

2/9/00

Cases with one core and ruthenium:

Store files in "1core-ru" directory.

Do the MDCS calculations at 1 year.

Case #	Cases	Input and Output Decks
Base Case	3.5 cores, no Ru release	
11	3.5 cores, Ru release	
21	1 core (final core offload), no Ru release	
31	1 core (final core offload), Ru release	

Step 1: Run Base Case

atmos 7d
 early 299
 chnc1-n
 SURST
 METSUR

} BESTD.OUT

I checked my run Base Case against SMSAR-99-02 numbers. They were exactly the same.

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Case	Distance	Prompt Fatalities	Social and Dose	Cancer Fatalities	
Base Case	SMSAB-99-02	0-100	1.01	45,400	2,320
		0-500	1.01	595,000	26,800
		0-100	1.01	45,400	2,320
	Return of input data	0-500	1.01	595,000	26,800
		0-100	1.01	45,400	2,320
		0-500	1.01	595,000	26,800
ELEVEN/D	0-100	95.3	95,300	9,150	
	0-500	95.3	624,000	33,900	
	0-100	94.4	95,100	9,120	
ELEVENAD	0-500	94.4	627,000	34,000	
	0-100	94.3	95,100	9,120	
	0-500	94.3	627,000	34,000	
ELEVENBD	0-100	1.02	45,400	2,320	
	0-500	1.02	595,000	26,800	
	0-100	1.01	45,400	2,320	
ELEVENCD	0-500	1.01	595,000	26,800	
	0-100	1.01	45,400	2,320	
	0-500	1.01	595,000	26,800	

Step 2: Run Case 11

Change R_u release fraction from 2×10^{-5} to 1.

amos 7d \rightarrow amos 11d

amos 11d	} ELEVEN D. out
early 299	
chinc1-h	
SURE SIT	
METSUR	

Run Case 119

Change C_0 inventory to 0.

amos 11d \rightarrow amos 1ad

amos 1ad	} ELEVEN A D.
early 299	
chinc1-h	
SURE SIT	
METSUR	

4 3

Run Case 11 b

Change Ru-103 inventory to 0 (C inventories are 0)

atmos/ad → atmos/bd

atmos/bd	}	ELEVEN BD
early 299		
chrnc1-n		
SURSET		
METSUR		

Run case 11 c

Change Ru-106 inventory to 0 (C inventories are 0)

atmos/ad → atmos/cd

atmos/cd	}	ELEVEN CD
early 299		
chrnc1-n		
SURSET		
METSUR		

Run Case 11d

Change Ru-103 and Ru-106 inventories to 0

(6 inventories are 0)

atmos lead \rightarrow atmos ldd

atmos ldd
early 299
uran-14
SUESSIT
METSUR
ELEVENDD

Evaluate inventory (double-check 5/14/99 numbers)

Ru-106

C_i in core at $t=0$	2.48×10^7	$e^{-\lambda t}$
C_i in core at $t=1$ yr	1.24×10^7	
C_i in batch 11 at $t=1$ yr	5.95×10^6	

$$C_i \text{ in batch 1-11 at } t=1 \text{ yr} \quad 9.13 \times 10^6 \quad \checkmark$$

$$C_i \text{ in batches 1-10: } 9.13 \times 10^6$$

$$\underline{- 5.95 \times 10^6}$$

$$3.18 \times 10^6$$

$$C_i \text{ in SFP} \quad 3.18 \times 10^6$$

$$\underline{1.24 \times 10^7}$$

$$1.55 \times 10^7 \quad C_i \quad \times 3.7 \times 10^{10}$$

$$B_g \text{ in SFP} = 5.76 \times 10^{17} \quad B_g \quad \text{vs.} \quad 5.77 \times 10^{17} \quad B_g \quad \checkmark$$

Cs-137

C:

in core at $t=0$ 5.84×10^6 ✓

in core at $t=1\text{yr}$ 5.71×10^6 $e^{-\lambda t}$

in bucket 11 at $t=1\text{yr}$ 2.77×10^6

in bucket 1-11 at $t=1\text{yr}$ 1.97×10^7 ✓

in bucket 1-10 1.97×10^7

$$- 2.77 \times 10^6$$
$$\underline{1.69 \times 10^7}$$

in SEP 1.69×10^7

$$5.71 \times 10^6$$
$$\underline{2.26 \times 10^7}$$

~~Eq~~ in SEP = $2.26 \times 10^7 \times 3.7 \times 10^{10} = 8.38 \times 10^{17}$ vs. 8.38×10^{17} ✓