E-09	7.1158E-01	4.3776E+03	1.0000	0.0447
56000	1281.0	1.089	0.90	30.3108	1370.07	1.184E+08	1.970E-08	2.3316E+00	1.4784E+03	1.0000	0.0760
58000	1292.5	1.089	0.90	30.3108	1436.06	1.241E+08	3.524E-08	4.3721E+00	8.2638E+02	1.0000	0.1007
60000	1301.0	1.089	0.90	30.3108	1502.04	1.298E+08	5.885E-08	7.6373E+00	4.9482E+02	1.0000	0.1288
62000	1310.3	1.089	0.90	30.3108	1568.02	1.355E+08	9.973E-08	1.3511E+01	2.9200E+02	1.0000	0.1653
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.339E-09	0.0000E+00	2.1741E+04	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	4.169E-10	2.5669E-03	6.9848E+04	1.0000	0.0113
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.094E-09	1.3466E-02	2.6628E+04	1.0000	0.0183
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	2.944E-09	5.4373E-02	9.8923E+03	1.0000	0.0299
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	1.673E-09	4.2237E-02	1.7404E+04	1.0000	0.0226
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	5.504E-09	1.7623E-01	5.2903E+03	1.0000	0.0407
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	2.109E-08	8.1816E-01	1.3806E+03	1.0000	0.0786
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	6.826E-09	3.1616E-01	4.2659E+03	1.0000	0.0452
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	2.480E-08	1.3354E+00	1.1741E+03	1.0000	0.0850
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	8.174E-08	5.0162E+00	3.5623E+02	1.0000	0.1505
40000	1160.8	1.089	0.90	30.3108	842.21	7.277E+07	7.484E-11	5.4460E-03	3.8908E+05	1.0000	0.0048
44000	1180.1	1.089	0.90	30.3108	974.17	8.417E+07	2.413E-10	2.0307E-02	1.2069E+05	1.0000	0.0086
48000	1198.8	1.089	0.90	30.3108	1106.14	9.557E+07	7.535E-10	7.2015E-02	3.8645E+04	1.0000	0.0152

52000	1216.5	1.089	0.90	30.3108	1238.11	1.070E+08	2.263E-09	2.4204E-01	1.2870E+04	1.0000	0.0262
56000	1234.1	1.089	0.90	30.3108	1370.07	1.184E+08	6.692E-09	7.9221E-01	4.3512E+03	1.0000	0.0448
58000	1244.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.193E-08	1.4796E+00	2.4419E+03	1.0000	0.0595
60000	1252.5	1.089	0.90	30.3108	1502.04	1.298E+08	1.993E-08	2.5858E+00	1.4615E+03	1.0000	0.0764
62000	1261.2	1.089	0.90	30.3108	1568.02	1.355E+08	3.383E-08	4.5831E+00	8.6079E+02	1.0000	0.0988
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	1.690E-10	0.0000E+00	1.7230E+05	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	9.120E-12	5.6150E-05	3.1931E+06	1.0000	0.0017
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	2.316E-11	2.8524E-04	1.2571E+06	1.0000	0.0027
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	6.225E-11	1.1499E-03	4.6776E+05	1.0000	0.0044
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	3.919E-11	9.8933E-04	7.4303E+05	1.0000	0.0035
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.307E-10	4.1857E-03	2.2274E+05	1.0000	0.0063
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	5.302E-10	2.0564E-02	5.4927E+04	1.0000	0.0127
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	1.798E-10	8.3272E-03	1.6196E+05	1.0000	0.0074
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	6.777E-10	3.6489E-02	4.2967E+04	1.0000	0.0144
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	2.302E-09	1.4128E-01	1.2649E+04	1.0000	0.0264
40000	1057.8	1.089	0.90	30.3108	842.21	7.277E+07	3.537E-12	2.5735E-04	8.2340E+06	1.0000	0.0010
44000	1072.8	1.089	0.90	30.3108	974.17	8.417E+07	1.105E-11	9.2966E-04	2.6364E+06	1.0000	0.0018
48000	1087.9	1.089	0.90	30.3108	1106.14	9.557E+07	3.415E-11	3.2634E-03	8.5280E+05	1.0000	0.0032
52000	1101.9	1.089	0.90	30.3108	1238.11	1.070E+08	1.008E-10	1.0787E-02	2.8879E+05	1.0000	0.0056
56000	1116.0	1.089	0.90	30.3108	1370.07	1.184E+08	2.955E-10	3.4976E-02	9.8554E+04	1.0000	0.0095
58000	1124.1	1.089	0.90	30.3108	1436.06	1.241E+08	5.193E-10	6.4430E-02	5.6077E+04	1.0000	0.0126
60000	1130.6	1.089	0.90	30.3108	1502.04	1.298E+08	8.691E-10	1.1279E-01	3.3505E+04	1.0000	0.0163
62000	1137.6	1.089	0.90	30.3108	1568.02	1.355E+08	1.472E-09	1.9944E-01	1.9781E+04	1.0000	0.0212
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	3.385E-12	0.0000E+00	8.6017E+06	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	6.309E-15	3.8844E-08	4.6157E+09	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	1.414E-14	1.7412E-07	2.0594E+09	1.0000	0.0001
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	3.571E-14	6.5964E-07	8.1540E+08	1.0000	0.0001
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	2.980E-14	7.5217E-07	9.7730E+08	1.0000	0.0001
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	9.620E-14	3.0801E-06	3.0269E+08	1.0000	0.0002
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	4.130E-13	1.6021E-05	7.0504E+07	1.0000	0.0004
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	1.680E-13	7.7827E-06	1.7329E+08	1.0000	0.0002
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	6.544E-13	3.5233E-05	4.4499E+07	1.0000	0.0004
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	2.238E-12	1.3735E-04	1.3010E+07	1.0000	0.0008
40000	909.4	1.089	0.90	30.3108	842.21	7.277E+07	1.291E-14	9.3908E-07	2.2564E+09	1.0000	0.0001
44000	918.3	1.089	0.90	30.3108	974.17	8.417E+07	3.672E-14	3.0906E-06	7.9304E+08	1.0000	0.0001
48000	928.3	1.089	0.90	30.3108	1106.14	9.557E+07	1.086E-13	1.0383E-05	2.6804E+08	1.0000	0.0002
52000	937.2	1.089	0.90	30.3108	1238.11	1.070E+08	3.043E-13	3.2556E-05	9.5682E+07	1.0000	0.0003
56000	946.3	1.089	0.90	30.3108	1370.07	1.184E+08	8.535E-13	1.0104E-04	3.4117E+07	1.0000	0.0005
58000	951.2	1.089	0.90	30.3108	1436.06	1.241E+08	1.446E-12	1.7938E-04	2.0141E+07	1.0000	0.0007
60000	955.5	1.089	0.90	30.3108	1502.04	1.298E+08	2.386E-12	3.0968E-04	1.2203E+07	1.0000	0.0009

62000	960.1	1.089	0.90	30.3108	1568.02	1.355E+08	3.979E-12	5.3912E-04	7.3177E+06	1.0000	0.0011
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	3.224E-15	0.0000E+00	9.0310E+09	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	2.712E-20	1.6701E-13	1.0736E+15	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	4.020E-20	4.9508E-13	7.2429E+14	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	7.433E-20	1.3730E-12	3.9175E+14	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.105E-19	2.7891E-12	2.6356E+14	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	2.737E-19	8.7620E-12	1.0640E+14	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.073E-18	4.1607E-11	2.7148E+13	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	7.329E-19	3.3943E-11	3.9733E+13	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	2.551E-18	1.3737E-10	1.1413E+13	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	7.627E-18	4.6805E-10	3.8178E+12	1.0000	0.0000
40000	735.0	1.089	0.90	30.3108	842.21	7.277E+07	9.719E-19	7.0722E-11	2.9962E+13	1.0000	0.0000
44000	737.2	1.089	0.90	30.3108	974.17	8.417E+07	2.175E-18	1.8308E-10	1.3387E+13	1.0000	0.0000
48000	741.2	1.089	0.90	30.3108	1106.14	9.557E+07	5.481E-18	5.2386E-10	5.3125E+12	1.0000	0.0000
52000	744.2	1.089	0.90	30.3108	1238.11	1.070E+08	1.290E-17	1.3798E-09	2.2575E+12	1.0000	0.0000
56000	747.4	1.089	0.90	30.3108	1370.07	1.184E+08	3.070E-17	3.6345E-09	9.4844E+11	1.0000	0.0000
58000	748.9	1.089	0.90	30.3108	1436.06	1.241E+08	4.703E-17	5.8354E-09	6.1916E+11	1.0000	0.0000
60000	750.6	1.089	0.90	30.3108	1502.04	1.298E+08	7.295E-17	9.4674E-09	3.9917E+11	1.0000	0.0000
62000	752.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.131E-16	1.5323E-08	2.5747E+11	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.305E-20	0.0000E+00	2.2307E+15	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	2.563E-22	1.5779E-15	1.1362E+17	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	4.236E-22	5.2157E-15	6.8751E+16	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	7.705E-22	1.4233E-14	3.7792E+16	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	5.904E-22	1.4904E-14	4.9321E+16	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.340E-21	4.2889E-14	2.1738E+16	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	4.996E-21	1.9378E-13	5.8290E+15	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	1.738E-21	8.0516E-14	1.6750E+16	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	5.521E-21	2.9722E-13	5.2749E+15	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	1.478E-20	9.0673E-13	1.9708E+15	1.0000	0.0000
40000	636.8	1.089	0.90	30.3108	842.21	7.277E+07	4.701E-22	3.4204E-14	6.1950E+16	1.0000	0.0000
44000	635.5	1.089	0.90	30.3108	974.17	8.417E+07	8.074E-22	6.7959E-14	3.6066E+16	1.0000	0.0000
48000	636.0	1.089	0.90	30.3108	1106.14	9.557E+07	1.631E-21	1.5584E-13	1.7858E+16	1.0000	0.0000
52000	635.7	1.089	0.90	30.3108	1238.11	1.070E+08	3.064E-21	3.2781E-13	9.5026E+15	1.0000	0.0000
56000	635.6	1.089	0.90	30.3108	1370.07	1.184E+08	5.863E-21	6.9408E-13	4.9664E+15	1.0000	0.0000
58000	635.6	1.089	0.90	30.3108	1436.06	1.241E+08	8.147E-21	1.0109E-12	3.5742E+15	1.0000	0.0000
60000	635.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.132E-20	1.4691E-12	2.5723E+15	1.0000	0.0000
62000	635.7	1.089	0.90	30.3108	1568.02	1.355E+08	1.587E-20	2.1503E-12	1.8347E+15	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0218	0.0113	0.0017	0.0000	0.0000	0.0000	0.0014				
8000	0.0352	0.0183	0.0027	0.0001	0.0000	0.0000	0.0023				
12000	0.0572	0.0299	0.0044	0.0001	0.0000	0.0000	0.0037				
16000	0.0427	0.0226	0.0035	0.0001	0.0000	0.0000	0.0028				
20000	0.0762	0.0407	0.0063	0.0002	0.0000	0.0000	0.0051				
24000	0.1438	0.0786	0.0127	0.0004	0.0000	0.0000	0.0098				
28000	0.0834	0.0452	0.0074	0.0002	0.0000	0.0000	0.0057				
32000	0.1535	0.0850	0.0144	0.0004	0.0000	0.0000	0.0107				
36000	0.2640	0.1505	0.0264	0.0008	0.0000	0.0000	0.0191				
40000	0.0082	0.0048	0.0010	0.0001	0.0000	0.0000	0.0006				
44000	0.0147	0.0086	0.0018	0.0001	0.0000	0.0000	0.0012				
48000	0.0259	0.0152	0.0032	0.0002	0.0000	0.0000	0.0020				
52000	0.0447	0.0262	0.0056	0.0003	0.0000	0.0000	0.0035				
56000	0.0760	0.0448	0.0095	0.0005	0.0000	0.0000	0.0060				
58000	0.1007	0.0595	0.0126	0.0007	0.0000	0.0000	0.0079				
60000	0.1288	0.0764	0.0163	0.0009	0.0000	0.0000	0.0102				
62000	0.1653	0.0988	0.0212	0.0011	0.0000	0.0000	0.0132				

Gas Gap Fractions: Xe-133											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300			cal/mol							
R	1.987			cal/mol-K							
Do/a2	0.61			1/sec							
lambda	1.5280E-06			1/sec							
r=0.0											
Bumup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	3.9242E+03	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	6.8624E+03	1.0000	0.0358
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	2.6041E+03	1.0000	0.0576
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	9.7103E+02	1.0000	0.0932
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	1.7573E+03	1.0000	0.0699
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	5.3958E+02	1.0000	0.1236
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	1.4420E+02	1.0000	0.2290
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	4.4821E+02	1.0000	0.1350
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	1.2556E+02	1.0000	0.2438
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	3.8618E+01	1.0000	0.4051
40000	1385.9	1.089	1.10	37.0465	818.21	7.069E+07	1.738E-09	1.2290E-01	8.7894E+02	1.0000	0.0978
44000	1412.9	1.089	1.10	37.0465	926.19	8.002E+07	5.543E-09	4.4359E-01	2.7565E+02	1.0000	0.1698
48000	1452.7	1.089	1.10	37.0465	1034.16	8.935E+07	2.167E-08	1.9365E+00	7.0504E+01	1.0000	0.3147
52000	1481.3	1.089	1.10	37.0465	1142.13	9.868E+07	6.787E-08	6.6970E+00	2.2515E+01	1.0000	0.4991
56000	1511.0	1.089	1.10	37.0465	1250.10	1.080E+08	2.123E-07	2.2936E+01	7.1957E+00	1.0000	0.7120
58000	1537.1	1.089	1.10	37.0465	1304.09	1.127E+08	4.441E-07	5.0039E+01	3.4406E+00	1.0000	0.8266
60000	1548.5	1.089	1.10	37.0465	1358.08	1.173E+08	7.346E-07	8.6193E+01	2.0801E+00	1.0000	0.8841
62000	1570.8	1.089	1.10	37.0465	1412.06	1.220E+08	1.425E-06	1.7383E+02	1.0724E+00	1.0000	0.9351
r=0.2											
Bumup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	7.9858E+03	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	2.5656E+04	1.0000	0.0186
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	9.7808E+03	1.0000	0.0300
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	3.6335E+03	1.0000	0.0489
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	6.3926E+03	1.0000	0.0371
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	1.9432E+03	1.0000	0.0665
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	5.0710E+02	1.0000	0.1273
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	1.5669E+03	1.0000	0.0739
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	4.3125E+02	1.0000	0.1375
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	1.3085E+02	1.0000	0.2393
40000	1326.8	1.089	1.10	37.0465	818.21	7.069E+07	5.398E-10	3.8163E-02	2.8305E+03	1.0000	0.0553
44000	1351.7	1.089	1.10	37.0465	926.19	8.002E+07	1.727E-09	1.3823E-01	8.8459E+02	1.0000	0.0975
48000	1388.9	1.089	1.10	37.0465	1034.16	8.935E+07	6.858E-09	6.1280E-01	2.2279E+02	1.0000	0.1875
52000	1415.3	1.089	1.10	37.0465	1142.13	9.868E+07	2.159E-08	2.1301E+00	7.0788E+01	1.0000	0.3142

56000	1443.5	1.089	1.10	37.0465	1250.10	1.080E+08	6.887E-08	7.4382E+00	2.2188E+01	1.0000	0.5018
58000	1468.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.465E-07	1.6504E+01	1.0432E+01	1.0000	0.6442
60000	1479.5	1.089	1.10	37.0465	1358.08	1.173E+08	2.455E-07	2.8809E+01	6.2234E+00	1.0000	0.7370
62000	1501.5	1.089	1.10	37.0465	1412.06	1.220E+08	4.892E-07	5.9679E+01	3.1237E+00	1.0000	0.8390
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	6.3286E+04	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	1.1729E+06	1.0000	0.0028
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	4.6176E+05	1.0000	0.0044
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	1.7181E+05	1.0000	0.0072
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	2.7292E+05	1.0000	0.0057
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	8.1815E+04	1.0000	0.0105
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	2.0175E+04	1.0000	0.0210
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	5.9489E+04	1.0000	0.0122
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	1.5782E+04	1.0000	0.0237
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	4.6460E+03	1.0000	0.0434
40000	1181.3	1.089	1.10	37.0465	818.21	7.069E+07	1.842E-11	1.3022E-03	8.2953E+04	1.0000	0.0104
44000	1201.2	1.089	1.10	37.0465	926.19	8.002E+07	5.924E-11	4.7406E-03	2.5793E+04	1.0000	0.0186
48000	1231.9	1.089	1.10	37.0465	1034.16	8.935E+07	2.433E-10	2.1741E-02	6.2797E+03	1.0000	0.0374
52000	1252.9	1.089	1.10	37.0465	1142.13	9.868E+07	7.707E-10	7.6057E-02	1.9825E+03	1.0000	0.0659
56000	1277.2	1.089	1.10	37.0465	1250.10	1.080E+08	2.586E-09	2.7929E-01	5.9092E+02	1.0000	0.1183
58000	1298.8	1.089	1.10	37.0465	1304.09	1.127E+08	5.771E-09	6.5019E-01	2.6479E+02	1.0000	0.1730
60000	1308.9	1.089	1.10	37.0465	1358.08	1.173E+08	9.953E-09	1.1679E+00	1.5352E+02	1.0000	0.2226
62000	1329.9	1.089	1.10	37.0465	1412.06	1.220E+08	2.145E-08	2.6171E+00	7.1230E+01	1.0000	0.3133
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	3.1595E+06	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	1.6954E+09	1.0000	0.0001
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	7.5642E+08	1.0000	0.0001
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	2.9950E+08	1.0000	0.0002
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	3.5897E+08	1.0000	0.0002
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	1.1118E+08	1.0000	0.0003
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	2.5897E+07	1.0000	0.0006
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	6.3651E+07	1.0000	0.0004
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	1.6345E+07	1.0000	0.0007
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	4.7786E+06	1.0000	0.0014
40000	979.2	1.089	1.10	37.0465	818.21	7.069E+07	3.194E-14	2.2580E-06	4.7839E+07	1.0000	0.0004
44000	992.0	1.089	1.10	37.0465	926.19	8.002E+07	9.961E-14	7.9707E-06	1.5340E+07	1.0000	0.0008
48000	1013.6	1.089	1.10	37.0465	1034.16	8.935E+07	4.202E-13	3.7547E-05	3.6363E+06	1.0000	0.0016
52000	1027.2	1.089	1.10	37.0465	1142.13	9.868E+07	1.305E-12	1.2877E-04	1.1709E+06	1.0000	0.0028
56000	1045.7	1.089	1.10	37.0465	1250.10	1.080E+08	4.715E-12	5.0926E-04	3.2407E+05	1.0000	0.0053
58000	1062.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.128E-11	1.2715E-03	1.3541E+05	1.0000	0.0081
60000	1070.7	1.089	1.10	37.0465	1358.08	1.173E+08	2.051E-11	2.4070E-03	7.4487E+04	1.0000	0.0110
62000	1089.1	1.089	1.10	37.0465	1412.06	1.220E+08	5.061E-11	6.1747E-03	3.0191E+04	1.0000	0.0172

r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	3.3172E+09	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	3.9433E+14	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	2.6604E+14	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	1.4389E+14	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	9.6808E+13	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	3.9083E+13	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	9.9716E+12	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	1.4594E+13	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	4.1922E+12	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	1.4023E+12	1.0000	0.0000
40000	753.8	1.089	1.10	37.0465	818.21	7.069E+07	4.772E-19	3.3738E-11	3.2017E+12	1.0000	0.0000
44000	758.8	1.089	1.10	37.0465	926.19	8.002E+07	1.266E-18	1.0135E-10	1.2065E+12	1.0000	0.0000
48000	770.1	1.089	1.10	37.0465	1034.16	8.935E+07	4.942E-18	4.4156E-10	3.0920E+11	1.0000	0.0000
52000	775.6	1.089	1.10	37.0465	1142.13	9.868E+07	1.334E-17	1.3163E-09	1.1455E+11	1.0000	0.0000
56000	786.7	1.089	1.10	37.0465	1250.10	1.080E+08	4.992E-17	5.3922E-09	3.0607E+10	1.0000	0.0000
58000	797.4	1.089	1.10	37.0465	1304.09	1.127E+08	1.290E-16	1.4539E-08	1.1842E+10	1.0000	0.0000
60000	803.0	1.089	1.10	37.0465	1358.08	1.173E+08	2.465E-16	2.8920E-08	6.1995E+09	1.0000	0.0000
62000	816.6	1.089	1.10	37.0465	1412.06	1.220E+08	7.284E-16	8.8866E-08	2.0978E+09	1.0000	0.0001
r=1.0.											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	8.1937E+14	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	4.1735E+16	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	2.5253E+16	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	1.3881E+16	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	1.8116E+16	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	7.9846E+15	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	2.1410E+15	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	6.1526E+15	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	1.9375E+15	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	7.2388E+14	1.0000	0.0000
40000	653.3	1.089	1.10	37.0465	818.21	7.069E+07	2.843E-22	2.0099E-14	5.3743E+15	1.0000	0.0000
44000	655.2	1.089	1.10	37.0465	926.19	8.002E+07	6.451E-22	5.1626E-14	2.3685E+15	1.0000	0.0000
48000	661.9	1.089	1.10	37.0465	1034.16	8.935E+07	2.185E-21	1.9526E-13	6.9922E+14	1.0000	0.0000
52000	664.1	1.089	1.10	37.0465	1142.13	9.868E+07	5.062E-21	4.9951E-13	3.0186E+14	1.0000	0.0000
56000	671.5	1.089	1.10	37.0465	1250.10	1.080E+08	1.788E-20	1.9307E-12	8.5481E+13	1.0000	0.0000
58000	679.2	1.089	1.10	37.0465	1304.09	1.127E+08	4.591E-20	5.1728E-12	3.3283E+13	1.0000	0.0000
60000	682.7	1.089	1.10	37.0465	1358.08	1.173E+08	8.395E-20	9.8509E-12	1.8201E+13	1.0000	0.0000
62000	688.0	1.089	1.10	37.0465	1412.06	1.220E+08	1.759E-19	2.1457E-11	8.6879E+12	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0358	0.0186	0.0028	0.0001	0.0000	0.0000	0.0023				

8000	0.0576	0.0300	0.0044	0.0001	0.0000	0.0000	0.0037				
12000	0.0932	0.0489	0.0072	0.0002	0.0000	0.0000	0.0060				
16000	0.0699	0.0371	0.0057	0.0002	0.0000	0.0000	0.0046				
20000	0.1236	0.0665	0.0105	0.0003	0.0000	0.0000	0.0083				
24000	0.2290	0.1273	0.0210	0.0006	0.0000	0.0000	0.0160				
28000	0.1350	0.0739	0.0122	0.0004	0.0000	0.0000	0.0093				
32000	0.2438	0.1375	0.0237	0.0007	0.0000	0.0000	0.0174				
36000	0.4051	0.2393	0.0434	0.0014	0.0000	0.0000	0.0305				
40000	0.0978	0.0553	0.0104	0.0004	0.0000	0.0000	0.0072				
44000	0.1698	0.0975	0.0186	0.0008	0.0000	0.0000	0.0127				
48000	0.3147	0.1875	0.0374	0.0016	0.0000	0.0000	0.0245				
52000	0.4991	0.3142	0.0659	0.0028	0.0000	0.0000	0.0413				
56000	0.7120	0.5018	0.1183	0.0053	0.0000	0.0000	0.0675				
58000	0.8266	0.6442	0.1730	0.0081	0.0000	0.0000	0.0894				
60000	0.8841	0.7370	0.2226	0.0110	0.0000	0.0000	0.1061				
62000	0.9351	0.8390	0.3133	0.0172	0.0001	0.0000	0.1307				

Gas Gap Fractions: Xe-133											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300		cal/mol								
R	1.987		cal/mol-K								
Do/a2	0.61		1/sec								
lambda	1.5280E-06		1/sec								
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	3.9242E+03	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	6.8624E+03	1.0000	0.0358
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	2.6041E+03	1.0000	0.0576
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	9.7103E+02	1.0000	0.0932
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	1.7573E+03	1.0000	0.0699
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	5.3958E+02	1.0000	0.1236
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	1.4420E+02	1.0000	0.2290
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	4.4821E+02	1.0000	0.1350
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	1.2556E+02	1.0000	0.2438
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	3.8618E+01	1.0000	0.4051
40000	1201.7	1.089	0.90	30.3108	842.21	7.277E+07	3.107E-11	2.2611E-03	4.9174E+04	1.0000	0.0135
44000	1222.7	1.089	0.90	30.3108	974.17	8.417E+07	1.009E-10	8.4938E-03	1.5142E+04	1.0000	0.0242
48000	1242.9	1.089	0.90	30.3108	1106.14	9.557E+07	3.160E-10	3.0202E-02	4.8351E+03	1.0000	0.0425
52000	1262.0	1.089	0.90	30.3108	1238.11	1.070E+08	9.503E-10	1.0165E-01	1.6079E+03	1.0000	0.0729
56000	1281.0	1.089	0.90	30.3108	1370.07	1.184E+08	2.814E-09	3.3308E-01	5.4304E+02	1.0000	0.1232
58000	1292.5	1.089	0.90	30.3108	1436.06	1.241E+08	5.034E-09	6.2459E-01	3.0354E+02	1.0000	0.1623
60000	1301.0	1.089	0.90	30.3108	1502.04	1.298E+08	8.407E-09	1.0910E+00	1.8175E+02	1.0000	0.2060
62000	1310.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.425E-08	1.9301E+00	1.0725E+02	1.0000	0.2617
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	7.9858E+03	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	2.5656E+04	1.0000	0.0186
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	9.7808E+03	1.0000	0.0300
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	3.6335E+03	1.0000	0.0489
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	6.3926E+03	1.0000	0.0371
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	1.9432E+03	1.0000	0.0665
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	5.0710E+02	1.0000	0.1273
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	1.5669E+03	1.0000	0.0739
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	4.3125E+02	1.0000	0.1375
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	1.3085E+02	1.0000	0.2393
40000	1160.8	1.089	0.90	30.3108	842.21	7.277E+07	1.069E-11	7.7801E-04	1.4291E+05	1.0000	0.0079
44000	1180.1	1.089	0.90	30.3108	974.17	8.417E+07	3.447E-11	2.9011E-03	4.4332E+04	1.0000	0.0142
48000	1198.8	1.089	0.90	30.3108	1106.14	9.557E+07	1.076E-10	1.0288E-02	1.4195E+04	1.0000	0.0250

52000	1216.5	1.089	0.90	30.3108	1238.11	1.070E+08	3.232E-10	3.4577E-02	4.7273E+03	1.0000	0.0430
56000	1234.1	1.089	0.90	30.3108	1370.07	1.184E+08	9.561E-10	1.1317E-01	1.5982E+03	1.0000	0.0732
58000	1244.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.704E-09	2.1137E-01	8.9692E+02	1.0000	0.0968
60000	1252.5	1.089	0.90	30.3108	1502.04	1.298E+08	2.846E-09	3.6941E-01	5.3680E+02	1.0000	0.1239
62000	1261.2	1.089	0.90	30.3108	1568.02	1.355E+08	4.833E-09	6.5473E-01	3.1617E+02	1.0000	0.1592
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mwd/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	6.3286E+04	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	1.1729E+06	1.0000	0.0028
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	4.6176E+05	1.0000	0.0044
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	1.7181E+05	1.0000	0.0072
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	2.7292E+05	1.0000	0.0057
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	8.1815E+04	1.0000	0.0105
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	2.0175E+04	1.0000	0.0210
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	5.9489E+04	1.0000	0.0122
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	1.5782E+04	1.0000	0.0237
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	4.6460E+03	1.0000	0.0434
40000	1057.8	1.089	0.90	30.3108	842.21	7.277E+07	5.052E-13	3.6764E-05	3.0244E+06	1.0000	0.0017
44000	1072.8	1.089	0.90	30.3108	974.17	8.417E+07	1.578E-12	1.3281E-04	9.6838E+05	1.0000	0.0030
48000	1087.9	1.089	0.90	30.3108	1106.14	9.557E+07	4.878E-12	4.6620E-04	3.1324E+05	1.0000	0.0054
52000	1101.9	1.089	0.90	30.3108	1238.11	1.070E+08	1.440E-11	1.5409E-03	1.0607E+05	1.0000	0.0092
56000	1116.0	1.089	0.90	30.3108	1370.07	1.184E+08	4.221E-11	4.9966E-03	3.6200E+04	1.0000	0.0157
58000	1124.1	1.089	0.90	30.3108	1436.06	1.241E+08	7.418E-11	9.2044E-03	2.0598E+04	1.0000	0.0208
60000	1130.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.242E-10	1.6113E-02	1.2307E+04	1.0000	0.0268
62000	1137.6	1.089	0.90	30.3108	1568.02	1.355E+08	2.103E-10	2.8491E-02	7.2657E+03	1.0000	0.0348
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mwd/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	3.1595E+06	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	1.6954E+09	1.0000	0.0001
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	7.5642E+08	1.0000	0.0001
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	2.9950E+08	1.0000	0.0002
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	3.5897E+08	1.0000	0.0002
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	1.1118E+08	1.0000	0.0003
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	2.5897E+07	1.0000	0.0006
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	6.3651E+07	1.0000	0.0004
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	1.6345E+07	1.0000	0.0007
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	4.7786E+06	1.0000	0.0014
40000	909.4	1.089	0.90	30.3108	842.21	7.277E+07	1.844E-15	1.3415E-07	8.2880E+08	1.0000	0.0001
44000	918.3	1.089	0.90	30.3108	974.17	8.417E+07	5.246E-15	4.4152E-07	2.9129E+08	1.0000	0.0002
48000	928.3	1.089	0.90	30.3108	1106.14	9.557E+07	1.552E-14	1.4832E-06	9.8454E+07	1.0000	0.0003
52000	937.2	1.089	0.90	30.3108	1238.11	1.070E+08	4.348E-14	4.6509E-06	3.5145E+07	1.0000	0.0005
56000	946.3	1.089	0.90	30.3108	1370.07	1.184E+08	1.219E-13	1.4434E-05	1.2531E+07	1.0000	0.0008
58000	951.2	1.089	0.90	30.3108	1436.06	1.241E+08	2.065E-13	2.5626E-05	7.3981E+06	1.0000	0.0011
60000	955.5	1.089	0.90	30.3108	1502.04	1.298E+08	3.409E-13	4.4240E-05	4.4823E+06	1.0000	0.0014

62000	960.1	1.089	0.90	30.3108	1568.02	1.355E+08	5.685E-13	7.7017E-05	2.6878E+06	1.0000	0.0018
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mwd/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	3.3172E+09	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	3.9433E+14	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	2.6604E+14	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	1.4389E+14	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	9.6808E+13	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	3.9083E+13	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	9.9716E+12	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	1.4594E+13	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	4.1922E+12	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	1.4023E+12	1.0000	0.0000
40000	735.0	1.089	0.90	30.3108	842.21	7.277E+07	1.388E-19	1.0103E-11	1.1005E+13	1.0000	0.0000
44000	737.2	1.089	0.90	30.3108	974.17	8.417E+07	3.107E-19	2.6155E-11	4.9173E+12	1.0000	0.0000
48000	741.2	1.089	0.90	30.3108	1106.14	9.557E+07	7.831E-19	7.4838E-11	1.9513E+12	1.0000	0.0000
52000	744.2	1.089	0.90	30.3108	1238.11	1.070E+08	1.843E-18	1.9712E-10	8.2922E+11	1.0000	0.0000
56000	747.4	1.089	0.90	30.3108	1370.07	1.184E+08	4.386E-18	5.1921E-10	3.4837E+11	1.0000	0.0000
58000	748.9	1.089	0.90	30.3108	1436.06	1.241E+08	6.719E-18	8.3363E-10	2.2742E+11	1.0000	0.0000
60000	750.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.042E-17	1.3525E-09	1.4662E+11	1.0000	0.0000
62000	752.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.616E-17	2.1889E-09	9.4570E+10	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mwd/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	8.1937E+14	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	4.1735E+16	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	2.5253E+16	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	1.3881E+16	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	1.8116E+16	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	7.9846E+15	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	2.1410E+15	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	6.1526E+15	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	1.9375E+15	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	7.2388E+14	1.0000	0.0000
40000	636.8	1.089	0.90	30.3108	842.21	7.277E+07	6.715E-23	4.8863E-15	2.2755E+16	1.0000	0.0000
44000	635.5	1.089	0.90	30.3108	974.17	8.417E+07	1.153E-22	9.7085E-15	1.3247E+16	1.0000	0.0000
48000	636.0	1.089	0.90	30.3108	1106.14	9.557E+07	2.330E-22	2.2263E-14	6.5593E+15	1.0000	0.0000
52000	635.7	1.089	0.90	30.3108	1238.11	1.070E+08	4.378E-22	4.6830E-14	3.4904E+15	1.0000	0.0000
56000	635.6	1.089	0.90	30.3108	1370.07	1.184E+08	8.376E-22	9.9155E-14	1.8242E+15	1.0000	0.0000
58000	635.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.164E-21	1.4441E-13	1.3128E+15	1.0000	0.0000
60000	635.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.617E-21	2.0988E-13	9.4483E+14	1.0000	0.0000
62000	635.7	1.089	0.90	30.3108	1568.02	1.355E+08	2.267E-21	3.0719E-13	6.7388E+14	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0358	0.0186	0.0028	0.0001	0.0000	0.0000	0.0023				
8000	0.0576	0.0300	0.0044	0.0001	0.0000	0.0000	0.0037				
12000	0.0932	0.0489	0.0072	0.0002	0.0000	0.0000	0.0060				
16000	0.0699	0.0371	0.0057	0.0002	0.0000	0.0000	0.0046				
20000	0.1236	0.0665	0.0105	0.0003	0.0000	0.0000	0.0083				
24000	0.2290	0.1273	0.0210	0.0006	0.0000	0.0000	0.0160				
28000	0.1350	0.0739	0.0122	0.0004	0.0000	0.0000	0.0093				
32000	0.2438	0.1375	0.0237	0.0007	0.0000	0.0000	0.0174				
36000	0.4051	0.2393	0.0434	0.0014	0.0000	0.0000	0.0305				
40000	0.0135	0.0079	0.0017	0.0001	0.0000	0.0000	0.0011				
44000	0.0242	0.0142	0.0030	0.0002	0.0000	0.0000	0.0019				
48000	0.0425	0.0250	0.0054	0.0003	0.0000	0.0000	0.0034				
52000	0.0729	0.0430	0.0092	0.0005	0.0000	0.0000	0.0058				
56000	0.1232	0.0732	0.0157	0.0008	0.0000	0.0000	0.0098				
58000	0.1623	0.0968	0.0208	0.0011	0.0000	0.0000	0.0130				
60000	0.2060	0.1239	0.0268	0.0014	0.0000	0.0000	0.0166				
62000	0.2617	0.1592	0.0348	0.0018	0.0000	0.0000	0.0214				

Gas Gap Fractions: Xe-133m											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=					44949.18	cc					
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=					410371.65	gm					
Q	72300	cal/mol									
R	1.987	cal/mol-K									
Do/a2	0.61	1/sec									
lambda	3.6630E-06	1/sec									
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	9.4074E+03	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	1.6451E+04	1.0000	0.0232
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	6.2426E+03	1.0000	0.0375
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	2.3278E+03	1.0000	0.0609
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	4.2127E+03	1.0000	0.0455
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	1.2935E+03	1.0000	0.0811
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	3.4569E+02	1.0000	0.1527
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	1.0745E+03	1.0000	0.0887
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	3.0099E+02	1.0000	0.1630
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	9.2577E+01	1.0000	0.2794
40000	1385.9	1.089	1.10	37.0465	818.21	7.069E+07	1.738E-09	1.2290E-01	2.1070E+03	1.0000	0.0639
44000	1412.9	1.089	1.10	37.0465	926.19	8.002E+07	5.543E-09	4.4359E-01	6.6079E+02	1.0000	0.1122
48000	1452.7	1.089	1.10	37.0465	1034.16	8.935E+07	2.167E-08	1.9365E+00	1.6902E+02	1.0000	0.2130
52000	1481.3	1.089	1.10	37.0465	1142.13	9.868E+07	6.787E-08	6.6970E+00	5.3975E+01	1.0000	0.3528
56000	1511.0	1.089	1.10	37.0465	1250.10	1.080E+08	2.123E-07	2.2936E+01	1.7250E+01	1.0000	0.5488
58000	1537.1	1.089	1.10	37.0465	1304.09	1.127E+08	4.441E-07	5.0039E+01	8.2480E+00	1.0000	0.6876
60000	1548.5	1.089	1.10	37.0465	1358.08	1.173E+08	7.346E-07	8.6193E+01	4.9866E+00	1.0000	0.7731
62000	1570.8	1.089	1.10	37.0465	1412.06	1.220E+08	1.425E-06	1.7383E+02	2.5708E+00	1.0000	0.8620
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	1.9144E+04	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	6.1503E+04	1.0000	0.0120
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	2.3447E+04	1.0000	0.0195
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	8.7105E+03	1.0000	0.0318
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	1.5325E+04	1.0000	0.0240
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	4.6583E+03	1.0000	0.0433
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	1.2156E+03	1.0000	0.0836
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	3.7562E+03	1.0000	0.0482
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	1.0338E+03	1.0000	0.0904
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	3.1367E+02	1.0000	0.1598
40000	1326.8	1.089	1.10	37.0465	818.21	7.069E+07	5.398E-10	3.8163E-02	6.7853E+03	1.0000	0.0360
44000	1351.7	1.089	1.10	37.0465	926.19	8.002E+07	1.727E-09	1.3823E-01	2.1206E+03	1.0000	0.0637
48000	1388.9	1.089	1.10	37.0465	1034.16	8.935E+07	6.858E-09	6.1280E-01	5.3409E+02	1.0000	0.1242

52000	1415.3	1.089	1.10	37.0465	1142.13	9.868E+07	2.159E-08	2.1301E+00	1.6970E+02	1.0000	0.2126
56000	1443.5	1.089	1.10	37.0465	1250.10	1.080E+08	6.887E-08	7.4382E+00	5.3190E+01	1.0000	0.3549
58000	1468.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.465E-07	1.6504E+01	2.5007E+01	1.0000	0.4800
60000	1479.5	1.089	1.10	37.0465	1358.08	1.173E+08	2.455E-07	2.8809E+01	1.4919E+01	1.0000	0.5763
62000	1501.5	1.089	1.10	37.0465	1412.06	1.220E+08	4.892E-07	5.9679E+01	7.4883E+00	1.0000	0.7049
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	1.5171E+05	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	2.8116E+06	1.0000	0.0018
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	1.1070E+06	1.0000	0.0028
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	4.1187E+05	1.0000	0.0047
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	6.5426E+05	1.0000	0.0037
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	1.9613E+05	1.0000	0.0068
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	4.8365E+04	1.0000	0.0136
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	1.4261E+05	1.0000	0.0079
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	3.7834E+04	1.0000	0.0153
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	1.1138E+04	1.0000	0.0282
40000	1181.3	1.089	1.10	37.0465	818.21	7.069E+07	1.842E-11	1.3022E-03	1.9886E+05	1.0000	0.0067
44000	1201.2	1.089	1.10	37.0465	926.19	8.002E+07	5.924E-11	4.7406E-03	6.1832E+04	1.0000	0.0120
48000	1231.9	1.089	1.10	37.0465	1034.16	8.935E+07	2.433E-10	2.1741E-02	1.5054E+04	1.0000	0.0243
52000	1252.9	1.089	1.10	37.0465	1142.13	9.868E+07	7.707E-10	7.6057E-02	4.7526E+03	1.0000	0.0429
56000	1277.2	1.089	1.10	37.0465	1250.10	1.080E+08	2.586E-09	2.7929E-01	1.4166E+03	1.0000	0.0776
58000	1298.8	1.089	1.10	37.0465	1304.09	1.127E+08	5.771E-09	6.5019E-01	6.3478E+02	1.0000	0.1143
60000	1308.9	1.089	1.10	37.0465	1358.08	1.173E+08	9.953E-09	1.1679E+00	3.6803E+02	1.0000	0.1482
62000	1329.9	1.089	1.10	37.0465	1412.06	1.220E+08	2.145E-08	2.6171E+00	1.7076E+02	1.0000	0.2120
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	7.5740E+06	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	4.0642E+09	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	1.8133E+09	1.0000	0.0001
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	7.1799E+08	1.0000	0.0001
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	8.6054E+08	1.0000	0.0001
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	2.6653E+08	1.0000	0.0002
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	6.2081E+07	1.0000	0.0004
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	1.5259E+08	1.0000	0.0002
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	3.9182E+07	1.0000	0.0005
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	1.1456E+07	1.0000	0.0009
40000	979.2	1.089	1.10	37.0465	818.21	7.069E+07	3.194E-14	2.2580E-06	1.1468E+08	1.0000	0.0003
44000	992.0	1.089	1.10	37.0465	926.19	8.002E+07	9.961E-14	7.9707E-06	3.6775E+07	1.0000	0.0005
48000	1013.6	1.089	1.10	37.0465	1034.16	8.935E+07	4.202E-13	3.7547E-05	8.7170E+06	1.0000	0.0010
52000	1027.2	1.089	1.10	37.0465	1142.13	9.868E+07	1.305E-12	1.2877E-04	2.8070E+06	1.0000	0.0018
56000	1045.7	1.089	1.10	37.0465	1250.10	1.080E+08	4.715E-12	5.0926E-04	7.7689E+05	1.0000	0.0034
58000	1062.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.128E-11	1.2715E-03	3.2460E+05	1.0000	0.0053
60000	1070.7	1.089	1.10	37.0465	1358.08	1.173E+08	2.051E-11	2.4070E-03	1.7856E+05	1.0000	0.0071

62000	1089.1	1.089	1.10	37.0465	1412.06	1.220E+08	5.061E-11	6.1747E-03	7.2375E+04	1.0000	0.0111
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	7.9521E+09	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	9.4530E+14	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	6.3776E+14	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	3.4495E+14	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	2.3207E+14	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	9.3692E+13	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	2.3904E+13	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	3.4986E+13	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	1.0050E+13	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	3.3617E+12	1.0000	0.0000
40000	753.8	1.089	1.10	37.0465	818.21	7.069E+07	4.772E-19	3.3738E-11	7.6753E+12	1.0000	0.0000
44000	758.8	1.089	1.10	37.0465	926.19	8.002E+07	1.266E-18	1.0135E-10	2.8923E+12	1.0000	0.0000
48000	770.1	1.089	1.10	37.0465	1034.16	8.935E+07	4.942E-18	4.4156E-10	7.4122E+11	1.0000	0.0000
52000	775.6	1.089	1.10	37.0465	1142.13	9.868E+07	1.334E-17	1.3163E-09	2.7461E+11	1.0000	0.0000
56000	786.7	1.089	1.10	37.0465	1250.10	1.080E+08	4.992E-17	5.3922E-09	7.3372E+10	1.0000	0.0000
58000	797.4	1.089	1.10	37.0465	1304.09	1.127E+08	1.290E-16	1.4539E-08	2.8388E+10	1.0000	0.0000
60000	803.0	1.089	1.10	37.0465	1358.08	1.173E+08	2.465E-16	2.8920E-08	1.4862E+10	1.0000	0.0000
62000	816.6	1.089	1.10	37.0465	1412.06	1.220E+08	7.284E-16	8.8866E-08	5.0288E+09	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	1.9642E+15	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	1.0005E+17	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	6.0537E+16	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	3.3277E+16	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	4.3429E+16	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	1.9141E+16	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	5.1326E+15	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	1.4749E+16	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	4.6447E+15	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	1.7353E+15	1.0000	0.0000
40000	653.3	1.089	1.10	37.0465	818.21	7.069E+07	2.843E-22	2.0099E-14	1.2884E+16	1.0000	0.0000
44000	655.2	1.089	1.10	37.0465	926.19	8.002E+07	6.451E-22	5.1626E-14	5.6778E+15	1.0000	0.0000
48000	661.9	1.089	1.10	37.0465	1034.16	8.935E+07	2.185E-21	1.9526E-13	1.6762E+15	1.0000	0.0000
52000	664.1	1.089	1.10	37.0465	1142.13	9.868E+07	5.062E-21	4.9951E-13	7.2365E+14	1.0000	0.0000
56000	671.5	1.089	1.10	37.0465	1250.10	1.080E+08	1.788E-20	1.9307E-12	2.0492E+14	1.0000	0.0000
58000	679.2	1.089	1.10	37.0465	1304.09	1.127E+08	4.591E-20	5.1728E-12	7.9788E+13	1.0000	0.0000
60000	682.7	1.089	1.10	37.0465	1358.08	1.173E+08	8.395E-20	9.8509E-12	4.3631E+13	1.0000	0.0000
62000	688.0	1.089	1.10	37.0465	1412.06	1.220E+08	1.759E-19	2.1457E-11	2.0827E+13	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0232	0.0120	0.0018	0.0000	0.0000	0.0000	0.0015				
8000	0.0375	0.0195	0.0028	0.0001	0.0000	0.0000	0.0024				
12000	0.0609	0.0318	0.0047	0.0001	0.0000	0.0000	0.0039				
16000	0.0455	0.0240	0.0037	0.0001	0.0000	0.0000	0.0030				
20000	0.0811	0.0433	0.0068	0.0002	0.0000	0.0000	0.0054				
24000	0.1527	0.0836	0.0136	0.0004	0.0000	0.0000	0.0105				
28000	0.0887	0.0482	0.0079	0.0002	0.0000	0.0000	0.0061				
32000	0.1630	0.0904	0.0153	0.0005	0.0000	0.0000	0.0114				
36000	0.2794	0.1598	0.0282	0.0009	0.0000	0.0000	0.0203				
40000	0.0639	0.0360	0.0067	0.0003	0.0000	0.0000	0.0047				
44000	0.1122	0.0637	0.0120	0.0005	0.0000	0.0000	0.0083				
48000	0.2130	0.1242	0.0243	0.0010	0.0000	0.0000	0.0162				
52000	0.3528	0.2126	0.0429	0.0018	0.0000	0.0000	0.0278				
56000	0.5488	0.3549	0.0776	0.0034	0.0000	0.0000	0.0471				
58000	0.6876	0.4800	0.1143	0.0053	0.0000	0.0000	0.0648				
60000	0.7731	0.5763	0.1482	0.0071	0.0000	0.0000	0.0793				
62000	0.8620	0.7049	0.2120	0.0111	0.0000	0.0000	0.1016				

Gas Gap Fractions: Xe-133m											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300	cal/mol									
R	1.987	cal/mol-K									
Do/a2	0.61	1/sec									
lambda	3.6630E-06	1/sec									
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	9.4074E+03	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	1.6451E+04	1.0000	0.0232
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	6.2426E+03	1.0000	0.0375
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	2.3278E+03	1.0000	0.0609
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	4.2127E+03	1.0000	0.0455
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	1.2935E+03	1.0000	0.0811
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	3.4569E+02	1.0000	0.1527
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	1.0745E+03	1.0000	0.0887
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	3.0099E+02	1.0000	0.1630
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	9.2577E+01	1.0000	0.2794
40000	1201.7	1.089	0.90	30.3108	842.21	7.277E+07	3.107E-11	2.2611E-03	1.1788E+05	1.0000	0.0087
44000	1222.7	1.089	0.90	30.3108	974.17	8.417E+07	1.009E-10	8.4938E-03	3.6298E+04	1.0000	0.0157
48000	1242.9	1.089	0.90	30.3108	1106.14	9.557E+07	3.160E-10	3.0202E-02	1.1591E+04	1.0000	0.0276
52000	1262.0	1.089	0.90	30.3108	1238.11	1.070E+08	9.503E-10	1.0165E-01	3.8546E+03	1.0000	0.0475
56000	1281.0	1.089	0.90	30.3108	1370.07	1.184E+08	2.814E-09	3.3308E-01	1.3018E+03	1.0000	0.0808
58000	1292.5	1.089	0.90	30.3108	1436.06	1.241E+08	5.034E-09	6.2459E-01	7.2766E+02	1.0000	0.1071
60000	1301.0	1.089	0.90	30.3108	1502.04	1.298E+08	8.407E-09	1.0910E+00	4.3570E+02	1.0000	0.1368
62000	1310.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.425E-08	1.9301E+00	2.5711E+02	1.0000	0.1754
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	1.9144E+04	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	6.1503E+04	1.0000	0.0120
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	2.3447E+04	1.0000	0.0195
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	8.7105E+03	1.0000	0.0318
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	1.5325E+04	1.0000	0.0240
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	4.6583E+03	1.0000	0.0433
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	1.2156E+03	1.0000	0.0836
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	3.7562E+03	1.0000	0.0482
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	1.0338E+03	1.0000	0.0904
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	3.1367E+02	1.0000	0.1598
40000	1160.8	1.089	0.90	30.3108	842.21	7.277E+07	1.069E-11	7.7801E-04	3.4260E+05	1.0000	0.0051
44000	1180.1	1.089	0.90	30.3108	974.17	8.417E+07	3.447E-11	2.9011E-03	1.0628E+05	1.0000	0.0092
48000	1198.8	1.089	0.90	30.3108	1106.14	9.557E+07	1.076E-10	1.0288E-02	3.4028E+04	1.0000	0.0162

52000	1216.5	1.089	0.90	30.3108	1238.11	1.070E+08	3.232E-10	3.4577E-02	1.1332E+04	1.0000	0.0279
56000	1234.1	1.089	0.90	30.3108	1370.07	1.184E+08	9.561E-10	1.1317E-01	3.8314E+03	1.0000	0.0477
58000	1244.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.704E-09	2.1137E-01	2.1502E+03	1.0000	0.0633
60000	1252.5	1.089	0.90	30.3108	1502.04	1.298E+08	2.846E-09	3.6941E-01	1.2869E+03	1.0000	0.0813
62000	1261.2	1.089	0.90	30.3108	1568.02	1.355E+08	4.833E-09	6.5473E-01	7.5795E+02	1.0000	0.1050
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	1.5171E+05	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	2.8116E+06	1.0000	0.0018
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	1.1070E+06	1.0000	0.0028
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	4.1187E+05	1.0000	0.0047
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	6.5426E+05	1.0000	0.0037
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	1.9613E+05	1.0000	0.0068
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	4.8365E+04	1.0000	0.0136
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	1.4261E+05	1.0000	0.0079
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	3.7834E+04	1.0000	0.0153
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	1.1138E+04	1.0000	0.0282
40000	1057.8	1.089	0.90	30.3108	842.21	7.277E+07	5.052E-13	3.6764E-05	7.2502E+06	1.0000	0.0011
44000	1072.8	1.089	0.90	30.3108	974.17	8.417E+07	1.578E-12	1.3281E-04	2.3215E+06	1.0000	0.0020
48000	1087.9	1.089	0.90	30.3108	1106.14	9.557E+07	4.878E-12	4.6620E-04	7.5092E+05	1.0000	0.0035
52000	1101.9	1.089	0.90	30.3108	1238.11	1.070E+08	1.440E-11	1.5409E-03	2.5429E+05	1.0000	0.0059
56000	1116.0	1.089	0.90	30.3108	1370.07	1.184E+08	4.221E-11	4.9966E-03	8.6780E+04	1.0000	0.0101
58000	1124.1	1.089	0.90	30.3108	1436.06	1.241E+08	7.418E-11	9.2044E-03	4.9377E+04	1.0000	0.0134
60000	1130.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.242E-10	1.6113E-02	2.9502E+04	1.0000	0.0174
62000	1137.6	1.089	0.90	30.3108	1568.02	1.355E+08	2.103E-10	2.8491E-02	1.7418E+04	1.0000	0.0226
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	7.5740E+06	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	4.0642E+09	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	1.8133E+09	1.0000	0.0001
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	7.1799E+08	1.0000	0.0001
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	8.6054E+08	1.0000	0.0001
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	2.6653E+08	1.0000	0.0002
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	6.2081E+07	1.0000	0.0004
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	1.5259E+08	1.0000	0.0002
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	3.9182E+07	1.0000	0.0005
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	1.1456E+07	1.0000	0.0009
40000	909.4	1.089	0.90	30.3108	842.21	7.277E+07	1.844E-15	1.3415E-07	1.9868E+09	1.0000	0.0001
44000	918.3	1.089	0.90	30.3108	974.17	8.417E+07	5.246E-15	4.4152E-07	6.9829E+08	1.0000	0.0001
48000	928.3	1.089	0.90	30.3108	1106.14	9.557E+07	1.552E-14	1.4832E-06	2.3602E+08	1.0000	0.0002
52000	937.2	1.089	0.90	30.3108	1238.11	1.070E+08	4.348E-14	4.6509E-06	8.4251E+07	1.0000	0.0003
56000	946.3	1.089	0.90	30.3108	1370.07	1.184E+08	1.219E-13	1.4434E-05	3.0041E+07	1.0000	0.0005
58000	951.2	1.089	0.90	30.3108	1436.06	1.241E+08	2.065E-13	2.5626E-05	1.7735E+07	1.0000	0.0007
60000	955.5	1.089	0.90	30.3108	1502.04	1.298E+08	3.409E-13	4.4240E-05	1.0745E+07	1.0000	0.0009

62000	960.1	1.089	0.90	30.3108	1568.02	1.355E+08	5.685E-13	7.7017E-05	6.4435E+06	1.0000	0.0012
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mwd/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	7.9521E+09	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	9.4530E+14	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	6.3776E+14	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	3.4495E+14	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	2.3207E+14	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	9.3692E+13	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	2.3904E+13	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	3.4986E+13	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	1.0050E+13	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	3.3617E+12	1.0000	0.0000
40000	735.0	1.089	0.90	30.3108	842.21	7.277E+07	1.388E-19	1.0103E-11	2.6382E+13	1.0000	0.0000
44000	737.2	1.089	0.90	30.3108	974.17	8.417E+07	3.107E-19	2.6155E-11	1.1788E+13	1.0000	0.0000
48000	741.2	1.089	0.90	30.3108	1106.14	9.557E+07	7.831E-19	7.4838E-11	4.6778E+12	1.0000	0.0000
52000	744.2	1.089	0.90	30.3108	1238.11	1.070E+08	1.843E-18	1.9712E-10	1.9878E+12	1.0000	0.0000
56000	747.4	1.089	0.90	30.3108	1370.07	1.184E+08	4.386E-18	5.1921E-10	8.3513E+11	1.0000	0.0000
58000	748.9	1.089	0.90	30.3108	1436.06	1.241E+08	6.719E-18	8.3363E-10	5.4519E+11	1.0000	0.0000
60000	750.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.042E-17	1.3525E-09	3.5148E+11	1.0000	0.0000
62000	752.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.616E-17	2.1889E-09	2.2671E+11	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mwd/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	1.9642E+15	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	1.0005E+17	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	6.0537E+16	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	3.3277E+16	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	4.3429E+16	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	1.9141E+16	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	5.1326E+15	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	1.4749E+16	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	4.6447E+15	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	1.7353E+15	1.0000	0.0000
40000	636.8	1.089	0.90	30.3108	842.21	7.277E+07	6.715E-23	4.8863E-15	5.4549E+16	1.0000	0.0000
44000	635.5	1.089	0.90	30.3108	974.17	8.417E+07	1.153E-22	9.7085E-15	3.1757E+16	1.0000	0.0000
48000	636.0	1.089	0.90	30.3108	1106.14	9.557E+07	2.330E-22	2.2263E-14	1.5724E+16	1.0000	0.0000
52000	635.7	1.089	0.90	30.3108	1238.11	1.070E+08	4.378E-22	4.6830E-14	8.3673E+15	1.0000	0.0000
56000	635.6	1.089	0.90	30.3108	1370.07	1.184E+08	8.376E-22	9.9155E-14	4.3730E+15	1.0000	0.0000
58000	635.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.164E-21	1.4441E-13	3.1472E+15	1.0000	0.0000
60000	635.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.617E-21	2.0988E-13	2.2650E+15	1.0000	0.0000
62000	635.7	1.089	0.90	30.3108	1568.02	1.355E+08	2.267E-21	3.0719E-13	1.6155E+15	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0232	0.0120	0.0018	0.0000	0.0000	0.0000	0.0015				
8000	0.0375	0.0195	0.0028	0.0001	0.0000	0.0000	0.0024				
12000	0.0609	0.0318	0.0047	0.0001	0.0000	0.0000	0.0039				
16000	0.0455	0.0240	0.0037	0.0001	0.0000	0.0000	0.0030				
20000	0.0811	0.0433	0.0068	0.0002	0.0000	0.0000	0.0054				
24000	0.1527	0.0836	0.0136	0.0004	0.0000	0.0000	0.0105				
28000	0.0887	0.0482	0.0079	0.0002	0.0000	0.0000	0.0061				
32000	0.1630	0.0904	0.0153	0.0005	0.0000	0.0000	0.0114				
36000	0.2794	0.1598	0.0282	0.0009	0.0000	0.0000	0.0203				
40000	0.0087	0.0051	0.0011	0.0001	0.0000	0.0000	0.0007				
44000	0.0157	0.0092	0.0020	0.0001	0.0000	0.0000	0.0012				
48000	0.0276	0.0162	0.0035	0.0002	0.0000	0.0000	0.0022				
52000	0.0475	0.0279	0.0059	0.0003	0.0000	0.0000	0.0037				
56000	0.0808	0.0477	0.0101	0.0005	0.0000	0.0000	0.0064				
58000	0.1071	0.0633	0.0134	0.0007	0.0000	0.0000	0.0085				
60000	0.1368	0.0813	0.0174	0.0009	0.0000	0.0000	0.0109				
62000	0.1754	0.1050	0.0226	0.0012	0.0000	0.0000	0.0141				

Gas Gap Fractions: Xe-135											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300		cal/mol								
R	1.987		cal/mol-K								
Do/a2	0.61		1/sec								
lambda	2.1150E-05		1/sec								
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	5.4318E+04	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	9.4986E+04	1.0000	0.0097
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	3.6045E+04	1.0000	0.0157
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	1.3441E+04	1.0000	0.0257
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	2.4324E+04	1.0000	0.0191
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	7.4687E+03	1.0000	0.0343
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	1.9960E+03	1.0000	0.0656
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	6.2039E+03	1.0000	0.0376
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	1.7379E+03	1.0000	0.0702
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	5.3454E+02	1.0000	0.1241
40000	1385.9	1.089	1.10	37.0465	818.21	7.069E+07	1.738E-09	1.2290E-01	1.2166E+04	1.0000	0.0270
44000	1412.9	1.089	1.10	37.0465	926.19	8.002E+07	5.543E-09	4.4359E-01	3.8154E+03	1.0000	0.0478
48000	1452.7	1.089	1.10	37.0465	1034.16	8.935E+07	2.167E-08	1.9365E+00	9.7589E+02	1.0000	0.0930
52000	1481.3	1.089	1.10	37.0465	1142.13	9.868E+07	6.787E-08	6.6970E+00	3.1165E+02	1.0000	0.1603
56000	1511.0	1.089	1.10	37.0465	1250.10	1.080E+08	2.123E-07	2.2936E+01	9.9600E+01	1.0000	0.2705
58000	1537.1	1.089	1.10	37.0465	1304.09	1.127E+08	4.441E-07	5.0039E+01	4.7624E+01	1.0000	0.3717
60000	1548.5	1.089	1.10	37.0465	1358.08	1.173E+08	7.346E-07	8.6193E+01	2.8792E+01	1.0000	0.4549
62000	1570.8	1.089	1.10	37.0465	1412.06	1.220E+08	1.425E-06	1.7383E+02	1.4844E+01	1.0000	0.5773
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	1.1054E+05	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	3.5512E+05	1.0000	0.0050
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	1.3538E+05	1.0000	0.0081
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	5.0294E+04	1.0000	0.0133
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	8.8485E+04	1.0000	0.0101
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	2.6897E+04	1.0000	0.0182
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	7.0191E+03	1.0000	0.0354
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	2.1688E+04	1.0000	0.0202
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	5.9692E+03	1.0000	0.0383
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	1.8111E+03	1.0000	0.0688
40000	1326.8	1.089	1.10	37.0465	818.21	7.069E+07	5.398E-10	3.8163E-02	3.9178E+04	1.0000	0.0151
44000	1351.7	1.089	1.10	37.0465	926.19	8.002E+07	1.727E-09	1.3823E-01	1.2244E+04	1.0000	0.0269
48000	1388.9	1.089	1.10	37.0465	1034.16	8.935E+07	6.858E-09	6.1280E-01	3.0838E+03	1.0000	0.0530

52000	1415.3	1.089	1.10	37.0465	1142.13	9.868E+07	2.159E-08	2.1301E+00	9.7982E+02	1.0000	0.0928
56000	1443.5	1.089	1.10	37.0465	1250.10	1.080E+08	6.887E-08	7.4382E+00	3.0712E+02	1.0000	0.1614
58000	1468.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.465E-07	1.6504E+01	1.4439E+02	1.0000	0.2289
60000	1479.5	1.089	1.10	37.0465	1358.08	1.173E+08	2.455E-07	2.8809E+01	8.6142E+01	1.0000	0.2884
62000	1501.5	1.089	1.10	37.0465	1412.06	1.220E+08	4.892E-07	5.9679E+01	4.3237E+01	1.0000	0.3869
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	8.7598E+05	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	1.6234E+07	1.0000	0.0007
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	6.3915E+06	1.0000	0.0012
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	2.3781E+06	1.0000	0.0019
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	3.7777E+06	1.0000	0.0015
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	1.1325E+06	1.0000	0.0028
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	2.7926E+05	1.0000	0.0057
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	8.2343E+05	1.0000	0.0033
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	2.1845E+05	1.0000	0.0064
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	6.4308E+04	1.0000	0.0118
40000	1181.3	1.089	1.10	37.0465	818.21	7.069E+07	1.842E-11	1.3022E-03	1.1482E+06	1.0000	0.0028
44000	1201.2	1.089	1.10	37.0465	926.19	8.002E+07	5.924E-11	4.7406E-03	3.5701E+05	1.0000	0.0050
48000	1231.9	1.089	1.10	37.0465	1034.16	8.935E+07	2.433E-10	2.1741E-02	8.6921E+04	1.0000	0.0101
52000	1252.9	1.089	1.10	37.0465	1142.13	9.868E+07	7.707E-10	7.6057E-02	2.7441E+04	1.0000	0.0180
56000	1277.2	1.089	1.10	37.0465	1250.10	1.080E+08	2.586E-09	2.7929E-01	8.1794E+03	1.0000	0.0328
58000	1298.8	1.089	1.10	37.0465	1304.09	1.127E+08	5.771E-09	6.5019E-01	3.6652E+03	1.0000	0.0487
60000	1308.9	1.089	1.10	37.0465	1358.08	1.173E+08	9.953E-09	1.1679E+00	2.1250E+03	1.0000	0.0637
62000	1329.9	1.089	1.10	37.0465	1412.06	1.220E+08	2.145E-08	2.6171E+00	9.8594E+02	1.0000	0.0925
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	4.3732E+07	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	2.3467E+10	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	1.0470E+10	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	4.1456E+09	1.0000	0.0000
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	4.9687E+09	1.0000	0.0000
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	1.5389E+09	1.0000	0.0001
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	3.5845E+08	1.0000	0.0002
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	8.8103E+08	1.0000	0.0001
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	2.2624E+08	1.0000	0.0002
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	6.6144E+07	1.0000	0.0004
40000	979.2	1.089	1.10	37.0465	818.21	7.069E+07	3.194E-14	2.2580E-06	6.6217E+08	1.0000	0.0001
44000	992.0	1.089	1.10	37.0465	926.19	8.002E+07	9.961E-14	7.9707E-06	2.1234E+08	1.0000	0.0002
48000	1013.6	1.089	1.10	37.0465	1034.16	8.935E+07	4.202E-13	3.7547E-05	5.0332E+07	1.0000	0.0004
52000	1027.2	1.089	1.10	37.0465	1142.13	9.868E+07	1.305E-12	1.2877E-04	1.6207E+07	1.0000	0.0007
56000	1045.7	1.089	1.10	37.0465	1250.10	1.080E+08	4.715E-12	5.0926E-04	4.4857E+06	1.0000	0.0014
58000	1062.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.128E-11	1.2715E-03	1.8743E+06	1.0000	0.0022
60000	1070.7	1.089	1.10	37.0465	1358.08	1.173E+08	2.051E-11	2.4070E-03	1.0310E+06	1.0000	0.0030

62000	1089.1	1.089	1.10	37.0465	1412.06	1.220E+08	5.061E-11	6.1747E-03	4.1789E+05	1.0000	0.0046
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	4.5915E+10	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	5.4581E+15	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	3.6824E+15	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	1.9917E+15	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	1.3400E+15	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	5.4098E+14	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	1.3802E+14	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	2.0201E+14	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	5.8026E+13	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	1.9410E+13	1.0000	0.0000
40000	753.8	1.089	1.10	37.0465	818.21	7.069E+07	4.772E-19	3.3738E-11	4.4317E+13	1.0000	0.0000
44000	758.8	1.089	1.10	37.0465	926.19	8.002E+07	1.266E-18	1.0135E-10	1.6700E+13	1.0000	0.0000
48000	770.1	1.089	1.10	37.0465	1034.16	8.935E+07	4.942E-18	4.4156E-10	4.2798E+12	1.0000	0.0000
52000	775.6	1.089	1.10	37.0465	1142.13	9.868E+07	1.334E-17	1.3163E-09	1.5856E+12	1.0000	0.0000
56000	786.7	1.089	1.10	37.0465	1250.10	1.080E+08	4.992E-17	5.3922E-09	4.2365E+11	1.0000	0.0000
58000	797.4	1.089	1.10	37.0465	1304.09	1.127E+08	1.290E-16	1.4539E-08	1.6391E+11	1.0000	0.0000
60000	803.0	1.089	1.10	37.0465	1358.08	1.173E+08	2.465E-16	2.8920E-08	8.5812E+10	1.0000	0.0000
62000	816.6	1.089	1.10	37.0465	1412.06	1.220E+08	7.284E-16	8.8866E-08	2.9036E+10	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	1.1341E+16	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	5.7768E+17	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	3.4954E+17	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	1.9214E+17	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	2.5076E+17	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	1.1052E+17	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	2.9636E+16	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	8.5161E+16	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	2.6818E+16	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	1.0020E+16	1.0000	0.0000
40000	653.3	1.089	1.10	37.0465	818.21	7.069E+07	2.843E-22	2.0099E-14	7.4390E+16	1.0000	0.0000
44000	655.2	1.089	1.10	37.0465	926.19	8.002E+07	6.451E-22	5.1626E-14	3.2783E+16	1.0000	0.0000
48000	661.9	1.089	1.10	37.0465	1034.16	8.935E+07	2.185E-21	1.9526E-13	9.6784E+15	1.0000	0.0000
52000	664.1	1.089	1.10	37.0465	1142.13	9.868E+07	5.062E-21	4.9951E-13	4.1783E+15	1.0000	0.0000
56000	671.5	1.089	1.10	37.0465	1250.10	1.080E+08	1.788E-20	1.9307E-12	1.1832E+15	1.0000	0.0000
58000	679.2	1.089	1.10	37.0465	1304.09	1.127E+08	4.591E-20	5.1728E-12	4.6069E+14	1.0000	0.0000
60000	682.7	1.089	1.10	37.0465	1358.08	1.173E+08	8.395E-20	9.8509E-12	2.5193E+14	1.0000	0.0000
62000	688.0	1.089	1.10	37.0465	1412.06	1.220E+08	1.759E-19	2.1457E-11	1.2026E+14	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0097	0.0050	0.0007	0.0000	0.0000	0.0000	0.0006				
8000	0.0157	0.0081	0.0012	0.0000	0.0000	0.0000	0.0010				
12000	0.0257	0.0133	0.0019	0.0000	0.0000	0.0000	0.0016				
16000	0.0191	0.0101	0.0015	0.0000	0.0000	0.0000	0.0013				
20000	0.0343	0.0182	0.0028	0.0001	0.0000	0.0000	0.0023				
24000	0.0656	0.0354	0.0057	0.0002	0.0000	0.0000	0.0044				
28000	0.0376	0.0202	0.0033	0.0001	0.0000	0.0000	0.0025				
32000	0.0702	0.0383	0.0064	0.0002	0.0000	0.0000	0.0048				
36000	0.1241	0.0688	0.0118	0.0004	0.0000	0.0000	0.0087				
40000	0.0270	0.0151	0.0028	0.0001	0.0000	0.0000	0.0020				
44000	0.0478	0.0269	0.0050	0.0002	0.0000	0.0000	0.0035				
48000	0.0930	0.0530	0.0101	0.0004	0.0000	0.0000	0.0069				
52000	0.1603	0.0928	0.0180	0.0007	0.0000	0.0000	0.0121				
56000	0.2705	0.1614	0.0328	0.0014	0.0000	0.0000	0.0212				
58000	0.3717	0.2289	0.0487	0.0022	0.0000	0.0000	0.0304				
60000	0.4549	0.2884	0.0637	0.0030	0.0000	0.0000	0.0385				
62000	0.5773	0.3869	0.0925	0.0046	0.0000	0.0000	0.0526				

Gas Gap Fractions: Xe-135											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300			cal/mol							
R	1.987			cal/mol-K							
Do/a2	0.61			1/sec							
lambda	2.115E-5			1/sec							
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	5.4318E+04	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	9.4986E+04	1.0000	0.0097
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	3.6045E+04	1.0000	0.0157
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	1.3441E+04	1.0000	0.0257
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	2.4324E+04	1.0000	0.0191
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	7.4687E+03	1.0000	0.0343
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	1.9960E+03	1.0000	0.0656
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	6.2039E+03	1.0000	0.0376
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	1.7379E+03	1.0000	0.0702
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	5.3454E+02	1.0000	0.1241
40000	1201.7	1.089	0.90	30.3108	842.21	7.277E+07	3.107E-11	2.2611E-03	6.8065E+05	1.0000	0.0036
44000	1222.7	1.089	0.90	30.3108	974.17	8.417E+07	1.009E-10	8.4938E-03	2.0958E+05	1.0000	0.0065
48000	1242.9	1.089	0.90	30.3108	1106.14	9.557E+07	3.160E-10	3.0202E-02	6.6926E+04	1.0000	0.0116
52000	1262.0	1.089	0.90	30.3108	1238.11	1.070E+08	9.503E-10	1.0165E-01	2.2256E+04	1.0000	0.0200
56000	1281.0	1.089	0.90	30.3108	1370.07	1.184E+08	2.814E-09	3.3308E-01	7.5165E+03	1.0000	0.0342
58000	1292.5	1.089	0.90	30.3108	1436.06	1.241E+08	5.034E-09	6.2459E-01	4.2015E+03	1.0000	0.0456
60000	1301.0	1.089	0.90	30.3108	1502.04	1.298E+08	8.407E-09	1.0910E+00	2.5157E+03	1.0000	0.0586
62000	1310.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.425E-08	1.9301E+00	1.4846E+03	1.0000	0.0758
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	1.1054E+05	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	3.5512E+05	1.0000	0.0050
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	1.3538E+05	1.0000	0.0081
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	5.0294E+04	1.0000	0.0133
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	8.8485E+04	1.0000	0.0101
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	2.6897E+04	1.0000	0.0182
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	7.0191E+03	1.0000	0.0354
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	2.1688E+04	1.0000	0.0202
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	5.9692E+03	1.0000	0.0383
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	1.8111E+03	1.0000	0.0688
40000	1160.8	1.089	0.90	30.3108	842.21	7.277E+07	1.069E-11	7.7801E-04	1.9782E+06	1.0000	0.0021
44000	1180.1	1.089	0.90	30.3108	974.17	8.417E+07	3.447E-11	2.9011E-03	6.1363E+05	1.0000	0.0038
48000	1198.8	1.089	0.90	30.3108	1106.14	9.557E+07	1.076E-10	1.0288E-02	1.9648E+05	1.0000	0.0068
52000	1216.5	1.089	0.90	30.3108	1238.11	1.070E+08	3.232E-10	3.4577E-02	6.5433E+04	1.0000	0.0117

56000	1234.1	1.089	0.90	30.3108	1370.07	1.184E+08	9.561E-10	1.1317E-01	2.2122E+04	1.0000	0.0200
58000	1244.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.704E-09	2.1137E-01	1.2415E+04	1.0000	0.0267
60000	1252.5	1.089	0.90	30.3108	1502.04	1.298E+08	2.846E-09	3.6941E-01	7.4302E+03	1.0000	0.0344
62000	1261.2	1.089	0.90	30.3108	1568.02	1.355E+08	4.833E-09	6.5473E-01	4.3764E+03	1.0000	0.0447
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	8.7598E+05	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	1.6234E+07	1.0000	0.0007
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	6.3915E+06	1.0000	0.0012
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	2.3781E+06	1.0000	0.0019
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	3.7777E+06	1.0000	0.0015
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	1.1325E+06	1.0000	0.0028
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	2.7926E+05	1.0000	0.0057
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	8.2343E+05	1.0000	0.0033
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	2.1845E+05	1.0000	0.0064
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	6.4308E+04	1.0000	0.0118
40000	1057.8	1.089	0.90	30.3108	842.21	7.277E+07	5.052E-13	3.6764E-05	4.1863E+07	1.0000	0.0005
44000	1072.8	1.089	0.90	30.3108	974.17	8.417E+07	1.578E-12	1.3281E-04	1.3404E+07	1.0000	0.0008
48000	1087.9	1.089	0.90	30.3108	1106.14	9.557E+07	4.878E-12	4.6620E-04	4.3358E+06	1.0000	0.0014
52000	1101.9	1.089	0.90	30.3108	1238.11	1.070E+08	1.440E-11	1.5409E-03	1.4682E+06	1.0000	0.0025
56000	1116.0	1.089	0.90	30.3108	1370.07	1.184E+08	4.221E-11	4.9966E-03	5.0106E+05	1.0000	0.0042
58000	1124.1	1.089	0.90	30.3108	1436.06	1.241E+08	7.418E-11	9.2044E-03	2.8510E+05	1.0000	0.0056
60000	1130.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.242E-10	1.6113E-02	1.7034E+05	1.0000	0.0073
62000	1137.6	1.089	0.90	30.3108	1568.02	1.355E+08	2.103E-10	2.8491E-02	1.0057E+05	1.0000	0.0094
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	4.3732E+07	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	2.3467E+10	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	1.0470E+10	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	4.1456E+09	1.0000	0.0000
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	4.9687E+09	1.0000	0.0000
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	1.5389E+09	1.0000	0.0001
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	3.5845E+08	1.0000	0.0002
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	8.8103E+08	1.0000	0.0001
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	2.2624E+08	1.0000	0.0002
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	6.6144E+07	1.0000	0.0004
40000	909.4	1.089	0.90	30.3108	842.21	7.277E+07	1.844E-15	1.3415E-07	1.1472E+10	1.0000	0.0000
44000	918.3	1.089	0.90	30.3108	974.17	8.417E+07	5.246E-15	4.4152E-07	4.0319E+09	1.0000	0.0000
48000	928.3	1.089	0.90	30.3108	1106.14	9.557E+07	1.552E-14	1.4832E-06	1.3628E+09	1.0000	0.0001
52000	937.2	1.089	0.90	30.3108	1238.11	1.070E+08	4.348E-14	4.6509E-06	4.8646E+08	1.0000	0.0001
56000	946.3	1.089	0.90	30.3108	1370.07	1.184E+08	1.219E-13	1.4434E-05	1.7346E+08	1.0000	0.0002
58000	951.2	1.089	0.90	30.3108	1436.06	1.241E+08	2.065E-13	2.5626E-05	1.0240E+08	1.0000	0.0003
60000	955.5	1.089	0.90	30.3108	1502.04	1.298E+08	3.409E-13	4.4240E-05	6.2042E+07	1.0000	0.0004
62000	960.1	1.089	0.90	30.3108	1568.02	1.355E+08	5.685E-13	7.7017E-05	3.7204E+07	1.0000	0.0005

r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	4.5915E+10	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	5.4581E+15	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	3.6824E+15	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	1.9917E+15	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	1.3400E+15	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	5.4098E+14	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	1.3802E+14	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	2.0201E+14	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	5.8026E+13	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	1.9410E+13	1.0000	0.0000
40000	735.0	1.089	0.90	30.3108	842.21	7.277E+07	1.388E-19	1.0103E-11	1.5233E+14	1.0000	0.0000
44000	737.2	1.089	0.90	30.3108	974.17	8.417E+07	3.107E-19	2.6155E-11	6.8063E+13	1.0000	0.0000
48000	741.2	1.089	0.90	30.3108	1106.14	9.557E+07	7.831E-19	7.4838E-11	2.7009E+13	1.0000	0.0000
52000	744.2	1.089	0.90	30.3108	1238.11	1.070E+08	1.843E-18	1.9712E-10	1.1478E+13	1.0000	0.0000
56000	747.4	1.089	0.90	30.3108	1370.07	1.184E+08	4.386E-18	5.1921E-10	4.8220E+12	1.0000	0.0000
58000	748.9	1.089	0.90	30.3108	1436.06	1.241E+08	6.719E-18	8.3363E-10	3.1479E+12	1.0000	0.0000
60000	750.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.042E-17	1.3525E-09	2.0294E+12	1.0000	0.0000
62000	752.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.616E-17	2.1889E-09	1.3090E+12	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	1.1341E+16	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	5.7768E+17	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	3.4954E+17	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	1.9214E+17	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	2.5076E+17	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	1.1052E+17	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	2.9636E+16	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	8.5161E+16	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	2.6818E+16	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	1.0020E+16	1.0000	0.0000
40000	636.8	1.089	0.90	30.3108	842.21	7.277E+07	6.715E-23	4.8863E-15	3.1496E+17	1.0000	0.0000
44000	635.5	1.089	0.90	30.3108	974.17	8.417E+07	1.153E-22	9.7085E-15	1.8336E+17	1.0000	0.0000
48000	636.0	1.089	0.90	30.3108	1106.14	9.557E+07	2.330E-22	2.2263E-14	9.0792E+16	1.0000	0.0000
52000	635.7	1.089	0.90	30.3108	1238.11	1.070E+08	4.378E-22	4.6830E-14	4.8312E+16	1.0000	0.0000
56000	635.6	1.089	0.90	30.3108	1370.07	1.184E+08	8.376E-22	9.9155E-14	2.5250E+16	1.0000	0.0000
58000	635.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.164E-21	1.4441E-13	1.8172E+16	1.0000	0.0000
60000	635.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.617E-21	2.0988E-13	1.3078E+16	1.0000	0.0000
62000	635.7	1.089	0.90	30.3108	1568.02	1.355E+08	2.267E-21	3.0719E-13	9.3277E+15	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0097	0.0050	0.0007	0.0000	0.0000	0.0000	0.0006				

8000	0.0157	0.0081	0.0012	0.0000	0.0000	0.0000	0.0010				
12000	0.0257	0.0133	0.0019	0.0000	0.0000	0.0000	0.0016				
16000	0.0191	0.0101	0.0015	0.0000	0.0000	0.0000	0.0013				
20000	0.0343	0.0182	0.0028	0.0001	0.0000	0.0000	0.0023				
24000	0.0656	0.0354	0.0057	0.0002	0.0000	0.0000	0.0044				
28000	0.0376	0.0202	0.0033	0.0001	0.0000	0.0000	0.0025				
32000	0.0702	0.0383	0.0064	0.0002	0.0000	0.0000	0.0048				
36000	0.1241	0.0688	0.0118	0.0004	0.0000	0.0000	0.0087				
40000	0.0036	0.0021	0.0005	0.0000	0.0000	0.0000	0.0003				
44000	0.0065	0.0038	0.0008	0.0000	0.0000	0.0000	0.0005				
48000	0.0116	0.0068	0.0014	0.0001	0.0000	0.0000	0.0009				
52000	0.0200	0.0117	0.0025	0.0001	0.0000	0.0000	0.0016				
56000	0.0342	0.0200	0.0042	0.0002	0.0000	0.0000	0.0027				
58000	0.0456	0.0267	0.0056	0.0003	0.0000	0.0000	0.0036				
60000	0.0586	0.0344	0.0073	0.0004	0.0000	0.0000	0.0046				
62000	0.0758	0.0447	0.0094	0.0005	0.0000	0.0000	0.0060				

Gas Gap Fractions: Xe-135m											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300	cal/mol									
R	1.987	cal/mol-K									
Do/a2	0.61	1/sec									
lambda	7.3800E-04	1/sec									
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	1.8953E+06	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	3.3144E+06	1.0000	0.0016
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	1.2577E+06	1.0000	0.0027
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	4.6899E+05	1.0000	0.0044
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	8.4876E+05	1.0000	0.0033
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	2.6061E+05	1.0000	0.0059
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	6.9648E+04	1.0000	0.0113
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	2.1648E+05	1.0000	0.0064
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	6.0641E+04	1.0000	0.0121
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	1.8652E+04	1.0000	0.0218
40000	1385.9	1.089	1.10	37.0465	818.21	7.069E+07	1.738E-09	1.2290E-01	4.2452E+05	1.0000	0.0046
44000	1412.9	1.089	1.10	37.0465	926.19	8.002E+07	5.543E-09	4.4359E-01	1.3313E+05	1.0000	0.0082
48000	1452.7	1.089	1.10	37.0465	1034.16	8.935E+07	2.167E-08	1.9365E+00	3.4052E+04	1.0000	0.0162
52000	1481.3	1.089	1.10	37.0465	1142.13	9.868E+07	6.787E-08	6.6970E+00	1.0874E+04	1.0000	0.0285
56000	1511.0	1.089	1.10	37.0465	1250.10	1.080E+08	2.123E-07	2.2936E+01	3.4754E+03	1.0000	0.0500
58000	1537.1	1.089	1.10	37.0465	1304.09	1.127E+08	4.441E-07	5.0039E+01	1.6618E+03	1.0000	0.0718
60000	1548.5	1.089	1.10	37.0465	1358.08	1.173E+08	7.346E-07	8.6193E+01	1.0047E+03	1.0000	0.0917
62000	1570.8	1.089	1.10	37.0465	1412.06	1.220E+08	1.425E-06	1.7383E+02	5.1795E+02	1.0000	0.1260
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	3.8570E+06	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	1.2391E+07	1.0000	0.0009
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	4.7240E+06	1.0000	0.0014
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	1.7549E+06	1.0000	0.0023
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	3.0875E+06	1.0000	0.0017
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	9.3852E+05	1.0000	0.0031
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	2.4492E+05	1.0000	0.0060
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	7.5678E+05	1.0000	0.0034
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	2.0829E+05	1.0000	0.0066
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	6.3197E+04	1.0000	0.0119
40000	1326.8	1.089	1.10	37.0465	818.21	7.069E+07	5.398E-10	3.8163E-02	1.3671E+06	1.0000	0.0026
44000	1351.7	1.089	1.10	37.0465	926.19	8.002E+07	1.727E-09	1.3823E-01	4.2724E+05	1.0000	0.0046
48000	1388.9	1.089	1.10	37.0465	1034.16	8.935E+07	6.858E-09	6.1280E-01	1.0761E+05	1.0000	0.0091

52000	1415.3	1.089	1.10	37.0465	1142.13	9.868E+07	2.159E-08	2.1301E+00	3.4189E+04	1.0000	0.0161
56000	1443.5	1.089	1.10	37.0465	1250.10	1.080E+08	6.887E-08	7.4382E+00	1.0716E+04	1.0000	0.0287
58000	1468.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.465E-07	1.6504E+01	5.0384E+03	1.0000	0.0417
60000	1479.5	1.089	1.10	37.0465	1358.08	1.173E+08	2.455E-07	2.8809E+01	3.0058E+03	1.0000	0.0537
62000	1501.5	1.089	1.10	37.0465	1412.06	1.220E+08	4.892E-07	5.9679E+01	1.5087E+03	1.0000	0.0752
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	3.0566E+07	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	5.6647E+08	1.0000	0.0001
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	2.2302E+08	1.0000	0.0002
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	8.2982E+07	1.0000	0.0003
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	1.3182E+08	1.0000	0.0003
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	3.9515E+07	1.0000	0.0005
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	9.7443E+06	1.0000	0.0010
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	2.8732E+07	1.0000	0.0006
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	7.6226E+06	1.0000	0.0011
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	2.2439E+06	1.0000	0.0020
40000	1181.3	1.089	1.10	37.0465	818.21	7.069E+07	1.842E-11	1.3022E-03	4.0065E+07	1.0000	0.0005
44000	1201.2	1.089	1.10	37.0465	926.19	8.002E+07	5.924E-11	4.7406E-03	1.2458E+07	1.0000	0.0008
48000	1231.9	1.089	1.10	37.0465	1034.16	8.935E+07	2.433E-10	2.1741E-02	3.0330E+06	1.0000	0.0017
52000	1252.9	1.089	1.10	37.0465	1142.13	9.868E+07	7.707E-10	7.6057E-02	9.5752E+05	1.0000	0.0031
56000	1277.2	1.089	1.10	37.0465	1250.10	1.080E+08	2.586E-09	2.7929E-01	2.8541E+05	1.0000	0.0056
58000	1298.8	1.089	1.10	37.0465	1304.09	1.127E+08	5.771E-09	6.5019E-01	1.2789E+05	1.0000	0.0084
60000	1308.9	1.089	1.10	37.0465	1358.08	1.173E+08	9.953E-09	1.1679E+00	7.4148E+04	1.0000	0.0110
62000	1329.9	1.089	1.10	37.0465	1412.06	1.220E+08	2.145E-08	2.6171E+00	3.4403E+04	1.0000	0.0161
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	1.5260E+09	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	8.1884E+11	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	3.6534E+11	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	1.4466E+11	1.0000	0.0000
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	1.7338E+11	1.0000	0.0000
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	5.3699E+10	1.0000	0.0000
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	1.2508E+10	1.0000	0.0000
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	3.0742E+10	1.0000	0.0000
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	7.8942E+09	1.0000	0.0000
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	2.3080E+09	1.0000	0.0001
40000	979.2	1.089	1.10	37.0465	818.21	7.069E+07	3.194E-14	2.2580E-06	2.3106E+10	1.0000	0.0000
44000	992.0	1.089	1.10	37.0465	926.19	8.002E+07	9.961E-14	7.9707E-06	7.4092E+09	1.0000	0.0000
48000	1013.6	1.089	1.10	37.0465	1034.16	8.935E+07	4.202E-13	3.7547E-05	1.7563E+09	1.0000	0.0001
52000	1027.2	1.089	1.10	37.0465	1142.13	9.868E+07	1.305E-12	1.2877E-04	5.6553E+08	1.0000	0.0001
56000	1045.7	1.089	1.10	37.0465	1250.10	1.080E+08	4.715E-12	5.0926E-04	1.5652E+08	1.0000	0.0002
58000	1062.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.128E-11	1.2715E-03	6.5400E+07	1.0000	0.0004
60000	1070.7	1.089	1.10	37.0465	1358.08	1.173E+08	2.051E-11	2.4070E-03	3.5976E+07	1.0000	0.0005

62000	1089.1	1.089	1.10	37.0465	1412.06	1.220E+08	5.061E-11	6.1747E-03	1.4582E+07	1.0000	0.0008
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	1.6021E+12	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	1.9045E+17	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	1.2849E+17	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	6.9498E+16	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	4.6757E+16	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	1.8877E+16	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	4.8161E+15	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	7.0488E+15	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	2.0248E+15	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	6.7730E+14	1.0000	0.0000
40000	753.8	1.089	1.10	37.0465	818.21	7.069E+07	4.772E-19	3.3738E-11	1.5464E+15	1.0000	0.0000
44000	758.8	1.089	1.10	37.0465	926.19	8.002E+07	1.266E-18	1.0135E-10	5.8273E+14	1.0000	0.0000
48000	770.1	1.089	1.10	37.0465	1034.16	8.935E+07	4.942E-18	4.4156E-10	1.4934E+14	1.0000	0.0000
52000	775.6	1.089	1.10	37.0465	1142.13	9.868E+07	1.334E-17	1.3163E-09	5.5327E+13	1.0000	0.0000
56000	786.7	1.089	1.10	37.0465	1250.10	1.080E+08	4.992E-17	5.3922E-09	1.4783E+13	1.0000	0.0000
58000	797.4	1.089	1.10	37.0465	1304.09	1.127E+08	1.290E-16	1.4539E-08	5.7194E+12	1.0000	0.0000
60000	803.0	1.089	1.10	37.0465	1358.08	1.173E+08	2.465E-16	2.8920E-08	2.9943E+12	1.0000	0.0000
62000	816.6	1.089	1.10	37.0465	1412.06	1.220E+08	7.284E-16	8.8866E-08	1.0132E+12	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	3.9574E+17	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	2.0157E+19	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	1.2197E+19	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	6.7044E+18	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	8.7498E+18	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	3.8564E+18	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	1.0341E+18	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	2.9716E+18	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	9.3578E+17	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	3.4962E+17	1.0000	0.0000
40000	653.3	1.089	1.10	37.0465	818.21	7.069E+07	2.843E-22	2.0099E-14	2.5957E+18	1.0000	0.0000
44000	655.2	1.089	1.10	37.0465	926.19	8.002E+07	6.451E-22	5.1626E-14	1.1439E+18	1.0000	0.0000
48000	661.9	1.089	1.10	37.0465	1034.16	8.935E+07	2.185E-21	1.9526E-13	3.3771E+17	1.0000	0.0000
52000	664.1	1.089	1.10	37.0465	1142.13	9.868E+07	5.062E-21	4.9951E-13	1.4580E+17	1.0000	0.0000
56000	671.5	1.089	1.10	37.0465	1250.10	1.080E+08	1.788E-20	1.9307E-12	4.1286E+16	1.0000	0.0000
58000	679.2	1.089	1.10	37.0465	1304.09	1.127E+08	4.591E-20	5.1728E-12	1.6075E+16	1.0000	0.0000
60000	682.7	1.089	1.10	37.0465	1358.08	1.173E+08	8.395E-20	9.8509E-12	8.7906E+15	1.0000	0.0000
62000	688.0	1.089	1.10	37.0465	1412.06	1.220E+08	1.759E-19	2.1457E-11	4.1961E+15	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0016	0.0009	0.0001	0.0000	0.0000	0.0000	0.0001				
8000	0.0027	0.0014	0.0002	0.0000	0.0000	0.0000	0.0002				
12000	0.0044	0.0023	0.0003	0.0000	0.0000	0.0000	0.0003				
16000	0.0033	0.0017	0.0003	0.0000	0.0000	0.0000	0.0002				
20000	0.0059	0.0031	0.0005	0.0000	0.0000	0.0000	0.0004				
24000	0.0113	0.0060	0.0010	0.0000	0.0000	0.0000	0.0008				
28000	0.0064	0.0034	0.0006	0.0000	0.0000	0.0000	0.0004				
32000	0.0121	0.0066	0.0011	0.0000	0.0000	0.0000	0.0008				
36000	0.0218	0.0119	0.0020	0.0001	0.0000	0.0000	0.0015				
40000	0.0046	0.0026	0.0005	0.0000	0.0000	0.0000	0.0003				
44000	0.0082	0.0046	0.0008	0.0000	0.0000	0.0000	0.0006				
48000	0.0162	0.0091	0.0017	0.0001	0.0000	0.0000	0.0012				
52000	0.0285	0.0161	0.0031	0.0001	0.0000	0.0000	0.0021				
56000	0.0500	0.0287	0.0056	0.0002	0.0000	0.0000	0.0038				
58000	0.0718	0.0417	0.0084	0.0004	0.0000	0.0000	0.0055				
60000	0.0917	0.0537	0.0110	0.0005	0.0000	0.0000	0.0071				
62000	0.1260	0.0752	0.0161	0.0008	0.0000	0.0000	0.0100				

Gas Gap Fractions: Xe-135m											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300	cal/mol									
R	1.987	cal/mol-K									
Do/a2	0.61	1/sec									
lambda	7.3800E-04	1/sec									
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	1.8953E+06	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	3.3144E+06	1.0000	0.0016
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	1.2577E+06	1.0000	0.0027
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	4.6899E+05	1.0000	0.0044
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	8.4876E+05	1.0000	0.0033
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	2.6061E+05	1.0000	0.0059
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	6.9648E+04	1.0000	0.0113
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	2.1648E+05	1.0000	0.0064
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	6.0641E+04	1.0000	0.0121
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	1.8652E+04	1.0000	0.0218
40000	1201.7	1.089	0.90	30.3108	842.21	7.277E+07	3.107E-11	2.2611E-03	2.3750E+07	1.0000	0.0006
44000	1222.7	1.089	0.90	30.3108	974.17	8.417E+07	1.009E-10	8.4938E-03	7.3131E+06	1.0000	0.0011
48000	1242.9	1.089	0.90	30.3108	1106.14	9.557E+07	3.160E-10	3.0202E-02	2.3353E+06	1.0000	0.0020
52000	1262.0	1.089	0.90	30.3108	1238.11	1.070E+08	9.503E-10	1.0165E-01	7.7661E+05	1.0000	0.0034
56000	1281.0	1.089	0.90	30.3108	1370.07	1.184E+08	2.814E-09	3.3308E-01	2.6228E+05	1.0000	0.0058
58000	1292.5	1.089	0.90	30.3108	1436.06	1.241E+08	5.034E-09	6.2459E-01	1.4660E+05	1.0000	0.0078
60000	1301.0	1.089	0.90	30.3108	1502.04	1.298E+08	8.407E-09	1.0910E+00	8.7783E+04	1.0000	0.0101
62000	1310.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.425E-08	1.9301E+00	5.1801E+04	1.0000	0.0131
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	3.8570E+06	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	1.2391E+07	1.0000	0.0009
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	4.7240E+06	1.0000	0.0014
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	1.7549E+06	1.0000	0.0023
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	3.0875E+06	1.0000	0.0017
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	9.3852E+05	1.0000	0.0031
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	2.4492E+05	1.0000	0.0060
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	7.5678E+05	1.0000	0.0034
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	2.0829E+05	1.0000	0.0066
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	6.3197E+04	1.0000	0.0119
40000	1160.8	1.089	0.90	30.3108	842.21	7.277E+07	1.069E-11	7.7801E-04	6.9025E+07	1.0000	0.0004
44000	1180.1	1.089	0.90	30.3108	974.17	8.417E+07	3.447E-11	2.9011E-03	2.1412E+07	1.0000	0.0006
48000	1198.8	1.089	0.90	30.3108	1106.14	9.557E+07	1.076E-10	1.0288E-02	6.8557E+06	1.0000	0.0011

52000	1216.5	1.089	0.90	30.3108	1238.11	1.070E+08	3.232E-10	3.4577E-02	2.2832E+06	1.0000	0.0020
56000	1234.1	1.089	0.90	30.3108	1370.07	1.184E+08	9.561E-10	1.1317E-01	7.7192E+05	1.0000	0.0034
58000	1244.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.704E-09	2.1137E-01	4.3320E+05	1.0000	0.0046
60000	1252.5	1.089	0.90	30.3108	1502.04	1.298E+08	2.846E-09	3.6941E-01	2.5927E+05	1.0000	0.0059
62000	1261.2	1.089	0.90	30.3108	1568.02	1.355E+08	4.833E-09	6.5473E-01	1.5271E+05	1.0000	0.0077
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	3.0566E+07	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	5.6647E+08	1.0000	0.0001
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	2.2302E+08	1.0000	0.0002
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	8.2982E+07	1.0000	0.0003
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	1.3182E+08	1.0000	0.0003
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	3.9515E+07	1.0000	0.0005
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	9.7443E+06	1.0000	0.0010
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	2.8732E+07	1.0000	0.0006
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	7.6226E+06	1.0000	0.0011
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	2.2439E+06	1.0000	0.0020
40000	1057.8	1.089	0.90	30.3108	842.21	7.277E+07	5.052E-13	3.6764E-05	1.4607E+09	1.0000	0.0001
44000	1072.8	1.089	0.90	30.3108	974.17	8.417E+07	1.578E-12	1.3281E-04	4.6771E+08	1.0000	0.0001
48000	1087.9	1.089	0.90	30.3108	1106.14	9.557E+07	4.878E-12	4.6620E-04	1.5129E+08	1.0000	0.0002
52000	1101.9	1.089	0.90	30.3108	1238.11	1.070E+08	1.440E-11	1.5409E-03	5.1232E+07	1.0000	0.0004
56000	1116.0	1.089	0.90	30.3108	1370.07	1.184E+08	4.221E-11	4.9966E-03	1.7484E+07	1.0000	0.0007
58000	1124.1	1.089	0.90	30.3108	1436.06	1.241E+08	7.418E-11	9.2044E-03	9.9483E+06	1.0000	0.0010
60000	1130.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.242E-10	1.6113E-02	5.9439E+06	1.0000	0.0012
62000	1137.6	1.089	0.90	30.3108	1568.02	1.355E+08	2.103E-10	2.8491E-02	3.5092E+06	1.0000	0.0016
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	1.5260E+09	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	8.1884E+11	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	3.6534E+11	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	1.4466E+11	1.0000	0.0000
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	1.7338E+11	1.0000	0.0000
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	5.3699E+10	1.0000	0.0000
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	1.2508E+10	1.0000	0.0000
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	3.0742E+10	1.0000	0.0000
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	7.8942E+09	1.0000	0.0000
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	2.3080E+09	1.0000	0.0001
40000	909.4	1.089	0.90	30.3108	842.21	7.277E+07	1.844E-15	1.3415E-07	4.0030E+11	1.0000	0.0000
44000	918.3	1.089	0.90	30.3108	974.17	8.417E+07	5.246E-15	4.4152E-07	1.4069E+11	1.0000	0.0000
48000	928.3	1.089	0.90	30.3108	1106.14	9.557E+07	1.552E-14	1.4832E-06	4.7552E+10	1.0000	0.0000
52000	937.2	1.089	0.90	30.3108	1238.11	1.070E+08	4.348E-14	4.6509E-06	1.6974E+10	1.0000	0.0000
56000	946.3	1.089	0.90	30.3108	1370.07	1.184E+08	1.219E-13	1.4434E-05	6.0525E+09	1.0000	0.0000
58000	951.2	1.089	0.90	30.3108	1436.06	1.241E+08	2.065E-13	2.5626E-05	3.5732E+09	1.0000	0.0001
60000	955.5	1.089	0.90	30.3108	1502.04	1.298E+08	3.409E-13	4.4240E-05	2.1649E+09	1.0000	0.0001

62000	960.1	1.089	0.90	30.3108	1568.02	1.355E+08	5.685E-13	7.7017E-05	1.2982E+09	1.0000	0.0001
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	1.6021E+12	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	1.9045E+17	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	1.2849E+17	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	6.9498E+16	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	4.6757E+16	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	1.8877E+16	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	4.8161E+15	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	7.0488E+15	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	2.0248E+15	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	6.7730E+14	1.0000	0.0000
40000	735.0	1.089	0.90	30.3108	842.21	7.277E+07	1.388E-19	1.0103E-11	5.3153E+15	1.0000	0.0000
44000	737.2	1.089	0.90	30.3108	974.17	8.417E+07	3.107E-19	2.6155E-11	2.3750E+15	1.0000	0.0000
48000	741.2	1.089	0.90	30.3108	1106.14	9.557E+07	7.831E-19	7.4838E-11	9.4245E+14	1.0000	0.0000
52000	744.2	1.089	0.90	30.3108	1238.11	1.070E+08	1.843E-18	1.9712E-10	4.0050E+14	1.0000	0.0000
56000	747.4	1.089	0.90	30.3108	1370.07	1.184E+08	4.386E-18	5.1921E-10	1.6826E+14	1.0000	0.0000
58000	748.9	1.089	0.90	30.3108	1436.06	1.241E+08	6.719E-18	8.3363E-10	1.0984E+14	1.0000	0.0000
60000	750.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.042E-17	1.3525E-09	7.0814E+13	1.0000	0.0000
62000	752.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.616E-17	2.1889E-09	4.5676E+13	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	3.9574E+17	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	2.0157E+19	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	1.2197E+19	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	6.7044E+18	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	8.7498E+18	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	3.8564E+18	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	1.0341E+18	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	2.9716E+18	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	9.3578E+17	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	3.4962E+17	1.0000	0.0000
40000	636.8	1.089	0.90	30.3108	842.21	7.277E+07	6.715E-23	4.8863E-15	1.0990E+19	1.0000	0.0000
44000	635.5	1.089	0.90	30.3108	974.17	8.417E+07	1.153E-22	9.7085E-15	6.3982E+18	1.0000	0.0000
48000	636.0	1.089	0.90	30.3108	1106.14	9.557E+07	2.330E-22	2.2263E-14	3.1681E+18	1.0000	0.0000
52000	635.7	1.089	0.90	30.3108	1238.11	1.070E+08	4.378E-22	4.6830E-14	1.6858E+18	1.0000	0.0000
56000	635.6	1.089	0.90	30.3108	1370.07	1.184E+08	8.376E-22	9.9155E-14	8.8105E+17	1.0000	0.0000
58000	635.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.164E-21	1.4441E-13	6.3408E+17	1.0000	0.0000
60000	635.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.617E-21	2.0988E-13	4.5634E+17	1.0000	0.0000
62000	635.7	1.089	0.90	30.3108	1568.02	1.355E+08	2.267E-21	3.0719E-13	3.2548E+17	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0016	0.0009	0.0001	0.0000	0.0000	0.0000	0.0001				
8000	0.0027	0.0014	0.0002	0.0000	0.0000	0.0000	0.0002				
12000	0.0044	0.0023	0.0003	0.0000	0.0000	0.0000	0.0003				
16000	0.0033	0.0017	0.0003	0.0000	0.0000	0.0000	0.0002				
20000	0.0059	0.0031	0.0005	0.0000	0.0000	0.0000	0.0004				
24000	0.0113	0.0060	0.0010	0.0000	0.0000	0.0000	0.0008				
28000	0.0064	0.0034	0.0006	0.0000	0.0000	0.0000	0.0004				
32000	0.0121	0.0066	0.0011	0.0000	0.0000	0.0000	0.0008				
36000	0.0218	0.0119	0.0020	0.0001	0.0000	0.0000	0.0015				
40000	0.0006	0.0004	0.0001	0.0000	0.0000	0.0000	0.0000				
44000	0.0011	0.0006	0.0001	0.0000	0.0000	0.0000	0.0001				
48000	0.0020	0.0011	0.0002	0.0000	0.0000	0.0000	0.0002				
52000	0.0034	0.0020	0.0004	0.0000	0.0000	0.0000	0.0003				
56000	0.0058	0.0034	0.0007	0.0000	0.0000	0.0000	0.0005				
58000	0.0078	0.0046	0.0010	0.0001	0.0000	0.0000	0.0006				
60000	0.0101	0.0059	0.0012	0.0001	0.0000	0.0000	0.0008				
62000	0.0131	0.0077	0.0016	0.0001	0.0000	0.0000	0.0010				

Gas Gap Fractions: Xe-138											
Vfuel=176*PI*(0.96774/2)*2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300	cal/mol									
R	1.987	cal/mol-K									
Do/a2	0.61	1/sec									
lambda	8.1510E-04	1/sec									
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	2.0934E+06	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	3.6607E+06	1.0000	0.0016
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	1.3891E+06	1.0000	0.0025
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	5.1799E+05	1.0000	0.0042
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	9.3743E+05	1.0000	0.0031
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	2.8784E+05	1.0000	0.0056
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	7.6924E+04	1.0000	0.0108
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	2.3909E+05	1.0000	0.0061
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	6.6977E+04	1.0000	0.0115
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	2.0601E+04	1.0000	0.0208
40000	1385.9	1.089	1.10	37.0465	818.21	7.069E+07	1.738E-09	1.2290E-01	4.6887E+05	1.0000	0.0044
44000	1412.9	1.089	1.10	37.0465	926.19	8.002E+07	5.543E-09	4.4359E-01	1.4704E+05	1.0000	0.0078
48000	1452.7	1.089	1.10	37.0465	1034.16	8.935E+07	2.167E-08	1.9365E+00	3.7610E+04	1.0000	0.0154
52000	1481.3	1.089	1.10	37.0465	1142.13	9.868E+07	6.787E-08	6.6970E+00	1.2011E+04	1.0000	0.0271
56000	1511.0	1.089	1.10	37.0465	1250.10	1.080E+08	2.123E-07	2.2936E+01	3.8385E+03	1.0000	0.0476
58000	1537.1	1.089	1.10	37.0465	1304.09	1.127E+08	4.441E-07	5.0039E+01	1.8354E+03	1.0000	0.0684
60000	1548.5	1.089	1.10	37.0465	1358.08	1.173E+08	7.346E-07	8.6193E+01	1.1096E+03	1.0000	0.0874
62000	1570.8	1.089	1.10	37.0465	1412.06	1.220E+08	1.425E-06	1.7383E+02	5.7207E+02	1.0000	0.1202
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	4.2600E+06	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	1.3686E+07	1.0000	0.0008
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	5.2175E+06	1.0000	0.0013
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	1.9383E+06	1.0000	0.0022
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	3.4101E+06	1.0000	0.0016
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	1.0366E+06	1.0000	0.0029
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	2.7051E+05	1.0000	0.0058
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	8.3584E+05	1.0000	0.0033
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	2.3005E+05	1.0000	0.0062
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	6.9800E+04	1.0000	0.0113
40000	1326.8	1.089	1.10	37.0465	818.21	7.069E+07	5.398E-10	3.8163E-02	1.5099E+06	1.0000	0.0024
44000	1351.7	1.089	1.10	37.0465	926.19	8.002E+07	1.727E-09	1.3823E-01	4.7188E+05	1.0000	0.0044
48000	1388.9	1.089	1.10	37.0465	1034.16	8.935E+07	6.858E-09	6.1280E-01	1.1885E+05	1.0000	0.0087

52000	1415.3	1.089	1.10	37.0465	1142.13	9.868E+07	2.159E-08	2.1301E+00	3.7761E+04	1.0000	0.0154
56000	1443.5	1.089	1.10	37.0465	1250.10	1.080E+08	6.887E-08	7.4382E+00	1.1836E+04	1.0000	0.0273
58000	1468.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.465E-07	1.6504E+01	5.5647E+03	1.0000	0.0397
60000	1479.5	1.089	1.10	37.0465	1358.08	1.173E+08	2.455E-07	2.8809E+01	3.3198E+03	1.0000	0.0512
62000	1501.5	1.089	1.10	37.0465	1412.06	1.220E+08	4.892E-07	5.9679E+01	1.6663E+03	1.0000	0.0717
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	3.3760E+07	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	6.2565E+08	1.0000	0.0001
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	2.4632E+08	1.0000	0.0002
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	9.1651E+07	1.0000	0.0003
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	1.4559E+08	1.0000	0.0002
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	4.3644E+07	1.0000	0.0005
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	1.0762E+07	1.0000	0.0009
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	3.1734E+07	1.0000	0.0005
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	8.4189E+06	1.0000	0.0010
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	2.4784E+06	1.0000	0.0019
40000	1181.3	1.089	1.10	37.0465	818.21	7.069E+07	1.842E-11	1.3022E-03	4.4250E+07	1.0000	0.0005
44000	1201.2	1.089	1.10	37.0465	926.19	8.002E+07	5.924E-11	4.7406E-03	1.3759E+07	1.0000	0.0008
48000	1231.9	1.089	1.10	37.0465	1034.16	8.935E+07	2.433E-10	2.1741E-02	3.3498E+06	1.0000	0.0016
52000	1252.9	1.089	1.10	37.0465	1142.13	9.868E+07	7.707E-10	7.6057E-02	1.0576E+06	1.0000	0.0029
56000	1277.2	1.089	1.10	37.0465	1250.10	1.080E+08	2.586E-09	2.7929E-01	3.1522E+05	1.0000	0.0053
58000	1298.8	1.089	1.10	37.0465	1304.09	1.127E+08	5.771E-09	6.5019E-01	1.4125E+05	1.0000	0.0080
60000	1308.9	1.089	1.10	37.0465	1358.08	1.173E+08	9.953E-09	1.1679E+00	8.1894E+04	1.0000	0.0104
62000	1329.9	1.089	1.10	37.0465	1412.06	1.220E+08	2.145E-08	2.6171E+00	3.7997E+04	1.0000	0.0153
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	1.6854E+09	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	9.0439E+11	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	4.0351E+11	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	1.5977E+11	1.0000	0.0000
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	1.9149E+11	1.0000	0.0000
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	5.9309E+10	1.0000	0.0000
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	1.3814E+10	1.0000	0.0000
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	3.3954E+10	1.0000	0.0000
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	8.7190E+09	1.0000	0.0000
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	2.5491E+09	1.0000	0.0001
40000	979.2	1.089	1.10	37.0465	818.21	7.069E+07	3.194E-14	2.2580E-06	2.5520E+10	1.0000	0.0000
44000	992.0	1.089	1.10	37.0465	926.19	8.002E+07	9.961E-14	7.9707E-06	8.1832E+09	1.0000	0.0000
48000	1013.6	1.089	1.10	37.0465	1034.16	8.935E+07	4.202E-13	3.7547E-05	1.9397E+09	1.0000	0.0001
52000	1027.2	1.089	1.10	37.0465	1142.13	9.868E+07	1.305E-12	1.2877E-04	6.2461E+08	1.0000	0.0001
56000	1045.7	1.089	1.10	37.0465	1250.10	1.080E+08	4.715E-12	5.0926E-04	1.7287E+08	1.0000	0.0002
58000	1062.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.128E-11	1.2715E-03	7.2232E+07	1.0000	0.0004
60000	1070.7	1.089	1.10	37.0465	1358.08	1.173E+08	2.051E-11	2.4070E-03	3.9734E+07	1.0000	0.0005

62000	1089.1	1.089	1.10	37.0465	1412.06	1.220E+08	5.061E-11	6.1747E-03	1.6105E+07	1.0000	0.0007
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	1.7695E+12	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	2.1035E+17	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	1.4192E+17	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	7.6758E+16	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	5.1642E+16	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	2.0849E+16	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	5.3193E+15	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	7.7852E+15	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	2.2363E+15	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	7.4806E+14	1.0000	0.0000
40000	753.8	1.089	1.10	37.0465	818.21	7.069E+07	4.772E-19	3.3738E-11	1.7079E+15	1.0000	0.0000
44000	758.8	1.089	1.10	37.0465	926.19	8.002E+07	1.266E-18	1.0135E-10	6.4360E+14	1.0000	0.0000
48000	770.1	1.089	1.10	37.0465	1034.16	8.935E+07	4.942E-18	4.4156E-10	1.6494E+14	1.0000	0.0000
52000	775.6	1.089	1.10	37.0465	1142.13	9.868E+07	1.334E-17	1.3163E-09	6.1107E+13	1.0000	0.0000
56000	786.7	1.089	1.10	37.0465	1250.10	1.080E+08	4.992E-17	5.3922E-09	1.6327E+13	1.0000	0.0000
58000	797.4	1.089	1.10	37.0465	1304.09	1.127E+08	1.290E-16	1.4539E-08	6.3170E+12	1.0000	0.0000
60000	803.0	1.089	1.10	37.0465	1358.08	1.173E+08	2.465E-16	2.8920E-08	3.3071E+12	1.0000	0.0000
62000	816.6	1.089	1.10	37.0465	1412.06	1.220E+08	7.284E-16	8.8866E-08	1.1190E+12	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	4.3708E+17	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	2.2263E+19	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	1.3471E+19	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	7.4048E+18	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	9.6639E+18	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	4.2593E+18	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	1.1421E+18	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	3.2820E+18	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	1.0335E+18	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	3.8615E+17	1.0000	0.0000
40000	653.3	1.089	1.10	37.0465	818.21	7.069E+07	2.843E-22	2.0099E-14	2.8669E+18	1.0000	0.0000
44000	655.2	1.089	1.10	37.0465	926.19	8.002E+07	6.451E-22	5.1626E-14	1.2634E+18	1.0000	0.0000
48000	661.9	1.089	1.10	37.0465	1034.16	8.935E+07	2.185E-21	1.9526E-13	3.7300E+17	1.0000	0.0000
52000	664.1	1.089	1.10	37.0465	1142.13	9.868E+07	5.062E-21	4.9951E-13	1.6103E+17	1.0000	0.0000
56000	671.5	1.089	1.10	37.0465	1250.10	1.080E+08	1.788E-20	1.9307E-12	4.5599E+16	1.0000	0.0000
58000	679.2	1.089	1.10	37.0465	1304.09	1.127E+08	4.591E-20	5.1728E-12	1.7755E+16	1.0000	0.0000
60000	682.7	1.089	1.10	37.0465	1358.08	1.173E+08	8.395E-20	9.8509E-12	9.7090E+15	1.0000	0.0000
62000	688.0	1.089	1.10	37.0465	1412.06	1.220E+08	1.759E-19	2.1457E-11	4.6345E+15	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0016	0.0008	0.0001	0.0000	0.0000	0.0000	0.0001				
8000	0.0025	0.0013	0.0002	0.0000	0.0000	0.0000	0.0002				
12000	0.0042	0.0022	0.0003	0.0000	0.0000	0.0000	0.0003				
16000	0.0031	0.0016	0.0002	0.0000	0.0000	0.0000	0.0002				
20000	0.0056	0.0029	0.0005	0.0000	0.0000	0.0000	0.0004				
24000	0.0108	0.0058	0.0009	0.0000	0.0000	0.0000	0.0007				
28000	0.0061	0.0033	0.0005	0.0000	0.0000	0.0000	0.0004				
32000	0.0115	0.0062	0.0010	0.0000	0.0000	0.0000	0.0008				
36000	0.0208	0.0113	0.0019	0.0001	0.0000	0.0000	0.0014				
40000	0.0044	0.0024	0.0005	0.0000	0.0000	0.0000	0.0003				
44000	0.0078	0.0044	0.0008	0.0000	0.0000	0.0000	0.0006				
48000	0.0154	0.0087	0.0016	0.0001	0.0000	0.0000	0.0011				
52000	0.0271	0.0154	0.0029	0.0001	0.0000	0.0000	0.0020				
56000	0.0476	0.0273	0.0053	0.0002	0.0000	0.0000	0.0036				
58000	0.0684	0.0397	0.0080	0.0004	0.0000	0.0000	0.0052				
60000	0.0874	0.0512	0.0104	0.0005	0.0000	0.0000	0.0068				
62000	0.1202	0.0717	0.0153	0.0007	0.0000	0.0000	0.0096				

Gas Gap Fractions: Xe-138											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300			cal/mol							
R	1.987			cal/mol-K							
Do/a2	0.61			1/sec							
lambda	8.151E-4			1/sec							
r=0.0											
Bumup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	2.0934E+06	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	3.6607E+06	1.0000	0.0016
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	1.3891E+06	1.0000	0.0025
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	5.1799E+05	1.0000	0.0042
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	9.3743E+05	1.0000	0.0031
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	2.8784E+05	1.0000	0.0056
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	7.6924E+04	1.0000	0.0108
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	2.3909E+05	1.0000	0.0061
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	6.6977E+04	1.0000	0.0115
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	2.0601E+04	1.0000	0.0208
40000	1201.7	1.089	0.90	30.3108	842.21	7.277E+07	3.107E-11	2.2611E-03	2.6232E+07	1.0000	0.0006
44000	1222.7	1.089	0.90	30.3108	974.17	8.417E+07	1.009E-10	8.4938E-03	8.0772E+06	1.0000	0.0011
48000	1242.9	1.089	0.90	30.3108	1106.14	9.557E+07	3.160E-10	3.0202E-02	2.5793E+06	1.0000	0.0019
52000	1262.0	1.089	0.90	30.3108	1238.11	1.070E+08	9.503E-10	1.0165E-01	8.5774E+05	1.0000	0.0032
56000	1281.0	1.089	0.90	30.3108	1370.07	1.184E+08	2.814E-09	3.3308E-01	2.8968E+05	1.0000	0.0056
58000	1292.5	1.089	0.90	30.3108	1436.06	1.241E+08	5.034E-09	6.2459E-01	1.6192E+05	1.0000	0.0074
60000	1301.0	1.089	0.90	30.3108	1502.04	1.298E+08	8.407E-09	1.0910E+00	9.6953E+04	1.0000	0.0096
62000	1310.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.425E-08	1.9301E+00	5.7213E+04	1.0000	0.0125
r=0.2											
Bumup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	4.2600E+06	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	1.3686E+07	1.0000	0.0008
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	5.2175E+06	1.0000	0.0013
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	1.9383E+06	1.0000	0.0022
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	3.4101E+06	1.0000	0.0016
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	1.0366E+06	1.0000	0.0029
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	2.7051E+05	1.0000	0.0058
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	8.3584E+05	1.0000	0.0033
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	2.3005E+05	1.0000	0.0062
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	6.9800E+04	1.0000	0.0113
40000	1160.8	1.089	0.90	30.3108	842.21	7.277E+07	1.069E-11	7.7801E-04	7.6236E+07	1.0000	0.0003
44000	1180.1	1.089	0.90	30.3108	974.17	8.417E+07	3.447E-11	2.9011E-03	2.3649E+07	1.0000	0.0006
48000	1198.8	1.089	0.90	30.3108	1106.14	9.557E+07	1.076E-10	1.0288E-02	7.5720E+06	1.0000	0.0011
52000	1216.5	1.089	0.90	30.3108	1238.11	1.070E+08	3.232E-10	3.4577E-02	2.5217E+06	1.0000	0.0019

56000	1234.1	1.089	0.90	30.3108	1370.07	1.184E+08	9.561E-10	1.1317E-01	8.5257E+05	1.0000	0.0032
58000	1244.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.704E-09	2.1137E-01	4.7846E+05	1.0000	0.0043
60000	1252.5	1.089	0.90	30.3108	1502.04	1.298E+08	2.846E-09	3.6941E-01	2.8635E+05	1.0000	0.0056
62000	1261.2	1.089	0.90	30.3108	1568.02	1.355E+08	4.833E-09	6.5473E-01	1.6866E+05	1.0000	0.0073
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	3.3760E+07	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	6.2565E+08	1.0000	0.0001
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	2.4632E+08	1.0000	0.0002
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	9.1651E+07	1.0000	0.0003
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	1.4559E+08	1.0000	0.0002
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	4.3644E+07	1.0000	0.0005
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	1.0762E+07	1.0000	0.0009
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	3.1734E+07	1.0000	0.0005
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	8.4189E+06	1.0000	0.0010
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	2.4784E+06	1.0000	0.0019
40000	1057.8	1.089	0.90	30.3108	842.21	7.277E+07	5.052E-13	3.6764E-05	1.6133E+09	1.0000	0.0001
44000	1072.8	1.089	0.90	30.3108	974.17	8.417E+07	1.578E-12	1.3281E-04	5.1658E+08	1.0000	0.0001
48000	1087.9	1.089	0.90	30.3108	1106.14	9.557E+07	4.878E-12	4.6620E-04	1.6710E+08	1.0000	0.0002
52000	1101.9	1.089	0.90	30.3108	1238.11	1.070E+08	1.440E-11	1.5409E-03	5.6585E+07	1.0000	0.0004
56000	1116.0	1.089	0.90	30.3108	1370.07	1.184E+08	4.221E-11	4.9966E-03	1.9310E+07	1.0000	0.0007
58000	1124.1	1.089	0.90	30.3108	1436.06	1.241E+08	7.418E-11	9.2044E-03	1.0988E+07	1.0000	0.0009
60000	1130.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.242E-10	1.6113E-02	6.5648E+06	1.0000	0.0012
62000	1137.6	1.089	0.90	30.3108	1568.02	1.355E+08	2.103E-10	2.8491E-02	3.8758E+06	1.0000	0.0015
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	1.6854E+09	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	9.0439E+11	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	4.0351E+11	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	1.5977E+11	1.0000	0.0000
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	1.9149E+11	1.0000	0.0000
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	5.9309E+10	1.0000	0.0000
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	1.3814E+10	1.0000	0.0000
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	3.3954E+10	1.0000	0.0000
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	8.7190E+09	1.0000	0.0000
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	2.5491E+09	1.0000	0.0001
40000	909.4	1.089	0.90	30.3108	842.21	7.277E+07	1.844E-15	1.3415E-07	4.4212E+11	1.0000	0.0000
44000	918.3	1.089	0.90	30.3108	974.17	8.417E+07	5.246E-15	4.4152E-07	1.5539E+11	1.0000	0.0000
48000	928.3	1.089	0.90	30.3108	1106.14	9.557E+07	1.552E-14	1.4832E-06	5.2520E+10	1.0000	0.0000
52000	937.2	1.089	0.90	30.3108	1238.11	1.070E+08	4.348E-14	4.6509E-06	1.8748E+10	1.0000	0.0000
56000	946.3	1.089	0.90	30.3108	1370.07	1.184E+08	1.219E-13	1.4434E-05	6.6848E+09	1.0000	0.0000
58000	951.2	1.089	0.90	30.3108	1436.06	1.241E+08	2.065E-13	2.5626E-05	3.9465E+09	1.0000	0.0000
60000	955.5	1.089	0.90	30.3108	1502.04	1.298E+08	3.409E-13	4.4240E-05	2.3910E+09	1.0000	0.0001
62000	960.1	1.089	0.90	30.3108	1568.02	1.355E+08	5.685E-13	7.7017E-05	1.4338E+09	1.0000	0.0001

r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t -	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	1.7695E+12	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	2.1035E+17	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	1.4192E+17	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	7.6758E+16	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	5.1642E+16	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	2.0849E+16	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	5.3193E+15	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	7.7852E+15	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	2.2363E+15	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	7.4806E+14	1.0000	0.0000
40000	735.0	1.089	0.90	30.3108	842.21	7.277E+07	1.388E-19	1.0103E-11	5.8706E+15	1.0000	0.0000
44000	737.2	1.089	0.90	30.3108	974.17	8.417E+07	3.107E-19	2.6155E-11	2.6231E+15	1.0000	0.0000
48000	741.2	1.089	0.90	30.3108	1106.14	9.557E+07	7.831E-19	7.4838E-11	1.0409E+15	1.0000	0.0000
52000	744.2	1.089	0.90	30.3108	1238.11	1.070E+08	1.843E-18	1.9712E-10	4.4234E+14	1.0000	0.0000
56000	747.4	1.089	0.90	30.3108	1370.07	1.184E+08	4.386E-18	5.1921E-10	1.8583E+14	1.0000	0.0000
58000	748.9	1.089	0.90	30.3108	1436.06	1.241E+08	6.719E-18	8.3363E-10	1.2132E+14	1.0000	0.0000
60000	750.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.042E-17	1.3525E-09	7.8212E+13	1.0000	0.0000
62000	752.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.616E-17	2.1889E-09	5.0448E+13	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	4.3708E+17	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	2.2263E+19	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	1.3471E+19	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	7.4048E+18	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	9.6639E+18	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	4.2593E+18	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	1.1421E+18	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	3.2820E+18	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	1.0335E+18	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	3.8615E+17	1.0000	0.0000
40000	636.8	1.089	0.90	30.3108	842.21	7.277E+07	6.715E-23	4.8863E-15	1.2138E+19	1.0000	0.0000
44000	635.5	1.089	0.90	30.3108	974.17	8.417E+07	1.153E-22	9.7085E-15	7.0666E+18	1.0000	0.0000
48000	636.0	1.089	0.90	30.3108	1106.14	9.557E+07	2.330E-22	2.2263E-14	3.4990E+18	1.0000	0.0000
52000	635.7	1.089	0.90	30.3108	1238.11	1.070E+08	4.378E-22	4.6830E-14	1.8619E+18	1.0000	0.0000
56000	635.6	1.089	0.90	30.3108	1370.07	1.184E+08	8.376E-22	9.9155E-14	9.7310E+17	1.0000	0.0000
58000	635.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.164E-21	1.4441E-13	7.0032E+17	1.0000	0.0000
60000	635.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.617E-21	2.0988E-13	5.0401E+17	1.0000	0.0000
62000	635.7	1.089	0.90	30.3108	1568.02	1.355E+08	2.267E-21	3.0719E-13	3.5948E+17	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0016	0.0008	0.0001	0.0000	0.0000	0.0000	0.0001				

8000	0.0025	0.0013	0.0002	0.0000	0.0000	0.0000	0.0002				
12000	0.0042	0.0022	0.0003	0.0000	0.0000	0.0000	0.0003				
16000	0.0031	0.0016	0.0002	0.0000	0.0000	0.0000	0.0002				
20000	0.0056	0.0029	0.0005	0.0000	0.0000	0.0000	0.0004				
24000	0.0108	0.0058	0.0009	0.0000	0.0000	0.0000	0.0007				
28000	0.0061	0.0033	0.0005	0.0000	0.0000	0.0000	0.0004				
32000	0.0115	0.0062	0.0010	0.0000	0.0000	0.0000	0.0008				
36000	0.0208	0.0113	0.0019	0.0001	0.0000	0.0000	0.0014				
40000	0.0006	0.0003	0.0001	0.0000	0.0000	0.0000	0.0000				
44000	0.0011	0.0006	0.0001	0.0000	0.0000	0.0000	0.0001				
48000	0.0019	0.0011	0.0002	0.0000	0.0000	0.0000	0.0001				
52000	0.0032	0.0019	0.0004	0.0000	0.0000	0.0000	0.0003				
56000	0.0056	0.0032	0.0007	0.0000	0.0000	0.0000	0.0004				
58000	0.0074	0.0043	0.0009	0.0000	0.0000	0.0000	0.0006				
60000	0.0096	0.0056	0.0012	0.0001	0.0000	0.0000	0.0007				
62000	0.0125	0.0073	0.0015	0.0001	0.0000	0.0000	0.0010				

Gas Gap Fractions: Kr-85										
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc			
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm			
Q	72300	cal/mol								
R	1.987	cal/mol-K								
Do/a2	0.61	1/sec								
lambda	2.0540E-09	1/sec								
r=0.0										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	1.0000E+00	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	9.1850E-01	0.0815
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	4.9837E-03	8.4816E-01	0.1518
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	1.4672E-02	7.4865E-01	0.2514
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.0561E-02	7.0724E-01	0.2928
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	3.9740E-02	6.0973E-01	0.3903
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	1.1151E-01	4.1367E-01	0.5863
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.3716E-01	3.6994E-01	0.6301
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	2.2874E-01	2.6328E-01	0.7367
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	5.2649E-01	1.2598E-01	0.8740
40000	1385.9	1.089	1.10	37.0465	818.21	7.069E+07	1.738E-09	5.4271E-01	1.2230E-01	0.8777
44000	1412.9	1.089	1.10	37.0465	926.19	8.002E+07	5.543E-09	5.9442E-01	1.1186E-01	0.8881
48000	1452.7	1.089	1.10	37.0465	1034.16	8.935E+07	2.167E-08	7.9660E-01	8.3659E-02	0.9163
52000	1481.3	1.089	1.10	37.0465	1142.13	9.868E+07	6.787E-08	1.4297E+00	4.6630E-02	0.9534
56000	1511.0	1.089	1.10	37.0465	1250.10	1.080E+08	2.123E-07	3.4107E+00	1.9547E-02	0.9805
58000	1537.1	1.089	1.10	37.0465	1304.09	1.127E+08	4.441E-07	5.4822E+00	1.2161E-02	0.9878
60000	1548.5	1.089	1.10	37.0465	1358.08	1.173E+08	7.346E-07	8.9085E+00	7.4835E-03	0.9925
62000	1570.8	1.089	1.10	37.0465	1412.06	1.220E+08	1.425E-06	1.5555E+01	4.2860E-03	0.9957
r=0.2										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	1.0000E+00	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	9.5733E-01	0.0427
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.3286E-03	9.1973E-01	0.0803
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	3.9178E-03	8.6462E-01	0.1354
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	5.5366E-03	8.4038E-01	0.1596
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	1.0862E-02	7.8109E-01	0.2189
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	3.1270E-02	6.4783E-01	0.3522
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	3.8608E-02	6.1448E-01	0.3855
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	6.5272E-02	5.2134E-01	0.4787
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	1.5315E-01	3.4653E-01	0.6535
40000	1326.8	1.089	1.10	37.0465	818.21	7.069E+07	5.398E-10	1.5819E-01	3.3967E-01	0.6603
44000	1351.7	1.089	1.10	37.0465	926.19	8.002E+07	1.727E-09	1.7430E-01	3.1920E-01	0.6808
48000	1388.9	1.089	1.10	37.0465	1034.16	8.935E+07	6.858E-09	2.3828E-01	2.5517E-01	0.7448

52000	1415.3	1.089	1.10	37.0465	1142.13	9.868E+07	2.159E-08	4.3965E-01	1.4981E-01	0.8502
56000	1443.5	1.089	1.10	37.0465	1250.10	1.080E+08	6.887E-08	1.0821E+00	6.1608E-02	0.9384
58000	1468.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.465E-07	1.7653E+00	3.7765E-02	0.9622
60000	1479.5	1.089	1.10	37.0465	1358.08	1.173E+08	2.455E-07	2.9105E+00	2.2905E-02	0.9771
62000	1501.5	1.089	1.10	37.0465	1412.06	1.220E+08	4.892E-07	5.1922E+00	1.2840E-02	0.9872
r=0.4										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	1.0000E+00	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	9.9362E-01	0.0064
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	2.8396E-05	9.8802E-01	0.0120
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	8.3153E-05	9.7955E-01	0.0205
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.2107E-04	9.7535E-01	0.0247
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	2.4756E-04	9.6486E-01	0.0351
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	7.6050E-04	9.3891E-01	0.0611
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	9.5379E-04	9.3173E-01	0.0683
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	1.6824E-03	9.0996E-01	0.0900
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	4.1573E-03	8.6073E-01	0.1393
40000	1181.3	1.089	1.10	37.0465	818.21	7.069E+07	1.842E-11	4.3292E-03	8.5801E-01	0.1420
44000	1201.2	1.089	1.10	37.0465	926.19	8.002E+07	5.924E-11	4.8818E-03	8.4964E-01	0.1504
48000	1231.9	1.089	1.10	37.0465	1034.16	8.935E+07	2.433E-10	7.1518E-03	8.1988E-01	0.1801
52000	1252.9	1.089	1.10	37.0465	1142.13	9.868E+07	7.707E-10	1.4342E-02	7.5125E-01	0.2488
56000	1277.2	1.089	1.10	37.0465	1250.10	1.080E+08	2.586E-09	3.8464E-02	6.1509E-01	0.3849
58000	1298.8	1.089	1.10	37.0465	1304.09	1.127E+08	5.771E-09	6.5380E-02	5.2103E-01	0.4790
60000	1308.9	1.089	1.10	37.0465	1358.08	1.173E+08	9.953E-09	1.1181E-01	4.1311E-01	0.5869
62000	1329.9	1.089	1.10	37.0465	1412.06	1.220E+08	2.145E-08	2.1186E-01	2.7874E-01	0.7213
r=0.6										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	1.0000E+00	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	9.9983E-01	0.0002
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	1.7987E-08	9.9970E-01	0.0003
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	4.9398E-08	9.9950E-01	0.0005
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	7.8227E-08	9.9937E-01	0.0006
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	1.7131E-07	9.9907E-01	0.0009
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	5.7092E-07	9.9830E-01	0.0017
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	7.5157E-07	9.9804E-01	0.0020
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	1.4551E-06	9.9728E-01	0.0027
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	3.8613E-06	9.9557E-01	0.0044
40000	979.2	1.089	1.10	37.0465	818.21	7.069E+07	3.194E-14	4.1593E-06	9.9540E-01	0.0046
44000	992.0	1.089	1.10	37.0465	926.19	8.002E+07	9.961E-14	5.0885E-06	9.9492E-01	0.0051
48000	1013.6	1.089	1.10	37.0465	1034.16	8.935E+07	4.202E-13	9.0086E-06	9.9324E-01	0.0068
52000	1027.2	1.089	1.10	37.0465	1142.13	9.868E+07	1.305E-12	2.1182E-05	9.8965E-01	0.0104
56000	1045.7	1.089	1.10	37.0465	1250.10	1.080E+08	4.715E-12	6.5168E-05	9.8188E-01	0.0181
58000	1062.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.128E-11	1.1780E-04	9.7568E-01	0.0243
60000	1070.7	1.089	1.10	37.0465	1358.08	1.173E+08	2.051E-11	2.1349E-04	9.6735E-01	0.0327

62000	1089.1	1.089	1.10	37.0465	1412.06	1.220E+08	5.061E-11	4.4956E-04	9.5282E-01	0.0472
r=0.8										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	1.0000E+00	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	1.0000E+00	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	5.9221E-14	1.0000E+00	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.2460E-13	1.0000E+00	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	2.3150E-13	1.0000E+00	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	4.9629E-13	1.0000E+00	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	1.5341E-12	1.0000E+00	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	2.3220E-12	1.0000E+00	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	5.0649E-12	9.9999E-01	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	1.3265E-11	9.9999E-01	0.0000
40000	753.8	1.089	1.10	37.0465	818.21	7.069E+07	4.772E-19	1.7717E-11	9.9999E-01	0.0000
44000	758.8	1.089	1.10	37.0465	926.19	8.002E+07	1.266E-18	2.9531E-11	9.9999E-01	0.0000
48000	770.1	1.089	1.10	37.0465	1034.16	8.935E+07	4.942E-18	7.5633E-11	9.9998E-01	0.0000
52000	775.6	1.089	1.10	37.0465	1142.13	9.868E+07	1.334E-17	2.0007E-10	9.9997E-01	0.0000
56000	786.7	1.089	1.10	37.0465	1250.10	1.080E+08	4.992E-17	6.6580E-10	9.9994E-01	0.0001
58000	797.4	1.089	1.10	37.0465	1304.09	1.127E+08	1.290E-16	1.2677E-09	9.9992E-01	0.0001
60000	803.0	1.089	1.10	37.0465	1358.08	1.173E+08	2.465E-16	2.4173E-09	9.9989E-01	0.0001
62000	816.6	1.089	1.10	37.0465	1412.06	1.220E+08	7.284E-16	5.8148E-09	9.9983E-01	0.0002
r=1.0										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	1.0000E+00	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	1.0000E+00	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	5.9797E-16	1.0000E+00	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	1.2757E-15	1.0000E+00	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	1.8470E-15	1.0000E+00	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	3.1431E-15	1.0000E+00	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	7.9765E-15	1.0000E+00	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	9.8454E-15	1.0000E+00	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	1.5780E-14	1.0000E+00	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	3.1665E-14	1.0000E+00	0.0000
40000	653.3	1.089	1.10	37.0465	818.21	7.069E+07	2.843E-22	3.4317E-14	1.0000E+00	0.0000
44000	655.2	1.089	1.10	37.0465	926.19	8.002E+07	6.451E-22	4.0336E-14	1.0000E+00	0.0000
48000	661.9	1.089	1.10	37.0465	1034.16	8.935E+07	2.185E-21	6.0722E-14	1.0000E+00	0.0000
52000	664.1	1.089	1.10	37.0465	1142.13	9.868E+07	5.062E-21	1.0794E-13	1.0000E+00	0.0000
56000	671.5	1.089	1.10	37.0465	1250.10	1.080E+08	1.788E-20	2.7470E-13	1.0000E+00	0.0000
58000	679.2	1.089	1.10	37.0465	1304.09	1.127E+08	4.591E-20	4.8884E-13	1.0000E+00	0.0000
60000	682.7	1.089	1.10	37.0465	1358.08	1.173E+08	8.395E-20	8.8043E-13	1.0000E+00	0.0000
62000	688.0	1.089	1.10	37.0465	1412.06	1.220E+08	1.759E-19	1.7008E-12	1.0000E+00	0.0000
Burnup	F	F	F	F	F	F				
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0				

	0.01	0.08	0.16	0.24	0.32	0.19				
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
4000	0.0815	0.0427	0.0064	0.0002	0.0000	0.0000	0.0053			
8000	0.1518	0.0803	0.0120	0.0003	0.0000	0.0000	0.0099			
12000	0.2514	0.1354	0.0205	0.0005	0.0000	0.0000	0.0167			
16000	0.2928	0.1596	0.0247	0.0006	0.0000	0.0000	0.0198			
20000	0.3903	0.2189	0.0351	0.0009	0.0000	0.0000	0.0273			
24000	0.5863	0.3522	0.0611	0.0017	0.0000	0.0000	0.0442			
28000	0.6301	0.3855	0.0683	0.0020	0.0000	0.0000	0.0485			
32000	0.7367	0.4787	0.0900	0.0027	0.0000	0.0000	0.0607			
36000	0.8740	0.6535	0.1393	0.0044	0.0000	0.0000	0.0844			
40000	0.8777	0.6603	0.1420	0.0046	0.0000	0.0000	0.0854			
44000	0.8881	0.6808	0.1504	0.0051	0.0000	0.0000	0.0886			
48000	0.9163	0.7448	0.1801	0.0068	0.0000	0.0000	0.0992			
52000	0.9534	0.8502	0.2488	0.0104	0.0000	0.0000	0.1198			
56000	0.9805	0.9384	0.3849	0.0181	0.0001	0.0000	0.1508			
58000	0.9878	0.9622	0.4790	0.0243	0.0001	0.0000	0.1694			
60000	0.9925	0.9771	0.5869	0.0327	0.0001	0.0000	0.1899			
62000	0.9957	0.9872	0.7213	0.0472	0.0002	0.0000	0.2157			

Gas Gap Fractions: Kr-85										
Vfuel=176*PI*(0.96774/2)^2*(347.218)=					44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=					410371.65	gm				
Q	72300	cal/mol								
R	1.987	cal/mol-K								
Do/a2	0.61	1/sec								
lambda	2.0540E-09	1/sec								
r=0.0										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	1.0000E+00	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	9.1850E-01	0.0815
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	4.9837E-03	8.4816E-01	0.1518
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	1.4672E-02	7.4865E-01	0.2514
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.0561E-02	7.0724E-01	0.2928
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	3.9740E-02	6.0973E-01	0.3903
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	1.1151E-01	4.1367E-01	0.5863
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.3716E-01	3.6994E-01	0.6301
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	2.2874E-01	2.6328E-01	0.7367
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	5.2649E-01	1.2598E-01	0.8740
40000	1201.7	1.089	0.90	30.3108	842.21	7.277E+07	3.107E-11	5.2685E-01	1.2589E-01	0.8741
44000	1222.7	1.089	0.90	30.3108	974.17	8.417E+07	1.009E-10	5.2800E-01	1.2563E-01	0.8744
48000	1242.9	1.089	0.90	30.3108	1106.14	9.557E+07	3.160E-10	5.3160E-01	1.2480E-01	0.8752
52000	1262.0	1.089	0.90	30.3108	1238.11	1.070E+08	9.503E-10	5.4244E-01	1.2237E-01	0.8776
56000	1281.0	1.089	0.90	30.3108	1370.07	1.184E+08	2.814E-09	5.7452E-01	1.1567E-01	0.8843
58000	1292.5	1.089	0.90	30.3108	1436.06	1.241E+08	5.034E-09	6.0322E-01	1.1025E-01	0.8897
60000	1301.0	1.089	0.90	30.3108	1502.04	1.298E+08	8.407E-09	6.5115E-01	1.0223E-01	0.8978
62000	1310.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.425E-08	7.3237E-01	9.0968E-02	0.9090
r=0.2										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	1.0000E+00	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	9.5733E-01	0.0427
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.3286E-03	9.1973E-01	0.0803
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	3.9178E-03	8.6462E-01	0.1354
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	5.5366E-03	8.4038E-01	0.1596
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	1.0862E-02	7.8109E-01	0.2189
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	3.1270E-02	6.4783E-01	0.3522
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	3.8608E-02	6.1448E-01	0.3855
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	6.5272E-02	5.2134E-01	0.4787
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	1.5315E-01	3.4653E-01	0.6535
40000	1160.8	1.089	0.90	30.3108	842.21	7.277E+07	1.069E-11	1.5327E-01	3.4636E-01	0.6536
44000	1180.1	1.089	0.90	30.3108	974.17	8.417E+07	3.447E-11	1.5366E-01	3.4582E-01	0.6542
48000	1198.8	1.089	0.90	30.3108	1106.14	9.557E+07	1.076E-10	1.5489E-01	3.4413E-01	0.6559

52000	1216.5	1.089	0.90	30.3108	1238.11	1.070E+08	3.232E-10	1.5858E-01	3.3915E-01	0.6608
56000	1234.1	1.089	0.90	30.3108	1370.07	1.184E+08	9.561E-10	1.6948E-01	3.2510E-01	0.6749
58000	1244.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.704E-09	1.7919E-01	3.1339E-01	0.6866
60000	1252.5	1.089	0.90	30.3108	1502.04	1.298E+08	2.846E-09	1.9542E-01	2.9533E-01	0.7047
62000	1261.2	1.089	0.90	30.3108	1568.02	1.355E+08	4.833E-09	2.2297E-01	2.6840E-01	0.7316
r=0.4										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	1.0000E+00	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	9.9362E-01	0.0064
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	2.8396E-05	9.8802E-01	0.0120
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	8.3153E-05	9.7955E-01	0.0205
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.2107E-04	9.7535E-01	0.0247
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	2.4756E-04	9.6486E-01	0.0351
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	7.6050E-04	9.3891E-01	0.0611
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	9.5379E-04	9.3173E-01	0.0683
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	1.6824E-03	9.0996E-01	0.0900
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	4.1573E-03	8.6073E-01	0.1393
40000	1057.8	1.089	0.90	30.3108	842.21	7.277E+07	5.052E-13	4.1631E-03	8.6063E-01	0.1394
44000	1072.8	1.089	0.90	30.3108	974.17	8.417E+07	1.578E-12	4.1811E-03	8.6035E-01	0.1397
48000	1087.9	1.089	0.90	30.3108	1106.14	9.557E+07	4.878E-12	4.2367E-03	8.5946E-01	0.1405
52000	1101.9	1.089	0.90	30.3108	1238.11	1.070E+08	1.440E-11	4.4009E-03	8.5689E-01	0.1431
56000	1116.0	1.089	0.90	30.3108	1370.07	1.184E+08	4.221E-11	4.8822E-03	8.4964E-01	0.1504
58000	1124.1	1.089	0.90	30.3108	1436.06	1.241E+08	7.418E-11	5.3051E-03	8.4358E-01	0.1564
60000	1130.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.242E-10	6.0130E-03	8.3402E-01	0.1660
62000	1137.6	1.089	0.90	30.3108	1568.02	1.355E+08	2.103E-10	7.2119E-03	8.1917E-01	0.1808
r=0.6										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	1.0000E+00	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	9.9983E-01	0.0002
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	1.7987E-08	9.9970E-01	0.0003
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	4.9398E-08	9.9950E-01	0.0005
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	7.8227E-08	9.9937E-01	0.0006
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	1.7131E-07	9.9907E-01	0.0009
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	5.7092E-07	9.9830E-01	0.0017
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	7.5157E-07	9.9804E-01	0.0020
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	1.4551E-06	9.9728E-01	0.0027
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	3.8613E-06	9.9557E-01	0.0044
40000	909.4	1.089	0.90	30.3108	842.21	7.277E+07	1.844E-15	3.8824E-06	9.9556E-01	0.0044
44000	918.3	1.089	0.90	30.3108	974.17	8.417E+07	5.246E-15	3.9422E-06	9.9553E-01	0.0045
48000	928.3	1.089	0.90	30.3108	1106.14	9.557E+07	1.552E-14	4.1191E-06	9.9543E-01	0.0046
52000	937.2	1.089	0.90	30.3108	1238.11	1.070E+08	4.348E-14	4.6148E-06	9.9516E-01	0.0048
56000	946.3	1.089	0.90	30.3108	1370.07	1.184E+08	1.219E-13	6.0051E-06	9.9448E-01	0.0055
58000	951.2	1.089	0.90	30.3108	1436.06	1.241E+08	2.065E-13	7.1826E-06	9.9396E-01	0.0060
60000	955.5	1.089	0.90	30.3108	1502.04	1.298E+08	3.409E-13	9.1260E-06	9.9320E-01	0.0068

62000	960.1	1.089	0.90	30.3108	1568.02	1.355E+08	5.685E-13	1.2367E-05	9.9208E-01	0.0079
r=0.8										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	1.0000E+00	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	1.0000E+00	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	5.9221E-14	1.0000E+00	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.2460E-13	1.0000E+00	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	2.3150E-13	1.0000E+00	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	4.9629E-13	1.0000E+00	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	1.5341E-12	1.0000E+00	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	2.3220E-12	1.0000E+00	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	5.0649E-12	9.9999E-01	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	1.3265E-11	9.9999E-01	0.0000
40000	735.0	1.089	0.90	30.3108	842.21	7.277E+07	1.388E-19	1.4848E-11	9.9999E-01	0.0000
44000	737.2	1.089	0.90	30.3108	974.17	8.417E+07	3.107E-19	1.8391E-11	9.9999E-01	0.0000
48000	741.2	1.089	0.90	30.3108	1106.14	9.557E+07	7.831E-19	2.7319E-11	9.9999E-01	0.0000
52000	744.2	1.089	0.90	30.3108	1238.11	1.070E+08	1.843E-18	4.8329E-11	9.9998E-01	0.0000
56000	747.4	1.089	0.90	30.3108	1370.07	1.184E+08	4.386E-18	9.8340E-11	9.9998E-01	0.0000
58000	748.9	1.089	0.90	30.3108	1436.06	1.241E+08	6.719E-18	1.3664E-10	9.9997E-01	0.0000
60000	750.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.042E-17	1.9606E-10	9.9997E-01	0.0000
62000	752.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.616E-17	2.8817E-10	9.9996E-01	0.0000
r=1.0										
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	g	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	1.0000E+00	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	1.0000E+00	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	5.9797E-16	1.0000E+00	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	1.2757E-15	1.0000E+00	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	1.8470E-15	1.0000E+00	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	3.1431E-15	1.0000E+00	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	7.9765E-15	1.0000E+00	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	9.8454E-15	1.0000E+00	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	1.5780E-14	1.0000E+00	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	3.1665E-14	1.0000E+00	0.0000
40000	636.8	1.089	0.90	30.3108	842.21	7.277E+07	6.715E-23	3.2430E-14	1.0000E+00	0.0000
44000	635.5	1.089	0.90	30.3108	974.17	8.417E+07	1.153E-22	3.3746E-14	1.0000E+00	0.0000
48000	636.0	1.089	0.90	30.3108	1106.14	9.557E+07	2.330E-22	3.6402E-14	1.0000E+00	0.0000
52000	635.7	1.089	0.90	30.3108	1238.11	1.070E+08	4.378E-22	4.1393E-14	1.0000E+00	0.0000
56000	635.6	1.089	0.90	30.3108	1370.07	1.184E+08	8.376E-22	5.0944E-14	1.0000E+00	0.0000
58000	635.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.164E-21	5.7579E-14	1.0000E+00	0.0000
60000	635.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.617E-21	6.6799E-14	1.0000E+00	0.0000
62000	635.7	1.089	0.90	30.3108	1568.02	1.355E+08	2.267E-21	7.9725E-14	1.0000E+00	0.0000
Burnup	F	F	F	F	F	F				
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0				

	0.01	0.08	0.16	0.24	0.32	0.19				
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
4000	0.0815	0.0427	0.0064	0.0002	0.0000	0.0000	0.0053			
8000	0.1518	0.0803	0.0120	0.0003	0.0000	0.0000	0.0099			
12000	0.2514	0.1354	0.0205	0.0005	0.0000	0.0000	0.0167			
16000	0.2928	0.1596	0.0247	0.0006	0.0000	0.0000	0.0198			
20000	0.3903	0.2189	0.0351	0.0009	0.0000	0.0000	0.0273			
24000	0.5863	0.3522	0.0611	0.0017	0.0000	0.0000	0.0442			
28000	0.6301	0.3855	0.0683	0.0020	0.0000	0.0000	0.0485			
32000	0.7367	0.4787	0.0900	0.0027	0.0000	0.0000	0.0607			
36000	0.8740	0.6535	0.1393	0.0044	0.0000	0.0000	0.0844			
40000	0.8741	0.6536	0.1394	0.0044	0.0000	0.0000	0.0844			
44000	0.8744	0.6542	0.1397	0.0045	0.0000	0.0000	0.0845			
48000	0.8752	0.6559	0.1405	0.0046	0.0000	0.0000	0.0848			
52000	0.8776	0.6608	0.1431	0.0048	0.0000	0.0000	0.0857			
56000	0.8843	0.6749	0.1504	0.0055	0.0000	0.0000	0.0882			
58000	0.8897	0.6866	0.1564	0.0060	0.0000	0.0000	0.0903			
60000	0.8978	0.7047	0.1660	0.0068	0.0000	0.0000	0.0936			
62000	0.9090	0.7316	0.1808	0.0079	0.0000	0.0000	0.0985			

Gas Gap Fractions: Kr-85m												
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc					
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm					
Q	72300	cal/mol										
R	1.987	cal/mol-K										
Do/a2	0.61	1/sec										
lambda	4.2970E-05	1/sec										
r=0.0												
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F	
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu		
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	1.1036E+05	0.0000	0.0000	
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	1.9298E+05	1.0000	0.0068	
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	7.3231E+04	1.0000	0.0110	
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	2.7307E+04	1.0000	0.0180	
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	4.9419E+04	1.0000	0.0134	
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	1.5174E+04	1.0000	0.0242	
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	4.0552E+03	1.0000	0.0464	
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	1.2604E+04	1.0000	0.0265	
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	3.5308E+03	1.0000	0.0496	
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	1.0860E+03	1.0000	0.0883	
40000	1385.9	1.089	1.10	37.0465	818.21	7.069E+07	1.738E-09	1.2290E-01	2.4717E+04	1.0000	0.0190	
44000	1412.9	1.089	1.10	37.0465	926.19	8.002E+07	5.543E-09	4.4359E-01	7.7517E+03	1.0000	0.0337	
48000	1452.7	1.089	1.10	37.0465	1034.16	8.935E+07	2.167E-08	1.9365E+00	1.9827E+03	1.0000	0.0659	
52000	1481.3	1.089	1.10	37.0465	1142.13	9.868E+07	6.787E-08	6.6970E+00	6.3317E+02	1.0000	0.1145	
56000	1511.0	1.089	1.10	37.0465	1250.10	1.080E+08	2.123E-07	2.2936E+01	2.0236E+02	1.0000	0.1961	
58000	1537.1	1.089	1.10	37.0465	1304.09	1.127E+08	4.441E-07	5.0039E+01	9.6756E+01	1.0000	0.2740	
60000	1548.5	1.089	1.10	37.0465	1358.08	1.173E+08	7.346E-07	8.6193E+01	5.8497E+01	1.0000	0.3410	
62000	1570.8	1.089	1.10	37.0465	1412.06	1.220E+08	1.425E-06	1.7383E+02	3.0158E+01	1.0000	0.4468	
r=0.2												
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F	
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu		
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	2.2457E+05	0.0000	0.0000	
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	7.2148E+05	1.0000	0.0035	
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	2.7505E+05	1.0000	0.0057	
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	1.0218E+05	1.0000	0.0094	
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	1.7977E+05	1.0000	0.0071	
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	5.4645E+04	1.0000	0.0128	
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	1.4260E+04	1.0000	0.0249	
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	4.4063E+04	1.0000	0.0142	
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	1.2127E+04	1.0000	0.0270	
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	3.6797E+03	1.0000	0.0486	
40000	1326.8	1.089	1.10	37.0465	818.21	7.069E+07	5.398E-10	3.8163E-02	7.9597E+04	1.0000	0.0106	
44000	1351.7	1.089	1.10	37.0465	926.19	8.002E+07	1.727E-09	1.3823E-01	2.4876E+04	1.0000	0.0189	
48000	1388.9	1.089	1.10	37.0465	1034.16	8.935E+07	6.858E-09	6.1280E-01	6.2654E+03	1.0000	0.0374	

52000	1415.3	1.089	1.10	37.0465	1142.13	9.868E+07	2.159E-08	2.1301E+00	1.9907E+03	1.0000	0.0657
56000	1443.5	1.089	1.10	37.0465	1250.10	1.080E+08	6.887E-08	7.4382E+00	6.2396E+02	1.0000	0.1153
58000	1468.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.465E-07	1.6504E+01	2.9336E+02	1.0000	0.1649
60000	1479.5	1.089	1.10	37.0465	1358.08	1.173E+08	2.455E-07	2.8809E+01	1.7501E+02	1.0000	0.2096
62000	1501.5	1.089	1.10	37.0465	1412.06	1.220E+08	4.892E-07	5.9679E+01	8.7844E+01	1.0000	0.2859
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	1.7797E+06	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	3.2983E+07	1.0000	0.0005
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	1.2985E+07	1.0000	0.0008
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	4.8316E+06	1.0000	0.0014
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	7.6750E+06	1.0000	0.0011
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	2.3008E+06	1.0000	0.0020
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	5.6736E+05	1.0000	0.0040
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	1.6729E+06	1.0000	0.0023
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	4.4382E+05	1.0000	0.0045
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	1.3065E+05	1.0000	0.0083
40000	1181.3	1.089	1.10	37.0465	818.21	7.069E+07	1.842E-11	1.3022E-03	2.3328E+06	1.0000	0.0020
44000	1201.2	1.089	1.10	37.0465	926.19	8.002E+07	5.924E-11	4.7406E-03	7.2534E+05	1.0000	0.0035
48000	1231.9	1.089	1.10	37.0465	1034.16	8.935E+07	2.433E-10	2.1741E-02	1.7660E+05	1.0000	0.0071
52000	1252.9	1.089	1.10	37.0465	1142.13	9.868E+07	7.707E-10	7.6057E-02	5.5752E+04	1.0000	0.0127
56000	1277.2	1.089	1.10	37.0465	1250.10	1.080E+08	2.586E-09	2.7929E-01	1.6618E+04	1.0000	0.0231
58000	1298.8	1.089	1.10	37.0465	1304.09	1.127E+08	5.771E-09	6.5019E-01	7.4464E+03	1.0000	0.0344
60000	1308.9	1.089	1.10	37.0465	1358.08	1.173E+08	9.953E-09	1.1679E+00	4.3172E+03	1.0000	0.0450
62000	1329.9	1.089	1.10	37.0465	1412.06	1.220E+08	2.145E-08	2.6171E+00	2.0031E+03	1.0000	0.0655
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	8.8850E+07	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	4.7677E+10	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	2.1272E+10	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	8.4226E+09	1.0000	0.0000
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	1.0095E+10	1.0000	0.0000
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	3.1266E+09	1.0000	0.0001
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	7.2826E+08	1.0000	0.0001
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	1.7900E+09	1.0000	0.0001
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	4.5964E+08	1.0000	0.0001
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	1.3438E+08	1.0000	0.0003
40000	979.2	1.089	1.10	37.0465	818.21	7.069E+07	3.194E-14	2.2580E-06	1.3453E+09	1.0000	0.0001
44000	992.0	1.089	1.10	37.0465	926.19	8.002E+07	9.961E-14	7.9707E-06	4.3140E+08	1.0000	0.0001
48000	1013.6	1.089	1.10	37.0465	1034.16	8.935E+07	4.202E-13	3.7547E-05	1.0226E+08	1.0000	0.0003
52000	1027.2	1.089	1.10	37.0465	1142.13	9.868E+07	1.305E-12	1.2877E-04	3.2928E+07	1.0000	0.0005
56000	1045.7	1.089	1.10	37.0465	1250.10	1.080E+08	4.715E-12	5.0926E-04	9.1135E+06	1.0000	0.0010
58000	1062.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.128E-11	1.2715E-03	3.8079E+06	1.0000	0.0015
60000	1070.7	1.089	1.10	37.0465	1358.08	1.173E+08	2.051E-11	2.4070E-03	2.0947E+06	1.0000	0.0021

62000	1089.1	1.089	1.10	37.0465	1412.06	1.220E+08	5.061E-11	6.1747E-03	8.4902E+05	1.0000	0.0033
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	9.3284E+10	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	1.1089E+16	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	7.4814E+15	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	4.0465E+15	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	2.7224E+15	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	1.0991E+15	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	2.8042E+14	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	4.1042E+14	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	1.1789E+14	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	3.9436E+13	1.0000	0.0000
40000	753.8	1.089	1.10	37.0465	818.21	7.069E+07	4.772E-19	3.3738E-11	9.0038E+13	1.0000	0.0000
44000	758.8	1.089	1.10	37.0465	926.19	8.002E+07	1.266E-18	1.0135E-10	3.3929E+13	1.0000	0.0000
48000	770.1	1.089	1.10	37.0465	1034.16	8.935E+07	4.942E-18	4.4156E-10	8.6951E+12	1.0000	0.0000
52000	775.6	1.089	1.10	37.0465	1142.13	9.868E+07	1.334E-17	1.3163E-09	3.2214E+12	1.0000	0.0000
56000	786.7	1.089	1.10	37.0465	1250.10	1.080E+08	4.992E-17	5.3922E-09	8.6071E+11	1.0000	0.0000
58000	797.4	1.089	1.10	37.0465	1304.09	1.127E+08	1.290E-16	1.4539E-08	3.3301E+11	1.0000	0.0000
60000	803.0	1.089	1.10	37.0465	1358.08	1.173E+08	2.465E-16	2.8920E-08	1.7434E+11	1.0000	0.0000
62000	816.6	1.089	1.10	37.0465	1412.06	1.220E+08	7.284E-16	8.8866E-08	5.8992E+10	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	2.3042E+16	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	1.1737E+18	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	7.1015E+17	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	3.9036E+17	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	5.0945E+17	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	2.2454E+17	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	6.0210E+16	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	1.7302E+17	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	5.4486E+16	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	2.0357E+16	1.0000	0.0000
40000	653.3	1.089	1.10	37.0465	818.21	7.069E+07	2.843E-22	2.0099E-14	1.5114E+17	1.0000	0.0000
44000	655.2	1.089	1.10	37.0465	926.19	8.002E+07	6.451E-22	5.1626E-14	6.6605E+16	1.0000	0.0000
48000	661.9	1.089	1.10	37.0465	1034.16	8.935E+07	2.185E-21	1.9526E-13	1.9663E+16	1.0000	0.0000
52000	664.1	1.089	1.10	37.0465	1142.13	9.868E+07	5.062E-21	4.9951E-13	8.4890E+15	1.0000	0.0000
56000	671.5	1.089	1.10	37.0465	1250.10	1.080E+08	1.788E-20	1.9307E-12	2.4039E+15	1.0000	0.0000
58000	679.2	1.089	1.10	37.0465	1304.09	1.127E+08	4.591E-20	5.1728E-12	9.3598E+14	1.0000	0.0000
60000	682.7	1.089	1.10	37.0465	1358.08	1.173E+08	8.395E-20	9.8509E-12	5.1183E+14	1.0000	0.0000
62000	688.0	1.089	1.10	37.0465	1412.06	1.220E+08	1.759E-19	2.1457E-11	2.4432E+14	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0068	0.0035	0.0005	0.0000	0.0000	0.0000	0.0004				
8000	0.0110	0.0057	0.0008	0.0000	0.0000	0.0000	0.0007				
12000	0.0180	0.0094	0.0014	0.0000	0.0000	0.0000	0.0012				
16000	0.0134	0.0071	0.0011	0.0000	0.0000	0.0000	0.0009				
20000	0.0242	0.0128	0.0020	0.0001	0.0000	0.0000	0.0016				
24000	0.0464	0.0249	0.0040	0.0001	0.0000	0.0000	0.0031				
28000	0.0265	0.0142	0.0023	0.0001	0.0000	0.0000	0.0018				
32000	0.0496	0.0270	0.0045	0.0001	0.0000	0.0000	0.0034				
36000	0.0883	0.0486	0.0083	0.0003	0.0000	0.0000	0.0062				
40000	0.0190	0.0106	0.0020	0.0001	0.0000	0.0000	0.0014				
44000	0.0337	0.0189	0.0035	0.0001	0.0000	0.0000	0.0024				
48000	0.0659	0.0374	0.0071	0.0003	0.0000	0.0000	0.0049				
52000	0.1145	0.0657	0.0127	0.0005	0.0000	0.0000	0.0086				
56000	0.1961	0.1153	0.0231	0.0010	0.0000	0.0000	0.0151				
58000	0.2740	0.1649	0.0344	0.0015	0.0000	0.0000	0.0218				
60000	0.3410	0.2096	0.0450	0.0021	0.0000	0.0000	0.0279				
62000	0.4468	0.2859	0.0655	0.0033	0.0000	0.0000	0.0386				

Gas Gap Fractions: Kr-85m											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300			cal/mol							
R	1.987			cal/mol-K							
Do/a2	0.61			1/sec							
lambda	4.297E-5			1/sec							
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	1.1036E+05	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	1.9298E+05	1.0000	0.0068
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	7.3231E+04	1.0000	0.0110
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	2.7307E+04	1.0000	0.0180
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	4.9419E+04	1.0000	0.0134
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	1.5174E+04	1.0000	0.0242
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	4.0552E+03	1.0000	0.0464
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	1.2604E+04	1.0000	0.0265
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	3.5308E+03	1.0000	0.0496
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	1.0860E+03	1.0000	0.0883
40000	1201.7	1.089	0.90	30.3108	842.21	7.277E+07	3.107E-11	2.2611E-03	1.3829E+06	1.0000	0.0025
44000	1222.7	1.089	0.90	30.3108	974.17	8.417E+07	1.009E-10	8.4938E-03	4.2581E+05	1.0000	0.0046
48000	1242.9	1.089	0.90	30.3108	1106.14	9.557E+07	3.160E-10	3.0202E-02	1.3597E+05	1.0000	0.0081
52000	1262.0	1.089	0.90	30.3108	1238.11	1.070E+08	9.503E-10	1.0165E-01	4.5218E+04	1.0000	0.0140
56000	1281.0	1.089	0.90	30.3108	1370.07	1.184E+08	2.814E-09	3.3308E-01	1.5271E+04	1.0000	0.0241
58000	1292.5	1.089	0.90	30.3108	1436.06	1.241E+08	5.034E-09	6.2459E-01	8.5360E+03	1.0000	0.0321
60000	1301.0	1.089	0.90	30.3108	1502.04	1.298E+08	8.407E-09	1.0910E+00	5.1111E+03	1.0000	0.0414
62000	1310.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.425E-08	1.9301E+00	3.0161E+03	1.0000	0.0536
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	2.2457E+05	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	7.2148E+05	1.0000	0.0035
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	2.7505E+05	1.0000	0.0057
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	1.0218E+05	1.0000	0.0094
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	1.7977E+05	1.0000	0.0071
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	5.4645E+04	1.0000	0.0128
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	1.4260E+04	1.0000	0.0249
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	4.4063E+04	1.0000	0.0142
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	1.2127E+04	1.0000	0.0270
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	3.6797E+03	1.0000	0.0486
40000	1160.8	1.089	0.90	30.3108	842.21	7.277E+07	1.069E-11	7.7801E-04	4.0190E+06	1.0000	0.0015
44000	1180.1	1.089	0.90	30.3108	974.17	8.417E+07	3.447E-11	2.9011E-03	1.2467E+06	1.0000	0.0027
48000	1198.8	1.089	0.90	30.3108	1106.14	9.557E+07	1.076E-10	1.0288E-02	3.9918E+05	1.0000	0.0047
52000	1216.5	1.089	0.90	30.3108	1238.11	1.070E+08	3.232E-10	3.4577E-02	1.3294E+05	1.0000	0.0082

56000	1234.1	1.089	0.90	30.3108	1370.07	1.184E+08	9.561E-10	1.1317E-01	4.4945E+04	1.0000	0.0141
58000	1244.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.704E-09	2.1137E-01	2.5223E+04	1.0000	0.0188
60000	1252.5	1.089	0.90	30.3108	1502.04	1.298E+08	2.846E-09	3.6941E-01	1.5096E+04	1.0000	0.0242
62000	1261.2	1.089	0.90	30.3108	1568.02	1.355E+08	4.833E-09	6.5473E-01	8.8913E+03	1.0000	0.0315
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	1.7797E+06	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	3.2983E+07	1.0000	0.0005
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	1.2985E+07	1.0000	0.0008
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	4.8316E+06	1.0000	0.0014
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	7.6750E+06	1.0000	0.0011
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	2.3008E+06	1.0000	0.0020
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	5.6736E+05	1.0000	0.0040
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	1.6729E+06	1.0000	0.0023
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	4.4382E+05	1.0000	0.0045
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	1.3065E+05	1.0000	0.0083
40000	1057.8	1.089	0.90	30.3108	842.21	7.277E+07	5.052E-13	3.6764E-05	8.5051E+07	1.0000	0.0003
44000	1072.8	1.089	0.90	30.3108	974.17	8.417E+07	1.578E-12	1.3281E-04	2.7233E+07	1.0000	0.0006
48000	1087.9	1.089	0.90	30.3108	1106.14	9.557E+07	4.878E-12	4.6620E-04	8.8089E+06	1.0000	0.0010
52000	1101.9	1.089	0.90	30.3108	1238.11	1.070E+08	1.440E-11	1.5409E-03	2.9830E+06	1.0000	0.0017
56000	1116.0	1.089	0.90	30.3108	1370.07	1.184E+08	4.221E-11	4.9966E-03	1.0180E+06	1.0000	0.0030
58000	1124.1	1.089	0.90	30.3108	1436.06	1.241E+08	7.418E-11	9.2044E-03	5.7924E+05	1.0000	0.0039
60000	1130.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.242E-10	1.6113E-02	3.4608E+05	1.0000	0.0051
62000	1137.6	1.089	0.90	30.3108	1568.02	1.355E+08	2.103E-10	2.8491E-02	2.0432E+05	1.0000	0.0066
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	8.8850E+07	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	4.7677E+10	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	2.1272E+10	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	8.4226E+09	1.0000	0.0000
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	1.0095E+10	1.0000	0.0000
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	3.1266E+09	1.0000	0.0001
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	7.2826E+08	1.0000	0.0001
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	1.7900E+09	1.0000	0.0001
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	4.5964E+08	1.0000	0.0001
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	1.3438E+08	1.0000	0.0003
40000	909.4	1.089	0.90	30.3108	842.21	7.277E+07	1.844E-15	1.3415E-07	2.3307E+10	1.0000	0.0000
44000	918.3	1.089	0.90	30.3108	974.17	8.417E+07	5.246E-15	4.4152E-07	8.1915E+09	1.0000	0.0000
48000	928.3	1.089	0.90	30.3108	1106.14	9.557E+07	1.552E-14	1.4832E-06	2.7687E+09	1.0000	0.0001
52000	937.2	1.089	0.90	30.3108	1238.11	1.070E+08	4.348E-14	4.6509E-06	9.8834E+08	1.0000	0.0001
56000	946.3	1.089	0.90	30.3108	1370.07	1.184E+08	1.219E-13	1.4434E-05	3.5241E+08	1.0000	0.0002
58000	951.2	1.089	0.90	30.3108	1436.06	1.241E+08	2.065E-13	2.5626E-05	2.0805E+08	1.0000	0.0002
60000	955.5	1.089	0.90	30.3108	1502.04	1.298E+08	3.409E-13	4.4240E-05	1.2605E+08	1.0000	0.0003
62000	960.1	1.089	0.90	30.3108	1568.02	1.355E+08	5.685E-13	7.7017E-05	7.5587E+07	1.0000	0.0003

r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	9.3284E+10	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	1.1089E+16	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	7.4814E+15	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	4.0465E+15	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	2.7224E+15	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	1.0991E+15	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	2.8042E+14	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	4.1042E+14	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	1.1789E+14	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	3.9436E+13	1.0000	0.0000
40000	735.0	1.089	0.90	30.3108	842.21	7.277E+07	1.388E-19	1.0103E-11	3.0949E+14	1.0000	0.0000
44000	737.2	1.089	0.90	30.3108	974.17	8.417E+07	3.107E-19	2.6155E-11	1.3828E+14	1.0000	0.0000
48000	741.2	1.089	0.90	30.3108	1106.14	9.557E+07	7.831E-19	7.4838E-11	5.4874E+13	1.0000	0.0000
52000	744.2	1.089	0.90	30.3108	1238.11	1.070E+08	1.843E-18	1.9712E-10	2.3319E+13	1.0000	0.0000
56000	747.4	1.089	0.90	30.3108	1370.07	1.184E+08	4.386E-18	5.1921E-10	9.7967E+12	1.0000	0.0000
58000	748.9	1.089	0.90	30.3108	1436.06	1.241E+08	6.719E-18	8.3363E-10	6.3955E+12	1.0000	0.0000
60000	750.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.042E-17	1.3525E-09	4.1231E+12	1.0000	0.0000
62000	752.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.616E-17	2.1889E-09	2.6595E+12	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	2.3042E+16	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	1.1737E+18	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	7.1015E+17	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	3.9036E+17	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	5.0945E+17	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	2.2454E+17	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	6.0210E+16	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	1.7302E+17	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	5.4486E+16	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	2.0357E+16	1.0000	0.0000
40000	636.8	1.089	0.90	30.3108	842.21	7.277E+07	6.715E-23	4.8863E-15	6.3991E+17	1.0000	0.0000
44000	635.5	1.089	0.90	30.3108	974.17	8.417E+07	1.153E-22	9.7085E-15	3.7253E+17	1.0000	0.0000
48000	636.0	1.089	0.90	30.3108	1106.14	9.557E+07	2.330E-22	2.2263E-14	1.8446E+17	1.0000	0.0000
52000	635.7	1.089	0.90	30.3108	1238.11	1.070E+08	4.378E-22	4.6830E-14	9.8155E+16	1.0000	0.0000
56000	635.6	1.089	0.90	30.3108	1370.07	1.184E+08	8.376E-22	9.9155E-14	5.1299E+16	1.0000	0.0000
58000	635.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.164E-21	1.4441E-13	3.6919E+16	1.0000	0.0000
60000	635.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.617E-21	2.0988E-13	2.6570E+16	1.0000	0.0000
62000	635.7	1.089	0.90	30.3108	1568.02	1.355E+08	2.267E-21	3.0719E-13	1.8951E+16	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0068	0.0035	0.0005	0.0000	0.0000	0.0000	0.0004				

8000	0.0110	0.0057	0.0008	0.0000	0.0000	0.0000	0.0007				
12000	0.0180	0.0094	0.0014	0.0000	0.0000	0.0000	0.0012				
16000	0.0134	0.0071	0.0011	0.0000	0.0000	0.0000	0.0009				
20000	0.0242	0.0128	0.0020	0.0001	0.0000	0.0000	0.0016				
24000	0.0464	0.0249	0.0040	0.0001	0.0000	0.0000	0.0031				
28000	0.0265	0.0142	0.0023	0.0001	0.0000	0.0000	0.0018				
32000	0.0496	0.0270	0.0045	0.0001	0.0000	0.0000	0.0034				
36000	0.0883	0.0486	0.0083	0.0003	0.0000	0.0000	0.0062				
40000	0.0025	0.0015	0.0003	0.0000	0.0000	0.0000	0.0002				
44000	0.0046	0.0027	0.0006	0.0000	0.0000	0.0000	0.0004				
48000	0.0081	0.0047	0.0010	0.0001	0.0000	0.0000	0.0006				
52000	0.0140	0.0082	0.0017	0.0001	0.0000	0.0000	0.0011				
56000	0.0241	0.0141	0.0030	0.0002	0.0000	0.0000	0.0019				
58000	0.0321	0.0188	0.0039	0.0002	0.0000	0.0000	0.0025				
60000	0.0414	0.0242	0.0051	0.0003	0.0000	0.0000	0.0032				
62000	0.0536	0.0315	0.0066	0.0003	0.0000	0.0000	0.0042				

Gas Gap Fractions: Kr-87											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300	cal/mol									
R	1.987	cal/mol-K									
Do/a2	0.61	1/sec									
lambda	1.5140E-04	1/sec									
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	3.8883E+05	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	6.7995E+05	1.0000	0.0036
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	2.5802E+05	1.0000	0.0059
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	9.6214E+04	1.0000	0.0096
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	1.7412E+05	1.0000	0.0072
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	5.3464E+04	1.0000	0.0129
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	1.4288E+04	1.0000	0.0249
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	4.4410E+04	1.0000	0.0142
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	1.2441E+04	1.0000	0.0267
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	3.8264E+03	1.0000	0.0477
40000	1385.9	1.089	1.10	37.0465	818.21	7.069E+07	1.738E-09	1.2290E-01	8.7089E+04	1.0000	0.0101
44000	1412.9	1.089	1.10	37.0465	926.19	8.002E+07	5.543E-09	4.4359E-01	2.7312E+04	1.0000	0.0180
48000	1452.7	1.089	1.10	37.0465	1034.16	8.935E+07	2.167E-08	1.9365E+00	6.9858E+03	1.0000	0.0355
52000	1481.3	1.089	1.10	37.0465	1142.13	9.868E+07	6.787E-08	6.6970E+00	2.2309E+03	1.0000	0.0622
56000	1511.0	1.089	1.10	37.0465	1250.10	1.080E+08	2.123E-07	2.2936E+01	7.1298E+02	1.0000	0.1081
58000	1537.1	1.089	1.10	37.0465	1304.09	1.127E+08	4.441E-07	5.0039E+01	3.4091E+02	1.0000	0.1537
60000	1548.5	1.089	1.10	37.0465	1358.08	1.173E+08	7.346E-07	8.6193E+01	2.0611E+02	1.0000	0.1944
62000	1570.8	1.089	1.10	37.0465	1412.06	1.220E+08	1.425E-06	1.7383E+02	1.0626E+02	1.0000	0.2628
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	7.9126E+05	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	2.5421E+06	1.0000	0.0019
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	9.6912E+05	1.0000	0.0030
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	3.6002E+05	1.0000	0.0050
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	6.3341E+05	1.0000	0.0038
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	1.9254E+05	1.0000	0.0068
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	5.0245E+04	1.0000	0.0133
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	1.5525E+05	1.0000	0.0076
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	4.2730E+04	1.0000	0.0144
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	1.2965E+04	1.0000	0.0261
40000	1326.8	1.089	1.10	37.0465	818.21	7.069E+07	5.398E-10	3.8163E-02	2.8045E+05	1.0000	0.0057
44000	1351.7	1.089	1.10	37.0465	926.19	8.002E+07	1.727E-09	1.3823E-01	8.7648E+04	1.0000	0.0101
48000	1388.9	1.089	1.10	37.0465	1034.16	8.935E+07	6.858E-09	6.1280E-01	2.2075E+04	1.0000	0.0201

52000	1415.3	1.089	1.10	37.0465	1142.13	9.868E+07	2.159E-08	2.1301E+00	7.0139E+03	1.0000	0.0354
56000	1443.5	1.089	1.10	37.0465	1250.10	1.080E+08	6.887E-08	7.4382E+00	2.1985E+03	1.0000	0.0626
58000	1468.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.465E-07	1.6504E+01	1.0336E+03	1.0000	0.0904
60000	1479.5	1.089	1.10	37.0465	1358.08	1.173E+08	2.455E-07	2.8809E+01	6.1664E+02	1.0000	0.1159
62000	1501.5	1.089	1.10	37.0465	1412.06	1.220E+08	4.892E-07	5.9679E+01	3.0951E+02	1.0000	0.1608
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	6.2706E+06	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	1.1621E+08	1.0000	0.0003
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	4.5753E+07	1.0000	0.0004
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	1.7024E+07	1.0000	0.0007
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	2.7042E+07	1.0000	0.0006
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	8.1065E+06	1.0000	0.0011
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	1.9990E+06	1.0000	0.0021
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	5.8944E+06	1.0000	0.0012
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	1.5638E+06	1.0000	0.0024
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	4.6034E+05	1.0000	0.0044
40000	1181.3	1.089	1.10	37.0465	818.21	7.069E+07	1.842E-11	1.3022E-03	8.2192E+06	1.0000	0.0010
44000	1201.2	1.089	1.10	37.0465	926.19	8.002E+07	5.924E-11	4.7406E-03	2.5556E+06	1.0000	0.0019
48000	1231.9	1.089	1.10	37.0465	1034.16	8.935E+07	2.433E-10	2.1741E-02	6.2221E+05	1.0000	0.0038
52000	1252.9	1.089	1.10	37.0465	1142.13	9.868E+07	7.707E-10	7.6057E-02	1.9643E+05	1.0000	0.0068
56000	1277.2	1.089	1.10	37.0465	1250.10	1.080E+08	2.586E-09	2.7929E-01	5.8551E+04	1.0000	0.0123
58000	1298.8	1.089	1.10	37.0465	1304.09	1.127E+08	5.771E-09	6.5019E-01	2.6237E+04	1.0000	0.0184
60000	1308.9	1.089	1.10	37.0465	1358.08	1.173E+08	9.953E-09	1.1679E+00	1.5211E+04	1.0000	0.0241
62000	1329.9	1.089	1.10	37.0465	1412.06	1.220E+08	2.145E-08	2.6171E+00	7.0578E+03	1.0000	0.0353
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	3.1305E+08	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	1.6798E+11	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	7.4949E+10	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	2.9676E+10	1.0000	0.0000
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	3.5568E+10	1.0000	0.0000
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	1.1016E+10	1.0000	0.0000
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	2.5659E+09	1.0000	0.0001
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	6.3068E+09	1.0000	0.0000
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	1.6195E+09	1.0000	0.0001
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	4.7348E+08	1.0000	0.0001
40000	979.2	1.089	1.10	37.0465	818.21	7.069E+07	3.194E-14	2.2580E-06	4.7401E+09	1.0000	0.0000
44000	992.0	1.089	1.10	37.0465	926.19	8.002E+07	9.961E-14	7.9707E-06	1.5200E+09	1.0000	0.0001
48000	1013.6	1.089	1.10	37.0465	1034.16	8.935E+07	4.202E-13	3.7547E-05	3.6029E+08	1.0000	0.0002
52000	1027.2	1.089	1.10	37.0465	1142.13	9.868E+07	1.305E-12	1.2877E-04	1.1602E+08	1.0000	0.0003
56000	1045.7	1.089	1.10	37.0465	1250.10	1.080E+08	4.715E-12	5.0926E-04	3.2110E+07	1.0000	0.0005
58000	1062.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.128E-11	1.2715E-03	1.3417E+07	1.0000	0.0008
60000	1070.7	1.089	1.10	37.0465	1358.08	1.173E+08	2.051E-11	2.4070E-03	7.3804E+06	1.0000	0.0011

62000	1089.1	1.089	1.10	37.0465	1412.06	1.220E+08	5.061E-11	6.1747E-03	2.9914E+06	1.0000	0.0017
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	3.2868E+11	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	3.9071E+16	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	2.6360E+16	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	1.4257E+16	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	9.5922E+15	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	3.8725E+15	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	9.8803E+14	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	1.4461E+15	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	4.1538E+14	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	1.3895E+14	1.0000	0.0000
40000	753.8	1.089	1.10	37.0465	818.21	7.069E+07	4.772E-19	3.3738E-11	3.1724E+14	1.0000	0.0000
44000	758.8	1.089	1.10	37.0465	926.19	8.002E+07	1.266E-18	1.0135E-10	1.1955E+14	1.0000	0.0000
48000	770.1	1.089	1.10	37.0465	1034.16	8.935E+07	4.942E-18	4.4156E-10	3.0636E+13	1.0000	0.0000
52000	775.6	1.089	1.10	37.0465	1142.13	9.868E+07	1.334E-17	1.3163E-09	1.1350E+13	1.0000	0.0000
56000	786.7	1.089	1.10	37.0465	1250.10	1.080E+08	4.992E-17	5.3922E-09	3.0326E+12	1.0000	0.0000
58000	797.4	1.089	1.10	37.0465	1304.09	1.127E+08	1.290E-16	1.4539E-08	1.1733E+12	1.0000	0.0000
60000	803.0	1.089	1.10	37.0465	1358.08	1.173E+08	2.465E-16	2.8920E-08	6.1427E+11	1.0000	0.0000
62000	816.6	1.089	1.10	37.0465	1412.06	1.220E+08	7.284E-16	8.8866E-08	2.0785E+11	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	8.1186E+16	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	4.1353E+18	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	2.5021E+18	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	1.3754E+18	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	1.7950E+18	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	7.9114E+17	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	2.1214E+17	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	6.0962E+17	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	1.9197E+17	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	7.1725E+16	1.0000	0.0000
40000	653.3	1.089	1.10	37.0465	818.21	7.069E+07	2.843E-22	2.0099E-14	5.3251E+17	1.0000	0.0000
44000	655.2	1.089	1.10	37.0465	926.19	8.002E+07	6.451E-22	5.1626E-14	2.3468E+17	1.0000	0.0000
48000	661.9	1.089	1.10	37.0465	1034.16	8.935E+07	2.185E-21	1.9526E-13	6.9282E+16	1.0000	0.0000
52000	664.1	1.089	1.10	37.0465	1142.13	9.868E+07	5.062E-21	4.9951E-13	2.9910E+16	1.0000	0.0000
56000	671.5	1.089	1.10	37.0465	1250.10	1.080E+08	1.788E-20	1.9307E-12	8.4698E+15	1.0000	0.0000
58000	679.2	1.089	1.10	37.0465	1304.09	1.127E+08	4.591E-20	5.1728E-12	3.2978E+15	1.0000	0.0000
60000	682.7	1.089	1.10	37.0465	1358.08	1.173E+08	8.395E-20	9.8509E-12	1.8034E+15	1.0000	0.0000
62000	688.0	1.089	1.10	37.0465	1412.06	1.220E+08	1.759E-19	2.1457E-11	8.6083E+14	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0036	0.0019	0.0003	0.0000	0.0000	0.0000	0.0002				
8000	0.0059	0.0030	0.0004	0.0000	0.0000	0.0000	0.0004				
12000	0.0096	0.0050	0.0007	0.0000	0.0000	0.0000	0.0006				
16000	0.0072	0.0038	0.0006	0.0000	0.0000	0.0000	0.0005				
20000	0.0129	0.0068	0.0011	0.0000	0.0000	0.0000	0.0009				
24000	0.0249	0.0133	0.0021	0.0001	0.0000	0.0000	0.0017				
28000	0.0142	0.0076	0.0012	0.0000	0.0000	0.0000	0.0010				
32000	0.0267	0.0144	0.0024	0.0001	0.0000	0.0000	0.0018				
36000	0.0477	0.0261	0.0044	0.0001	0.0000	0.0000	0.0033				
40000	0.0101	0.0057	0.0010	0.0000	0.0000	0.0000	0.0007				
44000	0.0180	0.0101	0.0019	0.0001	0.0000	0.0000	0.0013				
48000	0.0355	0.0201	0.0038	0.0002	0.0000	0.0000	0.0026				
52000	0.0622	0.0354	0.0068	0.0003	0.0000	0.0000	0.0046				
56000	0.1081	0.0626	0.0123	0.0005	0.0000	0.0000	0.0082				
58000	0.1537	0.0904	0.0184	0.0008	0.0000	0.0000	0.0119				
60000	0.1944	0.1159	0.0241	0.0011	0.0000	0.0000	0.0153				
62000	0.2628	0.1608	0.0353	0.0017	0.0000	0.0000	0.0216				

Gas Gap Fractions: Kr-87												
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc					
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm					
Q	72300	cal/mol										
R	1.987	cal/mol-K										
Do/a2	0.61	1/sec										
lambda	1.5140E-04	1/sec										
r=0.0												
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F	
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu		
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	3.8883E+05	0.0000	0.0000	
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	6.7995E+05	1.0000	0.0036	
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	2.5802E+05	1.0000	0.0059	
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	9.6214E+04	1.0000	0.0096	
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	1.7412E+05	1.0000	0.0072	
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	5.3464E+04	1.0000	0.0129	
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	1.4288E+04	1.0000	0.0249	
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	4.4410E+04	1.0000	0.0142	
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	1.2441E+04	1.0000	0.0267	
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	3.8264E+03	1.0000	0.0477	
40000	1201.7	1.089	0.90	30.3108	842.21	7.277E+07	3.107E-11	2.2611E-03	4.8724E+06	1.0000	0.0014	
44000	1222.7	1.089	0.90	30.3108	974.17	8.417E+07	1.009E-10	8.4938E-03	1.5003E+06	1.0000	0.0024	
48000	1242.9	1.089	0.90	30.3108	1106.14	9.557E+07	3.160E-10	3.0202E-02	4.7908E+05	1.0000	0.0043	
52000	1262.0	1.089	0.90	30.3108	1238.11	1.070E+08	9.503E-10	1.0165E-01	1.5932E+05	1.0000	0.0075	
56000	1281.0	1.089	0.90	30.3108	1370.07	1.184E+08	2.814E-09	3.3308E-01	5.3806E+04	1.0000	0.0129	
58000	1292.5	1.089	0.90	30.3108	1436.06	1.241E+08	5.034E-09	6.2459E-01	3.0076E+04	1.0000	0.0172	
60000	1301.0	1.089	0.90	30.3108	1502.04	1.298E+08	8.407E-09	1.0910E+00	1.8009E+04	1.0000	0.0222	
62000	1310.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.425E-08	1.9301E+00	1.0627E+04	1.0000	0.0288	
r=0.2												
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F	
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu		
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	7.9126E+05	0.0000	0.0000	
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	2.5421E+06	1.0000	0.0019	
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	9.6912E+05	1.0000	0.0030	
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	3.6002E+05	1.0000	0.0050	
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	6.3341E+05	1.0000	0.0038	
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	1.9254E+05	1.0000	0.0068	
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	5.0245E+04	1.0000	0.0133	
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	1.5525E+05	1.0000	0.0076	
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	4.2730E+04	1.0000	0.0144	
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	1.2965E+04	1.0000	0.0261	
40000	1160.8	1.089	0.90	30.3108	842.21	7.277E+07	1.069E-11	7.7801E-04	1.4160E+07	1.0000	0.0008	
44000	1180.1	1.089	0.90	30.3108	974.17	8.417E+07	3.447E-11	2.9011E-03	4.3926E+06	1.0000	0.0014	
48000	1198.8	1.089	0.90	30.3108	1106.14	9.557E+07	1.076E-10	1.0288E-02	1.4065E+06	1.0000	0.0025	

52000	1216.5	1.089	0.90	30.3108	1238.11	1.070E+08	3.232E-10	3.4577E-02	4.6840E+05	1.0000	0.0044
56000	1234.1	1.089	0.90	30.3108	1370.07	1.184E+08	9.561E-10	1.1317E-01	1.5836E+05	1.0000	0.0075
58000	1244.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.704E-09	2.1137E-01	8.8871E+04	1.0000	0.0100
60000	1252.5	1.089	0.90	30.3108	1502.04	1.298E+08	2.846E-09	3.6941E-01	5.3188E+04	1.0000	0.0130
62000	1261.2	1.089	0.90	30.3108	1568.02	1.355E+08	4.833E-09	6.5473E-01	3.1328E+04	1.0000	0.0169
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mwd/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	6.2706E+06	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	1.1621E+08	1.0000	0.0003
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	4.5753E+07	1.0000	0.0004
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	1.7024E+07	1.0000	0.0007
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	2.7042E+07	1.0000	0.0006
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	8.1065E+06	1.0000	0.0011
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	1.9990E+06	1.0000	0.0021
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	5.8944E+06	1.0000	0.0012
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	1.5638E+06	1.0000	0.0024
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	4.6034E+05	1.0000	0.0044
40000	1057.8	1.089	0.90	30.3108	842.21	7.277E+07	5.052E-13	3.6764E-05	2.9967E+08	1.0000	0.0002
44000	1072.8	1.089	0.90	30.3108	974.17	8.417E+07	1.578E-12	1.3281E-04	9.5951E+07	1.0000	0.0003
48000	1087.9	1.089	0.90	30.3108	1106.14	9.557E+07	4.878E-12	4.6620E-04	3.1037E+07	1.0000	0.0005
52000	1101.9	1.089	0.90	30.3108	1238.11	1.070E+08	1.440E-11	1.5409E-03	1.0510E+07	1.0000	0.0009
56000	1116.0	1.089	0.90	30.3108	1370.07	1.184E+08	4.221E-11	4.9966E-03	3.5868E+06	1.0000	0.0016
58000	1124.1	1.089	0.90	30.3108	1436.06	1.241E+08	7.418E-11	9.2044E-03	2.0409E+06	1.0000	0.0021
60000	1130.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.242E-10	1.6113E-02	1.2194E+06	1.0000	0.0027
62000	1137.6	1.089	0.90	30.3108	1568.02	1.355E+08	2.103E-10	2.8491E-02	7.1991E+05	1.0000	0.0035
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mwd/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	3.1305E+08	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	1.6798E+11	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	7.4949E+10	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	2.9676E+10	1.0000	0.0000
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	3.5568E+10	1.0000	0.0000
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	1.1016E+10	1.0000	0.0000
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	2.5659E+09	1.0000	0.0001
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	6.3068E+09	1.0000	0.0000
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	1.6195E+09	1.0000	0.0001
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	4.7348E+08	1.0000	0.0001
40000	909.4	1.089	0.90	30.3108	842.21	7.277E+07	1.844E-15	1.3415E-07	8.2121E+10	1.0000	0.0000
44000	918.3	1.089	0.90	30.3108	974.17	8.417E+07	5.246E-15	4.4152E-07	2.8862E+10	1.0000	0.0000
48000	928.3	1.089	0.90	30.3108	1106.14	9.557E+07	1.552E-14	1.4832E-06	9.7552E+09	1.0000	0.0000
52000	937.2	1.089	0.90	30.3108	1238.11	1.070E+08	4.348E-14	4.6509E-06	3.4823E+09	1.0000	0.0001
56000	946.3	1.089	0.90	30.3108	1370.07	1.184E+08	1.219E-13	1.4434E-05	1.2417E+09	1.0000	0.0001
58000	951.2	1.089	0.90	30.3108	1436.06	1.241E+08	2.065E-13	2.5626E-05	7.3303E+08	1.0000	0.0001
60000	955.5	1.089	0.90	30.3108	1502.04	1.298E+08	3.409E-13	4.4240E-05	4.4412E+08	1.0000	0.0001

62000	960.1	1.089	0.90	30.3108	1568.02	1.355E+08	5.685E-13	7.7017E-05	2.6632E+08	1.0000	0.0002
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	3.2868E+11	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	3.9071E+16	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	2.6360E+16	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	1.4257E+16	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	9.5922E+15	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	3.8725E+15	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	9.8803E+14	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	1.4461E+15	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	4.1538E+14	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	1.3895E+14	1.0000	0.0000
40000	735.0	1.089	0.90	30.3108	842.21	7.277E+07	1.388E-19	1.0103E-11	1.0904E+15	1.0000	0.0000
44000	737.2	1.089	0.90	30.3108	974.17	8.417E+07	3.107E-19	2.6155E-11	4.8722E+14	1.0000	0.0000
48000	741.2	1.089	0.90	30.3108	1106.14	9.557E+07	7.831E-19	7.4838E-11	1.9334E+14	1.0000	0.0000
52000	744.2	1.089	0.90	30.3108	1238.11	1.070E+08	1.843E-18	1.9712E-10	8.2162E+13	1.0000	0.0000
56000	747.4	1.089	0.90	30.3108	1370.07	1.184E+08	4.386E-18	5.1921E-10	3.4518E+13	1.0000	0.0000
58000	748.9	1.089	0.90	30.3108	1436.06	1.241E+08	6.719E-18	8.3363E-10	2.2534E+13	1.0000	0.0000
60000	750.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.042E-17	1.3525E-09	1.4527E+13	1.0000	0.0000
62000	752.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.616E-17	2.1889E-09	9.3704E+12	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	8.1186E+16	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	4.1353E+18	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	2.5021E+18	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	1.3754E+18	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	1.7950E+18	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	7.9114E+17	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	2.1214E+17	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	6.0962E+17	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	1.9197E+17	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	7.1725E+16	1.0000	0.0000
40000	636.8	1.089	0.90	30.3108	842.21	7.277E+07	6.715E-23	4.8863E-15	2.2546E+18	1.0000	0.0000
44000	635.5	1.089	0.90	30.3108	974.17	8.417E+07	1.153E-22	9.7085E-15	1.3126E+18	1.0000	0.0000
48000	636.0	1.089	0.90	30.3108	1106.14	9.557E+07	2.330E-22	2.2263E-14	6.4992E+17	1.0000	0.0000
52000	635.7	1.089	0.90	30.3108	1238.11	1.070E+08	4.378E-22	4.6830E-14	3.4584E+17	1.0000	0.0000
56000	635.6	1.089	0.90	30.3108	1370.07	1.184E+08	8.376E-22	9.9155E-14	1.8075E+17	1.0000	0.0000
58000	635.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.164E-21	1.4441E-13	1.3008E+17	1.0000	0.0000
60000	635.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.617E-21	2.0988E-13	9.3617E+16	1.0000	0.0000
62000	635.7	1.089	0.90	30.3108	1568.02	1.355E+08	2.267E-21	3.0719E-13	6.6771E+16	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0036	0.0019	0.0003	0.0000	0.0000	0.0000	0.0002				
8000	0.0059	0.0030	0.0004	0.0000	0.0000	0.0000	0.0004				
12000	0.0096	0.0050	0.0007	0.0000	0.0000	0.0000	0.0006				
16000	0.0072	0.0038	0.0006	0.0000	0.0000	0.0000	0.0005				
20000	0.0129	0.0068	0.0011	0.0000	0.0000	0.0000	0.0009				
24000	0.0249	0.0133	0.0021	0.0001	0.0000	0.0000	0.0017				
28000	0.0142	0.0076	0.0012	0.0000	0.0000	0.0000	0.0010				
32000	0.0267	0.0144	0.0024	0.0001	0.0000	0.0000	0.0018				
36000	0.0477	0.0261	0.0044	0.0001	0.0000	0.0000	0.0033				
40000	0.0014	0.0008	0.0002	0.0000	0.0000	0.0000	0.0001				
44000	0.0024	0.0014	0.0003	0.0000	0.0000	0.0000	0.0002				
48000	0.0043	0.0025	0.0005	0.0000	0.0000	0.0000	0.0003				
52000	0.0075	0.0044	0.0009	0.0001	0.0000	0.0000	0.0006				
56000	0.0129	0.0075	0.0016	0.0001	0.0000	0.0000	0.0010				
58000	0.0172	0.0100	0.0021	0.0001	0.0000	0.0000	0.0013				
60000	0.0222	0.0130	0.0027	0.0001	0.0000	0.0000	0.0017				
62000	0.0288	0.0169	0.0035	0.0002	0.0000	0.0000	0.0022				

Gas Gap Fractions: Kr-88											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300	cal/mol									
R	1.987	cal/mol-K									
Do/a2	0.61	1/sec									
lambda	6.7310E-05	1/sec									
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	1.7287E+05	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	3.0229E+05	1.0000	0.0054
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	1.1471E+05	1.0000	0.0088
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	4.2775E+04	1.0000	0.0144
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	7.7412E+04	1.0000	0.0107
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	2.3769E+04	1.0000	0.0193
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	6.3523E+03	1.0000	0.0372
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	1.9744E+04	1.0000	0.0212
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	5.5309E+03	1.0000	0.0398
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	1.7012E+03	1.0000	0.0710
40000	1385.9	1.089	1.10	37.0465	818.21	7.069E+07	1.738E-09	1.2290E-01	3.8718E+04	1.0000	0.0152
44000	1412.9	1.089	1.10	37.0465	926.19	8.002E+07	5.543E-09	4.4359E-01	1.2143E+04	1.0000	0.0270
48000	1452.7	1.089	1.10	37.0465	1034.16	8.935E+07	2.167E-08	1.9365E+00	3.1058E+03	1.0000	0.0529
52000	1481.3	1.089	1.10	37.0465	1142.13	9.868E+07	6.787E-08	6.6970E+00	9.9182E+02	1.0000	0.0922
56000	1511.0	1.089	1.10	37.0465	1250.10	1.080E+08	2.123E-07	2.2936E+01	3.1698E+02	1.0000	0.1590
58000	1537.1	1.089	1.10	37.0465	1304.09	1.127E+08	4.441E-07	5.0039E+01	1.5156E+02	1.0000	0.2239
60000	1548.5	1.089	1.10	37.0465	1358.08	1.173E+08	7.346E-07	8.6193E+01	9.1632E+01	1.0000	0.2807
62000	1570.8	1.089	1.10	37.0465	1412.06	1.220E+08	1.425E-06	1.7383E+02	4.7240E+01	1.0000	0.3730
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	3.5178E+05	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	1.1302E+06	1.0000	0.0028
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	4.3085E+05	1.0000	0.0046
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	1.6006E+05	1.0000	0.0075
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	2.8160E+05	1.0000	0.0056
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	8.5599E+04	1.0000	0.0102
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	2.2338E+04	1.0000	0.0199
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	6.9023E+04	1.0000	0.0114
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	1.8997E+04	1.0000	0.0216
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	5.7640E+03	1.0000	0.0390
40000	1326.8	1.089	1.10	37.0465	818.21	7.069E+07	5.398E-10	3.8163E-02	1.2468E+05	1.0000	0.0085
44000	1351.7	1.089	1.10	37.0465	926.19	8.002E+07	1.727E-09	1.3823E-01	3.8967E+04	1.0000	0.0151
48000	1388.9	1.089	1.10	37.0465	1034.16	8.935E+07	6.858E-09	6.1280E-01	9.8143E+03	1.0000	0.0300

52000	1415.3	1.089	1.10	37.0465	1142.13	9.868E+07	2.159E-08	2.1301E+00	3.1183E+03	1.0000	0.0528
56000	1443.5	1.089	1.10	37.0465	1250.10	1.080E+08	6.887E-08	7.4382E+00	9.7740E+02	1.0000	0.0929
58000	1468.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.465E-07	1.6504E+01	4.5953E+02	1.0000	0.1334
60000	1479.5	1.089	1.10	37.0465	1358.08	1.173E+08	2.455E-07	2.8809E+01	2.7415E+02	1.0000	0.1702
62000	1501.5	1.089	1.10	37.0465	1412.06	1.220E+08	4.892E-07	5.9679E+01	1.3760E+02	1.0000	0.2339
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	2.7878E+06	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	5.1665E+07	1.0000	0.0004
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	2.0341E+07	1.0000	0.0007
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	7.5685E+06	1.0000	0.0011
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	1.2022E+07	1.0000	0.0009
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	3.6040E+06	1.0000	0.0016
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	8.8874E+05	1.0000	0.0032
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	2.6206E+06	1.0000	0.0019
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	6.9522E+05	1.0000	0.0036
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	2.0466E+05	1.0000	0.0066
40000	1181.3	1.089	1.10	37.0465	818.21	7.069E+07	1.842E-11	1.3022E-03	3.6541E+06	1.0000	0.0016
44000	1201.2	1.089	1.10	37.0465	926.19	8.002E+07	5.924E-11	4.7406E-03	1.1362E+06	1.0000	0.0028
48000	1231.9	1.089	1.10	37.0465	1034.16	8.935E+07	2.433E-10	2.1741E-02	2.7663E+05	1.0000	0.0057
52000	1252.9	1.089	1.10	37.0465	1142.13	9.868E+07	7.707E-10	7.6057E-02	8.7332E+04	1.0000	0.0101
56000	1277.2	1.089	1.10	37.0465	1250.10	1.080E+08	2.586E-09	2.7929E-01	2.6031E+04	1.0000	0.0185
58000	1298.8	1.089	1.10	37.0465	1304.09	1.127E+08	5.771E-09	6.5019E-01	1.1664E+04	1.0000	0.0275
60000	1308.9	1.089	1.10	37.0465	1358.08	1.173E+08	9.953E-09	1.1679E+00	6.7627E+03	1.0000	0.0360
62000	1329.9	1.089	1.10	37.0465	1412.06	1.220E+08	2.145E-08	2.6171E+00	3.1378E+03	1.0000	0.0526
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	1.3918E+08	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	7.4683E+10	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	3.3321E+10	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	1.3193E+10	1.0000	0.0000
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	1.5813E+10	1.0000	0.0000
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	4.8976E+09	1.0000	0.0000
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	1.1408E+09	1.0000	0.0001
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	2.8039E+09	1.0000	0.0001
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	7.2000E+08	1.0000	0.0001
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	2.1050E+08	1.0000	0.0002
40000	979.2	1.089	1.10	37.0465	818.21	7.069E+07	3.194E-14	2.2580E-06	2.1074E+09	1.0000	0.0001
44000	992.0	1.089	1.10	37.0465	926.19	8.002E+07	9.961E-14	7.9707E-06	6.7576E+08	1.0000	0.0001
48000	1013.6	1.089	1.10	37.0465	1034.16	8.935E+07	4.202E-13	3.7547E-05	1.6018E+08	1.0000	0.0002
52000	1027.2	1.089	1.10	37.0465	1142.13	9.868E+07	1.305E-12	1.2877E-04	5.1580E+07	1.0000	0.0004
56000	1045.7	1.089	1.10	37.0465	1250.10	1.080E+08	4.715E-12	5.0926E-04	1.4276E+07	1.0000	0.0008
58000	1062.3	1.089	1.10	37.0465	1304.09	1.127E+08	1.128E-11	1.2715E-03	5.9648E+06	1.0000	0.0012
60000	1070.7	1.089	1.10	37.0465	1358.08	1.173E+08	2.051E-11	2.4070E-03	3.2812E+06	1.0000	0.0017

62000	1089.1	1.089	1.10	37.0465	1412.06	1.220E+08	5.061E-11	6.1747E-03	1.3299E+06	1.0000	0.0026
r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	1.4612E+11	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	1.7370E+16	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	1.1719E+16	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	6.3386E+15	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	4.2645E+15	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	1.7217E+15	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	4.3926E+14	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	6.4289E+14	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	1.8467E+14	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	6.1774E+13	1.0000	0.0000
40000	753.8	1.089	1.10	37.0465	818.21	7.069E+07	4.772E-19	3.3738E-11	1.4104E+14	1.0000	0.0000
44000	758.8	1.089	1.10	37.0465	926.19	8.002E+07	1.266E-18	1.0135E-10	5.3148E+13	1.0000	0.0000
48000	770.1	1.089	1.10	37.0465	1034.16	8.935E+07	4.942E-18	4.4156E-10	1.3620E+13	1.0000	0.0000
52000	775.6	1.089	1.10	37.0465	1142.13	9.868E+07	1.334E-17	1.3163E-09	5.0462E+12	1.0000	0.0000
56000	786.7	1.089	1.10	37.0465	1250.10	1.080E+08	4.992E-17	5.3922E-09	1.3483E+12	1.0000	0.0000
58000	797.4	1.089	1.10	37.0465	1304.09	1.127E+08	1.290E-16	1.4539E-08	5.2165E+11	1.0000	0.0000
60000	803.0	1.089	1.10	37.0465	1358.08	1.173E+08	2.465E-16	2.8920E-08	2.7310E+11	1.0000	0.0000
62000	816.6	1.089	1.10	37.0465	1412.06	1.220E+08	7.284E-16	8.8866E-08	9.2408E+10	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	3.6094E+16	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	1.8385E+18	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	1.1124E+18	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	6.1148E+17	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	7.9803E+17	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	3.5173E+17	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	9.4315E+16	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	2.7103E+17	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	8.5349E+16	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	3.1888E+16	1.0000	0.0000
40000	653.3	1.089	1.10	37.0465	818.21	7.069E+07	2.843E-22	2.0099E-14	2.3675E+17	1.0000	0.0000
44000	655.2	1.089	1.10	37.0465	926.19	8.002E+07	6.451E-22	5.1626E-14	1.0433E+17	1.0000	0.0000
48000	661.9	1.089	1.10	37.0465	1034.16	8.935E+07	2.185E-21	1.9526E-13	3.0802E+16	1.0000	0.0000
52000	664.1	1.089	1.10	37.0465	1142.13	9.868E+07	5.062E-21	4.9951E-13	1.3297E+16	1.0000	0.0000
56000	671.5	1.089	1.10	37.0465	1250.10	1.080E+08	1.788E-20	1.9307E-12	3.7655E+15	1.0000	0.0000
58000	679.2	1.089	1.10	37.0465	1304.09	1.127E+08	4.591E-20	5.1728E-12	1.4662E+15	1.0000	0.0000
60000	682.7	1.089	1.10	37.0465	1358.08	1.173E+08	8.395E-20	9.8509E-12	8.0176E+14	1.0000	0.0000
62000	688.0	1.089	1.10	37.0465	1412.06	1.220E+08	1.759E-19	2.1457E-11	3.8271E+14	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					

	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0054	0.0028	0.0004	0.0000	0.0000	0.0000	0.0003				
8000	0.0088	0.0046	0.0007	0.0000	0.0000	0.0000	0.0006				
12000	0.0144	0.0075	0.0011	0.0000	0.0000	0.0000	0.0009				
16000	0.0107	0.0056	0.0009	0.0000	0.0000	0.0000	0.0007				
20000	0.0193	0.0102	0.0016	0.0000	0.0000	0.0000	0.0013				
24000	0.0372	0.0199	0.0032	0.0001	0.0000	0.0000	0.0025				
28000	0.0212	0.0114	0.0019	0.0001	0.0000	0.0000	0.0014				
32000	0.0398	0.0216	0.0036	0.0001	0.0000	0.0000	0.0027				
36000	0.0710	0.0390	0.0066	0.0002	0.0000	0.0000	0.0049				
40000	0.0152	0.0085	0.0016	0.0001	0.0000	0.0000	0.0011				
44000	0.0270	0.0151	0.0028	0.0001	0.0000	0.0000	0.0020				
48000	0.0529	0.0300	0.0057	0.0002	0.0000	0.0000	0.0039				
52000	0.0922	0.0528	0.0101	0.0004	0.0000	0.0000	0.0069				
56000	0.1590	0.0929	0.0185	0.0008	0.0000	0.0000	0.0122				
58000	0.2239	0.1334	0.0275	0.0012	0.0000	0.0000	0.0176				
60000	0.2807	0.1702	0.0360	0.0017	0.0000	0.0000	0.0226				
62000	0.3730	0.2339	0.0526	0.0026	0.0000	0.0000	0.0315				

Gas Gap Fractions: Kr-88											
Vfuel=176*PI*(0.96774/2)^2*(347.218)=						44949.18	cc				
Mfuel=(10.96)*(0.945)*Vfuel*(238/270)=						410371.65	gm				
Q	72300			cal/mol							
R	1.987			cal/mol-K							
Do/a2	0.61			1/sec							
lambda	6.731E-5			1/sec							
r=0.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1718.6	1.65	1.10	56.1311	0.00	0.000E+00	3.894E-10	0.0000E+00	1.7287E+05	0.0000	0.0000
4000	1625.2	1.65	1.10	56.1311	71.26	6.157E+06	2.227E-10	1.3709E-03	3.0229E+05	1.0000	0.0054
8000	1648.1	1.65	1.10	56.1311	142.52	1.231E+07	5.868E-10	7.2255E-03	1.1471E+05	1.0000	0.0088
12000	1673.0	1.65	1.10	56.1311	213.79	1.847E+07	1.574E-09	2.9066E-02	4.2775E+04	1.0000	0.0144
16000	1582.0	1.65	1.00	51.0283	292.17	2.524E+07	8.695E-10	2.1950E-02	7.7412E+04	1.0000	0.0107
20000	1618.8	1.65	1.00	51.0283	370.56	3.202E+07	2.832E-09	9.0665E-02	2.3769E+04	1.0000	0.0193
24000	1667.9	1.65	1.00	51.0283	448.95	3.879E+07	1.060E-08	4.1102E-01	6.3523E+03	1.0000	0.0372
28000	1541.3	1.65	0.90	45.9254	536.05	4.631E+07	3.409E-09	1.5789E-01	1.9744E+04	1.0000	0.0212
32000	1582.5	1.65	0.90	45.9254	623.14	5.384E+07	1.217E-08	6.5522E-01	5.5309E+03	1.0000	0.0398
36000	1619.2	1.65	0.90	45.9254	710.24	6.136E+07	3.957E-08	2.4280E+00	1.7012E+03	1.0000	0.0710
40000	1201.7	1.089	0.90	30.3108	842.21	7.277E+07	3.107E-11	2.2611E-03	2.1662E+06	1.0000	0.0020
44000	1222.7	1.089	0.90	30.3108	974.17	8.417E+07	1.009E-10	8.4938E-03	6.6700E+05	1.0000	0.0037
48000	1242.9	1.089	0.90	30.3108	1106.14	9.557E+07	3.160E-10	3.0202E-02	2.1299E+05	1.0000	0.0065
52000	1262.0	1.089	0.90	30.3108	1238.11	1.070E+08	9.503E-10	1.0165E-01	7.0831E+04	1.0000	0.0112
56000	1281.0	1.089	0.90	30.3108	1370.07	1.184E+08	2.814E-09	3.3308E-01	2.3921E+04	1.0000	0.0193
58000	1292.5	1.089	0.90	30.3108	1436.06	1.241E+08	5.034E-09	6.2459E-01	1.3371E+04	1.0000	0.0257
60000	1301.0	1.089	0.90	30.3108	1502.04	1.298E+08	8.407E-09	1.0910E+00	8.0063E+03	1.0000	0.0332
62000	1310.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.425E-08	1.9301E+00	4.7246E+03	1.0000	0.0430
r=0.2											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1662.8	1.65	1.10	56.1311	0.00	0.000E+00	1.913E-10	0.0000E+00	3.5178E+05	0.0000	0.0000
4000	1534.8	1.65	1.10	56.1311	71.26	6.157E+06	5.956E-11	3.6670E-04	1.1302E+06	1.0000	0.0028
8000	1554.9	1.65	1.10	56.1311	142.52	1.231E+07	1.562E-10	1.9238E-03	4.3085E+05	1.0000	0.0046
12000	1577.3	1.65	1.10	56.1311	213.79	1.847E+07	4.205E-10	7.7676E-03	1.6006E+05	1.0000	0.0075
16000	1497.9	1.65	1.00	51.0283	292.17	2.524E+07	2.390E-10	6.0339E-03	2.8160E+05	1.0000	0.0056
20000	1531.5	1.65	1.00	51.0283	370.56	3.202E+07	7.863E-10	2.5176E-02	8.5599E+04	1.0000	0.0102
24000	1577.0	1.65	1.00	51.0283	448.95	3.879E+07	3.013E-09	1.1688E-01	2.2338E+04	1.0000	0.0199
28000	1463.7	1.65	0.90	45.9254	536.05	4.631E+07	9.752E-10	4.5165E-02	6.9023E+04	1.0000	0.0114
32000	1501.9	1.65	0.90	45.9254	623.14	5.384E+07	3.543E-09	1.9077E-01	1.8997E+04	1.0000	0.0216
36000	1535.8	1.65	0.90	45.9254	710.24	6.136E+07	1.168E-08	7.1660E-01	5.7640E+03	1.0000	0.0390
40000	1160.8	1.089	0.90	30.3108	842.21	7.277E+07	1.069E-11	7.7801E-04	6.2955E+06	1.0000	0.0012
44000	1180.1	1.089	0.90	30.3108	974.17	8.417E+07	3.447E-11	2.9011E-03	1.9529E+06	1.0000	0.0021
48000	1198.8	1.089	0.90	30.3108	1106.14	9.557E+07	1.076E-10	1.0288E-02	6.2529E+05	1.0000	0.0038
52000	1216.5	1.089	0.90	30.3108	1238.11	1.070E+08	3.232E-10	3.4577E-02	2.0824E+05	1.0000	0.0066

56000	1234.1	1.089	0.90	30.3108	1370.07	1.184E+08	9.561E-10	1.1317E-01	7.0404E+04	1.0000	0.0113
58000	1244.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.704E-09	2.1137E-01	3.9510E+04	1.0000	0.0150
60000	1252.5	1.089	0.90	30.3108	1502.04	1.298E+08	2.846E-09	3.6941E-01	2.3647E+04	1.0000	0.0194
62000	1261.2	1.089	0.90	30.3108	1568.02	1.355E+08	4.833E-09	6.5473E-01	1.3928E+04	1.0000	0.0252
r=0.4											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1519.1	1.65	1.10	56.1311	0.00	0.000E+00	2.414E-11	0.0000E+00	2.7878E+06	0.0000	0.0000
4000	1321.7	1.65	1.10	56.1311	71.26	6.157E+06	1.303E-12	8.0214E-06	5.1665E+07	1.0000	0.0004
8000	1335.0	1.65	1.10	56.1311	142.52	1.231E+07	3.309E-12	4.0748E-05	2.0341E+07	1.0000	0.0007
12000	1351.4	1.65	1.10	56.1311	213.79	1.847E+07	8.893E-12	1.6427E-04	7.5685E+06	1.0000	0.0011
16000	1297.4	1.65	1.00	51.0283	292.17	2.524E+07	5.599E-12	1.4133E-04	1.2022E+07	1.0000	0.0009
20000	1323.2	1.65	1.00	51.0283	370.56	3.202E+07	1.868E-11	5.9795E-04	3.6040E+06	1.0000	0.0016
24000	1359.9	1.65	1.00	51.0283	448.95	3.879E+07	7.574E-11	2.9378E-03	8.8874E+05	1.0000	0.0032
28000	1276.9	1.65	0.90	45.9254	536.05	4.631E+07	2.569E-11	1.1896E-03	2.6206E+06	1.0000	0.0019
32000	1307.6	1.65	0.90	45.9254	623.14	5.384E+07	9.682E-11	5.2126E-03	6.9522E+05	1.0000	0.0036
36000	1334.7	1.65	0.90	45.9254	710.24	6.136E+07	3.289E-10	2.0182E-02	2.0466E+05	1.0000	0.0066
40000	1057.8	1.089	0.90	30.3108	842.21	7.277E+07	5.052E-13	3.6764E-05	1.3323E+08	1.0000	0.0003
44000	1072.8	1.089	0.90	30.3108	974.17	8.417E+07	1.578E-12	1.3281E-04	4.2658E+07	1.0000	0.0005
48000	1087.9	1.089	0.90	30.3108	1106.14	9.557E+07	4.878E-12	4.6620E-04	1.3799E+07	1.0000	0.0008
52000	1101.9	1.089	0.90	30.3108	1238.11	1.070E+08	1.440E-11	1.5409E-03	4.6727E+06	1.0000	0.0014
56000	1116.0	1.089	0.90	30.3108	1370.07	1.184E+08	4.221E-11	4.9966E-03	1.5946E+06	1.0000	0.0024
58000	1124.1	1.089	0.90	30.3108	1436.06	1.241E+08	7.418E-11	9.2044E-03	9.0734E+05	1.0000	0.0031
60000	1130.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.242E-10	1.6113E-02	5.4212E+05	1.0000	0.0041
62000	1137.6	1.089	0.90	30.3108	1568.02	1.355E+08	2.103E-10	2.8491E-02	3.2006E+05	1.0000	0.0053
r=0.6											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1305.9	1.65	1.10	56.1311	0.00	0.000E+00	4.836E-13	0.0000E+00	1.3918E+08	0.0000	0.0000
4000	1045.4	1.65	1.10	56.1311	71.26	6.157E+06	9.013E-16	5.5492E-09	7.4683E+10	1.0000	0.0000
8000	1049.9	1.65	1.10	56.1311	142.52	1.231E+07	2.020E-15	2.4875E-08	3.3321E+10	1.0000	0.0000
12000	1058.1	1.65	1.10	56.1311	213.79	1.847E+07	5.102E-15	9.4235E-08	1.3193E+10	1.0000	0.0000
16000	1032.9	1.65	1.00	51.0283	292.17	2.524E+07	4.257E-15	1.0745E-07	1.5813E+10	1.0000	0.0000
20000	1048.2	1.65	1.00	51.0283	370.56	3.202E+07	1.374E-14	4.4001E-07	4.8976E+09	1.0000	0.0000
24000	1072.9	1.65	1.00	51.0283	448.95	3.879E+07	5.900E-14	2.2887E-06	1.1408E+09	1.0000	0.0001
28000	1025.8	1.65	0.90	45.9254	536.05	4.631E+07	2.401E-14	1.1118E-06	2.8039E+09	1.0000	0.0001
32000	1046.5	1.65	0.90	45.9254	623.14	5.384E+07	9.349E-14	5.0333E-06	7.2000E+08	1.0000	0.0001
36000	1064.0	1.65	0.90	45.9254	710.24	6.136E+07	3.198E-13	1.9622E-05	2.1050E+08	1.0000	0.0002
40000	909.4	1.089	0.90	30.3108	842.21	7.277E+07	1.844E-15	1.3415E-07	3.6510E+10	1.0000	0.0000
44000	918.3	1.089	0.90	30.3108	974.17	8.417E+07	5.246E-15	4.4152E-07	1.2832E+10	1.0000	0.0000
48000	928.3	1.089	0.90	30.3108	1106.14	9.557E+07	1.552E-14	1.4832E-06	4.3370E+09	1.0000	0.0000
52000	937.2	1.089	0.90	30.3108	1238.11	1.070E+08	4.348E-14	4.6509E-06	1.5482E+09	1.0000	0.0001
56000	946.3	1.089	0.90	30.3108	1370.07	1.184E+08	1.219E-13	1.4434E-05	5.5203E+08	1.0000	0.0001
58000	951.2	1.089	0.90	30.3108	1436.06	1.241E+08	2.065E-13	2.5626E-05	3.2589E+08	1.0000	0.0002
60000	955.5	1.089	0.90	30.3108	1502.04	1.298E+08	3.409E-13	4.4240E-05	1.9745E+08	1.0000	0.0002
62000	960.1	1.089	0.90	30.3108	1568.02	1.355E+08	5.685E-13	7.7017E-05	1.1840E+08	1.0000	0.0003

r=0.8											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	1045.0	1.65	1.10	56.1311	0.00	0.000E+00	4.606E-16	0.0000E+00	1.4612E+11	0.0000	0.0000
4000	771.5	1.65	1.10	56.1311	71.26	6.157E+06	3.875E-21	2.3858E-14	1.7370E+16	1.0000	0.0000
8000	767.2	1.65	1.10	56.1311	142.52	1.231E+07	5.744E-21	7.0726E-14	1.1719E+16	1.0000	0.0000
12000	766.5	1.65	1.10	56.1311	213.79	1.847E+07	1.062E-20	1.9614E-13	6.3386E+15	1.0000	0.0000
16000	762.3	1.65	1.00	51.0283	292.17	2.524E+07	1.578E-20	3.9844E-13	4.2645E+15	1.0000	0.0000
20000	766.3	1.65	1.00	51.0283	370.56	3.202E+07	3.910E-20	1.2517E-12	1.7217E+15	1.0000	0.0000
24000	777.9	1.65	1.00	51.0283	448.95	3.879E+07	1.532E-19	5.9439E-12	4.3926E+14	1.0000	0.0000
28000	761.0	1.65	0.90	45.9254	536.05	4.631E+07	1.047E-19	4.8490E-12	6.4289E+14	1.0000	0.0000
32000	770.5	1.65	0.90	45.9254	623.14	5.384E+07	3.645E-19	1.9624E-11	1.8467E+14	1.0000	0.0000
36000	777.7	1.65	0.90	45.9254	710.24	6.136E+07	1.090E-18	6.6865E-11	6.1774E+13	1.0000	0.0000
40000	735.0	1.089	0.90	30.3108	842.21	7.277E+07	1.388E-19	1.0103E-11	4.8479E+14	1.0000	0.0000
44000	737.2	1.089	0.90	30.3108	974.17	8.417E+07	3.107E-19	2.6155E-11	2.1661E+14	1.0000	0.0000
48000	741.2	1.089	0.90	30.3108	1106.14	9.557E+07	7.831E-19	7.4838E-11	8.5957E+13	1.0000	0.0000
52000	744.2	1.089	0.90	30.3108	1238.11	1.070E+08	1.843E-18	1.9712E-10	3.6528E+13	1.0000	0.0000
56000	747.4	1.089	0.90	30.3108	1370.07	1.184E+08	4.386E-18	5.1921E-10	1.5346E+13	1.0000	0.0000
58000	748.9	1.089	0.90	30.3108	1436.06	1.241E+08	6.719E-18	8.3363E-10	1.0018E+13	1.0000	0.0000
60000	750.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.042E-17	1.3525E-09	6.4586E+12	1.0000	0.0000
62000	752.3	1.089	0.90	30.3108	1568.02	1.355E+08	1.616E-17	2.1889E-09	4.1659E+12	1.0000	0.0000
r=1.0											
Burnup	Tfuel	pf	af	sp pow	EFPD	t	D'	tau	mu	erf	F
mwd/mtu	deg-K			mw/mtu		sec	1/sec			tau*mu	
0	770.3	1.65	1.10	56.1311	0.00	0.000E+00	1.865E-21	0.0000E+00	3.6094E+16	0.0000	0.0000
4000	702.1	1.65	1.10	56.1311	71.26	6.157E+06	3.661E-23	2.2542E-16	1.8385E+18	1.0000	0.0000
8000	700.0	1.65	1.10	56.1311	142.52	1.231E+07	6.051E-23	7.4510E-16	1.1124E+18	1.0000	0.0000
12000	699.2	1.65	1.10	56.1311	213.79	1.847E+07	1.101E-22	2.0332E-15	6.1148E+17	1.0000	0.0000
16000	687.0	1.65	1.00	51.0283	292.17	2.524E+07	8.435E-23	2.1292E-15	7.9803E+17	1.0000	0.0000
20000	689.1	1.65	1.00	51.0283	370.56	3.202E+07	1.914E-22	6.1270E-15	3.5173E+17	1.0000	0.0000
24000	697.8	1.65	1.00	51.0283	448.95	3.879E+07	7.137E-22	2.7683E-14	9.4315E+16	1.0000	0.0000
28000	675.6	1.65	0.90	45.9254	536.05	4.631E+07	2.484E-22	1.1502E-14	2.7103E+17	1.0000	0.0000
32000	681.9	1.65	0.90	45.9254	623.14	5.384E+07	7.886E-22	4.2460E-14	8.5349E+16	1.0000	0.0000
36000	686.1	1.65	0.90	45.9254	710.24	6.136E+07	2.111E-21	1.2953E-13	3.1888E+16	1.0000	0.0000
40000	636.8	1.089	0.90	30.3108	842.21	7.277E+07	6.715E-23	4.8863E-15	1.0024E+18	1.0000	0.0000
44000	635.5	1.089	0.90	30.3108	974.17	8.417E+07	1.153E-22	9.7085E-15	5.8355E+17	1.0000	0.0000
48000	636.0	1.089	0.90	30.3108	1106.14	9.557E+07	2.330E-22	2.2263E-14	2.8895E+17	1.0000	0.0000
52000	635.7	1.089	0.90	30.3108	1238.11	1.070E+08	4.378E-22	4.6830E-14	1.5375E+17	1.0000	0.0000
56000	635.6	1.089	0.90	30.3108	1370.07	1.184E+08	8.376E-22	9.9155E-14	8.0357E+16	1.0000	0.0000
58000	635.6	1.089	0.90	30.3108	1436.06	1.241E+08	1.164E-21	1.4441E-13	5.7832E+16	1.0000	0.0000
60000	635.6	1.089	0.90	30.3108	1502.04	1.298E+08	1.617E-21	2.0988E-13	4.1621E+16	1.0000	0.0000
62000	635.7	1.089	0.90	30.3108	1568.02	1.355E+08	2.267E-21	3.0719E-13	2.9685E+16	1.0000	0.0000
Burnup	F	F	F	F	F	F					
mwd/mtu	r=0.0	r=0.2	r=0.4	r=0.6	r=0.8	r=1.0					
	0.01	0.08	0.16	0.24	0.32	0.19					
0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
4000	0.0054	0.0028	0.0004	0.0000	0.0000	0.0000	0.0003				

8000	0.0088	0.0046	0.0007	0.0000	0.0000	0.0000	0.0006				
12000	0.0144	0.0075	0.0011	0.0000	0.0000	0.0000	0.0009				
16000	0.0107	0.0056	0.0009	0.0000	0.0000	0.0000	0.0007				
20000	0.0193	0.0102	0.0016	0.0000	0.0000	0.0000	0.0013				
24000	0.0372	0.0199	0.0032	0.0001	0.0000	0.0000	0.0025				
28000	0.0212	0.0114	0.0019	0.0001	0.0000	0.0000	0.0014				
32000	0.0398	0.0216	0.0036	0.0001	0.0000	0.0000	0.0027				
36000	0.0710	0.0390	0.0066	0.0002	0.0000	0.0000	0.0049				
40000	0.0020	0.0012	0.0003	0.0000	0.0000	0.0000	0.0002				
44000	0.0037	0.0021	0.0005	0.0000	0.0000	0.0000	0.0003				
48000	0.0065	0.0038	0.0008	0.0000	0.0000	0.0000	0.0005				
52000	0.0112	0.0066	0.0014	0.0001	0.0000	0.0000	0.0009				
56000	0.0193	0.0113	0.0024	0.0001	0.0000	0.0000	0.0015				
58000	0.0257	0.0150	0.0031	0.0002	0.0000	0.0000	0.0020				
60000	0.0332	0.0194	0.0041	0.0002	0.0000	0.0000	0.0026				
62000	0.0430	0.0252	0.0053	0.0003	0.0000	0.0000	0.0034				