TABLE 7.1-1

COMPARISON OF REACTOR TYPES FOR LIMITING OFF-SITE DOSE CONSEQUENCES

PART A, EXCEPT ABWR

Accident	Reactor Type	EAB Dose TEDE (rem)	LPZ Dose TEDE (rem)	Guideline[1] TEDE (rem)
Main Steam Line Break				
Accident-initiated Iodine Spike	AP1000	0.79	1.01	2.5
Pre-existing Iodine Spike	AP1000	0.69	0.28	25
Reactor Coolant Pump Locked Rotor				
	AP1000	2.5	0.4	2.5
Control Rod Ejection Accident				
	AP1000	2.98	1.11	6.3
Steam Generator Tube Rupture				
Accident-initiated Iodine Spike	AP1000	1.49	0.16	2.5
Pre-existing Iodine Spike	AP1000	2.98	0.23	25
Small Line Break				
	AP1000	1.3	0.2	2.5
Loss of Coolant Accident				
	AP1000	24.6	6.50	25
	ACR-700	6.3	5.3	25
Fuel Handling Accident				
	AP1000	2.4	0.4	6.3

NOTES:

1. 25 rem is the TEDE guideline from Regulatory Guide 1.183. NUREG-0800 Chapter 15 specifies a guideline of “a small fraction” of the limit, defined as 10 percent or less (2.5 rem), and “well within” the guidelines for other events defined as 25 percent or less (6.3 rem).

TABLE 7.1-1 (Continued)

PART B, ABWR

Accident	Affected Organ	EAB Dose (rem)	LPZ Dose (rem)	Guideline[1] (rem)
Main Steam Line Break				
Max Equilibrium Iodine Activity	Thyroid	1.11	1.65E-01	30
	Whole Body	1.7E-02	2.53E-03	2.5
Pre-existing Iodine Spike	Thyroid	22.2	3.29	300
	Whole Body	3.4E-01	5.05E-02	25
Control Rod Drop Accident	Thyroid	Negligible	Negligible	75
	Whole Body	Negligible	Negligible	6
Small Line Break	Thyroid	2.04	0.30	30
	Whole Body	0.027	0.004	2.5
Loss of Coolant Accident	Thyroid	82.5	233	300
	Whole Body	1.78	3.11	25
Fuel Handling Accident	Thyroid	9.78	1.45	75
	Whole Body	0.41	0.06	6

NOTES:

1. ABWR LOCA guideline based on 10CFR100 limits due to use of TID-14844 source term. NUREG-0800 Chapter 15 specifies a guideline of “a small fraction” of the limit, defined as 10 percent or less, and “well within” the guidelines for other events defined as 25 percent or less.

TABLE 7.1-2

AP1000 MAIN STEAM LINE BREAK - ACCIDENT-INITIATED IODINE SPIKE

Time	Exclusion Area Boundary Dose Total Effective Dose Equivalent (rem)	Low Population Zone Dose Total Effective Dose Equivalent (rem)
0 to 2 hour	0.79	----*
0 to 8 hour	----*	0.42
8 to 24 hour	----*	0.26
24 to 96 hour	----*	0.33
96 to 720 hours	----*	----*
TOTAL	0.79	1.01

NOTES:

* Dose not applicable

TABLE 7.1-3

AP1000 MAIN STEAM LINE BREAK - PRE-EXISTING IODINE SPIKE

Time	Exclusion Area Boundary Dose Total Effective Dose Equivalent (rem)	Low Population Zone Dose Total Effective Dose Equivalent (rem)
0 to 2 hour	0.69	----*
0 to 8 hour	----*	0.16
8 to 24 hour	----*	0.05
24 to 96 hour	----*	0.07
96 to 720 hours	----*	----*
TOTAL	0.69	0.28

NOTES:

* Dose not applicable

TABLE 7.1-4

ABWR MAIN STEAM LINE BREAK OUTSIDE CONTAINMENT

Isotope	Maximum Equilibrium Value for Full Power Operation Megabecquerel Released 0 to 2 hour	Pre-existing Iodine Spike Megabecquerel Released 0 to 2 hour
I-131	7.29E+04	1.46E+06
I-132	7.10E+05	1.42E+07
I-133	5.00E+05	9.99E+06
I-134	1.40E+06	2.79E+07
I-135	7.29E+05	1.46E+07
Total Halogens	3.41E+06	6.81E+07
KR-83M	4.07E+02	2.44E+03
KR-85M	7.18E+02	4.29E+03
KR-85	2.26E+00	1.36E+01
KR-87	2.44E+03	1.47E+04
KR-88	2.46E+03	1.48E+04
KR-89	9.88E+03	5.92E+04
KR-90	2.55E+03	1.55E+04
XE-131M	1.76E+00	1.06E+01
XE-133M	3.39E+01	2.04E+02
XE-133	9.47E+02	5.70E+03
XE-135M	2.89E+03	1.74E+04
XE-135	2.70E+03	1.62E+04
XE-137	1.23E+04	7.40E+04
XE-138	9.44E+03	5.66E+04
XE-139	4.33E+03	2.59E+04
TOTAL NOBLE GASES	5.11E+04	3.07E+05

TABLE 7.1-5

ABWR MAIN STEAM LINE BREAK OUTSIDE CONTAINMENT - MAXIMUM EQUILIBRIUM VALUE FOR FULL POWER OPERATION

Time	Exclusion Area Boundary Dose (rem)		Low Population Zone Dose (rem)	
	Thyroid	Whole Body	Thyroid	Whole Body
0 to 2 hour	1.11	1.70E-02	----*	----*
0 to 8 hour	----*	----*	1.65E-01	2.53E-03
8 to 24 hour	----*	----*	----*	----*
24 to 96 hour	----*	----*	----*	----*
96 to 720 hours	----*	----*	----*	----*
TOTAL	1.11	1.70E-02	1.65E-01	2.53E-03

NOTES:

* Dose not applicable

TABLE 7.1-6

ABWR MAIN STEAM LINE BREAK OUTSIDE CONTAINMENT - PRE-EXISTING IODINE SPIKE

Time	Exclusion Area Boundary Dose (rem)		Low Population Zone Dose (rem)	
	Thyroid	Whole Body	Thyroid	Whole Body
0 to 2 hour	2.22E+01	3.4E-01	----*	----*
0 to 8 hour	----*	----*	3.29E+00	5.05E-02
8 to 24 hour	----*	----*	----*	----*
24 to 96 hour	----*	----*	----*	----*
96 to 720 hours	----*	----*	----*	----*
TOTAL	2.22E+01	3.4E-01	3.29E+00	5.05E-02

NOTES:

* Dose not applicable

TABLE 7.1-7

AP1000 LOCKED ROTOR ACCIDENT – PRE-EXISTING IODINE SPIKE

Time	Exclusion Area Boundary Dose Total Effective Dose Equivalent (rem)	Low Population Zone Dose Total Effective Dose Equivalent (rem)
0 to 2 hour	2.5	----*
0 to 8 hour	----*	0.4
8 to 24 hour	----*	----*
24 to 96 hour	----*	----*
96 to 720 hours	----*	----*
TOTAL	2.5	0.4

NOTES:

* Dose not applicable

TABLE 7.1-8

AP1000 CONTROL ROD EJECTION ACCIDENT - PRE-EXISTING IODINE SPIKE

Time	Exclusion Area Boundary Dose Total Effective Dose Equivalent (rem)	Low Population Zone Dose Total Effective Dose Equivalent (rem)
0 to 2 hour	2.98	----*
0 to 8 hour	----*	0.916
8 to 24 hour	----*	0.160
24 to 96 hour	----*	0.024
96 to 720 hours	----*	0.005
TOTAL	2.98	1.105

NOTES:

* Dose not applicable

TABLE 7.1-9

AP1000 STEAM GENERATOR TUBE RUPTURE - ACCIDENT-INITIATED IODINE SPIKE

Time	Exclusion Area Boundary Dose Total Effective Dose Equivalent (rem)	Low Population Zone Dose Total Effective Dose Equivalent (rem)
0 to 2 hour	1.49	----*
0 to 8 hour	----*	0.12
8 to 24 hour	----*	0.04
24 to 96 hour	----*	----*
96 to 720 hours	----*	----*
TOTAL	1.49	0.16

NOTES:

* Dose not applicable

TABLE 7.1-10

AP1000 STEAM GENERATOR TUBE RUPTURE - PRE-EXISTING IODINE SPIKE

Time	Exclusion Area Boundary Dose Total Effective Dose Equivalent (rem)	Low Population Zone Dose Total Effective Dose Equivalent (rem)
0 to 2 hour	2.98	----*
0 to 8 hour	----*	0.21
8 to 24 hour	----*	0.02
24 to 96 hour	----*	----*
96 to 720 hours	----*	----*
TOTAL	2.98	0.23

NOTES:

* Dose not applicable

TABLE 7.1-11

AP1000 SMALL LINE BREAK ACCIDENT, 0 TO 0.5 HOUR DURATION - ACCIDENT-INITIATED IODINE SPIKE

Time	Exclusion Area Boundary Dose Total Effective Dose Equivalent (rem)	Low Population Zone Dose Total Effective Dose Equivalent (rem)
0 to 2 hour	1.3	----*
0 to 8 hour	----*	0.2
8 to 24 hour	----*	----*
24 to 96 hour	----*	----*
96 to 720 hours	----*	----*
TOTAL	1.3	0.2

NOTES:

* Dose not applicable

TABLE 7.1-12

ABWR SMALL LINE BREAK OUTSIDE CONTAINMENT - ACTIVITY RELEASED TO ENVIRONMENT

Time	Release from Break (directly to Environment) (MBq)
0 to 2 hour	4.784E+05
0 to 8 hour	4.185E+06
8 to 24 hour	3.288E+06
24 to 96 hour	7.171E+06
96 to 720 hours	4.482E+06
TOTAL	1.960E+07

TABLE 7.1-13

ABWR SMALL LINE BREAK OUTSIDE CONTAINMENT

Time	Exclusion Area Boundary Dose (rem)		Low Population Zone Dose (rem)	
	Thyroid	Whole Body	Thyroid	Whole Body
0 to 2 hour	2.04	2.68E-02	----*	----*
0 to 8 hour	----*	----*	0.3	0.004
8 to 24 hour	----*	----*	----*	----*
24 to 96 hour	----*	----*	----*	----*
96 to 720 hours	----*	----*	----*	----*
TOTAL	2.04	2.68E-02	0.3	0.004

NOTES:

* Dose not applicable

TABLE 7.1-14

AP1000 DESIGN BASIS LOSS OF COOLANT ACCIDENT

Time	Exclusion Area Boundary Dose Total Effective Dose Equivalent (rem)	Low Population Zone Dose Total Effective Dose Equivalent (rem)
0 to 2 hour	24.6	----*
0 to 8 hour	----*	6.02
8 to 24 hour	----*	0.20
24 to 96 hour	----*	0.16
96 to 720 hours	----*	0.12
TOTAL	24.6	6.50

NOTES:

1. *Dose not applicable
2. Two-hour period with greatest EAB dose shown. LOCA based on Regulatory Guide 1.183.

TABLE 7.1-15

ABWR LOCA CURIES RELEASED TO ENVIRONMENT BY TIME INTERVAL

Isotope	0 to 2 hours	0 to 8 hours	8 to 24 hours	1 to 4 days	4 to 30 days
I-131	2.60E+02	3.74E+02	9.23E+02	8.70E+03	6.22E+04
I-132	3.52E+02	3.85E+02	3.24E+01	0	0
I-133	5.41E+02	7.43E+02	1.18E+03	3.32E+03	6.76E+02
I-134	5.14E+02	5.15E+02	0	0	0
I-135	5.14E+02	6.47E+02	3.32E+02	1.68E+02	0
Kr-83m	3.26E+02	9.00E+02	4.32E+01	0	0
Kr-85m	8.44E+02	3.74E+03	4.36E+03	7.03E+02	0
Kr-85	4.09E+01	3.49E+02	2.19E+03	2.18E+04	2.86E+05
Kr-87	1.20E+03	2.17E+03	8.92E+01	2.70E+00	0
Kr-88	2.12E+03	7.14E+03	3.43E+03	2.97E+02	0
Kr-89	1.81E+02	1.81E+02	0	0	0
Xe-131m	2.13E+01	1.72E+02	1.12E+03	9.52E+03	6.22E+04
Xe-133m	3.00E+02	2.48E+03	1.38E+04	7.59E+04	7.27E+04
Xe-133	7.63E+03	6.11E+04	3.77E+05	2.78E+06	8.41E+06
Xe-135m	4.87E+02	4.87E+02	0	0	0
Xe-135	9.26E+02	5.51E+03	1.52E+04	1.17E+04	0
Xe-137	5.14E+02	5.14E+02	0	0	0
Xe-138	2.00E+03	2.00E+03	0	0	0

TABLE 7.1-16

ABWR DESIGN BASIS LOSS OF COOLANT ACCIDENT

Time	Exclusion Area Boundary Dose		Low Population Zone Dose	
	Thyroid (rem)	Whole Body (rem)	Thyroid (rem)	Whole Body (rem)
0 to 2 hour	82.5	1.78	----*	----*
0 to 8 hour	----*	----*	1.75E+01	5.66E-01
8 to 24 hour	----*	----*	1.28E+01	5.13E-01
24 to 96 hour	----*	----*	6.63E+01	9.23E-01
96 to 720 hours	----*	----*	1.36E+02	1.11E+00
TOTAL	82.5	1.78	233	3.11

NOTES:

1. *Dose not applicable
2. LOCA based on Regulatory Guide 1.3 and TID-14844.

TABLE 7.1-17

ACR-700 DESIGN BASIS LARGE LOCA - CURIES RELEASED TO ENVIRONMENT BY INTERVAL

Isotope	0-2 hour	2 to 8 hr	8 to 24 hrs	1 to 4 days	4 to 30 days
I-131	57	170	440	900	3460
I-132	63	120	140	69	69
I-133	117	330	750	830	910
I-134	66	83	83	41	41
I-135	101	250	430	270	270
Kr 83-m	2094	3600	3900	2000	2000
Kr 85-m	5702	13000	19600	10700	10700
Kr 85	45	140	360	820	6900
Kr 87	7977	11600	12000	6000	6000
Kr 88	14474	28900	36700	18700	18700
Kr 89	864	870	860	430	430
Xe 131-m	252	800	2000	4200	19700
Xe133-m	1397	4100	10200	16400	26600
Xe-133	45632	135400	350900	679600	1982700
Xe135-m	1784	1800	1800	900	900
Xe 135	3738	9700	18600	13100	13200
Xe 137	1894	1900	1900	950	950
Xe 138	6774	6800	6800	3400	3400

TABLE 7.1-18

ACR-700 LARGE LOSS OF COOLANT ACCIDENT

Time	Exclusion Area Boundary Dose Total Effective Dose Equivalent (rem)	Low Population Zone Dose Total Effective Dose Equivalent (rem)
0 to 2 hour	6.3	0.9
2 to 8 hour	----*	1.7
8 to 24 hour	----*	1.6
24 to 96 hour	----*	0.6
96 to 720 hours	----*	0.5
TOTAL	6.3	5.3

NOTES:

* Dose not applicable

TABLE 7.1-19

AP1000 FUEL HANDLING ACCIDENT - CURIES RELEASED TO ENVIRONMENT

Isotope	Release 0-2 hrs
I-130	3.52E-02
I-131	2.90E+02
I-132	1.54E+02
I-133	1.91E+01
I-134	0
I-135	1.36E-02
Kr-83m	0
Kr-85m	2.68E-03
Kr-85	1.10E+03
Kr-87	0
Kr-88	0
Kr-89	0
Xe-131m	5.36E+02
Xe-133m	1.29E+03
Xe-133	6.94E+04
Xe-135m	4.37E-01
Xe-135	1.32E+02
Xe-137	0
Xe-138	0

TABLE 7.1-20

AP1000 FUEL HANDLING ACCIDENT

Time	Exclusion Area Boundary Dose Total Effective Dose Equivalent (rem)	Low Population Zone Dose Total Effective Dose Equivalent (rem)
0 to 2 hour	2.4	----*
0 to 8 hour	----*	0.4
8 to 24 hour	----*	----*
24 to 96 hour	----*	----*
96 to 720 hours	----*	----*
TOTAL	2.4	0.4

NOTES:

* Dose not applicable

TABLE 7.1-21

ABWR FUEL HANDLING ACCIDENT - CURIES RELEASED TO ENVIRONMENT

Isotope	Release (Ci)
I131	1.458E+01
I132	1.176E+01
I133	9.430E+00
I134	5.147E-07
I135	1.549E+00
KR 83M	5.563E+00
KR 85	2.568E+02
KR 85M	7.084E+01
KR 87	1.100E-02
KR 88	2.051E+01
XE129M	4.103E-05
XE131M	6.726E+01
XE133	2.272E+04
XE133M	8.907E+02
XE135	5.205E+03
XE135M	2.709E+02

TABLE 7.1-22

ABWR FUEL HANDLING ACCIDENT

Time	Exclusion Area Boundary Dose (rem)		Low Population Zone Dose (rem)	
	Thyroid	Whole Body	Thyroid	Whole Body
0 to 2 hour	9.78	0.41	----*	----*
0 to 8 hour	----*	----*	1.45	0.06
8 to 24 hour	----*	----*	----*	----*
24 to 96 hour	----*	----*	----*	----*
96 to 720 hours	----*	----*	----*	----*
TOTAL	9.78	0.41	1.45	0.06

NOTES:

1. Activity is based on a 24-hour shutdown before fuel movement begins.

TABLE 7.1-23

AP1000 LOCKED ROTOR ACCIDENT - CURIES RELEASED TO ENVIRONMENT

Isotope	0 to 1.5 hrs
I-130	4.15E+00
I-131	1.83E+02
I-132	1.33E+02
I-133	2.31E+02
I-134	1.44E+02
I-135	2.04E+02
Kr-85m	4.09E+02
Kr-85	3.77E+01
Kr-87	6.05E+02
Kr-88	1.05E+03
Xe-131m	1.87E+01
Xe-133m	1.02E+02
Xe-133	3.33E+03
Xe-135m	1.63E+02
Xe-135	8.01E+02
Xe-138	6.48E+02
Rb-86	6.69E-02
Cs-134	5.83E+00
Cs-136	1.85E+00
Cs-137	3.42E+00
Cs-138	3.05E+01

TABLE 7.1-24

AP1000 CONTROL ROD EJECTION ACCIDENT - CURIES RELEASED TO ENVIRONMENT BY INTERVAL – PRE-EXISTING IODINE SPIKE

Isotope	0 to 2 hrs	2 to 8 hrs	8 to 24 hrs	24 to 96 hrs	96 to 720 hrs
I-130	5.93E+00	7.28E+00	4.32E+00	4.06E-01	5.88E-04
I-131	1.64E+02	2.45E+02	2.31E+02	6.20E+01	3.33E+01
I-132	1.90E+02	9.94E+01	9.85E+00	1.65E-02	0
I-133	3.29E+02	4.40E+02	3.18E+02	4.56E+01	4.81E-01
I-134	2.18E+02	2.85E+01	1.37E-01	8.96E-08	0
I-135	2.91E+02	2.97E+02	1.19E+02	4.79E+00	1.46E-04
Kr-85m	2.85E+02	6.48E+01	3.87E+01	3.53E+00	5.01E-05
Kr-85	1.24E+01	5.60E+00	1.49E+01	6.70E+01	5.71E+02
Kr-87	4.86E+02	2.60E+01	1.03E+00	1.67E-04	0
Kr-88	7.49E+02	1.18E+02	3.49E+01	7.18E-01	1.68E-08
Xe-131m	1.22E+01	5.46E+00	1.42E+01	5.72E+01	2.31E+02
Xe-133m	6.62E+01	2.81E+01	6.49E+01	1.69E+02	1.06E+02
Xe-133	2.18E+03	9.58E+02	2.40E+03	8.53E+03	1.68E+04
Xe-135m	2.18E+02	5.30E-02	4.33E-09	0	0
Xe-135	5.39E+02	1.72E+02	2.09E+02	8.69E+01	3.58E-01
Xe-138	8.89E+02	1.38E-01	3.19E-09	0	0
Rb-86	3.70E-01	7.27E-01	6.96E-01	1.73E-01	6.79E-02
Cs-134	3.15E+01	6.22E+01	6.03E+01	1.55E+01	1.03E+01
Cs-136	8.98E+00	1.75E+01	1.67E+01	4.10E+00	1.31E+00
Cs-137	1.83E+01	3.62E+01	3.51E+01	9.04E+00	6.05E+00
Cs-138	1.13E+02	7.05E+00	1.68E-03	0	0

TABLE 7.1-25

AP1000 STEAM GENERATOR TUBE RUPTURE ACCIDENT - CURIES RELEASED TO ENVIRONMENT BY INTERVAL - ACCIDENT INITIATED IODINE SPIKE

Isotope	0 to 2 hrs	2 to 8 hrs	8 to 24 hrs
I-130	7.30E-02	1.19E-02	3.13E-02
I-131	4.90E+00	1.15E+00	3.55E+00
I-132	5.79E+00	1.75E-01	2.30E-01
I-133	8.79E+00	1.68E+00	4.73E+00
I-134	1.12E+00	1.18E-03	5.21E-04
I-135	5.15E+00	6.01E-01	1.36E+00
Kr-85m	5.67E+01	1.91E+01	2.50E-02
Kr-85	2.25E+02	1.07E+02	4.44E-01
Kr-87	2.46E+01	3.56E+00	3.02E-04
Kr-88	9.44E+01	2.61E+01	1.80E-02
Xe-131 m	1.02E+02	4.82E+01	1.96E-01
Xe-133m	1.26E+02	5.83E+01	2.19E-01
Xe-133	9.37E+03	4.41E+03	1.75E+01
Xe-135m	3.61E+00	5.78E-03	0
Xe-135	2.51E+02	1.00E+02	2.35E-01
Xe-138	4.78E+00	4.99E-03	0
Rb-86	*	*	*
Cs-134	1.65E+00	6.35E-02	2.27E-01
Cs-136	2.45E+00	9.30E-02	3.30E-01
Cs-137	1.19E+00	4.58E-02	1.64E-01
Cs-138	5.71E-01	3.07E-06	6.00E-07

Note: * = Rb-86 contribution considered negligible for this accident.

TABLE 7.1-26

AP1000 STEAM GENERATOR TUBE RUPTURE ACCIDENT - CURIES RELEASED TO ENVIRONMENT BY INTERVAL – PRE-EXISTING IODINE SPIKE

Isotope	0 to 2 hrs	2 to 8 hrs	8 to 24 hrs
I-130	1.81E+00	6.12E-02	2.90E-01
I-131	1.22E+02	5.97E+00	3.32E+01
I-132	1.43E+02	8.53E-01	2.08E+00
I-133	2.19E+02	8.68E+00	4.41E+01
I-134	2.78E+01	5.16E-03	4.57E-03
I-135	1.28E+02	3.06E+00	1.26E+01
Kr-85m	5.67E+01	1.91E+01	2.50E-02
Kr-85	2.25E+02	1.07E+02	4.44E-01
Kr-87	2.46E+01	3.56E+00	3.02E-04
Kr-88	9.44E+01	2.61E+01	1.80E-02
Xe-131m	1.02E+02	4.82E+01	1.96E-01
Xe-133m	1.26E+02	5.83E+01	2.19E-01
Xe-133	9.37E+03	4.41E+03	1.75E+01
Xe-135m	3.61E+00	5.78E-03	0
Xe-135	2.51E+02	1.00E+02	2.35E-01
Xe-138	4.78E+00	4.99E-03	0
Rb-86	*	*	*
Cs-134	1.65E+00	6.35E-02	2.27E-01
Cs-136	2.45E+00	9.30E-02	3.30E-01
Cs-137	1.19E+00	4.58E-02	1.64E-01
Cs-138	5.71E-01	3.07E-06	6.00E-07

Note: * = Rb-86 contribution considered negligible for this accident.

TABLE 7.1-27

AP1000 SMALL LINE BREAK ACCIDENT - CURIES RELEASED TO ENVIRONMENT - ACCIDENT INITIATED IODINE SPIKE

Isotope	0 to 0.5 hr
I-130	1.90E+00
I-131	9.26E+01
I-132	3.49E+02
I-133	2.01E+02
I-134	1.58E+02
I-135	1.68E+02
Kr-85m	1.24E+01
Kr-85	4.40E+01
Kr-87	7.00E+00
Kr-88	2.21E+01
Xe-131m	1.99E+1
Xe-133m	2.50E+01
Xe-133	1.84E+02
Xe-135m	2.60E+00
Xe-135	5.20E+01
Xe-138	3.60E+00
Cs-134	4.20E+00
Cs-136	6.20E+00
Cs-137	3.00E+00
Cs-138	2.20E+00

TABLE 7.1-28

AP1000 DESIGN BASIS LOSS OF COOLANT ACCIDENT - CURIES RELEASED TO ENVIRONMENT BY INTERVAL

Isotope	0 to 1 hrs	2 to 3 hrs	0 to 8 hrs	8 to 24 hrs	24 to 96 hrs	96 to 720 hrs
Halogen Group						
I-130	5.62E+00	4.92E+01	7.80E+01	2.96E+00	1.11 E+00	1.99E-02
I-131	1.54E+02	1.44E+03	2.36E+03	1.56E+02	3.74E+02	1.12E+03
I-132	1.79E+02	1.18E+03	1.67E+03	7.64E+00	2.29E-02	0
I-133	3.11E+02	2.80E+03	4.51E+03	2.16E+02	1.63E+02	1.62E+01
I-134	1.96E+02	7.51E+02	1.02E+03	1.26E-01	1.07E-07	0
I-135	2.75E+02	2.27E+03	3.50E+03	8.31E+01	9.55E+00	4.95E-03
Noble Gas Group						
Kr-85m	6.74E+01	1.31 E+03	3.77E+03	1.87E+03	1.71E+02	2.43E-03
Kr-85	3.08E+00	7.32E+01	2.96E+02	7.05E+02	3.17E+03	2.70E+04
Kr-87	9.54E+01	1.14E+03	1.94E+03	4.97E+01	8.11E-03	0
Kr-88	1.70E+02	2.95E+03	7.26E+03	1.70E+03	3.49E+01	8.16E-07
Xe-131m	3.07E+00	7.28E+01	2.94E+02	6.79E+02	2.74E+03	1.11E+04
Xe-133m	1.68E+01	3.92E+02	1.54E+03	3.15E+03	8.21E+03	5.15E+03
Xe-133	5.49E+02	1.30E+04	5.19E+04	1.16E+05	4.11E+05	8.10E+05
Xe-135m	1.44E+01	2.14E+01	3.59E+01	2.14E-07	0	0
Xe-135	1.32E+02	2.85E+03	9.64E+03	1.01 E+04	4.21E+03	1.73E+01
Xe-138	5.31E+01	6.69E+01	1.20E+02	1.58E-07	0	0
Alkali Metal Group						
Rb-86	3.32E-01	2.61E+00	4.26E+00	9.37E-02	2.03E-03	1.05E-02
Cs-134	2.81E+01	2.22E+02	3.63E+02	8.06E+00	1.88E-01	1.59E+00
Cs-136	8.01E+00	6.30E+01	1.03E+02	2.25E+00	4.72E-02	2.03E-01
Cs-137	1.64E+01	1.29E+02	2.11E+02	4.70E+00	1.10E-01	9.39E-01
Cs-138	1.06E+02	2.06E+02	3.19E+02	6.92E-04	0	0

TABLE 7.1-28 (Continued)

Isotope	0 to 1 hrs	2 to 3 hrs	0 to 8 hrs	8 to 24 hrs	24 to 96 hrs	96 to 720 hrs
Tellurium Group						
Sr-89	3.23E+00	7.56E+01	1.19E+02	2.87E+00	6.54E-02	4.60E-01
Sr-90	2.78E-01	6.52E+00	1.03E+01	2.48E-01	5.82E-03	4.97E-02
Sr-91	3.77E+00	8.14E+01	1.22E+02	1.74E+00	2.76E-03	1.44E-05
Sr-92	3.45E+00	6.13E+01	8.30E+01	3.26E-01	1.06E-05	0
Sb-127	8.55E-01	1.98E+01	3.11E+01	7.13E-01	1.16E-02	1.60E-02
Sb-129	2.25E+00	4.43E+01	6.28E+01	4.83E-01	1.01E-04	1.00E-09
Te-127m	1.10E-01	2.58E+00	4.06E+00	9.83E-02	2.27E-03	1.77E-02
Te-127	7.99E-01	1.72E+01	2.57E+01	3.65E-01	5.63E-04	2.72E-06
Te-129m	3.76E-01	8.80E+00	1.38E+01	3.33E-01	7.47E-03	4.79E-02
Te-129	1.50E+00	1.89E+01	2.32E+01	8.54E-03	7.27E-10	0
Te-131m	1.15E+00	2.62E+01	4.05E+01	8.29E-01	6.86E-03	1.60E-03
Te-132	1.14E+01	2.65E+02	4.15E+02	9.42E+00	1.44E-01	1.60E-01
Ba-139	3.83E+00	5.30E+01	6.63E+01	4.73E-02	2.03E-08	0
Ba-140	5.71E+00	1.33E+02	2.10E+02	5.00E+00	1.05E-01	4.41E-01
Noble Metals Group						
Mo-99	7.63E-01	1.77E+01	2.76E+01	6.19E-01	8.79E-03	7.72E-03
Tc-99m	6.09E-01	1.26E+01	1.83E+01	1.94E-01	1.08E-04	2.73E-08
Ru-103	6.07E-01	1.42E+01	2.23E+01	5.38E-01	1.21E-02	8.11E-02
Ru-105	3.59E-01	7.08E+00	1.01E+01	7.97E-02	1.82E-05	2.40E-10
Ru-106	2.00E-01	4.67E+00	7.36E+00	1.78E-01	4.16E-03	3.46E-02
Rh-105	3.70E-01	8.48E+00	1.32E+01	2.76E-01	2.64E-03	8.48E-04

TABLE 7.1-28 (Continued)

Isotope	0 to 1 hrs	2 to 3 hrs	0 to 8 hrs	8 to 24 hrs	24 to 96 hrs	96 to 720 hrs
Lanthanide Group						
Y-90	2.90E-03	6.65E-02	1.04E-01	2.32E-03	3.25E-05	2.75E-05
Y-91	4.19E-02	9.71E-01	1.53E+00	3.69E-02	8.43E-04	6.09E-03
Y-92	3.70E-02	6.93E-01	9.64E-01	5.77E-03	5.86E-07	0
Y-93	4.75E-02	1.02E+00	1.53E+00	2.25E-02	4.05E-05	2.91E-07
Nb-95	5.64E-02	1.31E+00	2.06E+00	4.95E-02	1.11E-03	7.23E-03
Zr-95	5.61E-02	1.30E+00	2.05E+00	4.94E-02	1.13E-03	8.29E-03
Zr-97	5.35E-02	1.19E+00	1.81E+00	3.26E-02	1.38E-04	7.58E-06
La-140	6.06E-02	1.38E+00	2.14E+00	4.58E-02	4.84E-04	1.97E-04
La-141	4.69E-02	8.98E-01	1.26E+00	8.69E-03	1.31E-06	0
La-142	3.58E-02	5.15E-01	6.53E-01	6.67E-04	6.96E-10	0
Nd-147	2.19E-02	5.06E-01	7.95E-01	1.89E-02	3.88E-04	1.49E-03
Pr-143	4.93E-02	1.14E+00	1.79E+00	4.27E-02	9.01E-04	3.95E-03
Am-241	4.23E-06	9.81E-05	1.54E-04	3.74E-06	8.75E-08	7.48E-07
Cm-242	9.98E-04	2.31E-02	3.64E-02	8.8 E-04	2.04E-05	1.64E-04
Cm-244	1.22E-04	2.84E-03	4.47E-03	1.08E-04	2.53E-06	2.16E-05
Cerium Group						
Ce-141	1.37E-01	3.19E+00	5.02E+00	1.21E-01	2.71E-03	1.72E-02
Ce-143	1.25E-01	2.85E+00	4.42E+00	9.20E-02	8.29E-04	2.34E-04
Ce-144	1.03E-01	2.41E+00	3.80E+00	9.19E-02	2.14E-03	1.77E-02
Pu-238	3.22E-04	7.51E-03	1.18E-02	2.86E-04	6.71E-06	5.73E-05
Pu-239	2.83E-05	6.60E-04	1.04E-03	2.52E-05	5.90E-07	5.04E-06
Pu-240	4.15E-05	9.69E-04	1.53E-03	3.69E-05	8.65E-07	7.39E-06
Pu-241	9.33E-03	2.17E-01	3.42E-01	8.30E-03	1.94E-04	1.66E-03
Np-239	1.60E+00	3.69E+01	5.76E+01	1.27E+00	1.67E-02	1.17E-02