S&P and PP Accident Source Terms

Plutonium and Uranium Isotopic Compositions

Radionuclide	Radionuclide Specific Activity (Ci/g)	WG Pu Weight Fraction	WG Pu Activity Per Gram of Pu (Ci)	KIS Pu Weight Fraction	KIS Pu Activity Per Gram of Pu (Ci)
Pu-238	1.71E+01	0.00050	8.55E-03	0.00040	6.84E-03
Pu-239	6.21E-02	0.92350	5.73E-02	0.87800	5.45E-02
Pu-240	2.27E-01	0.06500	1.48E-02	0.11540	2.62E-02
Pu-241	1.03E+02	0.00000	0.00E+00	0.00370	3.81E-01
Pu-242	3.93E-03	0.00100	3.93E-06	0.00260	1.02E-05
Am-241	3.44E+00	0.01000	3.44E-02	0.06250	2.15E-01

Radionuclide	Radionuclide Specific Activity (Ci/g)
H-3	9.69E+03

HA Event	Container	Form	Frequency	Release Duration	Release Point	Heat Release (MW)	Isotopic Composition	MAR (kg)	DR	LPF(1)	LPF(2)	LPF(3)	ARF	RF	Oxide Conversion Factor	ST (g Pu, HEU, T, or BeO)	Number of Exposed Workers
S&P Glovebox Fire	Milk bottles	PuO2	Unlikely	15 min.	PDC Stack	0	WG Pu	5.00E+00	2.50E-01	4.90E-03	1.00E+00	1.00E+00	1.00E-01	7.00E-01	8.80E-01	3.77E-01	28
	Equipment (Furnace)	PuO2						5.00E+00	2.50E-01	4.90E-03	1.00E+00	1.00E+00	6.00E-03	1.00E-02	8.80E-01	3.23E-04	
	S&P Can	PuO2						1.00E+01	2.50E-01	4.90E-03	1.00E+00	1.00E+00	1.00E-01	7.00E-01	8.80E-01	7.55E-01	
	Outer Can	PuO2						1.50E+01	2.50E-01	4.90E-03	1.00E+00	1.00E+00	1.08E-01	7.00E-01	8.80E-01	1.22E+00	
								3.50E+01							Total	2.35E+00	
	Molecular Sieve	Tritium					Tritium	2.36E-02	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	1.00E+00	2.36E+01	
Multi-Room Fire	Milk bottles	PuO2	Extremely Unlikely	30 min.	PDC Stack	0	WG Pu	1.00E+01	2.50E-01	4.90E-03	1.00E+00	1.00E+00	1.00E-01	7.00E-01	8.80E-01	7.55E-01	28
	Equipment	PuO2						3.00E+01	2.50E-01	4.90E-03	1.00E+00	1.00E+00	5.00E-03	4.00E-01	8.80E-01	6.47E-02	
	Inner Can	PuO2						1.50E+01	2.50E-01	4.90E-03	1.00E+00	1.00E+00	1.00E-01	7.00E-01	8.80E-01	1.13E+00	
	Outer Can	PuO2						2.50E+01	2.50E-01	4.90E-03	1.00E+00	1.00E+00	1.08E-01	7.00E-01	8.80E-01	2.04E+00	
	Convenience Cans	PuO2						5.00E+01	2.50E-01	4.90E-03	1.00E+00	1.00E+00	5.00E-03	4.00E-01	8.80E-01	1.08E-01	
								1.30E+02							Total	4.10E+00	
Product NDA Room Fire	Pu oxide	PuO2	Extremely Unlikely	30 min.	PDC Stack	0	WG Pu	1.60E+02	3.13E-02	4.90E-03	1.00E+00	1.00E+00	1.08E-01	7.00E-01	8.80E-01	1.63E+00	28
Loss of Ventilation/Cooling in ISM Storage	Pu oxide	PuO2	Extremely Unlikely	3 min.	PDC Stack	0	WG Pu	5.25E+02	1.00E+00	5.00E-03	3.00E-03	4.90E-03	1.00E-01	7.00E-01	8.80E-01	2.38E-03	28
Over-Pressurization of Oxide Storage Cans	Pu oxide (1 batch)	PuO2	Unlikely	3 min.	PDC Stack	0	WG Pu	3.00E+01	1.00E+00	1.00E+00	4.90E-03	1.00E+00	1.08E-01	7.00E-01	8.80E-01	9.78E+00	28

HA Event	Container	Form	Frequency	Release Duration	Release Point	Heat Release (MW)	Isotopic Composition	MAR (kg)	DR	LPF(1)	LPF(2)	LPF(3)	ARF	RF	Oxide Conversion Factor	ST (g Pu, HEU, T, or BeO)	Number of Exposed Workers
Pu Metal Misfeed into Sanitization Furnace	Liquid Metal	Pu	Unlikely	3 min.	PDC Stack	0	WG Pu	7.00E+00	1.00E+00	3.00E-03	4.90E-03	1.00E+00	1.00E-02	1.00E+00	1.00E+00	1.03E-03	28
Criticality (see criticality tab)			Unlikely	3 min.	PDC Stack	0	Phase 1 or Phase 2	1E+19 fissions									28
Loss of Offsite Power	Pu oxide	PuO2	Anticipated	30 min.	PDC Stack	0	WG Pu	5.25E+02	1.00E+00	5.00E-03	3.00E-03	4.90E-03	1.00E-01	7.00E-01	8.80E-01	2.38E-03	28
	Pit Disassembly- 3013 can	PuO2		3 min.				5.00E+00	1.00E+00	3.00E-03	4.90E-03	1.00E+00	5.00E-03	4.00E-01	8.80E-01	1.29E-04	
	SRL	Pu						6.50E+00	1.00E+00	3.00E-03	4.90E-03	1.00E+00	5.00E-07	1.00E+00	1.00E+00	4.78E-08	
	DMO	PuO2						2.50E+01	1.00E+00	3.00E-03	4.90E-03	1.00E+00	5.00E-03	4.00E-01	8.80E-01	6.47E-04	
	HYD	Pu						4.00E+00	1.00E+00	3.00E-03	4.90E-03	1.00E+00	5.00E-07	1.00E+00	1.00E+00	2.94E-08	
	OPH	PuO2						1.00E+01	1.00E+00	3.00E-03	4.90E-03	1.00E+00	5.00E-03	4.00E-01	8.80E-01	2.59E-04	
	ISM Storage	PuO2						5.00E+00	1.00E+00	3.00E-03	4.90E-03	1.00E+00	5.00E-03	4.00E-01	8.80E-01	1.29E-04	
	Inner Canning	PuO2						1.00E+01	1.00E+00	3.00E-03	4.90E-03	1.00E+00	5.00E-03	4.00E-01	8.80E-01	2.59E-04	
	Outer Canning	PuO2						1.00E+01	1.00E+00	4.90E-03	1.00E+00	1.00E+00	5.00E-03	4.00E-01	8.80E-01	8.62E-02	
	ITS	PuO2						1.50E+01	1.00E+00	3.00E-03	4.90E-03	1.00E+00	5.00E-03	4.00E-01	8.80E-01	3.88E-04	
								6.16E+02							Total	9.04E-02	
SST/SGT Loading Dock Tornado or Tornado Generated Missile Impact	Pu oxide	PuO2	Extremely Unlikely	3 min.	Ground-Leve	0	KIS Pu (Phase 1) WG Pu (Phase	1.20E+02	8.30E-02	1.00E-01	1.00E+00	1.00E+00	5.00E-04	4.00E-01	8.80E-01	1.75E-01	6
Seismic-Induced Fire	Milk bottles	PuO2	Extremely Unlikely	30 min.	PDC Stack	0	WG Pu	3.00E+01	2.50E-01	4.90E-03	1.00E+00	1.00E+00	1.00E-01	7.00E-01	8.80E-01	2.26E+00	28
	Equipment	PuO2						1.50E+01	2.50E-01	4.90E-03	1.00E+00	1.00E+00	5.00E-03	4.00E-01	8.80E-01	3.23E-02	
	Inner Can	PuO2						1.50E+01	2.50E-01	4.90E-03	1.00E+00	1.00E+00	1.00E-01	7.00E-01	8.80E-01	1.13E+00	
	Outer Can	PuO2						4.50E+01	1.10E-01	4.90E-03	1.00E+00	1.00E+00	1.08E-01	7.00E-01	8.80E-01	1.61E+00	
	Vacuum Container	PuO2						8.30E-01	2.50E-01	4.90E-03	1.00E+00	1.00E+00	5.00E-03	4.00E-01	8.80E-01	1.79E-03	
	Pu Metal	Pu						8.20E+01	2.50E-01	4.90E-03	1.00E+00	1.00E+00	5.00E-04	5.00E-01	1.00E+00	2.51E-02	
	Waste	PuO2						1.20E+00	2.50E-01	4.90E-03	1.00E+00	1.00E+00	5.00E-03	4.00E-01	8.80E-01	2.59E-03	
								1.89E+02							Total	5.07E+00	

Criticality (1E+19 Fissions)							
Release duration = 3 minutes							
LPF based on no iodine removal equipment present in ventilation system.							
	1E+19						1E+19
	Fissions						Fissions
Radionuclide	MAR (Ci)		DR	ARF	RF	LPF	ST (Ci)
KR-83m	110		1	1	1	1	110
KR-85m	71		1	1	1	1	71
KR-85	0.0081		1	1	1	1	0.0081
KR-87	430		1	1	1	1	430
KR-88	230		1	1	1	1	230
KR-89	13000		1	1	1	1	13000
XE-131m	0.1		1	1	1	1	0.1
XE-133m	2.2		1	1	1	1	2.2
XE-133	27		1	1	1	1	27
XE-135m	3300		1	1	1	1	3300
XE-135	410		1	1	1	1	410
XE-137	49000		1	1	1	1	49000
XE-138	11000		1	1	1	1	11000
I-131	11		1	1	1	1	11
I-132	1200		1	1	1	1	1200
I-133	160		1	1	1	1	160
I-134	4300		1	1	1	1	4300
I-135	450		1	1	1	1	450