APPENDIX 7.A

EXAMPLE DOSE CALCULATIONS FOR NORMAL, OFF-NORMAL, AND ACCIDENT CONDITIONS OF STORAGE

MPC-32 Normal Conditions of Storage, Dose from Inhalation: 7 pages
MPC-32 Off-Normal Conditions of Storage, Dose from Inhalation: 7 pages
MPC-32, Accident Conditions of Storage, Dose Inhalation: 7 pages

MPC-32 Normal Conditions of Storage, Dose from Submersion: 8 pages
MPC-32, Off-Normal Conditions of Storage, Dose from Submersion: 8 pages
MPC-32, Accident Conditions of Storage, Dose from Submersion: 8 pages

MPC-68 Normal Conditions of Storage, Dose from Inhalation: 7 pages
MPC-68 Off-Normal Conditions of Storage, Dose from Inhalation: 7 pages
MPC-68, Accident Conditions of Storage, Dose Inhalation: 7 pages

MPC-68 Normal Conditions of Storage, Dose from Submersion: 8 pages
MPC-68, Off-Normal Conditions of Storage, Dose from Submersion: 8 pages
MPC-68, Accident Conditions of Storage, Dose from Submersion: 8 pages

MPC-32															
Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occupancy Time (sec)	CDE (mRem)
Gases															
H 3	3.68E+02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.60E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	1.70E-05
I129	3.31E-02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.44E-14	1.60E-04	3.30E-04	8.69E-11	3.22E-01	3.15E+07	7.69E-09
KR 85	5.86E+03	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	2.55E-09	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
Crud															
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	3.30E-04	4.76E-09	1.76E+01	3.15E+07	5.54E-03
Volatiles															
SR 90	6.32E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.83E-11	1.60E-04	3.30E-04	2.64E-09	9.77E+00	3.15E+07	2.97E-04
RU106	1.59E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	4.61E-12	1.60E-04	3.30E-04	1.38E-08	5.11E+01	3.15E+07	3.91E-04
CS134	4.04E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.17E-11	1.60E-04	3.30E-04	1.30E-08	4.81E+01	3.15E+07	9.36E-04
CS137	9.82E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.84E-11	1.60E-04	3.30E-04	8.76E-09	3.24E+01	3.15E+07	1.53E-03
Fines															
PU241	8.53E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.71E-13	1.60E-04	3.30E-04	6.82E-07	2.52E+03	3.15E+07	1.56E-03
Y 90	6.32E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.75E-13	1.60E-04	3.30E-04	9.52E-12	3.52E-02	3.15E+07	1.61E-08
PM147	2.63E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.14E-13	1.60E-04	3.30E-04	1.88E-14	6.96E-05	3.15E+07	1.32E-11
CE144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	3.30E-04	1.93E-09	7.14E+00	3.15E+07	4.20E-07
PR144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	3.30E-04	2.41E-15	8.92E-06	3.15E+07	5.25E-13
EU154	5.90E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.56E-14	1.60E-04	3.30E-04	1.17E-08	4.33E+01	3.15E+07	1.85E-06
CM244	1.01E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.39E-14	1.60E-04	3.30E-04	1.59E-05	5.88E+04	3.15E+07	4.29E-03
PU238	5.81E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.52E-14	1.60E-04	3.30E-04	2.80E-05	1.04E+05	3.15E+07	4.35E-03
SB125	2.30E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.99E-15	1.60E-04	3.30E-04	3.60E-10	1.33E+00	3.15E+07	2.21E-08
EU155	1.65E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.17E-15	1.60E-04	3.30E-04	3.56E-10	1.32E+00	3.15E+07	1.57E-08
AM241	9.00E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.91E-15	1.60E-04	3.30E-04	3.25E-05	1.20E+05	3.15E+07	7.82E-04
TE125M	5.61E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.44E-15	1.60E-04	3.30E-04	1.24E-10	4.59E-01	3.15E+07	1.86E-09
PU240	4.05E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.76E-15	1.60E-04	3.30E-04	3.18E-05	1.18E+05	3.15E+07	3.44E-04
SM151	3.38E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.47E-15	1.60E-04	3.30E-04	4.03E-14	1.49E-04	3.15E+07	3.64E-13
PU239	2.04E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.87E-16	1.60E-04	3.30E-04	3.18E-05	1.18E+05	3.15E+07	1.73E-04
BA137M	9.27E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.03E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	1.59E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.91E-14	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	1.14E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.95E-16	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	3.30E-04	3.26E-05	1.21E+05	3.15E+07	4.25E-05
CM242	3.23E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.40E-16	1.60E-04	3.30E-04	5.70E-07	2.11E+03	3.15E+07	4.92E-07
CM243	3.63E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.58E-16	1.60E-04	3.30E-04	2.07E-05	7.66E+04	3.15E+07	2.01E-05
NP239	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	3.30E-04	7.45E-11	2.76E-01	3.15E+07	9.70E-11
NP237	3.88E-01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.69E-18	1.60E-04	3.30E-04	2.96E-05	1.10E+05	3.15E+07	3.07E-07
PU242	2.85E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.24E-17	1.60E-04	3.30E-04	3.02E-05	1.12E+05	3.15E+07	2.30E-06
AM242	8.72E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.79E-17	1.60E-04	3.30E-04	1.94E-09	7.18E+00	3.15E+07	4.52E-10
AM242M	8.76E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.81E-17	1.60E-04	3.30E-04	3.21E-05	1.19E+05	3.15E+07	7.52E-06
														Total	2.03E-02

MPC-32															
Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occupancy Time (sec)	CDE (mRem)
Gases															
H 3	3.68E+02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.60E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	1.70E-05
I129	3.31E-02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.44E-14	1.60E-04	3.30E-04	2.09E-10	7.73E-01	3.15E+07	1.85E-08
KR 85	5.86E+03	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	2.55E-09	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
Crud															
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	3.30E-04	1.84E-08	6.81E+01	3.15E+07	2.14E-02
Volatiles															
SR 90	6.32E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.83E-11	1.60E-04	3.30E-04	2.64E-09	9.77E+00	3.15E+07	2.97E-04
RU106	1.59E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	4.61E-12	1.60E-04	3.30E-04	1.37E-08	5.07E+01	3.15E+07	3.88E-04
CS134	4.04E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.17E-11	1.60E-04	3.30E-04	1.08E-08	4.00E+01	3.15E+07	7.78E-04
CS137	9.82E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.84E-11	1.60E-04	3.30E-04	7.84E-09	2.90E+01	3.15E+07	1.37E-03
Fines															
PU241	8.53E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.71E-13	1.60E-04	3.30E-04	3.06E-11	1.13E-01	3.15E+07	6.98E-08
Y 90	6.32E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.75E-13	1.60E-04	3.30E-04	9.52E-12	3.52E-02	3.15E+07	1.61E-08
PM147	2.63E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.14E-13	1.60E-04	3.30E-04	3.60E-14	1.33E-04	3.15E+07	2.53E-11
CE144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	3.30E-04	1.97E-09	7.29E+00	3.15E+07	4.29E-07
PR144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	3.30E-04	1.05E-14	3.89E-05	3.15E+07	2.29E-12
EU154	5.90E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.56E-14	1.60E-04	3.30E-04	1.55E-08	5.74E+01	3.15E+07	2.45E-06
CM244	1.01E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.39E-14	1.60E-04	3.30E-04	1.04E-09	3.85E+00	3.15E+07	2.81E-07
PU238	5.81E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.52E-14	1.60E-04	3.30E-04	1.00E-09	3.70E+00	3.15E+07	1.55E-07
SB125	2.30E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.99E-15	1.60E-04	3.30E-04	4.16E-10	1.54E+00	3.15E+07	2.56E-08
EU155	1.65E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.17E-15	1.60E-04	3.30E-04	6.14E-10	2.27E+00	3.15E+07	2.71E-08
AM241	9.00E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.91E-15	1.60E-04	3.30E-04	2.67E-09	9.88E+00	3.15E+07	6.43E-08
TE125M	5.61E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.44E-15	1.60E-04	3.30E-04	1.07E-10	3.96E-01	3.15E+07	1.60E-09
PU240	4.05E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.76E-15	1.60E-04	3.30E-04	9.51E-10	3.52E+00	3.15E+07	1.03E-08
SM151	3.38E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.47E-15	1.60E-04	3.30E-04	1.49E-13	5.51E-04	3.15E+07	1.35E-12
PU239	2.04E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.87E-16	1.60E-04	3.30E-04	9.22E-10	3.41E+00	3.15E+07	5.03E-09
BA137M	9.27E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.03E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	1.59E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.91E-14	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	1.14E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.95E-16	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	3.30E-04	1.52E-08	5.62E+01	3.15E+07	1.98E-08
CM242	3.23E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.40E-16	1.60E-04	3.30E-04	9.44E-10	3.49E+00	3.15E+07	8.15E-10
CM243	3.63E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.58E-16	1.60E-04	3.30E-04	6.29E-09	2.33E+01	3.15E+07	6.11E-09
NP239	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	3.30E-04	1.63E-11	6.03E-02	3.15E+07	2.12E-11
NP237	3.88E-01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.69E-18	1.60E-04	3.30E-04	1.69E-08	6.25E+01	3.15E+07	1.75E-10
PU242	2.85E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.24E-17	1.60E-04	3.30E-04	9.45E-10	3.50E+00	3.15E+07	7.20E-11
AM242	8.72E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.79E-17	1.60E-04	3.30E-04	2.94E-12	1.09E-02	3.15E+07	6.86E-13
AM242M	8.76E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.81E-17	1.60E-04	3.30E-04	1.38E-09	5.11E+00	3.15E+07	3.23E-10
														Total	2.43E-02

MPC-32															
Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occupancy Time (sec)	CDE (mRem)
Gases															
H 3	3.68E+02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.60E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	1.70E-05
I129	3.31E-02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.44E-14	1.60E-04	3.30E-04	3.14E-10	1.16E+00	3.15E+07	2.78E-08
KR 85	5.86E+03	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	2.55E-09	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
Crud															
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	3.30E-04	3.45E-07	1.28E+03	3.15E+07	4.02E-01
Volatiles															
SR 90	6.32E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.83E-11	1.60E-04	3.30E-04	2.86E-06	1.06E+04	3.15E+07	3.22E-01
RU106	1.59E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	4.61E-12	1.60E-04	3.30E-04	1.04E-06	3.85E+03	3.15E+07	2.95E-02
CS134	4.04E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.17E-11	1.60E-04	3.30E-04	1.18E-08	4.37E+01	3.15E+07	8.50E-04
CS137	9.82E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.84E-11	1.60E-04	3.30E-04	8.82E-09	3.26E+01	3.15E+07	1.54E-03
Fines															
PU241	8.53E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.71E-13	1.60E-04	3.30E-04	3.18E-06	1.18E+04	3.15E+07	7.25E-03
Y 90	6.32E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.75E-13	1.60E-04	3.30E-04	9.31E-09	3.44E+01	3.15E+07	1.57E-05
PM147	2.63E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.14E-13	1.60E-04	3.30E-04	7.74E-08	2.86E+02	3.15E+07	5.44E-05
CE144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	3.30E-04	7.91E-07	2.93E+03	3.15E+07	1.72E-04
PR144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	3.30E-04	9.40E-11	3.48E-01	3.15E+07	2.05E-08
EU154	5.90E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.56E-14	1.60E-04	3.30E-04	7.92E-08	2.93E+02	3.15E+07	1.25E-05
CM244	1.01E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.39E-14	1.60E-04	3.30E-04	1.93E-05	7.14E+04	3.15E+07	5.21E-03
PU238	5.81E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.52E-14	1.60E-04	3.30E-04	3.20E-04	1.18E+06	3.15E+07	4.97E-02
SB125	2.30E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.99E-15	1.60E-04	3.30E-04	2.17E-08	8.03E+01	3.15E+07	1.33E-06
EU155	1.65E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.17E-15	1.60E-04	3.30E-04	1.19E-08	4.40E+01	3.15E+07	5.25E-07
AM241	9.00E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.91E-15	1.60E-04	3.30E-04	1.84E-05	6.81E+04	3.15E+07	4.43E-04
TE125M	5.61E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.44E-15	1.60E-04	3.30E-04	1.04E-08	3.85E+01	3.15E+07	1.56E-07
PU240	4.05E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.76E-15	1.60E-04	3.30E-04	3.23E-04	1.20E+06	3.15E+07	3.50E-03
SM151	3.38E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.47E-15	1.60E-04	3.30E-04	3.26E-09	1.21E+01	3.15E+07	2.95E-08
PU239	2.04E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.87E-16	1.60E-04	3.30E-04	3.23E-04	1.20E+06	3.15E+07	1.76E-03
BA137M	9.27E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.03E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	1.59E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.91E-14	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	1.14E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.95E-16	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	3.30E-04	1.78E-05	6.59E+04	3.15E+07	2.32E-05
CM242	3.23E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.40E-16	1.60E-04	3.30E-04	1.55E-05	5.74E+04	3.15E+07	1.34E-05
CM243	3.63E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.58E-16	1.60E-04	3.30E-04	1.94E-05	7.18E+04	3.15E+07	1.88E-05
NP239	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	3.30E-04	2.36E-09	8.73E+00	3.15E+07	3.07E-09
NP237	3.88E-01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.69E-18	1.60E-04	3.30E-04	1.61E-05	5.96E+04	3.15E+07	1.67E-07
PU242	2.85E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.24E-17	1.60E-04	3.30E-04	3.07E-04	1.14E+06	3.15E+07	2.34E-05
AM242	8.72E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.79E-17	1.60E-04	3.30E-04	5.20E-08	1.92E+02	3.15E+07	1.21E-08
AM242M	8.76E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.81E-17	1.60E-04	3.30E-04	4.20E-06	1.55E+04	3.15E+07	9.84E-07
														Total	8.24E-01

MPC-32															
Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occupancy Time (sec)	CDE (mRem)
Gases															
H 3	3.68E+02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.60E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	1.70E-05
I129	3.31E-02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.44E-14	1.60E-04	3.30E-04	1.40E-10	5.18E-01	3.15E+07	1.24E-08
KR 85	5.86E+03	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	2.55E-09	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
Crud															
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	3.30E-04	1.72E-08	6.36E+01	3.15E+07	2.00E-02
Volatiles															
SR 90	6.32E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.83E-11	1.60E-04	3.30E-04	3.36E-07	1.24E+03	3.15E+07	3.79E-02
RU106	1.59E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	4.61E-12	1.60E-04	3.30E-04	1.37E-08	5.07E+01	3.15E+07	3.88E-04
CS134	4.04E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.17E-11	1.60E-04	3.30E-04	1.18E-08	4.37E+01	3.15E+07	8.50E-04
CS137	9.82E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.84E-11	1.60E-04	3.30E-04	8.30E-09	3.07E+01	3.15E+07	1.45E-03
Fines															
PU241	8.53E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.71E-13	1.60E-04	3.30E-04	3.36E-06	1.24E+04	3.15E+07	7.66E-03
Y 90	6.32E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.75E-13	1.60E-04	3.30E-04	2.79E-10	1.03E+00	3.15E+07	4.72E-07
PM147	2.63E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.14E-13	1.60E-04	3.30E-04	8.16E-09	3.02E+01	3.15E+07	5.74E-06
CE144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	3.30E-04	2.67E-08	9.88E+01	3.15E+07	5.81E-06
PR144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	3.30E-04	8.08E-14	2.99E-04	3.15E+07	1.76E-11
EU154	5.90E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.56E-14	1.60E-04	3.30E-04	1.06E-07	3.92E+02	3.15E+07	1.67E-05
CM244	1.01E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.39E-14	1.60E-04	3.30E-04	9.38E-05	3.47E+05	3.15E+07	2.53E-02
PU238	5.81E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.52E-14	1.60E-04	3.30E-04	1.52E-04	5.62E+05	3.15E+07	2.36E-02
SB125	2.30E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.99E-15	1.60E-04	3.30E-04	6.49E-10	2.40E+00	3.15E+07	3.99E-08
EU155	1.65E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.17E-15	1.60E-04	3.30E-04	1.43E-08	5.29E+01	3.15E+07	6.31E-07
AM241	9.00E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.91E-15	1.60E-04	3.30E-04	1.74E-04	6.44E+05	3.15E+07	4.19E-03
TE125M	5.61E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.44E-15	1.60E-04	3.30E-04	3.01E-09	1.11E+01	3.15E+07	4.51E-08
PU240	4.05E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.76E-15	1.60E-04	3.30E-04	1.69E-04	6.25E+05	3.15E+07	1.83E-03
SM151	3.38E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.47E-15	1.60E-04	3.30E-04	1.10E-08	4.07E+01	3.15E+07	9.94E-08
PU239	2.04E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.87E-16	1.60E-04	3.30E-04	1.69E-04	6.25E+05	3.15E+07	9.22E-04
BA137M	9.27E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.03E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	1.59E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.91E-14	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	1.14E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.95E-16	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	3.30E-04	1.73E-04	6.40E+05	3.15E+07	2.25E-04
CM242	3.23E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.40E-16	1.60E-04	3.30E-04	3.90E-06	1.44E+04	3.15E+07	3.37E-06
CM243	3.63E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.58E-16	1.60E-04	3.30E-04	1.18E-04	4.37E+05	3.15E+07	1.15E-04
NP239	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	3.30E-04	2.08E-10	7.70E-01	3.15E+07	2.71E-10
NP237	3.88E-01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.69E-18	1.60E-04	3.30E-04	2.62E-04	9.69E+05	3.15E+07	2.72E-06
PU242	2.85E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.24E-17	1.60E-04	3.30E-04	1.61E-04	5.96E+05	3.15E+07	1.23E-05
AM242	8.72E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.79E-17	1.60E-04	3.30E-04	1.32E-08	4.88E+01	3.15E+07	3.08E-09
AM242M	8.76E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.81E-17	1.60E-04	3.30E-04	1.69E-04	6.25E+05	3.15E+07	3.96E-05
														Total	1.25E-01

MPC-32															
Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occupancy Time (sec)	CDE (mRem)
Gases															
H 3	3.68E+02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.60E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	1.70E-05
I129	3.31E-02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.44E-14	1.60E-04	3.30E-04	1.38E-10	5.11E-01	3.15E+07	1.22E-08
KR 85	5.86E+03	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	2.55E-09	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
Crud															
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	3.30E-04	1.35E-08	5.00E+01	3.15E+07	1.57E-02
Volatiles															
SR 90	6.32E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.83E-11	1.60E-04	3.30E-04	7.27E-07	2.69E+03	3.15E+07	8.19E-02
RU106	1.59E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	4.61E-12	1.60E-04	3.30E-04	1.37E-08	5.07E+01	3.15E+07	3.88E-04
CS134	4.04E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.17E-11	1.60E-04	3.30E-04	1.10E-08	4.07E+01	3.15E+07	7.92E-04
CS137	9.82E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.84E-11	1.60E-04	3.30E-04	7.94E-09	2.94E+01	3.15E+07	1.39E-03
Fines															
PU241	8.53E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.71E-13	1.60E-04	3.30E-04	4.20E-05	1.55E+05	3.15E+07	9.58E-02
Y 90	6.32E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.75E-13	1.60E-04	3.30E-04	2.78E-10	1.03E+00	3.15E+07	4.70E-07
PM147	2.63E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.14E-13	1.60E-04	3.30E-04	1.02E-07	3.77E+02	3.15E+07	7.17E-05
CE144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	3.30E-04	4.54E-08	1.68E+02	3.15E+07	9.88E-06
PR144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	3.30E-04	1.35E-13	5.00E-04	3.15E+07	2.94E-11
EU154	5.90E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.56E-14	1.60E-04	3.30E-04	5.23E-07	1.94E+03	3.15E+07	8.25E-05
CM244	1.01E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.39E-14	1.60E-04	3.30E-04	1.17E-03	4.33E+06	3.15E+07	3.16E-01
PU238	5.81E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.52E-14	1.60E-04	3.30E-04	1.90E-03	7.03E+06	3.15E+07	2.95E-01
SB125	2.30E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.99E-15	1.60E-04	3.30E-04	2.73E-09	1.01E+01	3.15E+07	1.68E-07
EU155	1.65E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.17E-15	1.60E-04	3.30E-04	1.52E-07	5.62E+02	3.15E+07	6.71E-06
AM241	9.00E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.91E-15	1.60E-04	3.30E-04	2.17E-03	8.03E+06	3.15E+07	5.22E-02
TE125M	5.61E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.44E-15	1.60E-04	3.30E-04	3.21E-08	1.19E+02	3.15E+07	4.81E-07
PU240	4.05E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.76E-15	1.60E-04	3.30E-04	2.11E-03	7.81E+06	3.15E+07	2.29E-02
SM151	3.38E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.47E-15	1.60E-04	3.30E-04	1.38E-07	5.11E+02	3.15E+07	1.25E-06
PU239	2.04E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.87E-16	1.60E-04	3.30E-04	2.11E-03	7.81E+06	3.15E+07	1.15E-02
BA137M	9.27E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.03E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	1.59E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.91E-14	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	1.14E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.95E-16	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	3.30E-04	2.17E-03	8.03E+06	3.15E+07	2.83E-03
CM242	3.23E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.40E-16	1.60E-04	3.30E-04	4.87E-05	1.80E+05	3.15E+07	4.21E-05
CM243	3.63E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.58E-16	1.60E-04	3.30E-04	1.47E-03	5.44E+06	3.15E+07	1.43E-03
NP239	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	3.30E-04	2.03E-09	7.51E+00	3.15E+07	2.64E-09
NP237	3.88E-01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.69E-18	1.60E-04	3.30E-04	3.27E-03	1.21E+07	3.15E+07	3.39E-05
PU242	2.85E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.24E-17	1.60E-04	3.30E-04	2.01E-03	7.44E+06	3.15E+07	1.53E-04
AM242	8.72E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.79E-17	1.60E-04	3.30E-04	1.65E-07	6.11E+02	3.15E+07	3.85E-08
AM242M	8.76E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.81E-17	1.60E-04	3.30E-04	2.12E-03	7.84E+06	3.15E+07	4.97E-04
														Total	8.99E-01

MPC-32															
Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occupancy Time (sec)	CDE (mRem)
Gases															
H 3	3.68E+02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.60E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	1.70E-05
I129	3.31E-02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.44E-14	1.60E-04	3.30E-04	1.56E-06	5.77E+03	3.15E+07	1.38E-04
KR 85	5.86E+03	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	2.55E-09	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
Crud															
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	3.30E-04	1.62E-08	5.99E+01	3.15E+07	1.89E-02
Volatiles															
SR 90	6.32E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.83E-11	1.60E-04	3.30E-04	2.64E-09	9.77E+00	3.15E+07	2.97E-04
RU106	1.59E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	4.61E-12	1.60E-04	3.30E-04	1.37E-08	5.07E+01	3.15E+07	3.88E-04
CS134	4.04E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.17E-11	1.60E-04	3.30E-04	1.11E-08	4.11E+01	3.15E+07	7.99E-04
CS137	9.82E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.84E-11	1.60E-04	3.30E-04	7.93E-09	2.93E+01	3.15E+07	1.39E-03
Fines															
PU241	8.53E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.71E-13	1.60E-04	3.30E-04	1.24E-11	4.59E-02	3.15E+07	2.83E-08
Y 90	6.32E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.75E-13	1.60E-04	3.30E-04	9.52E-12	3.52E-02	3.15E+07	1.61E-08
PM147	2.63E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.14E-13	1.60E-04	3.30E-04	1.98E-14	7.33E-05	3.15E+07	1.39E-11
CE144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	3.30E-04	1.88E-09	6.96E+00	3.15E+07	4.09E-07
PR144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	3.30E-04	8.47E-15	3.13E-05	3.15E+07	1.84E-12
EU154	5.90E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.56E-14	1.60E-04	3.30E-04	7.14E-09	2.64E+01	3.15E+07	1.13E-06
CM244	1.01E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.39E-14	1.60E-04	3.30E-04	1.01E-09	3.74E+00	3.15E+07	2.73E-07
PU238	5.81E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.52E-14	1.60E-04	3.30E-04	9.62E-10	3.56E+00	3.15E+07	1.49E-07
SB125	2.30E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.99E-15	1.60E-04	3.30E-04	3.24E-10	1.20E+00	3.15E+07	1.99E-08
EU155	1.65E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.17E-15	1.60E-04	3.30E-04	2.40E-10	8.88E-01	3.15E+07	1.06E-08
AM241	9.00E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.91E-15	1.60E-04	3.30E-04	1.60E-09	5.92E+00	3.15E+07	3.85E-08
TE125M	5.61E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.44E-15	1.60E-04	3.30E-04	9.93E-11	3.67E-01	3.15E+07	1.49E-09
PU240	4.05E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.76E-15	1.60E-04	3.30E-04	9.05E-10	3.35E+00	3.15E+07	9.80E-09
SM151	3.38E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.47E-15	1.60E-04	3.30E-04	1.32E-14	4.88E-05	3.15E+07	1.19E-13
PU239	2.04E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.87E-16	1.60E-04	3.30E-04	9.03E-10	3.34E+00	3.15E+07	4.93E-09
BA137M	9.27E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.03E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	1.59E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.91E-14	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	1.14E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.95E-16	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	3.30E-04	8.29E-09	3.07E+01	3.15E+07	1.08E-08
CM242	3.23E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.40E-16	1.60E-04	3.30E-04	9.41E-10	3.48E+00	3.15E+07	8.13E-10
CM243	3.63E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.58E-16	1.60E-04	3.30E-04	3.83E-09	1.42E+01	3.15E+07	3.72E-09
NP239	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	3.30E-04	7.62E-12	2.82E-02	3.15E+07	9.92E-12
NP237	3.88E-01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.69E-18	1.60E-04	3.30E-04	1.34E-08	4.96E+01	3.15E+07	1.39E-10
PU242	2.85E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.24E-17	1.60E-04	3.30E-04	8.79E-10	3.25E+00	3.15E+07	6.70E-11
AM242	8.72E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.79E-17	1.60E-04	3.30E-04	2.52E-12	9.32E-03	3.15E+07	5.88E-13
AM242M	8.76E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.81E-17	1.60E-04	3.30E-04	5.64E-10	2.09E+00	3.15E+07	1.32E-10
														Total	2.19E-02

MPC-32															
Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occupancy Time (sec)	CEDE (mRem)
Gases															
H 3	3.68E+02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.60E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	1.70E-05
I129	3.31E-02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.44E-14	1.60E-04	3.30E-04	4.69E-08	1.74E+02	3.15E+07	4.15E-06
KR 85	5.86E+03	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	2.55E-09	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
Crud															
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	3.30E-04	5.91E-08	2.19E+02	3.15E+07	6.88E-02
Volatiles															
SR 90	6.32E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.83E-11	1.60E-04	3.30E-04	3.51E-07	1.30E+03	3.15E+07	3.95E-02
RU106	1.59E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	4.61E-12	1.60E-04	3.30E-04	1.29E-07	4.77E+02	3.15E+07	3.66E-03
CS134	4.04E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.17E-11	1.60E-04	3.30E-04	1.25E-08	4.63E+01	3.15E+07	9.00E-04
CS137	9.82E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.84E-11	1.60E-04	3.30E-04	8.63E-09	3.19E+01	3.15E+07	1.51E-03
Fines															
PU241	8.53E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.71E-13	1.60E-04	3.30E-04	2.23E-06	8.25E+03	3.15E+07	5.09E-03
Y 90	6.32E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.75E-13	1.60E-04	3.30E-04	2.28E-09	8.44E+00	3.15E+07	3.85E-06
PM147	2.63E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.14E-13	1.60E-04	3.30E-04	1.06E-08	3.92E+01	3.15E+07	7.46E-06
CE144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	3.30E-04	1.01E-07	3.74E+02	3.15E+07	2.20E-05
PR144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	3.30E-04	1.17E-11	4.33E-02	3.15E+07	2.55E-09
EU154	5.90E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.56E-14	1.60E-04	3.30E-04	7.73E-08	2.86E+02	3.15E+07	1.22E-05
CM244	1.01E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.39E-14	1.60E-04	3.30E-04	6.70E-05	2.48E+05	3.15E+07	1.81E-02
PU238	5.81E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.52E-14	1.60E-04	3.30E-04	1.06E-04	3.92E+05	3.15E+07	1.65E-02
SB125	2.30E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.99E-15	1.60E-04	3.30E-04	3.30E-09	1.22E+01	3.15E+07	2.03E-07
EU155	1.65E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.17E-15	1.60E-04	3.30E-04	1.12E-08	4.14E+01	3.15E+07	4.94E-07
AM241	9.00E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.91E-15	1.60E-04	3.30E-04	1.20E-04	4.44E+05	3.15E+07	2.89E-03
TE125M	5.61E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.44E-15	1.60E-04	3.30E-04	1.97E-09	7.29E+00	3.15E+07	2.95E-08
PU240	4.05E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.76E-15	1.60E-04	3.30E-04	1.16E-04	4.29E+05	3.15E+07	1.26E-03
SM151	3.38E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.47E-15	1.60E-04	3.30E-04	8.10E-09	3.00E+01	3.15E+07	7.32E-08
PU239	2.04E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.87E-16	1.60E-04	3.30E-04	1.16E-04	4.29E+05	3.15E+07	6.33E-04
BA137M	9.27E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.03E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	1.59E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.91E-14	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	1.14E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.95E-16	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	3.30E-04	1.19E-04	4.40E+05	3.15E+07	1.55E-04
CM242	3.23E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.40E-16	1.60E-04	3.30E-04	4.67E-06	1.73E+04	3.15E+07	4.03E-06
CM243	3.63E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.58E-16	1.60E-04	3.30E-04	8.30E-05	3.07E+05	3.15E+07	8.06E-05
NP239	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	3.30E-04	6.78E-10	2.51E+00	3.15E+07	8.83E-10
NP237	3.88E-01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.69E-18	1.60E-04	3.30E-04	1.46E-04	5.40E+05	3.15E+07	1.51E-06
PU242	2.85E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.24E-17	1.60E-04	3.30E-04	1.11E-04	4.11E+05	3.15E+07	8.46E-06
AM242	8.72E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.79E-17	1.60E-04	3.30E-04	1.58E-08	5.85E+01	3.15E+07	3.68E-09
AM242M	8.76E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.81E-17	1.60E-04	3.30E-04	1.15E-04	4.26E+05	3.15E+07	2.69E-05
														Total	1.59E-01

MPC-32															
Off-Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occupancy Time (sec)	CDE (mRem)
Gases															
H 3	3.68E+02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	7.36E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	7.83E-05
I129	3.31E-02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	6.62E-14	1.60E-04	3.30E-04	8.69E-11	3.22E-01	3.15E+07	3.54E-08
KR 85	5.86E+03	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.17E-08	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
Crud															
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	3.30E-04	4.76E-09	1.76E+01	3.15E+07	5.54E-03
Volatiles															
SR 90	6.32E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	8.42E-11	1.60E-04	3.30E-04	2.64E-09	9.77E+00	3.15E+07	1.37E-03
RU106	1.59E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.12E-11	1.60E-04	3.30E-04	1.38E-08	5.11E+01	3.15E+07	1.80E-03
CS134	4.04E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	5.38E-11	1.60E-04	3.30E-04	1.30E-08	4.81E+01	3.15E+07	4.31E-03
CS137	9.82E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.31E-10	1.60E-04	3.30E-04	8.76E-09	3.24E+01	3.15E+07	7.05E-03
Fines															
PU241	8.53E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.71E-12	1.60E-04	3.30E-04	6.82E-07	2.52E+03	3.15E+07	7.16E-03
Y 90	6.32E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.26E-12	1.60E-04	3.30E-04	9.52E-12	3.52E-02	3.15E+07	7.40E-08
PM147	2.63E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.26E-13	1.60E-04	3.30E-04	1.88E-14	6.96E-05	3.15E+07	6.08E-11
CE144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	3.30E-04	1.93E-09	7.14E+00	3.15E+07	1.93E-06
PR144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	3.30E-04	2.41E-15	8.92E-06	3.15E+07	2.41E-12
EU154	5.90E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.18E-13	1.60E-04	3.30E-04	1.17E-08	4.33E+01	3.15E+07	8.49E-06
CM244	1.01E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.02E-13	1.60E-04	3.30E-04	1.59E-05	5.88E+04	3.15E+07	1.98E-02
PU238	5.81E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.16E-13	1.60E-04	3.30E-04	2.80E-05	1.04E+05	3.15E+07	2.00E-02
SB125	2.30E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.60E-14	1.60E-04	3.30E-04	3.60E-10	1.33E+00	3.15E+07	1.02E-07
EU155	1.65E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.30E-14	1.60E-04	3.30E-04	3.56E-10	1.32E+00	3.15E+07	7.23E-08
AM241	9.00E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.80E-14	1.60E-04	3.30E-04	3.25E-05	1.20E+05	3.15E+07	3.60E-03
TE125M	5.61E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.12E-14	1.60E-04	3.30E-04	1.24E-10	4.59E-01	3.15E+07	8.56E-09
PU240	4.05E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.10E-15	1.60E-04	3.30E-04	3.18E-05	1.18E+05	3.15E+07	1.58E-03
SM151	3.38E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.76E-15	1.60E-04	3.30E-04	4.03E-14	1.49E-04	3.15E+07	1.68E-12
PU239	2.04E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.08E-15	1.60E-04	3.30E-04	3.18E-05	1.18E+05	3.15E+07	7.98E-04
BA137M	9.27E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.85E-12	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	1.59E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.18E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	1.14E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.28E-15	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	3.30E-04	3.26E-05	1.21E+05	3.15E+07	1.95E-04
CM242	3.23E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.46E-16	1.60E-04	3.30E-04	5.70E-07	2.11E+03	3.15E+07	2.26E-06
CM243	3.63E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.26E-16	1.60E-04	3.30E-04	2.07E-05	7.66E+04	3.15E+07	9.24E-05
NP239	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	3.30E-04	7.45E-11	2.76E-01	3.15E+07	4.46E-10
NP237	3.88E-01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.76E-18	1.60E-04	3.30E-04	2.96E-05	1.10E+05	3.15E+07	1.41E-06
PU242	2.85E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.70E-17	1.60E-04	3.30E-04	3.02E-05	1.12E+05	3.15E+07	1.06E-05
AM242	8.72E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.74E-16	1.60E-04	3.30E-04	1.94E-09	7.18E+00	3.15E+07	2.08E-09
AM242M	8.76E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.75E-16	1.60E-04	3.30E-04	3.21E-05	1.19E+05	3.15E+07	3.46E-05
														Total	7.34E-02

MPC-32															
Off-Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occupancy Time (sec)	CDE (mRem)
Gases															
H 3	3.68E+02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	7.36E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	7.83E-05
I129	3.31E-02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	6.62E-14	1.60E-04	3.30E-04	2.09E-10	7.73E-01	3.15E+07	8.51E-08
KR 85	5.86E+03	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.17E-08	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
Crud															
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	3.30E-04	1.84E-08	6.81E+01	3.15E+07	2.14E-02
Volatiles															
SR 90	6.32E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	8.42E-11	1.60E-04	3.30E-04	2.64E-09	9.77E+00	3.15E+07	1.37E-03
RU106	1.59E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.12E-11	1.60E-04	3.30E-04	1.37E-08	5.07E+01	3.15E+07	1.79E-03
CS134	4.04E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	5.38E-11	1.60E-04	3.30E-04	1.08E-08	4.00E+01	3.15E+07	3.58E-03
CS137	9.82E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.31E-10	1.60E-04	3.30E-04	7.84E-09	2.90E+01	3.15E+07	6.31E-03
Fines															
PU241	8.53E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.71E-12	1.60E-04	3.30E-04	3.06E-11	1.13E-01	3.15E+07	3.21E-07
Y 90	6.32E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.26E-12	1.60E-04	3.30E-04	9.52E-12	3.52E-02	3.15E+07	7.40E-08
PM147	2.63E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.26E-13	1.60E-04	3.30E-04	3.60E-14	1.33E-04	3.15E+07	1.16E-10
CE144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	3.30E-04	1.97E-09	7.29E+00	3.15E+07	1.97E-06
PR144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	3.30E-04	1.05E-14	3.89E-05	3.15E+07	1.05E-11
EU154	5.90E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.18E-13	1.60E-04	3.30E-04	1.55E-08	5.74E+01	3.15E+07	1.12E-05
CM244	1.01E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.02E-13	1.60E-04	3.30E-04	1.04E-09	3.85E+00	3.15E+07	1.29E-06
PU238	5.81E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.16E-13	1.60E-04	3.30E-04	1.00E-09	3.70E+00	3.15E+07	7.15E-07
SB125	2.30E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.60E-14	1.60E-04	3.30E-04	4.16E-10	1.54E+00	3.15E+07	1.18E-07
EU155	1.65E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.30E-14	1.60E-04	3.30E-04	6.14E-10	2.27E+00	3.15E+07	1.25E-07
AM241	9.00E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.80E-14	1.60E-04	3.30E-04	2.67E-09	9.88E+00	3.15E+07	2.96E-07
TE125M	5.61E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.12E-14	1.60E-04	3.30E-04	1.07E-10	3.96E-01	3.15E+07	7.38E-09
PU240	4.05E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.10E-15	1.60E-04	3.30E-04	9.51E-10	3.52E+00	3.15E+07	4.74E-08
SM151	3.38E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.76E-15	1.60E-04	3.30E-04	1.49E-13	5.51E-04	3.15E+07	6.20E-12
PU239	2.04E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.08E-15	1.60E-04	3.30E-04	9.22E-10	3.41E+00	3.15E+07	2.31E-08
BA137M	9.27E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.85E-12	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	1.59E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.18E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	1.14E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.28E-15	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	3.30E-04	1.52E-08	5.62E+01	3.15E+07	9.11E-08
CM242	3.23E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.46E-16	1.60E-04	3.30E-04	9.44E-10	3.49E+00	3.15E+07	3.75E-09
CM243	3.63E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.26E-16	1.60E-04	3.30E-04	6.29E-09	2.33E+01	3.15E+07	2.81E-08
NP239	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	3.30E-04	1.63E-11	6.03E-02	3.15E+07	9.77E-11
NP237	3.88E-01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.76E-18	1.60E-04	3.30E-04	1.69E-08	6.25E+01	3.15E+07	8.07E-10
PU242	2.85E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.70E-17	1.60E-04	3.30E-04	9.45E-10	3.50E+00	3.15E+07	3.31E-10
AM242	8.72E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.74E-16	1.60E-04	3.30E-04	2.94E-12	1.09E-02	3.15E+07	3.15E-12
AM242M	8.76E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.75E-16	1.60E-04	3.30E-04	1.38E-09	5.11E+00	3.15E+07	1.49E-09
														Total	3.46E-02

MPC-32															
Off-Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occupancy Time (sec)	CDE (mRem)
Gases															
H 3	3.68E+02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	7.36E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	7.83E-05
I129	3.31E-02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	6.62E-14	1.60E-04	3.30E-04	3.14E-10	1.16E+00	3.15E+07	1.28E-07
KR 85	5.86E+03	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.17E-08	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
Crud															
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	3.30E-04	3.45E-07	1.28E+03	3.15E+07	4.02E-01
Volatiles															
SR 90	6.32E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	8.42E-11	1.60E-04	3.30E-04	2.86E-06	1.06E+04	3.15E+07	1.48E+00
RU106	1.59E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.12E-11	1.60E-04	3.30E-04	1.04E-06	3.85E+03	3.15E+07	1.36E-01
CS134	4.04E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	5.38E-11	1.60E-04	3.30E-04	1.18E-08	4.37E+01	3.15E+07	3.91E-03
CS137	9.82E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.31E-10	1.60E-04	3.30E-04	8.82E-09	3.26E+01	3.15E+07	7.10E-03
Fines															
PU241	8.53E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.71E-12	1.60E-04	3.30E-04	3.18E-06	1.18E+04	3.15E+07	3.34E-02
Y 90	6.32E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.26E-12	1.60E-04	3.30E-04	9.31E-09	3.44E+01	3.15E+07	7.24E-05
PM147	2.63E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.26E-13	1.60E-04	3.30E-04	7.74E-08	2.86E+02	3.15E+07	2.50E-04
CE144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	3.30E-04	7.91E-07	2.93E+03	3.15E+07	7.92E-04
PR144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	3.30E-04	9.40E-11	3.48E-01	3.15E+07	9.41E-08
EU154	5.90E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.18E-13	1.60E-04	3.30E-04	7.92E-08	2.93E+02	3.15E+07	5.75E-05
CM244	1.01E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.02E-13	1.60E-04	3.30E-04	1.93E-05	7.14E+04	3.15E+07	2.40E-02
PU238	5.81E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.16E-13	1.60E-04	3.30E-04	3.20E-04	1.18E+06	3.15E+07	2.29E-01
SB125	2.30E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.60E-14	1.60E-04	3.30E-04	2.17E-08	8.03E+01	3.15E+07	6.14E-06
EU155	1.65E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.30E-14	1.60E-04	3.30E-04	1.19E-08	4.40E+01	3.15E+07	2.42E-06
AM241	9.00E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.80E-14	1.60E-04	3.30E-04	1.84E-05	6.81E+04	3.15E+07	2.04E-03
TE125M	5.61E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.12E-14	1.60E-04	3.30E-04	1.04E-08	3.85E+01	3.15E+07	7.18E-07
PU240	4.05E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.10E-15	1.60E-04	3.30E-04	3.23E-04	1.20E+06	3.15E+07	1.61E-02
SM151	3.38E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.76E-15	1.60E-04	3.30E-04	3.26E-09	1.21E+01	3.15E+07	1.36E-07
PU239	2.04E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.08E-15	1.60E-04	3.30E-04	3.23E-04	1.20E+06	3.15E+07	8.11E-03
BA137M	9.27E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.85E-12	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	1.59E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.18E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	1.14E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.28E-15	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	3.30E-04	1.78E-05	6.59E+04	3.15E+07	1.07E-04
CM242	3.23E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.46E-16	1.60E-04	3.30E-04	1.55E-05	5.74E+04	3.15E+07	6.16E-05
CM243	3.63E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.26E-16	1.60E-04	3.30E-04	1.94E-05	7.18E+04	3.15E+07	8.66E-05
NP239	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	3.30E-04	2.36E-09	8.73E+00	3.15E+07	1.41E-08
NP237	3.88E-01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.76E-18	1.60E-04	3.30E-04	1.61E-05	5.96E+04	3.15E+07	7.68E-07
PU242	2.85E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.70E-17	1.60E-04	3.30E-04	3.07E-04	1.14E+06	3.15E+07	1.08E-04
AM242	8.72E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.74E-16	1.60E-04	3.30E-04	5.20E-08	1.92E+02	3.15E+07	5.58E-08
AM242M	8.76E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.75E-16	1.60E-04	3.30E-04	4.20E-06	1.55E+04	3.15E+07	4.53E-06
														Total	2.34E+00

MPC-32															
Off-Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occupancy Time (sec)	CDE (mRem)
Gases															
H 3	3.68E+02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	7.36E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	7.83E-05
I129	3.31E-02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	6.62E-14	1.60E-04	3.30E-04	1.40E-10	5.18E-01	3.15E+07	5.70E-08
KR 85	5.86E+03	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.17E-08	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
Crud															
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	3.30E-04	1.72E-08	6.36E+01	3.15E+07	2.00E-02
Volatiles															
SR 90	6.32E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	8.42E-11	1.60E-04	3.30E-04	3.36E-07	1.24E+03	3.15E+07	1.74E-01
RU106	1.59E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.12E-11	1.60E-04	3.30E-04	1.37E-08	5.07E+01	3.15E+07	1.79E-03
CS134	4.04E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	5.38E-11	1.60E-04	3.30E-04	1.18E-08	4.37E+01	3.15E+07	3.91E-03
CS137	9.82E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.31E-10	1.60E-04	3.30E-04	8.30E-09	3.07E+01	3.15E+07	6.68E-03
Fines															
PU241	8.53E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.71E-12	1.60E-04	3.30E-04	3.36E-06	1.24E+04	3.15E+07	3.53E-02
Y 90	6.32E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.26E-12	1.60E-04	3.30E-04	2.79E-10	1.03E+00	3.15E+07	2.17E-06
PM147	2.63E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.26E-13	1.60E-04	3.30E-04	8.16E-09	3.02E+01	3.15E+07	2.64E-05
CE144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	3.30E-04	2.67E-08	9.88E+01	3.15E+07	2.67E-05
PR144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	3.30E-04	8.08E-14	2.99E-04	3.15E+07	8.09E-11
EU154	5.90E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.18E-13	1.60E-04	3.30E-04	1.06E-07	3.92E+02	3.15E+07	7.69E-05
CM244	1.01E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.02E-13	1.60E-04	3.30E-04	9.38E-05	3.47E+05	3.15E+07	1.17E-01
PU238	5.81E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.16E-13	1.60E-04	3.30E-04	1.52E-04	5.62E+05	3.15E+07	1.09E-01
SB125	2.30E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.60E-14	1.60E-04	3.30E-04	6.49E-10	2.40E+00	3.15E+07	1.84E-07
EU155	1.65E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.30E-14	1.60E-04	3.30E-04	1.43E-08	5.29E+01	3.15E+07	2.90E-06
AM241	9.00E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.80E-14	1.60E-04	3.30E-04	1.74E-04	6.44E+05	3.15E+07	1.93E-02
TE125M	5.61E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.12E-14	1.60E-04	3.30E-04	3.01E-09	1.11E+01	3.15E+07	2.08E-07
PU240	4.05E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.10E-15	1.60E-04	3.30E-04	1.69E-04	6.25E+05	3.15E+07	8.42E-03
SM151	3.38E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.76E-15	1.60E-04	3.30E-04	1.10E-08	4.07E+01	3.15E+07	4.57E-07
PU239	2.04E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.08E-15	1.60E-04	3.30E-04	1.69E-04	6.25E+05	3.15E+07	4.24E-03
BA137M	9.27E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.85E-12	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	1.59E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.18E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	1.14E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.28E-15	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	3.30E-04	1.73E-04	6.40E+05	3.15E+07	1.04E-03
CM242	3.23E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.46E-16	1.60E-04	3.30E-04	3.90E-06	1.44E+04	3.15E+07	1.55E-05
CM243	3.63E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.26E-16	1.60E-04	3.30E-04	1.18E-04	4.37E+05	3.15E+07	5.27E-04
NP239	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	3.30E-04	2.08E-10	7.70E-01	3.15E+07	1.25E-09
NP237	3.88E-01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.76E-18	1.60E-04	3.30E-04	2.62E-04	9.69E+05	3.15E+07	1.25E-05
PU242	2.85E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.70E-17	1.60E-04	3.30E-04	1.61E-04	5.96E+05	3.15E+07	5.64E-05
AM242	8.72E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.74E-16	1.60E-04	3.30E-04	1.32E-08	4.88E+01	3.15E+07	1.42E-08
AM242M	8.76E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.75E-16	1.60E-04	3.30E-04	1.69E-04	6.25E+05	3.15E+07	1.82E-04
														Total	5.01E-01

MPC-32															
Off-Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occupancy Time (sec)	CDE (mRem)
Gases															
H 3	3.68E+02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	7.36E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	7.83E-05
I129	3.31E-02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	6.62E-14	1.60E-04	3.30E-04	1.38E-10	5.11E-01	3.15E+07	5.62E-08
KR 85	5.86E+03	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.17E-08	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
Crud															
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	3.30E-04	1.35E-08	5.00E+01	3.15E+07	1.57E-02
Volatiles															
SR 90	6.32E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	8.42E-11	1.60E-04	3.30E-04	7.27E-07	2.69E+03	3.15E+07	3.77E-01
RU106	1.59E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.12E-11	1.60E-04	3.30E-04	1.37E-08	5.07E+01	3.15E+07	1.79E-03
CS134	4.04E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	5.38E-11	1.60E-04	3.30E-04	1.10E-08	4.07E+01	3.15E+07	3.64E-03
CS137	9.82E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.31E-10	1.60E-04	3.30E-04	7.94E-09	2.94E+01	3.15E+07	6.39E-03
Fines															
PU241	8.53E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.71E-12	1.60E-04	3.30E-04	4.20E-05	1.55E+05	3.15E+07	4.41E-01
Y 90	6.32E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.26E-12	1.60E-04	3.30E-04	2.78E-10	1.03E+00	3.15E+07	2.16E-06
PM147	2.63E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.26E-13	1.60E-04	3.30E-04	1.02E-07	3.77E+02	3.15E+07	3.30E-04
CE144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	3.30E-04	4.54E-08	1.68E+02	3.15E+07	4.55E-05
PR144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	3.30E-04	1.35E-13	5.00E-04	3.15E+07	1.35E-10
EU154	5.90E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.18E-13	1.60E-04	3.30E-04	5.23E-07	1.94E+03	3.15E+07	3.80E-04
CM244	1.01E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.02E-13	1.60E-04	3.30E-04	1.17E-03	4.33E+06	3.15E+07	1.45E+00
PU238	5.81E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.16E-13	1.60E-04	3.30E-04	1.90E-03	7.03E+06	3.15E+07	1.36E+00
SB125	2.30E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.60E-14	1.60E-04	3.30E-04	2.73E-09	1.01E+01	3.15E+07	7.72E-07
EU155	1.65E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.30E-14	1.60E-04	3.30E-04	1.52E-07	5.62E+02	3.15E+07	3.09E-05
AM241	9.00E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.80E-14	1.60E-04	3.30E-04	2.17E-03	8.03E+06	3.15E+07	2.40E-01
TE125M	5.61E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.12E-14	1.60E-04	3.30E-04	3.21E-08	1.19E+02	3.15E+07	2.21E-06
PU240	4.05E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.10E-15	1.60E-04	3.30E-04	2.11E-03	7.81E+06	3.15E+07	1.05E-01
SM151	3.38E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.76E-15	1.60E-04	3.30E-04	1.38E-07	5.11E+02	3.15E+07	5.74E-06
PU239	2.04E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.08E-15	1.60E-04	3.30E-04	2.11E-03	7.81E+06	3.15E+07	5.30E-02
BA137M	9.27E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.85E-12	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	1.59E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.18E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	1.14E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.28E-15	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	3.30E-04	2.17E-03	8.03E+06	3.15E+07	1.30E-02
CM242	3.23E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.46E-16	1.60E-04	3.30E-04	4.87E-05	1.80E+05	3.15E+07	1.94E-04
CM243	3.63E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.26E-16	1.60E-04	3.30E-04	1.47E-03	5.44E+06	3.15E+07	6.56E-03
NP239	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	3.30E-04	2.03E-09	7.51E+00	3.15E+07	1.22E-08
NP237	3.88E-01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.76E-18	1.60E-04	3.30E-04	3.27E-03	1.21E+07	3.15E+07	1.56E-04
PU242	2.85E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.70E-17	1.60E-04	3.30E-04	2.01E-03	7.44E+06	3.15E+07	7.05E-04
AM242	8.72E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.74E-16	1.60E-04	3.30E-04	1.65E-07	6.11E+02	3.15E+07	1.77E-07
AM242M	8.76E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.75E-16	1.60E-04	3.30E-04	2.12E-03	7.84E+06	3.15E+07	2.28E-03
														Total	4.08E+00

MPC-32															
Off-Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occupancy Time (sec)	CDE (mRem)
Gases															
H 3	3.68E+02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	7.36E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	7.83E-05
I129	3.31E-02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	6.62E-14	1.60E-04	3.30E-04	1.56E-06	5.77E+03	3.15E+07	6.35E-04
KR 85	5.86E+03	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.17E-08	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
Crud															
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	3.30E-04	1.62E-08	5.99E+01	3.15E+07	1.89E-02
Volatiles															
SR 90	6.32E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	8.42E-11	1.60E-04	3.30E-04	2.64E-09	9.77E+00	3.15E+07	1.37E-03
RU106	1.59E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.12E-11	1.60E-04	3.30E-04	1.37E-08	5.07E+01	3.15E+07	1.79E-03
CS134	4.04E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	5.38E-11	1.60E-04	3.30E-04	1.11E-08	4.11E+01	3.15E+07	3.68E-03
CS137	9.82E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.31E-10	1.60E-04	3.30E-04	7.93E-09	2.93E+01	3.15E+07	6.39E-03
Fines															
PU241	8.53E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.71E-12	1.60E-04	3.30E-04	1.24E-11	4.59E-02	3.15E+07	1.30E-07
Y 90	6.32E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.26E-12	1.60E-04	3.30E-04	9.52E-12	3.52E-02	3.15E+07	7.40E-08
PM147	2.63E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.26E-13	1.60E-04	3.30E-04	1.98E-14	7.33E-05	3.15E+07	6.41E-11
CE144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	3.30E-04	1.88E-09	6.96E+00	3.15E+07	1.88E-06
PR144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	3.30E-04	8.47E-15	3.13E-05	3.15E+07	8.48E-12
EU154	5.90E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.18E-13	1.60E-04	3.30E-04	7.14E-09	2.64E+01	3.15E+07	5.18E-06
CM244	1.01E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.02E-13	1.60E-04	3.30E-04	1.01E-09	3.74E+00	3.15E+07	1.25E-06
PU238	5.81E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.16E-13	1.60E-04	3.30E-04	9.62E-10	3.56E+00	3.15E+07	6.88E-07
SB125	2.30E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.60E-14	1.60E-04	3.30E-04	3.24E-10	1.20E+00	3.15E+07	9.16E-08
EU155	1.65E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.30E-14	1.60E-04	3.30E-04	2.40E-10	8.88E-01	3.15E+07	4.87E-08
AM241	9.00E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.80E-14	1.60E-04	3.30E-04	1.60E-09	5.92E+00	3.15E+07	1.77E-07
TE125M	5.61E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.12E-14	1.60E-04	3.30E-04	9.93E-11	3.67E-01	3.15E+07	6.85E-09
PU240	4.05E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.10E-15	1.60E-04	3.30E-04	9.05E-10	3.35E+00	3.15E+07	4.51E-08
SM151	3.38E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.76E-15	1.60E-04	3.30E-04	1.32E-14	4.88E-05	3.15E+07	5.49E-13
PU239	2.04E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.08E-15	1.60E-04	3.30E-04	9.03E-10	3.34E+00	3.15E+07	2.27E-08
BA137M	9.27E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.85E-12	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	1.59E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.18E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	1.14E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.28E-15	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	3.30E-04	8.29E-09	3.07E+01	3.15E+07	4.97E-08
CM242	3.23E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.46E-16	1.60E-04	3.30E-04	9.41E-10	3.48E+00	3.15E+07	3.74E-09
CM243	3.63E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.26E-16	1.60E-04	3.30E-04	3.83E-09	1.42E+01	3.15E+07	1.71E-08
NP239	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	3.30E-04	7.62E-12	2.82E-02	3.15E+07	4.57E-11
NP237	3.88E-01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.76E-18	1.60E-04	3.30E-04	1.34E-08	4.96E+01	3.15E+07	6.40E-10
PU242	2.85E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.70E-17	1.60E-04	3.30E-04	8.79E-10	3.25E+00	3.15E+07	3.08E-10
AM242	8.72E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.74E-16	1.60E-04	3.30E-04	2.52E-12	9.32E-03	3.15E+07	2.70E-12
AM242M	8.76E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.75E-16	1.60E-04	3.30E-04	5.64E-10	2.09E+00	3.15E+07	6.08E-10
														Total	3.28E-02

MPC-32															
Off-Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occupancy Time (sec)	CEDE (mRem)
Gases															
H 3	3.68E+02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	7.36E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	7.83E-05
I129	3.31E-02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	6.62E-14	1.60E-04	3.30E-04	4.69E-08	1.74E+02	3.15E+07	1.91E-05
KR 85	5.86E+03	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.17E-08	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
Crud															
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	3.30E-04	5.91E-08	2.19E+02	3.15E+07	6.88E-02
Volatiles															
SR 90	6.32E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	8.42E-11	1.60E-04	3.30E-04	3.51E-07	1.30E+03	3.15E+07	1.82E-01
RU106	1.59E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.12E-11	1.60E-04	3.30E-04	1.29E-07	4.77E+02	3.15E+07	1.68E-02
CS134	4.04E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	5.38E-11	1.60E-04	3.30E-04	1.25E-08	4.63E+01	3.15E+07	4.14E-03
CS137	9.82E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.31E-10	1.60E-04	3.30E-04	8.63E-09	3.19E+01	3.15E+07	6.95E-03
Fines															
PU241	8.53E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.71E-12	1.60E-04	3.30E-04	2.23E-06	8.25E+03	3.15E+07	2.34E-02
Y 90	6.32E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.26E-12	1.60E-04	3.30E-04	2.28E-09	8.44E+00	3.15E+07	1.77E-05
PM147	2.63E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.26E-13	1.60E-04	3.30E-04	1.06E-08	3.92E+01	3.15E+07	3.43E-05
CE144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	3.30E-04	1.01E-07	3.74E+02	3.15E+07	1.01E-04
PR144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	3.30E-04	1.17E-11	4.33E-02	3.15E+07	1.17E-08
EU154	5.90E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.18E-13	1.60E-04	3.30E-04	7.73E-08	2.86E+02	3.15E+07	5.61E-05
CM244	1.01E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.02E-13	1.60E-04	3.30E-04	6.70E-05	2.48E+05	3.15E+07	8.32E-02
PU238	5.81E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.16E-13	1.60E-04	3.30E-04	1.06E-04	3.92E+05	3.15E+07	7.58E-02
SB125	2.30E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.60E-14	1.60E-04	3.30E-04	3.30E-09	1.22E+01	3.15E+07	9.33E-07
EU155	1.65E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.30E-14	1.60E-04	3.30E-04	1.12E-08	4.14E+01	3.15E+07	2.27E-06
AM241	9.00E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.80E-14	1.60E-04	3.30E-04	1.20E-04	4.44E+05	3.15E+07	1.33E-02
TE125M	5.61E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.12E-14	1.60E-04	3.30E-04	1.97E-09	7.29E+00	3.15E+07	1.36E-07
PU240	4.05E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.10E-15	1.60E-04	3.30E-04	1.16E-04	4.29E+05	3.15E+07	5.78E-03
SM151	3.38E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.76E-15	1.60E-04	3.30E-04	8.10E-09	3.00E+01	3.15E+07	3.37E-07
PU239	2.04E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.08E-15	1.60E-04	3.30E-04	1.16E-04	4.29E+05	3.15E+07	2.91E-03
BA137M	9.27E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.85E-12	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	1.59E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.18E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	1.14E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.28E-15	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	3.30E-04	1.19E-04	4.40E+05	3.15E+07	7.13E-04
CM242	3.23E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.46E-16	1.60E-04	3.30E-04	4.67E-06	1.73E+04	3.15E+07	1.86E-05
CM243	3.63E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.26E-16	1.60E-04	3.30E-04	8.30E-05	3.07E+05	3.15E+07	3.71E-04
NP239	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	3.30E-04	6.78E-10	2.51E+00	3.15E+07	4.06E-09
NP237	3.88E-01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.76E-18	1.60E-04	3.30E-04	1.46E-04	5.40E+05	3.15E+07	6.97E-06
PU242	2.85E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.70E-17	1.60E-04	3.30E-04	1.11E-04	4.11E+05	3.15E+07	3.89E-05
AM242	8.72E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.74E-16	1.60E-04	3.30E-04	1.58E-08	5.85E+01	3.15E+07	1.69E-08
AM242M	8.76E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.75E-16	1.60E-04	3.30E-04	1.15E-04	4.26E+05	3.15E+07	1.24E-04
														Total	4.85E-01

MPC-32														
Accident Conditions														
Committed Dose Equivalent From Inhalation														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occupancy Time (sec)	CDE (mRem)
Gases														
H 3	3.68E+02	100%	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.11E-08	8.00E-03	3.30E-04	1.73E-11	6.40E-02	2.59E+06	4.88E-03
I129	3.31E-02	100%	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.00E-12	8.00E-03	3.30E-04	8.69E-11	3.22E-01	2.59E+06	2.20E-06
KR 85	5.86E+03	100%	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.77E-07	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
Crud														
Co-60	2.18E+01	100%	32	6.19E+06	1.95E-05	3.15E-12	1.00	2.20E-09	8.00E-03	3.30E-04	4.76E-09	1.76E+01	2.59E+06	2.65E-01
Volatiles														
SR 90	6.32E+04	100%	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.28E-09	8.00E-03	3.30E-04	2.64E-09	9.77E+00	2.59E+06	8.52E-02
RU106	1.59E+04	100%	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	3.21E-10	8.00E-03	3.30E-04	1.38E-08	5.11E+01	2.59E+06	1.12E-01
CS134	4.04E+04	100%	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	8.15E-10	8.00E-03	3.30E-04	1.30E-08	4.81E+01	2.59E+06	2.68E-01
CS137	9.82E+04	100%	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.98E-09	8.00E-03	3.30E-04	8.76E-09	3.24E+01	2.59E+06	4.39E-01
Fines														
PU241	8.53E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.58E-11	8.00E-03	3.30E-04	6.82E-07	2.52E+03	2.59E+06	4.46E-01
Y 90	6.32E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.91E-11	8.00E-03	3.30E-04	9.52E-12	3.52E-02	2.59E+06	4.61E-06
PM147	2.63E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	7.96E-12	8.00E-03	3.30E-04	1.88E-14	6.96E-05	2.59E+06	3.79E-09
CE144	8.14E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	3.30E-04	1.93E-09	7.14E+00	2.59E+06	1.20E-04
PR144	8.14E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	3.30E-04	2.41E-15	8.92E-06	2.59E+06	1.50E-10
EU154	5.90E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.79E-12	8.00E-03	3.30E-04	1.17E-08	4.33E+01	2.59E+06	5.29E-04
CM244	1.01E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.06E-12	8.00E-03	3.30E-04	1.59E-05	5.88E+04	2.59E+06	1.23E+00
PU238	5.81E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.76E-12	8.00E-03	3.30E-04	2.80E-05	1.04E+05	2.59E+06	1.25E+00
SB125	2.30E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.96E-13	8.00E-03	3.30E-04	3.60E-10	1.33E+00	2.59E+06	6.34E-06
EU155	1.65E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.99E-13	8.00E-03	3.30E-04	3.56E-10	1.32E+00	2.59E+06	4.50E-06
AM241	9.00E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.72E-13	8.00E-03	3.30E-04	3.25E-05	1.20E+05	2.59E+06	2.24E-01
TE125M	5.61E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.70E-13	8.00E-03	3.30E-04	1.24E-10	4.59E-01	2.59E+06	5.33E-07
PU240	4.05E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.23E-13	8.00E-03	3.30E-04	3.18E-05	1.18E+05	2.59E+06	9.87E-02
SM151	3.38E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.02E-13	8.00E-03	3.30E-04	4.03E-14	1.49E-04	2.59E+06	1.04E-10
PU239	2.04E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.17E-14	8.00E-03	3.30E-04	3.18E-05	1.18E+05	2.59E+06	4.97E-02
BA137M	9.27E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.81E-11	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
RH106	1.59E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.81E-12	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
PR144M	1.14E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.45E-14	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
AM243	4.87E+01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	3.30E-04	3.26E-05	1.21E+05	2.59E+06	1.22E-02
CM242	3.23E+01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	9.78E-15	8.00E-03	3.30E-04	5.70E-07	2.11E+03	2.59E+06	1.41E-04
CM243	3.63E+01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.10E-14	8.00E-03	3.30E-04	2.07E-05	7.66E+04	2.59E+06	5.76E-03
NP239	4.87E+01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	3.30E-04	7.45E-11	2.76E-01	2.59E+06	2.78E-08
NP237	3.88E-01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.17E-16	8.00E-03	3.30E-04	2.96E-05	1.10E+05	2.59E+06	8.80E-05
PU242	2.85E+00	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	8.63E-16	8.00E-03	3.30E-04	3.02E-05	1.12E+05	2.59E+06	6.60E-04
AM242	8.72E+00	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.64E-15	8.00E-03	3.30E-04	1.94E-09	7.18E+00	2.59E+06	1.30E-07
AM242M	8.76E+00	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.65E-15	8.00E-03	3.30E-04	3.21E-05	1.19E+05	2.59E+06	2.15E-03
													Total	4.49E+00

MPC-32														
Accident Conditions														
Committed Dose Equivalent From Inhalation														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occupancy Time (sec)	CDE (mRem)
Gases														
H 3	3.68E+02	100%	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.11E-08	8.00E-03	3.30E-04	1.73E-11	6.40E-02	2.59E+06	4.88E-03
I129	3.31E-02	100%	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.00E-12	8.00E-03	3.30E-04	2.09E-10	7.73E-01	2.59E+06	5.30E-06
KR 85	5.86E+03	100%	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.77E-07	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
Crud														
Co-60	2.18E+01	100%	32	6.19E+06	1.95E-05	3.15E-12	1.00	2.20E-09	8.00E-03	3.30E-04	1.84E-08	6.81E+01	2.59E+06	1.02E+00
Volatiles														
SR 90	6.32E+04	100%	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.28E-09	8.00E-03	3.30E-04	2.64E-09	9.77E+00	2.59E+06	8.52E-02
RU106	1.59E+04	100%	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	3.21E-10	8.00E-03	3.30E-04	1.37E-08	5.07E+01	2.59E+06	1.11E-01
CS134	4.04E+04	100%	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	8.15E-10	8.00E-03	3.30E-04	1.08E-08	4.00E+01	2.59E+06	2.23E-01
CS137	9.82E+04	100%	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.98E-09	8.00E-03	3.30E-04	7.84E-09	2.90E+01	2.59E+06	3.93E-01
Fines														
PU241	8.53E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.58E-11	8.00E-03	3.30E-04	3.06E-11	1.13E-01	2.59E+06	2.00E-05
Y 90	6.32E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.91E-11	8.00E-03	3.30E-04	9.52E-12	3.52E-02	2.59E+06	4.61E-06
PM147	2.63E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	7.96E-12	8.00E-03	3.30E-04	3.60E-14	1.33E-04	2.59E+06	7.25E-09
CE144	8.14E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	3.30E-04	1.97E-09	7.29E+00	2.59E+06	1.23E-04
PR144	8.14E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	3.30E-04	1.05E-14	3.89E-05	2.59E+06	6.55E-10
EU154	5.90E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.79E-12	8.00E-03	3.30E-04	1.55E-08	5.74E+01	2.59E+06	7.01E-04
CM244	1.01E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.06E-12	8.00E-03	3.30E-04	1.04E-09	3.85E+00	2.59E+06	8.05E-05
PU238	5.81E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.76E-12	8.00E-03	3.30E-04	1.00E-09	3.70E+00	2.59E+06	4.45E-05
SB125	2.30E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.96E-13	8.00E-03	3.30E-04	4.16E-10	1.54E+00	2.59E+06	7.33E-06
EU155	1.65E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.99E-13	8.00E-03	3.30E-04	6.14E-10	2.27E+00	2.59E+06	7.76E-06
AM241	9.00E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.72E-13	8.00E-03	3.30E-04	2.67E-09	9.88E+00	2.59E+06	1.84E-05
TE125M	5.61E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.70E-13	8.00E-03	3.30E-04	1.07E-10	3.96E-01	2.59E+06	4.60E-07
PU240	4.05E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.23E-13	8.00E-03	3.30E-04	9.51E-10	3.52E+00	2.59E+06	2.95E-06
SM151	3.38E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.02E-13	8.00E-03	3.30E-04	1.49E-13	5.51E-04	2.59E+06	3.86E-10
PU239	2.04E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.17E-14	8.00E-03	3.30E-04	9.22E-10	3.41E+00	2.59E+06	1.44E-06
BA137M	9.27E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.81E-11	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
RH106	1.59E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.81E-12	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
PR144M	1.14E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.45E-14	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
AM243	4.87E+01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	3.30E-04	1.52E-08	5.62E+01	2.59E+06	5.67E-06
CM242	3.23E+01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	9.78E-15	8.00E-03	3.30E-04	9.44E-10	3.49E+00	2.59E+06	2.34E-07
CM243	3.63E+01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.10E-14	8.00E-03	3.30E-04	6.29E-09	2.33E+01	2.59E+06	1.75E-06
NP239	4.87E+01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	3.30E-04	1.63E-11	6.03E-02	2.59E+06	6.08E-09
NP237	3.88E-01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.17E-16	8.00E-03	3.30E-04	1.69E-08	6.25E+01	2.59E+06	5.02E-08
PU242	2.85E+00	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	8.63E-16	8.00E-03	3.30E-04	9.45E-10	3.50E+00	2.59E+06	2.06E-08
AM242	8.72E+00	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.64E-15	8.00E-03	3.30E-04	2.94E-12	1.09E-02	2.59E+06	1.96E-10
AM242M	8.76E+00	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.65E-15	8.00E-03	3.30E-04	1.38E-09	5.11E+00	2.59E+06	9.26E-08
													Total	1.84E+00

MPC-32														
Accident Conditions														
Committed Dose Equivalent From Inhalation														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occupancy Time (sec)	CDE (mRem)
Gases														
H 3	3.68E+02	100%	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.11E-08	8.00E-03	3.30E-04	1.73E-11	6.40E-02	2.59E+06	4.88E-03
I129	3.31E-02	100%	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.00E-12	8.00E-03	3.30E-04	3.14E-10	1.16E+00	2.59E+06	7.96E-06
KR 85	5.86E+03	100%	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.77E-07	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
Crud														
Co-60	2.18E+01	100%	32	6.19E+06	1.95E-05	3.15E-12	1.00	2.20E-09	8.00E-03	3.30E-04	3.45E-07	1.28E+03	2.59E+06	1.92E+01
Volatiles														
SR 90	6.32E+04	100%	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.28E-09	8.00E-03	3.30E-04	2.86E-06	1.06E+04	2.59E+06	9.23E+01
RU106	1.59E+04	100%	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	3.21E-10	8.00E-03	3.30E-04	1.04E-06	3.85E+03	2.59E+06	8.45E+00
CS134	4.04E+04	100%	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	8.15E-10	8.00E-03	3.30E-04	1.18E-08	4.37E+01	2.59E+06	2.44E-01
CS137	9.82E+04	100%	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.98E-09	8.00E-03	3.30E-04	8.82E-09	3.26E+01	2.59E+06	4.42E-01
Fines														
PU241	8.53E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.58E-11	8.00E-03	3.30E-04	3.18E-06	1.18E+04	2.59E+06	2.08E+00
Y 90	6.32E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.91E-11	8.00E-03	3.30E-04	9.31E-09	3.44E+01	2.59E+06	4.51E-03
PM147	2.63E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	7.96E-12	8.00E-03	3.30E-04	7.74E-08	2.86E+02	2.59E+06	1.56E-02
CE144	8.14E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	3.30E-04	7.91E-07	2.93E+03	2.59E+06	4.93E-02
PR144	8.14E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	3.30E-04	9.40E-11	3.48E-01	2.59E+06	5.86E-06
EU154	5.90E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.79E-12	8.00E-03	3.30E-04	7.92E-08	2.93E+02	2.59E+06	3.58E-03
CM244	1.01E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.06E-12	8.00E-03	3.30E-04	1.93E-05	7.14E+04	2.59E+06	1.49E+00
PU238	5.81E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.76E-12	8.00E-03	3.30E-04	3.20E-04	1.18E+06	2.59E+06	1.42E+01
SB125	2.30E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.96E-13	8.00E-03	3.30E-04	2.17E-08	8.03E+01	2.59E+06	3.82E-04
EU155	1.65E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.99E-13	8.00E-03	3.30E-04	1.19E-08	4.40E+01	2.59E+06	1.50E-04
AM241	9.00E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.72E-13	8.00E-03	3.30E-04	1.84E-05	6.81E+04	2.59E+06	1.27E-01
TE125M	5.61E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.70E-13	8.00E-03	3.30E-04	1.04E-08	3.85E+01	2.59E+06	4.47E-05
PU240	4.05E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.23E-13	8.00E-03	3.30E-04	3.23E-04	1.20E+06	2.59E+06	1.00E+00
SM151	3.38E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.02E-13	8.00E-03	3.30E-04	3.26E-09	1.21E+01	2.59E+06	8.44E-06
PU239	2.04E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.17E-14	8.00E-03	3.30E-04	3.23E-04	1.20E+06	2.59E+06	5.05E-01
BA137M	9.27E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.81E-11	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
RH106	1.59E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.81E-12	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
PR144M	1.14E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.45E-14	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
AM243	4.87E+01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	3.30E-04	1.78E-05	6.59E+04	2.59E+06	6.64E-03
CM242	3.23E+01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	9.78E-15	8.00E-03	3.30E-04	1.55E-05	5.74E+04	2.59E+06	3.84E-03
CM243	3.63E+01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.10E-14	8.00E-03	3.30E-04	1.94E-05	7.18E+04	2.59E+06	5.40E-03
NP239	4.87E+01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	3.30E-04	2.36E-09	8.73E+00	2.59E+06	8.81E-07
NP237	3.88E-01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.17E-16	8.00E-03	3.30E-04	1.61E-05	5.96E+04	2.59E+06	4.79E-05
PU242	2.85E+00	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	8.63E-16	8.00E-03	3.30E-04	3.07E-04	1.14E+06	2.59E+06	6.70E-03
AM242	8.72E+00	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.64E-15	8.00E-03	3.30E-04	5.20E-08	1.92E+02	2.59E+06	3.47E-06
AM242M	8.76E+00	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.65E-15	8.00E-03	3.30E-04	4.20E-06	1.55E+04	2.59E+06	2.82E-04
													Total	1.40E+02

MPC-32														
Accident Conditions														
Committed Dose Equivalent From Inhalation														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occupancy Time (sec)	CDE (mRem)
Gases														
H 3	3.68E+02	100%	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.11E-08	8.00E-03	3.30E-04	1.73E-11	6.40E-02	2.59E+06	4.88E-03
I129	3.31E-02	100%	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.00E-12	8.00E-03	3.30E-04	1.40E-10	5.18E-01	2.59E+06	3.55E-06
KR 85	5.86E+03	100%	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.77E-07	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
Crud														
Co-60	2.18E+01	100%	32	6.19E+06	1.95E-05	3.15E-12	1.00	2.20E-09	8.00E-03	3.30E-04	1.72E-08	6.36E+01	2.59E+06	9.56E-01
Volatiles														
SR 90	6.32E+04	100%	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.28E-09	8.00E-03	3.30E-04	3.36E-07	1.24E+03	2.59E+06	1.08E+01
RU106	1.59E+04	100%	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	3.21E-10	8.00E-03	3.30E-04	1.37E-08	5.07E+01	2.59E+06	1.11E-01
CS134	4.04E+04	100%	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	8.15E-10	8.00E-03	3.30E-04	1.18E-08	4.37E+01	2.59E+06	2.44E-01
CS137	9.82E+04	100%	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.98E-09	8.00E-03	3.30E-04	8.30E-09	3.07E+01	2.59E+06	4.16E-01
Fines														
PU241	8.53E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.58E-11	8.00E-03	3.30E-04	3.36E-06	1.24E+04	2.59E+06	2.20E+00
Y 90	6.32E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.91E-11	8.00E-03	3.30E-04	2.79E-10	1.03E+00	2.59E+06	1.35E-04
PM147	2.63E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	7.96E-12	8.00E-03	3.30E-04	8.16E-09	3.02E+01	2.59E+06	1.64E-03
CE144	8.14E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	3.30E-04	2.67E-08	9.88E+01	2.59E+06	1.67E-03
PR144	8.14E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	3.30E-04	8.08E-14	2.99E-04	2.59E+06	5.04E-09
EU154	5.90E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.79E-12	8.00E-03	3.30E-04	1.06E-07	3.92E+02	2.59E+06	4.79E-03
CM244	1.01E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.06E-12	8.00E-03	3.30E-04	9.38E-05	3.47E+05	2.59E+06	7.26E+00
PU238	5.81E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.76E-12	8.00E-03	3.30E-04	1.52E-04	5.62E+05	2.59E+06	6.77E+00
SB125	2.30E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.96E-13	8.00E-03	3.30E-04	6.49E-10	2.40E+00	2.59E+06	1.14E-05
EU155	1.65E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.99E-13	8.00E-03	3.30E-04	1.43E-08	5.29E+01	2.59E+06	1.81E-04
AM241	9.00E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.72E-13	8.00E-03	3.30E-04	1.74E-04	6.44E+05	2.59E+06	1.20E+00
TE125M	5.61E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.70E-13	8.00E-03	3.30E-04	3.01E-09	1.11E+01	2.59E+06	1.29E-05
PU240	4.05E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.23E-13	8.00E-03	3.30E-04	1.69E-04	6.25E+05	2.59E+06	5.24E-01
SM151	3.38E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.02E-13	8.00E-03	3.30E-04	1.10E-08	4.07E+01	2.59E+06	2.85E-05
PU239	2.04E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.17E-14	8.00E-03	3.30E-04	1.69E-04	6.25E+05	2.59E+06	2.64E-01
BA137M	9.27E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.81E-11	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
RH106	1.59E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.81E-12	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
PR144M	1.14E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.45E-14	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
AM243	4.87E+01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	3.30E-04	1.73E-04	6.40E+05	2.59E+06	6.46E-02
CM242	3.23E+01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	9.78E-15	8.00E-03	3.30E-04	3.90E-06	1.44E+04	2.59E+06	9.65E-04
CM243	3.63E+01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.10E-14	8.00E-03	3.30E-04	1.18E-04	4.37E+05	2.59E+06	3.28E-02
NP239	4.87E+01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	3.30E-04	2.08E-10	7.70E-01	2.59E+06	7.76E-08
NP237	3.88E-01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.17E-16	8.00E-03	3.30E-04	2.62E-04	9.69E+05	2.59E+06	7.79E-04
PU242	2.85E+00	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	8.63E-16	8.00E-03	3.30E-04	1.61E-04	5.96E+05	2.59E+06	3.52E-03
AM242	8.72E+00	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.64E-15	8.00E-03	3.30E-04	1.32E-08	4.88E+01	2.59E+06	8.82E-07
AM242M	8.76E+00	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.65E-15	8.00E-03	3.30E-04	1.69E-04	6.25E+05	2.59E+06	1.13E-02
													Total	3.09E+01

MPC-32														
Accident Conditions														
Committed Dose Equivalent From Inhalation														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occupancy Time (sec)	CDE (mRem)
Gases														
H 3	3.68E+02	100%	32	6.19E+06	1.95E-05	3.16E-12	0.30	1.12E-08	8.00E-03	3.30E-04	1.73E-11	6.40E-02	2.59E+06	4.89E-03
I129	3.31E-02	100%	32	6.19E+06	1.95E-05	3.16E-12	0.30	1.00E-12	8.00E-03	3.30E-04	1.38E-10	5.11E-01	2.59E+06	3.51E-06
KR 85	5.86E+03	100%	32	6.19E+06	1.95E-05	3.16E-12	0.30	1.78E-07	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
Crud														
Co-60	2.18E+01	100%	32	6.19E+06	1.95E-05	3.16E-12	1.00	2.20E-09	8.00E-03	3.30E-04	1.35E-08	5.00E+01	2.59E+06	7.52E-01
Volatiles														
SR 90	6.32E+04	100%	32	6.19E+06	1.95E-05	3.16E-12	2.00E-04	1.28E-09	8.00E-03	3.30E-04	7.27E-07	2.69E+03	2.59E+06	2.35E+01
RU106	1.59E+04	100%	32	6.19E+06	1.95E-05	3.16E-12	2.00E-04	3.21E-10	8.00E-03	3.30E-04	1.37E-08	5.07E+01	2.59E+06	1.11E-01
CS134	4.04E+04	100%	32	6.19E+06	1.95E-05	3.16E-12	2.00E-04	8.16E-10	8.00E-03	3.30E-04	1.10E-08	4.07E+01	2.59E+06	2.27E-01
CS137	9.82E+04	100%	32	6.19E+06	1.95E-05	3.16E-12	2.00E-04	1.98E-09	8.00E-03	3.30E-04	7.94E-09	2.94E+01	2.59E+06	3.99E-01
Fines														
PU241	8.53E+04	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	2.59E-11	8.00E-03	3.30E-04	4.20E-05	1.55E+05	2.59E+06	2.75E+01
Y 90	6.32E+04	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	1.92E-11	8.00E-03	3.30E-04	2.78E-10	1.03E+00	2.59E+06	1.35E-04
PM147	2.63E+04	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	7.97E-12	8.00E-03	3.30E-04	1.02E-07	3.77E+02	2.59E+06	2.06E-02
CE144	8.14E+03	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	2.47E-12	8.00E-03	3.30E-04	4.54E-08	1.68E+02	2.59E+06	2.84E-03
PR144	8.14E+03	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	2.47E-12	8.00E-03	3.30E-04	1.35E-13	5.00E-04	2.59E+06	8.43E-09
EU154	5.90E+03	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	1.79E-12	8.00E-03	3.30E-04	5.23E-07	1.94E+03	2.59E+06	2.37E-02
CM244	1.01E+04	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	3.06E-12	8.00E-03	3.30E-04	1.17E-03	4.33E+06	2.59E+06	9.07E+01
PU238	5.81E+03	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	1.76E-12	8.00E-03	3.30E-04	1.90E-03	7.03E+06	2.59E+06	8.47E+01
SB125	2.30E+03	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	6.97E-13	8.00E-03	3.30E-04	2.73E-09	1.01E+01	2.59E+06	4.82E-05
EU155	1.65E+03	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	5.00E-13	8.00E-03	3.30E-04	1.52E-07	5.62E+02	2.59E+06	1.92E-03
AM241	9.00E+02	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	2.73E-13	8.00E-03	3.30E-04	2.17E-03	8.03E+06	2.59E+06	1.50E+01
TE125M	5.61E+02	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	1.70E-13	8.00E-03	3.30E-04	3.21E-08	1.19E+02	2.59E+06	1.38E-04
PU240	4.05E+02	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	1.23E-13	8.00E-03	3.30E-04	2.11E-03	7.81E+06	2.59E+06	6.56E+00
SM151	3.38E+02	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	1.02E-13	8.00E-03	3.30E-04	1.38E-07	5.11E+02	2.59E+06	3.58E-04
PU239	2.04E+02	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	6.18E-14	8.00E-03	3.30E-04	2.11E-03	7.81E+06	2.59E+06	3.30E+00
BA137M	9.27E+04	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	2.81E-11	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
RH106	1.59E+04	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	4.82E-12	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
PR144M	1.14E+02	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	3.46E-14	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
AM243	4.87E+01	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	1.48E-14	8.00E-03	3.30E-04	2.17E-03	8.03E+06	2.59E+06	8.11E-01
CM242	3.23E+01	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	9.79E-15	8.00E-03	3.30E-04	4.87E-05	1.80E+05	2.59E+06	1.21E-02
CM243	3.63E+01	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	1.10E-14	8.00E-03	3.30E-04	1.47E-03	5.44E+06	2.59E+06	4.10E-01
NP239	4.87E+01	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	1.48E-14	8.00E-03	3.30E-04	2.03E-09	7.51E+00	2.59E+06	7.59E-07
NP237	3.88E-01	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	1.18E-16	8.00E-03	3.30E-04	3.27E-03	1.21E+07	2.59E+06	9.74E-03
PU242	2.85E+00	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	8.64E-16	8.00E-03	3.30E-04	2.01E-03	7.44E+06	2.59E+06	4.40E-02
AM242	8.72E+00	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	2.64E-15	8.00E-03	3.30E-04	1.65E-07	6.11E+02	2.59E+06	1.10E-05
AM242M	8.76E+00	10%	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	2.66E-15	8.00E-03	3.30E-04	2.12E-03	7.84E+06	2.59E+06	1.43E-01
													Total	2.54E+02

MPC-32														
Accident Conditions														
Committed Dose Equivalent From Inhalation														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occupancy Time (sec)	CDE (mRem)
Gases														
H 3	3.68E+02	100%	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.11E-08	8.00E-03	3.30E-04	1.73E-11	6.40E-02	2.59E+06	4.88E-03
I129	3.31E-02	100%	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.00E-12	8.00E-03	3.30E-04	1.56E-06	5.77E+03	2.59E+06	3.96E-02
KR 85	5.86E+03	100%	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.77E-07	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
Crud														
Co-60	2.18E+01	100%	32	6.19E+06	1.95E-05	3.15E-12	1.00	2.20E-09	8.00E-03	3.30E-04	1.62E-08	5.99E+01	2.59E+06	9.01E-01
Volatiles														
SR 90	6.32E+04	100%	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.28E-09	8.00E-03	3.30E-04	2.64E-09	9.77E+00	2.59E+06	8.52E-02
RU106	1.59E+04	100%	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	3.21E-10	8.00E-03	3.30E-04	1.37E-08	5.07E+01	2.59E+06	1.11E-01
CS134	4.04E+04	100%	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	8.15E-10	8.00E-03	3.30E-04	1.11E-08	4.11E+01	2.59E+06	2.29E-01
CS137	9.82E+04	100%	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.98E-09	8.00E-03	3.30E-04	7.93E-09	2.93E+01	2.59E+06	3.98E-01
Fines														
PU241	8.53E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.58E-11	8.00E-03	3.30E-04	1.24E-11	4.59E-02	2.59E+06	8.10E-06
Y 90	6.32E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.91E-11	8.00E-03	3.30E-04	9.52E-12	3.52E-02	2.59E+06	4.61E-06
PM147	2.63E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	7.96E-12	8.00E-03	3.30E-04	1.98E-14	7.33E-05	2.59E+06	3.99E-09
CE144	8.14E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	3.30E-04	1.88E-09	6.96E+00	2.59E+06	1.17E-04
PR144	8.14E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	3.30E-04	8.47E-15	3.13E-05	2.59E+06	5.28E-10
EU154	5.90E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.79E-12	8.00E-03	3.30E-04	7.14E-09	2.64E+01	2.59E+06	3.23E-04
CM244	1.01E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.06E-12	8.00E-03	3.30E-04	1.01E-09	3.74E+00	2.59E+06	7.82E-05
PU238	5.81E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.76E-12	8.00E-03	3.30E-04	9.62E-10	3.56E+00	2.59E+06	4.28E-05
SB125	2.30E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.96E-13	8.00E-03	3.30E-04	3.24E-10	1.20E+00	2.59E+06	5.71E-06
EU155	1.65E+03	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.99E-13	8.00E-03	3.30E-04	2.40E-10	8.88E-01	2.59E+06	3.03E-06
AM241	9.00E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.72E-13	8.00E-03	3.30E-04	1.60E-09	5.92E+00	2.59E+06	1.10E-05
TE125M	5.61E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.70E-13	8.00E-03	3.30E-04	9.93E-11	3.67E-01	2.59E+06	4.27E-07
PU240	4.05E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.23E-13	8.00E-03	3.30E-04	9.05E-10	3.35E+00	2.59E+06	2.81E-06
SM151	3.38E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.02E-13	8.00E-03	3.30E-04	1.32E-14	4.88E-05	2.59E+06	3.42E-11
PU239	2.04E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.17E-14	8.00E-03	3.30E-04	9.03E-10	3.34E+00	2.59E+06	1.41E-06
BA137M	9.27E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.81E-11	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
RH106	1.59E+04	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.81E-12	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
PR144M	1.14E+02	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.45E-14	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
AM243	4.87E+01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	3.30E-04	8.29E-09	3.07E+01	2.59E+06	3.09E-06
CM242	3.23E+01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	9.78E-15	8.00E-03	3.30E-04	9.41E-10	3.48E+00	2.59E+06	2.33E-07
CM243	3.63E+01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.10E-14	8.00E-03	3.30E-04	3.83E-09	1.42E+01	2.59E+06	1.07E-06
NP239	4.87E+01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	3.30E-04	7.62E-12	2.82E-02	2.59E+06	2.84E-09
NP237	3.88E-01	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.17E-16	8.00E-03	3.30E-04	1.34E-08	4.96E+01	2.59E+06	3.98E-08
PU242	2.85E+00	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	8.63E-16	8.00E-03	3.30E-04	8.79E-10	3.25E+00	2.59E+06	1.92E-08
AM242	8.72E+00	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.64E-15	8.00E-03	3.30E-04	2.52E-12	9.32E-03	2.59E+06	1.68E-10
AM242M	8.76E+00	10%	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.65E-15	8.00E-03	3.30E-04	5.64E-10	2.09E+00	2.59E+06	3.79E-08
													Total	1.77E+00

MPC-32														
Accident Conditions														
Committed Effective Dose Equivalent From Inhalation														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occupancy Time (sec)	CEDE (mRem)
Gases														
H 3	3.68E+02	100%	32	6.20E+06	1.95E-05	3.15E-12	0.30	1.11E-08	8.00E-03	3.30E-04	1.73E-11	6.40E-02	2.59E+06	4.87E-03
I129	3.31E-02	100%	32	6.20E+06	1.95E-05	3.15E-12	0.30	1.00E-12	8.00E-03	3.30E-04	4.69E-08	1.74E+02	2.59E+06	1.19E-03
KR 85	5.86E+03	100%	32	6.20E+06	1.95E-05	3.15E-12	0.30	1.77E-07	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
Crud														
Co-60	2.18E+01	100%	32	6.20E+06	1.95E-05	3.15E-12	1.00	2.19E-09	8.00E-03	3.30E-04	5.91E-08	2.19E+02	2.59E+06	3.28E+00
Volatiles														
SR 90	6.32E+04	100%	32	6.20E+06	1.95E-05	3.15E-12	2.00E-04	1.27E-09	8.00E-03	3.30E-04	3.51E-07	1.30E+03	2.59E+06	1.13E+01
RU106	1.59E+04	100%	32	6.20E+06	1.95E-05	3.15E-12	2.00E-04	3.20E-10	8.00E-03	3.30E-04	1.29E-07	4.77E+02	2.59E+06	1.05E+00
CS134	4.04E+04	100%	32	6.20E+06	1.95E-05	3.15E-12	2.00E-04	8.14E-10	8.00E-03	3.30E-04	1.25E-08	4.63E+01	2.59E+06	2.58E-01
CS137	9.82E+04	100%	32	6.20E+06	1.95E-05	3.15E-12	2.00E-04	1.98E-09	8.00E-03	3.30E-04	8.63E-09	3.19E+01	2.59E+06	4.32E-01
Fines														
PU241	8.53E+04	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	2.58E-11	8.00E-03	3.30E-04	2.23E-06	8.25E+03	2.59E+06	1.46E+00
Y 90	6.32E+04	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	1.91E-11	8.00E-03	3.30E-04	2.28E-09	8.44E+00	2.59E+06	1.10E-03
PM147	2.63E+04	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	7.95E-12	8.00E-03	3.30E-04	1.06E-08	3.92E+01	2.59E+06	2.13E-03
CE144	8.14E+03	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	3.30E-04	1.01E-07	3.74E+02	2.59E+06	6.29E-03
PR144	8.14E+03	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	3.30E-04	1.17E-11	4.33E-02	2.59E+06	7.29E-07
EU154	5.90E+03	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	1.78E-12	8.00E-03	3.30E-04	7.73E-08	2.86E+02	2.59E+06	3.49E-03
CM244	1.01E+04	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	3.05E-12	8.00E-03	3.30E-04	6.70E-05	2.48E+05	2.59E+06	5.18E+00
PU238	5.81E+03	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	1.76E-12	8.00E-03	3.30E-04	1.06E-04	3.92E+05	2.59E+06	4.71E+00
SB125	2.30E+03	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	6.95E-13	8.00E-03	3.30E-04	3.30E-09	1.22E+01	2.59E+06	5.80E-05
EU155	1.65E+03	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	4.99E-13	8.00E-03	3.30E-04	1.12E-08	4.14E+01	2.59E+06	1.41E-04
AM241	9.00E+02	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	2.72E-13	8.00E-03	3.30E-04	1.20E-04	4.44E+05	2.59E+06	8.26E-01
TE125M	5.61E+02	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	1.69E-13	8.00E-03	3.30E-04	1.97E-09	7.29E+00	2.59E+06	8.45E-06
PU240	4.05E+02	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	1.22E-13	8.00E-03	3.30E-04	1.16E-04	4.29E+05	2.59E+06	3.59E-01
SM151	3.38E+02	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	1.02E-13	8.00E-03	3.30E-04	8.10E-09	3.00E+01	2.59E+06	2.09E-05
PU239	2.04E+02	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	6.16E-14	8.00E-03	3.30E-04	1.16E-04	4.29E+05	2.59E+06	1.81E-01
BA137M	9.27E+04	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	2.80E-11	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
RH106	1.59E+04	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	4.80E-12	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
PR144M	1.14E+02	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	3.44E-14	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
AM243	4.87E+01	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	3.30E-04	1.19E-04	4.40E+05	2.59E+06	4.43E-02
CM242	3.23E+01	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	9.76E-15	8.00E-03	3.30E-04	4.67E-06	1.73E+04	2.59E+06	1.15E-03
CM243	3.63E+01	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	1.10E-14	8.00E-03	3.30E-04	8.30E-05	3.07E+05	2.59E+06	2.30E-02
NP239	4.87E+01	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	3.30E-04	6.78E-10	2.51E+00	2.59E+06	2.53E-07
NP237	3.88E-01	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	1.17E-16	8.00E-03	3.30E-04	1.46E-04	5.40E+05	2.59E+06	4.33E-04
PU242	2.85E+00	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	8.61E-16	8.00E-03	3.30E-04	1.11E-04	4.11E+05	2.59E+06	2.42E-03
AM242	8.72E+00	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	2.63E-15	8.00E-03	3.30E-04	1.58E-08	5.85E+01	2.59E+06	1.05E-06
AM242M	8.76E+00	10%	32	6.20E+06	1.95E-05	3.15E-12	3.00E-05	2.65E-15	8.00E-03	3.30E-04	1.15E-04	4.26E+05	2.59E+06	7.71E-03
													Total	2.91E+01

MPC-32														
Normal Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)
Gases														
H 3	3.68E+02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.60E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
I129	3.31E-02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.44E-14	1.60E-04	4.83E-16	1.79E-06	3.15E+07	1.30E-10
KR 85	5.86E+03	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	2.55E-09	1.60E-04	1.17E-16	4.33E-07	3.15E+07	5.56E-06
Crud														
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	1.23E-13	4.55E-04	3.15E+07	4.34E-04
Volatiles														
SR 90	6.32E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.83E-11	1.60E-04	7.78E-18	2.88E-08	3.15E+07	2.66E-09
RU106	1.59E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	4.61E-12	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
CS134	4.04E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.17E-11	1.60E-04	7.40E-14	2.74E-04	3.15E+07	1.62E-05
CS137	9.82E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.84E-11	1.60E-04	7.96E-18	2.95E-08	3.15E+07	4.22E-09
Fines														
PU241	8.53E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.71E-13	1.60E-04	7.19E-20	2.66E-10	3.15E+07	4.97E-13
Y 90	6.32E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.75E-13	1.60E-04	1.89E-16	6.99E-07	3.15E+07	9.68E-10
PM147	2.63E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.14E-13	1.60E-04	7.48E-19	2.77E-09	3.15E+07	1.59E-12
CE144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	8.53E-16	3.16E-06	3.15E+07	5.63E-10
PR144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	1.90E-15	7.03E-06	3.15E+07	1.25E-09
EU154	5.90E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.56E-14	1.60E-04	6.00E-14	2.22E-04	3.15E+07	2.87E-08
CM244	1.01E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.39E-14	1.60E-04	6.90E-18	2.55E-08	3.15E+07	5.65E-12
PU238	5.81E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.52E-14	1.60E-04	6.56E-18	2.43E-08	3.15E+07	3.09E-12
SB125	2.30E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.99E-15	1.60E-04	1.98E-14	7.33E-05	3.15E+07	3.69E-09
EU155	1.65E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.17E-15	1.60E-04	2.49E-15	9.21E-06	3.15E+07	3.33E-10
AM241	9.00E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.91E-15	1.60E-04	8.58E-16	3.17E-06	3.15E+07	6.26E-11
TE125M	5.61E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.44E-15	1.60E-04	5.96E-16	2.21E-06	3.15E+07	2.71E-11
PU240	4.05E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.76E-15	1.60E-04	6.36E-18	2.35E-08	3.15E+07	2.09E-13
SM151	3.38E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.47E-15	1.60E-04	5.20E-20	1.92E-10	3.15E+07	1.42E-15
PU239	2.04E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.87E-16	1.60E-04	4.84E-18	1.79E-08	3.15E+07	8.00E-14
BA137M	9.27E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.03E-13	1.60E-04	2.82E-14	1.04E-04	3.15E+07	2.12E-07
RH106	1.59E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.91E-14	1.60E-04	1.01E-14	3.74E-05	3.15E+07	1.30E-08
PR144M	1.14E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.95E-16	1.60E-04	3.25E-16	1.20E-06	3.15E+07	3.00E-12
AM243	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	2.19E-15	8.10E-06	3.15E+07	8.64E-12
CM242	3.23E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.40E-16	1.60E-04	7.83E-18	2.90E-08	3.15E+07	2.05E-14
CM243	3.63E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.58E-16	1.60E-04	5.77E-15	2.13E-05	3.15E+07	1.70E-11
NP239	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	7.53E-15	2.79E-05	3.15E+07	2.97E-11
NP237	3.88E-01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.69E-18	1.60E-04	1.04E-15	3.85E-06	3.15E+07	3.27E-14
PU242	2.85E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.24E-17	1.60E-04	5.34E-18	1.98E-08	3.15E+07	1.23E-15
AM242	8.72E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.79E-17	1.60E-04	6.09E-16	2.25E-06	3.15E+07	4.30E-13
AM242M	8.76E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.81E-17	1.60E-04	3.80E-17	1.41E-07	3.15E+07	2.70E-14
													Total	4.56E-04

MPC-32														
Normal Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)
Gases														
H 3	3.68E+02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.60E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
I129	3.31E-02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.44E-14	1.60E-04	6.66E-16	2.46E-06	3.15E+07	1.79E-10
KR 85	5.86E+03	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	2.55E-09	1.60E-04	1.34E-16	4.96E-07	3.15E+07	6.36E-06
Crud														
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	1.39E-13	5.14E-04	3.15E+07	4.90E-04
Volatiles														
SR 90	6.32E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.83E-11	1.60E-04	9.49E-18	3.51E-08	3.15E+07	3.24E-09
RU106	1.59E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	4.61E-12	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
CS134	4.04E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.17E-11	1.60E-04	8.43E-14	3.12E-04	3.15E+07	1.84E-05
CS137	9.82E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.84E-11	1.60E-04	9.67E-18	3.58E-08	3.15E+07	5.13E-09
Fines														
PU241	8.53E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.71E-13	1.60E-04	8.67E-20	3.21E-10	3.15E+07	5.99E-13
Y 90	6.32E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.75E-13	1.60E-04	2.20E-16	8.14E-07	3.15E+07	1.13E-09
PM147	2.63E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.14E-13	1.60E-04	9.56E-19	3.54E-09	3.15E+07	2.04E-12
CE144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	1.01E-15	3.74E-06	3.15E+07	6.66E-10
PR144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	2.15E-15	7.96E-06	3.15E+07	1.42E-09
EU154	5.90E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.56E-14	1.60E-04	6.81E-14	2.52E-04	3.15E+07	3.26E-08
CM244	1.01E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.39E-14	1.60E-04	1.33E-17	4.92E-08	3.15E+07	1.09E-11
PU238	5.81E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.52E-14	1.60E-04	1.27E-17	4.70E-08	3.15E+07	5.98E-12
SB125	2.30E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.99E-15	1.60E-04	2.27E-14	8.40E-05	3.15E+07	4.23E-09
EU155	1.65E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.17E-15	1.60E-04	2.95E-15	1.09E-05	3.15E+07	3.94E-10
AM241	9.00E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.91E-15	1.60E-04	1.07E-15	3.96E-06	3.15E+07	7.80E-11
TE125M	5.61E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.44E-15	1.60E-04	8.48E-16	3.14E-06	3.15E+07	3.85E-11
PU240	4.05E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.76E-15	1.60E-04	1.23E-17	4.55E-08	3.15E+07	4.04E-13
SM151	3.38E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.47E-15	1.60E-04	8.80E-20	3.26E-10	3.15E+07	2.41E-15
PU239	2.04E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.87E-16	1.60E-04	7.55E-18	2.79E-08	3.15E+07	1.25E-13
BA137M	9.27E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.03E-13	1.60E-04	3.22E-14	1.19E-04	3.15E+07	2.42E-07
RH106	1.59E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.91E-14	1.60E-04	1.16E-14	4.29E-05	3.15E+07	1.49E-08
PR144M	1.14E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.95E-16	1.60E-04	4.20E-16	1.55E-06	3.15E+07	3.88E-12
AM243	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	2.61E-15	9.66E-06	3.15E+07	1.03E-11
CM242	3.23E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.40E-16	1.60E-04	1.48E-17	5.48E-08	3.15E+07	3.87E-14
CM243	3.63E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.58E-16	1.60E-04	6.68E-15	2.47E-05	3.15E+07	1.97E-11
NP239	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	8.73E-15	3.23E-05	3.15E+07	3.45E-11
NP237	3.88E-01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.69E-18	1.60E-04	1.26E-15	4.66E-06	3.15E+07	3.96E-14
PU242	2.85E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.24E-17	1.60E-04	1.03E-17	3.81E-08	3.15E+07	2.38E-15
AM242	8.72E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.79E-17	1.60E-04	7.30E-16	2.70E-06	3.15E+07	5.16E-13
AM242M	8.76E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.81E-17	1.60E-04	6.01E-17	2.22E-07	3.15E+07	4.27E-14
													Total	5.16E-04

MPC-32														
Normal Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)
Gases														
H 3	3.68E+02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.60E-10	1.60E-04	2.75E-18	1.02E-08	3.15E+07	8.20E-09
I129	3.31E-02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.44E-14	1.60E-04	2.14E-16	7.92E-07	3.15E+07	5.74E-11
KR 85	5.86E+03	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	2.55E-09	1.60E-04	1.14E-16	4.22E-07	3.15E+07	5.41E-06
Crud														
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	1.24E-13	4.59E-04	3.15E+07	4.38E-04
Volatiles														
SR 90	6.32E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.83E-11	1.60E-04	6.44E-18	2.38E-08	3.15E+07	2.20E-09
RU106	1.59E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	4.61E-12	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
CS134	4.04E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.17E-11	1.60E-04	7.37E-14	2.73E-04	3.15E+07	1.61E-05
CS137	9.82E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.84E-11	1.60E-04	6.68E-18	2.47E-08	3.15E+07	3.54E-09
Fines														
PU241	8.53E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.71E-13	1.60E-04	6.48E-20	2.40E-10	3.15E+07	4.48E-13
Y 90	6.32E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.75E-13	1.60E-04	1.77E-16	6.55E-07	3.15E+07	9.07E-10
PM147	2.63E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.14E-13	1.60E-04	5.45E-19	2.02E-09	3.15E+07	1.16E-12
CE144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	7.69E-16	2.85E-06	3.15E+07	5.07E-10
PR144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	1.90E-15	7.03E-06	3.15E+07	1.25E-09
EU154	5.90E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.56E-14	1.60E-04	5.99E-14	2.22E-04	3.15E+07	2.86E-08
CM244	1.01E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.39E-14	1.60E-04	7.08E-19	2.62E-09	3.15E+07	5.79E-13
PU238	5.81E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.52E-14	1.60E-04	1.06E-18	3.92E-09	3.15E+07	4.99E-13
SB125	2.30E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.99E-15	1.60E-04	1.95E-14	7.22E-05	3.15E+07	3.63E-09
EU155	1.65E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.17E-15	1.60E-04	2.22E-15	8.21E-06	3.15E+07	2.97E-10
AM241	9.00E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.91E-15	1.60E-04	6.74E-16	2.49E-06	3.15E+07	4.92E-11
TE125M	5.61E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.44E-15	1.60E-04	2.23E-16	8.25E-07	3.15E+07	1.01E-11
PU240	4.05E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.76E-15	1.60E-04	1.09E-18	4.03E-09	3.15E+07	3.58E-14
SM151	3.38E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.47E-15	1.60E-04	7.08E-21	2.62E-11	3.15E+07	1.94E-16
PU239	2.04E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.87E-16	1.60E-04	2.65E-18	9.81E-09	3.15E+07	4.38E-14
BA137M	9.27E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.03E-13	1.60E-04	2.80E-14	1.04E-04	3.15E+07	2.10E-07
RH106	1.59E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.91E-14	1.60E-04	1.01E-14	3.74E-05	3.15E+07	1.30E-08
PR144M	1.14E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.95E-16	1.60E-04	2.00E-16	7.40E-07	3.15E+07	1.85E-12
AM243	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	1.92E-15	7.10E-06	3.15E+07	7.58E-12
CM242	3.23E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.40E-16	1.60E-04	1.13E-18	4.18E-09	3.15E+07	2.96E-15
CM243	3.63E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.58E-16	1.60E-04	5.50E-15	2.04E-05	3.15E+07	1.62E-11
NP239	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	7.18E-15	2.66E-05	3.15E+07	2.83E-11
NP237	3.88E-01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.69E-18	1.60E-04	9.02E-16	3.34E-06	3.15E+07	2.84E-14
PU242	2.85E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.24E-17	1.60E-04	9.69E-19	3.59E-09	3.15E+07	2.24E-16
AM242	8.72E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.79E-17	1.60E-04	5.51E-16	2.04E-06	3.15E+07	3.89E-13
AM242M	8.76E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.81E-17	1.60E-04	1.72E-17	6.36E-08	3.15E+07	1.22E-14
													Total	4.59E-04

MPC-32															
Normal Conditions															
Effective Dose Equivalent From Submersion															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
Gases															
H 3	3.68E+02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.60E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
I129	3.31E-02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.44E-14	1.60E-04	1.64E-16	6.07E-07	3.15E+07	4.40E-11	
KR 85	5.86E+03	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	2.55E-09	1.60E-04	1.09E-16	4.03E-07	3.15E+07	5.18E-06	
Crud															
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	1.23E-13	4.55E-04	3.15E+07	4.34E-04	
Volatiles															
SR 90	6.32E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.83E-11	1.60E-04	5.44E-18	2.01E-08	3.15E+07	1.86E-09	
RU106	1.59E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	4.61E-12	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
CS134	4.04E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.17E-11	1.60E-04	7.19E-14	2.66E-04	3.15E+07	1.57E-05	
CS137	9.82E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.84E-11	1.60E-04	5.70E-18	2.11E-08	3.15E+07	3.02E-09	
Fines															
PU241	8.53E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.71E-13	1.60E-04	5.63E-20	2.08E-10	3.15E+07	3.89E-13	
Y 90	6.32E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.75E-13	1.60E-04	1.62E-16	5.99E-07	3.15E+07	8.30E-10	
PM147	2.63E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.14E-13	1.60E-04	4.46E-19	1.65E-09	3.15E+07	9.51E-13	
CE144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	6.68E-16	2.47E-06	3.15E+07	4.41E-10	
PR144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	1.87E-15	6.92E-06	3.15E+07	1.23E-09	
EU154	5.90E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.56E-14	1.60E-04	5.87E-14	2.17E-04	3.15E+07	2.81E-08	
CM244	1.01E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.39E-14	1.60E-04	1.46E-18	5.40E-09	3.15E+07	1.19E-12	
PU238	5.81E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.52E-14	1.60E-04	1.68E-18	6.22E-09	3.15E+07	7.91E-13	
SB125	2.30E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.99E-15	1.60E-04	1.87E-14	6.92E-05	3.15E+07	3.48E-09	
EU155	1.65E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.17E-15	1.60E-04	1.85E-15	6.85E-06	3.15E+07	2.47E-10	
AM241	9.00E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.91E-15	1.60E-04	5.21E-16	1.93E-06	3.15E+07	3.80E-11	
TE125M	5.61E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.44E-15	1.60E-04	1.86E-16	6.88E-07	3.15E+07	8.45E-12	
PU240	4.05E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.76E-15	1.60E-04	1.65E-18	6.11E-09	3.15E+07	5.42E-14	
SM151	3.38E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.47E-15	1.60E-04	1.13E-20	4.18E-11	3.15E+07	3.10E-16	
PU239	2.04E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.87E-16	1.60E-04	2.67E-18	9.88E-09	3.15E+07	4.41E-14	
BA137M	9.27E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.03E-13	1.60E-04	2.73E-14	1.01E-04	3.15E+07	2.05E-07	
RH106	1.59E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.91E-14	1.60E-04	9.75E-15	3.61E-05	3.15E+07	1.26E-08	
PR144M	1.14E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.95E-16	1.60E-04	1.56E-16	5.77E-07	3.15E+07	1.44E-12	
AM243	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	1.55E-15	5.74E-06	3.15E+07	6.12E-12	
CM242	3.23E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.40E-16	1.60E-04	1.89E-18	6.99E-09	3.15E+07	4.95E-15	
CM243	3.63E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.58E-16	1.60E-04	5.00E-15	1.85E-05	3.15E+07	1.47E-11	
NP239	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	6.50E-15	2.41E-05	3.15E+07	2.57E-11	
NP237	3.88E-01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.69E-18	1.60E-04	7.69E-16	2.85E-06	3.15E+07	2.42E-14	
PU242	2.85E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.24E-17	1.60E-04	1.43E-18	5.29E-09	3.15E+07	3.30E-16	
AM242	8.72E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.79E-17	1.60E-04	4.77E-16	1.76E-06	3.15E+07	3.37E-13	
AM242M	8.76E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.81E-17	1.60E-04	1.72E-17	6.36E-08	3.15E+07	1.22E-14	
													Total	4.55E-04	

MPC-32														
Normal Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)
Gases														
H 3	3.68E+02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.60E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
I129	3.31E-02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.44E-14	1.60E-04	1.10E-15	4.07E-06	3.15E+07	2.95E-10
KR 85	5.86E+03	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	2.55E-09	1.60E-04	2.20E-16	8.14E-07	3.15E+07	1.04E-05
Crud														
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	1.78E-13	6.59E-04	3.15E+07	6.28E-04
Volatiles														
SR 90	6.32E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.83E-11	1.60E-04	2.28E-17	8.44E-08	3.15E+07	7.78E-09
RU106	1.59E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	4.61E-12	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
CS134	4.04E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.17E-11	1.60E-04	1.20E-13	4.44E-04	3.15E+07	2.62E-05
CS137	9.82E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.84E-11	1.60E-04	2.29E-17	8.47E-08	3.15E+07	1.21E-08
Fines														
PU241	8.53E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.71E-13	1.60E-04	2.19E-19	8.10E-10	3.15E+07	1.51E-12
Y 90	6.32E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.75E-13	1.60E-04	4.44E-16	1.64E-06	3.15E+07	2.27E-09
PM147	2.63E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.14E-13	1.60E-04	2.18E-18	8.07E-09	3.15E+07	4.65E-12
CE144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	2.49E-15	9.21E-06	3.15E+07	1.64E-09
PR144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	2.99E-15	1.11E-05	3.15E+07	1.97E-09
EU154	5.90E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.56E-14	1.60E-04	9.43E-14	3.49E-04	3.15E+07	4.51E-08
CM244	1.01E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.39E-14	1.60E-04	8.82E-18	3.26E-08	3.15E+07	7.22E-12
PU238	5.81E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.52E-14	1.60E-04	9.30E-18	3.44E-08	3.15E+07	4.38E-12
SB125	2.30E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.99E-15	1.60E-04	3.53E-14	1.31E-04	3.15E+07	6.58E-09
EU155	1.65E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.17E-15	1.60E-04	8.09E-15	2.99E-05	3.15E+07	1.08E-09
AM241	9.00E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.91E-15	1.60E-04	2.87E-15	1.06E-05	3.15E+07	2.09E-10
TE125M	5.61E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.44E-15	1.60E-04	1.22E-15	4.51E-06	3.15E+07	5.55E-11
PU240	4.05E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.76E-15	1.60E-04	9.26E-18	3.43E-08	3.15E+07	3.04E-13
SM151	3.38E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.47E-15	1.60E-04	7.09E-20	2.62E-10	3.15E+07	1.94E-15
PU239	2.04E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.87E-16	1.60E-04	9.47E-18	3.50E-08	3.15E+07	1.57E-13
BA137M	9.27E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.03E-13	1.60E-04	4.63E-14	1.71E-04	3.15E+07	3.48E-07
RH106	1.59E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.91E-14	1.60E-04	1.72E-14	6.36E-05	3.15E+07	2.22E-08
PR144M	1.14E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.95E-16	1.60E-04	8.16E-16	3.02E-06	3.15E+07	7.54E-12
AM243	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	7.47E-15	2.76E-05	3.15E+07	2.95E-11
CM242	3.23E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.40E-16	1.60E-04	1.06E-17	3.92E-08	3.15E+07	2.77E-14
CM243	3.63E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.58E-16	1.60E-04	1.50E-14	5.55E-05	3.15E+07	4.41E-11
NP239	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	2.00E-14	7.40E-05	3.15E+07	7.89E-11
NP237	3.88E-01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.69E-18	1.60E-04	3.20E-15	1.18E-05	3.15E+07	1.01E-13
PU242	2.85E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.24E-17	1.60E-04	7.90E-18	2.92E-08	3.15E+07	1.82E-15
AM242	8.72E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.79E-17	1.60E-04	1.88E-15	6.96E-06	3.15E+07	1.33E-12
AM242M	8.76E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.81E-17	1.60E-04	7.94E-17	2.94E-07	3.15E+07	5.64E-14
													Total	6.65E-04

MPC-32															
Normal Conditions															
Effective Dose Equivalent From Submersion															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
Gases															
H 3	3.68E+02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.60E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
I129	3.31E-02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.44E-14	1.60E-04	3.86E-16	1.43E-06	3.15E+07	1.04E-10	
KR 85	5.86E+03	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	2.55E-09	1.60E-04	1.18E-16	4.37E-07	3.15E+07	5.60E-06	
Crud															
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	1.27E-13	4.70E-04	3.15E+07	4.48E-04	
Volatiles															
SR 90	6.32E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.83E-11	1.60E-04	7.33E-18	2.71E-08	3.15E+07	2.50E-09	
RU106	1.59E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	4.61E-12	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
CS134	4.04E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.17E-11	1.60E-04	7.57E-14	2.80E-04	3.15E+07	1.65E-05	
CS137	9.82E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.84E-11	1.60E-04	7.55E-18	2.79E-08	3.15E+07	4.01E-09	
Fines															
PU241	8.53E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.71E-13	1.60E-04	6.98E-20	2.58E-10	3.15E+07	4.82E-13	
Y 90	6.32E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.75E-13	1.60E-04	1.87E-16	6.92E-07	3.15E+07	9.58E-10	
PM147	2.63E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.14E-13	1.60E-04	6.75E-19	2.50E-09	3.15E+07	1.44E-12	
CE144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	8.33E-16	3.08E-06	3.15E+07	5.49E-10	
PR144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	1.95E-15	7.22E-06	3.15E+07	1.29E-09	
EU154	5.90E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.56E-14	1.60E-04	6.15E-14	2.28E-04	3.15E+07	2.94E-08	
CM244	1.01E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.39E-14	1.60E-04	4.19E-18	1.55E-08	3.15E+07	3.43E-12	
PU238	5.81E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.52E-14	1.60E-04	4.01E-18	1.48E-08	3.15E+07	1.89E-12	
SB125	2.30E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.99E-15	1.60E-04	2.01E-14	7.44E-05	3.15E+07	3.74E-09	
EU155	1.65E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.17E-15	1.60E-04	2.41E-15	8.92E-06	3.15E+07	3.22E-10	
AM241	9.00E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.91E-15	1.60E-04	7.83E-16	2.90E-06	3.15E+07	5.71E-11	
TE125M	5.61E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.44E-15	1.60E-04	4.64E-16	1.72E-06	3.15E+07	2.11E-11	
PU240	4.05E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.76E-15	1.60E-04	3.92E-18	1.45E-08	3.15E+07	1.29E-13	
SM151	3.38E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.47E-15	1.60E-04	3.58E-20	1.32E-10	3.15E+07	9.81E-16	
PU239	2.04E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.87E-16	1.60E-04	3.88E-18	1.44E-08	3.15E+07	6.41E-14	
BA137M	9.27E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.03E-13	1.60E-04	2.88E-14	1.07E-04	3.15E+07	2.16E-07	
RH106	1.59E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.91E-14	1.60E-04	1.03E-14	3.81E-05	3.15E+07	1.33E-08	
PR144M	1.14E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.95E-16	1.60E-04	2.81E-16	1.04E-06	3.15E+07	2.60E-12	
AM243	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	2.09E-15	7.73E-06	3.15E+07	8.25E-12	
CM242	3.23E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.40E-16	1.60E-04	4.91E-18	1.82E-08	3.15E+07	1.29E-14	
CM243	3.63E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.58E-16	1.60E-04	5.76E-15	2.13E-05	3.15E+07	1.69E-11	
NP239	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	7.52E-15	2.78E-05	3.15E+07	2.97E-11	
NP237	3.88E-01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.69E-18	1.60E-04	9.94E-16	3.68E-06	3.15E+07	3.13E-14	
PU242	2.85E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.24E-17	1.60E-04	3.32E-18	1.23E-08	3.15E+07	7.67E-16	
AM242	8.72E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.79E-17	1.60E-04	5.94E-16	2.20E-06	3.15E+07	4.20E-13	
AM242M	8.76E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.81E-17	1.60E-04	2.95E-17	1.09E-07	3.15E+07	2.09E-14	
													Total	4.71E-04	

MPC-32														
Normal Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)
Gases														
H 3	3.68E+02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.60E-10	1.60E-04	3.31E-19	1.22E-09	3.15E+07	9.87E-10
I129	3.31E-02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.44E-14	1.60E-04	3.80E-16	1.41E-06	3.15E+07	1.02E-10
KR 85	5.86E+03	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	2.55E-09	1.60E-04	1.19E-16	4.40E-07	3.15E+07	5.65E-06
Crud														
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	1.26E-13	4.66E-04	3.15E+07	4.45E-04
Volatiles														
SR 90	6.32E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.83E-11	1.60E-04	7.53E-18	2.79E-08	3.15E+07	2.57E-09
RU106	1.59E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	4.61E-12	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
CS134	4.04E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.17E-11	1.60E-04	7.57E-14	2.80E-04	3.15E+07	1.65E-05
CS137	9.82E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.84E-11	1.60E-04	7.74E-18	2.86E-08	3.15E+07	4.11E-09
Fines														
PU241	8.53E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.71E-13	1.60E-04	7.25E-20	2.68E-10	3.15E+07	5.01E-13
Y 90	6.32E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.75E-13	1.60E-04	1.90E-16	7.03E-07	3.15E+07	9.73E-10
PM147	2.63E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.14E-13	1.60E-04	6.93E-19	2.56E-09	3.15E+07	1.48E-12
CE144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	8.53E-16	3.16E-06	3.15E+07	5.63E-10
PR144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	1.95E-15	7.22E-06	3.15E+07	1.29E-09
EU154	5.90E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.56E-14	1.60E-04	6.14E-14	2.27E-04	3.15E+07	2.94E-08
CM244	1.01E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.39E-14	1.60E-04	4.91E-18	1.82E-08	3.15E+07	4.02E-12
PU238	5.81E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.52E-14	1.60E-04	4.88E-18	1.81E-08	3.15E+07	2.30E-12
SB125	2.30E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.99E-15	1.60E-04	2.02E-14	7.47E-05	3.15E+07	3.76E-09
EU155	1.65E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.17E-15	1.60E-04	2.49E-15	9.21E-06	3.15E+07	3.33E-10
AM241	9.00E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.91E-15	1.60E-04	8.18E-16	3.03E-06	3.15E+07	5.97E-11
TE125M	5.61E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.44E-15	1.60E-04	4.53E-16	1.68E-06	3.15E+07	2.06E-11
PU240	4.05E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.76E-15	1.60E-04	4.75E-18	1.76E-08	3.15E+07	1.56E-13
SM151	3.38E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.47E-15	1.60E-04	3.61E-20	1.34E-10	3.15E+07	9.89E-16
PU239	2.04E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.87E-16	1.60E-04	4.24E-18	1.57E-08	3.15E+07	7.01E-14
BA137M	9.27E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.03E-13	1.60E-04	2.88E-14	1.07E-04	3.15E+07	2.16E-07
RH106	1.59E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.91E-14	1.60E-04	1.04E-14	3.85E-05	3.15E+07	1.34E-08
PR144M	1.14E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.95E-16	1.60E-04	2.79E-16	1.03E-06	3.15E+07	2.58E-12
AM243	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	2.18E-15	8.07E-06	3.15E+07	8.60E-12
CM242	3.23E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.40E-16	1.60E-04	5.69E-18	2.11E-08	3.15E+07	1.49E-14
CM243	3.63E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.58E-16	1.60E-04	5.88E-15	2.18E-05	3.15E+07	1.73E-11
NP239	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	7.69E-15	2.85E-05	3.15E+07	3.03E-11
NP237	3.88E-01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.69E-18	1.60E-04	1.03E-15	3.81E-06	3.15E+07	3.24E-14
PU242	2.85E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.24E-17	1.60E-04	4.01E-18	1.48E-08	3.15E+07	9.26E-16
AM242	8.72E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.79E-17	1.60E-04	6.15E-16	2.28E-06	3.15E+07	4.35E-13
AM242M	8.76E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.81E-17	1.60E-04	3.17E-17	1.17E-07	3.15E+07	2.25E-14
													Total	4.67E-04

MPC-32														
Normal Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	SDE (mRem)
Gases														
H 3	3.68E+02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.60E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
I129	3.31E-02	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.44E-14	1.60E-04	1.10E-15	4.07E-06	3.15E+07	2.95E-10
KR 85	5.86E+03	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	2.55E-09	1.60E-04	1.32E-14	4.88E-05	3.15E+07	6.27E-04
Crud														
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	1.45E-13	5.37E-04	3.15E+07	5.12E-04
Volatiles														
SR 90	6.32E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.83E-11	1.60E-04	9.20E-15	3.40E-05	3.15E+07	3.14E-06
RU106	1.59E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	4.61E-12	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
CS134	4.04E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.17E-11	1.60E-04	9.45E-14	3.50E-04	3.15E+07	2.06E-05
CS137	9.82E+04	2.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.84E-11	1.60E-04	8.63E-15	3.19E-05	3.15E+07	4.58E-06
Fines														
PU241	8.53E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.71E-13	1.60E-04	1.17E-19	4.33E-10	3.15E+07	8.09E-13
Y 90	6.32E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.75E-13	1.60E-04	6.24E-14	2.31E-04	3.15E+07	3.20E-07
PM147	2.63E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.14E-13	1.60E-04	8.11E-16	3.00E-06	3.15E+07	1.73E-09
CE144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	2.93E-15	1.08E-05	3.15E+07	1.93E-09
PR144	8.14E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.54E-14	1.60E-04	8.43E-14	3.12E-04	3.15E+07	5.56E-08
EU154	5.90E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.56E-14	1.60E-04	8.29E-14	3.07E-04	3.15E+07	3.96E-08
CM244	1.01E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.39E-14	1.60E-04	3.91E-17	1.45E-07	3.15E+07	3.20E-11
PU238	5.81E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.52E-14	1.60E-04	4.09E-17	1.51E-07	3.15E+07	1.93E-11
SB125	2.30E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.99E-15	1.60E-04	2.65E-14	9.81E-05	3.15E+07	4.94E-09
EU155	1.65E+03	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.17E-15	1.60E-04	3.39E-15	1.25E-05	3.15E+07	4.53E-10
AM241	9.00E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.91E-15	1.60E-04	1.28E-15	4.74E-06	3.15E+07	9.34E-11
TE125M	5.61E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.44E-15	1.60E-04	1.94E-15	7.18E-06	3.15E+07	8.82E-11
PU240	4.05E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.76E-15	1.60E-04	3.92E-17	1.45E-07	3.15E+07	1.29E-12
SM151	3.38E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.47E-15	1.60E-04	1.90E-19	7.03E-10	3.15E+07	5.20E-15
PU239	2.04E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.87E-16	1.60E-04	1.86E-17	6.88E-08	3.15E+07	3.07E-13
BA137M	9.27E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.03E-13	1.60E-04	3.73E-14	1.38E-04	3.15E+07	2.80E-07
RH106	1.59E+04	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.91E-14	1.60E-04	1.09E-13	4.03E-04	3.15E+07	1.40E-07
PR144M	1.14E+02	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.95E-16	1.60E-04	5.08E-16	1.88E-06	3.15E+07	4.69E-12
AM243	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	2.75E-15	1.02E-05	3.15E+07	1.09E-11
CM242	3.23E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.40E-16	1.60E-04	4.29E-17	1.59E-07	3.15E+07	1.12E-13
CM243	3.63E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.58E-16	1.60E-04	9.79E-15	3.62E-05	3.15E+07	2.88E-11
NP239	4.87E+01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.12E-16	1.60E-04	1.60E-14	5.92E-05	3.15E+07	6.31E-11
NP237	3.88E-01	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.69E-18	1.60E-04	1.54E-15	5.70E-06	3.15E+07	4.84E-14
PU242	2.85E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.24E-17	1.60E-04	3.27E-17	1.21E-07	3.15E+07	7.55E-15
AM242	8.72E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.79E-17	1.60E-04	8.20E-15	3.03E-05	3.15E+07	5.79E-12
AM242M	8.76E+00	2.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.81E-17	1.60E-04	1.36E-16	5.03E-07	3.15E+07	9.65E-14
													Total	1.17E-03

MPC-32														
Off-Normal Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)
Gases														
H 3	3.68E+02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	7.36E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
I129	3.31E-02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	6.62E-14	1.60E-04	4.83E-16	1.79E-06	3.15E+07	5.96E-10
KR 85	5.86E+03	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.17E-08	1.60E-04	1.17E-16	4.33E-07	3.15E+07	2.56E-05
Crud														
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	1.23E-13	4.55E-04	3.15E+07	4.34E-04
Volatiles														
SR 90	6.32E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	8.42E-11	1.60E-04	7.78E-18	2.88E-08	3.15E+07	1.22E-08
RU106	1.59E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.12E-11	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
CS134	4.04E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	5.38E-11	1.60E-04	7.40E-14	2.74E-04	3.15E+07	7.43E-05
CS137	9.82E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.31E-10	1.60E-04	7.96E-18	2.95E-08	3.15E+07	1.94E-08
Fines														
PU241	8.53E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.71E-12	1.60E-04	7.19E-20	2.66E-10	3.15E+07	2.29E-12
Y 90	6.32E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.26E-12	1.60E-04	1.89E-16	6.99E-07	3.15E+07	4.45E-09
PM147	2.63E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.26E-13	1.60E-04	7.48E-19	2.77E-09	3.15E+07	7.33E-12
CE144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	8.53E-16	3.16E-06	3.15E+07	2.59E-09
PR144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	1.90E-15	7.03E-06	3.15E+07	5.77E-09
EU154	5.90E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.18E-13	1.60E-04	6.00E-14	2.22E-04	3.15E+07	1.32E-07
CM244	1.01E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.02E-13	1.60E-04	6.90E-18	2.55E-08	3.15E+07	2.60E-11
PU238	5.81E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.16E-13	1.60E-04	6.56E-18	2.43E-08	3.15E+07	1.42E-11
SB125	2.30E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.60E-14	1.60E-04	1.98E-14	7.33E-05	3.15E+07	1.70E-08
EU155	1.65E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.30E-14	1.60E-04	2.49E-15	9.21E-06	3.15E+07	1.53E-09
AM241	9.00E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.80E-14	1.60E-04	8.58E-16	3.17E-06	3.15E+07	2.88E-10
TE125M	5.61E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.12E-14	1.60E-04	5.96E-16	2.21E-06	3.15E+07	1.25E-10
PU240	4.05E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.10E-15	1.60E-04	6.36E-18	2.35E-08	3.15E+07	9.60E-13
SM151	3.38E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.76E-15	1.60E-04	5.20E-20	1.92E-10	3.15E+07	6.55E-15
PU239	2.04E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.08E-15	1.60E-04	4.84E-18	1.79E-08	3.15E+07	3.68E-13
BA137M	9.27E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.85E-12	1.60E-04	2.82E-14	1.04E-04	3.15E+07	9.74E-07
RH106	1.59E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.18E-13	1.60E-04	1.01E-14	3.74E-05	3.15E+07	5.99E-08
PR144M	1.14E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.28E-15	1.60E-04	3.25E-16	1.20E-06	3.15E+07	1.38E-11
AM243	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	2.19E-15	8.10E-06	3.15E+07	3.98E-11
CM242	3.23E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.46E-16	1.60E-04	7.83E-18	2.90E-08	3.15E+07	9.43E-14
CM243	3.63E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.26E-16	1.60E-04	5.77E-15	2.13E-05	3.15E+07	7.81E-11
NP239	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	7.53E-15	2.79E-05	3.15E+07	1.37E-10
NP237	3.88E-01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.76E-18	1.60E-04	1.04E-15	3.85E-06	3.15E+07	1.50E-13
PU242	2.85E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.70E-17	1.60E-04	5.34E-18	1.98E-08	3.15E+07	5.67E-15
AM242	8.72E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.74E-16	1.60E-04	6.09E-16	2.25E-06	3.15E+07	1.98E-12
AM242M	8.76E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.75E-16	1.60E-04	3.80E-17	1.41E-07	3.15E+07	1.24E-13
													Total	5.35E-04

MPC-32														
Off-Normal Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)
Gases														
H 3	3.68E+02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	7.36E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
I129	3.31E-02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	6.62E-14	1.60E-04	6.66E-16	2.46E-06	3.15E+07	8.22E-10
KR 85	5.86E+03	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.17E-08	1.60E-04	1.34E-16	4.96E-07	3.15E+07	2.93E-05
Crud														
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	1.39E-13	5.14E-04	3.15E+07	4.90E-04
Volatiles														
SR 90	6.32E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	8.42E-11	1.60E-04	9.49E-18	3.51E-08	3.15E+07	1.49E-08
RU106	1.59E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.12E-11	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
CS134	4.04E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	5.38E-11	1.60E-04	8.43E-14	3.12E-04	3.15E+07	8.46E-05
CS137	9.82E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.31E-10	1.60E-04	9.67E-18	3.58E-08	3.15E+07	2.36E-08
Fines														
PU241	8.53E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.71E-12	1.60E-04	8.67E-20	3.21E-10	3.15E+07	2.76E-12
Y 90	6.32E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.26E-12	1.60E-04	2.20E-16	8.14E-07	3.15E+07	5.18E-09
PM147	2.63E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.26E-13	1.60E-04	9.56E-19	3.54E-09	3.15E+07	9.37E-12
CE144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	1.01E-15	3.74E-06	3.15E+07	3.06E-09
PR144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	2.15E-15	7.96E-06	3.15E+07	6.52E-09
EU154	5.90E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.18E-13	1.60E-04	6.81E-14	2.52E-04	3.15E+07	1.50E-07
CM244	1.01E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.02E-13	1.60E-04	1.33E-17	4.92E-08	3.15E+07	5.01E-11
PU238	5.81E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.16E-13	1.60E-04	1.27E-17	4.70E-08	3.15E+07	2.75E-11
SB125	2.30E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.60E-14	1.60E-04	2.27E-14	8.40E-05	3.15E+07	1.95E-08
EU155	1.65E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.30E-14	1.60E-04	2.95E-15	1.09E-05	3.15E+07	1.81E-09
AM241	9.00E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.80E-14	1.60E-04	1.07E-15	3.96E-06	3.15E+07	3.59E-10
TE125M	5.61E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.12E-14	1.60E-04	8.48E-16	3.14E-06	3.15E+07	1.77E-10
PU240	4.05E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.10E-15	1.60E-04	1.23E-17	4.55E-08	3.15E+07	1.86E-12
SM151	3.38E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.76E-15	1.60E-04	8.80E-20	3.26E-10	3.15E+07	1.11E-14
PU239	2.04E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.08E-15	1.60E-04	7.55E-18	2.79E-08	3.15E+07	5.74E-13
BA137M	9.27E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.85E-12	1.60E-04	3.22E-14	1.19E-04	3.15E+07	1.11E-06
RH106	1.59E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.18E-13	1.60E-04	1.16E-14	4.29E-05	3.15E+07	6.88E-08
PR144M	1.14E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.28E-15	1.60E-04	4.20E-16	1.55E-06	3.15E+07	1.78E-11
AM243	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	2.61E-15	9.66E-06	3.15E+07	4.74E-11
CM242	3.23E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.46E-16	1.60E-04	1.48E-17	5.48E-08	3.15E+07	1.78E-13
CM243	3.63E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.26E-16	1.60E-04	6.68E-15	2.47E-05	3.15E+07	9.04E-11
NP239	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	8.73E-15	3.23E-05	3.15E+07	1.58E-10
NP237	3.88E-01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.76E-18	1.60E-04	1.26E-15	4.66E-06	3.15E+07	1.82E-13
PU242	2.85E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.70E-17	1.60E-04	1.03E-17	3.81E-08	3.15E+07	1.09E-14
AM242	8.72E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.74E-16	1.60E-04	7.30E-16	2.70E-06	3.15E+07	2.37E-12
AM242M	8.76E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.75E-16	1.60E-04	6.01E-17	2.22E-07	3.15E+07	1.96E-13
													Total	6.06E-04

MPC-32															
Off-Normal Conditions															
Effective Dose Equivalent From Submersion															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
Gases															
H 3	3.68E+02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	7.36E-10	1.60E-04	2.75E-18	1.02E-08	3.15E+07	3.77E-08	
I129	3.31E-02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	6.62E-14	1.60E-04	2.14E-16	7.92E-07	3.15E+07	2.64E-10	
KR 85	5.86E+03	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.17E-08	1.60E-04	1.14E-16	4.22E-07	3.15E+07	2.49E-05	
Crud															
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	1.24E-13	4.59E-04	3.15E+07	4.38E-04	
Volatiles															
SR 90	6.32E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	8.42E-11	1.60E-04	6.44E-18	2.38E-08	3.15E+07	1.01E-08	
RU106	1.59E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.12E-11	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
CS134	4.04E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	5.38E-11	1.60E-04	7.37E-14	2.73E-04	3.15E+07	7.40E-05	
CS137	9.82E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.31E-10	1.60E-04	6.68E-18	2.47E-08	3.15E+07	1.63E-08	
Fines															
PU241	8.53E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.71E-12	1.60E-04	6.48E-20	2.40E-10	3.15E+07	2.06E-12	
Y 90	6.32E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.26E-12	1.60E-04	1.77E-16	6.55E-07	3.15E+07	4.17E-09	
PM147	2.63E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.26E-13	1.60E-04	5.45E-19	2.02E-09	3.15E+07	5.34E-12	
CE144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	7.69E-16	2.85E-06	3.15E+07	2.33E-09	
PR144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	1.90E-15	7.03E-06	3.15E+07	5.77E-09	
EU154	5.90E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.18E-13	1.60E-04	5.99E-14	2.22E-04	3.15E+07	1.32E-07	
CM244	1.01E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.02E-13	1.60E-04	7.08E-19	2.62E-09	3.15E+07	2.67E-12	
PU238	5.81E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.16E-13	1.60E-04	1.06E-18	3.92E-09	3.15E+07	2.30E-12	
SB125	2.30E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.60E-14	1.60E-04	1.95E-14	7.22E-05	3.15E+07	1.67E-08	
EU155	1.65E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.30E-14	1.60E-04	2.22E-15	8.21E-06	3.15E+07	1.37E-09	
AM241	9.00E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.80E-14	1.60E-04	6.74E-16	2.49E-06	3.15E+07	2.26E-10	
TE125M	5.61E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.12E-14	1.60E-04	2.23E-16	8.25E-07	3.15E+07	4.66E-11	
PU240	4.05E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.10E-15	1.60E-04	1.09E-18	4.03E-09	3.15E+07	1.65E-13	
SM151	3.38E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.76E-15	1.60E-04	7.08E-21	2.62E-11	3.15E+07	8.92E-16	
PU239	2.04E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.08E-15	1.60E-04	2.65E-18	9.81E-09	3.15E+07	2.02E-13	
BA137M	9.27E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.85E-12	1.60E-04	2.80E-14	1.04E-04	3.15E+07	9.68E-07	
RH106	1.59E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.18E-13	1.60E-04	1.01E-14	3.74E-05	3.15E+07	5.99E-08	
PR144M	1.14E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.28E-15	1.60E-04	2.00E-16	7.40E-07	3.15E+07	8.50E-12	
AM243	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	1.92E-15	7.10E-06	3.15E+07	3.49E-11	
CM242	3.23E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.46E-16	1.60E-04	1.13E-18	4.18E-09	3.15E+07	1.36E-14	
CM243	3.63E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.26E-16	1.60E-04	5.50E-15	2.04E-05	3.15E+07	7.44E-11	
NP239	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	7.18E-15	2.66E-05	3.15E+07	1.30E-10	
NP237	3.88E-01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.76E-18	1.60E-04	9.02E-16	3.34E-06	3.15E+07	1.30E-13	
PU242	2.85E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.70E-17	1.60E-04	9.69E-19	3.59E-09	3.15E+07	1.03E-15	
AM242	8.72E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.74E-16	1.60E-04	5.51E-16	2.04E-06	3.15E+07	1.79E-12	
AM242M	8.76E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.75E-16	1.60E-04	1.72E-17	6.36E-08	3.15E+07	5.62E-14	
													Total	5.38E-04	

MPC-32														
Off-Normal Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)
Gases														
H 3	3.68E+02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	7.36E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
I129	3.31E-02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	6.62E-14	1.60E-04	1.64E-16	6.07E-07	3.15E+07	2.02E-10
KR 85	5.86E+03	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.17E-08	1.60E-04	1.09E-16	4.03E-07	3.15E+07	2.38E-05
Crud														
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	1.23E-13	4.55E-04	3.15E+07	4.34E-04
Volatiles														
SR 90	6.32E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	8.42E-11	1.60E-04	5.44E-18	2.01E-08	3.15E+07	8.54E-09
RU106	1.59E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.12E-11	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
CS134	4.04E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	5.38E-11	1.60E-04	7.19E-14	2.66E-04	3.15E+07	7.22E-05
CS137	9.82E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.31E-10	1.60E-04	5.70E-18	2.11E-08	3.15E+07	1.39E-08
Fines														
PU241	8.53E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.71E-12	1.60E-04	5.63E-20	2.08E-10	3.15E+07	1.79E-12
Y 90	6.32E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.26E-12	1.60E-04	1.62E-16	5.99E-07	3.15E+07	3.82E-09
PM147	2.63E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.26E-13	1.60E-04	4.46E-19	1.65E-09	3.15E+07	4.37E-12
CE144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	6.68E-16	2.47E-06	3.15E+07	2.03E-09
PR144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	1.87E-15	6.92E-06	3.15E+07	5.67E-09
EU154	5.90E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.18E-13	1.60E-04	5.87E-14	2.17E-04	3.15E+07	1.29E-07
CM244	1.01E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.02E-13	1.60E-04	1.46E-18	5.40E-09	3.15E+07	5.50E-12
PU238	5.81E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.16E-13	1.60E-04	1.68E-18	6.22E-09	3.15E+07	3.64E-12
SB125	2.30E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.60E-14	1.60E-04	1.87E-14	6.92E-05	3.15E+07	1.60E-08
EU155	1.65E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.30E-14	1.60E-04	1.85E-15	6.85E-06	3.15E+07	1.14E-09
AM241	9.00E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.80E-14	1.60E-04	5.21E-16	1.93E-06	3.15E+07	1.75E-10
TE125M	5.61E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.12E-14	1.60E-04	1.86E-16	6.88E-07	3.15E+07	3.89E-11
PU240	4.05E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.10E-15	1.60E-04	1.65E-18	6.11E-09	3.15E+07	2.49E-13
SM151	3.38E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.76E-15	1.60E-04	1.13E-20	4.18E-11	3.15E+07	1.42E-15
PU239	2.04E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.08E-15	1.60E-04	2.67E-18	9.88E-09	3.15E+07	2.03E-13
BA137M	9.27E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.85E-12	1.60E-04	2.73E-14	1.01E-04	3.15E+07	9.43E-07
RH106	1.59E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.18E-13	1.60E-04	9.75E-15	3.61E-05	3.15E+07	5.78E-08
PR144M	1.14E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.28E-15	1.60E-04	1.56E-16	5.77E-07	3.15E+07	6.63E-12
AM243	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	1.55E-15	5.74E-06	3.15E+07	2.81E-11
CM242	3.23E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.46E-16	1.60E-04	1.89E-18	6.99E-09	3.15E+07	2.28E-14
CM243	3.63E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.26E-16	1.60E-04	5.00E-15	1.85E-05	3.15E+07	6.77E-11
NP239	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	6.50E-15	2.41E-05	3.15E+07	1.18E-10
NP237	3.88E-01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.76E-18	1.60E-04	7.69E-16	2.85E-06	3.15E+07	1.11E-13
PU242	2.85E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.70E-17	1.60E-04	1.43E-18	5.29E-09	3.15E+07	1.52E-15
AM242	8.72E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.74E-16	1.60E-04	4.77E-16	1.76E-06	3.15E+07	1.55E-12
AM242M	8.76E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.75E-16	1.60E-04	1.72E-17	6.36E-08	3.15E+07	5.62E-14
													Total	5.31E-04

MPC-32														
Off-Normal Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)
Gases														
H 3	3.68E+02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	7.36E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
I129	3.31E-02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	6.62E-14	1.60E-04	1.10E-15	4.07E-06	3.15E+07	1.36E-09
KR 85	5.86E+03	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.17E-08	1.60E-04	2.20E-16	8.14E-07	3.15E+07	4.81E-05
Crud														
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	1.78E-13	6.59E-04	3.15E+07	6.28E-04
Volatiles														
SR 90	6.32E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	8.42E-11	1.60E-04	2.28E-17	8.44E-08	3.15E+07	3.58E-08
RU106	1.59E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.12E-11	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
CS134	4.04E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	5.38E-11	1.60E-04	1.20E-13	4.44E-04	3.15E+07	1.20E-04
CS137	9.82E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.31E-10	1.60E-04	2.29E-17	8.47E-08	3.15E+07	5.59E-08
Fines														
PU241	8.53E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.71E-12	1.60E-04	2.19E-19	8.10E-10	3.15E+07	6.96E-12
Y 90	6.32E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.26E-12	1.60E-04	4.44E-16	1.64E-06	3.15E+07	1.05E-08
PM147	2.63E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.26E-13	1.60E-04	2.18E-18	8.07E-09	3.15E+07	2.14E-11
CE144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	2.49E-15	9.21E-06	3.15E+07	7.56E-09
PR144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	2.99E-15	1.11E-05	3.15E+07	9.07E-09
EU154	5.90E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.18E-13	1.60E-04	9.43E-14	3.49E-04	3.15E+07	2.07E-07
CM244	1.01E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.02E-13	1.60E-04	8.82E-18	3.26E-08	3.15E+07	3.32E-11
PU238	5.81E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.16E-13	1.60E-04	9.30E-18	3.44E-08	3.15E+07	2.01E-11
SB125	2.30E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.60E-14	1.60E-04	3.53E-14	1.31E-04	3.15E+07	3.03E-08
EU155	1.65E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.30E-14	1.60E-04	8.09E-15	2.99E-05	3.15E+07	4.98E-09
AM241	9.00E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.80E-14	1.60E-04	2.87E-15	1.06E-05	3.15E+07	9.63E-10
TE125M	5.61E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.12E-14	1.60E-04	1.22E-15	4.51E-06	3.15E+07	2.55E-10
PU240	4.05E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.10E-15	1.60E-04	9.26E-18	3.43E-08	3.15E+07	1.40E-12
SM151	3.38E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.76E-15	1.60E-04	7.09E-20	2.62E-10	3.15E+07	8.93E-15
PU239	2.04E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.08E-15	1.60E-04	9.47E-18	3.50E-08	3.15E+07	7.20E-13
BA137M	9.27E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.85E-12	1.60E-04	4.63E-14	1.71E-04	3.15E+07	1.60E-06
RH106	1.59E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.18E-13	1.60E-04	1.72E-14	6.36E-05	3.15E+07	1.02E-07
PR144M	1.14E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.28E-15	1.60E-04	8.16E-16	3.02E-06	3.15E+07	3.47E-11
AM243	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	7.47E-15	2.76E-05	3.15E+07	1.36E-10
CM242	3.23E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.46E-16	1.60E-04	1.06E-17	3.92E-08	3.15E+07	1.28E-13
CM243	3.63E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.26E-16	1.60E-04	1.50E-14	5.55E-05	3.15E+07	2.03E-10
NP239	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	2.00E-14	7.40E-05	3.15E+07	3.63E-10
NP237	3.88E-01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.76E-18	1.60E-04	3.20E-15	1.18E-05	3.15E+07	4.63E-13
PU242	2.85E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.70E-17	1.60E-04	7.90E-18	2.92E-08	3.15E+07	8.39E-15
AM242	8.72E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.74E-16	1.60E-04	1.88E-15	6.96E-06	3.15E+07	6.11E-12
AM242M	8.76E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.75E-16	1.60E-04	7.94E-17	2.94E-07	3.15E+07	2.59E-13
													Total	7.99E-04

MPC-32															
Off-Normal Conditions															
Effective Dose Equivalent From Submersion															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
Gases															
H 3	3.68E+02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	7.36E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
I129	3.31E-02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	6.62E-14	1.60E-04	3.86E-16	1.43E-06	3.15E+07	4.76E-10	
KR 85	5.86E+03	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.17E-08	1.60E-04	1.18E-16	4.37E-07	3.15E+07	2.58E-05	
Crud															
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	1.27E-13	4.70E-04	3.15E+07	4.48E-04	
Volatiles															
SR 90	6.32E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	8.42E-11	1.60E-04	7.33E-18	2.71E-08	3.15E+07	1.15E-08	
RU106	1.59E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.12E-11	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
CS134	4.04E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	5.38E-11	1.60E-04	7.57E-14	2.80E-04	3.15E+07	7.60E-05	
CS137	9.82E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.31E-10	1.60E-04	7.55E-18	2.79E-08	3.15E+07	1.84E-08	
Fines															
PU241	8.53E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.71E-12	1.60E-04	6.98E-20	2.58E-10	3.15E+07	2.22E-12	
Y 90	6.32E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.26E-12	1.60E-04	1.87E-16	6.92E-07	3.15E+07	4.41E-09	
PM147	2.63E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.26E-13	1.60E-04	6.75E-19	2.50E-09	3.15E+07	6.62E-12	
CE144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	8.33E-16	3.08E-06	3.15E+07	2.53E-09	
PR144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	1.95E-15	7.22E-06	3.15E+07	5.92E-09	
EU154	5.90E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.18E-13	1.60E-04	6.15E-14	2.28E-04	3.15E+07	1.35E-07	
CM244	1.01E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.02E-13	1.60E-04	4.19E-18	1.55E-08	3.15E+07	1.58E-11	
PU238	5.81E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.16E-13	1.60E-04	4.01E-18	1.48E-08	3.15E+07	8.68E-12	
SB125	2.30E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.60E-14	1.60E-04	2.01E-14	7.44E-05	3.15E+07	1.72E-08	
EU155	1.65E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.30E-14	1.60E-04	2.41E-15	8.92E-06	3.15E+07	1.48E-09	
AM241	9.00E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.80E-14	1.60E-04	7.83E-16	2.90E-06	3.15E+07	2.63E-10	
TE125M	5.61E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.12E-14	1.60E-04	4.64E-16	1.72E-06	3.15E+07	9.70E-11	
PU240	4.05E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.10E-15	1.60E-04	3.92E-18	1.45E-08	3.15E+07	5.92E-13	
SM151	3.38E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.76E-15	1.60E-04	3.58E-20	1.32E-10	3.15E+07	4.51E-15	
PU239	2.04E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.08E-15	1.60E-04	3.88E-18	1.44E-08	3.15E+07	2.95E-13	
BA137M	9.27E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.85E-12	1.60E-04	2.88E-14	1.07E-04	3.15E+07	9.95E-07	
RH106	1.59E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.18E-13	1.60E-04	1.03E-14	3.81E-05	3.15E+07	6.10E-08	
PR144M	1.14E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.28E-15	1.60E-04	2.81E-16	1.04E-06	3.15E+07	1.19E-11	
AM243	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	2.09E-15	7.73E-06	3.15E+07	3.79E-11	
CM242	3.23E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.46E-16	1.60E-04	4.91E-18	1.82E-08	3.15E+07	5.91E-14	
CM243	3.63E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.26E-16	1.60E-04	5.76E-15	2.13E-05	3.15E+07	7.79E-11	
NP239	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	7.52E-15	2.78E-05	3.15E+07	1.37E-10	
NP237	3.88E-01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.76E-18	1.60E-04	9.94E-16	3.68E-06	3.15E+07	1.44E-13	
PU242	2.85E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.70E-17	1.60E-04	3.32E-18	1.23E-08	3.15E+07	3.53E-15	
AM242	8.72E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.74E-16	1.60E-04	5.94E-16	2.20E-06	3.15E+07	1.93E-12	
AM242M	8.76E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.75E-16	1.60E-04	2.95E-17	1.09E-07	3.15E+07	9.63E-14	
													Total	5.51E-04	

MPC-32															
Off-Normal Conditions															
Effective Dose Equivalent From Submersion															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
Gases															
H 3	3.68E+02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	7.36E-10	1.60E-04	3.31E-19	1.22E-09	3.15E+07	4.54E-09	
I129	3.31E-02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	6.62E-14	1.60E-04	3.80E-16	1.41E-06	3.15E+07	4.69E-10	
KR 85	5.86E+03	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.17E-08	1.60E-04	1.19E-16	4.40E-07	3.15E+07	2.60E-05	
Crud															
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	1.26E-13	4.66E-04	3.15E+07	4.45E-04	
Volatiles															
SR 90	6.32E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	8.42E-11	1.60E-04	7.53E-18	2.79E-08	3.15E+07	1.18E-08	
RU106	1.59E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.12E-11	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
CS134	4.04E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	5.38E-11	1.60E-04	7.57E-14	2.80E-04	3.15E+07	7.60E-05	
CS137	9.82E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.31E-10	1.60E-04	7.74E-18	2.86E-08	3.15E+07	1.89E-08	
Fines															
PU241	8.53E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.71E-12	1.60E-04	7.25E-20	2.68E-10	3.15E+07	2.31E-12	
Y 90	6.32E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.26E-12	1.60E-04	1.90E-16	7.03E-07	3.15E+07	4.48E-09	
PM147	2.63E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.26E-13	1.60E-04	6.93E-19	2.56E-09	3.15E+07	6.79E-12	
CE144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	8.53E-16	3.16E-06	3.15E+07	2.59E-09	
PR144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	1.95E-15	7.22E-06	3.15E+07	5.92E-09	
EU154	5.90E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.18E-13	1.60E-04	6.14E-14	2.27E-04	3.15E+07	1.35E-07	
CM244	1.01E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.02E-13	1.60E-04	4.91E-18	1.82E-08	3.15E+07	1.85E-11	
PU238	5.81E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.16E-13	1.60E-04	4.88E-18	1.81E-08	3.15E+07	1.06E-11	
SB125	2.30E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.60E-14	1.60E-04	2.02E-14	7.47E-05	3.15E+07	1.73E-08	
EU155	1.65E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.30E-14	1.60E-04	2.49E-15	9.21E-06	3.15E+07	1.53E-09	
AM241	9.00E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.80E-14	1.60E-04	8.18E-16	3.03E-06	3.15E+07	2.74E-10	
TE125M	5.61E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.12E-14	1.60E-04	4.53E-16	1.68E-06	3.15E+07	9.47E-11	
PU240	4.05E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.10E-15	1.60E-04	4.75E-18	1.76E-08	3.15E+07	7.17E-13	
SM151	3.38E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.76E-15	1.60E-04	3.61E-20	1.34E-10	3.15E+07	4.55E-15	
PU239	2.04E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.08E-15	1.60E-04	4.24E-18	1.57E-08	3.15E+07	3.22E-13	
BA137M	9.27E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.85E-12	1.60E-04	2.88E-14	1.07E-04	3.15E+07	9.95E-07	
RH106	1.59E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.18E-13	1.60E-04	1.04E-14	3.85E-05	3.15E+07	6.16E-08	
PR144M	1.14E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.28E-15	1.60E-04	2.79E-16	1.03E-06	3.15E+07	1.19E-11	
AM243	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	2.18E-15	8.07E-06	3.15E+07	3.96E-11	
CM242	3.23E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.46E-16	1.60E-04	5.69E-18	2.11E-08	3.15E+07	6.85E-14	
CM243	3.63E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.26E-16	1.60E-04	5.88E-15	2.18E-05	3.15E+07	7.96E-11	
NP239	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	7.69E-15	2.85E-05	3.15E+07	1.40E-10	
NP237	3.88E-01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.76E-18	1.60E-04	1.03E-15	3.81E-06	3.15E+07	1.49E-13	
PU242	2.85E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.70E-17	1.60E-04	4.01E-18	1.48E-08	3.15E+07	4.26E-15	
AM242	8.72E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.74E-16	1.60E-04	6.15E-16	2.28E-06	3.15E+07	2.00E-12	
AM242M	8.76E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.75E-16	1.60E-04	3.17E-17	1.17E-07	3.15E+07	1.04E-13	
													Total	5.48E-04	

MPC-32															
Off-Normal Conditions															
Effective Dose Equivalent From Submersion															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	SDE (mRem)	
Gases															
H 3	3.68E+02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	7.36E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
I129	3.31E-02	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	6.62E-14	1.60E-04	1.10E-15	4.07E-06	3.15E+07	1.36E-09	
KR 85	5.86E+03	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.30	1.17E-08	1.60E-04	1.32E-14	4.88E-05	3.15E+07	2.88E-03	
Crud															
Co-60	2.18E+01	100.0%	100%	32	6.19E+06	1.12E-05	1.81E-12	0.15	1.89E-10	1.60E-04	1.45E-13	5.37E-04	3.15E+07	5.12E-04	
Volatiles															
SR 90	6.32E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	8.42E-11	1.60E-04	9.20E-15	3.40E-05	3.15E+07	1.44E-05	
RU106	1.59E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	2.12E-11	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
CS134	4.04E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	5.38E-11	1.60E-04	9.45E-14	3.50E-04	3.15E+07	9.49E-05	
CS137	9.82E+04	11.5%	100%	32	6.19E+06	1.12E-05	1.81E-12	2.00E-04	1.31E-10	1.60E-04	8.63E-15	3.19E-05	3.15E+07	2.11E-05	
Fines															
PU241	8.53E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.71E-12	1.60E-04	1.17E-19	4.33E-10	3.15E+07	3.72E-12	
Y 90	6.32E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.26E-12	1.60E-04	6.24E-14	2.31E-04	3.15E+07	1.47E-06	
PM147	2.63E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.26E-13	1.60E-04	8.11E-16	3.00E-06	3.15E+07	7.95E-09	
CE144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	2.93E-15	1.08E-05	3.15E+07	8.89E-09	
PR144	8.14E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.63E-13	1.60E-04	8.43E-14	3.12E-04	3.15E+07	2.56E-07	
EU154	5.90E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.18E-13	1.60E-04	8.29E-14	3.07E-04	3.15E+07	1.82E-07	
CM244	1.01E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.02E-13	1.60E-04	3.91E-17	1.45E-07	3.15E+07	1.47E-10	
PU238	5.81E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.16E-13	1.60E-04	4.09E-17	1.51E-07	3.15E+07	8.86E-11	
SB125	2.30E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.60E-14	1.60E-04	2.65E-14	9.81E-05	3.15E+07	2.27E-08	
EU155	1.65E+03	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.30E-14	1.60E-04	3.39E-15	1.25E-05	3.15E+07	2.09E-09	
AM241	9.00E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.80E-14	1.60E-04	1.28E-15	4.74E-06	3.15E+07	4.29E-10	
TE125M	5.61E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.12E-14	1.60E-04	1.94E-15	7.18E-06	3.15E+07	4.06E-10	
PU240	4.05E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	8.10E-15	1.60E-04	3.92E-17	1.45E-07	3.15E+07	5.92E-12	
SM151	3.38E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.76E-15	1.60E-04	1.90E-19	7.03E-10	3.15E+07	2.39E-14	
PU239	2.04E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	4.08E-15	1.60E-04	1.86E-17	6.88E-08	3.15E+07	1.41E-12	
BA137M	9.27E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.85E-12	1.60E-04	3.73E-14	1.38E-04	3.15E+07	1.29E-06	
RH106	1.59E+04	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	3.18E-13	1.60E-04	1.09E-13	4.03E-04	3.15E+07	6.46E-07	
PR144M	1.14E+02	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	2.28E-15	1.60E-04	5.08E-16	1.88E-06	3.15E+07	2.16E-11	
AM243	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	2.75E-15	1.02E-05	3.15E+07	4.99E-11	
CM242	3.23E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	6.46E-16	1.60E-04	4.29E-17	1.59E-07	3.15E+07	5.17E-13	
CM243	3.63E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.26E-16	1.60E-04	9.79E-15	3.62E-05	3.15E+07	1.32E-10	
NP239	4.87E+01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	9.74E-16	1.60E-04	1.60E-14	5.92E-05	3.15E+07	2.90E-10	
NP237	3.88E-01	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	7.76E-18	1.60E-04	1.54E-15	5.70E-06	3.15E+07	2.23E-13	
PU242	2.85E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	5.70E-17	1.60E-04	3.27E-17	1.21E-07	3.15E+07	3.47E-14	
AM242	8.72E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.74E-16	1.60E-04	8.20E-15	3.03E-05	3.15E+07	2.67E-11	
AM242M	8.76E+00	11.5%	10%	32	6.19E+06	1.12E-05	1.81E-12	3.00E-05	1.75E-16	1.60E-04	1.36E-16	5.03E-07	3.15E+07	4.44E-13	
													Total	3.53E-03	

MPC-32														
Accident Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	Lacc Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
Gases														
H 3	3.68E+02	1.00E+00	32	6.19E+06	1.95E-05	3.16E-12	0.30	1.12E-08	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
I129	3.31E-02	1.00E+00	32	6.19E+06	1.95E-05	3.16E-12	0.30	1.00E-12	8.00E-03	4.83E-16	1.79E-06	2.59E+06	3.72E-08	
KR 85	5.86E+03	1.00E+00	32	6.19E+06	1.95E-05	3.16E-12	0.30	1.78E-07	8.00E-03	1.17E-16	4.33E-07	2.59E+06	1.59E-03	
Crud														
Co-60	2.18E+01	1.00E+00	32	6.19E+06	1.95E-05	3.16E-12	1.00	2.20E-09	8.00E-03	1.23E-13	4.55E-04	2.59E+06	2.07E-02	
Volatiles														
SR 90	6.32E+04	1.00E+00	32	6.19E+06	1.95E-05	3.16E-12	2.00E-04	1.28E-09	8.00E-03	7.78E-18	2.88E-08	2.59E+06	7.62E-07	
RU106	1.59E+04	1.00E+00	32	6.19E+06	1.95E-05	3.16E-12	2.00E-04	3.21E-10	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
CS134	4.04E+04	1.00E+00	32	6.19E+06	1.95E-05	3.16E-12	2.00E-04	8.16E-10	8.00E-03	7.40E-14	2.74E-04	2.59E+06	4.63E-03	
CS137	9.82E+04	1.00E+00	32	6.19E+06	1.95E-05	3.16E-12	2.00E-04	1.98E-09	8.00E-03	7.96E-18	2.95E-08	2.59E+06	1.21E-06	
Fines														
PU241	8.53E+04	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	2.59E-11	8.00E-03	7.19E-20	2.66E-10	2.59E+06	1.43E-10	
Y 90	6.32E+04	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	1.92E-11	8.00E-03	1.89E-16	6.99E-07	2.59E+06	2.78E-07	
PM147	2.63E+04	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	7.97E-12	8.00E-03	7.48E-19	2.77E-09	2.59E+06	4.57E-10	
CE144	8.14E+03	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	2.47E-12	8.00E-03	8.53E-16	3.16E-06	2.59E+06	1.61E-07	
PR144	8.14E+03	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	2.47E-12	8.00E-03	1.90E-15	7.03E-06	2.59E+06	3.59E-07	
EU154	5.90E+03	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	1.79E-12	8.00E-03	6.00E-14	2.22E-04	2.59E+06	8.23E-06	
CM244	1.01E+04	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	3.06E-12	8.00E-03	6.90E-18	2.55E-08	2.59E+06	1.62E-09	
PU238	5.81E+03	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	1.76E-12	8.00E-03	6.56E-18	2.43E-08	2.59E+06	8.86E-10	
SB125	2.30E+03	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	6.97E-13	8.00E-03	1.98E-14	7.33E-05	2.59E+06	1.06E-06	
EU155	1.65E+03	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	5.00E-13	8.00E-03	2.49E-15	9.21E-06	2.59E+06	9.55E-08	
AM241	9.00E+02	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	2.73E-13	8.00E-03	8.58E-16	3.17E-06	2.59E+06	1.79E-08	
TE125M	5.61E+02	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	1.70E-13	8.00E-03	5.96E-16	2.21E-06	2.59E+06	7.77E-09	
PU240	4.05E+02	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	1.23E-13	8.00E-03	6.36E-18	2.35E-08	2.59E+06	5.99E-11	
SM151	3.38E+02	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	1.02E-13	8.00E-03	5.20E-20	1.92E-10	2.59E+06	4.08E-13	
PU239	2.04E+02	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	6.18E-14	8.00E-03	4.84E-18	1.79E-08	2.59E+06	2.29E-11	
BA137M	9.27E+04	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	2.81E-11	8.00E-03	2.82E-14	1.04E-04	2.59E+06	6.07E-05	
RH106	1.59E+04	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	4.82E-12	8.00E-03	1.01E-14	3.74E-05	2.59E+06	3.73E-06	
PR144M	1.14E+02	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	3.46E-14	8.00E-03	3.25E-16	1.20E-06	2.59E+06	8.61E-10	
AM243	4.87E+01	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	1.48E-14	8.00E-03	2.19E-15	8.10E-06	2.59E+06	2.48E-09	
CM242	3.23E+01	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	9.79E-15	8.00E-03	7.83E-18	2.90E-08	2.59E+06	5.88E-12	
CM243	3.63E+01	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	1.10E-14	8.00E-03	5.77E-15	2.13E-05	2.59E+06	4.87E-09	
NP239	4.87E+01	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	1.48E-14	8.00E-03	7.53E-15	2.79E-05	2.59E+06	8.52E-09	
NP237	3.88E-01	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	1.18E-16	8.00E-03	1.04E-15	3.85E-06	2.59E+06	9.38E-12	
PU242	2.85E+00	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	8.64E-16	8.00E-03	5.34E-18	1.98E-08	2.59E+06	3.54E-13	
AM242	8.72E+00	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	2.64E-15	8.00E-03	6.09E-16	2.25E-06	2.59E+06	1.23E-10	
AM242M	8.76E+00	1.00E-01	32	6.19E+06	1.95E-05	3.16E-12	3.00E-05	2.66E-15	8.00E-03	3.80E-17	1.41E-07	2.59E+06	7.74E-12	
												Total	2.70E-02	

MPC-32														
Accident Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	Lacc Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
Gases														
H 3	3.68E+02	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.11E-08	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
I129	3.31E-02	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.00E-12	8.00E-03	6.66E-16	2.46E-06	2.59E+06	5.11E-08	
KR 85	5.86E+03	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.77E-07	8.00E-03	1.34E-16	4.96E-07	2.59E+06	1.82E-03	
Crud														
Co-60	2.18E+01	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	1.00	2.20E-09	8.00E-03	1.39E-13	5.14E-04	2.59E+06	2.34E-02	
Volatiles														
SR 90	6.32E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.28E-09	8.00E-03	9.49E-18	3.51E-08	2.59E+06	9.28E-07	
RU106	1.59E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	3.21E-10	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
CS134	4.04E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	8.15E-10	8.00E-03	8.43E-14	3.12E-04	2.59E+06	5.27E-03	
CS137	9.82E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.98E-09	8.00E-03	9.67E-18	3.58E-08	2.59E+06	1.47E-06	
Fines														
PU241	8.53E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.58E-11	8.00E-03	8.67E-20	3.21E-10	2.59E+06	1.72E-10	
Y 90	6.32E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.91E-11	8.00E-03	2.20E-16	8.14E-07	2.59E+06	3.23E-07	
PM147	2.63E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	7.96E-12	8.00E-03	9.56E-19	3.54E-09	2.59E+06	5.83E-10	
CE144	8.14E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	1.01E-15	3.74E-06	2.59E+06	1.91E-07	
PR144	8.14E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	2.15E-15	7.96E-06	2.59E+06	4.06E-07	
EU154	5.90E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.79E-12	8.00E-03	6.81E-14	2.52E-04	2.59E+06	9.32E-06	
CM244	1.01E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.06E-12	8.00E-03	1.33E-17	4.92E-08	2.59E+06	3.12E-09	
PU238	5.81E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.76E-12	8.00E-03	1.27E-17	4.70E-08	2.59E+06	1.71E-09	
SB125	2.30E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.96E-13	8.00E-03	2.27E-14	8.40E-05	2.59E+06	1.21E-06	
EU155	1.65E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.99E-13	8.00E-03	2.95E-15	1.09E-05	2.59E+06	1.13E-07	
AM241	9.00E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.72E-13	8.00E-03	1.07E-15	3.96E-06	2.59E+06	2.23E-08	
TE125M	5.61E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.70E-13	8.00E-03	8.48E-16	3.14E-06	2.59E+06	1.10E-08	
PU240	4.05E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.23E-13	8.00E-03	1.23E-17	4.55E-08	2.59E+06	1.16E-10	
SM151	3.38E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.02E-13	8.00E-03	8.80E-20	3.26E-10	2.59E+06	6.90E-13	
PU239	2.04E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.17E-14	8.00E-03	7.55E-18	2.79E-08	2.59E+06	3.57E-11	
BA137M	9.27E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.81E-11	8.00E-03	3.22E-14	1.19E-04	2.59E+06	6.93E-05	
RH106	1.59E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.81E-12	8.00E-03	1.16E-14	4.29E-05	2.59E+06	4.28E-06	
PR144M	1.14E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.45E-14	8.00E-03	4.20E-16	1.55E-06	2.59E+06	1.11E-09	
AM243	4.87E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	2.61E-15	9.66E-06	2.59E+06	2.95E-09	
CM242	3.23E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	9.78E-15	8.00E-03	1.48E-17	5.48E-08	2.59E+06	1.11E-11	
CM243	3.63E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.10E-14	8.00E-03	6.68E-15	2.47E-05	2.59E+06	5.63E-09	
NP239	4.87E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	8.73E-15	3.23E-05	2.59E+06	9.86E-09	
NP237	3.88E-01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.17E-16	8.00E-03	1.26E-15	4.66E-06	2.59E+06	1.13E-11	
PU242	2.85E+00	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	8.63E-16	8.00E-03	1.03E-17	3.81E-08	2.59E+06	6.81E-13	
AM242	8.72E+00	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.64E-15	8.00E-03	7.30E-16	2.70E-06	2.59E+06	1.48E-10	
AM242M	8.76E+00	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.65E-15	8.00E-03	6.01E-17	2.22E-07	2.59E+06	1.22E-11	
												Total	3.06E-02	

MPC-32														
Accident Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	Lacc Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
Gases														
H 3	3.68E+02	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.11E-08	8.00E-03	2.75E-18	1.02E-08	2.59E+06	2.35E-06	
I129	3.31E-02	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.00E-12	8.00E-03	2.14E-16	7.92E-07	2.59E+06	1.64E-08	
KR 85	5.86E+03	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.77E-07	8.00E-03	1.14E-16	4.22E-07	2.59E+06	1.55E-03	
Crud														
Co-60	2.18E+01	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	1.00	2.20E-09	8.00E-03	1.24E-13	4.59E-04	2.59E+06	2.09E-02	
Volatiles														
SR 90	6.32E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.28E-09	8.00E-03	6.44E-18	2.38E-08	2.59E+06	6.30E-07	
RU106	1.59E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	3.21E-10	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
CS134	4.04E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	8.15E-10	8.00E-03	7.37E-14	2.73E-04	2.59E+06	4.61E-03	
CS137	9.82E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.98E-09	8.00E-03	6.68E-18	2.47E-08	2.59E+06	1.01E-06	
Fines														
PU241	8.53E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.58E-11	8.00E-03	6.48E-20	2.40E-10	2.59E+06	1.28E-10	
Y 90	6.32E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.91E-11	8.00E-03	1.77E-16	6.55E-07	2.59E+06	2.60E-07	
PM147	2.63E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	7.96E-12	8.00E-03	5.45E-19	2.02E-09	2.59E+06	3.33E-10	
CE144	8.14E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	7.69E-16	2.85E-06	2.59E+06	1.45E-07	
PR144	8.14E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	1.90E-15	7.03E-06	2.59E+06	3.59E-07	
EU154	5.90E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.79E-12	8.00E-03	5.99E-14	2.22E-04	2.59E+06	8.20E-06	
CM244	1.01E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.06E-12	8.00E-03	7.08E-19	2.62E-09	2.59E+06	1.66E-10	
PU238	5.81E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.76E-12	8.00E-03	1.06E-18	3.92E-09	2.59E+06	1.43E-10	
SB125	2.30E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.96E-13	8.00E-03	1.95E-14	7.22E-05	2.59E+06	1.04E-06	
EU155	1.65E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.99E-13	8.00E-03	2.22E-15	8.21E-06	2.59E+06	8.50E-08	
AM241	9.00E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.72E-13	8.00E-03	6.74E-16	2.49E-06	2.59E+06	1.41E-08	
TE125M	5.61E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.70E-13	8.00E-03	2.23E-16	8.25E-07	2.59E+06	2.90E-09	
PU240	4.05E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.23E-13	8.00E-03	1.09E-18	4.03E-09	2.59E+06	1.02E-11	
SM151	3.38E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.02E-13	8.00E-03	7.08E-21	2.62E-11	2.59E+06	5.55E-14	
PU239	2.04E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.17E-14	8.00E-03	2.65E-18	9.81E-09	2.59E+06	1.25E-11	
BA137M	9.27E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.81E-11	8.00E-03	2.80E-14	1.04E-04	2.59E+06	6.02E-05	
RH106	1.59E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.81E-12	8.00E-03	1.01E-14	3.74E-05	2.59E+06	3.73E-06	
PR144M	1.14E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.45E-14	8.00E-03	2.00E-16	7.40E-07	2.59E+06	5.29E-10	
AM243	4.87E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	1.92E-15	7.10E-06	2.59E+06	2.17E-09	
CM242	3.23E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	9.78E-15	8.00E-03	1.13E-18	4.18E-09	2.59E+06	8.47E-13	
CM243	3.63E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.10E-14	8.00E-03	5.50E-15	2.04E-05	2.59E+06	4.63E-09	
NP239	4.87E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	7.18E-15	2.66E-05	2.59E+06	8.11E-09	
NP237	3.88E-01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.17E-16	8.00E-03	9.02E-16	3.34E-06	2.59E+06	8.12E-12	
PU242	2.85E+00	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	8.63E-16	8.00E-03	9.69E-19	3.59E-09	2.59E+06	6.41E-14	
AM242	8.72E+00	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.64E-15	8.00E-03	5.51E-16	2.04E-06	2.59E+06	1.11E-10	
AM242M	8.76E+00	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.65E-15	8.00E-03	1.72E-17	6.36E-08	2.59E+06	3.50E-12	
												Total	2.71E-02	

MPC-32													
Accident Conditions													
Effective Dose Equivalent From Submersion													
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	Lacc Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)
Gases													
H 3	3.68E+02	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.11E-08	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00
I129	3.31E-02	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.00E-12	8.00E-03	1.64E-16	6.07E-07	2.59E+06	1.26E-08
KR 85	5.86E+03	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.77E-07	8.00E-03	1.09E-16	4.03E-07	2.59E+06	1.48E-03
Crud													
Co-60	2.18E+01	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	1.00	2.20E-09	8.00E-03	1.23E-13	4.55E-04	2.59E+06	2.07E-02
Volatiles													
SR 90	6.32E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.28E-09	8.00E-03	5.44E-18	2.01E-08	2.59E+06	5.32E-07
RU106	1.59E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	3.21E-10	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00
CS134	4.04E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	8.15E-10	8.00E-03	7.19E-14	2.66E-04	2.59E+06	4.49E-03
CS137	9.82E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.98E-09	8.00E-03	5.70E-18	2.11E-08	2.59E+06	8.66E-07
Fines													
PU241	8.53E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.58E-11	8.00E-03	5.63E-20	2.08E-10	2.59E+06	1.11E-10
Y 90	6.32E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.91E-11	8.00E-03	1.62E-16	5.99E-07	2.59E+06	2.38E-07
PM147	2.63E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	7.96E-12	8.00E-03	4.46E-19	1.65E-09	2.59E+06	2.72E-10
CE144	8.14E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	6.68E-16	2.47E-06	2.59E+06	1.26E-07
PR144	8.14E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	1.87E-15	6.92E-06	2.59E+06	3.53E-07
EU154	5.90E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.79E-12	8.00E-03	5.87E-14	2.17E-04	2.59E+06	8.04E-06
CM244	1.01E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.06E-12	8.00E-03	1.46E-18	5.40E-09	2.59E+06	3.42E-10
PU238	5.81E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.76E-12	8.00E-03	1.68E-18	6.22E-09	2.59E+06	2.26E-10
SB125	2.30E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.96E-13	8.00E-03	1.87E-14	6.92E-05	2.59E+06	9.97E-07
EU155	1.65E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.99E-13	8.00E-03	1.85E-15	6.85E-06	2.59E+06	7.08E-08
AM241	9.00E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.72E-13	8.00E-03	5.21E-16	1.93E-06	2.59E+06	1.09E-08
TE125M	5.61E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.70E-13	8.00E-03	1.86E-16	6.88E-07	2.59E+06	2.42E-09
PU240	4.05E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.23E-13	8.00E-03	1.65E-18	6.11E-09	2.59E+06	1.55E-11
SM151	3.38E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.02E-13	8.00E-03	1.13E-20	4.18E-11	2.59E+06	8.86E-14
PU239	2.04E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.17E-14	8.00E-03	2.67E-18	9.88E-09	2.59E+06	1.26E-11
BA137M	9.27E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.81E-11	8.00E-03	2.73E-14	1.01E-04	2.59E+06	5.87E-05
RH106	1.59E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.81E-12	8.00E-03	9.75E-15	3.61E-05	2.59E+06	3.60E-06
PR144M	1.14E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.45E-14	8.00E-03	1.56E-16	5.77E-07	2.59E+06	4.13E-10
AM243	4.87E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	1.55E-15	5.74E-06	2.59E+06	1.75E-09
CM242	3.23E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	9.78E-15	8.00E-03	1.89E-18	6.99E-09	2.59E+06	1.42E-12
CM243	3.63E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.10E-14	8.00E-03	5.00E-15	1.85E-05	2.59E+06	4.21E-09
NP239	4.87E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	6.50E-15	2.41E-05	2.59E+06	7.34E-09
NP237	3.88E-01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.17E-16	8.00E-03	7.69E-16	2.85E-06	2.59E+06	6.92E-12
PU242	2.85E+00	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	8.63E-16	8.00E-03	1.43E-18	5.29E-09	2.59E+06	9.46E-14
AM242	8.72E+00	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.64E-15	8.00E-03	4.77E-16	1.76E-06	2.59E+06	9.65E-11
AM242M	8.76E+00	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.65E-15	8.00E-03	1.72E-17	6.36E-08	2.59E+06	3.50E-12
												Total	2.68E-02

MPC-32														
Accident Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
Gases														
H 3	3.68E+02	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.11E-08	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
I129	3.31E-02	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.00E-12	8.00E-03	1.10E-15	4.07E-06	2.59E+06	8.45E-08	
KR 85	5.86E+03	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.77E-07	8.00E-03	2.20E-16	8.14E-07	2.59E+06	2.99E-03	
Crud														
Co-60	2.18E+01	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	1.00	2.20E-09	8.00E-03	1.78E-13	6.59E-04	2.59E+06	3.00E-02	
Volatiles														
SR 90	6.32E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.28E-09	8.00E-03	2.28E-17	8.44E-08	2.59E+06	2.23E-06	
RU106	1.59E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	3.21E-10	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
CS134	4.04E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	8.15E-10	8.00E-03	1.20E-13	4.44E-04	2.59E+06	7.50E-03	
CS137	9.82E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.98E-09	8.00E-03	2.29E-17	8.47E-08	2.59E+06	3.48E-06	
Fines														
PU241	8.53E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.58E-11	8.00E-03	2.19E-19	8.10E-10	2.59E+06	4.33E-10	
Y 90	6.32E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.91E-11	8.00E-03	4.44E-16	1.64E-06	2.59E+06	6.51E-07	
PM147	2.63E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	7.96E-12	8.00E-03	2.18E-18	8.07E-09	2.59E+06	1.33E-09	
CE144	8.14E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	2.49E-15	9.21E-06	2.59E+06	4.70E-07	
PR144	8.14E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	2.99E-15	1.11E-05	2.59E+06	5.65E-07	
EU154	5.90E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.79E-12	8.00E-03	9.43E-14	3.49E-04	2.59E+06	1.29E-05	
CM244	1.01E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.06E-12	8.00E-03	8.82E-18	3.26E-08	2.59E+06	2.07E-09	
PU238	5.81E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.76E-12	8.00E-03	9.30E-18	3.44E-08	2.59E+06	1.25E-09	
SB125	2.30E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.96E-13	8.00E-03	3.53E-14	1.31E-04	2.59E+06	1.88E-06	
EU155	1.65E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.99E-13	8.00E-03	8.09E-15	2.99E-05	2.59E+06	3.10E-07	
AM241	9.00E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.72E-13	8.00E-03	2.87E-15	1.06E-05	2.59E+06	5.99E-08	
TE125M	5.61E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.70E-13	8.00E-03	1.22E-15	4.51E-06	2.59E+06	1.59E-08	
PU240	4.05E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.23E-13	8.00E-03	9.26E-18	3.43E-08	2.59E+06	8.70E-11	
SM151	3.38E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.02E-13	8.00E-03	7.09E-20	2.62E-10	2.59E+06	5.56E-13	
PU239	2.04E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.17E-14	8.00E-03	9.47E-18	3.50E-08	2.59E+06	4.48E-11	
BA137M	9.27E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.81E-11	8.00E-03	4.63E-14	1.71E-04	2.59E+06	9.96E-05	
RH106	1.59E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.81E-12	8.00E-03	1.72E-14	6.36E-05	2.59E+06	6.35E-06	
PR144M	1.14E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.45E-14	8.00E-03	8.16E-16	3.02E-06	2.59E+06	2.16E-09	
AM243	4.87E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	7.47E-15	2.76E-05	2.59E+06	8.44E-09	
CM242	3.23E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	9.78E-15	8.00E-03	1.06E-17	3.92E-08	2.59E+06	7.94E-12	
CM243	3.63E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.10E-14	8.00E-03	1.50E-14	5.55E-05	2.59E+06	1.26E-08	
NP239	4.87E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	2.00E-14	7.40E-05	2.59E+06	2.26E-08	
NP237	3.88E-01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.17E-16	8.00E-03	3.20E-15	1.18E-05	2.59E+06	2.88E-11	
PU242	2.85E+00	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	8.63E-16	8.00E-03	7.90E-18	2.92E-08	2.59E+06	5.22E-13	
AM242	8.72E+00	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.64E-15	8.00E-03	1.88E-15	6.96E-06	2.59E+06	3.80E-10	
AM242M	8.76E+00	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.65E-15	8.00E-03	7.94E-17	2.94E-07	2.59E+06	1.61E-11	
												Total	4.06E-02	

MPC-32														
Accident Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	Lacc Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
Gases														
H 3	3.68E+02	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.11E-08	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
I129	3.31E-02	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.00E-12	8.00E-03	3.86E-16	1.43E-06	2.59E+06	2.96E-08	
KR 85	5.86E+03	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.77E-07	8.00E-03	1.18E-16	4.37E-07	2.59E+06	1.60E-03	
Crud														
Co-60	2.18E+01	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	1.00	2.20E-09	8.00E-03	1.27E-13	4.70E-04	2.59E+06	2.14E-02	
Volatiles														
SR 90	6.32E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.28E-09	8.00E-03	7.33E-18	2.71E-08	2.59E+06	7.17E-07	
RU106	1.59E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	3.21E-10	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
CS134	4.04E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	8.15E-10	8.00E-03	7.57E-14	2.80E-04	2.59E+06	4.73E-03	
CS137	9.82E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.98E-09	8.00E-03	7.55E-18	2.79E-08	2.59E+06	1.15E-06	
Fines														
PU241	8.53E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.58E-11	8.00E-03	6.98E-20	2.58E-10	2.59E+06	1.38E-10	
Y 90	6.32E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.91E-11	8.00E-03	1.87E-16	6.92E-07	2.59E+06	2.74E-07	
PM147	2.63E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	7.96E-12	8.00E-03	6.75E-19	2.50E-09	2.59E+06	4.12E-10	
CE144	8.14E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	8.33E-16	3.08E-06	2.59E+06	1.57E-07	
PR144	8.14E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	1.95E-15	7.22E-06	2.59E+06	3.68E-07	
EU154	5.90E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.79E-12	8.00E-03	6.15E-14	2.28E-04	2.59E+06	8.42E-06	
CM244	1.01E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.06E-12	8.00E-03	4.19E-18	1.55E-08	2.59E+06	9.82E-10	
PU238	5.81E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.76E-12	8.00E-03	4.01E-18	1.48E-08	2.59E+06	5.41E-10	
SB125	2.30E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.96E-13	8.00E-03	2.01E-14	7.44E-05	2.59E+06	1.07E-06	
EU155	1.65E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.99E-13	8.00E-03	2.41E-15	8.92E-06	2.59E+06	9.23E-08	
AM241	9.00E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.72E-13	8.00E-03	7.83E-16	2.90E-06	2.59E+06	1.64E-08	
TE125M	5.61E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.70E-13	8.00E-03	4.64E-16	1.72E-06	2.59E+06	6.04E-09	
PU240	4.05E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.23E-13	8.00E-03	3.92E-18	1.45E-08	2.59E+06	3.68E-11	
SM151	3.38E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.02E-13	8.00E-03	3.58E-20	1.32E-10	2.59E+06	2.81E-13	
PU239	2.04E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.17E-14	8.00E-03	3.88E-18	1.44E-08	2.59E+06	1.84E-11	
BA137M	9.27E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.81E-11	8.00E-03	2.88E-14	1.07E-04	2.59E+06	6.19E-05	
RH106	1.59E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.81E-12	8.00E-03	1.03E-14	3.81E-05	2.59E+06	3.80E-06	
PR144M	1.14E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.45E-14	8.00E-03	2.81E-16	1.04E-06	2.59E+06	7.43E-10	
AM243	4.87E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	2.09E-15	7.73E-06	2.59E+06	2.36E-09	
CM242	3.23E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	9.78E-15	8.00E-03	4.91E-18	1.82E-08	2.59E+06	3.68E-12	
CM243	3.63E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.10E-14	8.00E-03	5.76E-15	2.13E-05	2.59E+06	4.85E-09	
NP239	4.87E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	7.52E-15	2.78E-05	2.59E+06	8.50E-09	
NP237	3.88E-01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.17E-16	8.00E-03	9.94E-16	3.68E-06	2.59E+06	8.95E-12	
PU242	2.85E+00	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	8.63E-16	8.00E-03	3.32E-18	1.23E-08	2.59E+06	2.20E-13	
AM242	8.72E+00	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.64E-15	8.00E-03	5.94E-16	2.20E-06	2.59E+06	1.20E-10	
AM242M	8.76E+00	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.65E-15	8.00E-03	2.95E-17	1.09E-07	2.59E+06	6.00E-12	
												Total	2.78E-02	

MPC-32														
Accident Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	Lacc Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
Gases														
H 3	3.68E+02	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.11E-08	8.00E-03	3.31E-19	1.22E-09	2.59E+06	2.83E-07	
I129	3.31E-02	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.00E-12	8.00E-03	3.80E-16	1.41E-06	2.59E+06	2.92E-08	
KR 85	5.86E+03	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.77E-07	8.00E-03	1.19E-16	4.40E-07	2.59E+06	1.62E-03	
Crud														
Co-60	2.18E+01	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	1.00	2.20E-09	8.00E-03	1.26E-13	4.66E-04	2.59E+06	2.12E-02	
Volatiles														
SR 90	6.32E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.28E-09	8.00E-03	7.53E-18	2.79E-08	2.59E+06	7.36E-07	
RU106	1.59E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	3.21E-10	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
CS134	4.04E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	8.15E-10	8.00E-03	7.57E-14	2.80E-04	2.59E+06	4.73E-03	
CS137	9.82E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.98E-09	8.00E-03	7.74E-18	2.86E-08	2.59E+06	1.18E-06	
Fines														
PU241	8.53E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.58E-11	8.00E-03	7.25E-20	2.68E-10	2.59E+06	1.43E-10	
Y 90	6.32E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.91E-11	8.00E-03	1.90E-16	7.03E-07	2.59E+06	2.79E-07	
PM147	2.63E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	7.96E-12	8.00E-03	6.93E-19	2.56E-09	2.59E+06	4.23E-10	
CE144	8.14E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	8.53E-16	3.16E-06	2.59E+06	1.61E-07	
PR144	8.14E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	1.95E-15	7.22E-06	2.59E+06	3.68E-07	
EU154	5.90E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.79E-12	8.00E-03	6.14E-14	2.27E-04	2.59E+06	8.41E-06	
CM244	1.01E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.06E-12	8.00E-03	4.91E-18	1.82E-08	2.59E+06	1.15E-09	
PU238	5.81E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.76E-12	8.00E-03	4.88E-18	1.81E-08	2.59E+06	6.58E-10	
SB125	2.30E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.96E-13	8.00E-03	2.02E-14	7.47E-05	2.59E+06	1.08E-06	
EU155	1.65E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.99E-13	8.00E-03	2.49E-15	9.21E-06	2.59E+06	9.53E-08	
AM241	9.00E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.72E-13	8.00E-03	8.18E-16	3.03E-06	2.59E+06	1.71E-08	
TE125M	5.61E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.70E-13	8.00E-03	4.53E-16	1.68E-06	2.59E+06	5.90E-09	
PU240	4.05E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.23E-13	8.00E-03	4.75E-18	1.76E-08	2.59E+06	4.46E-11	
SM151	3.38E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.02E-13	8.00E-03	3.61E-20	1.34E-10	2.59E+06	2.83E-13	
PU239	2.04E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.17E-14	8.00E-03	4.24E-18	1.57E-08	2.59E+06	2.01E-11	
BA137M	9.27E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.81E-11	8.00E-03	2.88E-14	1.07E-04	2.59E+06	6.19E-05	
RH106	1.59E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.81E-12	8.00E-03	1.04E-14	3.85E-05	2.59E+06	3.84E-06	
PR144M	1.14E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.45E-14	8.00E-03	2.79E-16	1.03E-06	2.59E+06	7.38E-10	
AM243	4.87E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	2.18E-15	8.07E-06	2.59E+06	2.46E-09	
CM242	3.23E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	9.78E-15	8.00E-03	5.69E-18	2.11E-08	2.59E+06	4.26E-12	
CM243	3.63E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.10E-14	8.00E-03	5.88E-15	2.18E-05	2.59E+06	4.95E-09	
NP239	4.87E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	7.69E-15	2.85E-05	2.59E+06	8.69E-09	
NP237	3.88E-01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.17E-16	8.00E-03	1.03E-15	3.81E-06	2.59E+06	9.27E-12	
PU242	2.85E+00	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	8.63E-16	8.00E-03	4.01E-18	1.48E-08	2.59E+06	2.65E-13	
AM242	8.72E+00	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.64E-15	8.00E-03	6.15E-16	2.28E-06	2.59E+06	1.24E-10	
AM242M	8.76E+00	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.65E-15	8.00E-03	3.17E-17	1.17E-07	2.59E+06	6.44E-12	
												Total	2.76E-02	

MPC-32														
Accident Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	Lacc Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	SDE (mRem)	
Gases														
H 3	3.68E+02	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.11E-08	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
I129	3.31E-02	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.00E-12	8.00E-03	1.10E-15	4.07E-06	2.59E+06	8.45E-08	
KR 85	5.86E+03	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	0.30	1.77E-07	8.00E-03	1.32E-14	4.88E-05	2.59E+06	1.79E-01	
Crud														
Co-60	2.18E+01	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	1.00	2.20E-09	8.00E-03	1.45E-13	5.37E-04	2.59E+06	2.44E-02	
Volatiles														
SR 90	6.32E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.28E-09	8.00E-03	9.20E-15	3.40E-05	2.59E+06	8.99E-04	
RU106	1.59E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	3.21E-10	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
CS134	4.04E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	8.15E-10	8.00E-03	9.45E-14	3.50E-04	2.59E+06	5.91E-03	
CS137	9.82E+04	1.00E+00	32	6.19E+06	1.95E-05	3.15E-12	2.00E-04	1.98E-09	8.00E-03	8.63E-15	3.19E-05	2.59E+06	1.31E-03	
Fines														
PU241	8.53E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.58E-11	8.00E-03	1.17E-19	4.33E-10	2.59E+06	2.32E-10	
Y 90	6.32E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.91E-11	8.00E-03	6.24E-14	2.31E-04	2.59E+06	9.15E-05	
PM147	2.63E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	7.96E-12	8.00E-03	8.11E-16	3.00E-06	2.59E+06	4.95E-07	
CE144	8.14E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	2.93E-15	1.08E-05	2.59E+06	5.53E-07	
PR144	8.14E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.46E-12	8.00E-03	8.43E-14	3.12E-04	2.59E+06	1.59E-05	
EU154	5.90E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.79E-12	8.00E-03	8.29E-14	3.07E-04	2.59E+06	1.13E-05	
CM244	1.01E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.06E-12	8.00E-03	3.91E-17	1.45E-07	2.59E+06	9.16E-09	
PU238	5.81E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.76E-12	8.00E-03	4.09E-17	1.51E-07	2.59E+06	5.51E-09	
SB125	2.30E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.96E-13	8.00E-03	2.65E-14	9.81E-05	2.59E+06	1.41E-06	
EU155	1.65E+03	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.99E-13	8.00E-03	3.39E-15	1.25E-05	2.59E+06	1.30E-07	
AM241	9.00E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.72E-13	8.00E-03	1.28E-15	4.74E-06	2.59E+06	2.67E-08	
TE125M	5.61E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.70E-13	8.00E-03	1.94E-15	7.18E-06	2.59E+06	2.52E-08	
PU240	4.05E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.23E-13	8.00E-03	3.92E-17	1.45E-07	2.59E+06	3.68E-10	
SM151	3.38E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.02E-13	8.00E-03	1.90E-19	7.03E-10	2.59E+06	1.49E-12	
PU239	2.04E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	6.17E-14	8.00E-03	1.86E-17	6.88E-08	2.59E+06	8.80E-11	
BA137M	9.27E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.81E-11	8.00E-03	3.73E-14	1.38E-04	2.59E+06	8.02E-05	
RH106	1.59E+04	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	4.81E-12	8.00E-03	1.09E-13	4.03E-04	2.59E+06	4.02E-05	
PR144M	1.14E+02	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	3.45E-14	8.00E-03	5.08E-16	1.88E-06	2.59E+06	1.34E-09	
AM243	4.87E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	2.75E-15	1.02E-05	2.59E+06	3.11E-09	
CM242	3.23E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	9.78E-15	8.00E-03	4.29E-17	1.59E-07	2.59E+06	3.22E-11	
CM243	3.63E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.10E-14	8.00E-03	9.79E-15	3.62E-05	2.59E+06	8.25E-09	
NP239	4.87E+01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.47E-14	8.00E-03	1.60E-14	5.92E-05	2.59E+06	1.81E-08	
NP237	3.88E-01	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	1.17E-16	8.00E-03	1.54E-15	5.70E-06	2.59E+06	1.39E-11	
PU242	2.85E+00	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	8.63E-16	8.00E-03	3.27E-17	1.21E-07	2.59E+06	2.16E-12	
AM242	8.72E+00	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.64E-15	8.00E-03	8.20E-15	3.03E-05	2.59E+06	1.66E-09	
AM242M	8.76E+00	1.00E-01	32	6.19E+06	1.95E-05	3.15E-12	3.00E-05	2.65E-15	8.00E-03	1.36E-16	5.03E-07	2.59E+06	2.76E-11	
												Total	2.12E-01	

MPC-68															
Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	CDE (mRem)
									Gases						
H 3	1.24E+02	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.18E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	1.26E-05
I129	1.12E-02	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.07E-14	1.60E-04	3.30E-04	8.69E-11	3.22E-01	3.15E+07	5.71E-09
KR 85	2.04E+03	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.95E-09	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
									Crud						
Co-60	6.50E+01	100.0%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	3.30E-04	4.76E-09	1.76E+01	3.15E+07	3.63E-02
									Volatiles						
SR 90	2.24E+04	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.42E-11	1.60E-04	3.30E-04	2.64E-09	9.77E+00	3.15E+07	2.31E-04
RU106	4.71E+03	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.99E-12	1.60E-04	3.30E-04	1.38E-08	5.11E+01	3.15E+07	2.54E-04
CS134	1.18E+04	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	7.50E-12	1.60E-04	3.30E-04	1.30E-08	4.81E+01	3.15E+07	6.00E-04
CS137	3.35E+04	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.13E-11	1.60E-04	3.30E-04	8.76E-09	3.24E+01	3.15E+07	1.15E-03
									Fines						
PU241	2.58E+04	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.46E-13	1.60E-04	3.30E-04	6.82E-07	2.52E+03	3.15E+07	1.03E-03
Y 90	2.24E+04	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.14E-13	1.60E-04	3.30E-04	9.52E-12	3.52E-02	3.15E+07	1.25E-08
PM147	9.63E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.18E-14	1.60E-04	3.30E-04	1.88E-14	6.96E-05	3.15E+07	1.06E-11
CE144	2.48E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	3.30E-04	1.93E-09	7.14E+00	3.15E+07	2.81E-07
PR144	2.48E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	3.30E-04	2.41E-15	8.92E-06	3.15E+07	3.51E-13
EU154	1.74E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.66E-14	1.60E-04	3.30E-04	1.17E-08	4.33E+01	3.15E+07	1.19E-06
CM244	2.38E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.27E-14	1.60E-04	3.30E-04	1.59E-05	5.88E+04	3.15E+07	2.22E-03
PU238	1.58E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.51E-14	1.60E-04	3.30E-04	2.80E-05	1.04E+05	3.15E+07	2.60E-03
SB125	7.91E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.54E-15	1.60E-04	3.30E-04	3.60E-10	1.33E+00	3.15E+07	1.67E-08
EU155	5.41E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.16E-15	1.60E-04	3.30E-04	3.56E-10	1.32E+00	3.15E+07	1.13E-08
AM241	2.78E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.65E-15	1.60E-04	3.30E-04	3.25E-05	1.20E+05	3.15E+07	5.30E-04
TE125M	1.93E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.84E-15	1.60E-04	3.30E-04	1.24E-10	4.59E-01	3.15E+07	1.41E-09
PU240	1.50E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.43E-15	1.60E-04	3.30E-04	3.18E-05	1.18E+05	3.15E+07	2.80E-04
SM151	9.76E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.31E-16	1.60E-04	3.30E-04	4.03E-14	1.49E-04	3.15E+07	2.31E-13
PU239	6.70E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.39E-16	1.60E-04	3.30E-04	3.18E-05	1.18E+05	3.15E+07	1.25E-04
BA137M	3.17E+04	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.02E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	4.71E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.49E-14	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	3.48E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.32E-16	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	1.36E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	3.30E-04	3.26E-05	1.21E+05	3.15E+07	2.60E-05
CM242	9.82E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.36E-17	1.60E-04	3.30E-04	5.70E-07	2.11E+03	3.15E+07	3.28E-07
CM243	9.79E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.34E-17	1.60E-04	3.30E-04	2.07E-05	7.66E+04	3.15E+07	1.19E-05
NP239	1.36E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	3.30E-04	7.45E-11	2.76E-01	3.15E+07	5.95E-11
NP237	1.18E-01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-18	1.60E-04	3.30E-04	2.96E-05	1.10E+05	3.15E+07	2.05E-07
PU242	9.04E-01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.62E-18	1.60E-04	3.30E-04	3.02E-05	1.12E+05	3.15E+07	1.60E-06
AM242	2.71E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.58E-17	1.60E-04	3.30E-04	1.94E-09	7.18E+00	3.15E+07	3.09E-10
AM242M	2.72E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.59E-17	1.60E-04	3.30E-04	3.21E-05	1.19E+05	3.15E+07	5.12E-06
														Total	4.54E-02

MPC-68															
Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	CDE (mRem)
									Gases						
H 3	1.24E+02	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.18E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	1.26E-05
I129	1.12E-02	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.07E-14	1.60E-04	3.30E-04	2.09E-10	7.73E-01	3.15E+07	1.37E-08
KR 85	2.04E+03	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.95E-09	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
									Crud						
Co-60	6.50E+01	100.0%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	3.30E-04	1.84E-08	6.81E+01	3.15E+07	1.40E-01
									Volatiles						
SR 90	2.24E+04	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.42E-11	1.60E-04	3.30E-04	2.64E-09	9.77E+00	3.15E+07	2.31E-04
RU106	4.71E+03	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.99E-12	1.60E-04	3.30E-04	1.37E-08	5.07E+01	3.15E+07	2.52E-04
CS134	1.18E+04	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	7.50E-12	1.60E-04	3.30E-04	1.08E-08	4.00E+01	3.15E+07	4.99E-04
CS137	3.35E+04	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.13E-11	1.60E-04	3.30E-04	7.84E-09	2.90E+01	3.15E+07	1.03E-03
									Fines						
PU241	2.58E+04	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.46E-13	1.60E-04	3.30E-04	3.06E-11	1.13E-01	3.15E+07	4.63E-08
Y 90	2.24E+04	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.14E-13	1.60E-04	3.30E-04	9.52E-12	3.52E-02	3.15E+07	1.25E-08
PM147	9.63E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.18E-14	1.60E-04	3.30E-04	3.60E-14	1.33E-04	3.15E+07	2.03E-11
CE144	2.48E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	3.30E-04	1.97E-09	7.29E+00	3.15E+07	2.87E-07
PR144	2.48E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	3.30E-04	1.05E-14	3.89E-05	3.15E+07	1.53E-12
EU154	1.74E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.66E-14	1.60E-04	3.30E-04	1.55E-08	5.74E+01	3.15E+07	1.58E-06
CM244	2.38E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.27E-14	1.60E-04	3.30E-04	1.04E-09	3.85E+00	3.15E+07	1.45E-07
PU238	1.58E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.51E-14	1.60E-04	3.30E-04	1.00E-09	3.70E+00	3.15E+07	9.27E-08
SB125	7.91E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.54E-15	1.60E-04	3.30E-04	4.16E-10	1.54E+00	3.15E+07	1.93E-08
EU155	5.41E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.16E-15	1.60E-04	3.30E-04	6.14E-10	2.27E+00	3.15E+07	1.95E-08
AM241	2.78E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.65E-15	1.60E-04	3.30E-04	2.67E-09	9.88E+00	3.15E+07	4.36E-08
TE125M	1.93E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.84E-15	1.60E-04	3.30E-04	1.07E-10	3.96E-01	3.15E+07	1.21E-09
PU240	1.50E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.43E-15	1.60E-04	3.30E-04	9.51E-10	3.52E+00	3.15E+07	8.37E-09
SM151	9.76E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.31E-16	1.60E-04	3.30E-04	1.49E-13	5.51E-04	3.15E+07	8.53E-13
PU239	6.70E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.39E-16	1.60E-04	3.30E-04	9.22E-10	3.41E+00	3.15E+07	3.63E-09
BA137M	3.17E+04	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.02E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	4.71E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.49E-14	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	3.48E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.32E-16	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	1.36E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	3.30E-04	1.52E-08	5.62E+01	3.15E+07	1.21E-08
CM242	9.82E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.36E-17	1.60E-04	3.30E-04	9.44E-10	3.49E+00	3.15E+07	5.44E-10
CM243	9.79E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.34E-17	1.60E-04	3.30E-04	6.29E-09	2.33E+01	3.15E+07	3.61E-09
NP239	1.36E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	3.30E-04	1.63E-11	6.03E-02	3.15E+07	1.30E-11
NP237	1.18E-01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-18	1.60E-04	3.30E-04	1.69E-08	6.25E+01	3.15E+07	1.17E-10
PU242	9.04E-01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.62E-18	1.60E-04	3.30E-04	9.45E-10	3.50E+00	3.15E+07	5.01E-11
AM242	2.71E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.58E-17	1.60E-04	3.30E-04	2.94E-12	1.09E-02	3.15E+07	4.68E-13
AM242M	2.72E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.59E-17	1.60E-04	3.30E-04	1.38E-09	5.11E+00	3.15E+07	2.20E-10
														Total	1.42E-01

MPC-68															
Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	CDE (mRem)
									Gases						
H 3	1.24E+02	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.18E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	1.26E-05
I129	1.12E-02	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.07E-14	1.60E-04	3.30E-04	3.14E-10	1.16E+00	3.15E+07	2.06E-08
KR 85	2.04E+03	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.95E-09	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
									Crud						
Co-60	6.50E+01	100.0%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	3.30E-04	3.45E-07	1.28E+03	3.15E+07	2.63E+00
									Volatiles						
SR 90	2.24E+04	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.42E-11	1.60E-04	3.30E-04	2.86E-06	1.06E+04	3.15E+07	2.51E-01
RU106	4.71E+03	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.99E-12	1.60E-04	3.30E-04	1.04E-06	3.85E+03	3.15E+07	1.92E-02
CS134	1.18E+04	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	7.50E-12	1.60E-04	3.30E-04	1.18E-08	4.37E+01	3.15E+07	5.45E-04
CS137	3.35E+04	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.13E-11	1.60E-04	3.30E-04	8.82E-09	3.26E+01	3.15E+07	1.16E-03
									Fines						
PU241	2.58E+04	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.46E-13	1.60E-04	3.30E-04	3.18E-06	1.18E+04	3.15E+07	4.81E-03
Y 90	2.24E+04	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.14E-13	1.60E-04	3.30E-04	9.31E-09	3.44E+01	3.15E+07	1.22E-05
PM147	9.63E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.18E-14	1.60E-04	3.30E-04	7.74E-08	2.86E+02	3.15E+07	4.37E-05
CE144	2.48E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	3.30E-04	7.91E-07	2.93E+03	3.15E+07	1.15E-04
PR144	2.48E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	3.30E-04	9.40E-11	3.48E-01	3.15E+07	1.37E-08
EU154	1.74E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.66E-14	1.60E-04	3.30E-04	7.92E-08	2.93E+02	3.15E+07	8.09E-06
CM244	2.38E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.27E-14	1.60E-04	3.30E-04	1.93E-05	7.14E+04	3.15E+07	2.70E-03
PU238	1.58E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.51E-14	1.60E-04	3.30E-04	3.20E-04	1.18E+06	3.15E+07	2.97E-02
SB125	7.91E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.54E-15	1.60E-04	3.30E-04	2.17E-08	8.03E+01	3.15E+07	1.01E-06
EU155	5.41E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.16E-15	1.60E-04	3.30E-04	1.19E-08	4.40E+01	3.15E+07	3.78E-07
AM241	2.78E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.65E-15	1.60E-04	3.30E-04	1.84E-05	6.81E+04	3.15E+07	3.00E-04
TE125M	1.93E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.84E-15	1.60E-04	3.30E-04	1.04E-08	3.85E+01	3.15E+07	1.18E-07
PU240	1.50E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.43E-15	1.60E-04	3.30E-04	3.23E-04	1.20E+06	3.15E+07	2.84E-03
SM151	9.76E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.31E-16	1.60E-04	3.30E-04	3.26E-09	1.21E+01	3.15E+07	1.87E-08
PU239	6.70E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.39E-16	1.60E-04	3.30E-04	3.23E-04	1.20E+06	3.15E+07	1.27E-03
BA137M	3.17E+04	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.02E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	4.71E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.49E-14	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	3.48E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.32E-16	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	1.36E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	3.30E-04	1.78E-05	6.59E+04	3.15E+07	1.42E-05
CM242	9.82E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.36E-17	1.60E-04	3.30E-04	1.55E-05	5.74E+04	3.15E+07	8.93E-06
CM243	9.79E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.34E-17	1.60E-04	3.30E-04	1.94E-05	7.18E+04	3.15E+07	1.11E-05
NP239	1.36E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	3.30E-04	2.36E-09	8.73E+00	3.15E+07	1.88E-09
NP237	1.18E-01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-18	1.60E-04	3.30E-04	1.61E-05	5.96E+04	3.15E+07	1.11E-07
PU242	9.04E-01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.62E-18	1.60E-04	3.30E-04	3.07E-04	1.14E+06	3.15E+07	1.63E-05
AM242	2.71E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.58E-17	1.60E-04	3.30E-04	5.20E-08	1.92E+02	3.15E+07	8.27E-09
AM242M	2.72E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.59E-17	1.60E-04	3.30E-04	4.20E-06	1.55E+04	3.15E+07	6.70E-07
														Total	2.95E+00

MPC-68															
Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	CDE (mRem)
									Gases						
H 3	1.24E+02	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.18E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	1.26E-05
I129	1.12E-02	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.07E-14	1.60E-04	3.30E-04	1.40E-10	5.18E-01	3.15E+07	9.20E-09
KR 85	2.04E+03	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.95E-09	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
									Crud						
Co-60	6.50E+01	100.0%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	3.30E-04	1.72E-08	6.36E+01	3.15E+07	1.31E-01
									Volatiles						
SR 90	2.24E+04	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.42E-11	1.60E-04	3.30E-04	3.36E-07	1.24E+03	3.15E+07	2.94E-02
RU106	4.71E+03	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.99E-12	1.60E-04	3.30E-04	1.37E-08	5.07E+01	3.15E+07	2.52E-04
CS134	1.18E+04	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	7.50E-12	1.60E-04	3.30E-04	1.18E-08	4.37E+01	3.15E+07	5.45E-04
CS137	3.35E+04	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.13E-11	1.60E-04	3.30E-04	8.30E-09	3.07E+01	3.15E+07	1.09E-03
									Fines						
PU241	2.58E+04	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.46E-13	1.60E-04	3.30E-04	3.36E-06	1.24E+04	3.15E+07	5.09E-03
Y 90	2.24E+04	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.14E-13	1.60E-04	3.30E-04	2.79E-10	1.03E+00	3.15E+07	3.67E-07
PM147	9.63E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.18E-14	1.60E-04	3.30E-04	8.16E-09	3.02E+01	3.15E+07	4.61E-06
CE144	2.48E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	3.30E-04	2.67E-08	9.88E+01	3.15E+07	3.89E-06
PR144	2.48E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	3.30E-04	8.08E-14	2.99E-04	3.15E+07	1.18E-11
EU154	1.74E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.66E-14	1.60E-04	3.30E-04	1.06E-07	3.92E+02	3.15E+07	1.08E-05
CM244	2.38E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.27E-14	1.60E-04	3.30E-04	9.38E-05	3.47E+05	3.15E+07	1.31E-02
PU238	1.58E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.51E-14	1.60E-04	3.30E-04	1.52E-04	5.62E+05	3.15E+07	1.41E-02
SB125	7.91E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.54E-15	1.60E-04	3.30E-04	6.49E-10	2.40E+00	3.15E+07	3.01E-08
EU155	5.41E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.16E-15	1.60E-04	3.30E-04	1.43E-08	5.29E+01	3.15E+07	4.54E-07
AM241	2.78E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.65E-15	1.60E-04	3.30E-04	1.74E-04	6.44E+05	3.15E+07	2.84E-03
TE125M	1.93E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.84E-15	1.60E-04	3.30E-04	3.01E-09	1.11E+01	3.15E+07	3.42E-08
PU240	1.50E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.43E-15	1.60E-04	3.30E-04	1.69E-04	6.25E+05	3.15E+07	1.49E-03
SM151	9.76E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.31E-16	1.60E-04	3.30E-04	1.10E-08	4.07E+01	3.15E+07	6.30E-08
PU239	6.70E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.39E-16	1.60E-04	3.30E-04	1.69E-04	6.25E+05	3.15E+07	6.64E-04
BA137M	3.17E+04	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.02E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	4.71E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.49E-14	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	3.48E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.32E-16	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	1.36E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	3.30E-04	1.73E-04	6.40E+05	3.15E+07	1.38E-04
CM242	9.82E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.36E-17	1.60E-04	3.30E-04	3.90E-06	1.44E+04	3.15E+07	2.25E-06
CM243	9.79E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.34E-17	1.60E-04	3.30E-04	1.18E-04	4.37E+05	3.15E+07	6.78E-05
NP239	1.36E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	3.30E-04	2.08E-10	7.70E-01	3.15E+07	1.66E-10
NP237	1.18E-01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-18	1.60E-04	3.30E-04	2.62E-04	9.69E+05	3.15E+07	1.81E-06
PU242	9.04E-01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.62E-18	1.60E-04	3.30E-04	1.61E-04	5.96E+05	3.15E+07	8.54E-06
AM242	2.71E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.58E-17	1.60E-04	3.30E-04	1.32E-08	4.88E+01	3.15E+07	2.10E-09
AM242M	2.72E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.59E-17	1.60E-04	3.30E-04	1.69E-04	6.25E+05	3.15E+07	2.70E-05
														Total	2.00E-01

MPC-68															
Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	CDE (mRem)
									Gases						
H 3	1.24E+02	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.18E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	1.26E-05
I129	1.12E-02	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.07E-14	1.60E-04	3.30E-04	1.38E-10	5.11E-01	3.15E+07	9.07E-09
KR 85	2.04E+03	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.95E-09	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
									Crud						
Co-60	6.50E+01	100.0%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	3.30E-04	1.35E-08	5.00E+01	3.15E+07	1.03E-01
									Volatiles						
SR 90	2.24E+04	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.42E-11	1.60E-04	3.30E-04	7.27E-07	2.69E+03	3.15E+07	6.37E-02
RU106	4.71E+03	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.99E-12	1.60E-04	3.30E-04	1.37E-08	5.07E+01	3.15E+07	2.52E-04
CS134	1.18E+04	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	7.50E-12	1.60E-04	3.30E-04	1.10E-08	4.07E+01	3.15E+07	5.08E-04
CS137	3.35E+04	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.13E-11	1.60E-04	3.30E-04	7.94E-09	2.94E+01	3.15E+07	1.04E-03
									Fines						
PU241	2.58E+04	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.46E-13	1.60E-04	3.30E-04	4.20E-05	1.55E+05	3.15E+07	6.36E-02
Y 90	2.24E+04	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.14E-13	1.60E-04	3.30E-04	2.78E-10	1.03E+00	3.15E+07	3.65E-07
PM147	9.63E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.18E-14	1.60E-04	3.30E-04	1.02E-07	3.77E+02	3.15E+07	5.76E-05
CE144	2.48E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	3.30E-04	4.54E-08	1.68E+02	3.15E+07	6.61E-06
PR144	2.48E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	3.30E-04	1.35E-13	5.00E-04	3.15E+07	1.96E-11
EU154	1.74E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.66E-14	1.60E-04	3.30E-04	5.23E-07	1.94E+03	3.15E+07	5.34E-05
CM244	2.38E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.27E-14	1.60E-04	3.30E-04	1.17E-03	4.33E+06	3.15E+07	1.63E-01
PU238	1.58E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.51E-14	1.60E-04	3.30E-04	1.90E-03	7.03E+06	3.15E+07	1.76E-01
SB125	7.91E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.54E-15	1.60E-04	3.30E-04	2.73E-09	1.01E+01	3.15E+07	1.27E-07
EU155	5.41E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.16E-15	1.60E-04	3.30E-04	1.52E-07	5.62E+02	3.15E+07	4.83E-06
AM241	2.78E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.65E-15	1.60E-04	3.30E-04	2.17E-03	8.03E+06	3.15E+07	3.54E-02
TE125M	1.93E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.84E-15	1.60E-04	3.30E-04	3.21E-08	1.19E+02	3.15E+07	3.64E-07
PU240	1.50E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.43E-15	1.60E-04	3.30E-04	2.11E-03	7.81E+06	3.15E+07	1.86E-02
SM151	9.76E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.31E-16	1.60E-04	3.30E-04	1.38E-07	5.11E+02	3.15E+07	7.90E-07
PU239	6.70E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.39E-16	1.60E-04	3.30E-04	2.11E-03	7.81E+06	3.15E+07	8.30E-03
BA137M	3.17E+04	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.02E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	4.71E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.49E-14	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	3.48E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.32E-16	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	1.36E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	3.30E-04	2.17E-03	8.03E+06	3.15E+07	1.73E-03
CM242	9.82E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.36E-17	1.60E-04	3.30E-04	4.87E-05	1.80E+05	3.15E+07	2.81E-05
CM243	9.79E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.34E-17	1.60E-04	3.30E-04	1.47E-03	5.44E+06	3.15E+07	8.45E-04
NP239	1.36E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	3.30E-04	2.03E-09	7.51E+00	3.15E+07	1.62E-09
NP237	1.18E-01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-18	1.60E-04	3.30E-04	3.27E-03	1.21E+07	3.15E+07	2.26E-05
PU242	9.04E-01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.62E-18	1.60E-04	3.30E-04	2.01E-03	7.44E+06	3.15E+07	1.07E-04
AM242	2.71E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.58E-17	1.60E-04	3.30E-04	1.65E-07	6.11E+02	3.15E+07	2.62E-08
AM242M	2.72E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.59E-17	1.60E-04	3.30E-04	2.12E-03	7.84E+06	3.15E+07	3.38E-04
														Total	6.37E-01

MPC-68															
Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	CDE (mRem)
									Gases						
H 3	1.24E+02	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.18E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	1.26E-05
I129	1.12E-02	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.07E-14	1.60E-04	3.30E-04	1.56E-06	5.77E+03	3.15E+07	1.03E-04
KR 85	2.04E+03	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.95E-09	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
									Crud						
Co-60	6.50E+01	100.0%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	3.30E-04	1.62E-08	5.99E+01	3.15E+07	1.24E-01
									Volatiles						
SR 90	2.24E+04	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.42E-11	1.60E-04	3.30E-04	2.64E-09	9.77E+00	3.15E+07	2.31E-04
RU106	4.71E+03	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.99E-12	1.60E-04	3.30E-04	1.37E-08	5.07E+01	3.15E+07	2.52E-04
CS134	1.18E+04	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	7.50E-12	1.60E-04	3.30E-04	1.11E-08	4.11E+01	3.15E+07	5.12E-04
CS137	3.35E+04	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.13E-11	1.60E-04	3.30E-04	7.93E-09	2.93E+01	3.15E+07	1.04E-03
									Fines						
PU241	2.58E+04	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.46E-13	1.60E-04	3.30E-04	1.24E-11	4.59E-02	3.15E+07	1.88E-08
Y 90	2.24E+04	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.14E-13	1.60E-04	3.30E-04	9.52E-12	3.52E-02	3.15E+07	1.25E-08
PM147	9.63E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.18E-14	1.60E-04	3.30E-04	1.98E-14	7.33E-05	3.15E+07	1.12E-11
CE144	2.48E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	3.30E-04	1.88E-09	6.96E+00	3.15E+07	2.74E-07
PR144	2.48E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	3.30E-04	8.47E-15	3.13E-05	3.15E+07	1.23E-12
EU154	1.74E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.66E-14	1.60E-04	3.30E-04	7.14E-09	2.64E+01	3.15E+07	7.29E-07
CM244	2.38E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.27E-14	1.60E-04	3.30E-04	1.01E-09	3.74E+00	3.15E+07	1.41E-07
PU238	1.58E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.51E-14	1.60E-04	3.30E-04	9.62E-10	3.56E+00	3.15E+07	8.92E-08
SB125	7.91E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.54E-15	1.60E-04	3.30E-04	3.24E-10	1.20E+00	3.15E+07	1.50E-08
EU155	5.41E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.16E-15	1.60E-04	3.30E-04	2.40E-10	8.88E-01	3.15E+07	7.62E-09
AM241	2.78E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.65E-15	1.60E-04	3.30E-04	1.60E-09	5.92E+00	3.15E+07	2.61E-08
TE125M	1.93E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.84E-15	1.60E-04	3.30E-04	9.93E-11	3.67E-01	3.15E+07	1.13E-09
PU240	1.50E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.43E-15	1.60E-04	3.30E-04	9.05E-10	3.35E+00	3.15E+07	7.97E-09
SM151	9.76E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.31E-16	1.60E-04	3.30E-04	1.32E-14	4.88E-05	3.15E+07	7.56E-14
PU239	6.70E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.39E-16	1.60E-04	3.30E-04	9.03E-10	3.34E+00	3.15E+07	3.55E-09
BA137M	3.17E+04	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.02E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	4.71E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.49E-14	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	3.48E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.32E-16	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	1.36E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	3.30E-04	8.29E-09	3.07E+01	3.15E+07	6.62E-09
CM242	9.82E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.36E-17	1.60E-04	3.30E-04	9.41E-10	3.48E+00	3.15E+07	5.42E-10
CM243	9.79E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.34E-17	1.60E-04	3.30E-04	3.83E-09	1.42E+01	3.15E+07	2.20E-09
NP239	1.36E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	3.30E-04	7.62E-12	2.82E-02	3.15E+07	6.08E-12
NP237	1.18E-01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-18	1.60E-04	3.30E-04	1.34E-08	4.96E+01	3.15E+07	9.28E-11
PU242	9.04E-01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.62E-18	1.60E-04	3.30E-04	8.79E-10	3.25E+00	3.15E+07	4.66E-11
AM242	2.71E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.58E-17	1.60E-04	3.30E-04	2.52E-12	9.32E-03	3.15E+07	4.01E-13
AM242M	2.72E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.59E-17	1.60E-04	3.30E-04	5.64E-10	2.09E+00	3.15E+07	9.00E-11
														Total	1.26E-01

MPC-68															
Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	CEDE (mRem)
									Gases						
H 3	1.24E+02	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.18E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	1.26E-05
I129	1.12E-02	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.07E-14	1.60E-04	3.30E-04	4.69E-08	1.74E+02	3.15E+07	3.08E-06
KR 85	2.04E+03	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.95E-09	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
									Crud						
Co-60	6.50E+01	100.0%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	3.30E-04	5.91E-08	2.19E+02	3.15E+07	4.51E-01
									Volatiles						
SR 90	2.24E+04	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.42E-11	1.60E-04	3.30E-04	3.51E-07	1.30E+03	3.15E+07	3.08E-02
RU106	4.71E+03	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.99E-12	1.60E-04	3.30E-04	1.29E-07	4.77E+02	3.15E+07	2.38E-03
CS134	1.18E+04	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	7.50E-12	1.60E-04	3.30E-04	1.25E-08	4.63E+01	3.15E+07	5.77E-04
CS137	3.35E+04	2.5%	1.00E+00	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.13E-11	1.60E-04	3.30E-04	8.63E-09	3.19E+01	3.15E+07	1.13E-03
									Fines						
PU241	2.58E+04	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.46E-13	1.60E-04	3.30E-04	2.23E-06	8.25E+03	3.15E+07	3.38E-03
Y 90	2.24E+04	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.14E-13	1.60E-04	3.30E-04	2.28E-09	8.44E+00	3.15E+07	3.00E-06
PM147	9.63E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.18E-14	1.60E-04	3.30E-04	1.06E-08	3.92E+01	3.15E+07	5.99E-06
CE144	2.48E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	3.30E-04	1.01E-07	3.74E+02	3.15E+07	1.47E-05
PR144	2.48E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	3.30E-04	1.17E-11	4.33E-02	3.15E+07	1.70E-09
EU154	1.74E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.66E-14	1.60E-04	3.30E-04	7.73E-08	2.86E+02	3.15E+07	7.89E-06
CM244	2.38E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.27E-14	1.60E-04	3.30E-04	6.70E-05	2.48E+05	3.15E+07	9.36E-03
PU238	1.58E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.51E-14	1.60E-04	3.30E-04	1.06E-04	3.92E+05	3.15E+07	9.83E-03
SB125	7.91E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.54E-15	1.60E-04	3.30E-04	3.30E-09	1.22E+01	3.15E+07	1.53E-07
EU155	5.41E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.16E-15	1.60E-04	3.30E-04	1.12E-08	4.14E+01	3.15E+07	3.56E-07
AM241	2.78E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.65E-15	1.60E-04	3.30E-04	1.20E-04	4.44E+05	3.15E+07	1.96E-03
TE125M	1.93E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.84E-15	1.60E-04	3.30E-04	1.97E-09	7.29E+00	3.15E+07	2.24E-08
PU240	1.50E+02	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.43E-15	1.60E-04	3.30E-04	1.16E-04	4.29E+05	3.15E+07	1.02E-03
SM151	9.76E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.31E-16	1.60E-04	3.30E-04	8.10E-09	3.00E+01	3.15E+07	4.64E-08
PU239	6.70E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.39E-16	1.60E-04	3.30E-04	1.16E-04	4.29E+05	3.15E+07	4.56E-04
BA137M	3.17E+04	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.02E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	4.71E+03	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.49E-14	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	3.48E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.32E-16	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	1.36E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	3.30E-04	1.19E-04	4.40E+05	3.15E+07	9.50E-05
CM242	9.82E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.36E-17	1.60E-04	3.30E-04	4.67E-06	1.73E+04	3.15E+07	2.69E-06
CM243	9.79E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.34E-17	1.60E-04	3.30E-04	8.30E-05	3.07E+05	3.15E+07	4.77E-05
NP239	1.36E+01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	3.30E-04	6.78E-10	2.51E+00	3.15E+07	5.41E-10
NP237	1.18E-01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-18	1.60E-04	3.30E-04	1.46E-04	5.40E+05	3.15E+07	1.01E-06
PU242	9.04E-01	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.62E-18	1.60E-04	3.30E-04	1.11E-04	4.11E+05	3.15E+07	5.89E-06
AM242	2.71E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.58E-17	1.60E-04	3.30E-04	1.58E-08	5.85E+01	3.15E+07	2.51E-09
AM242M	2.72E+00	2.5%	1.00E-01	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.59E-17	1.60E-04	3.30E-04	1.15E-04	4.26E+05	3.15E+07	1.84E-05
														Total	5.12E-01

MPC-68															
Off-Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	$L_{off\ nor}$ Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	CDE (mRem)
									Gases						
H 3	1.24E+02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	5.43E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	5.78E-05
I129	1.12E-02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	4.91E-14	1.60E-04	3.30E-04	8.69E-11	3.22E-01	3.15E+07	2.63E-08
KR 85	2.04E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	8.95E-09	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	3.30E-04	4.76E-09	1.76E+01	3.15E+07	3.63E-02
									Volatiles						
SR 90	2.24E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	6.55E-11	1.60E-04	3.30E-04	2.64E-09	9.77E+00	3.15E+07	1.06E-03
RU106	4.71E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.38E-11	1.60E-04	3.30E-04	1.38E-08	5.11E+01	3.15E+07	1.17E-03
CS134	1.18E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	3.45E-11	1.60E-04	3.30E-04	1.30E-08	4.81E+01	3.15E+07	2.76E-03
CS137	3.35E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	9.80E-11	1.60E-04	3.30E-04	8.76E-09	3.24E+01	3.15E+07	5.28E-03
									Fines						
PU241	2.58E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-12	1.60E-04	3.30E-04	6.82E-07	2.52E+03	3.15E+07	4.75E-03
Y 90	2.24E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.83E-13	1.60E-04	3.30E-04	9.52E-12	3.52E-02	3.15E+07	5.76E-08
PM147	9.63E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.22E-13	1.60E-04	3.30E-04	1.88E-14	6.96E-05	3.15E+07	4.89E-11
CE144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	3.30E-04	1.93E-09	7.14E+00	3.15E+07	1.29E-06
PR144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	3.30E-04	2.41E-15	8.92E-06	3.15E+07	1.61E-12
EU154	1.74E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.63E-14	1.60E-04	3.30E-04	1.17E-08	4.33E+01	3.15E+07	5.50E-06
CM244	2.38E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.04E-13	1.60E-04	3.30E-04	1.59E-05	5.88E+04	3.15E+07	1.02E-02
PU238	1.58E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.93E-14	1.60E-04	3.30E-04	2.80E-05	1.04E+05	3.15E+07	1.19E-02
SB125	7.91E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.47E-14	1.60E-04	3.30E-04	3.60E-10	1.33E+00	3.15E+07	7.69E-08
EU155	5.41E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.37E-14	1.60E-04	3.30E-04	3.56E-10	1.32E+00	3.15E+07	5.20E-08
AM241	2.78E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.22E-14	1.60E-04	3.30E-04	3.25E-05	1.20E+05	3.15E+07	2.44E-03
TE125M	1.93E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.48E-15	1.60E-04	3.30E-04	1.24E-10	4.59E-01	3.15E+07	6.47E-09
PU240	1.50E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.58E-15	1.60E-04	3.30E-04	3.18E-05	1.18E+05	3.15E+07	1.29E-03
SM151	9.76E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.28E-15	1.60E-04	3.30E-04	4.03E-14	1.49E-04	3.15E+07	1.06E-12
PU239	6.70E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.94E-15	1.60E-04	3.30E-04	3.18E-05	1.18E+05	3.15E+07	5.75E-04
BA137M	3.17E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.39E-12	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	4.71E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.07E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	3.48E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.53E-15	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	3.30E-04	3.26E-05	1.21E+05	3.15E+07	1.20E-04
CM242	9.82E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.31E-16	1.60E-04	3.30E-04	5.70E-07	2.11E+03	3.15E+07	1.51E-06
CM243	9.79E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.29E-16	1.60E-04	3.30E-04	2.07E-05	7.66E+04	3.15E+07	5.47E-05
NP239	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	3.30E-04	7.45E-11	2.76E-01	3.15E+07	2.74E-10
NP237	1.18E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.18E-18	1.60E-04	3.30E-04	2.96E-05	1.10E+05	3.15E+07	9.43E-07
PU242	9.04E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.97E-17	1.60E-04	3.30E-04	3.02E-05	1.12E+05	3.15E+07	7.37E-06
AM242	2.71E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	3.30E-04	1.94E-09	7.18E+00	3.15E+07	1.42E-09
AM242M	2.72E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	3.30E-04	3.21E-05	1.19E+05	3.15E+07	2.36E-05
														Total	7.81E-02

MPC-68															
Off-Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	$L_{off\ nor}$ Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	CDE (mRem)
									Gases						
H 3	1.24E+02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	5.43E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	5.78E-05
I129	1.12E-02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	4.91E-14	1.60E-04	3.30E-04	2.09E-10	7.73E-01	3.15E+07	6.32E-08
KR 85	2.04E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	8.95E-09	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	3.30E-04	1.84E-08	6.81E+01	3.15E+07	1.40E-01
									Volatiles						
SR 90	2.24E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	6.55E-11	1.60E-04	3.30E-04	2.64E-09	9.77E+00	3.15E+07	1.06E-03
RU106	4.71E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.38E-11	1.60E-04	3.30E-04	1.37E-08	5.07E+01	3.15E+07	1.16E-03
CS134	1.18E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	3.45E-11	1.60E-04	3.30E-04	1.08E-08	4.00E+01	3.15E+07	2.29E-03
CS137	3.35E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	9.80E-11	1.60E-04	3.30E-04	7.84E-09	2.90E+01	3.15E+07	4.73E-03
									Fines						
PU241	2.58E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-12	1.60E-04	3.30E-04	3.06E-11	1.13E-01	3.15E+07	2.13E-07
Y 90	2.24E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.83E-13	1.60E-04	3.30E-04	9.52E-12	3.52E-02	3.15E+07	5.76E-08
PM147	9.63E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.22E-13	1.60E-04	3.30E-04	3.60E-14	1.33E-04	3.15E+07	9.36E-11
CE144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	3.30E-04	1.97E-09	7.29E+00	3.15E+07	1.32E-06
PR144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	3.30E-04	1.05E-14	3.89E-05	3.15E+07	7.03E-12
EU154	1.74E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.63E-14	1.60E-04	3.30E-04	1.55E-08	5.74E+01	3.15E+07	7.28E-06
CM244	2.38E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.04E-13	1.60E-04	3.30E-04	1.04E-09	3.85E+00	3.15E+07	6.68E-07
PU238	1.58E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.93E-14	1.60E-04	3.30E-04	1.00E-09	3.70E+00	3.15E+07	4.27E-07
SB125	7.91E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.47E-14	1.60E-04	3.30E-04	4.16E-10	1.54E+00	3.15E+07	8.88E-08
EU155	5.41E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.37E-14	1.60E-04	3.30E-04	6.14E-10	2.27E+00	3.15E+07	8.97E-08
AM241	2.78E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.22E-14	1.60E-04	3.30E-04	2.67E-09	9.88E+00	3.15E+07	2.00E-07
TE125M	1.93E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.48E-15	1.60E-04	3.30E-04	1.07E-10	3.96E-01	3.15E+07	5.59E-09
PU240	1.50E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.58E-15	1.60E-04	3.30E-04	9.51E-10	3.52E+00	3.15E+07	3.85E-08
SM151	9.76E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.28E-15	1.60E-04	3.30E-04	1.49E-13	5.51E-04	3.15E+07	3.93E-12
PU239	6.70E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.94E-15	1.60E-04	3.30E-04	9.22E-10	3.41E+00	3.15E+07	1.67E-08
BA137M	3.17E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.39E-12	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	4.71E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.07E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	3.48E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.53E-15	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	3.30E-04	1.52E-08	5.62E+01	3.15E+07	5.58E-08
CM242	9.82E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.31E-16	1.60E-04	3.30E-04	9.44E-10	3.49E+00	3.15E+07	2.50E-09
CM243	9.79E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.29E-16	1.60E-04	3.30E-04	6.29E-09	2.33E+01	3.15E+07	1.66E-08
NP239	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	3.30E-04	1.63E-11	6.03E-02	3.15E+07	5.98E-11
NP237	1.18E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.18E-18	1.60E-04	3.30E-04	1.69E-08	6.25E+01	3.15E+07	5.38E-10
PU242	9.04E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.97E-17	1.60E-04	3.30E-04	9.45E-10	3.50E+00	3.15E+07	2.31E-10
AM242	2.71E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	3.30E-04	2.94E-12	1.09E-02	3.15E+07	2.15E-12
AM242M	2.72E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	3.30E-04	1.38E-09	5.11E+00	3.15E+07	1.01E-09
														Total	1.50E-01

MPC-68															
Off-Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	$L_{off\ nor}$ Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	CDE (mRem)
									Gases						
H 3	1.24E+02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	5.43E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	5.78E-05
I129	1.12E-02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	4.91E-14	1.60E-04	3.30E-04	3.14E-10	1.16E+00	3.15E+07	9.49E-08
KR 85	2.04E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	8.95E-09	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	3.30E-04	3.45E-07	1.28E+03	3.15E+07	2.63E+00
									Volatiles						
SR 90	2.24E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	6.55E-11	1.60E-04	3.30E-04	2.86E-06	1.06E+04	3.15E+07	1.15E+00
RU106	4.71E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.38E-11	1.60E-04	3.30E-04	1.04E-06	3.85E+03	3.15E+07	8.82E-02
CS134	1.18E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	3.45E-11	1.60E-04	3.30E-04	1.18E-08	4.37E+01	3.15E+07	2.51E-03
CS137	3.35E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	9.80E-11	1.60E-04	3.30E-04	8.82E-09	3.26E+01	3.15E+07	5.32E-03
									Fines						
PU241	2.58E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-12	1.60E-04	3.30E-04	3.18E-06	1.18E+04	3.15E+07	2.21E-02
Y 90	2.24E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.83E-13	1.60E-04	3.30E-04	9.31E-09	3.44E+01	3.15E+07	5.63E-05
PM147	9.63E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.22E-13	1.60E-04	3.30E-04	7.74E-08	2.86E+02	3.15E+07	2.01E-04
CE144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	3.30E-04	7.91E-07	2.93E+03	3.15E+07	5.30E-04
PR144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	3.30E-04	9.40E-11	3.48E-01	3.15E+07	6.29E-08
EU154	1.74E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.63E-14	1.60E-04	3.30E-04	7.92E-08	2.93E+02	3.15E+07	3.72E-05
CM244	2.38E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.04E-13	1.60E-04	3.30E-04	1.93E-05	7.14E+04	3.15E+07	1.24E-02
PU238	1.58E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.93E-14	1.60E-04	3.30E-04	3.20E-04	1.18E+06	3.15E+07	1.36E-01
SB125	7.91E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.47E-14	1.60E-04	3.30E-04	2.17E-08	8.03E+01	3.15E+07	4.63E-06
EU155	5.41E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.37E-14	1.60E-04	3.30E-04	1.19E-08	4.40E+01	3.15E+07	1.74E-06
AM241	2.78E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.22E-14	1.60E-04	3.30E-04	1.84E-05	6.81E+04	3.15E+07	1.38E-03
TE125M	1.93E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.48E-15	1.60E-04	3.30E-04	1.04E-08	3.85E+01	3.15E+07	5.43E-07
PU240	1.50E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.58E-15	1.60E-04	3.30E-04	3.23E-04	1.20E+06	3.15E+07	1.31E-02
SM151	9.76E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.28E-15	1.60E-04	3.30E-04	3.26E-09	1.21E+01	3.15E+07	8.59E-08
PU239	6.70E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.94E-15	1.60E-04	3.30E-04	3.23E-04	1.20E+06	3.15E+07	5.84E-03
BA137M	3.17E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.39E-12	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	4.71E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.07E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	3.48E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.53E-15	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	3.30E-04	1.78E-05	6.59E+04	3.15E+07	6.53E-05
CM242	9.82E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.31E-16	1.60E-04	3.30E-04	1.55E-05	5.74E+04	3.15E+07	4.11E-05
CM243	9.79E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.29E-16	1.60E-04	3.30E-04	1.94E-05	7.18E+04	3.15E+07	5.13E-05
NP239	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	3.30E-04	2.36E-09	8.73E+00	3.15E+07	8.66E-09
NP237	1.18E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.18E-18	1.60E-04	3.30E-04	1.61E-05	5.96E+04	3.15E+07	5.13E-07
PU242	9.04E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.97E-17	1.60E-04	3.30E-04	3.07E-04	1.14E+06	3.15E+07	7.49E-05
AM242	2.71E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	3.30E-04	5.20E-08	1.92E+02	3.15E+07	3.80E-08
AM242M	2.72E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	3.30E-04	4.20E-06	1.55E+04	3.15E+07	3.08E-06
														Total	4.07E+00

MPC-68															
Off-Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	$L_{off\ nor}$ Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	CDE (mRem)
									Gases						
H 3	1.24E+02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	5.43E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	5.78E-05
I129	1.12E-02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	4.91E-14	1.60E-04	3.30E-04	1.40E-10	5.18E-01	3.15E+07	4.23E-08
KR 85	2.04E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	8.95E-09	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	3.30E-04	1.72E-08	6.36E+01	3.15E+07	1.31E-01
									Volatiles						
SR 90	2.24E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	6.55E-11	1.60E-04	3.30E-04	3.36E-07	1.24E+03	3.15E+07	1.35E-01
RU106	4.71E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.38E-11	1.60E-04	3.30E-04	1.37E-08	5.07E+01	3.15E+07	1.16E-03
CS134	1.18E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	3.45E-11	1.60E-04	3.30E-04	1.18E-08	4.37E+01	3.15E+07	2.51E-03
CS137	3.35E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	9.80E-11	1.60E-04	3.30E-04	8.30E-09	3.07E+01	3.15E+07	5.00E-03
									Fines						
PU241	2.58E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-12	1.60E-04	3.30E-04	3.36E-06	1.24E+04	3.15E+07	2.34E-02
Y 90	2.24E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.83E-13	1.60E-04	3.30E-04	2.79E-10	1.03E+00	3.15E+07	1.69E-06
PM147	9.63E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.22E-13	1.60E-04	3.30E-04	8.16E-09	3.02E+01	3.15E+07	2.12E-05
CE144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	3.30E-04	2.67E-08	9.88E+01	3.15E+07	1.79E-05
PR144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	3.30E-04	8.08E-14	2.99E-04	3.15E+07	5.41E-11
EU154	1.74E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.63E-14	1.60E-04	3.30E-04	1.06E-07	3.92E+02	3.15E+07	4.98E-05
CM244	2.38E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.04E-13	1.60E-04	3.30E-04	9.38E-05	3.47E+05	3.15E+07	6.03E-02
PU238	1.58E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.93E-14	1.60E-04	3.30E-04	1.52E-04	5.62E+05	3.15E+07	6.48E-02
SB125	7.91E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.47E-14	1.60E-04	3.30E-04	6.49E-10	2.40E+00	3.15E+07	1.39E-07
EU155	5.41E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.37E-14	1.60E-04	3.30E-04	1.43E-08	5.29E+01	3.15E+07	2.09E-06
AM241	2.78E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.22E-14	1.60E-04	3.30E-04	1.74E-04	6.44E+05	3.15E+07	1.31E-02
TE125M	1.93E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.48E-15	1.60E-04	3.30E-04	3.01E-09	1.11E+01	3.15E+07	1.57E-07
PU240	1.50E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.58E-15	1.60E-04	3.30E-04	1.69E-04	6.25E+05	3.15E+07	6.84E-03
SM151	9.76E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.28E-15	1.60E-04	3.30E-04	1.10E-08	4.07E+01	3.15E+07	2.90E-07
PU239	6.70E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.94E-15	1.60E-04	3.30E-04	1.69E-04	6.25E+05	3.15E+07	3.06E-03
BA137M	3.17E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.39E-12	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	4.71E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.07E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	3.48E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.53E-15	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	3.30E-04	1.73E-04	6.40E+05	3.15E+07	6.35E-04
CM242	9.82E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.31E-16	1.60E-04	3.30E-04	3.90E-06	1.44E+04	3.15E+07	1.03E-05
CM243	9.79E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.29E-16	1.60E-04	3.30E-04	1.18E-04	4.37E+05	3.15E+07	3.12E-04
NP239	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	3.30E-04	2.08E-10	7.70E-01	3.15E+07	7.64E-10
NP237	1.18E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.18E-18	1.60E-04	3.30E-04	2.62E-04	9.69E+05	3.15E+07	8.35E-06
PU242	9.04E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.97E-17	1.60E-04	3.30E-04	1.61E-04	5.96E+05	3.15E+07	3.93E-05
AM242	2.71E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	3.30E-04	1.32E-08	4.88E+01	3.15E+07	9.66E-09
AM242M	2.72E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	3.30E-04	1.69E-04	6.25E+05	3.15E+07	1.24E-04
														Total	4.48E-01

MPC-68															
Off-Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	$L_{off\ nor}$ Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	CDE (mRem)
									Gases						
H 3	1.24E+02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	5.43E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	5.78E-05
I129	1.12E-02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	4.91E-14	1.60E-04	3.30E-04	1.38E-10	5.11E-01	3.15E+07	4.17E-08
KR 85	2.04E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	8.95E-09	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	3.30E-04	1.35E-08	5.00E+01	3.15E+07	1.03E-01
									Volatiles						
SR 90	2.24E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	6.55E-11	1.60E-04	3.30E-04	7.27E-07	2.69E+03	3.15E+07	2.93E-01
RU106	4.71E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.38E-11	1.60E-04	3.30E-04	1.37E-08	5.07E+01	3.15E+07	1.16E-03
CS134	1.18E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	3.45E-11	1.60E-04	3.30E-04	1.10E-08	4.07E+01	3.15E+07	2.34E-03
CS137	3.35E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	9.80E-11	1.60E-04	3.30E-04	7.94E-09	2.94E+01	3.15E+07	4.79E-03
									Fines						
PU241	2.58E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-12	1.60E-04	3.30E-04	4.20E-05	1.55E+05	3.15E+07	2.93E-01
Y 90	2.24E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.83E-13	1.60E-04	3.30E-04	2.78E-10	1.03E+00	3.15E+07	1.68E-06
PM147	9.63E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.22E-13	1.60E-04	3.30E-04	1.02E-07	3.77E+02	3.15E+07	2.65E-04
CE144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	3.30E-04	4.54E-08	1.68E+02	3.15E+07	3.04E-05
PR144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	3.30E-04	1.35E-13	5.00E-04	3.15E+07	9.04E-11
EU154	1.74E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.63E-14	1.60E-04	3.30E-04	5.23E-07	1.94E+03	3.15E+07	2.46E-04
CM244	2.38E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.04E-13	1.60E-04	3.30E-04	1.17E-03	4.33E+06	3.15E+07	7.52E-01
PU238	1.58E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.93E-14	1.60E-04	3.30E-04	1.90E-03	7.03E+06	3.15E+07	8.10E-01
SB125	7.91E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.47E-14	1.60E-04	3.30E-04	2.73E-09	1.01E+01	3.15E+07	5.83E-07
EU155	5.41E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.37E-14	1.60E-04	3.30E-04	1.52E-07	5.62E+02	3.15E+07	2.22E-05
AM241	2.78E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.22E-14	1.60E-04	3.30E-04	2.17E-03	8.03E+06	3.15E+07	1.63E-01
TE125M	1.93E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.48E-15	1.60E-04	3.30E-04	3.21E-08	1.19E+02	3.15E+07	1.68E-06
PU240	1.50E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.58E-15	1.60E-04	3.30E-04	2.11E-03	7.81E+06	3.15E+07	8.54E-02
SM151	9.76E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.28E-15	1.60E-04	3.30E-04	1.38E-07	5.11E+02	3.15E+07	3.64E-06
PU239	6.70E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.94E-15	1.60E-04	3.30E-04	2.11E-03	7.81E+06	3.15E+07	3.82E-02
BA137M	3.17E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.39E-12	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	4.71E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.07E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	3.48E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.53E-15	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	3.30E-04	2.17E-03	8.03E+06	3.15E+07	7.97E-03
CM242	9.82E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.31E-16	1.60E-04	3.30E-04	4.87E-05	1.80E+05	3.15E+07	1.29E-04
CM243	9.79E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.29E-16	1.60E-04	3.30E-04	1.47E-03	5.44E+06	3.15E+07	3.88E-03
NP239	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	3.30E-04	2.03E-09	7.51E+00	3.15E+07	7.45E-09
NP237	1.18E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.18E-18	1.60E-04	3.30E-04	3.27E-03	1.21E+07	3.15E+07	1.04E-04
PU242	9.04E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.97E-17	1.60E-04	3.30E-04	2.01E-03	7.44E+06	3.15E+07	4.90E-04
AM242	2.71E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	3.30E-04	1.65E-07	6.11E+02	3.15E+07	1.21E-07
AM242M	2.72E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	3.30E-04	2.12E-03	7.84E+06	3.15E+07	1.56E-03
														Total	2.56E+00

MPC-68															
Off-Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	$L_{off\ nor}$ Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	CDE (mRem)
									Gases						
H 3	1.24E+02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	5.43E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	5.78E-05
I129	1.12E-02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	4.91E-14	1.60E-04	3.30E-04	1.56E-06	5.77E+03	3.15E+07	4.72E-04
KR 85	2.04E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	8.95E-09	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	3.30E-04	1.62E-08	5.99E+01	3.15E+07	1.24E-01
									Volatiles						
SR 90	2.24E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	6.55E-11	1.60E-04	3.30E-04	2.64E-09	9.77E+00	3.15E+07	1.06E-03
RU106	4.71E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.38E-11	1.60E-04	3.30E-04	1.37E-08	5.07E+01	3.15E+07	1.16E-03
CS134	1.18E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	3.45E-11	1.60E-04	3.30E-04	1.11E-08	4.11E+01	3.15E+07	2.36E-03
CS137	3.35E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	9.80E-11	1.60E-04	3.30E-04	7.93E-09	2.93E+01	3.15E+07	4.78E-03
									Fines						
PU241	2.58E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-12	1.60E-04	3.30E-04	1.24E-11	4.59E-02	3.15E+07	8.64E-08
Y 90	2.24E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.83E-13	1.60E-04	3.30E-04	9.52E-12	3.52E-02	3.15E+07	5.76E-08
PM147	9.63E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.22E-13	1.60E-04	3.30E-04	1.98E-14	7.33E-05	3.15E+07	5.15E-11
CE144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	3.30E-04	1.88E-09	6.96E+00	3.15E+07	1.26E-06
PR144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	3.30E-04	8.47E-15	3.13E-05	3.15E+07	5.67E-12
EU154	1.74E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.63E-14	1.60E-04	3.30E-04	7.14E-09	2.64E+01	3.15E+07	3.35E-06
CM244	2.38E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.04E-13	1.60E-04	3.30E-04	1.01E-09	3.74E+00	3.15E+07	6.49E-07
PU238	1.58E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.93E-14	1.60E-04	3.30E-04	9.62E-10	3.56E+00	3.15E+07	4.10E-07
SB125	7.91E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.47E-14	1.60E-04	3.30E-04	3.24E-10	1.20E+00	3.15E+07	6.92E-08
EU155	5.41E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.37E-14	1.60E-04	3.30E-04	2.40E-10	8.88E-01	3.15E+07	3.50E-08
AM241	2.78E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.22E-14	1.60E-04	3.30E-04	1.60E-09	5.92E+00	3.15E+07	1.20E-07
TE125M	1.93E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.48E-15	1.60E-04	3.30E-04	9.93E-11	3.67E-01	3.15E+07	5.18E-09
PU240	1.50E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.58E-15	1.60E-04	3.30E-04	9.05E-10	3.35E+00	3.15E+07	3.66E-08
SM151	9.76E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.28E-15	1.60E-04	3.30E-04	1.32E-14	4.88E-05	3.15E+07	3.48E-13
PU239	6.70E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.94E-15	1.60E-04	3.30E-04	9.03E-10	3.34E+00	3.15E+07	1.63E-08
BA137M	3.17E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.39E-12	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	4.71E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.07E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	3.48E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.53E-15	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	3.30E-04	8.29E-09	3.07E+01	3.15E+07	3.04E-08
CM242	9.82E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.31E-16	1.60E-04	3.30E-04	9.41E-10	3.48E+00	3.15E+07	2.49E-09
CM243	9.79E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.29E-16	1.60E-04	3.30E-04	3.83E-09	1.42E+01	3.15E+07	1.01E-08
NP239	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	3.30E-04	7.62E-12	2.82E-02	3.15E+07	2.80E-11
NP237	1.18E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.18E-18	1.60E-04	3.30E-04	1.34E-08	4.96E+01	3.15E+07	4.27E-10
PU242	9.04E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.97E-17	1.60E-04	3.30E-04	8.79E-10	3.25E+00	3.15E+07	2.14E-10
AM242	2.71E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	3.30E-04	2.52E-12	9.32E-03	3.15E+07	1.84E-12
AM242M	2.72E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	3.30E-04	5.64E-10	2.09E+00	3.15E+07	4.14E-10
														Total	1.33E-01

MPC-68															
Off-Normal Conditions															
Committed Effective Dose Equivalent From Inhalation															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	$L_{off\ nor}$ Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	CEDE (mRem)
									Gases						
H 3	1.24E+02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	5.43E-10	1.60E-04	3.30E-04	1.73E-11	6.40E-02	3.15E+07	5.78E-05
I129	1.12E-02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	4.91E-14	1.60E-04	3.30E-04	4.69E-08	1.74E+02	3.15E+07	1.42E-05
KR 85	2.04E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	8.95E-09	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	3.30E-04	5.91E-08	2.19E+02	3.15E+07	4.51E-01
									Volatiles						
SR 90	2.24E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	6.55E-11	1.60E-04	3.30E-04	3.51E-07	1.30E+03	3.15E+07	1.41E-01
RU106	4.71E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.38E-11	1.60E-04	3.30E-04	1.29E-07	4.77E+02	3.15E+07	1.09E-02
CS134	1.18E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	3.45E-11	1.60E-04	3.30E-04	1.25E-08	4.63E+01	3.15E+07	2.65E-03
CS137	3.35E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	9.80E-11	1.60E-04	3.30E-04	8.63E-09	3.19E+01	3.15E+07	5.20E-03
									Fines						
PU241	2.58E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-12	1.60E-04	3.30E-04	2.23E-06	8.25E+03	3.15E+07	1.55E-02
Y 90	2.24E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.83E-13	1.60E-04	3.30E-04	2.28E-09	8.44E+00	3.15E+07	1.38E-05
PM147	9.63E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.22E-13	1.60E-04	3.30E-04	1.06E-08	3.92E+01	3.15E+07	2.76E-05
CE144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	3.30E-04	1.01E-07	3.74E+02	3.15E+07	6.76E-05
PR144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	3.30E-04	1.17E-11	4.33E-02	3.15E+07	7.83E-09
EU154	1.74E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.63E-14	1.60E-04	3.30E-04	7.73E-08	2.86E+02	3.15E+07	3.63E-05
CM244	2.38E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.04E-13	1.60E-04	3.30E-04	6.70E-05	2.48E+05	3.15E+07	4.30E-02
PU238	1.58E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.93E-14	1.60E-04	3.30E-04	1.06E-04	3.92E+05	3.15E+07	4.52E-02
SB125	7.91E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.47E-14	1.60E-04	3.30E-04	3.30E-09	1.22E+01	3.15E+07	7.05E-07
EU155	5.41E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.37E-14	1.60E-04	3.30E-04	1.12E-08	4.14E+01	3.15E+07	1.64E-06
AM241	2.78E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.22E-14	1.60E-04	3.30E-04	1.20E-04	4.44E+05	3.15E+07	9.01E-03
TE125M	1.93E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.48E-15	1.60E-04	3.30E-04	1.97E-09	7.29E+00	3.15E+07	1.03E-07
PU240	1.50E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.58E-15	1.60E-04	3.30E-04	1.16E-04	4.29E+05	3.15E+07	4.70E-03
SM151	9.76E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.28E-15	1.60E-04	3.30E-04	8.10E-09	3.00E+01	3.15E+07	2.13E-07
PU239	6.70E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.94E-15	1.60E-04	3.30E-04	1.16E-04	4.29E+05	3.15E+07	2.10E-03
BA137M	3.17E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.39E-12	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
RH106	4.71E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.07E-13	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
PR144M	3.48E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.53E-15	1.60E-04	3.30E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
AM243	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	3.30E-04	1.19E-04	4.40E+05	3.15E+07	4.37E-04
CM242	9.82E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.31E-16	1.60E-04	3.30E-04	4.67E-06	1.73E+04	3.15E+07	1.24E-05
CM243	9.79E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.29E-16	1.60E-04	3.30E-04	8.30E-05	3.07E+05	3.15E+07	2.19E-04
NP239	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	3.30E-04	6.78E-10	2.51E+00	3.15E+07	2.49E-09
NP237	1.18E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.18E-18	1.60E-04	3.30E-04	1.46E-04	5.40E+05	3.15E+07	4.65E-06
PU242	9.04E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.97E-17	1.60E-04	3.30E-04	1.11E-04	4.11E+05	3.15E+07	2.71E-05
AM242	2.71E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	3.30E-04	1.58E-08	5.85E+01	3.15E+07	1.16E-08
AM242M	2.72E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	3.30E-04	1.15E-04	4.26E+05	3.15E+07	8.44E-05
														Total	7.32E-01

MPC-68														
Accident Conditions														
Committed Dose Equivalent From Inhalation														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	CDE (mRem)
								Gases						
H 3	1.24E+02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	8.23E-09	8.00E-03	3.30E-04	1.73E-11	6.40E-02	2.59E+06	3.60E-03
I129	1.12E-02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	7.45E-13	8.00E-03	3.30E-04	8.69E-11	3.22E-01	2.59E+06	1.64E-06
KR 85	2.04E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	1.36E-07	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
								Crud						
Co-60	6.50E+01	100%	68	5.99E+06	1.95E-05	3.26E-12	1.00	1.44E-08	8.00E-03	3.30E-04	4.76E-09	1.76E+01	2.59E+06	1.74E+00
								Volatiles						
SR 90	2.24E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	9.93E-10	8.00E-03	3.30E-04	2.64E-09	9.77E+00	2.59E+06	6.63E-02
RU106	4.71E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	2.09E-10	8.00E-03	3.30E-04	1.38E-08	5.11E+01	2.59E+06	7.29E-02
CS134	1.18E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	5.23E-10	8.00E-03	3.30E-04	1.30E-08	4.81E+01	2.59E+06	1.72E-01
CS137	3.35E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	1.49E-09	8.00E-03	3.30E-04	8.76E-09	3.24E+01	2.59E+06	3.29E-01
								Fines						
PU241	2.58E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.72E-11	8.00E-03	3.30E-04	6.82E-07	2.52E+03	2.59E+06	2.96E-01
Y 90	2.24E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.49E-11	8.00E-03	3.30E-04	9.52E-12	3.52E-02	2.59E+06	3.59E-06
PM147	9.63E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.41E-12	8.00E-03	3.30E-04	1.88E-14	6.96E-05	2.59E+06	3.05E-09
CE144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	3.30E-04	1.93E-09	7.14E+00	2.59E+06	8.05E-05
PR144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	3.30E-04	2.41E-15	8.92E-06	2.59E+06	1.01E-10
EU154	1.74E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.16E-12	8.00E-03	3.30E-04	1.17E-08	4.33E+01	2.59E+06	3.43E-04
CM244	2.38E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.58E-12	8.00E-03	3.30E-04	1.59E-05	5.88E+04	2.59E+06	6.37E-01
PU238	1.58E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.05E-12	8.00E-03	3.30E-04	2.80E-05	1.04E+05	2.59E+06	7.44E-01
SB125	7.91E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	5.26E-13	8.00E-03	3.30E-04	3.60E-10	1.33E+00	2.59E+06	4.79E-06
EU155	5.41E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.60E-13	8.00E-03	3.30E-04	3.56E-10	1.32E+00	2.59E+06	3.24E-06
AM241	2.78E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.85E-13	8.00E-03	3.30E-04	3.25E-05	1.20E+05	2.59E+06	1.52E-01
TE125M	1.93E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.29E-13	8.00E-03	3.30E-04	1.24E-10	4.59E-01	2.59E+06	4.04E-07
PU240	1.50E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.98E-14	8.00E-03	3.30E-04	3.18E-05	1.18E+05	2.59E+06	8.03E-02
SM151	9.76E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.49E-14	8.00E-03	3.30E-04	4.03E-14	1.49E-04	2.59E+06	6.62E-11
PU239	6.70E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	4.46E-14	8.00E-03	3.30E-04	3.18E-05	1.18E+05	2.59E+06	3.59E-02
BA137M	3.17E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.11E-11	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
RH106	4.71E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.13E-12	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
PR144M	3.48E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.31E-14	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
AM243	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	3.30E-04	3.26E-05	1.21E+05	2.59E+06	7.46E-03
CM242	9.82E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.53E-15	8.00E-03	3.30E-04	5.70E-07	2.11E+03	2.59E+06	9.42E-05
CM243	9.79E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.51E-15	8.00E-03	3.30E-04	2.07E-05	7.66E+04	2.59E+06	3.41E-03
NP239	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	3.30E-04	7.45E-11	2.76E-01	2.59E+06	1.70E-08
NP237	1.18E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	7.85E-17	8.00E-03	3.30E-04	2.96E-05	1.10E+05	2.59E+06	5.88E-05
PU242	9.04E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.01E-16	8.00E-03	3.30E-04	3.02E-05	1.12E+05	2.59E+06	4.59E-04
AM242	2.71E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.80E-15	8.00E-03	3.30E-04	1.94E-09	7.18E+00	2.59E+06	8.85E-08
AM242M	2.72E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.81E-15	8.00E-03	3.30E-04	3.21E-05	1.19E+05	2.59E+06	1.47E-03
													Total	4.34E+00

MPC-68														
Accident Conditions														
Committed Dose Equivalent From Inhalation														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	CDE (mRem)
								Gases						
H 3	1.24E+02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	8.23E-09	8.00E-03	3.30E-04	1.73E-11	6.40E-02	2.59E+06	3.60E-03
I129	1.12E-02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	7.45E-13	8.00E-03	3.30E-04	2.09E-10	7.73E-01	2.59E+06	3.94E-06
KR 85	2.04E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	1.36E-07	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
								Crud						
Co-60	6.50E+01	100%	68	5.99E+06	1.95E-05	3.26E-12	1.00	1.44E-08	8.00E-03	3.30E-04	1.84E-08	6.81E+01	2.59E+06	6.71E+00
								Volatiles						
SR 90	2.24E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	9.93E-10	8.00E-03	3.30E-04	2.64E-09	9.77E+00	2.59E+06	6.63E-02
RU106	4.71E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	2.09E-10	8.00E-03	3.30E-04	1.37E-08	5.07E+01	2.59E+06	7.24E-02
CS134	1.18E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	5.23E-10	8.00E-03	3.30E-04	1.08E-08	4.00E+01	2.59E+06	1.43E-01
CS137	3.35E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	1.49E-09	8.00E-03	3.30E-04	7.84E-09	2.90E+01	2.59E+06	2.95E-01
								Fines						
PU241	2.58E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.72E-11	8.00E-03	3.30E-04	3.06E-11	1.13E-01	2.59E+06	1.33E-05
Y 90	2.24E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.49E-11	8.00E-03	3.30E-04	9.52E-12	3.52E-02	2.59E+06	3.59E-06
PM147	9.63E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.41E-12	8.00E-03	3.30E-04	3.60E-14	1.33E-04	2.59E+06	5.83E-09
CE144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	3.30E-04	1.97E-09	7.29E+00	2.59E+06	8.22E-05
PR144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	3.30E-04	1.05E-14	3.89E-05	2.59E+06	4.38E-10
EU154	1.74E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.16E-12	8.00E-03	3.30E-04	1.55E-08	5.74E+01	2.59E+06	4.54E-04
CM244	2.38E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.58E-12	8.00E-03	3.30E-04	1.04E-09	3.85E+00	2.59E+06	4.17E-05
PU238	1.58E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.05E-12	8.00E-03	3.30E-04	1.00E-09	3.70E+00	2.59E+06	2.66E-05
SB125	7.91E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	5.26E-13	8.00E-03	3.30E-04	4.16E-10	1.54E+00	2.59E+06	5.54E-06
EU155	5.41E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.60E-13	8.00E-03	3.30E-04	6.14E-10	2.27E+00	2.59E+06	5.59E-06
AM241	2.78E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.85E-13	8.00E-03	3.30E-04	2.67E-09	9.88E+00	2.59E+06	1.25E-05
TE125M	1.93E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.29E-13	8.00E-03	3.30E-04	1.07E-10	3.96E-01	2.59E+06	3.48E-07
PU240	1.50E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.98E-14	8.00E-03	3.30E-04	9.51E-10	3.52E+00	2.59E+06	2.40E-06
SM151	9.76E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.49E-14	8.00E-03	3.30E-04	1.49E-13	5.51E-04	2.59E+06	2.45E-10
PU239	6.70E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	4.46E-14	8.00E-03	3.30E-04	9.22E-10	3.41E+00	2.59E+06	1.04E-06
BA137M	3.17E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.11E-11	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
RH106	4.71E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.13E-12	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
PR144M	3.48E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.31E-14	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
AM243	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	3.30E-04	1.52E-08	5.62E+01	2.59E+06	3.48E-06
CM242	9.82E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.53E-15	8.00E-03	3.30E-04	9.44E-10	3.49E+00	2.59E+06	1.56E-07
CM243	9.79E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.51E-15	8.00E-03	3.30E-04	6.29E-09	2.33E+01	2.59E+06	1.04E-06
NP239	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	3.30E-04	1.63E-11	6.03E-02	2.59E+06	3.73E-09
NP237	1.18E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	7.85E-17	8.00E-03	3.30E-04	1.69E-08	6.25E+01	2.59E+06	3.36E-08
PU242	9.04E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.01E-16	8.00E-03	3.30E-04	9.45E-10	3.50E+00	2.59E+06	1.44E-08
AM242	2.71E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.80E-15	8.00E-03	3.30E-04	2.94E-12	1.09E-02	2.59E+06	1.34E-10
AM242M	2.72E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.81E-15	8.00E-03	3.30E-04	1.38E-09	5.11E+00	2.59E+06	6.32E-08
													Total	7.29E+00

MPC-68														
Accident Conditions														
Committed Dose Equivalent From Inhalation														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	CDE (mRem)
								Gases						
H 3	1.24E+02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	8.23E-09	8.00E-03	3.30E-04	1.73E-11	6.40E-02	2.59E+06	3.60E-03
I129	1.12E-02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	7.45E-13	8.00E-03	3.30E-04	3.14E-10	1.16E+00	2.59E+06	5.92E-06
KR 85	2.04E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	1.36E-07	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
								Crud						
Co-60	6.50E+01	100%	68	5.99E+06	1.95E-05	3.26E-12	1.00	1.44E-08	8.00E-03	3.30E-04	3.45E-07	1.28E+03	2.59E+06	1.26E+02
								Volatiles						
SR 90	2.24E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	9.93E-10	8.00E-03	3.30E-04	2.86E-06	1.06E+04	2.59E+06	7.19E+01
RU106	4.71E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	2.09E-10	8.00E-03	3.30E-04	1.04E-06	3.85E+03	2.59E+06	5.50E+00
CS134	1.18E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	5.23E-10	8.00E-03	3.30E-04	1.18E-08	4.37E+01	2.59E+06	1.56E-01
CS137	3.35E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	1.49E-09	8.00E-03	3.30E-04	8.82E-09	3.26E+01	2.59E+06	3.31E-01
								Fines						
PU241	2.58E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.72E-11	8.00E-03	3.30E-04	3.18E-06	1.18E+04	2.59E+06	1.38E+00
Y 90	2.24E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.49E-11	8.00E-03	3.30E-04	9.31E-09	3.44E+01	2.59E+06	3.51E-03
PM147	9.63E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.41E-12	8.00E-03	3.30E-04	7.74E-08	2.86E+02	2.59E+06	1.25E-02
CE144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	3.30E-04	7.91E-07	2.93E+03	2.59E+06	3.30E-02
PR144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	3.30E-04	9.40E-11	3.48E-01	2.59E+06	3.92E-06
EU154	1.74E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.16E-12	8.00E-03	3.30E-04	7.92E-08	2.93E+02	2.59E+06	2.32E-03
CM244	2.38E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.58E-12	8.00E-03	3.30E-04	1.93E-05	7.14E+04	2.59E+06	7.73E-01
PU238	1.58E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.05E-12	8.00E-03	3.30E-04	3.20E-04	1.18E+06	2.59E+06	8.51E+00
SB125	7.91E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	5.26E-13	8.00E-03	3.30E-04	2.17E-08	8.03E+01	2.59E+06	2.89E-04
EU155	5.41E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.60E-13	8.00E-03	3.30E-04	1.19E-08	4.40E+01	2.59E+06	1.08E-04
AM241	2.78E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.85E-13	8.00E-03	3.30E-04	1.84E-05	6.81E+04	2.59E+06	8.61E-02
TE125M	1.93E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.29E-13	8.00E-03	3.30E-04	1.04E-08	3.85E+01	2.59E+06	3.38E-05
PU240	1.50E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.98E-14	8.00E-03	3.30E-04	3.23E-04	1.20E+06	2.59E+06	8.15E-01
SM151	9.76E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.49E-14	8.00E-03	3.30E-04	3.26E-09	1.21E+01	2.59E+06	5.35E-06
PU239	6.70E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	4.46E-14	8.00E-03	3.30E-04	3.23E-04	1.20E+06	2.59E+06	3.64E-01
BA137M	3.17E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.11E-11	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
RH106	4.71E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.13E-12	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
PR144M	3.48E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.31E-14	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
AM243	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	3.30E-04	1.78E-05	6.59E+04	2.59E+06	4.07E-03
CM242	9.82E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.53E-15	8.00E-03	3.30E-04	1.55E-05	5.74E+04	2.59E+06	2.56E-03
CM243	9.79E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.51E-15	8.00E-03	3.30E-04	1.94E-05	7.18E+04	2.59E+06	3.20E-03
NP239	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	3.30E-04	2.36E-09	8.73E+00	2.59E+06	5.40E-07
NP237	1.18E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	7.85E-17	8.00E-03	3.30E-04	1.61E-05	5.96E+04	2.59E+06	3.20E-05
PU242	9.04E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.01E-16	8.00E-03	3.30E-04	3.07E-04	1.14E+06	2.59E+06	4.67E-03
AM242	2.71E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.80E-15	8.00E-03	3.30E-04	5.20E-08	1.92E+02	2.59E+06	2.37E-06
AM242M	2.72E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.81E-15	8.00E-03	3.30E-04	4.20E-06	1.55E+04	2.59E+06	1.92E-04
													Total	2.16E+02

MPC-68														
Accident Conditions														
Committed Dose Equivalent From Inhalation														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	CDE (mRem)
								Gases						
H 3	1.24E+02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	8.23E-09	8.00E-03	3.30E-04	1.73E-11	6.40E-02	2.59E+06	3.60E-03
I129	1.12E-02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	7.45E-13	8.00E-03	3.30E-04	1.40E-10	5.18E-01	2.59E+06	2.64E-06
KR 85	2.04E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	1.36E-07	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
								Crud						
Co-60	6.50E+01	100%	68	5.99E+06	1.95E-05	3.26E-12	1.00	1.44E-08	8.00E-03	3.30E-04	1.72E-08	6.36E+01	2.59E+06	6.27E+00
								Volatiles						
SR 90	2.24E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	9.93E-10	8.00E-03	3.30E-04	3.36E-07	1.24E+03	2.59E+06	8.44E+00
RU106	4.71E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	2.09E-10	8.00E-03	3.30E-04	1.37E-08	5.07E+01	2.59E+06	7.24E-02
CS134	1.18E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	5.23E-10	8.00E-03	3.30E-04	1.18E-08	4.37E+01	2.59E+06	1.56E-01
CS137	3.35E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	1.49E-09	8.00E-03	3.30E-04	8.30E-09	3.07E+01	2.59E+06	3.12E-01
								Fines						
PU241	2.58E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.72E-11	8.00E-03	3.30E-04	3.36E-06	1.24E+04	2.59E+06	1.46E+00
Y 90	2.24E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.49E-11	8.00E-03	3.30E-04	2.79E-10	1.03E+00	2.59E+06	1.05E-04
PM147	9.63E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.41E-12	8.00E-03	3.30E-04	8.16E-09	3.02E+01	2.59E+06	1.32E-03
CE144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	3.30E-04	2.67E-08	9.88E+01	2.59E+06	1.11E-03
PR144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	3.30E-04	8.08E-14	2.99E-04	2.59E+06	3.37E-09
EU154	1.74E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.16E-12	8.00E-03	3.30E-04	1.06E-07	3.92E+02	2.59E+06	3.10E-03
CM244	2.38E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.58E-12	8.00E-03	3.30E-04	9.38E-05	3.47E+05	2.59E+06	3.76E+00
PU238	1.58E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.05E-12	8.00E-03	3.30E-04	1.52E-04	5.62E+05	2.59E+06	4.04E+00
SB125	7.91E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	5.26E-13	8.00E-03	3.30E-04	6.49E-10	2.40E+00	2.59E+06	8.64E-06
EU155	5.41E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.60E-13	8.00E-03	3.30E-04	1.43E-08	5.29E+01	2.59E+06	1.30E-04
AM241	2.78E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.85E-13	8.00E-03	3.30E-04	1.74E-04	6.44E+05	2.59E+06	8.14E-01
TE125M	1.93E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.29E-13	8.00E-03	3.30E-04	3.01E-09	1.11E+01	2.59E+06	9.80E-06
PU240	1.50E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.98E-14	8.00E-03	3.30E-04	1.69E-04	6.25E+05	2.59E+06	4.27E-01
SM151	9.76E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.49E-14	8.00E-03	3.30E-04	1.10E-08	4.07E+01	2.59E+06	1.81E-05
PU239	6.70E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	4.46E-14	8.00E-03	3.30E-04	1.69E-04	6.25E+05	2.59E+06	1.91E-01
BA137M	3.17E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.11E-11	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
RH106	4.71E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.13E-12	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
PR144M	3.48E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.31E-14	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
AM243	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	3.30E-04	1.73E-04	6.40E+05	2.59E+06	3.96E-02
CM242	9.82E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.53E-15	8.00E-03	3.30E-04	3.90E-06	1.44E+04	2.59E+06	6.44E-04
CM243	9.79E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.51E-15	8.00E-03	3.30E-04	1.18E-04	4.37E+05	2.59E+06	1.94E-02
NP239	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	3.30E-04	2.08E-10	7.70E-01	2.59E+06	4.76E-08
NP237	1.18E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	7.85E-17	8.00E-03	3.30E-04	2.62E-04	9.69E+05	2.59E+06	5.20E-04
PU242	9.04E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.01E-16	8.00E-03	3.30E-04	1.61E-04	5.96E+05	2.59E+06	2.45E-03
AM242	2.71E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.80E-15	8.00E-03	3.30E-04	1.32E-08	4.88E+01	2.59E+06	6.02E-07
AM242M	2.72E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.81E-15	8.00E-03	3.30E-04	1.69E-04	6.25E+05	2.59E+06	7.74E-03
													Total	2.60E+01

MPC-68														
Accident Conditions														
Committed Dose Equivalent From Inhalation														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	CDE (mRem)
								Gases						
H 3	1.24E+02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	8.23E-09	8.00E-03	3.30E-04	1.73E-11	6.40E-02	2.59E+06	3.60E-03
I129	1.12E-02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	7.45E-13	8.00E-03	3.30E-04	1.38E-10	5.11E-01	2.59E+06	2.60E-06
KR 85	2.04E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	1.36E-07	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
								Crud						
Co-60	6.50E+01	100%	68	5.99E+06	1.95E-05	3.26E-12	1.00	1.44E-08	8.00E-03	3.30E-04	1.35E-08	5.00E+01	2.59E+06	4.92E+00
								Volatiles						
SR 90	2.24E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	9.93E-10	8.00E-03	3.30E-04	7.27E-07	2.69E+03	2.59E+06	1.83E+01
RU106	4.71E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	2.09E-10	8.00E-03	3.30E-04	1.37E-08	5.07E+01	2.59E+06	7.24E-02
CS134	1.18E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	5.23E-10	8.00E-03	3.30E-04	1.10E-08	4.07E+01	2.59E+06	1.46E-01
CS137	3.35E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	1.49E-09	8.00E-03	3.30E-04	7.94E-09	2.94E+01	2.59E+06	2.98E-01
								Fines						
PU241	2.58E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.72E-11	8.00E-03	3.30E-04	4.20E-05	1.55E+05	2.59E+06	1.82E+01
Y 90	2.24E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.49E-11	8.00E-03	3.30E-04	2.78E-10	1.03E+00	2.59E+06	1.05E-04
PM147	9.63E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.41E-12	8.00E-03	3.30E-04	1.02E-07	3.77E+02	2.59E+06	1.65E-02
CE144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	3.30E-04	4.54E-08	1.68E+02	2.59E+06	1.89E-03
PR144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	3.30E-04	1.35E-13	5.00E-04	2.59E+06	5.63E-09
EU154	1.74E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.16E-12	8.00E-03	3.30E-04	5.23E-07	1.94E+03	2.59E+06	1.53E-02
CM244	2.38E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.58E-12	8.00E-03	3.30E-04	1.17E-03	4.33E+06	2.59E+06	4.69E+01
PU238	1.58E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.05E-12	8.00E-03	3.30E-04	1.90E-03	7.03E+06	2.59E+06	5.05E+01
SB125	7.91E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	5.26E-13	8.00E-03	3.30E-04	2.73E-09	1.01E+01	2.59E+06	3.63E-05
EU155	5.41E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.60E-13	8.00E-03	3.30E-04	1.52E-07	5.62E+02	2.59E+06	1.38E-03
AM241	2.78E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.85E-13	8.00E-03	3.30E-04	2.17E-03	8.03E+06	2.59E+06	1.02E+01
TE125M	1.93E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.29E-13	8.00E-03	3.30E-04	3.21E-08	1.19E+02	2.59E+06	1.04E-04
PU240	1.50E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.98E-14	8.00E-03	3.30E-04	2.11E-03	7.81E+06	2.59E+06	5.33E+00
SM151	9.76E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.49E-14	8.00E-03	3.30E-04	1.38E-07	5.11E+02	2.59E+06	2.27E-04
PU239	6.70E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	4.46E-14	8.00E-03	3.30E-04	2.11E-03	7.81E+06	2.59E+06	2.38E+00
BA137M	3.17E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.11E-11	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
RH106	4.71E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.13E-12	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
PR144M	3.48E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.31E-14	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
AM243	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	3.30E-04	2.17E-03	8.03E+06	2.59E+06	4.97E-01
CM242	9.82E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.53E-15	8.00E-03	3.30E-04	4.87E-05	1.80E+05	2.59E+06	8.05E-03
CM243	9.79E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.51E-15	8.00E-03	3.30E-04	1.47E-03	5.44E+06	2.59E+06	2.42E-01
NP239	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	3.30E-04	2.03E-09	7.51E+00	2.59E+06	4.65E-07
NP237	1.18E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	7.85E-17	8.00E-03	3.30E-04	3.27E-03	1.21E+07	2.59E+06	6.49E-03
PU242	9.04E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.01E-16	8.00E-03	3.30E-04	2.01E-03	7.44E+06	2.59E+06	3.06E-02
AM242	2.71E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.80E-15	8.00E-03	3.30E-04	1.65E-07	6.11E+02	2.59E+06	7.52E-06
AM242M	2.72E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.81E-15	8.00E-03	3.30E-04	2.12E-03	7.84E+06	2.59E+06	9.70E-02
													Total	1.58E+02

MPC-68														
Accident Conditions														
Committed Dose Equivalent From Inhalation														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	CDE (mRem)
								Gases						
H 3	1.24E+02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	8.23E-09	8.00E-03	3.30E-04	1.73E-11	6.40E-02	2.59E+06	3.60E-03
I129	1.12E-02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	7.45E-13	8.00E-03	3.30E-04	1.56E-06	5.77E+03	2.59E+06	2.94E-02
KR 85	2.04E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	1.36E-07	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
								Crud						
Co-60	6.50E+01	100%	68	5.99E+06	1.95E-05	3.26E-12	1.00	1.44E-08	8.00E-03	3.30E-04	1.62E-08	5.99E+01	2.59E+06	5.91E+00
								Volatiles						
SR 90	2.24E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	9.93E-10	8.00E-03	3.30E-04	2.64E-09	9.77E+00	2.59E+06	6.63E-02
RU106	4.71E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	2.09E-10	8.00E-03	3.30E-04	1.37E-08	5.07E+01	2.59E+06	7.24E-02
CS134	1.18E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	5.23E-10	8.00E-03	3.30E-04	1.11E-08	4.11E+01	2.59E+06	1.47E-01
CS137	3.35E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	1.49E-09	8.00E-03	3.30E-04	7.93E-09	2.93E+01	2.59E+06	2.98E-01
								Fines						
PU241	2.58E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.72E-11	8.00E-03	3.30E-04	1.24E-11	4.59E-02	2.59E+06	5.38E-06
Y 90	2.24E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.49E-11	8.00E-03	3.30E-04	9.52E-12	3.52E-02	2.59E+06	3.59E-06
PM147	9.63E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.41E-12	8.00E-03	3.30E-04	1.98E-14	7.33E-05	2.59E+06	3.21E-09
CE144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	3.30E-04	1.88E-09	6.96E+00	2.59E+06	7.85E-05
PR144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	3.30E-04	8.47E-15	3.13E-05	2.59E+06	3.53E-10
EU154	1.74E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.16E-12	8.00E-03	3.30E-04	7.14E-09	2.64E+01	2.59E+06	2.09E-04
CM244	2.38E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.58E-12	8.00E-03	3.30E-04	1.01E-09	3.74E+00	2.59E+06	4.04E-05
PU238	1.58E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.05E-12	8.00E-03	3.30E-04	9.62E-10	3.56E+00	2.59E+06	2.56E-05
SB125	7.91E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	5.26E-13	8.00E-03	3.30E-04	3.24E-10	1.20E+00	2.59E+06	4.31E-06
EU155	5.41E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.60E-13	8.00E-03	3.30E-04	2.40E-10	8.88E-01	2.59E+06	2.18E-06
AM241	2.78E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.85E-13	8.00E-03	3.30E-04	1.60E-09	5.92E+00	2.59E+06	7.48E-06
TE125M	1.93E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.29E-13	8.00E-03	3.30E-04	9.93E-11	3.67E-01	2.59E+06	3.23E-07
PU240	1.50E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.98E-14	8.00E-03	3.30E-04	9.05E-10	3.35E+00	2.59E+06	2.28E-06
SM151	9.76E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.49E-14	8.00E-03	3.30E-04	1.32E-14	4.88E-05	2.59E+06	2.17E-11
PU239	6.70E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	4.46E-14	8.00E-03	3.30E-04	9.03E-10	3.34E+00	2.59E+06	1.02E-06
BA137M	3.17E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.11E-11	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
RH106	4.71E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.13E-12	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
PR144M	3.48E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.31E-14	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
AM243	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	3.30E-04	8.29E-09	3.07E+01	2.59E+06	1.90E-06
CM242	9.82E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.53E-15	8.00E-03	3.30E-04	9.41E-10	3.48E+00	2.59E+06	1.55E-07
CM243	9.79E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.51E-15	8.00E-03	3.30E-04	3.83E-09	1.42E+01	2.59E+06	6.31E-07
NP239	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	3.30E-04	7.62E-12	2.82E-02	2.59E+06	1.74E-09
NP237	1.18E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	7.85E-17	8.00E-03	3.30E-04	1.34E-08	4.96E+01	2.59E+06	2.66E-08
PU242	9.04E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.01E-16	8.00E-03	3.30E-04	8.79E-10	3.25E+00	2.59E+06	1.34E-08
AM242	2.71E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.80E-15	8.00E-03	3.30E-04	2.52E-12	9.32E-03	2.59E+06	1.15E-10
AM242M	2.72E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.81E-15	8.00E-03	3.30E-04	5.64E-10	2.09E+00	2.59E+06	2.58E-08
													Total	6.52E+00

MPC-68														
Accident Conditions														
Committed Effective Dose Equivalent From Inhalation														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	Breathing Rate (m3/sec)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	CEDE (mRem)
								Gases						
H 3	1.24E+02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	8.23E-09	8.00E-03	3.30E-04	1.73E-11	6.40E-02	2.59E+06	3.60E-03
I129	1.12E-02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	7.45E-13	8.00E-03	3.30E-04	4.69E-08	1.74E+02	2.59E+06	8.84E-04
KR 85	2.04E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	1.36E-07	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
								Crud						
Co-60	6.50E+01	100%	68	5.99E+06	1.95E-05	3.26E-12	1.00	1.44E-08	8.00E-03	3.30E-04	5.91E-08	2.19E+02	2.59E+06	2.15E+01
								Volatiles						
SR 90	2.24E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	9.93E-10	8.00E-03	3.30E-04	3.51E-07	1.30E+03	2.59E+06	8.82E+00
RU106	4.71E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	2.09E-10	8.00E-03	3.30E-04	1.29E-07	4.77E+02	2.59E+06	6.82E-01
CS134	1.18E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	5.23E-10	8.00E-03	3.30E-04	1.25E-08	4.63E+01	2.59E+06	1.65E-01
CS137	3.35E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	1.49E-09	8.00E-03	3.30E-04	8.63E-09	3.19E+01	2.59E+06	3.24E-01
								Fines						
PU241	2.58E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.72E-11	8.00E-03	3.30E-04	2.23E-06	8.25E+03	2.59E+06	9.68E-01
Y 90	2.24E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.49E-11	8.00E-03	3.30E-04	2.28E-09	8.44E+00	2.59E+06	8.59E-04
PM147	9.63E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.41E-12	8.00E-03	3.30E-04	1.06E-08	3.92E+01	2.59E+06	1.72E-03
CE144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	3.30E-04	1.01E-07	3.74E+02	2.59E+06	4.21E-03
PR144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	3.30E-04	1.17E-11	4.33E-02	2.59E+06	4.88E-07
EU154	1.74E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.16E-12	8.00E-03	3.30E-04	7.73E-08	2.86E+02	2.59E+06	2.26E-03
CM244	2.38E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.58E-12	8.00E-03	3.30E-04	6.70E-05	2.48E+05	2.59E+06	2.68E+00
PU238	1.58E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.05E-12	8.00E-03	3.30E-04	1.06E-04	3.92E+05	2.59E+06	2.82E+00
SB125	7.91E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	5.26E-13	8.00E-03	3.30E-04	3.30E-09	1.22E+01	2.59E+06	4.39E-05
EU155	5.41E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.60E-13	8.00E-03	3.30E-04	1.12E-08	4.14E+01	2.59E+06	1.02E-04
AM241	2.78E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.85E-13	8.00E-03	3.30E-04	1.20E-04	4.44E+05	2.59E+06	5.61E-01
TE125M	1.93E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.29E-13	8.00E-03	3.30E-04	1.97E-09	7.29E+00	2.59E+06	6.41E-06
PU240	1.50E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.98E-14	8.00E-03	3.30E-04	1.16E-04	4.29E+05	2.59E+06	2.93E-01
SM151	9.76E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.49E-14	8.00E-03	3.30E-04	8.10E-09	3.00E+01	2.59E+06	1.33E-05
PU239	6.70E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	4.46E-14	8.00E-03	3.30E-04	1.16E-04	4.29E+05	2.59E+06	1.31E-01
BA137M	3.17E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.11E-11	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
RH106	4.71E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.13E-12	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
PR144M	3.48E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.31E-14	8.00E-03	3.30E-04	0.00E+00	0.00E+00	2.59E+06	0.00E+00
AM243	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	3.30E-04	1.19E-04	4.40E+05	2.59E+06	2.72E-02
CM242	9.82E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.53E-15	8.00E-03	3.30E-04	4.67E-06	1.73E+04	2.59E+06	7.72E-04
CM243	9.79E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.51E-15	8.00E-03	3.30E-04	8.30E-05	3.07E+05	2.59E+06	1.37E-02
NP239	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	3.30E-04	6.78E-10	2.51E+00	2.59E+06	1.55E-07
NP237	1.18E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	7.85E-17	8.00E-03	3.30E-04	1.46E-04	5.40E+05	2.59E+06	2.90E-04
PU242	9.04E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.01E-16	8.00E-03	3.30E-04	1.11E-04	4.11E+05	2.59E+06	1.69E-03
AM242	2.71E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.80E-15	8.00E-03	3.30E-04	1.58E-08	5.85E+01	2.59E+06	7.21E-07
AM242M	2.72E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.81E-15	8.00E-03	3.30E-04	1.15E-04	4.26E+05	2.59E+06	5.26E-03
													Total	3.91E+01

MPC-68															
Normal Conditions															
Effective Dose Equivalent From Submersion															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
									Gases						
H 3	1.24E+02	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.18E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
I129	1.12E-02	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.07E-14	1.60E-04	4.83E-16	1.79E-06	3.15E+07	9.62E-11	
KR 85	2.04E+03	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.95E-09	1.60E-04	1.17E-16	4.33E-07	3.15E+07	4.24E-06	
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	1.23E-13	4.55E-04	3.15E+07	2.84E-03	
									Volatiles						
SR 90	2.24E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.42E-11	1.60E-04	7.78E-18	2.88E-08	3.15E+07	2.07E-09	
RU106	4.71E+03	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.99E-12	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
CS134	1.18E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	7.50E-12	1.60E-04	7.40E-14	2.74E-04	3.15E+07	1.04E-05	
CS137	3.35E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.13E-11	1.60E-04	7.96E-18	2.95E-08	3.15E+07	3.16E-09	
									Fines						
PU241	2.58E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.46E-13	1.60E-04	7.19E-20	2.66E-10	3.15E+07	3.30E-13	
Y 90	2.24E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.14E-13	1.60E-04	1.89E-16	6.99E-07	3.15E+07	7.53E-10	
PM147	9.63E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.18E-14	1.60E-04	7.48E-19	2.77E-09	3.15E+07	1.28E-12	
CE144	2.48E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	8.53E-16	3.16E-06	3.15E+07	3.76E-10	
PR144	2.48E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	1.90E-15	7.03E-06	3.15E+07	8.38E-10	
EU154	1.74E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.66E-14	1.60E-04	6.00E-14	2.22E-04	3.15E+07	1.86E-08	
CM244	2.38E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.27E-14	1.60E-04	6.90E-18	2.55E-08	3.15E+07	2.92E-12	
PU238	1.58E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.51E-14	1.60E-04	6.56E-18	2.43E-08	3.15E+07	1.84E-12	
SB125	7.91E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.54E-15	1.60E-04	1.98E-14	7.33E-05	3.15E+07	2.79E-09	
EU155	5.41E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.16E-15	1.60E-04	2.49E-15	9.21E-06	3.15E+07	2.40E-10	
AM241	2.78E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.65E-15	1.60E-04	8.58E-16	3.17E-06	3.15E+07	4.24E-11	
TE125M	1.93E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.84E-15	1.60E-04	5.96E-16	2.21E-06	3.15E+07	2.05E-11	
PU240	1.50E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.43E-15	1.60E-04	6.36E-18	2.35E-08	3.15E+07	1.70E-13	
SM151	9.76E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.31E-16	1.60E-04	5.20E-20	1.92E-10	3.15E+07	9.02E-16	
PU239	6.70E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.39E-16	1.60E-04	4.84E-18	1.79E-08	3.15E+07	5.77E-14	
BA137M	3.17E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.02E-13	1.60E-04	2.82E-14	1.04E-04	3.15E+07	1.59E-07	
RH106	4.71E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.49E-14	1.60E-04	1.01E-14	3.74E-05	3.15E+07	8.46E-09	
PR144M	3.48E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.32E-16	1.60E-04	3.25E-16	1.20E-06	3.15E+07	2.01E-12	
AM243	1.36E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	2.19E-15	8.10E-06	3.15E+07	5.30E-12	
CM242	9.82E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.36E-17	1.60E-04	7.83E-18	2.90E-08	3.15E+07	1.37E-14	
CM243	9.79E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.34E-17	1.60E-04	5.77E-15	2.13E-05	3.15E+07	1.00E-11	
NP239	1.36E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	7.53E-15	2.79E-05	3.15E+07	1.82E-11	
NP237	1.18E-01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-18	1.60E-04	1.04E-15	3.85E-06	3.15E+07	2.18E-14	
PU242	9.04E-01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.62E-18	1.60E-04	5.34E-18	1.98E-08	3.15E+07	8.58E-16	
AM242	2.71E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.58E-17	1.60E-04	6.09E-16	2.25E-06	3.15E+07	2.93E-13	
AM242M	2.72E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.59E-17	1.60E-04	3.80E-17	1.41E-07	3.15E+07	1.84E-14	
													Total	2.86E-03	

MPC-68															
Normal Conditions															
Effective Dose Equivalent From Submersion															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
									Gases						
H 3	1.24E+02	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.18E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
I129	1.12E-02	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.07E-14	1.60E-04	6.66E-16	2.46E-06	3.15E+07	1.33E-10	
KR 85	2.04E+03	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.95E-09	1.60E-04	1.34E-16	4.96E-07	3.15E+07	4.86E-06	
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	1.39E-13	5.14E-04	3.15E+07	3.21E-03	
									Volatiles						
SR 90	2.24E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.42E-11	1.60E-04	9.49E-18	3.51E-08	3.15E+07	2.52E-09	
RU106	4.71E+03	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.99E-12	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
CS134	1.18E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	7.50E-12	1.60E-04	8.43E-14	3.12E-04	3.15E+07	1.18E-05	
CS137	3.35E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.13E-11	1.60E-04	9.67E-18	3.58E-08	3.15E+07	3.84E-09	
									Fines						
PU241	2.58E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.46E-13	1.60E-04	8.67E-20	3.21E-10	3.15E+07	3.98E-13	
Y 90	2.24E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.14E-13	1.60E-04	2.20E-16	8.14E-07	3.15E+07	8.76E-10	
PM147	9.63E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.18E-14	1.60E-04	9.56E-19	3.54E-09	3.15E+07	1.64E-12	
CE144	2.48E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	1.01E-15	3.74E-06	3.15E+07	4.45E-10	
PR144	2.48E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	2.15E-15	7.96E-06	3.15E+07	9.48E-10	
EU154	1.74E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.66E-14	1.60E-04	6.81E-14	2.52E-04	3.15E+07	2.11E-08	
CM244	2.38E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.27E-14	1.60E-04	1.33E-17	4.92E-08	3.15E+07	5.63E-12	
PU238	1.58E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.51E-14	1.60E-04	1.27E-17	4.70E-08	3.15E+07	3.57E-12	
SB125	7.91E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.54E-15	1.60E-04	2.27E-14	8.40E-05	3.15E+07	3.19E-09	
EU155	5.41E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.16E-15	1.60E-04	2.95E-15	1.09E-05	3.15E+07	2.84E-10	
AM241	2.78E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.65E-15	1.60E-04	1.07E-15	3.96E-06	3.15E+07	5.29E-11	
TE125M	1.93E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.84E-15	1.60E-04	8.48E-16	3.14E-06	3.15E+07	2.92E-11	
PU240	1.50E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.43E-15	1.60E-04	1.23E-17	4.55E-08	3.15E+07	3.28E-13	
SM151	9.76E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.31E-16	1.60E-04	8.80E-20	3.26E-10	3.15E+07	1.53E-15	
PU239	6.70E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.39E-16	1.60E-04	7.55E-18	2.79E-08	3.15E+07	9.00E-14	
BA137M	3.17E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.02E-13	1.60E-04	3.22E-14	1.19E-04	3.15E+07	1.82E-07	
RH106	4.71E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.49E-14	1.60E-04	1.16E-14	4.29E-05	3.15E+07	9.72E-09	
PR144M	3.48E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.32E-16	1.60E-04	4.20E-16	1.55E-06	3.15E+07	2.60E-12	
AM243	1.36E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	2.61E-15	9.66E-06	3.15E+07	6.31E-12	
CM242	9.82E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.36E-17	1.60E-04	1.48E-17	5.48E-08	3.15E+07	2.58E-14	
CM243	9.79E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.34E-17	1.60E-04	6.68E-15	2.47E-05	3.15E+07	1.16E-11	
NP239	1.36E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	8.73E-15	3.23E-05	3.15E+07	2.11E-11	
NP237	1.18E-01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-18	1.60E-04	1.26E-15	4.66E-06	3.15E+07	2.64E-14	
PU242	9.04E-01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.62E-18	1.60E-04	1.03E-17	3.81E-08	3.15E+07	1.66E-15	
AM242	2.71E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.58E-17	1.60E-04	7.30E-16	2.70E-06	3.15E+07	3.52E-13	
AM242M	2.72E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.59E-17	1.60E-04	6.01E-17	2.22E-07	3.15E+07	2.91E-14	
													Total	3.23E-03	

MPC-68															
Normal Conditions															
Effective Dose Equivalent From Submersion															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
									Gases						
H 3	1.24E+02	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.18E-10	1.60E-04	2.75E-18	1.02E-08	3.15E+07	6.05E-09	
I129	1.12E-02	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.07E-14	1.60E-04	2.14E-16	7.92E-07	3.15E+07	4.26E-11	
KR 85	2.04E+03	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.95E-09	1.60E-04	1.14E-16	4.22E-07	3.15E+07	4.14E-06	
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	1.24E-13	4.59E-04	3.15E+07	2.87E-03	
									Volatiles						
SR 90	2.24E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.42E-11	1.60E-04	6.44E-18	2.38E-08	3.15E+07	1.71E-09	
RU106	4.71E+03	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.99E-12	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
CS134	1.18E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	7.50E-12	1.60E-04	7.37E-14	2.73E-04	3.15E+07	1.03E-05	
CS137	3.35E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.13E-11	1.60E-04	6.68E-18	2.47E-08	3.15E+07	2.65E-09	
									Fines						
PU241	2.58E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.46E-13	1.60E-04	6.48E-20	2.40E-10	3.15E+07	2.97E-13	
Y 90	2.24E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.14E-13	1.60E-04	1.77E-16	6.55E-07	3.15E+07	7.05E-10	
PM147	9.63E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.18E-14	1.60E-04	5.45E-19	2.02E-09	3.15E+07	9.33E-13	
CE144	2.48E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	7.69E-16	2.85E-06	3.15E+07	3.39E-10	
PR144	2.48E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	1.90E-15	7.03E-06	3.15E+07	8.38E-10	
EU154	1.74E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.66E-14	1.60E-04	5.99E-14	2.22E-04	3.15E+07	1.85E-08	
CM244	2.38E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.27E-14	1.60E-04	7.08E-19	2.62E-09	3.15E+07	3.00E-13	
PU238	1.58E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.51E-14	1.60E-04	1.06E-18	3.92E-09	3.15E+07	2.98E-13	
SB125	7.91E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.54E-15	1.60E-04	1.95E-14	7.22E-05	3.15E+07	2.74E-09	
EU155	5.41E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.16E-15	1.60E-04	2.22E-15	8.21E-06	3.15E+07	2.14E-10	
AM241	2.78E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.65E-15	1.60E-04	6.74E-16	2.49E-06	3.15E+07	3.33E-11	
TE125M	1.93E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.84E-15	1.60E-04	2.23E-16	8.25E-07	3.15E+07	7.67E-12	
PU240	1.50E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.43E-15	1.60E-04	1.09E-18	4.03E-09	3.15E+07	2.91E-14	
SM151	9.76E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.31E-16	1.60E-04	7.08E-21	2.62E-11	3.15E+07	1.23E-16	
PU239	6.70E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.39E-16	1.60E-04	2.65E-18	9.81E-09	3.15E+07	3.16E-14	
BA137M	3.17E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.02E-13	1.60E-04	2.80E-14	1.04E-04	3.15E+07	1.58E-07	
RH106	4.71E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.49E-14	1.60E-04	1.01E-14	3.74E-05	3.15E+07	8.46E-09	
PR144M	3.48E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.32E-16	1.60E-04	2.00E-16	7.40E-07	3.15E+07	1.24E-12	
AM243	1.36E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	1.92E-15	7.10E-06	3.15E+07	4.64E-12	
CM242	9.82E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.36E-17	1.60E-04	1.13E-18	4.18E-09	3.15E+07	1.97E-15	
CM243	9.79E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.34E-17	1.60E-04	5.50E-15	2.04E-05	3.15E+07	9.58E-12	
NP239	1.36E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	7.18E-15	2.66E-05	3.15E+07	1.74E-11	
NP237	1.18E-01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-18	1.60E-04	9.02E-16	3.34E-06	3.15E+07	1.89E-14	
PU242	9.04E-01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.62E-18	1.60E-04	9.69E-19	3.59E-09	3.15E+07	1.56E-16	
AM242	2.71E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.58E-17	1.60E-04	5.51E-16	2.04E-06	3.15E+07	2.66E-13	
AM242M	2.72E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.59E-17	1.60E-04	1.72E-17	6.36E-08	3.15E+07	8.32E-15	
													Total	2.88E-03	

MPC-68															
Normal Conditions															
Effective Dose Equivalent From Submersion															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
									Gases						
H 3	1.24E+02	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.18E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
I129	1.12E-02	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.07E-14	1.60E-04	1.64E-16	6.07E-07	3.15E+07	3.27E-11	
KR 85	2.04E+03	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.95E-09	1.60E-04	1.09E-16	4.03E-07	3.15E+07	3.95E-06	
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	1.23E-13	4.55E-04	3.15E+07	2.84E-03	
									Volatiles						
SR 90	2.24E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.42E-11	1.60E-04	5.44E-18	2.01E-08	3.15E+07	1.44E-09	
RU106	4.71E+03	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.99E-12	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
CS134	1.18E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	7.50E-12	1.60E-04	7.19E-14	2.66E-04	3.15E+07	1.01E-05	
CS137	3.35E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.13E-11	1.60E-04	5.70E-18	2.11E-08	3.15E+07	2.26E-09	
									Fines						
PU241	2.58E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.46E-13	1.60E-04	5.63E-20	2.08E-10	3.15E+07	2.58E-13	
Y 90	2.24E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.14E-13	1.60E-04	1.62E-16	5.99E-07	3.15E+07	6.45E-10	
PM147	9.63E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.18E-14	1.60E-04	4.46E-19	1.65E-09	3.15E+07	7.64E-13	
CE144	2.48E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	6.68E-16	2.47E-06	3.15E+07	2.95E-10	
PR144	2.48E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	1.87E-15	6.92E-06	3.15E+07	8.25E-10	
EU154	1.74E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.66E-14	1.60E-04	5.87E-14	2.17E-04	3.15E+07	1.82E-08	
CM244	2.38E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.27E-14	1.60E-04	1.46E-18	5.40E-09	3.15E+07	6.18E-13	
PU238	1.58E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.51E-14	1.60E-04	1.68E-18	6.22E-09	3.15E+07	4.72E-13	
SB125	7.91E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.54E-15	1.60E-04	1.87E-14	6.92E-05	3.15E+07	2.63E-09	
EU155	5.41E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.16E-15	1.60E-04	1.85E-15	6.85E-06	3.15E+07	1.78E-10	
AM241	2.78E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.65E-15	1.60E-04	5.21E-16	1.93E-06	3.15E+07	2.58E-11	
TE125M	1.93E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.84E-15	1.60E-04	1.86E-16	6.88E-07	3.15E+07	6.40E-12	
PU240	1.50E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.43E-15	1.60E-04	1.65E-18	6.11E-09	3.15E+07	4.40E-14	
SM151	9.76E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.31E-16	1.60E-04	1.13E-20	4.18E-11	3.15E+07	1.96E-16	
PU239	6.70E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.39E-16	1.60E-04	2.67E-18	9.88E-09	3.15E+07	3.18E-14	
BA137M	3.17E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.02E-13	1.60E-04	2.73E-14	1.01E-04	3.15E+07	1.54E-07	
RH106	4.71E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.49E-14	1.60E-04	9.75E-15	3.61E-05	3.15E+07	8.17E-09	
PR144M	3.48E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.32E-16	1.60E-04	1.56E-16	5.77E-07	3.15E+07	9.65E-13	
AM243	1.36E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	1.55E-15	5.74E-06	3.15E+07	3.75E-12	
CM242	9.82E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.36E-17	1.60E-04	1.89E-18	6.99E-09	3.15E+07	3.30E-15	
CM243	9.79E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.34E-17	1.60E-04	5.00E-15	1.85E-05	3.15E+07	8.70E-12	
NP239	1.36E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	6.50E-15	2.41E-05	3.15E+07	1.57E-11	
NP237	1.18E-01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-18	1.60E-04	7.69E-16	2.85E-06	3.15E+07	1.61E-14	
PU242	9.04E-01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.62E-18	1.60E-04	1.43E-18	5.29E-09	3.15E+07	2.30E-16	
AM242	2.71E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.58E-17	1.60E-04	4.77E-16	1.76E-06	3.15E+07	2.30E-13	
AM242M	2.72E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.59E-17	1.60E-04	1.72E-17	6.36E-08	3.15E+07	8.32E-15	
													Total	2.86E-03	

MPC-68															
Normal Conditions															
Effective Dose Equivalent From Submersion															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
									Gases						
H 3	1.24E+02	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.18E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
I129	1.12E-02	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.07E-14	1.60E-04	1.10E-15	4.07E-06	3.15E+07	2.19E-10	
KR 85	2.04E+03	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.95E-09	1.60E-04	2.20E-16	8.14E-07	3.15E+07	7.98E-06	
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	1.78E-13	6.59E-04	3.15E+07	4.11E-03	
									Volatiles						
SR 90	2.24E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.42E-11	1.60E-04	2.28E-17	8.44E-08	3.15E+07	6.05E-09	
RU106	4.71E+03	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.99E-12	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
CS134	1.18E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	7.50E-12	1.60E-04	1.20E-13	4.44E-04	3.15E+07	1.68E-05	
CS137	3.35E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.13E-11	1.60E-04	2.29E-17	8.47E-08	3.15E+07	9.09E-09	
									Fines						
PU241	2.58E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.46E-13	1.60E-04	2.19E-19	8.10E-10	3.15E+07	1.00E-12	
Y 90	2.24E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.14E-13	1.60E-04	4.44E-16	1.64E-06	3.15E+07	1.77E-09	
PM147	9.63E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.18E-14	1.60E-04	2.18E-18	8.07E-09	3.15E+07	3.73E-12	
CE144	2.48E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	2.49E-15	9.21E-06	3.15E+07	1.10E-09	
PR144	2.48E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	2.99E-15	1.11E-05	3.15E+07	1.32E-09	
EU154	1.74E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.66E-14	1.60E-04	9.43E-14	3.49E-04	3.15E+07	2.92E-08	
CM244	2.38E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.27E-14	1.60E-04	8.82E-18	3.26E-08	3.15E+07	3.73E-12	
PU238	1.58E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.51E-14	1.60E-04	9.30E-18	3.44E-08	3.15E+07	2.61E-12	
SB125	7.91E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.54E-15	1.60E-04	3.53E-14	1.31E-04	3.15E+07	4.97E-09	
EU155	5.41E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.16E-15	1.60E-04	8.09E-15	2.99E-05	3.15E+07	7.78E-10	
AM241	2.78E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.65E-15	1.60E-04	2.87E-15	1.06E-05	3.15E+07	1.42E-10	
TE125M	1.93E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.84E-15	1.60E-04	1.22E-15	4.51E-06	3.15E+07	4.20E-11	
PU240	1.50E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.43E-15	1.60E-04	9.26E-18	3.43E-08	3.15E+07	2.47E-13	
SM151	9.76E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.31E-16	1.60E-04	7.09E-20	2.62E-10	3.15E+07	1.23E-15	
PU239	6.70E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.39E-16	1.60E-04	9.47E-18	3.50E-08	3.15E+07	1.13E-13	
BA137M	3.17E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.02E-13	1.60E-04	4.63E-14	1.71E-04	3.15E+07	2.61E-07	
RH106	4.71E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.49E-14	1.60E-04	1.72E-14	6.36E-05	3.15E+07	1.44E-08	
PR144M	3.48E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.32E-16	1.60E-04	8.16E-16	3.02E-06	3.15E+07	5.05E-12	
AM243	1.36E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	7.47E-15	2.76E-05	3.15E+07	1.81E-11	
CM242	9.82E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.36E-17	1.60E-04	1.06E-17	3.92E-08	3.15E+07	1.85E-14	
CM243	9.79E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.34E-17	1.60E-04	1.50E-14	5.55E-05	3.15E+07	2.61E-11	
NP239	1.36E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	2.00E-14	7.40E-05	3.15E+07	4.84E-11	
NP237	1.18E-01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-18	1.60E-04	3.20E-15	1.18E-05	3.15E+07	6.71E-14	
PU242	9.04E-01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.62E-18	1.60E-04	7.90E-18	2.92E-08	3.15E+07	1.27E-15	
AM242	2.71E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.58E-17	1.60E-04	1.88E-15	6.96E-06	3.15E+07	9.06E-13	
AM242M	2.72E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.59E-17	1.60E-04	7.94E-17	2.94E-07	3.15E+07	3.84E-14	
													Total	4.14E-03	

MPC-68														
Normal Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)
									Gases					
H 3	1.24E+02	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.18E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
I129	1.12E-02	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.07E-14	1.60E-04	3.86E-16	1.43E-06	3.15E+07	7.69E-11
KR 85	2.04E+03	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.95E-09	1.60E-04	1.18E-16	4.37E-07	3.15E+07	4.28E-06
									Crud					
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	1.27E-13	4.70E-04	3.15E+07	2.94E-03
									Volatiles					
SR 90	2.24E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.42E-11	1.60E-04	7.33E-18	2.71E-08	3.15E+07	1.95E-09
RU106	4.71E+03	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.99E-12	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00
CS134	1.18E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	7.50E-12	1.60E-04	7.57E-14	2.80E-04	3.15E+07	1.06E-05
CS137	3.35E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.13E-11	1.60E-04	7.55E-18	2.79E-08	3.15E+07	3.00E-09
									Fines					
PU241	2.58E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.46E-13	1.60E-04	6.98E-20	2.58E-10	3.15E+07	3.20E-13
Y 90	2.24E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.14E-13	1.60E-04	1.87E-16	6.92E-07	3.15E+07	7.45E-10
PM147	9.63E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.18E-14	1.60E-04	6.75E-19	2.50E-09	3.15E+07	1.16E-12
CE144	2.48E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	8.33E-16	3.08E-06	3.15E+07	3.67E-10
PR144	2.48E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	1.95E-15	7.22E-06	3.15E+07	8.60E-10
EU154	1.74E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.66E-14	1.60E-04	6.15E-14	2.28E-04	3.15E+07	1.90E-08
CM244	2.38E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.27E-14	1.60E-04	4.19E-18	1.55E-08	3.15E+07	1.77E-12
PU238	1.58E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.51E-14	1.60E-04	4.01E-18	1.48E-08	3.15E+07	1.13E-12
SB125	7.91E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.54E-15	1.60E-04	2.01E-14	7.44E-05	3.15E+07	2.83E-09
EU155	5.41E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.16E-15	1.60E-04	2.41E-15	8.92E-06	3.15E+07	2.32E-10
AM241	2.78E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.65E-15	1.60E-04	7.83E-16	2.90E-06	3.15E+07	3.87E-11
TE125M	1.93E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.84E-15	1.60E-04	4.64E-16	1.72E-06	3.15E+07	1.60E-11
PU240	1.50E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.43E-15	1.60E-04	3.92E-18	1.45E-08	3.15E+07	1.05E-13
SM151	9.76E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.31E-16	1.60E-04	3.58E-20	1.32E-10	3.15E+07	6.21E-16
PU239	6.70E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.39E-16	1.60E-04	3.88E-18	1.44E-08	3.15E+07	4.62E-14
BA137M	3.17E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.02E-13	1.60E-04	2.88E-14	1.07E-04	3.15E+07	1.62E-07
RH106	4.71E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.49E-14	1.60E-04	1.03E-14	3.81E-05	3.15E+07	8.63E-09
PR144M	3.48E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.32E-16	1.60E-04	2.81E-16	1.04E-06	3.15E+07	1.74E-12
AM243	1.36E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	2.09E-15	7.73E-06	3.15E+07	5.05E-12
CM242	9.82E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.36E-17	1.60E-04	4.91E-18	1.82E-08	3.15E+07	8.57E-15
CM243	9.79E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.34E-17	1.60E-04	5.76E-15	2.13E-05	3.15E+07	1.00E-11
NP239	1.36E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	7.52E-15	2.78E-05	3.15E+07	1.82E-11
NP237	1.18E-01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-18	1.60E-04	9.94E-16	3.68E-06	3.15E+07	2.09E-14
PU242	9.04E-01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.62E-18	1.60E-04	3.32E-18	1.23E-08	3.15E+07	5.34E-16
AM242	2.71E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.58E-17	1.60E-04	5.94E-16	2.20E-06	3.15E+07	2.86E-13
AM242M	2.72E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.59E-17	1.60E-04	2.95E-17	1.09E-07	3.15E+07	1.43E-14
													Total	2.95E-03

MPC-68															
Normal Conditions															
Effective Dose Equivalent From Submersion															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
									Gases						
H 3	1.24E+02	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.18E-10	1.60E-04	3.31E-19	1.22E-09	3.15E+07	7.28E-10	
I129	1.12E-02	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.07E-14	1.60E-04	3.80E-16	1.41E-06	3.15E+07	7.57E-11	
KR 85	2.04E+03	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.95E-09	1.60E-04	1.19E-16	4.40E-07	3.15E+07	4.32E-06	
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	1.26E-13	4.66E-04	3.15E+07	2.91E-03	
									Volatiles						
SR 90	2.24E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.42E-11	1.60E-04	7.53E-18	2.79E-08	3.15E+07	2.00E-09	
RU106	4.71E+03	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.99E-12	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
CS134	1.18E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	7.50E-12	1.60E-04	7.57E-14	2.80E-04	3.15E+07	1.06E-05	
CS137	3.35E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.13E-11	1.60E-04	7.74E-18	2.86E-08	3.15E+07	3.07E-09	
									Fines						
PU241	2.58E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.46E-13	1.60E-04	7.25E-20	2.68E-10	3.15E+07	3.33E-13	
Y 90	2.24E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.14E-13	1.60E-04	1.90E-16	7.03E-07	3.15E+07	7.57E-10	
PM147	9.63E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.18E-14	1.60E-04	6.93E-19	2.56E-09	3.15E+07	1.19E-12	
CE144	2.48E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	8.53E-16	3.16E-06	3.15E+07	3.76E-10	
PR144	2.48E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	1.95E-15	7.22E-06	3.15E+07	8.60E-10	
EU154	1.74E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.66E-14	1.60E-04	6.14E-14	2.27E-04	3.15E+07	1.90E-08	
CM244	2.38E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.27E-14	1.60E-04	4.91E-18	1.82E-08	3.15E+07	2.08E-12	
PU238	1.58E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.51E-14	1.60E-04	4.88E-18	1.81E-08	3.15E+07	1.37E-12	
SB125	7.91E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.54E-15	1.60E-04	2.02E-14	7.47E-05	3.15E+07	2.84E-09	
EU155	5.41E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.16E-15	1.60E-04	2.49E-15	9.21E-06	3.15E+07	2.40E-10	
AM241	2.78E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.65E-15	1.60E-04	8.18E-16	3.03E-06	3.15E+07	4.04E-11	
TE125M	1.93E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.84E-15	1.60E-04	4.53E-16	1.68E-06	3.15E+07	1.56E-11	
PU240	1.50E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.43E-15	1.60E-04	4.75E-18	1.76E-08	3.15E+07	1.27E-13	
SM151	9.76E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.31E-16	1.60E-04	3.61E-20	1.34E-10	3.15E+07	6.27E-16	
PU239	6.70E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.39E-16	1.60E-04	4.24E-18	1.57E-08	3.15E+07	5.05E-14	
BA137M	3.17E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.02E-13	1.60E-04	2.88E-14	1.07E-04	3.15E+07	1.62E-07	
RH106	4.71E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.49E-14	1.60E-04	1.04E-14	3.85E-05	3.15E+07	8.71E-09	
PR144M	3.48E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.32E-16	1.60E-04	2.79E-16	1.03E-06	3.15E+07	1.73E-12	
AM243	1.36E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	2.18E-15	8.07E-06	3.15E+07	5.27E-12	
CM242	9.82E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.36E-17	1.60E-04	5.69E-18	2.11E-08	3.15E+07	9.94E-15	
CM243	9.79E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.34E-17	1.60E-04	5.88E-15	2.18E-05	3.15E+07	1.02E-11	
NP239	1.36E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	7.69E-15	2.85E-05	3.15E+07	1.86E-11	
NP237	1.18E-01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-18	1.60E-04	1.03E-15	3.81E-06	3.15E+07	2.16E-14	
PU242	9.04E-01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.62E-18	1.60E-04	4.01E-18	1.48E-08	3.15E+07	6.45E-16	
AM242	2.71E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.58E-17	1.60E-04	6.15E-16	2.28E-06	3.15E+07	2.96E-13	
AM242M	2.72E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.59E-17	1.60E-04	3.17E-17	1.17E-07	3.15E+07	1.53E-14	
													Total	2.93E-03	

MPC-68															
Normal Conditions															
Effective Dose Equivalent From Submersion															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{nor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	SDE (mRem)	
									Gases						
H 3	1.24E+02	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.18E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
I129	1.12E-02	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.07E-14	1.60E-04	1.10E-15	4.07E-06	3.15E+07	2.19E-10	
KR 85	2.04E+03	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	1.95E-09	1.60E-04	1.32E-14	4.88E-05	3.15E+07	4.79E-04	
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	1.45E-13	5.37E-04	3.15E+07	3.35E-03	
									Volatiles						
SR 90	2.24E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.42E-11	1.60E-04	9.20E-15	3.40E-05	3.15E+07	2.44E-06	
RU106	4.71E+03	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.99E-12	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
CS134	1.18E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	7.50E-12	1.60E-04	9.45E-14	3.50E-04	3.15E+07	1.32E-05	
CS137	3.35E+04	2.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	2.13E-11	1.60E-04	8.63E-15	3.19E-05	3.15E+07	3.43E-06	
									Fines						
PU241	2.58E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.46E-13	1.60E-04	1.17E-19	4.33E-10	3.15E+07	5.37E-13	
Y 90	2.24E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.14E-13	1.60E-04	6.24E-14	2.31E-04	3.15E+07	2.49E-07	
PM147	9.63E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.18E-14	1.60E-04	8.11E-16	3.00E-06	3.15E+07	1.39E-09	
CE144	2.48E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	2.93E-15	1.08E-05	3.15E+07	1.29E-09	
PR144	2.48E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.36E-14	1.60E-04	8.43E-14	3.12E-04	3.15E+07	3.72E-08	
EU154	1.74E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.66E-14	1.60E-04	8.29E-14	3.07E-04	3.15E+07	2.57E-08	
CM244	2.38E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.27E-14	1.60E-04	3.91E-17	1.45E-07	3.15E+07	1.65E-11	
PU238	1.58E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.51E-14	1.60E-04	4.09E-17	1.51E-07	3.15E+07	1.15E-11	
SB125	7.91E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.54E-15	1.60E-04	2.65E-14	9.81E-05	3.15E+07	3.73E-09	
EU155	5.41E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.16E-15	1.60E-04	3.39E-15	1.25E-05	3.15E+07	3.26E-10	
AM241	2.78E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.65E-15	1.60E-04	1.28E-15	4.74E-06	3.15E+07	6.33E-11	
TE125M	1.93E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.84E-15	1.60E-04	1.94E-15	7.18E-06	3.15E+07	6.67E-11	
PU240	1.50E+02	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.43E-15	1.60E-04	3.92E-17	1.45E-07	3.15E+07	1.05E-12	
SM151	9.76E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.31E-16	1.60E-04	1.90E-19	7.03E-10	3.15E+07	3.30E-15	
PU239	6.70E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.39E-16	1.60E-04	1.86E-17	6.88E-08	3.15E+07	2.22E-13	
BA137M	3.17E+04	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.02E-13	1.60E-04	3.73E-14	1.38E-04	3.15E+07	2.10E-07	
RH106	4.71E+03	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.49E-14	1.60E-04	1.09E-13	4.03E-04	3.15E+07	9.13E-08	
PR144M	3.48E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.32E-16	1.60E-04	5.08E-16	1.88E-06	3.15E+07	3.14E-12	
AM243	1.36E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	2.75E-15	1.02E-05	3.15E+07	6.65E-12	
CM242	9.82E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.36E-17	1.60E-04	4.29E-17	1.59E-07	3.15E+07	7.49E-14	
CM243	9.79E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.34E-17	1.60E-04	9.79E-15	3.62E-05	3.15E+07	1.70E-11	
NP239	1.36E+01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.30E-16	1.60E-04	1.60E-14	5.92E-05	3.15E+07	3.87E-11	
NP237	1.18E-01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-18	1.60E-04	1.54E-15	5.70E-06	3.15E+07	3.23E-14	
PU242	9.04E-01	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.62E-18	1.60E-04	3.27E-17	1.21E-07	3.15E+07	5.26E-15	
AM242	2.71E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.58E-17	1.60E-04	8.20E-15	3.03E-05	3.15E+07	3.95E-12	
AM242M	2.72E+00	2.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.59E-17	1.60E-04	1.36E-16	5.03E-07	3.15E+07	6.58E-14	
													Total	3.85E-03	

MPC-68															
Off-Normal Conditions															
Effective Dose Equivalent From Submersion															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
									Gases						
H 3	1.24E+02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	5.43E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
I129	1.12E-02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	4.91E-14	1.60E-04	4.83E-16	1.79E-06	3.15E+07	4.43E-10	
KR 85	2.04E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	8.95E-09	1.60E-04	1.17E-16	4.33E-07	3.15E+07	1.95E-05	
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	1.23E-13	4.55E-04	3.15E+07	2.84E-03	
									Volatiles						
SR 90	2.24E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	6.55E-11	1.60E-04	7.78E-18	2.88E-08	3.15E+07	9.50E-09	
RU106	4.71E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.38E-11	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
CS134	1.18E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	3.45E-11	1.60E-04	7.40E-14	2.74E-04	3.15E+07	4.76E-05	
CS137	3.35E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	9.80E-11	1.60E-04	7.96E-18	2.95E-08	3.15E+07	1.45E-08	
									Fines						
PU241	2.58E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-12	1.60E-04	7.19E-20	2.66E-10	3.15E+07	1.52E-12	
Y 90	2.24E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.83E-13	1.60E-04	1.89E-16	6.99E-07	3.15E+07	3.46E-09	
PM147	9.63E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.22E-13	1.60E-04	7.48E-19	2.77E-09	3.15E+07	5.89E-12	
CE144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	8.53E-16	3.16E-06	3.15E+07	1.73E-09	
PR144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	1.90E-15	7.03E-06	3.15E+07	3.85E-09	
EU154	1.74E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.63E-14	1.60E-04	6.00E-14	2.22E-04	3.15E+07	8.54E-08	
CM244	2.38E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.04E-13	1.60E-04	6.90E-18	2.55E-08	3.15E+07	1.34E-11	
PU238	1.58E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.93E-14	1.60E-04	6.56E-18	2.43E-08	3.15E+07	8.48E-12	
SB125	7.91E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.47E-14	1.60E-04	1.98E-14	7.33E-05	3.15E+07	1.28E-08	
EU155	5.41E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.37E-14	1.60E-04	2.49E-15	9.21E-06	3.15E+07	1.10E-09	
AM241	2.78E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.22E-14	1.60E-04	8.58E-16	3.17E-06	3.15E+07	1.95E-10	
TE125M	1.93E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.48E-15	1.60E-04	5.96E-16	2.21E-06	3.15E+07	9.43E-11	
PU240	1.50E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.58E-15	1.60E-04	6.36E-18	2.35E-08	3.15E+07	7.80E-13	
SM151	9.76E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.28E-15	1.60E-04	5.20E-20	1.92E-10	3.15E+07	4.15E-15	
PU239	6.70E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.94E-15	1.60E-04	4.84E-18	1.79E-08	3.15E+07	2.65E-13	
BA137M	3.17E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.39E-12	1.60E-04	2.82E-14	1.04E-04	3.15E+07	7.31E-07	
RH106	4.71E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.07E-13	1.60E-04	1.01E-14	3.74E-05	3.15E+07	3.89E-08	
PR144M	3.48E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.53E-15	1.60E-04	3.25E-16	1.20E-06	3.15E+07	9.25E-12	
AM243	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	2.19E-15	8.10E-06	3.15E+07	2.44E-11	
CM242	9.82E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.31E-16	1.60E-04	7.83E-18	2.90E-08	3.15E+07	6.29E-14	
CM243	9.79E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.29E-16	1.60E-04	5.77E-15	2.13E-05	3.15E+07	4.62E-11	
NP239	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	7.53E-15	2.79E-05	3.15E+07	8.38E-11	
NP237	1.18E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.18E-18	1.60E-04	1.04E-15	3.85E-06	3.15E+07	1.00E-13	
PU242	9.04E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.97E-17	1.60E-04	5.34E-18	1.98E-08	3.15E+07	3.95E-15	
AM242	2.71E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	6.09E-16	2.25E-06	3.15E+07	1.35E-12	
AM242M	2.72E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	3.80E-17	1.41E-07	3.15E+07	8.45E-14	
													Total	2.91E-03	

MPC-68															
Off-Normal Conditions															
Effective Dose Equivalent From Submersion															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
									Gases						
H 3	1.24E+02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	5.43E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
I129	1.12E-02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	4.91E-14	1.60E-04	6.66E-16	2.46E-06	3.15E+07	6.10E-10	
KR 85	2.04E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	8.95E-09	1.60E-04	1.34E-16	4.96E-07	3.15E+07	2.24E-05	
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	1.39E-13	5.14E-04	3.15E+07	3.21E-03	
									Volatiles						
SR 90	2.24E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	6.55E-11	1.60E-04	9.49E-18	3.51E-08	3.15E+07	1.16E-08	
RU106	4.71E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.38E-11	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
CS134	1.18E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	3.45E-11	1.60E-04	8.43E-14	3.12E-04	3.15E+07	5.42E-05	
CS137	3.35E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	9.80E-11	1.60E-04	9.67E-18	3.58E-08	3.15E+07	1.77E-08	
									Fines						
PU241	2.58E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-12	1.60E-04	8.67E-20	3.21E-10	3.15E+07	1.83E-12	
Y 90	2.24E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.83E-13	1.60E-04	2.20E-16	8.14E-07	3.15E+07	4.03E-09	
PM147	9.63E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.22E-13	1.60E-04	9.56E-19	3.54E-09	3.15E+07	7.53E-12	
CE144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	1.01E-15	3.74E-06	3.15E+07	2.05E-09	
PR144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	2.15E-15	7.96E-06	3.15E+07	4.36E-09	
EU154	1.74E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.63E-14	1.60E-04	6.81E-14	2.52E-04	3.15E+07	9.69E-08	
CM244	2.38E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.04E-13	1.60E-04	1.33E-17	4.92E-08	3.15E+07	2.59E-11	
PU238	1.58E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.93E-14	1.60E-04	1.27E-17	4.70E-08	3.15E+07	1.64E-11	
SB125	7.91E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.47E-14	1.60E-04	2.27E-14	8.40E-05	3.15E+07	1.47E-08	
EU155	5.41E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.37E-14	1.60E-04	2.95E-15	1.09E-05	3.15E+07	1.31E-09	
AM241	2.78E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.22E-14	1.60E-04	1.07E-15	3.96E-06	3.15E+07	2.43E-10	
TE125M	1.93E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.48E-15	1.60E-04	8.48E-16	3.14E-06	3.15E+07	1.34E-10	
PU240	1.50E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.58E-15	1.60E-04	1.23E-17	4.55E-08	3.15E+07	1.51E-12	
SM151	9.76E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.28E-15	1.60E-04	8.80E-20	3.26E-10	3.15E+07	7.03E-15	
PU239	6.70E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.94E-15	1.60E-04	7.55E-18	2.79E-08	3.15E+07	4.14E-13	
BA137M	3.17E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.39E-12	1.60E-04	3.22E-14	1.19E-04	3.15E+07	8.35E-07	
RH106	4.71E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.07E-13	1.60E-04	1.16E-14	4.29E-05	3.15E+07	4.47E-08	
PR144M	3.48E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.53E-15	1.60E-04	4.20E-16	1.55E-06	3.15E+07	1.20E-11	
AM243	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	2.61E-15	9.66E-06	3.15E+07	2.90E-11	
CM242	9.82E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.31E-16	1.60E-04	1.48E-17	5.48E-08	3.15E+07	1.19E-13	
CM243	9.79E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.29E-16	1.60E-04	6.68E-15	2.47E-05	3.15E+07	5.35E-11	
NP239	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	8.73E-15	3.23E-05	3.15E+07	9.71E-11	
NP237	1.18E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.18E-18	1.60E-04	1.26E-15	4.66E-06	3.15E+07	1.22E-13	
PU242	9.04E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.97E-17	1.60E-04	1.03E-17	3.81E-08	3.15E+07	7.62E-15	
AM242	2.71E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	7.30E-16	2.70E-06	3.15E+07	1.62E-12	
AM242M	2.72E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	6.01E-17	2.22E-07	3.15E+07	1.34E-13	
													Total	3.29E-03	

MPC-68															
Off-Normal Conditions															
Effective Dose Equivalent From Submersion															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
									Gases						
H 3	1.24E+02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	5.43E-10	1.60E-04	2.75E-18	1.02E-08	3.15E+07	2.78E-08	
I129	1.12E-02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	4.91E-14	1.60E-04	2.14E-16	7.92E-07	3.15E+07	1.96E-10	
KR 85	2.04E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	8.95E-09	1.60E-04	1.14E-16	4.22E-07	3.15E+07	1.90E-05	
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	1.24E-13	4.59E-04	3.15E+07	2.87E-03	
									Volatiles						
SR 90	2.24E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	6.55E-11	1.60E-04	6.44E-18	2.38E-08	3.15E+07	7.87E-09	
RU106	4.71E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.38E-11	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
CS134	1.18E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	3.45E-11	1.60E-04	7.37E-14	2.73E-04	3.15E+07	4.74E-05	
CS137	3.35E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	9.80E-11	1.60E-04	6.68E-18	2.47E-08	3.15E+07	1.22E-08	
									Fines						
PU241	2.58E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-12	1.60E-04	6.48E-20	2.40E-10	3.15E+07	1.37E-12	
Y 90	2.24E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.83E-13	1.60E-04	1.77E-16	6.55E-07	3.15E+07	3.24E-09	
PM147	9.63E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.22E-13	1.60E-04	5.45E-19	2.02E-09	3.15E+07	4.29E-12	
CE144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	7.69E-16	2.85E-06	3.15E+07	1.56E-09	
PR144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	1.90E-15	7.03E-06	3.15E+07	3.85E-09	
EU154	1.74E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.63E-14	1.60E-04	5.99E-14	2.22E-04	3.15E+07	8.53E-08	
CM244	2.38E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.04E-13	1.60E-04	7.08E-19	2.62E-09	3.15E+07	1.38E-12	
PU238	1.58E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.93E-14	1.60E-04	1.06E-18	3.92E-09	3.15E+07	1.37E-12	
SB125	7.91E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.47E-14	1.60E-04	1.95E-14	7.22E-05	3.15E+07	1.26E-08	
EU155	5.41E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.37E-14	1.60E-04	2.22E-15	8.21E-06	3.15E+07	9.82E-10	
AM241	2.78E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.22E-14	1.60E-04	6.74E-16	2.49E-06	3.15E+07	1.53E-10	
TE125M	1.93E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.48E-15	1.60E-04	2.23E-16	8.25E-07	3.15E+07	3.53E-11	
PU240	1.50E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.58E-15	1.60E-04	1.09E-18	4.03E-09	3.15E+07	1.34E-13	
SM151	9.76E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.28E-15	1.60E-04	7.08E-21	2.62E-11	3.15E+07	5.65E-16	
PU239	6.70E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.94E-15	1.60E-04	2.65E-18	9.81E-09	3.15E+07	1.45E-13	
BA137M	3.17E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.39E-12	1.60E-04	2.80E-14	1.04E-04	3.15E+07	7.26E-07	
RH106	4.71E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.07E-13	1.60E-04	1.01E-14	3.74E-05	3.15E+07	3.89E-08	
PR144M	3.48E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.53E-15	1.60E-04	2.00E-16	7.40E-07	3.15E+07	5.69E-12	
AM243	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	1.92E-15	7.10E-06	3.15E+07	2.14E-11	
CM242	9.82E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.31E-16	1.60E-04	1.13E-18	4.18E-09	3.15E+07	9.08E-15	
CM243	9.79E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.29E-16	1.60E-04	5.50E-15	2.04E-05	3.15E+07	4.40E-11	
NP239	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	7.18E-15	2.66E-05	3.15E+07	7.99E-11	
NP237	1.18E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.18E-18	1.60E-04	9.02E-16	3.34E-06	3.15E+07	8.71E-14	
PU242	9.04E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.97E-17	1.60E-04	9.69E-19	3.59E-09	3.15E+07	7.17E-16	
AM242	2.71E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	5.51E-16	2.04E-06	3.15E+07	1.22E-12	
AM242M	2.72E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	1.72E-17	6.36E-08	3.15E+07	3.83E-14	
													Total	2.93E-03	

MPC-68															
Off-Normal Conditions															
Effective Dose Equivalent From Submersion															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
									Gases						
H 3	1.24E+02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	5.43E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
I129	1.12E-02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	4.91E-14	1.60E-04	1.64E-16	6.07E-07	3.15E+07	1.50E-10	
KR 85	2.04E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	8.95E-09	1.60E-04	1.09E-16	4.03E-07	3.15E+07	1.82E-05	
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	1.23E-13	4.55E-04	3.15E+07	2.84E-03	
									Volatiles						
SR 90	2.24E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	6.55E-11	1.60E-04	5.44E-18	2.01E-08	3.15E+07	6.65E-09	
RU106	4.71E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.38E-11	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
CS134	1.18E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	3.45E-11	1.60E-04	7.19E-14	2.66E-04	3.15E+07	4.63E-05	
CS137	3.35E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	9.80E-11	1.60E-04	5.70E-18	2.11E-08	3.15E+07	1.04E-08	
									Fines						
PU241	2.58E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-12	1.60E-04	5.63E-20	2.08E-10	3.15E+07	1.19E-12	
Y 90	2.24E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.83E-13	1.60E-04	1.62E-16	5.99E-07	3.15E+07	2.97E-09	
PM147	9.63E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.22E-13	1.60E-04	4.46E-19	1.65E-09	3.15E+07	3.51E-12	
CE144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	6.68E-16	2.47E-06	3.15E+07	1.36E-09	
PR144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	1.87E-15	6.92E-06	3.15E+07	3.79E-09	
EU154	1.74E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.63E-14	1.60E-04	5.87E-14	2.17E-04	3.15E+07	8.35E-08	
CM244	2.38E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.04E-13	1.60E-04	1.46E-18	5.40E-09	3.15E+07	2.84E-12	
PU238	1.58E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.93E-14	1.60E-04	1.68E-18	6.22E-09	3.15E+07	2.17E-12	
SB125	7.91E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.47E-14	1.60E-04	1.87E-14	6.92E-05	3.15E+07	1.21E-08	
EU155	5.41E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.37E-14	1.60E-04	1.85E-15	6.85E-06	3.15E+07	8.19E-10	
AM241	2.78E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.22E-14	1.60E-04	5.21E-16	1.93E-06	3.15E+07	1.18E-10	
TE125M	1.93E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.48E-15	1.60E-04	1.86E-16	6.88E-07	3.15E+07	2.94E-11	
PU240	1.50E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.58E-15	1.60E-04	1.65E-18	6.11E-09	3.15E+07	2.02E-13	
SM151	9.76E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.28E-15	1.60E-04	1.13E-20	4.18E-11	3.15E+07	9.02E-16	
PU239	6.70E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.94E-15	1.60E-04	2.67E-18	9.88E-09	3.15E+07	1.46E-13	
BA137M	3.17E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.39E-12	1.60E-04	2.73E-14	1.01E-04	3.15E+07	7.08E-07	
RH106	4.71E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.07E-13	1.60E-04	9.75E-15	3.61E-05	3.15E+07	3.76E-08	
PR144M	3.48E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.53E-15	1.60E-04	1.56E-16	5.77E-07	3.15E+07	4.44E-12	
AM243	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	1.55E-15	5.74E-06	3.15E+07	1.72E-11	
CM242	9.82E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.31E-16	1.60E-04	1.89E-18	6.99E-09	3.15E+07	1.52E-14	
CM243	9.79E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.29E-16	1.60E-04	5.00E-15	1.85E-05	3.15E+07	4.00E-11	
NP239	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	6.50E-15	2.41E-05	3.15E+07	7.23E-11	
NP237	1.18E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.18E-18	1.60E-04	7.69E-16	2.85E-06	3.15E+07	7.42E-14	
PU242	9.04E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.97E-17	1.60E-04	1.43E-18	5.29E-09	3.15E+07	1.06E-15	
AM242	2.71E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	4.77E-16	1.76E-06	3.15E+07	1.06E-12	
AM242M	2.72E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	1.72E-17	6.36E-08	3.15E+07	3.83E-14	
													Total	2.91E-03	

MPC-68															
Off-Normal Conditions															
Effective Dose Equivalent From Submersion															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
									Gases						
H 3	1.24E+02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	5.43E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
I129	1.12E-02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	4.91E-14	1.60E-04	1.10E-15	4.07E-06	3.15E+07	1.01E-09	
KR 85	2.04E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	8.95E-09	1.60E-04	2.20E-16	8.14E-07	3.15E+07	3.67E-05	
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	1.78E-13	6.59E-04	3.15E+07	4.11E-03	
									Volatiles						
SR 90	2.24E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	6.55E-11	1.60E-04	2.28E-17	8.44E-08	3.15E+07	2.79E-08	
RU106	4.71E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.38E-11	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
CS134	1.18E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	3.45E-11	1.60E-04	1.20E-13	4.44E-04	3.15E+07	7.72E-05	
CS137	3.35E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	9.80E-11	1.60E-04	2.29E-17	8.47E-08	3.15E+07	4.18E-08	
									Fines						
PU241	2.58E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-12	1.60E-04	2.19E-19	8.10E-10	3.15E+07	4.62E-12	
Y 90	2.24E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.83E-13	1.60E-04	4.44E-16	1.64E-06	3.15E+07	8.14E-09	
PM147	9.63E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.22E-13	1.60E-04	2.18E-18	8.07E-09	3.15E+07	1.72E-11	
CE144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	2.49E-15	9.21E-06	3.15E+07	5.05E-09	
PR144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	2.99E-15	1.11E-05	3.15E+07	6.07E-09	
EU154	1.74E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.63E-14	1.60E-04	9.43E-14	3.49E-04	3.15E+07	1.34E-07	
CM244	2.38E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.04E-13	1.60E-04	8.82E-18	3.26E-08	3.15E+07	1.72E-11	
PU238	1.58E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.93E-14	1.60E-04	9.30E-18	3.44E-08	3.15E+07	1.20E-11	
SB125	7.91E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.47E-14	1.60E-04	3.53E-14	1.31E-04	3.15E+07	2.28E-08	
EU155	5.41E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.37E-14	1.60E-04	8.09E-15	2.99E-05	3.15E+07	3.58E-09	
AM241	2.78E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.22E-14	1.60E-04	2.87E-15	1.06E-05	3.15E+07	6.53E-10	
TE125M	1.93E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.48E-15	1.60E-04	1.22E-15	4.51E-06	3.15E+07	1.93E-10	
PU240	1.50E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.58E-15	1.60E-04	9.26E-18	3.43E-08	3.15E+07	1.14E-12	
SM151	9.76E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.28E-15	1.60E-04	7.09E-20	2.62E-10	3.15E+07	5.66E-15	
PU239	6.70E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.94E-15	1.60E-04	9.47E-18	3.50E-08	3.15E+07	5.19E-13	
BA137M	3.17E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.39E-12	1.60E-04	4.63E-14	1.71E-04	3.15E+07	1.20E-06	
RH106	4.71E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.07E-13	1.60E-04	1.72E-14	6.36E-05	3.15E+07	6.63E-08	
PR144M	3.48E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.53E-15	1.60E-04	8.16E-16	3.02E-06	3.15E+07	2.32E-11	
AM243	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	7.47E-15	2.76E-05	3.15E+07	8.31E-11	
CM242	9.82E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.31E-16	1.60E-04	1.06E-17	3.92E-08	3.15E+07	8.51E-14	
CM243	9.79E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.29E-16	1.60E-04	1.50E-14	5.55E-05	3.15E+07	1.20E-10	
NP239	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	2.00E-14	7.40E-05	3.15E+07	2.22E-10	
NP237	1.18E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.18E-18	1.60E-04	3.20E-15	1.18E-05	3.15E+07	3.09E-13	
PU242	9.04E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.97E-17	1.60E-04	7.90E-18	2.92E-08	3.15E+07	5.84E-15	
AM242	2.71E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	1.88E-15	6.96E-06	3.15E+07	4.17E-12	
AM242M	2.72E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	7.94E-17	2.94E-07	3.15E+07	1.77E-13	
													Total	4.23E-03	

MPC-68															
Off-Normal Conditions															
Effective Dose Equivalent From Submersion															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
									Gases						
H 3	1.24E+02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	5.43E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
I129	1.12E-02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	4.91E-14	1.60E-04	3.86E-16	1.43E-06	3.15E+07	3.54E-10	
KR 85	2.04E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	8.95E-09	1.60E-04	1.18E-16	4.37E-07	3.15E+07	1.97E-05	
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	1.27E-13	4.70E-04	3.15E+07	2.94E-03	
									Volatiles						
SR 90	2.24E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	6.55E-11	1.60E-04	7.33E-18	2.71E-08	3.15E+07	8.95E-09	
RU106	4.71E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.38E-11	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
CS134	1.18E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	3.45E-11	1.60E-04	7.57E-14	2.80E-04	3.15E+07	4.87E-05	
CS137	3.35E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	9.80E-11	1.60E-04	7.55E-18	2.79E-08	3.15E+07	1.38E-08	
									Fines						
PU241	2.58E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-12	1.60E-04	6.98E-20	2.58E-10	3.15E+07	1.47E-12	
Y 90	2.24E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.83E-13	1.60E-04	1.87E-16	6.92E-07	3.15E+07	3.43E-09	
PM147	9.63E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.22E-13	1.60E-04	6.75E-19	2.50E-09	3.15E+07	5.32E-12	
CE144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	8.33E-16	3.08E-06	3.15E+07	1.69E-09	
PR144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	1.95E-15	7.22E-06	3.15E+07	3.96E-09	
EU154	1.74E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.63E-14	1.60E-04	6.15E-14	2.28E-04	3.15E+07	8.75E-08	
CM244	2.38E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.04E-13	1.60E-04	4.19E-18	1.55E-08	3.15E+07	8.16E-12	
PU238	1.58E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.93E-14	1.60E-04	4.01E-18	1.48E-08	3.15E+07	5.18E-12	
SB125	7.91E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.47E-14	1.60E-04	2.01E-14	7.44E-05	3.15E+07	1.30E-08	
EU155	5.41E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.37E-14	1.60E-04	2.41E-15	8.92E-06	3.15E+07	1.07E-09	
AM241	2.78E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.22E-14	1.60E-04	7.83E-16	2.90E-06	3.15E+07	1.78E-10	
TE125M	1.93E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.48E-15	1.60E-04	4.64E-16	1.72E-06	3.15E+07	7.34E-11	
PU240	1.50E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.58E-15	1.60E-04	3.92E-18	1.45E-08	3.15E+07	4.81E-13	
SM151	9.76E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.28E-15	1.60E-04	3.58E-20	1.32E-10	3.15E+07	2.86E-15	
PU239	6.70E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.94E-15	1.60E-04	3.88E-18	1.44E-08	3.15E+07	2.13E-13	
BA137M	3.17E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.39E-12	1.60E-04	2.88E-14	1.07E-04	3.15E+07	7.47E-07	
RH106	4.71E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.07E-13	1.60E-04	1.03E-14	3.81E-05	3.15E+07	3.97E-08	
PR144M	3.48E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.53E-15	1.60E-04	2.81E-16	1.04E-06	3.15E+07	8.00E-12	
AM243	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	2.09E-15	7.73E-06	3.15E+07	2.33E-11	
CM242	9.82E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.31E-16	1.60E-04	4.91E-18	1.82E-08	3.15E+07	3.94E-14	
CM243	9.79E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.29E-16	1.60E-04	5.76E-15	2.13E-05	3.15E+07	4.61E-11	
NP239	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	7.52E-15	2.78E-05	3.15E+07	8.37E-11	
NP237	1.18E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.18E-18	1.60E-04	9.94E-16	3.68E-06	3.15E+07	9.59E-14	
PU242	9.04E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.97E-17	1.60E-04	3.32E-18	1.23E-08	3.15E+07	2.46E-15	
AM242	2.71E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	5.94E-16	2.20E-06	3.15E+07	1.32E-12	
AM242M	2.72E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	2.95E-17	1.09E-07	3.15E+07	6.56E-14	
													Total	3.01E-03	

MPC-68															
Off-Normal Conditions															
Effective Dose Equivalent From Submersion															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
									Gases						
H 3	1.24E+02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	5.43E-10	1.60E-04	3.31E-19	1.22E-09	3.15E+07	3.35E-09	
I129	1.12E-02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	4.91E-14	1.60E-04	3.80E-16	1.41E-06	3.15E+07	3.48E-10	
KR 85	2.04E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	8.95E-09	1.60E-04	1.19E-16	4.40E-07	3.15E+07	1.99E-05	
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	1.26E-13	4.66E-04	3.15E+07	2.91E-03	
									Volatiles						
SR 90	2.24E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	6.55E-11	1.60E-04	7.53E-18	2.79E-08	3.15E+07	9.20E-09	
RU106	4.71E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.38E-11	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
CS134	1.18E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	3.45E-11	1.60E-04	7.57E-14	2.80E-04	3.15E+07	4.87E-05	
CS137	3.35E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	9.80E-11	1.60E-04	7.74E-18	2.86E-08	3.15E+07	1.41E-08	
									Fines						
PU241	2.58E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-12	1.60E-04	7.25E-20	2.68E-10	3.15E+07	1.53E-12	
Y 90	2.24E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.83E-13	1.60E-04	1.90E-16	7.03E-07	3.15E+07	3.48E-09	
PM147	9.63E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.22E-13	1.60E-04	6.93E-19	2.56E-09	3.15E+07	5.46E-12	
CE144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	8.53E-16	3.16E-06	3.15E+07	1.73E-09	
PR144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	1.95E-15	7.22E-06	3.15E+07	3.96E-09	
EU154	1.74E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.63E-14	1.60E-04	6.14E-14	2.27E-04	3.15E+07	8.74E-08	
CM244	2.38E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.04E-13	1.60E-04	4.91E-18	1.82E-08	3.15E+07	9.56E-12	
PU238	1.58E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.93E-14	1.60E-04	4.88E-18	1.81E-08	3.15E+07	6.31E-12	
SB125	7.91E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.47E-14	1.60E-04	2.02E-14	7.47E-05	3.15E+07	1.31E-08	
EU155	5.41E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.37E-14	1.60E-04	2.49E-15	9.21E-06	3.15E+07	1.10E-09	
AM241	2.78E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.22E-14	1.60E-04	8.18E-16	3.03E-06	3.15E+07	1.86E-10	
TE125M	1.93E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.48E-15	1.60E-04	4.53E-16	1.68E-06	3.15E+07	7.17E-11	
PU240	1.50E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.58E-15	1.60E-04	4.75E-18	1.76E-08	3.15E+07	5.83E-13	
SM151	9.76E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.28E-15	1.60E-04	3.61E-20	1.34E-10	3.15E+07	2.88E-15	
PU239	6.70E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.94E-15	1.60E-04	4.24E-18	1.57E-08	3.15E+07	2.32E-13	
BA137M	3.17E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.39E-12	1.60E-04	2.88E-14	1.07E-04	3.15E+07	7.47E-07	
RH106	4.71E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.07E-13	1.60E-04	1.04E-14	3.85E-05	3.15E+07	4.01E-08	
PR144M	3.48E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.53E-15	1.60E-04	2.79E-16	1.03E-06	3.15E+07	7.94E-12	
AM243	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	2.18E-15	8.07E-06	3.15E+07	2.43E-11	
CM242	9.82E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.31E-16	1.60E-04	5.69E-18	2.11E-08	3.15E+07	4.57E-14	
CM243	9.79E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.29E-16	1.60E-04	5.88E-15	2.18E-05	3.15E+07	4.71E-11	
NP239	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	7.69E-15	2.85E-05	3.15E+07	8.55E-11	
NP237	1.18E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.18E-18	1.60E-04	1.03E-15	3.81E-06	3.15E+07	9.94E-14	
PU242	9.04E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.97E-17	1.60E-04	4.01E-18	1.48E-08	3.15E+07	2.97E-15	
AM242	2.71E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	6.15E-16	2.28E-06	3.15E+07	1.36E-12	
AM242M	2.72E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	3.17E-17	1.17E-07	3.15E+07	7.05E-14	
													Total	2.98E-03	

MPC-68															
Off-Normal Conditions															
Effective Dose Equivalent From Submersion															
Nuclide	Inventory (Ci/Assy)	% available for release	% remain airborne	No. Assy	MPC Vol (cm3)	L_{offnor} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	SDE (mRem)	
									Gases						
H 3	1.24E+02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	5.43E-10	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
I129	1.12E-02	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	4.91E-14	1.60E-04	1.10E-15	4.07E-06	3.15E+07	1.01E-09	
KR 85	2.04E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.30	8.95E-09	1.60E-04	1.32E-14	4.88E-05	3.15E+07	2.20E-03	
									Crud						
Co-60	6.50E+01	100.0%	100%	68	5.99E+06	1.12E-05	1.87E-12	0.15	1.24E-09	1.60E-04	1.45E-13	5.37E-04	3.15E+07	3.35E-03	
									Volatiles						
SR 90	2.24E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	6.55E-11	1.60E-04	9.20E-15	3.40E-05	3.15E+07	1.12E-05	
RU106	4.71E+03	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	1.38E-11	1.60E-04	0.00E+00	0.00E+00	3.15E+07	0.00E+00	
CS134	1.18E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	3.45E-11	1.60E-04	9.45E-14	3.50E-04	3.15E+07	6.08E-05	
CS137	3.35E+04	11.5%	100%	68	5.99E+06	1.12E-05	1.87E-12	2.00E-04	9.80E-11	1.60E-04	8.63E-15	3.19E-05	3.15E+07	1.58E-05	
									Fines						
PU241	2.58E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.13E-12	1.60E-04	1.17E-19	4.33E-10	3.15E+07	2.47E-12	
Y 90	2.24E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	9.83E-13	1.60E-04	6.24E-14	2.31E-04	3.15E+07	1.14E-06	
PM147	9.63E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.22E-13	1.60E-04	8.11E-16	3.00E-06	3.15E+07	6.39E-09	
CE144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	2.93E-15	1.08E-05	3.15E+07	5.94E-09	
PR144	2.48E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.09E-13	1.60E-04	8.43E-14	3.12E-04	3.15E+07	1.71E-07	
EU154	1.74E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	7.63E-14	1.60E-04	8.29E-14	3.07E-04	3.15E+07	1.18E-07	
CM244	2.38E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.04E-13	1.60E-04	3.91E-17	1.45E-07	3.15E+07	7.61E-11	
PU238	1.58E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.93E-14	1.60E-04	4.09E-17	1.51E-07	3.15E+07	5.29E-11	
SB125	7.91E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.47E-14	1.60E-04	2.65E-14	9.81E-05	3.15E+07	1.71E-08	
EU155	5.41E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.37E-14	1.60E-04	3.39E-15	1.25E-05	3.15E+07	1.50E-09	
AM241	2.78E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.22E-14	1.60E-04	1.28E-15	4.74E-06	3.15E+07	2.91E-10	
TE125M	1.93E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	8.48E-15	1.60E-04	1.94E-15	7.18E-06	3.15E+07	3.07E-10	
PU240	1.50E+02	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	6.58E-15	1.60E-04	3.92E-17	1.45E-07	3.15E+07	4.81E-12	
SM151	9.76E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.28E-15	1.60E-04	1.90E-19	7.03E-10	3.15E+07	1.52E-14	
PU239	6.70E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.94E-15	1.60E-04	1.86E-17	6.88E-08	3.15E+07	1.02E-12	
BA137M	3.17E+04	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.39E-12	1.60E-04	3.73E-14	1.38E-04	3.15E+07	9.67E-07	
RH106	4.71E+03	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	2.07E-13	1.60E-04	1.09E-13	4.03E-04	3.15E+07	4.20E-07	
PR144M	3.48E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.53E-15	1.60E-04	5.08E-16	1.88E-06	3.15E+07	1.45E-11	
AM243	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	2.75E-15	1.02E-05	3.15E+07	3.06E-11	
CM242	9.82E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.31E-16	1.60E-04	4.29E-17	1.59E-07	3.15E+07	3.45E-13	
CM243	9.79E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	4.29E-16	1.60E-04	9.79E-15	3.62E-05	3.15E+07	7.84E-11	
NP239	1.36E+01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.97E-16	1.60E-04	1.60E-14	5.92E-05	3.15E+07	1.78E-10	
NP237	1.18E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	5.18E-18	1.60E-04	1.54E-15	5.70E-06	3.15E+07	1.49E-13	
PU242	9.04E-01	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	3.97E-17	1.60E-04	3.27E-17	1.21E-07	3.15E+07	2.42E-14	
AM242	2.71E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	8.20E-15	3.03E-05	3.15E+07	1.82E-11	
AM242M	2.72E+00	11.5%	10%	68	5.99E+06	1.12E-05	1.87E-12	3.00E-05	1.19E-16	1.60E-04	1.36E-16	5.03E-07	3.15E+07	3.03E-13	
													Total	5.65E-03	

MPC-68														
Accident Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
								Gases						
H 3	1.24E+02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	8.23E-09	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
I129	1.12E-02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	7.45E-13	8.00E-03	4.83E-16	1.79E-06	2.59E+06	2.76E-08	
KR 85	2.04E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	1.36E-07	8.00E-03	1.17E-16	4.33E-07	2.59E+06	1.22E-03	
								Crud						
Co-60	6.50E+01	100%	68	5.99E+06	1.95E-05	3.26E-12	1.00	1.44E-08	8.00E-03	1.23E-13	4.55E-04	2.59E+06	1.36E-01	
								Volatiles						
SR 90	2.24E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	9.93E-10	8.00E-03	7.78E-18	2.88E-08	2.59E+06	5.92E-07	
RU106	4.71E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	2.09E-10	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
CS134	1.18E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	5.23E-10	8.00E-03	7.40E-14	2.74E-04	2.59E+06	2.97E-03	
CS137	3.35E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	1.49E-09	8.00E-03	7.96E-18	2.95E-08	2.59E+06	9.06E-07	
								Fines						
PU241	2.58E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.72E-11	8.00E-03	7.19E-20	2.66E-10	2.59E+06	9.46E-11	
Y 90	2.24E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.49E-11	8.00E-03	1.89E-16	6.99E-07	2.59E+06	2.16E-07	
PM147	9.63E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.41E-12	8.00E-03	7.48E-19	2.77E-09	2.59E+06	3.67E-10	
CE144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	8.53E-16	3.16E-06	2.59E+06	1.08E-07	
PR144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	1.90E-15	7.03E-06	2.59E+06	2.40E-07	
EU154	1.74E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.16E-12	8.00E-03	6.00E-14	2.22E-04	2.59E+06	5.32E-06	
CM244	2.38E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.58E-12	8.00E-03	6.90E-18	2.55E-08	2.59E+06	8.37E-10	
PU238	1.58E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.05E-12	8.00E-03	6.56E-18	2.43E-08	2.59E+06	5.29E-10	
SB125	7.91E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	5.26E-13	8.00E-03	1.98E-14	7.33E-05	2.59E+06	7.99E-07	
EU155	5.41E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.60E-13	8.00E-03	2.49E-15	9.21E-06	2.59E+06	6.87E-08	
AM241	2.78E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.85E-13	8.00E-03	8.58E-16	3.17E-06	2.59E+06	1.22E-08	
TE125M	1.93E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.29E-13	8.00E-03	5.96E-16	2.21E-06	2.59E+06	5.88E-09	
PU240	1.50E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.98E-14	8.00E-03	6.36E-18	2.35E-08	2.59E+06	4.86E-11	
SM151	9.76E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.49E-14	8.00E-03	5.20E-20	1.92E-10	2.59E+06	2.59E-13	
PU239	6.70E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	4.46E-14	8.00E-03	4.84E-18	1.79E-08	2.59E+06	1.65E-11	
BA137M	3.17E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.11E-11	8.00E-03	2.82E-14	1.04E-04	2.59E+06	4.56E-05	
RH106	4.71E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.13E-12	8.00E-03	1.01E-14	3.74E-05	2.59E+06	2.43E-06	
PR144M	3.48E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.31E-14	8.00E-03	3.25E-16	1.20E-06	2.59E+06	5.77E-10	
AM243	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	2.19E-15	8.10E-06	2.59E+06	1.52E-09	
CM242	9.82E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.53E-15	8.00E-03	7.83E-18	2.90E-08	2.59E+06	3.92E-12	
CM243	9.79E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.51E-15	8.00E-03	5.77E-15	2.13E-05	2.59E+06	2.88E-09	
NP239	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	7.53E-15	2.79E-05	2.59E+06	5.22E-09	
NP237	1.18E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	7.85E-17	8.00E-03	1.04E-15	3.85E-06	2.59E+06	6.26E-12	
PU242	9.04E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.01E-16	8.00E-03	5.34E-18	1.98E-08	2.59E+06	2.46E-13	
AM242	2.71E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.80E-15	8.00E-03	6.09E-16	2.25E-06	2.59E+06	8.42E-11	
AM242M	2.72E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.81E-15	8.00E-03	3.80E-17	1.41E-07	2.59E+06	5.27E-12	
												Total	1.40E-01	

MPC-68														
Accident Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
								Gases						
H 3	1.24E+02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	8.23E-09	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
I129	1.12E-02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	7.45E-13	8.00E-03	6.66E-16	2.46E-06	2.59E+06	3.80E-08	
KR 85	2.04E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	1.36E-07	8.00E-03	1.34E-16	4.96E-07	2.59E+06	1.39E-03	
								Crud						
Co-60	6.50E+01	100%	68	5.99E+06	1.95E-05	3.26E-12	1.00	1.44E-08	8.00E-03	1.39E-13	5.14E-04	2.59E+06	1.54E-01	
								Volatiles						
SR 90	2.24E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	9.93E-10	8.00E-03	9.49E-18	3.51E-08	2.59E+06	7.23E-07	
RU106	4.71E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	2.09E-10	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
CS134	1.18E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	5.23E-10	8.00E-03	8.43E-14	3.12E-04	2.59E+06	3.38E-03	
CS137	3.35E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	1.49E-09	8.00E-03	9.67E-18	3.58E-08	2.59E+06	1.10E-06	
								Fines						
PU241	2.58E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.72E-11	8.00E-03	8.67E-20	3.21E-10	2.59E+06	1.14E-10	
Y 90	2.24E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.49E-11	8.00E-03	2.20E-16	8.14E-07	2.59E+06	2.51E-07	
PM147	9.63E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.41E-12	8.00E-03	9.56E-19	3.54E-09	2.59E+06	4.69E-10	
CE144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	1.01E-15	3.74E-06	2.59E+06	1.28E-07	
PR144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	2.15E-15	7.96E-06	2.59E+06	2.72E-07	
EU154	1.74E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.16E-12	8.00E-03	6.81E-14	2.52E-04	2.59E+06	6.04E-06	
CM244	2.38E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.58E-12	8.00E-03	1.33E-17	4.92E-08	2.59E+06	1.61E-09	
PU238	1.58E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.05E-12	8.00E-03	1.27E-17	4.70E-08	2.59E+06	1.02E-09	
SB125	7.91E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	5.26E-13	8.00E-03	2.27E-14	8.40E-05	2.59E+06	9.16E-07	
EU155	5.41E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.60E-13	8.00E-03	2.95E-15	1.09E-05	2.59E+06	8.14E-08	
AM241	2.78E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.85E-13	8.00E-03	1.07E-15	3.96E-06	2.59E+06	1.52E-08	
TE125M	1.93E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.29E-13	8.00E-03	8.48E-16	3.14E-06	2.59E+06	8.36E-09	
PU240	1.50E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.98E-14	8.00E-03	1.23E-17	4.55E-08	2.59E+06	9.41E-11	
SM151	9.76E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.49E-14	8.00E-03	8.80E-20	3.26E-10	2.59E+06	4.38E-13	
PU239	6.70E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	4.46E-14	8.00E-03	7.55E-18	2.79E-08	2.59E+06	2.58E-11	
BA137M	3.17E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.11E-11	8.00E-03	3.22E-14	1.19E-04	2.59E+06	5.20E-05	
RH106	4.71E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.13E-12	8.00E-03	1.16E-14	4.29E-05	2.59E+06	2.79E-06	
PR144M	3.48E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.31E-14	8.00E-03	4.20E-16	1.55E-06	2.59E+06	7.45E-10	
AM243	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	2.61E-15	9.66E-06	2.59E+06	1.81E-09	
CM242	9.82E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.53E-15	8.00E-03	1.48E-17	5.48E-08	2.59E+06	7.41E-12	
CM243	9.79E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.51E-15	8.00E-03	6.68E-15	2.47E-05	2.59E+06	3.33E-09	
NP239	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	8.73E-15	3.23E-05	2.59E+06	6.05E-09	
NP237	1.18E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	7.85E-17	8.00E-03	1.26E-15	4.66E-06	2.59E+06	7.58E-12	
PU242	9.04E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.01E-16	8.00E-03	1.03E-17	3.81E-08	2.59E+06	4.75E-13	
AM242	2.71E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.80E-15	8.00E-03	7.30E-16	2.70E-06	2.59E+06	1.01E-10	
AM242M	2.72E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.81E-15	8.00E-03	6.01E-17	2.22E-07	2.59E+06	8.34E-12	
												Total	1.58E-01	

MPC-68														
Accident Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
								Gases						
H 3	1.24E+02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	8.23E-09	8.00E-03	2.75E-18	1.02E-08	2.59E+06	1.73E-06	
I129	1.12E-02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	7.45E-13	8.00E-03	2.14E-16	7.92E-07	2.59E+06	1.22E-08	
KR 85	2.04E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	1.36E-07	8.00E-03	1.14E-16	4.22E-07	2.59E+06	1.19E-03	
								Crud						
Co-60	6.50E+01	100%	68	5.99E+06	1.95E-05	3.26E-12	1.00	1.44E-08	8.00E-03	1.24E-13	4.59E-04	2.59E+06	1.37E-01	
								Volatiles						
SR 90	2.24E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	9.93E-10	8.00E-03	6.44E-18	2.38E-08	2.59E+06	4.90E-07	
RU106	4.71E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	2.09E-10	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
CS134	1.18E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	5.23E-10	8.00E-03	7.37E-14	2.73E-04	2.59E+06	2.96E-03	
CS137	3.35E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	1.49E-09	8.00E-03	6.68E-18	2.47E-08	2.59E+06	7.61E-07	
								Fines						
PU241	2.58E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.72E-11	8.00E-03	6.48E-20	2.40E-10	2.59E+06	8.52E-11	
Y 90	2.24E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.49E-11	8.00E-03	1.77E-16	6.55E-07	2.59E+06	2.02E-07	
PM147	9.63E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.41E-12	8.00E-03	5.45E-19	2.02E-09	2.59E+06	2.68E-10	
CE144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	7.69E-16	2.85E-06	2.59E+06	9.72E-08	
PR144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	1.90E-15	7.03E-06	2.59E+06	2.40E-07	
EU154	1.74E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.16E-12	8.00E-03	5.99E-14	2.22E-04	2.59E+06	5.31E-06	
CM244	2.38E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.58E-12	8.00E-03	7.08E-19	2.62E-09	2.59E+06	8.59E-11	
PU238	1.58E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.05E-12	8.00E-03	1.06E-18	3.92E-09	2.59E+06	8.54E-11	
SB125	7.91E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	5.26E-13	8.00E-03	1.95E-14	7.22E-05	2.59E+06	7.87E-07	
EU155	5.41E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.60E-13	8.00E-03	2.22E-15	8.21E-06	2.59E+06	6.12E-08	
AM241	2.78E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.85E-13	8.00E-03	6.74E-16	2.49E-06	2.59E+06	9.55E-09	
TE125M	1.93E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.29E-13	8.00E-03	2.23E-16	8.25E-07	2.59E+06	2.20E-09	
PU240	1.50E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.98E-14	8.00E-03	1.09E-18	4.03E-09	2.59E+06	8.34E-12	
SM151	9.76E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.49E-14	8.00E-03	7.08E-21	2.62E-11	2.59E+06	3.52E-14	
PU239	6.70E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	4.46E-14	8.00E-03	2.65E-18	9.81E-09	2.59E+06	9.05E-12	
BA137M	3.17E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.11E-11	8.00E-03	2.80E-14	1.04E-04	2.59E+06	4.53E-05	
RH106	4.71E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.13E-12	8.00E-03	1.01E-14	3.74E-05	2.59E+06	2.43E-06	
PR144M	3.48E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.31E-14	8.00E-03	2.00E-16	7.40E-07	2.59E+06	3.55E-10	
AM243	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	1.92E-15	7.10E-06	2.59E+06	1.33E-09	
CM242	9.82E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.53E-15	8.00E-03	1.13E-18	4.18E-09	2.59E+06	5.66E-13	
CM243	9.79E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.51E-15	8.00E-03	5.50E-15	2.04E-05	2.59E+06	2.75E-09	
NP239	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	7.18E-15	2.66E-05	2.59E+06	4.98E-09	
NP237	1.18E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	7.85E-17	8.00E-03	9.02E-16	3.34E-06	2.59E+06	5.43E-12	
PU242	9.04E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.01E-16	8.00E-03	9.69E-19	3.59E-09	2.59E+06	4.47E-14	
AM242	2.71E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.80E-15	8.00E-03	5.51E-16	2.04E-06	2.59E+06	7.61E-11	
AM242M	2.72E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.81E-15	8.00E-03	1.72E-17	6.36E-08	2.59E+06	2.39E-12	
												Total	1.41E-01	

MPC-68														
Accident Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
								Gases						
H 3	1.24E+02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	8.23E-09	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
I129	1.12E-02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	7.45E-13	8.00E-03	1.64E-16	6.07E-07	2.59E+06	9.37E-09	
KR 85	2.04E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	1.36E-07	8.00E-03	1.09E-16	4.03E-07	2.59E+06	1.13E-03	
								Crud						
Co-60	6.50E+01	100%	68	5.99E+06	1.95E-05	3.26E-12	1.00	1.44E-08	8.00E-03	1.23E-13	4.55E-04	2.59E+06	1.36E-01	
								Volatiles						
SR 90	2.24E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	9.93E-10	8.00E-03	5.44E-18	2.01E-08	2.59E+06	4.14E-07	
RU106	4.71E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	2.09E-10	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
CS134	1.18E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	5.23E-10	8.00E-03	7.19E-14	2.66E-04	2.59E+06	2.88E-03	
CS137	3.35E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	1.49E-09	8.00E-03	5.70E-18	2.11E-08	2.59E+06	6.49E-07	
								Fines						
PU241	2.58E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.72E-11	8.00E-03	5.63E-20	2.08E-10	2.59E+06	7.41E-11	
Y 90	2.24E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.49E-11	8.00E-03	1.62E-16	5.99E-07	2.59E+06	1.85E-07	
PM147	9.63E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.41E-12	8.00E-03	4.46E-19	1.65E-09	2.59E+06	2.19E-10	
CE144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	6.68E-16	2.47E-06	2.59E+06	8.45E-08	
PR144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	1.87E-15	6.92E-06	2.59E+06	2.36E-07	
EU154	1.74E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.16E-12	8.00E-03	5.87E-14	2.17E-04	2.59E+06	5.21E-06	
CM244	2.38E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.58E-12	8.00E-03	1.46E-18	5.40E-09	2.59E+06	1.77E-10	
PU238	1.58E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.05E-12	8.00E-03	1.68E-18	6.22E-09	2.59E+06	1.35E-10	
SB125	7.91E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	5.26E-13	8.00E-03	1.87E-14	6.92E-05	2.59E+06	7.54E-07	
EU155	5.41E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.60E-13	8.00E-03	1.85E-15	6.85E-06	2.59E+06	5.10E-08	
AM241	2.78E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.85E-13	8.00E-03	5.21E-16	1.93E-06	2.59E+06	7.39E-09	
TE125M	1.93E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.29E-13	8.00E-03	1.86E-16	6.88E-07	2.59E+06	1.83E-09	
PU240	1.50E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.98E-14	8.00E-03	1.65E-18	6.11E-09	2.59E+06	1.26E-11	
SM151	9.76E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.49E-14	8.00E-03	1.13E-20	4.18E-11	2.59E+06	5.62E-14	
PU239	6.70E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	4.46E-14	8.00E-03	2.67E-18	9.88E-09	2.59E+06	9.12E-12	
BA137M	3.17E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.11E-11	8.00E-03	2.73E-14	1.01E-04	2.59E+06	4.41E-05	
RH106	4.71E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.13E-12	8.00E-03	9.75E-15	3.61E-05	2.59E+06	2.34E-06	
PR144M	3.48E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.31E-14	8.00E-03	1.56E-16	5.77E-07	2.59E+06	2.77E-10	
AM243	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	1.55E-15	5.74E-06	2.59E+06	1.07E-09	
CM242	9.82E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.53E-15	8.00E-03	1.89E-18	6.99E-09	2.59E+06	9.46E-13	
CM243	9.79E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.51E-15	8.00E-03	5.00E-15	1.85E-05	2.59E+06	2.50E-09	
NP239	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	6.50E-15	2.41E-05	2.59E+06	4.51E-09	
NP237	1.18E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	7.85E-17	8.00E-03	7.69E-16	2.85E-06	2.59E+06	4.63E-12	
PU242	9.04E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.01E-16	8.00E-03	1.43E-18	5.29E-09	2.59E+06	6.59E-14	
AM242	2.71E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.80E-15	8.00E-03	4.77E-16	1.76E-06	2.59E+06	6.59E-11	
AM242M	2.72E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.81E-15	8.00E-03	1.72E-17	6.36E-08	2.59E+06	2.39E-12	
												Total	1.40E-01	

MPC-68														
Accident Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
								Gases						
H 3	1.24E+02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	8.23E-09	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
I129	1.12E-02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	7.45E-13	8.00E-03	1.10E-15	4.07E-06	2.59E+06	6.28E-08	
KR 85	2.04E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	1.36E-07	8.00E-03	2.20E-16	8.14E-07	2.59E+06	2.29E-03	
								Crud						
Co-60	6.50E+01	100%	68	5.99E+06	1.95E-05	3.26E-12	1.00	1.44E-08	8.00E-03	1.78E-13	6.59E-04	2.59E+06	1.97E-01	
								Volatiles						
SR 90	2.24E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	9.93E-10	8.00E-03	2.28E-17	8.44E-08	2.59E+06	1.74E-06	
RU106	4.71E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	2.09E-10	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
CS134	1.18E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	5.23E-10	8.00E-03	1.20E-13	4.44E-04	2.59E+06	4.81E-03	
CS137	3.35E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	1.49E-09	8.00E-03	2.29E-17	8.47E-08	2.59E+06	2.61E-06	
								Fines						
PU241	2.58E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.72E-11	8.00E-03	2.19E-19	8.10E-10	2.59E+06	2.88E-10	
Y 90	2.24E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.49E-11	8.00E-03	4.44E-16	1.64E-06	2.59E+06	5.07E-07	
PM147	9.63E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.41E-12	8.00E-03	2.18E-18	8.07E-09	2.59E+06	1.07E-09	
CE144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	2.49E-15	9.21E-06	2.59E+06	3.15E-07	
PR144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	2.99E-15	1.11E-05	2.59E+06	3.78E-07	
EU154	1.74E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.16E-12	8.00E-03	9.43E-14	3.49E-04	2.59E+06	8.37E-06	
CM244	2.38E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.58E-12	8.00E-03	8.82E-18	3.26E-08	2.59E+06	1.07E-09	
PU238	1.58E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.05E-12	8.00E-03	9.30E-18	3.44E-08	2.59E+06	7.49E-10	
SB125	7.91E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	5.26E-13	8.00E-03	3.53E-14	1.31E-04	2.59E+06	1.42E-06	
EU155	5.41E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.60E-13	8.00E-03	8.09E-15	2.99E-05	2.59E+06	2.23E-07	
AM241	2.78E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.85E-13	8.00E-03	2.87E-15	1.06E-05	2.59E+06	4.07E-08	
TE125M	1.93E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.29E-13	8.00E-03	1.22E-15	4.51E-06	2.59E+06	1.20E-08	
PU240	1.50E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.98E-14	8.00E-03	9.26E-18	3.43E-08	2.59E+06	7.08E-11	
SM151	9.76E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.49E-14	8.00E-03	7.09E-20	2.62E-10	2.59E+06	3.53E-13	
PU239	6.70E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	4.46E-14	8.00E-03	9.47E-18	3.50E-08	2.59E+06	3.24E-11	
BA137M	3.17E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.11E-11	8.00E-03	4.63E-14	1.71E-04	2.59E+06	7.48E-05	
RH106	4.71E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.13E-12	8.00E-03	1.72E-14	6.36E-05	2.59E+06	4.13E-06	
PR144M	3.48E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.31E-14	8.00E-03	8.16E-16	3.02E-06	2.59E+06	1.45E-09	
AM243	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	7.47E-15	2.76E-05	2.59E+06	5.18E-09	
CM242	9.82E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.53E-15	8.00E-03	1.06E-17	3.92E-08	2.59E+06	5.31E-12	
CM243	9.79E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.51E-15	8.00E-03	1.50E-14	5.55E-05	2.59E+06	7.49E-09	
NP239	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	2.00E-14	7.40E-05	2.59E+06	1.39E-08	
NP237	1.18E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	7.85E-17	8.00E-03	3.20E-15	1.18E-05	2.59E+06	1.93E-11	
PU242	9.04E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.01E-16	8.00E-03	7.90E-18	2.92E-08	2.59E+06	3.64E-13	
AM242	2.71E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.80E-15	8.00E-03	1.88E-15	6.96E-06	2.59E+06	2.60E-10	
AM242M	2.72E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.81E-15	8.00E-03	7.94E-17	2.94E-07	2.59E+06	1.10E-11	
												Total	2.04E-01	

MPC-68														
Accident Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
								Gases						
H 3	1.24E+02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	8.23E-09	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
I129	1.12E-02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	7.45E-13	8.00E-03	3.86E-16	1.43E-06	2.59E+06	2.20E-08	
KR 85	2.04E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	1.36E-07	8.00E-03	1.18E-16	4.37E-07	2.59E+06	1.23E-03	
								Crud						
Co-60	6.50E+01	100%	68	5.99E+06	1.95E-05	3.26E-12	1.00	1.44E-08	8.00E-03	1.27E-13	4.70E-04	2.59E+06	1.40E-01	
								Volatiles						
SR 90	2.24E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	9.93E-10	8.00E-03	7.33E-18	2.71E-08	2.59E+06	5.58E-07	
RU106	4.71E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	2.09E-10	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
CS134	1.18E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	5.23E-10	8.00E-03	7.57E-14	2.80E-04	2.59E+06	3.04E-03	
CS137	3.35E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	1.49E-09	8.00E-03	7.55E-18	2.79E-08	2.59E+06	8.60E-07	
								Fines						
PU241	2.58E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.72E-11	8.00E-03	6.98E-20	2.58E-10	2.59E+06	9.18E-11	
Y 90	2.24E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.49E-11	8.00E-03	1.87E-16	6.92E-07	2.59E+06	2.14E-07	
PM147	9.63E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.41E-12	8.00E-03	6.75E-19	2.50E-09	2.59E+06	3.31E-10	
CE144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	8.33E-16	3.08E-06	2.59E+06	1.05E-07	
PR144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	1.95E-15	7.22E-06	2.59E+06	2.47E-07	
EU154	1.74E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.16E-12	8.00E-03	6.15E-14	2.28E-04	2.59E+06	5.46E-06	
CM244	2.38E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.58E-12	8.00E-03	4.19E-18	1.55E-08	2.59E+06	5.08E-10	
PU238	1.58E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.05E-12	8.00E-03	4.01E-18	1.48E-08	2.59E+06	3.23E-10	
SB125	7.91E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	5.26E-13	8.00E-03	2.01E-14	7.44E-05	2.59E+06	8.11E-07	
EU155	5.41E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.60E-13	8.00E-03	2.41E-15	8.92E-06	2.59E+06	6.65E-08	
AM241	2.78E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.85E-13	8.00E-03	7.83E-16	2.90E-06	2.59E+06	1.11E-08	
TE125M	1.93E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.29E-13	8.00E-03	4.64E-16	1.72E-06	2.59E+06	4.58E-09	
PU240	1.50E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.98E-14	8.00E-03	3.92E-18	1.45E-08	2.59E+06	3.00E-11	
SM151	9.76E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.49E-14	8.00E-03	3.58E-20	1.32E-10	2.59E+06	1.78E-13	
PU239	6.70E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	4.46E-14	8.00E-03	3.88E-18	1.44E-08	2.59E+06	1.33E-11	
BA137M	3.17E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.11E-11	8.00E-03	2.88E-14	1.07E-04	2.59E+06	4.66E-05	
RH106	4.71E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.13E-12	8.00E-03	1.03E-14	3.81E-05	2.59E+06	2.47E-06	
PR144M	3.48E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.31E-14	8.00E-03	2.81E-16	1.04E-06	2.59E+06	4.99E-10	
AM243	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	2.09E-15	7.73E-06	2.59E+06	1.45E-09	
CM242	9.82E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.53E-15	8.00E-03	4.91E-18	1.82E-08	2.59E+06	2.46E-12	
CM243	9.79E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.51E-15	8.00E-03	5.76E-15	2.13E-05	2.59E+06	2.88E-09	
NP239	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	7.52E-15	2.78E-05	2.59E+06	5.21E-09	
NP237	1.18E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	7.85E-17	8.00E-03	9.94E-16	3.68E-06	2.59E+06	5.98E-12	
PU242	9.04E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.01E-16	8.00E-03	3.32E-18	1.23E-08	2.59E+06	1.53E-13	
AM242	2.71E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.80E-15	8.00E-03	5.94E-16	2.20E-06	2.59E+06	8.21E-11	
AM242M	2.72E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.81E-15	8.00E-03	2.95E-17	1.09E-07	2.59E+06	4.09E-12	
												Total	1.45E-01	

MPC-68														
Accident Conditions														
Effective Dose Equivalent From Submersion														
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	DDE (mRem)	
								Gases						
H 3	1.24E+02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	8.23E-09	8.00E-03	3.31E-19	1.22E-09	2.59E+06	2.09E-07	
I129	1.12E-02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	7.45E-13	8.00E-03	3.80E-16	1.41E-06	2.59E+06	2.17E-08	
KR 85	2.04E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	1.36E-07	8.00E-03	1.19E-16	4.40E-07	2.59E+06	1.24E-03	
								Crud						
Co-60	6.50E+01	100%	68	5.99E+06	1.95E-05	3.26E-12	1.00	1.44E-08	8.00E-03	1.26E-13	4.66E-04	2.59E+06	1.39E-01	
								Volatiles						
SR 90	2.24E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	9.93E-10	8.00E-03	7.53E-18	2.79E-08	2.59E+06	5.73E-07	
RU106	4.71E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	2.09E-10	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00	
CS134	1.18E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	5.23E-10	8.00E-03	7.57E-14	2.80E-04	2.59E+06	3.04E-03	
CS137	3.35E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	1.49E-09	8.00E-03	7.74E-18	2.86E-08	2.59E+06	8.81E-07	
								Fines						
PU241	2.58E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.72E-11	8.00E-03	7.25E-20	2.68E-10	2.59E+06	9.54E-11	
Y 90	2.24E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.49E-11	8.00E-03	1.90E-16	7.03E-07	2.59E+06	2.17E-07	
PM147	9.63E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.41E-12	8.00E-03	6.93E-19	2.56E-09	2.59E+06	3.40E-10	
CE144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	8.53E-16	3.16E-06	2.59E+06	1.08E-07	
PR144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	1.95E-15	7.22E-06	2.59E+06	2.47E-07	
EU154	1.74E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.16E-12	8.00E-03	6.14E-14	2.27E-04	2.59E+06	5.45E-06	
CM244	2.38E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.58E-12	8.00E-03	4.91E-18	1.82E-08	2.59E+06	5.96E-10	
PU238	1.58E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.05E-12	8.00E-03	4.88E-18	1.81E-08	2.59E+06	3.93E-10	
SB125	7.91E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	5.26E-13	8.00E-03	2.02E-14	7.47E-05	2.59E+06	8.15E-07	
EU155	5.41E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.60E-13	8.00E-03	2.49E-15	9.21E-06	2.59E+06	6.87E-08	
AM241	2.78E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.85E-13	8.00E-03	8.18E-16	3.03E-06	2.59E+06	1.16E-08	
TE125M	1.93E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.29E-13	8.00E-03	4.53E-16	1.68E-06	2.59E+06	4.47E-09	
PU240	1.50E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.98E-14	8.00E-03	4.75E-18	1.76E-08	2.59E+06	3.63E-11	
SM151	9.76E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.49E-14	8.00E-03	3.61E-20	1.34E-10	2.59E+06	1.80E-13	
PU239	6.70E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	4.46E-14	8.00E-03	4.24E-18	1.57E-08	2.59E+06	1.45E-11	
BA137M	3.17E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.11E-11	8.00E-03	2.88E-14	1.07E-04	2.59E+06	4.66E-05	
RH106	4.71E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.13E-12	8.00E-03	1.04E-14	3.85E-05	2.59E+06	2.50E-06	
PR144M	3.48E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.31E-14	8.00E-03	2.79E-16	1.03E-06	2.59E+06	4.95E-10	
AM243	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	2.18E-15	8.07E-06	2.59E+06	1.51E-09	
CM242	9.82E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.53E-15	8.00E-03	5.69E-18	2.11E-08	2.59E+06	2.85E-12	
CM243	9.79E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.51E-15	8.00E-03	5.88E-15	2.18E-05	2.59E+06	2.94E-09	
NP239	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	7.69E-15	2.85E-05	2.59E+06	5.33E-09	
NP237	1.18E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	7.85E-17	8.00E-03	1.03E-15	3.81E-06	2.59E+06	6.20E-12	
PU242	9.04E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.01E-16	8.00E-03	4.01E-18	1.48E-08	2.59E+06	1.85E-13	
AM242	2.71E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.80E-15	8.00E-03	6.15E-16	2.28E-06	2.59E+06	8.50E-11	
AM242M	2.72E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.81E-15	8.00E-03	3.17E-17	1.17E-07	2.59E+06	4.40E-12	
												Total	1.44E-01	

MPC-68													
Accident Conditions													
Effective Dose Equivalent From Submersion													
Nuclide	Inventory (Ci/Assy)	% remain airborne	No. Assy	MPC Vol (cm3)	L_{acc} Rate at Upstream (cm3/s)	Fraction Released per sec	Release Fraction	Release Rate (Ci/sec)	X/Q (sec/m3)	DCF (Sv/Bq)	DCF (mRem/uCi)	Occ Time (sec)	SDE (mRem)
								Gases					
H 3	1.24E+02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	8.23E-09	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00
I129	1.12E-02	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	7.45E-13	8.00E-03	1.10E-15	4.07E-06	2.59E+06	6.28E-08
KR 85	2.04E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	0.30	1.36E-07	8.00E-03	1.32E-14	4.88E-05	2.59E+06	1.37E-01
								Crud					
Co-60	6.50E+01	100%	68	5.99E+06	1.95E-05	3.26E-12	1.00	1.44E-08	8.00E-03	1.45E-13	5.37E-04	2.59E+06	1.60E-01
								Volatiles					
SR 90	2.24E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	9.93E-10	8.00E-03	9.20E-15	3.40E-05	2.59E+06	7.01E-04
RU106	4.71E+03	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	2.09E-10	8.00E-03	0.00E+00	0.00E+00	2.59E+06	0.00E+00
CS134	1.18E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	5.23E-10	8.00E-03	9.45E-14	3.50E-04	2.59E+06	3.79E-03
CS137	3.35E+04	100%	68	5.99E+06	1.95E-05	3.26E-12	2.00E-04	1.49E-09	8.00E-03	8.63E-15	3.19E-05	2.59E+06	9.83E-04
								Fines					
PU241	2.58E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.72E-11	8.00E-03	1.17E-19	4.33E-10	2.59E+06	1.54E-10
Y 90	2.24E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.49E-11	8.00E-03	6.24E-14	2.31E-04	2.59E+06	7.13E-05
PM147	9.63E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.41E-12	8.00E-03	8.11E-16	3.00E-06	2.59E+06	3.98E-07
CE144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	2.93E-15	1.08E-05	2.59E+06	3.71E-07
PR144	2.48E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.65E-12	8.00E-03	8.43E-14	3.12E-04	2.59E+06	1.07E-05
EU154	1.74E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.16E-12	8.00E-03	8.29E-14	3.07E-04	2.59E+06	7.36E-06
CM244	2.38E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.58E-12	8.00E-03	3.91E-17	1.45E-07	2.59E+06	4.75E-09
PU238	1.58E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.05E-12	8.00E-03	4.09E-17	1.51E-07	2.59E+06	3.30E-09
SB125	7.91E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	5.26E-13	8.00E-03	2.65E-14	9.81E-05	2.59E+06	1.07E-06
EU155	5.41E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.60E-13	8.00E-03	3.39E-15	1.25E-05	2.59E+06	9.35E-08
AM241	2.78E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.85E-13	8.00E-03	1.28E-15	4.74E-06	2.59E+06	1.81E-08
TE125M	1.93E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.29E-13	8.00E-03	1.94E-15	7.18E-06	2.59E+06	1.91E-08
PU240	1.50E+02	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.98E-14	8.00E-03	3.92E-17	1.45E-07	2.59E+06	3.00E-10
SM151	9.76E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.49E-14	8.00E-03	1.90E-19	7.03E-10	2.59E+06	9.46E-13
PU239	6.70E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	4.46E-14	8.00E-03	1.86E-17	6.88E-08	2.59E+06	6.35E-11
BA137M	3.17E+04	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.11E-11	8.00E-03	3.73E-14	1.38E-04	2.59E+06	6.03E-05
RH106	4.71E+03	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	3.13E-12	8.00E-03	1.09E-13	4.03E-04	2.59E+06	2.62E-05
PR144M	3.48E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	2.31E-14	8.00E-03	5.08E-16	1.88E-06	2.59E+06	9.01E-10
AM243	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	2.75E-15	1.02E-05	2.59E+06	1.91E-09
CM242	9.82E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.53E-15	8.00E-03	4.29E-17	1.59E-07	2.59E+06	2.15E-11
CM243	9.79E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.51E-15	8.00E-03	9.79E-15	3.62E-05	2.59E+06	4.89E-09
NP239	1.36E+01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	9.05E-15	8.00E-03	1.60E-14	5.92E-05	2.59E+06	1.11E-08
NP237	1.18E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	7.85E-17	8.00E-03	1.54E-15	5.70E-06	2.59E+06	9.27E-12
PU242	9.04E-01	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	6.01E-16	8.00E-03	3.27E-17	1.21E-07	2.59E+06	1.51E-12
AM242	2.71E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.80E-15	8.00E-03	8.20E-15	3.03E-05	2.59E+06	1.13E-09
AM242M	2.72E+00	10%	68	5.99E+06	1.95E-05	3.26E-12	3.00E-05	1.81E-15	8.00E-03	1.36E-16	5.03E-07	2.59E+06	1.89E-11
												Total	3.03E-01

CHAPTER 8: OPERATING PROCEDURES†

8.0 INTRODUCTION:

This chapter outlines the loading, unloading, and recovery procedures for the HI-STORM 100 System for storage operations. The procedures provided in this chapter are prescriptive to the extent that they provide the basis and general guidance for plant personnel in preparing detailed, written, site-specific, loading, handling, storage and unloading procedures. Users may add, *modify the sequence of, perform in parallel,* or delete steps as necessary provided that the intent of this guidance is met *and the requirements of the CoC are met. Such changes are within the scope of this chapter and do not require a 72.48 evaluation.* The information provided in this chapter meets all requirements of NUREG-1536 [8.0.1].

Section 8.1 provides the guidance for loading the HI-STORM 100 System in the spent fuel pool. Section 8.2 provides the procedures for ISFSI operations and general guidance for performing maintenance and responding to abnormal events. Responses to abnormal events that may occur during normal loading operations are provided with the procedure steps. Section 8.3 provides the procedure for unloading the HI-STORM 100 System in the spent fuel pool. Section 8.4 provides the guidance for MPC transfer to the HI-STAR 100 Overpack for transport or storage. Section 8.4 can also be used for recovery of a breached MPC for transport or storage. Section 8.5 provides the guidance for transfer of the MPC into HI-STORM from the HI-STAR 100 transport overpack. The Technical Specifications in Appendix A to CoC 72-1014 provide Limiting Conditions of Operation (LCO), Surveillance Requirements (SR's), as well as administrative information, such as Use and Application. Appendix B to COC 72-1014 provides the approved contents and design features applicable to the HI-STORM 100 System. FSAR Appendix 12.A includes the Bases for the LCOs. The Technical Specifications impose restrictions and requirements that must be applied throughout the loading and unloading process. Equipment specific operating details such as vacuum drying system, valve manipulation and Transporter operation are not within the scope of this FSAR and will be provided to users based on the specific equipment selected by the users and the configuration of the site.

The procedures contained herein describe acceptable methods for performing HI-STORM 100 loading and unloading operations. *Unless otherwise stated, references to the HI-STORM 100 apply equally to the HI-STORM 100 and the HI-STORM 100S.* Users may alter these procedures to allow alternate methods and operations to be performed in parallel or out of sequence as long as the general intent of the procedure is met. In the figures following each section, acceptable configurations of rigging, piping, and

† This chapter has been prepared in the format and section organization set forth in Regulatory Guide 3.61. However, the material content of this chapter also fulfills the requirements of NUREG 1536. Pagination and numbering of sections, figures, and tables are consistent with the convention set down in Chapter 1, Section 1.0, herein. Finally, all terms-of-art used in this chapter are consistent with the terminology of the glossary (Table 1.0.1) and component nomenclature of the Bill-of-Materials (Section 1.5).

instrumentation are shown. In some cases, the figures are artists renditions. Users may select alternate configurations, equipment and methodology to accommodate their specific needs. *provided that the intent of this guidance is met and the requirements of the CoC are met. Such changes are within the scope of this chapter and do not require a 72.48 evaluation.* All rigging should be approved by the user's load handling authority prior to use. User-developed procedures and the design and operation of any alternate equipment must be reviewed by the Certificate holder prior to implementation.

Licensees (Users) will utilize the procedures provided in this chapter, the Technical Specifications in Appendix A to CoC 72-1014, the conditions of the Certificate of Compliance, equipment-specific operating instructions, and plant working procedures and apply them to develop the site specific written, loading and unloading procedures.

The loading and unloading procedures in Section 8.1 and 8.3 can also be appropriately revised into written site-specific procedures to allow dry loading and unloading of the system in a hot cell or other remote handling facility. The Dry Transfer Facility (DTF) loading and unloading procedures are essentially the same with respect to loading and vacuum drying, inerting, and leakage testing of the MPC. The dry transfer facility shall develop the appropriate site-specific procedures as part of the DTF facility license.

Tables 8.1.1 through 8.1.4 provide the handling weights for each of the HI-STORM 100 System major components and the loads to be lifted during various phases of the operation of the HI-STORM 100 System. Users shall take appropriate actions to ensure that the lift weights do not exceed user-supplied lifting equipment rated loads. Table 8.1.5 provides the HI-STORM 100 System bolt torque and sequencing requirements. Table 8.1.6 provides an operational description of the HI-STORM 100 System ancillary equipment along with its safety designation and QA category, where applicable. Fuel assembly selection and verification shall be performed by the licensee in accordance with written, approved procedures which ensure that only SNF assemblies authorized in the Certificate of Compliance and as defined in the Appendix B to CoC 72-1014 are loaded into the HI-STORM 100 System.

In addition to the requirements set forth in the CoC, users will be required to develop or modify existing programs and procedures to account for the operation of an ISFSI. Written procedures will be required to be developed or modified to account for such things as nondestructive examination (NDE) of the MPC welds, handling and storage of items and components identified as Important to Safety, 10CFR72.48 [8.1.1] programs, specialized instrument calibration, special nuclear material accountability at the ISFSI, security modifications, fuel handling procedures, training and emergency response, equipment and process qualifications. Users are required to take necessary actions to prevent boiling of the water in the MPC. This may be accomplished by performing a site-specific analysis to identify a time limitation to ensure that water boiling will not occur in the MPC prior to the initiation of draining operations. Chapter 4 of the FSAR provides some sample time limits for the time to initiation of draining for various spent fuel pool water temperatures using design basis heat loads.

Table 8.1.7 summarizes some of the instrumentation used to load and unload the HI-

STORM 100 System. Other instrumentation that meets the requirements of the Technical Specifications is also acceptable. Tables 8.1.8, 8.1.9, and 8.1.10 provide sample receipt inspection checklists for the HI-STORM 100 overpack, the MPC, and the HI-TRAC Transfer Cask, respectively. Users ~~*shall*~~ *may* develop site-specific receipt inspection checklists, as required for their equipment. Fuel handling, including the handling of fuel assemblies in the Damaged Fuel Container (DFC) shall be performed in accordance with written site-specific procedures. DFCs shall be loaded in the spent fuel pool racks prior to placement into the MPC.

Technical and Safety Basis for Loading and Unloading Procedures

The procedures herein (Sections 8.1.2 through 8.1.5) are developed for the loading, storage, unloading, and recovery of spent fuel in the HI-STORM 100 System. The activities involved in loading of spent fuel in a canister system, if not carefully performed, may present risks. The design of the HI-STORM 100 System, including these procedures, the ancillary equipment and the Technical Specifications, serve to minimize risks and mitigate consequences of potential events. To summarize, consideration is given in the loading and unloading systems and procedures to the potential events listed in Table 8.0.1.

The primary objective is to reduce the risk of occurrence and/or to mitigate the consequences of the event. The procedures contain Notes, Warnings, and Cautions to notify the operators to upcoming situations and provide additional information as needed. The Notes, Warnings and Cautions are purposely bolded and boxed and immediately precede the applicable steps.

In the event of an extreme abnormal condition (e.g., cask drop or tip-over event) the user shall have appropriate procedural guidance to respond to the situation. As a minimum, the procedures shall address establishing emergency action levels, implementation of emergency action program, establishment of personnel exclusions zones, monitoring of radiological conditions, actions to mitigate or prevent the release of radioactive materials, and recovery planning and execution and reporting to the appropriate regulatory agencies, as required.

Table 8.0.1
OPERATIONAL CONSIDERATIONS

POTENTIAL EVENTS	METHODS USED TO ADDRESS EVENT	COMMENTS/ REFERENCES
Cask Drop During Handling Operations	Cask lifting and handling equipment is designed to ANSI N14.6. Procedural guidance is given for cask handling, inspection of lifting equipment, and proper engagement to the trunnions. Technical Specifications limit the cask and overpack lift height outside the fuel building.	See Section 8.1.2. See Technical Specifications in Appendix A to CoC 72-1014 for HI-TRAC and HI-STORM lift height limitations.
Cask Tip-Over Prior to welding of the MPC lid	The lid retention system is available to secure the MPC lid during movement between the spent fuel pool and the cask preparation area.	See Section 8.1.5 Step 1. See Figure 8.1.15.
Contamination of the MPC external shell	The annulus seal, pool lid, and annulus overpressure system minimize the potential for the MPC external shell to become contaminated from contact with the spent fuel pool water. Technical Specifications require surveys of certain components of the HI-STORM 100 System to monitor for removable contamination.	See Figures 8.1.13 and 8.1.14. See Technical Specifications in Appendix A to CoC 72-1014.
Contamination spread from cask process system exhausts	Processing systems are equipped with exhausts that can be directed to the plant's processing systems.	See Figures 8.1.19-8.1.22.
Damage to fuel assembly cladding from oxidation/thermal shock	Fuel assemblies are never subjected to air or oxygen during loading and unloading operations. Cool-Down System brings fuel assembly *bulk* temperatures to below water boiling temperature prior to flooding.	See Section 8.1.5 Step 24b, Section 8.3.3 ~~Step 8~~ and LCO 3.1.3.
Damage to Vacuum Drying System vacuum gauges from positive pressure	Vacuum Drying System is separate from pressurized gas and water systems.	See Figure 8.1.22 and 8.1.23.

Table 8.0.1
OPERATIONAL CONSIDERATIONS
(CONTINUED)

POTENTIAL EVENTS	METHODS USED TO ADDRESS EVENT	COMMENTS/ REFERENCES
Excess dose from failed fuel assemblies	MPC gas sampling allows operators to determine the integrity of the fuel cladding prior to opening the MPC. This allows preparation and planning for failed fuel. The RVOAs allow the vent and drain ports to be operated like valves and prevent the need to hot tap into the penetrations during unloading operation.	See Figure 8.1.16 and Section 8.3.3 Step *4*~~7~~.
Excess dose to operators	The procedures provide ALARA Notes and Warnings when radiological conditions may change.	See ALARA Notes and Warnings throughout the procedures.
Excess generation of radioactive waste	The HI-STORM system uses process systems that minimize the amount of radioactive waste generated. Such features include smooth surfaces for ease of decontamination efforts, prevention of avoidable contamination, and procedural guidance to reduce decontamination requirements. Where possible, items are installed by hand and require no tools.	Examples: HI-TRAC bottom protective cover, bolt plugs in empty holes, pre-wetting of components.
Fuel assembly misloading event	Procedural guidance is given to perform assembly selection verification and a post-loading visual verification of assembly identification prior to installation of the MPC lid.	See Section 8.1.4 Steps 1 and 3.
Incomplete moisture removal from MPC	The vacuum drying process reduces the MPC pressure in stages to prevent the formation of ice. Vacuum is held below 3 torr for 30 minutes with the vacuum pump isolated to assure dryness.	See Section 8.1.5 Step *6*~~28~~ and Technical Specification LCO 3.1.1.
Incorrect *MPC* lid installation	Procedural guidance is given to visually verify correct MPC lid installation prior to HI-TRAC removal from the spent fuel pool.	See Section 8.1.5 Step *1.j*~~6~~ and ~~10~~*3*.

Table 8.0.1
OPERATIONAL CONSIDERATIONS
(CONTINUED)

POTENTIAL EVENTS	METHODS USED TO ADDRESS EVENT	COMMENTS/ REFERENCES
Load Drop	Rigging diagrams and procedural guidance are provided for all lifts. Component weights are provided in Tables 8.1.1 through 8.1.4.	See Figures 8.1.6, 8.1.7, 8.1.9, 8.1.25 and 8.1.27. See Tables 8.1.1 through 8.1.4.
Over-pressurization of MPC during loading and unloading	Pressure relief valves in the water and gas processing systems limit the MPC pressure to acceptable levels.	See Figures 8.1.20, 8.1.21, 8.1.23 and 8.3.4.
Overstressing MPC lift lugs from side loading	The MPC is upended using the upending frame. The lift lugs are never side loaded.	See Figure 8.1.6 and Section 8.1.2 Step 6.
Overweight cask lift	Procedural guidance is given to alert operators to potential overweight lifts.	See Section 8.1.7 Step 6 for example. See Tables 8.1.1 through 8.1.4.
Personnel contamination by cutting/grinding activities	Procedural guidance is given to warn operators prior to cutting or grinding activities.	See Section 8.1.5 Step *3*~~25~~ and Section 8.3.3 Step *3*~~5~~.
Transfer cask carrying hot particles out of the spent fuel pool	Procedural guidance is given to scan the transfer cask prior to removal from the spent fuel pool.	See Section 8.1.3 Step 1 and Section 8.1.5 Step *1*~~9~~.
Unplanned or uncontrolled release of radioactive materials	The MPC vent and drain ports are equipped with metal-to-metal seals to minimize the leakage during vacuum drying and backfill operations. Unlike elastomer seals, the metal seals resist degradation due to temperature and radiation and allow future access to the MPC ports without hot tapping. The RVOAs allow the port to be opened and closed like a valve so gas sampling may be performed.	See Figure 8.1.11 and 8.1.16. See Section 8.3.3 Step *4*~~7~~.
~~Weld deficiencies from condensation of water on the weld joint~~	~~A vacuum source on the MPC prevents water vapor from condensing on the MPC weld joint.~~	~~Step 25.~~

8.1 PROCEDURE FOR LOADING THE HI-STORM 100 SYSTEM IN THE SPENT FUEL POOL

8.1.1 Overview of Loading Operations:

8.1.1.1 General Description

The HI-STORM 100 System is used to load, transfer and store spent fuel. Specific steps are performed to prepare the HI-STORM 100 System for fuel loading, to load the fuel, to prepare the system for storage and to place it in storage at an ISFSI. The MPC transfer may be performed in the *cask receiving area* ~~*truck bay*~~, at the ISFSI, or any other location deemed appropriate by the user. HI-TRAC and/or HI-STORM may be transferred between the ISFSI and the fuel loading facility using a specially designed transporter, heavy haul transfer trailer, or any other load handling equipment designed for such applications as long as the Technical Specification lift height restrictions are met *(lift height restrictions apply only to suspended forms of transport).* Users shall develop detailed written procedures to control on-site transport operations. Section 8.1.2 provides the general procedures for rigging and handling of the HI-STORM overpack and HI-TRAC transfer cask. Figure 8.1.1 shows a flow *general* diagram of the HI-STORM loading operations.

The following description and operating procedures outline the use of a HI-TRAC transfer cask with separate pool lid and transfer lid. Users may opt to use other configurations (e.g., a single lid) as long as there is sufficient crane capacity, available room to perform the operations and that appropriate measures are available to prevent contamination of the MPC external shell. Any alternate configuration must be evaluated by the certificate holder on a site-specific basis to ensure that the design margins for criticality, shielding, structural and thermal remain adequate and that all appropriate operational and safety features are maintained. It should be noted that user's facilities and equipment may necessitate variations of the following description.

Refer to the boxes of Figure 8.1.2 for the following description. At the start of loading operations, an empty MPC is upended (Box 1). The empty MPC is raised and inserted into HI-TRAC (Box 2). The annulus is filled with plant demineralized water† and the MPC is filled with either spent fuel pool water or plant demineralized water (Box 3). An inflatable seal is installed in the *upper end of the* annulus between the MPC and HI-TRAC to prevent spent fuel pool water from contaminating the exterior surface of the MPC. HI-TRAC and the MPC are then raised and lowered into the spent fuel pool for fuel loading using the lift yoke (Box 4). Pre-selected assemblies are loaded into the MPC and a visual verification of the assembly identification is performed (Box 5).

While still underwater, a thick shielded lid (the MPC lid) is installed using either slings attached to the lift yoke or the optional lid retention system (Box 6). The lift yoke remotely engages to the HI-TRAC lifting trunnions to lift the HI-TRAC and loaded MPC close to the spent fuel pool surface (Box 7). When radiation dose rate measurements confirm that it is safe to remove the HI-TRAC from the spent fuel pool, the cask is removed from the spent fuel pool. If the lid retention system is being used, the HI-TRAC top lid bolts are installed to secure the MPC lid for the

† Users may substitute domestic water in each step where demineralized water is specified.

transfer to the cask preparation area. The lift yoke and HI-TRAC are sprayed with demineralized water to help remove contamination as they are removed from the spent fuel pool.

HI-TRAC is placed in the designated preparation area and the lift yoke and lid retention system (if utilized) are removed. The next phase of decontamination is then performed. The top surfaces of the MPC lid and the upper flange of HI-TRAC are decontaminated. The temporary shield ring (if utilized) is installed and filled with water and the neutron shield jacket is filled with water (if drained). The inflatable annulus seal is removed, and the annulus shield (if utilized) is installed. The temporary shield ring provides additional personnel shielding around the top of the HI-TRAC during MPC closure operations. The annulus shield provides additional personnel shielding at the top of the annulus and also prevents small items from being dropped into the annulus. Dose rates are measured at the MPC lid to ensure that the dose rates are within expected values.

The MPC water level is lowered slightly, the MPC is vented, and the MPC lid is seal welded using the automated welding system (Box 8). Visual examinations are performed on the tack welds. Liquid penetrant (PT) examinations are performed on the root and final passes. ~~A volumetric examination is performed on the MPC welds to ensure that the completed weld is satisfactory. As an alternative to volumetric examination of the MPC lid-to-shell weld, a multi-layer PT is performed including one intermediate examination after approximately every three-eighth inch of weld depth.~~ *An ultrasonic or multi-layer PT examination is performed on the MPC Lid-to-Shell weld to ensure that the weld is satisfactory. As an alternative to volumetric examination of the MPC lid-to-shell weld, a multi-layer PT is performed including one intermediate examination after approximately every three-eighth inch of weld depth.* The water level is raised to the top of the MPC and a hydrostatic test followed by an additional liquid penetrant examination is performed on the MPC Lid-to-Shell weld to verify structural integrity. A small amount of water is displaced with helium gas for leakage testing. A leakage rate test is performed on the MPC lid-to-shell weld to verify weld integrity and to ensure that leakage rates are within acceptance criteria (See Technical Specification LCO 3.1.1).

~~The water level is raised to the top of the MPC again and then the MPC water is displaced from the MPC by blowing pressurized helium or nitrogen gas into the vent port of the MPC thus displacing the water through the drain line. The volume of water displaced from the MPC is measured to determine the free volume inside the MPC. This information is used to determine the helium backfill requirements for the MPC.~~

The vacuum drying system is connected to the MPC and is used to remove all liquid water from the MPC in a stepped evacuation process (Box 9). A stepped evacuation process is used to preclude the formation of ice in the MPC and vacuum drying system lines. The internal pressure is reduced to below 3 torr and held for 30 minutes to ensure that all liquid water is removed (See Technical Specification LCO 3.1.1).

Alternatively for high-burn-up fuel, a moisture removal system is utilized to remove residual moisture from the MPC. Gas is circulated through the MPC to evaporate and remove moisture. The residual moisture is condensed until no additional moisture remains in the MPC. Gas exiting the MPC is monitored for entrained moisture until no discernable moisture is present in the MPC. Following MPC drying, the MPC is evacuated and backfilled with a predetermined

pressure of helium gas (See Technical Specification LCO 3.1.1). Limitations for the at-vacuum duration are evaluated and established on a canister basis to ensure that acceptable cladding temperatures are not exceeded although a time limit of less than 2 hours at vacuum will bound any MPC. ~~Following this dryness test, the vacuum drying system is disconnected, the helium backfill system is attached, and the MPC is backfilled with a predetermined *pressure amount* of helium gas (See Technical Specification LCO 3.1.1).~~ The helium backfill ensures adequate heat transfer during storage, provides an inert atmosphere for long-term fuel integrity, and provides the means of future leakage rate testing of the MPC confinement boundary welds. Cover plates are installed and seal welded over the MPC vent and drain ports with liquid penetrant examinations performed on the root and final passes *(for multi-pass welds)* (Box 10). The cover plates are helium leakage tested to confirm that they meet the established leakage rate criteria.

The MPC closure ring is then placed on the MPC and dose rates are measured at the MPC lid to ensure that the dose rates are within expected values. The closure ring is aligned, tacked in place and seal welded providing redundant closure of the MPC confinement boundary closure welds. Tack welds are visually examined, and the root and final welds are inspected using the liquid penetrant examination technique to ensure weld integrity.

The annulus shield (if utilized) is removed and the remaining water in the annulus is drained. The temporary shield ring (if utilized) is drained and removed. The MPC lid and accessible areas of the top of the MPC shell are smeared for removable contamination (See Technical Specification LCO 3.2.2) and HI-TRAC dose rates are measured. HI-TRAC top lid is installed and the bolts are torqued (Box 11). The MPC lift cleats are installed on the MPC lid. The MPC lift cleats are the primary lifting point on the MPC. The two cleats provide redundant support of the MPC when it is lifted or supported. Two or four stays (depending on the site crane hook configuration) are installed between the MPC lift cleats and the lift yoke main pins. The stays secure the MPC within HI-TRAC while the pool lid is replaced with the transfer lid (Box 12).

The HI-TRAC is positioned approximately one inch above the transfer slide to prepare for bottom lid replacement. The transfer slide consists of an adjustable-height rolling carriage and a pair of channel tracks. The transfer slide supports the transfer step which is used to position the two lids at the same elevation and creates a tight seam between the two lids to eliminate radiation streaming. The overhead crane is shut down to prevent inadvertent operation. The transfer slide carriage is raised to support the pool lid while the bottom lid bolts are removed. The transfer slide then lowers the pool lid and simultaneously replaces the pool lid with the transfer lid. The carriage is raised and the bottom lid bolts are replaced. The MPC lift cleats and stays support the MPC during the transfer operations. Following the transfer, the MPC stays are disconnected and HI-TRAC is positioned for MPC transfer into HI-STORM.

MPC transfer may be performed inside or outside the fuel building (Box 13). Similarly, HI-TRAC and HI-STORM may be transferred to the ISFSI in several different ways (Box 14 and 15). The empty HI-STORM overpack is inspected and positioned with the lid removed. Vent duct shield inserts[1] are installed in the HI-STORM exit vent ducts. The vent duct shield inserts prevent radiation streaming *from the HI-STORM Overpack* as the MPC is lowered past the exit vents. The HI-TRAC is placed on top of HI-STORM. Alignment *guides* ~~pins~~ (or alternate

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[1] *Vent duct shield inserts are only used on the HI-STORM 100.*

alignment methods) help guide HI-TRAC during this operation[2]. The MPC may be lowered using the MPC downloader, the main crane hook or other similar devices. The MPC downloader (if used) may be attached to the HI-TRAC lid or mounted to the overhead lifting device. The MPC lift slings are attached to the MPC lift cleats. The MPC is raised slightly, the transfer lid door locking pins are removed and the doors are opened. Optional trim plates may be installed on the top and bottom of both doors and secured using hand clamps. The trim plates eliminate radiation streaming above and below the doors. The MPC is lowered into HI-STORM. Following verification that the MPC is fully lowered, the MPC lift slings are disconnected from the lifting ~~structure~~ device and lowered onto the MPC lid. The trim plates are removed, the doors are closed and the locking pins are installed. *The empty HI-TRAC must be removed with the doors open when the HI-STORM 100S is used to prevent interference with the lift cleats and slings.* HI-TRAC is removed from on top of HI-STORM *and HI-STORM 100 is moved from under HI-TRAC as necessary.* The MPC lift slings and MPC lift cleats are removed. Hole plugs are installed in the empty MPC lifting holes to fill the voids left by the lift cleat bolts. The vent duct shield inserts *(if used)* and alignment guides are removed, the HI-STORM lid is installed, and *exit vent* gamma shield cross plates and ~~thermocouples~~ *temperature elements* (if used) are installed. The inlet[3] and exit vent screens are installed. The HI-STORM lid studs and nuts are installed and torqued. The ~~shielding effectiveness test is performed and~~ HI-STORM is secured to the transporter (as applicable) and moved to the ISFSI pad. ~~If necessary, the inlet vent screens are installed.~~ The HI-STORM Overpack and HI-TRAC transfer cask may be moved using a number of methods as long as the lifting equipment requirements in the Technical Specification are met. *For sites with high seismic conditions, the HI-STORM 100A is anchored to the ISFSI.* Once located at the storage pad, *the inlet vent gamma shield cross plates are installed and the shielding effectiveness test is performed. Finally,* the ~~thermocouple~~ *temperature element* instrument connections are made (if used), and the air temperature rise testing (if required by the Technical Specifications) is performed to ensure that the system is functioning within its design parameters.

8.1.1.2 *Movement of a Loaded Overpack Without the Permanent Lid Installed*

For those users who complete the MPC transfer between the HI-TRAC transfer cask to the HI-STORM 100 or HI-STORM 100S overpack inside the Part 50 facility, the overpack may be moved from inside the Part 50 facility to outside the Part 50 facility (or vice versa) without the pernanent overpack lid installed under certain circumstances. In general, if space and floor loading permit, the permanent overpack lid should be installed prior to movement of the loaded overpack. However, it is recognized that some users' facilities may have physical restrictions, such as door clearances, that do not allow the loaded overpack to be moved with the permanent lid installed.

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2 *The alignment guide may be configured in many different ways to accommodate the specific sites. See Table 8.1.6.*

3 *Depending on the mode of transport, the inlet vents may be required to be left out until placement on the ISFSI pad. This may be required to allow jacks to be inserted into the HI-STORM 100 Overpack ducts.*

In these site-specific cases, two options apply. An optional temporary lid should be installed to provide supplemental shielding during the overpack move. Or, the loaded overpack may be moved with no lid installed. In both cases, the following administrative controls shall be implemented:

- *The overpack shall be support from below (e.g., on a rail car)*
- *Appropriate low speed and positive load control shall be maintained at all times during overpack movement to prevent lateral shifting of the load.*
- *The permanent overpack lid shall be installed as soon as practicable after the loaded overpack exits the Part 50 structure and adequate clearance is available for handling and installing the lid.*

8.1.2 HI-TRAC and HI-STORM Receiving and Handling Operations:

Note:
HI-TRAC may be received and handled in several different configurations and may be transported on-site in a horizontal or vertical orientation. This section provides general guidance for HI-TRAC and HI-STORM handling. Site-specific procedures shall specify the required operational sequences based on the handling configuration at the sites. Refer to the Technical Specifications for loaded HI-TRAC and HI-STORM 100 Overpack handling limitations.

1. Vertical Handling of HI-TRAC:
   a. Verify that the lift yoke load test certifications are current.
   b. Visually inspect the lifting device (lift yoke or lift links) and the lifting trunnions for gouges, cracks, deformation or other indications of damage. Replace or repair damaged components as necessary.
   c. Engage the lift yoke to the lifting trunnions. See Figure 8.1.3.
   d. Apply lifting tension to the lift yoke and verify proper engagement of the lift yoke.

Note:
Refer to the site's heavy load handling procedures for lift height, load path, floor loading and other applicable load handling requirements. Refer to Technical Specification 4.9 for additional equipment handling requirements.

Warning:
When lifting the loaded HI-TRAC with only the pool lid, the HI-TRAC should be carried as low as practicable. This minimizes the dose rates due to radiation scattering from the floor. Personnel should remain clear of the area and the HI-TRAC should be placed in position as soon as practicable.

e. Raise HI-TRAC and position it accordingly.

2. Upending of HI-TRAC in the transfer frame:

a. Position HI-TRAC under the lifting device. Refer to Step 1, above.

b. If necessary, remove the missile shield from the HI-TRAC transfer frame. See Figure 8.1.4.

c. Verify that the lift yoke load test certifications are current.

d. Visually inspect the lift yoke and the lifting trunnions for gouges, cracks, deformation or other indications of damage. Repair or replace damaged components as necessary.

e. *If necessary,* place a light layer of Fel-Pro Chemical Products, N-5000, Nuclear Grade Lubricant (or equivalent) on the cask trunnions and the palms of the lift yoke.

f. Engage the lift yoke to the lifting trunnions. See Figure 8.1.3.

g. Apply lifting tension to the lift yoke and verify proper engagement of the lift yoke.

h. Slowly rotate HI-TRAC to the vertical position keeping all rigging as close to vertical as practicable. See Figure 8.1.4.

i. Lift the pocket trunnions clear of the transfer frame rotation trunnions.

3. Downending of HI-TRAC in the transfer frame:

ALARA Warning:
A loaded HI-TRAC should only be downended with the transfer lid *or other auxiliary shielding* installed.

a. Position the transfer frame under the lifting device.

b. Verify that the lift yoke load test certifications are current.

c. Visually inspect the lift yoke and the lifting trunnions for gouges, cracks, deformation or other indications of damage. Repair or replace damaged components as necessary.

d. If necessary, place a light layer of Fel-Pro Chemical Products, N-5000, Nuclear Grade Lubricant (or equivalent) on the cask trunnions and the palms of the lift yoke.

e. Place a light layer of Fel-Pro Chemical Products, N-5000, Nuclear Grade Lubricant (or equivalent) on the inside surfaces of the cask rotation trunnion pockets and the corresponding surfaces of the transfer frame.

f. Engage the lift yoke to the lifting trunnions. See Figure 8.1.3.

g. Apply lifting tension to the lift yoke and verify proper lift yoke engagement.

h. Position the pocket trunnions to receive the transfer frame rotation trunnions. See Figure 8.1.4.

i. Slowly rotate HI-TRAC to the horizontal position keeping all rigging as close to vertical as practicable.

j. Disengage the lift yoke.

4. Horizontal Handling of HI-TRAC in the Transfer Frame:

a. Verify that the transfer frame is secured to the transport vehicle as necessary.

b. Downend HI-TRAC on the transfer frame per Step 3, if necessary.

c. If necessary, install the HI-TRAC missile Shield on the HI-STAR 100 transfer frame (See Figure 8.1.4).

5. Vertical Handling of HI-STORM:

Note:
The HI-STORM 100 Overpack is lifted using a special lifting device that connects the overhead lifting device (i.e. transporter or crane) to HI-STORM 100 lifting. The device is designed in accordance with ANSI N14.6 and maintains even (balanced) loading on all four HI-STORM 100 Overpack lift points.

a. Visually inspect the HI-STORM lifting device ~~*studs*~~ for gouges, cracks, deformation or other indications of damage.

b. Visually inspect the transporter attachment points for gouges, cracks, deformation or other indications of damage. Repair or replace damaged components as necessary.

c. If necessary, attach the transporter's lifting points to the HI-STORM *lifting device.*

d. Raise and position HI-STORM accordingly. See Figure 8.1.5.

6. Empty MPC Installation in HI-TRAC:

Note:
To avoid side loading the MPC lift lugs, the MPC must be upended in the MPC upending frame (or equivalent). See Figure 8.1.6.

a. If necessary, rinse off any road dirt with water. Remove any foreign objects from the MPC internals.

b. If necessary, upend the MPC as follows:

1. Visually inspect the MPC upending frame for gouges, cracks, deformation or other indications of damage. Repair or replace damaged components as necessary.

2. Install the MPC on the upending frame. Make sure that the banding straps are secure around the MPC shell. See Figure 8.1.6.

3. Inspect the upending frame slings in accordance with the site's lifting equipment inspection procedures. Rig the slings around the bar in a choker configuration to the outside of the cleats. See Figure 8.1.6.

4. Attach the MPC upper end slings of the upending frame to the main overhead lifting device. Attach the bottom-end slings to a secondary lifting device (or a chain fall attached to the primary lifting device) (See Figure 8.1.6).

5. Raise the MPC in the upending frame.

Warning:
The upending frame corner should be kept close to the ground during the upending process.

6. Slowly lift the upper end of the upending frame while lowering the bottom end of the upending frame.

7. When the MPC approaches the vertical orientation, tension on the lower slings may be released.

8. Place the MPC in a vertical orientation.

9. Disconnect the MPC straps and disconnect the rigging.

c. Install the MPC in HI-TRAC as follows:

1. Install the four point lift sling to the lift lugs inside the MPC. See Figure 8.1.7.

2. Raise and place the MPC inside HI-TRAC.

Note:
An alignment punch mark is provided on HI-TRAC and the top edge of the MPC. Similar marks are provided on the MPC lid and closure ring. See Figure 8.1.8.

3. Rotate the MPC so the alignment marks agree and seat the MPC inside HI-TRAC. Disconnect the MPC rigging or the MPC lift rig.

8.1.3 HI-TRAC and MPC Receipt Inspection and Loading Preparation

Note:

Receipt inspection, installation of the empty MPC in the HI-TRAC, and lower fuel spacer installation may occur at any location or be performed at any time prior to complete submersion in the spent fuel pool as long as appropriate steps are taken to prevent contaminating the exterior of the MPC or interior of the HI-TRAC.

ALARA Note:
A bottom protective cover may be attached to HI-TRAC pool lid bottom. This will help prevent imbedding contaminated particles in HI-TRAC bottom surface and ease the decontamination effort.

1. Place HI-TRAC in the cask receiving area. Perform appropriate contamination and security surveillances, as required.

2. If necessary, remove HI-TRAC top lid by removing the top lid bolts and using the lift sling. See Figure 8.1.9 for rigging.

   a. Rinse off any road dirt with water. Inspect all cavity locations for foreign objects. Remove any foreign objects.

   b. Perform a radiological survey of the inside of HI-TRAC to verify there is no residual contamination from previous uses of the cask.

3. Disconnect the rigging.

4. Store the top lid and bolts in a site-approved location.

5. If necessary, configure HI-TRAC with the pool lid as follows:

ALARA Warning:
The bottom lid replacement as described below may be performed only on an empty HI-TRAC.

   a. Inspect the seal on the pool lid for cuts, cracks, gaps and general condition. Replace the seal if necessary.

   b. Remove the bottom lid bolts and store them temporarily.

   c. Raise the empty HI-TRAC and position it on top of the pool lid. A circular tongue and groove arrangement helps align the pool lid with the HI-TRAC body.

   d. Inspect the pool lid bolts for general condition. Replace worn or damaged bolts with new bolts.

   e. Install the pool lid bolts. See Table 8.1.5 for torque requirements.

   f. If necessary, thread the drain connector pipe to the pool lid.

   g. Store the HI-TRAC Transfer Lid in a site-approved location.

6. At the site's discretion, perform an MPC receipt inspection and cleanliness inspection in accordance with a site-specific inspection checklist.

7. Install the MPC inside HI-TRAC and place HI-TRAC in the designated preparation area. See Section 8.1.2.

Note:
Upper fuel spacers are fuel-type specific. Not all fuel types require fuel spacers. *Upper fuel spacer installation may occur any time prior to MPC lid installation.*

8. Install the upper fuel spacers in the MPC lid as follows:

Warning:
Never work under a suspended load.

   a. Position the MPC lid on supports to allow access to the underside of the MPC lid.

b. Thread the fuel spacers into the holes provided on the underside of the MPC lid. See Figure 8.1.10 and Table 8.1.5 for torque requirements.

c. Install threaded plugs in the MPC lid where and when spacers will not be installed, if necessary. See Table 8.1.5 for torque requirements.

9. At the user's discretion perform an MPC lid and closure ring fit test:

Note:
It may be necessary to perform the MPC installation and inspection in a location that has sufficient crane clearance to perform the operation.

a. Visually inspect the MPC lid rigging (See Figure 8.1.9).

b. At the user's discretion, raise the MPC lid such that the drain line can be installed. Install the drain line to the underside of the MPC lid. Ensure that the reducer is fully seated against the bottom of the MPC lid. See Figure 8.1.11.

c. Align the MPC lid and lift yoke so the drain line will be positioned in the MPC drain location. See Figure 8.1.12. Install the MPC lid. Verify that the MPC lid fit and weld prep are in accordance with the design drawings.

ALARA Note:
The closure ring is installed by hand. ~~No tools are required~~*Some grinding may be required on the closure ring to adjust the fit.*

d. Install, *align and fit-up* the closure ring.

e. Verify that closure ring fit and weld prep are in accordance with the fabrication drawings or the approved design drawings.

f. Remove the closure ring, vent and drain port cover plates and the MPC lid. Disconnect the drain line. Store these components in an approved plant storage location.

10. At the user's discretion, perform an MPC vent and drain port cover plate fit test and verify that the weld prep is in accordance with the approved fabrication drawings.

Note:
Fuel spacers are fuel-type specific. Not all fuel types require fuel spacers. Lower fuel spacers are set in the MPC cells manually. No restraining devices are used.

11. Install lower fuel spacers in the MPC (if necessary). See Figure 8.1.10.

12. Fill the MPC and annulus as follows:

a. Fill the annulus with plant demineralized water to just below the inflatable seal seating surface.

Caution:
Do not use any sharp tools or instruments to install the inflatable seal. Some air in the inflatable seal helps in the installation.

b. Manually insert the inflatable annulus seal around the MPC. See Figure 8.1.13.

c. Ensure that the seal is uniformly positioned in the annulus area.

d. Inflate the seal to between 30 and 35 psig *or as directed by the manufacturer.*

e. Visually inspect the seal to ensure that it is properly seated in the annulus. Deflate, adjust and inflate the seal as necessary. Replace the seal as necessary.

ALARA Note:
Bolt plugs, placed in, or waterproof tape over empty bolt holes, reduce the time required for decontamination.

13. At the user's discretion, install HI-TRAC top lid bolt plugs and/or apply waterproof tape over any empty bolt holes.

ALARA Note:
Keeping the water level below the top of the MPC prevents splashing during handling.

14. Fill the MPC with either demineralized water or spent fuel pool water to approximately 12 inches below the top of the MPC shell. *Refer to LCO 3.3.1 for boron concentration requirements.*

15. If necessary for plant crane capacity limitations, drain the water from the neutron shield jacket. See Tables 8.1.1 through 8.1.4 *as applicable.*

16. Place HI-TRAC in the spent fuel pool as follows:

ALARA Note:
The term "Spent Fuel Pool" is used generically to refer to the users designated cask loading location. The optional annulus overpressure system is used to provide further protection against MPC external shell contamination during in-pool operations. The annulus overpressure system is equipped with *mechanisms* ~~double locking quick disconnects~~ to prevent inadvertent draining *and provide a slight overpressure of uncontaminated fluid to the HI-TRAC annulus. Depending on the user's plant configuration and available equipment, the annulus overpressure system may be connected, disconnected and operated in a different manner than described herein.*

a. If used, fill the annulus overpressure system lines and reservoir with demineralized water and close the reservoir valve. Attach the annulus overpressure system to the HI-TRAC. See Figure 8.1.14.

b. Verify spent fuel pool for boron concentration requirements in accordance with LCO 3.3.1.

c. Engage the lift yoke to HI-TRAC lifting trunnions and position HI-TRAC over the cask loading area with the basket aligned to the orientation of the spent fuel racks.

ALARA Note:
Wetting the components that enter the spent fuel pool may reduce the amount of decontamination work to be performed later.

d. Wet the surfaces of HI-TRAC and lift yoke with plant demineralized water while slowly lowering HI-TRAC into the spent fuel pool.

e. When the top of the HI-TRAC reaches the elevation of the reservoir, open the annulus overpressure system reservoir valve. Maintain the reservoir water level at approximately 3/4 full the entire time the cask is in the spent fuel pool.

f. Place HI-TRAC on the floor of the cask loading area and disengage the lift yoke. Visually verify that the lift yoke is fully disengaged. Remove the lift yoke from the spent fuel pool while spraying the crane cables and yoke with plant demineralized water.

g. Observe the annulus seal for signs of air leakage. If leakage is observed (by the steady flow of bubbles emanating from one or more discrete locations) then immediately remove the HI-TRAC from the spent fuel pool and repair or replace the seal.

8.1.4 MPC Fuel Loading

Note:
An underwater camera or other suitable viewing device may be used for monitoring underwater operations.

1. Perform a fuel assembly selection verification using plant fuel records to ensure that only fuel assemblies that meet all the conditions for loading as specified in Appendix B to CoC 72-1014 have been selected for loading into the MPC.

2. Load the pre-selected fuel assemblies into the MPC in accordance with the approved fuel loading pattern.

3. Perform a post-loading visual verification of the assembly identification to confirm that the serial numbers match the approved fuel loading pattern.

8.1.5 MPC Closure

Note:
The user may elect to use the lid retention system (See Figure 8.1.15) to assist in the installation of the MPC lid and lift yoke, and to provide the means to secure the MPC lid in the event of a drop accident during loaded cask handling operations outside of the spent fuel pool. The user is responsible for evaluating the additional weight imposed on the cask, lift yoke, crane and floor prior to use. See Tables 8.1.1 through 8.1.4 as applicable. *The following guidance describes installation of the MPC lid using the lift yoke. The MPC lid may also be installed separately.*

Depending on facility configuration, users may elect to perform MPC closure operations with the HI-TRAC partially submerged in the spent fuel pool. If opted, operations involving removal of the HI-TRAC from the spent fuel pool shall be sequenced accordingly.

1. Remove the HI-TRAC from the spent fuel pool as follows:

   a. Visually inspect the MPC lid rigging or lid retention system in accordance with site-approved rigging procedures. Attach the MPC lid to the lift yoke so that MPC lid, drain line and trunnions will be in relative alignment. Raise the MPC lid and adjust the rigging so the MPC lid hangs level as necessary.

   b. Install the drain line to the underside of the MPC lid. Ensure that the reducer is fully seated against the bottom of the MPC lid. See Figure 8.1.17.

   c. Align the MPC lid and lift yoke so the drain line will be positioned in the MPC drain location and the cask trunnions will also engage. See Figure 8.1.11 and 8.1.17.

ALARA Note:
Pre-wetting the components that enter the spent fuel pool may reduce the amount of decontamination work to be performed later.

   d. Slowly lower the MPC lid into the pool and insert the drain line into the drain access location and visually verify that the drain line is correctly oriented. See Figure 8.1.12.

   e. Lower the MPC lid while monitoring for any hang-up of the drain line. If the drain line becomes kinked or disfigured for any reason, remove the MPC lid and replace the drain line.

Note:
The outer diameter of the MPC lid will seat flush with the top edge of the MPC shell when properly installed.

   f. Seat the MPC lid in the MPC and visually verify that the lid is properly installed.

   g. Engage the lift yoke to HI-TRAC lifting trunnions.

   h. Apply a slight tension to the lift yoke and visually verify proper engagement of the lift yoke to the lifting trunnions.

ALARA Note:
Activated debris may have settled on the top face of HI-TRAC and MPC during fuel loading. The cask top surface should be kept under water until a preliminary dose rate scan clears the cask for removal. Users are responsible for any water dilution considerations.

   i. Raise HI-TRAC until the MPC lid is just below the surface of the spent fuel pool. Survey the area above the cask lid to check for hot particles. ~~Raise and flush the upper surface of HI-TRAC and MPC with plant demineralized water as necessary to r~~*R*emove any activated *or highly radioactive* particles from HI-TRAC or MPC.

   j. Visually verify that the MPC lid is properly seated. Lower HI-TRAC, reinstall the lid, and repeat ~~Step 5,~~ as necessary.

   k. Install the lid retention system bolts if the lid retention system is used.

l. Continue to raise the HI-TRAC under the direction of the plant's radiological control personnel. Continue rinsing the surfaces with demineralized water. When the top of the HI-TRAC reaches the same elevation as the reservoir, close the annulus overpressure system reservoir valve (if used). See Figure 8.1.14.

Caution:

Users are required to take necessary actions to prevent boiling of the water in the MPC. This may be accomplished by performing a site-specific analysis to identify a time limitation to ensure that water boiling will not occur in the MPC prior to the initiation of draining operations. Chapter 4 of the FSAR provides some sample time limits for the time to initiation of draining for various spent fuel pool water temperatures using design basis heat loads. These time limits may be adopted if the user chooses not to perform a site-specific analysis. If time limitations are imposed, users shall have appropriate procedures and equipment to take action. One course of action involves initiating an MPC water flush for a certain duration and flow rate. Any site-specific analysis shall identify the methods to respond should it become likely that the imposed time limit could be exceeded. *Refer to LCO 3.3.1 for boron concentration requirements whenever water is added to the loaded MPC.*

m. Remove HI-TRAC from the spent fuel pool while spraying the surfaces with plant demineralized water. Record the time.

ALARA Note:

Decontamination of HI-TRAC bottom should be performed using remote cleaning methods, covering or other methods to minimize personnel exposure. The bottom lid decontamination may be deferred *to a convenient and practical time and location.*~~until the after bottom lid replacement.~~ Any initial decontamination should only be sufficient to preclude spread of contamination within the fuel building.

n. Decontaminate HI-TRAC bottom and HI-TRAC exterior surfaces including the pool lid bottom. Remove the bottom protective cover, if used.

o. If used, disconnect the annulus overpressure system from the HI-TRAC via the quick disconnect. See Figure 8.1.14.

p. Set HI-TRAC in the designated cask preparation area.

Note:

If the transfer cask is expected to be operated in an environment below 32 °F, the water jacket shall be filled with an ethylene glycol solution (25% ethylene glycol). Otherwise, the jacket shall be filled with demineralized water. *Depending on weight limitations, the neutron shield jacket may remain filled. Users shall evaluate the cask weights to ensure that cask trunnion, lifting devices and equipment load limitations are not exceeded.*

q. If previously drained, fill the neutron shield jacket with plant demineralized water or an ethylene glycol solution (25% ethylene glycol) as necessary.

r. Disconnect the lifting slings or lid retention system (if used) from the MPC lid and disengage the lift yoke. Decontaminate and store these items in an approved storage location.

Warning:
MPC lid dose rates are measured to ensure that dose rates are within expected values. Dose rates exceeding the ~~429 mrem/hour~~ expected values could indicate that fuel assemblies not meeting the ~~Technical Specifications~~ CoC may have been loaded~~.~~.

s. Measure the dose rates at the MPC lid and verify that the combined gamma and neutron dose rate is below 429 mrem/hour.

t. Perform decontamination and a dose rate/contamination survey of HI-TRAC.

u. Prepare the MPC annulus for MPC lid welding as follows:

ALARA Note:
If the temporary shield ring is not used, some form of gamma shielding (e.g., lead bricks or blankets) should be placed in the trunnion recess areas of the HI-TRAC water jacket to eliminate the localized hot spot.

v. Decontaminate the area around the HI-TRAC top flange and install the temporary shield ring, (if used). See Figure 8.1.18.

ALARA Note:
The water in the HI-TRAC-to-MPC annulus provides personnel shielding. The level should be checked periodically and refilled accordingly.

w. Attach the drain line to the HI-TRAC drain port and lower the annulus water level approximately 6 inches.

2. Prepare for MPC lid welding as follows:

Note:
The following steps use two identical Removable Valve Operating Assemblies (RVOAs) (See Figure 8.1.16) to engage the MPC vent and drain ports. The MPC vent and drain ports are equipped with metal-to-metal seals to minimize leakage during ~~vacuum~~ drying, and to withstand the long-term effects of temperature and radiation. The RVOAs allow the vent and drain ports to be operated like valves and prevent the need to hot tap into the penetrations during unloading operations. The RVOAs are purposely not installed until the cask is removed from the spent fuel pool to reduce the amount of decontamination.

Note:
The vent and drain ports are opened by pushing the RVOA handle down to engage the square nut on the cap and turning the handle fully in the counter-clockwise direction. The handle will not turn once the port is fully open. Similarly, the vent and drain ports are closed by turning the handle fully in the clockwise direction. The ports are closed when the handle cannot be turned further.

Note:

Steps involving preparation for welding may occur in parallel as long as precautions are taken to prevent contamination of the annulus.

a. Clean the vent and drain ports to remove any dirt. Install the RVOAs (See Figure 8.1.16) to the vent and drain ports leaving caps open.

ALARA Warning:

Personnel should remain clear of the drain hoses any time water is being pumped or purged from the MPC. Assembly crud, suspended in the water, may create a radiation hazard to workers. Controlling the amount of water pumped from the MPC prior to welding keeps the fuel assembly cladding covered with water yet still allows room for thermal expansion.

b. Attach the water pump to the drain port (See Figure 8.1.19) and pump ~~between approximately~~ *between* 50 *and*~~to~~ 120 gallons to the spent fuel pool or liquid radwaste system. The water level is lowered to keep moisture away from the weld region.

c. Disconnect the water pump.

d. Carefully decontaminate the MPC lid top surface and the shell area above the inflatable annulus seal.

e. Deflate and remove the inflatable annulus seal.

ALARA Note:

The MPC exterior shell survey is performed to evaluate the performance of the inflatable annulus seal. Indications of contamination could require the MPC to be unloaded. In the event that the MPC shell is contaminated, users must decontaminate the annulus. If the contamination cannot be reduced to acceptable levels, the MPC must be returned to the spent fuel pool and unloaded. The MPC may then be removed and the external shell decontaminated.

f. Survey the MPC lid top surfaces and the accessible areas of the top three inches of the MPC shell in accordance with the requirements of Technical Specification LCO 3.2.2.

ALARA Note:

The annulus shield is used to prevent objects from being dropped into the annulus and helps reduce dose rates directly above the annulus region. ~~The annulus shield is hand installed and requires no tools.~~

g. Install the annulus shield. See Figure 8.1.13.

3. Weld the MPC lid as follows:

ALARA Warning:

Grinding of MPC welds may create the potential for contamination. All grinding activities shall be performed under the direction of radiation protection personnel.

ALARA Warning:
It may be necessary to rotate or reposition the MPC lid slightly to achieve uniform weld gap and lid alignment. A punch mark is located on the outer edge of the MPC lid and shell. These marks are aligned with the alignment mark on the top edge of the HI-TRAC Transfer Cask (See Figure 8.1.8). If necessary, the MPC lid lift should be performed using a hand operated chain fall to closely control the lift to allow rotation and repositioning by hand. If the chain fall is hung from the crane hook, the crane should be tagged out of service to prevent inadvertent use during this operation. Continuous radiation monitoring is recommended.

a. If necessary center the lid in the MPC shell using a hand-operated chain fall.

Note:
The MPC is equipped with lid shims that serve to close the gap in the joint for MPC lid closure weld.

b. As necessary, install the MPC lid shims around the MPC lid to make the weld gap uniform.

ALARA Note:
The AWS Baseplate shield is used to further reduce the dose rates to the operators working around the top cask surfaces.

c. Install the automated welding system. See Figure 8.1.9 for rigging.

Note:
It may be necessary to remove the RVOAs to allow access for the automated welding system. In this event, the vent and drain port caps should be opened to allow for thermal expansion of the MPC water.

d. Tack weld the MPC lid.

e. Visually inspect the tack welds.

Note:

The Lid-to-Shell weld may be examined by either volumetric examination (UT) or multi-layer liquid penetrant examination. If volumetric examination is used, it shall be the ultrasonic method and shall include a liquid penetrant (PT) of the root and final weld layers. If PT alone is used, at a minimum, it must include the root and final weld layers and each 3/8-inch of weld depth.

For all liquid penetrant examinations in this procedure, ASME Boiler and Pressure Vessel Code [8.1.3], Section V, Article 6 provides the liquid penetrant examination methods. The acceptance standards for liquid penetrant examination shall be in accordance with ASME Boiler and Pressure Vessel Code, Section III, Subsection NB, Article NB-5350 as specified on the Design Drawings. ASME Code, Section III, Subsection NB, Article NB-4450 provides acceptable requirements for weld repair. NDE personnel shall be qualified per the requirements of Section III and V of the Code or site-specific program.

Volumetric examination of the MPC Lid-to-Shell weld by ultrasonic test method is defined in ASME Boiler and Pressure Vessel Code, Section V, Article 5. The acceptance standards for UT examination are per Section III, Subsection NB, Article NB-5332 for UT as defined on the Design Drawings. NDE personnel shall be qualified per the requirements of Section III and V of the Code or site-specific program.

f. Lay the root weld.

g. Perform a liquid penetrant examination of the weld root.

h. Complete the MPC lid welding performing intermediate PTs as required.

i. Perform a liquid penetrant examination on the MPC lid final pass.

4. Perform hydrostatic and MPC leakage rate testing as follows:

Note:

Equipment configurations, other than those shown in the accompanying figures that achieve the same results, may also be used.

ALARA Note:

The leakage rates are determined before the MPC is drained for ALARA reasons. A weld repair is a lower dose activity if water remains inside the MPC.

a. Attach the drain line to the vent port and route the drain line to the spent fuel pool or the plant liquid radwaste system. See Figure 8.1.20 for the hydrostatic test arrangement.

ALARA Warning:

Water flowing from the MPC may carry activated particles and fuel particles. Apply appropriate ALARA practices around the drain line.

b. Fill the MPC with either spent fuel pool water or plant demineralized water until water is observed flowing out of the vent port drain hose. *Refer to LCO 3.3.1 for boron concentration requirements.*

c. Perform a hydrostatic test of the MPC as follows:

1. Close the drain valve and pressurize the MPC to 125 +5/-0 psig.

2. Close the inlet valve and monitor the pressure for a minimum of 10 minutes. The pressure shall not drop during the performance of the test.

3. Following the 10-minute hold period, visually examine the MPC lid-to-shell weld for leakage of water. The acceptance criteria is no observable water leakage.

4. Release the MPC internal pressure, disconnect the water fill line and drain line from the vent and drain port RVOAs leaving the vent and drain port caps open.

d. Repeat the liquid penetrant examination on the MPC lid final pass.

e. Attach a regulated helium supply (pressure set to *90*~~10~~+10/-0 psig) to the vent port and attach the drain line to the drain port as shown on Figure 8.1.21.

~~e.Reset the totalizer on the drain line.~~

f. Verify the correct pressure (pressure set to *90*~~10~~+10/-0 psig) on the helium supply and open the helium supply valve. Drain approximately twenty gallons~~as measured by the totalizer.~~.

g. Close the drain port valve and pressurize the MPC to *9*~~1~~0+10/-0 psig helium.

h. Close the vent port.

Note:
The leakage detector may detect residual helium in the atmosphere. If the leakage tests detects a leak, the area should be flushed with nitrogen or compressed air and the location should be retested. *Users may correlate the leakage rate acceptance criteria based on the conditions of the test.*

i. Perform a helium sniffer probe leakage rate test of the MPC lid-to shell weld in accordance with the Mass Spectrometer Leak Detector (MSLD) manufacturer's instructions and ANSI N14.5 [8.1.2]. The MPC Helium Leak Rate shall be < 5.0E-6 atm cc/sec (He) *based on a 1 atmosphere pressure differential across the weld joint*. See Technical Specification LCO 3.1.1.

j. Repair any weld defects in accordance with the site's approved weld repair procedures. Reperform the Ultrasonic (if necessary), PT, Hydrostatic and Helium Leakage tests if weld repair is performed.

5. Drain the MPC as follows:

a. Attach the drain line to the vent port and route the drain line to the spent fuel pool or the plant liquid radwaste system. See Figure 8.1.20.

ALARA Warning:
Water flowing from the MPC may carry activated particles and fuel particles. Apply appropriate ALARA practices around the drain line.

~~Attach the water fill line to the drain port (water pressure set to 15+5/-0 psig) and fill the MPC with either spent fuel pool water or plant demineralized water until water is observed flowing out of the drain line.~~

b. Disconnect the water fill and drain lines from the MPC leaving the vent port valve open to allow for thermal expansion of the MPC water.

ALARA Warning:
Dose rates will rise as water is drained from the MPC. Continuous dose rate monitoring is recommended.

c. Attach a regulated helium or nitrogen supply (pressure set to 2~~1~~5+5/-0 psig) to the vent port.

d. Attach a drain line to the drain port shown on Figure 8.1.21.

~~f.Reset the totalizer on the drain line.~~

e. Verify the correct pressure (pressure set to 25+5/-0) on the gas supply.

f. Open the gas supply valve and record the time at the start of MPC drain*ing*~~down~~.

Note:
An optional warming pad may be placed under the HI-TRAC Transfer Cask to replace the heat lost during the evaporation process of ~~vacuum~~ *MPC* drying. This may be used at the user's discretion for older and colder fuel assemblies to reduce vacuum drying times.

g. Start the warming pad, if used.

Note:
Users may continue to purge the ~~MPC~~MPC to remove as much water as possible.

h. Drain the water out of the MPC until water ceases to flow out of the drain line. Shut the gas supply valve. See Figure 8.1.21.

~~k.Record the volume of water (as measured on the totalizer) drained from the MPC.~~

i. Disconnect the gas supply line from the MPC.

j. Disconnect the drain line from the MPC.

6. ~~Vacuum~~ Dry the MPC as follows:

Note:

Vacuum drying *or moisture removal (for high burn-up fuel)* is performed to remove moisture and oxidizing gasses from the MPC. This ensures a suitable environment for long-term storage of spent fuel assemblies and ensures that the MPC pressure remains within design limits. The vacuum drying process *described herein* reduces the MPC internal pressure in stages. Dropping the internal pressure too quickly may cause the formation of ice in the fittings. Ice formation could result in incomplete removal of moisture from the MPC. *The moisture removal process limits bulk MPC temperatures by continuously circulating gas through the MPC. Steps 8.1.22a through h are used for vacuum drying. Steps 8.1.22i through k are used for moisture removal.*

a. *Attach the drying system (VDS) to the vent and drain port RVOAs. See Figure 8.1.22a for the vacuum drying system and 8.1.22b for the moisture removal system. Other equipment configurations that achieve the same results may also be used.* ~~Attach the vacuum drying system (VDS) to the vent and drain port RVOAs. See Figure 8.1.22.~~

Note:

The vacuum drying system may be configured with an optional fore-line condenser to increase vacuum pump efficiency. Water may need to be periodically drained. ~~The volume of condensed water should be measured and added to the water volume measured during MPC draining.~~ *Other equipment configurations that achieve the same results may be used.*

b. Reduce the MPC pressure to approximately 100 torr and throttle the VDS suction valve to maintain this pressure for approximately 15 minutes.

c. Reduce the MPC pressure to approximately 70 torr and throttle the VDS suction valve to maintain this pressure for approximately 15 minutes.

d. Reduce the MPC pressure to approximately 50 torr and throttle the VDS suction valve to maintain this pressure for approximately 15 minutes.

e. Reduce the MPC pressure to approximately 30 torr and throttle the VDS suction valve to maintain this pressure for approximately 15 minutes.

Note:

The vacuum drying system pressure will remain at about 30 torr until most of the liquid water has been removed from the MPC.

f. When the MPC pressure begins to drop (without any operator action), completely open the VDS suction valve and reduce the MPC pressure to below 3 torr.

g. Shut the VDS valves and verify a stable MPC pressure on the vacuum gage.

Note:
The MPC pressure may rise due to the presence of water in the MPC. The dryness test may need to be repeated several times until all the water has been removed. Leaks in the vacuum drying system, damage to the vacuum pump, and improper vacuum gauge calibration may cause repeated failure of the dryness verification test. These conditions should be checked as part of the corrective actions if repeated failure of the dryness verification test is occurring.

h. Perform the MPC drying pressure test in accordance with the Technical Specification LCO 3.1.1.

i. Attach the moisture removal system to the vent and drain port RVOAs. See Figure 8.1.22b.

j. Circulate the drying gas though the MPC while monitoring the circulating gas for moisture. Collect and remove the moisture from the system as necessary.

k. Continue the monitoring and moisture removal until LCO 3.1.1 is met for MPC dryness. Discontinue MPC drying operations.

l. If necessary, attach the vacuum pump to the MPC.

Caution:
Limitations for the at-vacuum duration are evaluated and established on a canister basis to ensure that acceptable cladding temperatures are not exceeded although a time limit of less than 2 hours at vacuum will bound any MPC.

~~i.~~*m. Evacuate the MPC to below 10 torr.*

n. Close the vent and drain port valves.

~~j.~~*o.* Disconnect the VDS from the MPC.

~~k.~~*p.* Stop the warming pad, if used.

~~l.~~*q.* Close the drain port RVOA cap and remove the drain port RVOA.

7. Backfill the MPC as follows:

Note:
Helium backfill shall be in accordance with the Technical Specification at 99.995% (minimum) purity. *Other equipment configurations that achieve the same results may be used.*

a. *Set the helium bottle regulator pressure to 70+5/-0 psig.*

b. *Purge the* helium backfill system *to remove oxygen from the lines.*

c. *Attach the* helium backfill system *to the vent port as shown on Figure 8.1.23 and open the vent port.*

d. *Slowly open the helium supply valve while monitoring the pressure rise in the MPC.*

Note: *If helium bottles need to be replaced, the bottle valve needs to be closed and the entire regulator assembly transferred to the new bottle.*

e. *Carefully backfill the MPC to greater than 0 psig and less than the maximum pressure specified in LCO 2.1.1.*

f. *Disconnect the* helium backfill system *from the MPC.*

g. *Close the vent port RVOA and disconnect the vent port RVOA.*

~~**Note:**~~   ~~If helium bottles need to be replaced, the bottle valve needs to be closed and the entire regulator assembly transferred to the new bottle.~~

~~h.Backfill the MPC to between M_{max} and M_{min} as determined in Step. and verify correct helium density per Technical Specification LCO 3.1.1.~~

~~i.Disconnect the HBS from the MPC.~~

~~j.Close the vent port RVOA and disconnect the vent port RVOA.~~

8. Weld the vent and drain port cover plates as follows:

Note: *The process provided herein may be modified to perform actions in parallel. Users may perform the final PT on the circumferential and plug welds at the same time.*

a. Wipe the inside area of the vent and drain port recesses to dry and clean the surfaces.

b. Place the cover plate over the vent port recess.~~Raise the edge of the cover plate and insert the nozzle of the helium supply into the vent port recess to displace the oxygen with helium.~~

~~**Note:**~~   ~~Helium gas is required to be injected into the port recesses to ensure that the leakage test is valid.~~

~~d.Displace the air in the recess using the helium nozzle and immediately close the cover plate.~~

Note: *The vent and drain ports are provided with two small threaded holes for the injection of helium. The set screws may be installed or removed during welding.*

c. Tack weld the cover plate.

d. Visually inspect the tack welds.

e. Weld the root pass on the vent port cover plate.

Note:
ASME Boiler and Pressure Vessel Code [8.1.3], Section V, Article 6 provides the liquid penetrant inspection methods. The acceptance standards for liquid penetrant examination shall be in accordance with ASME Boiler and Pressure Vessel Code, Section III, Subsection NB, Article NB-5350 as specified on the Design Drawings. ASME Code, Section III, Subsection NB, Article NB-4450 provides acceptable requirements for weld repair. NDE personnel shall be qualified per the requirements of Section V of the Code or site-specific program.

f. Perform a liquid penetrant examination on the vent port cover plate root weld.

g. Complete the vent port cover plate welding.

Note:
ASME Boiler and Pressure Vessel Code [8.1.3], Section V, Article 6 provides the liquid penetrant inspection methods. The acceptance standards for liquid penetrant examination shall be in accordance with ASME Boiler and Pressure Vessel Code, Section III, Subsection NB, Article NB-5350 as specified on the Design Drawings. ASME Code, Section III, Subsection NB, Article NB-4450 provides acceptable requirements for weld repair. NDE personnel shall be qualified per the requirements of Section V of the Code or site-specific program.

h. Perform a liquid penetrant examination on the vent port cover weld.

i. Repeat for the drain port cover plate.

9. Perform a leakage test of the MPC vent and drain port cover plates as follows:

Note:
The leakage detector may detect residual helium in the atmosphere from the helium injection process. If the leakage tests detects a leak, the area should be blown clear with compressed air or nitrogen and the location should be retested.

Note:
The following process provides a high concentration of helium gas in the cavity. Other methods that ensure a high concentration of helium gas are also acceptable.

a. *If necessary, remove the cover plate set screws.*

b. *Flush the cavity with helium to remove the air and immediately install the set screws recessed ¼-inch below the top of the cover plate.*

c. *Plug weld the recess above each set screw to complete the penetration closure welding.*

Note:
ASME Boiler and Pressure Vessel Code [8.1.3], Section V, Article 6 provides the liquid penetrant inspection methods. The acceptance standards for liquid penetrant examination shall be in accordance with ASME Boiler and Pressure Vessel Code, Section III, Subsection NB, Article NB-5350 as specified on the Design Drawings. ASME Code, Section III, Subsection NB, Article NB-4450 provides acceptable requirements for weld repair. NDE personnel shall be qualified per the requirements of Section V of the Code or site-specific program.

d. *Perform a liquid penetrant examination on the plug weld.*

e. Flush the area around the vent and drain cover plates with compressed air or nitrogen to remove any residual helium gas.

f. Perform a helium leakage rate test of vent and drain cover plate welds in accordance with the Mass Spectrometer Leak Detector (MSLD) manufacturer's instructions and ANSI N14.5 [8.1.2]. The MPC Helium Leak Rate acceptance criteria is provided in the Technical Specification LCO 3.1.1.

g. Repair any weld defects in accordance with the site's approved code weld repair procedures. Re-perform the leakage test as required.

10. Weld the MPC closure ring as follows:

ALARA Note:
The closure ring is installed by hand. No tools are required. *Localized grinding to achieve the desired fit and weld prep are allowed.*

a. Install and align the closure ring. See Figure 8.1.8.

b. Tack weld the closure ring to the MPC shell and the MPC lid.

c. Visually inspect the tack welds.

d. Lay the root weld between the closure ring and the MPC shell.

e. Lay the root weld between the closure ring and the MPC lid.

f. Lay the root weld connecting the two closure ring segments.

Note:
ASME Boiler and Pressure Vessel Code [8.1.3], Section V, Article 6 provides the liquid penetrant inspection methods. The acceptance standards for liquid penetrant examination shall be in accordance with ASME Boiler and Pressure Vessel Code, Section III, Subsection NB, Article NB-5350 as specified on the Design Drawings. ASME Code, Section III, Subsection NB, Article NB-4450 provides acceptable requirements for weld repair. NDE personnel shall be qualified per the requirements of Section V of the Code or site-specific program.

g. Perform a liquid penetrant examination on the closure ring root welds.

h. Complete the closure ring welding.

Note:
ASME Boiler and Pressure Vessel Code [8.1.3], Section V, Article 6 provides the liquid penetrant inspection methods. The acceptance standards for liquid penetrant examination are contained in the ASME Boiler and Pressure Vessel Code, Section III, Subsection NB, Article NB-5350. ASME Code, Section III, Subsection NB, Article NB-4450 provides acceptable requirements for weld repair. NDE personnel shall be qualified per the requirements of Section V of the Code or site-specific program.

i. Perform a liquid penetrant examination on the closure ring final weld.

~~j. Remove the automated welding system.~~

j. If necessary, remove the AWS ~~baseplate shield~~. See Figure 8.1.7 for rigging.

8.1.6 Preparation for Storage

ALARA Warning:
Dose rates will rise around the top of the annulus as water is drained from the annulus. Apply appropriate ALARA practices.

1. Remove the annulus shield *(if used)* and store it in an approved plant storage location
2. Attach a drain line to the HI-TRAC and drain the remaining water from the annulus to the spent fuel pool or the plant liquid radwaste system.
3. Install HI-TRAC top lid as follows:

Warning:
When traversing the MPC with the HI-TRAC top lid *using non-single-failure proof (or equivalent safety factors)*, the lid shall be kept less than 2 feet above the top surface of the MPC. This is performed to protect the MPC lid from a potential lid drop.

a. Install HI-TRAC top lid. Inspect the bolts for general condition. Replace worn or damaged bolts with new bolts.

b. Install and torque the top lid bolts. See Table 8.1.5 for torque requirements.

4. Inspect the lift cleat bolts for general condition. Replace worn or damaged bolts with new bolts.
5. Install the MPC lift cleats and MPC support stays to the MPC lid and torque the bolts. See Figure 8.1.24 and 8.1.25. See Table 8.1.5 for torque requirements.
6. Drain the temporary shield ring, if used. Remove the ring segments (or site-supplied temporary shielding) and store them in an approved plant storage location.
7. Replace the pool lid with the transfer lid as follows:

ALARA Note:
The transfer slide is used to perform the bottom lid replacement and eliminate the possibility of directly exposing the bottom of the MPC. The transfer slide consists of the glide rails, rollers, transfer step and carriage. The transfer slide carriage and jacks are powered and operated by remote control. The carriage consists of ~~four~~ short-stroke hydraulic jacks that raise the carriage to support the weight of the bottom lid. The transfer step produces a tight level seam between the transfer lid and the pool lid to minimize radiation streaming. The transfer slide jacks do not have sufficient lift capability to support the entire weight of the HI-TRAC. This was selected specifically to limit floor loads. Users should designate a specific area that has sufficient room and support for performing this operation.

Note:
The following steps are performed to pretension the MPC support stays.

a. Lower the lift yoke and attach the MPC support stays to the lift yoke. See Figure 8.1.25.

b. Rise the lift yoke and engage the lift yoke to the HI-TRAC lifting trunnions.

Note:
The MPC lift cleats and support stays provide redundant support of the MPC during the bottom lid replacement.

c. If necessary, position the transfer step and transfer lid adjacent to one another on the transfer slide carriage. See Figure 8.1.26. See Figure 8.1.9 for transfer step rigging.

d. Test the travel and lift features of the transfer slide to ensure its operability.

e. Position HI-TRAC with the pool lid centered over the transfer step approximately one inch above the transfer step.

f. Raise the transfer slide carriage so the transfer step is supporting the pool lid bottom. Remove the bottom lid bolts and store them temporarily.

ALARA Warning:
Clear all personnel away from the immediate operations area. The transfer slide carriage and jacks are remotely operated. The carriage has fine adjustment features to allow precise positioning of the lids.

g. Lower the transfer carriage and position the transfer lid under HI-TRAC.

h. Raise the transfer slide carriage to place the transfer lid against the HI-TRAC bottom lid bolting flange.

i. Inspect the transfer lid bolts for general condition. Replace worn or damaged bolts with new bolts.

j. Install the transfer lid bolts. See Table 8.1.5 for torque requirements.

k. Raise and remove the HI-TRAC from the transfer slide.

l. Disconnect the MPC support stays and store them in an approved plant storage location.

Note:
HI-STORM receipt inspection *and preparation* may be performed independent of procedural sequence.

8. Perform a HI-STORM receipt inspection and cleanliness inspection in accordance with a site-approved inspection checklist, if required. See Figure 8.1.27 for HI-STORM lid rigging.

Note:

MPC transfer may be performed in the cask receiving area, at the ISFSI, or any other location deemed appropriate by the licensee. The following steps describe the general transfer operations (See Figure 8.1.28). The HI-STORM may be positioned on an air pad, roller skid in the cask receiving area or at the ISFSI. The HI-STORM or HI-TRAC may be transferred to the ISFSI using a heavy haul transfer trailer, special transporter or other equipment specifically designed for such a function (See Figure 8.1.29) as long as the HI-TRAC and HI-STORM lifting requirements as described in the Technical Specifications are not exceeded. The licensee is responsible for assessing and controlling floor loading conditions during the MPC transfer operations. *Installation of the lid, vent screen, and other components may vary according to the cask movement methods and location of MPC transfer.*

8.1.7 Placement of HI-STORM into Storage

1. Position an empty HI-STORM module at the designated MPC transfer location. The HI-STORM may be positioned on the ground, on a deenergized air pad, on a roller skid, ~~or~~ on a flatbed trailer *or other special device designed for such purposes*. If necessary, remove the exit vent screens and gamma shield cross plates *,temperature elements* and the HI-STORM lid. See Figure 8.1.28 for some of the various MPC transfer options.
   a. Rinse off any road dirt with water. Inspect all cavity locations for foreign objects. Remove any foreign objects.
   b. Transfer the HI-TRAC to the MPC transfer location.
2. Deenergize the air pad or chock the vehicle wheels to prevent movement of the HI-STORM during MPC transfer and to maintain level, as required.

ALARA Note:

The HI-STORM vent duct shield inserts eliminate the streaming path created when the MPC is transferred past the exit vent ducts. *Vent duct shield inserts are not used with the HI-STORM 100S.*

3. If necessary, iInstall the HI-STORM vent duct shield inserts in the HI-STORM exit vents. See Figure 8.1.30.
4. Install the alignment *guides*. See Figure 8.1.31 (detail).

Warning:

Depending on the specific site and mode of transfer operation selected, the HI-TRAC may require independent support by the lifting device or independent restraint on top of HI-STORM 100 during the MPC transfer operations. This may be achieved by maintaining continuous hold of the HI-TRAC by the lifting device or by the use of mechanical restraints securing the HI-TRAC in position.

5. Position *HI-TRAC* above HI-STORM. See Figures 8.1.28 and 8.1.31.
6. Align HI-TRAC over HI-STORM (See Figure 8.1.31) and mate the overpacks.

7. If necessary, *attach* ~~install the~~ *the* MPC downloader. ~~on top of HI-TRAC.~~ See Figure 8.1.32.

8. Attach the MPC lift slings to the MPC lift cleats.

9. Raise the MPC slightly to remove the weight of the MPC from the transfer lid doors.

10. Remove the transfer lid door locking pins and open the doors.

ALARA Warning:

MPC trim plates are used to eliminate the streaming path above and below the doors. If trim plates are not used, personnel should remain clear of the immediate door area during MPC downloading since there may be some radiation streaming during MPC raising and lowering operations.

11. At the user's discretion, install trim plates to cover the gap above and below the door. The trim plates may be secured using hand clamps or any other method deemed suitable by the user. See Figure 8.1.33.

12. Lower the MPC into HI-STORM.

13. Disconnect the slings from the MPC lifting device and lower them onto the MPC lid. ~~Remove the trim plates (if used), close the doors and install the locking pins. See Table 8.1.5 for torque requirements.~~

ALARA Warning:

Personnel should remain clear (to the maximum extent practicable) of the HI-STORM annulus when HI-TRAC is removed due to radiation streaming.

Note:

It may be necessary, due to site-specific circumstances, to move HI-STORM from under the empty HI-TRAC to install the HI-STORM lid, while inside the Part 50 facility. In these cases. users shall evaluate the specifics of their movements within the requirements of their Part 50 license.

14. Remove HI-TRAC from on top of HI-STORM.

15. Remove the MPC lift cleats and MPC lift slings and install hole plugs in the empty MPC bolt holes. See Table 8.1.5 for torque requirements.

16. Place HI-STORM in storage as follows:

    a. Remove the HI-STORM vent duct shield inserts *(if used)*. See Figure 8.1.30.

    b. Inspect the HI-STORM lid studs nuts for general condition. Replace worn or damaged components with new ones.

    c. *If used, inspect the HI-STORM 100A anchor components for general condition. Replace worn or damaged components with new ones.*

    ~~c.~~*d.* Remove the *alignment guides* and install the four studs to full (bottomed-out) engagement.

Warning:
Unless the lift is single-failure proof (or equivalent safety factor) the HI-STORM lid, the lid shall be kept less than 2 feet above the top surface of the overpack. This is performed to protect the *MPC* lid from a potential HI-STORM 100 lid drop.

Note:
Shims may be needed on the HI-STORM 100 lid studs. The shims shall be positioned to ensure a radial gap of less than 1/16 inch around each stud. *The method of cask movement will determine the most effective sequence for vent screen, lid, temperature element, and vent gamma shield cross plate installation.*

~~d.~~*e.* Install the HI-STORM lid and install the lid nuts.. See Table 8.1.5 for bolting requirements. Install the HI-STORM 100 lid stud shims if necessary. See Figure 8.1.27 for rigging.

~~e.~~*f.* Install the HI-STORM exit vent gamma shield cross plates, ~~thermocouples~~ *temperature elements (if used)* and vent screens. See Table 8.1.5 for torque requirements. See Figure 8.1.34a and 8.1.34b.

~~f.~~*g.* Remove the HI-STORM lid lifting device and install the hole plugs in the empty holes. Store the lifting device in an approved plant storage location. See Table 8.1.5 for torque requirements.

~~g.Perform shielding effectiveness testing per Technical Specification LCO 3.2.3.~~

h. Secure HI-STORM to the *transporter* ~~transfer~~ device as necessary.

17. Perform a transport route walkdown to ensure that the cask transport conditions are met. See Technical Specification for the on-site cask handling limitations.

~~a.~~*18.* Transfer the HI-STORM to its designated storage location at the appropriate pitch. See Figure 8.1.35.

Note:
Any jacking system shall have the provisions to ensure uniform loading of all four jacks during the lifting operation.

~~b.~~*a.* If air pads were used, insert the HI-STORM lifting jacks and raise HI-STORM. See Figure 8.1.36. Remove the air pad.

~~c.~~*b.* Lower and remove the HI-STORM lifting jacks, if used.

c. *For HI-STORM 100A overpack (anchored), perform the following:*

1. *Inspect the anchor stud receptacles and very that they are clean and ready for receipt of the anchor hardware.*
2. *Align the overpack over the anchor location.*
3. *Lower the overpack to the ground while adjusting for alignment.*

~~18.~~*4.* *Install the anchor connecting hardware (See Table 8.1.5 for torque requirements).*

19. *Install the HI-STORM inlet vent gamma shield cross plates and vent screens. See Table 8.1.5 for torque requirements. See Figure 8.1.34.*

20. *Perform shielding effectiveness testing per Technical Specification LCO 3.2.3.*

~~19.~~*21.* Perform an air temperature rise test as follows for the first HI-STORM 100 System placed in service:

Note:
The air temperature rise test shall be performed between 5 and 7 days after installation of the HI-STORM 100 lid to allow thermal conditions to stabilize. The purpose of this test is to confirm the initial performance of the HI-STORM 100 ventilation system.

a. Measure the inlet air (or screen surface) temperature at the center of each of the four vent screens. Determine the average inlet air (or surface screen) temperature.

b. Measure the outlet air (or screen surface) temperature at the center of each of the four vent screens. Determine the average outlet air (or surface screen) temperature.

c. Determine the average air temperature rise by subtracting the results of the average inlet screen temperature from the average outlet screen temperature.

d. Report the results to the certificate holder.

Table 8.1.1
HI-STORM 100 SYSTEM COMPONENT AND HANDLING WEIGHTS
125-TON HI-TRAC

Component	MPC-24 (Lbs.)	MPC-32 (Lbs.)	MPC-68 (Lbs.)	Case[4] Applicability					
				1	2	3	4	5	6
Empty HI-STORM 100 overpack (without lid)[5]	245,040	245,040	245,040					1	
HI-STORM 100 lid (without rigging)	23,963	23,963	23,963					1	
Empty HI-STORM 100S overpack (without lid)[4]	226,326	226,326	226,326					1	
HI-STORM 100S lid (without rigging)	24,905	24,905	24,905					1	
Empty MPC (without lid or closure ring including drain line)	29,845	24,503	29,302	1	1	1	1	1	1
MPC lid (without fuel spacers or drain line)	9677	9677	10,194	1	1	1	1	1	1
MPC Closure Ring	145	145	145			1	1	1	1
Fuel (design basis)	40,320	53,760	47,600	1	1	1	1	1	1
Damaged Fuel Container (Dresden 1)	0	0	150						
Damaged Fuel Container (Humboldt Bay)	0	0	120						
MPC water (with fuel in MPC)	17,630	17,630	16,957	1	1				
Annulus Water	256	256	256	1	1				
HI-TRAC Lift Yoke (with slings)	3600	3600	3600	1	1	1			
Annulus Seal	50	50	50	1	1				
Lid Retention System	2300	2300	2300						
Transfer frame	6700	6700	6700						1
Empty HI-TRAC (without Top Lid, neutron shield jacket water, or bottom lids)	117,803	117,803	117,803	1	1	1			1
HI-TRAC Top Lid	2745	2745	2745			1			1
HI-TRAC Pool Lid (with bolts)	11,871	11,871	11,871	1	1				
HI-TRAC Transfer Lid (with bolts)	23,437	23,437	23,437			1			1
HI-TRAC Neutron Shield Jacket Water	8281	8281	8281		1	1			1
MPC Stays (total of 2)	200	200	200						
MPC Lift Cleat	480	230	480			1	1		1

[4] See Table8.1.2 for a description of each load handling case.
[5] Add an additional 1955 lbs. for the HI-STORM 100A overpack.

TABLE 8.1.2
MAXIMUM HANDLING WEIGHTS
125-TON HI-TRAC

Caution:
The maximum weight supported by the 125-Ton HI-TRAC lifting trunnions cannot exceed 250,000 lbs. Users must take actions to ensure that this limit is not exceeded.

Note:
The weight of the fuel spacers and the damaged fuel container are less than the weight of the design basis fuel assembly for each MPC and are therefore not included in the maximum handling weight calculations. Fuel spacers are determined to be the maximum combination weight of fuel + spacer. Users should determine their specific handling weights based on the MPC contents and the expected handling modes.

Case No.	*Load Handling Evolution*	*Weight (lbs)*		
		MPC-24	*MPC-32*	*MPC-68*
1	*Loaded HI-TRAC removal from spent fuel pool (neutron tank empty)*	*231,052*	*239,150*	*237,633*
2	*Loaded HI-TRAC removal from spent fuel pool (neutron tank full)*	*239,334*	*247,432*	*245,915*
3	*Loaded HI-TRAC During Movement through Hatchway*	*236,334*	*244,182*	*243,588*
4	*MPC during transfer operations*	*80,467*	*88,315*	*87,721*
5A	*Loaded HI-STORM 100 in storage (See Note 5 to Table 8.1.1)*	*348,990*	*357,088*	*356,244*
5B	*Loaded HI-STORM 100S in storage (See Note 5 to Table 8.1.1)*	*331,218*	*339,316*	*338,472*
6	*Loaded HI-TRAC and transfer frame during on site handling*	*239,434*	*247,282*	*246,688*

Table 8.1.3
HI-STORM 100 SYSTEM COMPONENT AND HANDLING WEIGHTS
100-TON HI-TRAC

Component	*MPC-24 (Lbs.)*	*MPC-32 (Lbs.)*	*MPC-68 (Lbs.)*	*Case[6] Applicability*					
				1	*2*	*3*	*4*	*5*	*6*
Empty HI-STORM 100 overpack (without lid) (See Note 5 to Table 8.1.1)	245,040	245,040	245,040					1	
HI-STORM 100 lid (without rigging)	23,963	23,963	23,963					1	
Empty HI-STORM 100S overpack (without lid) (See Note 5 to Table 8.1.1)	226,326	226,326	226,326						
HI-STORM 100S lid (without rigging)	24,905	24,905	24,905						
Empty MPC (without lid or closure ring including drain line)	29,845	24,503	29,302	1	1	1	1	1	1
MPC lid (without fuel spacers or drain line)	9677	9677	10,194	1	1	1	1	1	1
MPC Closure Ring	145	145	145			1	1	1	1
Fuel (design basis)	40,320	53,760	47,600	1	1	1	1	1	1
Damaged Fuel Container (Dresden 1)	0	0	150						
Damaged Fuel Container (Humboldt Bay)	0	0	120						
MPC water (with fuel in MPC)	17,630	17,630	16,957	1	1				
Annulus Water	256	256	256	1	1				
HI-TRAC Lift Yoke (with slings)	3200	3200	3200	1	1	1			
Annulus Seal	50	50	50	1	1				
Lid Retention System	2300	2300	2300						
Transfer frame	6700	6700	6700						1
Empty HI-TRAC (without Top Lid, neutron shield jacket water, or bottom lids)	84,003	84,003	84,003	1	1	1			1
HI-TRAC Top Lid	1,189	1,189	1,189			1			1
HI-TRAC Pool Lid	7,863	7,863	7,863	1	1				
HI-TRAC Transfer Lid	16,686	16,686	16,686			1			1
HI-TRAC Neutron Shield Jacket Water	7,583	7,583	7,583		1	1			1
MPC Stays (total of 2)	200	200	200						
MPC Lift Cleat	480	480	480				1		1

6 *See Table 8.1.4 for a description of each load handling case.*

Table 8.1.4
MAXIMUM HANDLING WEIGHTS
100-TON HI-TRAC

Caution:
The maximum weight supported by the 100-Ton HI-TRAC lifting trunnions cannot exceed 200,000 lbs. Users must take actions to ensure that this limit is not exceeded.

Note:
The weight of the fuel spacers and the damaged fuel container are less than the weight of the design basis fuel assembly and therefore not included in the maximum handling weight calculations. Fuel spacers are determined to be the maximum combination weight of fuel + spacer. Users should determine the handling weights based on the contents to be loaded and the expected mode of operations.

Case No.	*Load Handling Evolution*	*Weight (lbs)*		
		MPC-24	*MPC-32*	*MPC-68*
1	*Loaded HI-TRAC removal from spent fuel pool (neutron tank empty)*	*192,844*	*200,942*	*199,425*
2	*Loaded HI-TRAC removal from spent fuel pool (neutron tank full)*	*200,427*	*208,525*	*207,008*
3	*Loaded HI-TRAC During Movement through Hatchway*	*192,647*	*200,745*	*199,901*
4	*MPC during transfer operations*	*80,467*	*88,565*	*87,721*
5~~a~~A	*Loaded HI-STORM 100 in storage (See Note 5 to Table 8.1.1)*	*348,990*	*357,088*	*356,244*
5B~~b~~	*Loaded HI-STORM 100S in storage (See Note 5 to Table 8.1.1)*	*331,218*	*339,316*	*338,472*
6	*Loaded HI-TRAC and transfer frame during on site handling*	*196,627*	*204,725*	*203,881*

Table 8.1.5
HI-STORM 100 SYSTEM TORQUE REQUIREMENTS

Fastener†	**Torque (ft-lbs)** ††	**Pattern**†††
HI-TRAC Top Lid Bolts†	*100*~~39~~ ft-lbs	Figure 8.1.37
HI-TRAC Pool Lid Bolts†	*100*~~58~~ ft-lbs	Figure 8.1.37
100-Ton HI-TRAC Transfer Lid Bolts†	203 ft-lbs	Figure 8.1.37
125-Ton HI-TRAC Transfer Lid Bolts†	270 ft-lbs	Figure 8.1.37
MPC Lift Cleats *Stud Nuts*~~Bolts~~†	453 ft-lbs	None
MPC Lift Hole Plugs†	Hand tight	None
Threaded Fuel Spacers	Hand Tight	None
HI-STORM Lid Nuts †	100 ft-lbs	None
HI-STORM 100S Lid Nuts† *(Temporary and Permanent Lids)*	*Hand Tight +1/8 to ½ turn*	*None*
Door Locking Pins	Hand Tight + 1/8 to 1/2 turn	None
HI-STORM 100 Vent Screen/~~Thermocouple~~ *Temperature Element* Screws	Hand Tight	None
HI-STORM 100A Anchor Studs	*55- 65 ksi tension applied by bolt tensioner (no initial torque)*	*None*

† ~~Bolts~~ *Studs and nuts* shall be cleaned and inspected for damage or excessive thread wear (replace if necessary) and coated with a light layer of Fel-Pro Chemical Products, N-5000, Nuclear Grade Lubricant (or equivalent).

†† Unless specifically specified, torques have a +/- 5% tolerance.

††† No detorquing pattern is needed.

Table 8.1.6
HI-STORM 100 SYSTEM ANCILLARY EQUIPMENT OPERATIONAL DESCRIPTION

Equipment	Important To Safety Classification	Reference Figure†	Description
Air Pads/Rollers	Not Important To Safety	8.1.29	Used for HI-STORM or HI-TRAC cask positioning. May be used in conjunction with the cask transporter or *other HI-STORM 100 or* HI-TRAC lifting device.
Annulus Overpressure System	Not Important To Safety	8.1.14	The annulus overpressure system is used for protection against spent fuel pool water contamination of the external MPC shell and baseplate surfaces by providing a slight annulus overpressure *during in-pool operations.*~~,~~
Annulus Shield	Not Important To Safety	8.1.13	A ~~segmented solid~~ shield that is placed at the top of the HI-TRAC annulus to provide supplemental shielding to the operators performing cask loading and closure operations.
Automated Welding System	Not Important To Safety	8.1.2b	Used for remote *field* welding of the MPC.~~lid, vent and drain port cover plates and the MPC closure ring.~~
AWS Baseplate Shield	Not Important To Safety	8.1.2b	*P*~~The AWS baseplate shield~~ provides supplemental shielding to the operators during the cask closure operations.
Bottom Lid Transfer Slide	Not Important To Safety	8.1.26	~~The Bottom Lid Transfer Slide is~~ *U*used to simultaneously replace the pool lid with the transfer lid under the suspended HI-TRAC and MPC. Used in conjunction with the bottom lid transfer step. ~~The transfer slide consists of the glide rails, rollers, transfer step and carriage. The transfer slide carriage and jacks are powered and operated by remote control. The transfer step produces a tight level seam between the transfer lid and the pool lid to minimize radiation streaming.~~
Cask Transporter	*Not Important to Safety unless site-specific conditions require transfer cask or overpack handling outside drop analysis basis.* ~~Determined by each licensee based on type and location, and height of lift being performed.~~	8.1.29a and 8.1.29b	Used for handling of the HI-STORM 100 Overpack and/or the HI-TRAC Transfer Cask around the site. The cask transporter may take the form of heavy haul transfer trailer, special transporter or other equipment specifically designed for such a function.
Cool-Down System	Not Important To Safety	8.3.4	*A* ~~a~~ closed-loop forced ventilation cooling system used to gas-cool the MPC fuel assemblies down to a temperature at which water can be introduced without the risk of uncontrolled pressure transients in the MPC due to flashing or thermally shocking the fuel assemblies. The ~~Cool-Down System~~*cool-down system* is attached between the MPC drain and vent ports. ~~The CDS consists of the piping, blower, heat exchanger, valves, instrumentation, and connectors.~~ The *cool-down system*~~CDS~~ is used only for unloading operations.

Table 8.1.6
HI-STORM 100 SYSTEM ANCILLARY EQUIPMENT OPERATIONAL DESCRIPTION
(Continued)

Equipment	Important To Safety Classification	Reference Figure†	Description
Lid and empty component lifting rigging	Not Important To Safety, Rigging shall be provided in accordance with ANSI N14.6.	8.1.9	Used for rigging such components *such* as the HI-TRAC *top* ~~upper shield~~ lid, pool lid, MPC lid, transfer lid, AWS ~~Baseplate shield~~, *HI-STORM Lid* and *auxiliary shielding and the*~~Automated Welding System Baseplate Shield~~ , empty MPC.
Helium Backfill System	Not Important To Safety	8.1.23	Used for *controlled insertion of* helium *into the* ~~backfilling of the~~ MPC *for leakage testing, blowdown and placement into storage.*~~ System consists of the gas lines, mass flow monitor, integrator, and valved quick disconnect.~~
HI-STORM 100 Lifting Jacks	Not Important To Safety	8.1.36	~~Four j~~Jack *systems* used for lifting the HI-STORM overpack for installation or removal of the air pad *or other low clearance lifting devices.*~~ The jacks are connected in series to ensure uniform lifting pressure is applied to the HI-STAR 100 ducts.~~
Alignment Guides	*Not Important To Safety*	*8.1.31*	*The alignment guides are used to provide alignment guidance during placement of HI-TRAC on top of HI-STORM for MPC transfers. The alignment guides may take several forms and may be attached to the bottom of HI-TRAC or the top of HI-STORM 100 or may be a separate component or components.*
HI-STORM Lifting Devices	Determined ~~by each licensee~~ *site-specifically* based on type, location, and height of lift being performed. Lifting devices shall be provided in accordance with ANSI N14.6.	Not shown.	*A special lifting device u*~~U~~sed for connecting the crane (or other primary lifting device) to the HI-STORM 100 for cask handling. Does not include the crane hook (or other primary lifting device) device. ~~The lifting device threaded into the HI-STORM 100 Overpack anchor blocks shall have shear area and strength properties (yield and ultimate) equivalent to the HI-STORM 100 Overpack lid studs. In addition the threaded components of the lifting device shall have a shoulder to ensure that the HI-STORM 100 lifting device cannot back-off.~~
HI-STORM Vent Duct Shield Inserts	Important to Safety Category B.	8.1.30	Used for prevention of radiation streaming from the HI-STORM *100* exit vents during MPC transfers to and from HI-STORM. *Not used with the HI-STORM 100S.*
HI-TRAC Drain Connector	Not Important To Safety	8.1.14	Used for *annulus* draining *and filing* ~~the annulus water following cask closure~~ operations. ~~The Drain~~
HI-TRAC Lift Yoke/Lifting Links	Determined ~~by each licensee~~ *site-specifically* based on type and location, and height of lift being performed. Lift yoke and lifting devices for loaded HI-TRAC handling shall be provided in accordance with ANSI N14.6.	8.1.3	Used for connecting the crane (or other primary lifting device) to the HI-TRAC for cask handling. Does not include the crane hook (or other primary lifting device) ~~device~~.

Table 8.1.6
HI-STORM 100 SYSTEM ANCILLARY EQUIPMENT OPERATIONAL DESCRIPTION
(Continued)

Equipment	Important To Safety Classification	Reference Figure†	Description
HI-TRAC transfer frame	Not Important To Safety	8.1.4	~~Optional.~~ A steel frame used to support HI-TRAC during *delivery,* on-site movement and upending/downending operations.
Cask Primary Lifting Device	Important to Safety *status determined site-specifically* ~~Category A.~~	8.1.28 and 8.1.32	An optional auxiliary (Non-Part 50) cask lifting device used for cask upending and downending and HI-TRAC raising for positioning on top of HI-STORM to allow MPC transfer. The device may consist of a crane, lifting platform, gantry system or any other suitable device used for such purpose.
Inflatable Annulus Seal	Not Important To Safety	8.1.13	Used to prevent spent fuel pool water from contaminating the external MPC shell and baseplate surfaces during in-pool operations.
Lid Retention System	*Important to* Safety ~~Related~~ Status determined by each licensee. MPC lid lifting portions of the lid retention system shall meet the requirements of ANSI N14.6.	8.1.15, 8.1.17	Optional. The lid retention system provides three functions; it *helps* guide~~s~~ the MPC lid into place during underwater installation, *helps* establish~~es~~ lift yoke alignment with the HI-TRAC trunnions, and *secures* ~~locks~~ the MPC lid in place during cask handling operations between the pool and decontamination pad.
MPC Lift Cleats	Important To Safety – Category A. MPC Lift Cleats shall requirements of ANSI N14.6.	8.1.24	*MPC lift cleats consist of the cleats and attachment hardware. The cleats are supplied as solid steel components that contain no weds. The MPC lift cleats are used* ~~Used~~ to secure the MPC inside HI-TRAC during bottom lid replacement and support the MPC during MPC transfer from HI-TRAC into HI-STORM and vice versa. *The ITS classification of the lifting device attached to the cleats may be lower than the cleat itself, as determined site-specifically.* ~~MPC cleats consist of the cleats and attachment bolts. Requires use of the MPC stays. The cleats are supplied as solid steel components that contain no welds.~~
Hydrostatic Test System	Not Important to Safety	8.1.20	Used to ~~hydrostatically~~ *pressure* test the MPC lid-to-shell weld.
MPC Downloader	Important To Safety *status determined site-specifically*~~—Category A (MPC supporting members only)~~. MPC Downloader Shall meet the requirements of *CoC, Appendix B, Section 3.5* ~~Technical Specification 4.9~~.	8.1.28 and 8.1.32	~~MPC Downloader is a single failure proof~~*A* ~~hydraulic~~ lifting device used *to help* ~~for~~ raise~~ing~~ and lower~~ing~~ the MPC during MPC transfer operations *to limit the lift force of the MPC against the top lid of HI-TRAC.* ~~.~~*The MPC downloader may take several forms depending on the location of MPC transfer and may be used in conjunction with other lifting devices.*

Table 8.1.6
HI-STORM 100 SYSTEM ANCILLARY EQUIPMENT OPERATIONAL DESCRIPTION
(Continued)

Equipment	Important To Safety Classification	Reference Figure†	Description
MPC Drain Line	Not Important To Safety	8.1.21	Used for MPC *gas and* water *transfer operations.*~~raising and lowering operations. Consists of the drain hose and adapter for the MPC drain and vent RVOAs.~~
MPC Fill Pump System	Not Important To Safety	Not shown	Large pump used for filling the MPC with spent fuel pool water prior to cask insertion into the spent fuel pool. Also used for emptying of the MPC for unloading operations.
MPC Support Stays	Important To Safety – Category A – Stays shall meet requirements of ANSI N14.6.	8.1.25	Used to secure the MPC to the lift yoke during HI-TRAC bottom lid replacement operations. Attaches between the MPC lift cleats and the lift yoke. Can be configured for *different* ~~single pin or dual pin~~ crane hook configuration. ~~Requires special lift yoke-to-crane hook pin(s). The stays may be removed for inspection, load testing and replacement.~~
MPC Upending Frame	Not Important to Safety	8.1.6	A welded steel frame used to evenly support the MPC *and control the upending process.*~~during upending operations. The frame consists of the main frame, five MPC support saddles, two rigging bars, five wrap around straps, and five strap attachment lugs.~~
MSLD (Helium Leakage Detector)	Not Important To Safety	Not shown	Used for helium leakage testing of the MPC closure welds.
MSLD Calibration Sources.	Not Important To Safety	Not shown	Traceable leakage sources for periodic calibration of the MSLD.
Small Water Pump	Not Important To Safety	8.1.19	Used for lowering the MPC water level prior to lid welding.
Temporary Lid	*Not Important to Safety*	*Not shown*	*Used for interim movement of the loaded HI-STORM 100 prior to placement of the HI-STORM 100 lid. Defense-in-Depth design feature.*
Temporary Shield Ring	Not Important To Safety	8.1.18	A water-filled segmented tank that fits on the cask neutron shield around the upper forging and provides supplemental shielding to personnel performing cask loading and closure operations. ~~Shield segments are installed by hand, no tools are required.~~
Vacuum Drying System	Not Important To Safety	8.1.22*a*	Used for removal of residual moisture from the MPC following water draining. Used for evacuation of the MPC *and other support equipment during closure and unloading operations.*~~to support backfilling operations. Used to support test volume samples for MPC unloading operations.~~
Moisture Removal System	*Not Important To Safety*	*8.1.22b*	*Used for removal of residual moisture from the MPC following water draining.*
Vent and Drain RVOAs	Not Important To Safety	8.1.16	Used to *access* ~~drain, dry, inert and fill the MPC through~~ the vent and drain ports. The vent and drain RVOAs allow the vent and drain ports to be operated like valves and prevent the need to hot tap into the penetrations during unloading operation.

Table 8.1.6
HI-STORM 100 SYSTEM ANCILLARY EQUIPMENT OPERATIONAL DESCRIPTION
(Continued)

Equipment	Important To Safety Classification	Reference Figure†	Description
Water Totalizer	Not Important To Safety	8.1.19 and 8.1.21	Used for water pump-down prior to lid welding operations. ~~Used for determining the MPC free space volume which is the input for the calculation of the required helium backfill quantit~~*May take several forms.*~~ies.~~
Weld Removal System	Not Important To Safety	8.3.2b	Semi-automated weld removal system used for removal of the MPC *field weld to support unloading operations.*~~to shell weld, MPC to closure ring weld and closure ring to MPC shell weld. The WRS mechanically removes the welds using a high-speed cutter.~~

† ~~Pictures~~ *Figures* are ~~artist rendering~~ *representative* and may not represent final configuration.

Table 8.1.7
HI-STORM 100 SYSTEM INSTRUMENTATION SUMMARY FOR LOADING AND UNLOADING OPERATIONS†

Instrument	Function
Contamination Survey Instruments	Monitors fixed and non-fixed contamination levels.
Dose Rate Monitors/Survey Equipment	Monitors dose rate and contamination levels and ensures proper function of shielding. Ensures assembly debris is not inadvertently removed from the spent fuel pool during overpack removal.
Flow Rate Monitor	Monitors *fluid* ~~the air~~ flow rate during *various loading and unloading operations.*~~assembly cool-down.~~
~~Helium Mass Flow Monitor~~	~~Determines the amount of helium introduced into the MPC during backfilling operations. Includes integrator.~~
Helium Mass Spectrometer Leak Detector (MSLD)	Ensures leakage rates of welds are within acceptance criteria.
Volumetric Examination Testing Rig	Used to assess the integrity of the MPC lid-to-shell weld.
Pressure Gauge*s*	Ensures correct ~~*MPC* helium~~ pressure during *loading and unloading* ~~*closure and opening* fuel cool-down~~ operations.
Temperature Gauge*s*	Monitors the state of *gas and water temperatures during closure and unloading operations.*~~fuel cool-down prior to MPC flooding.~~
Temperature Surface Pyrometer	For HI-STORM vent operability testing.
Vacuum Gages	Used for vacuum drying operations and to prepare an MPC evacuated sample bottle for MPC gas sampling for unloading operations.
~~Water Pressure Gauge~~	~~Used for performance of the MPC Hydrostatic Test.~~
Water Totalizer	Used for water pump-down prior to lid welding operations. Used for determining the MPC free space volume which is the input for the calculation of the required helium backfill quantities.
Moisture Monitoring Instruments	*Used to monitor the MPC moisture levels as part of the moisture removal system.*

† All instruments require calibration. See figures at the end of this section for additional instruments, controllers and piping diagrams.

Table 8.1.8
HI-STORM 100 SYSTEM OVERPACK INSPECTION CHECKLIST

Note:
This checklist provides the basis for establishing a site-specific inspection checklist for the HI-STORM 100 overpack. Specific findings shall be brought to the attention of the appropriate site organizations for assessment, evaluation and potential corrective action prior to use.

HI-STORM 100 Overpack Lid:

1. Lid studs and nuts shall be inspected for general condition.
2. The painted surfaces shall be inspected for corrosion and chipped, cracked or blistered paint.
3. All lid surfaces shall be relatively free of dents, scratches, gouges or other damage.
4. The lid shall be inspected for the presence or availability of studs and nuts and hole plugs.
5. Lid lifting device/ holes shall be inspected for dirt and debris and thread condition.
6. Lid bolt holes shall be inspected for general condition.

HI-STORM 100 Main Body:

1. Lid bolt holes shall be inspected for dirt, debris, and thread condition.
2. Vents shall be free from obstructions.
3. Vent screens shall be available, intact, and free of holes and tears in the fabric.
4. The interior cavity shall be free of debris, litter, tools, and equipment.
5. Painted surfaces shall be inspected for corrosion, and chipped, cracked or blistered paint.
6. The nameplate shall be inspected for presence, legibility, and general condition and conformance to Quality Assurance records package.
7. *Anchor hardware shall be checked for general condition.*

Table 8.1.9
MPC INSPECTION CHECKLIST

Note:
This checklist provides the basis for establishing a site-specific inspection checklist for MPC. Specific findings shall be brought to the attention of the appropriate site organizations for assessment, evaluation and potential corrective action prior to use.

MPC Lid and Closure Ring:

1. The MPC lid and closure ring surfaces shall be relatively free of dents, gouges or other shipping damage.
2. The drain line shall be inspected for straightness, thread condition, and blockage.
3. Vent and Drain attachments shall be inspected for availability, thread condition operability and general condition.
4. Upper fuel spacers (if used) shall be inspected for availability and general condition. Plugs shall be available for non-used spacer locations.
5. Lower fuel spacers (if used) shall be inspected for availability and general condition.
6. Drain and vent port cover plates shall be inspected for availability and general condition.
7. Serial numbers shall be inspected for readability.

MPC Main Body:

1. All visible MPC body surfaces shall be inspected for dents, gouges or other shipping damage.
2. Fuel cell openings shall be inspected for debris, dents and general condition.
3. Lift lugs shall be inspected for general condition.
4. Verify proper MPC basket type for contents.

Table 8.1.10
HI-TRAC TRANSFER CASK INSPECTION CHECKLIST

Note:
This checklist provides the basis for establishing a site-specific inspection checklist for the HI-TRAC Transfer Cask. Specific findings shall be brought to the attention of the appropriate site organizations for assessment, evaluation and potential corrective action prior to use.

HI-TRAC Top Lid:

1. The painted surfaces shall be inspected for corrosion and chipped, cracked or blistered paint.
2. All Top Lid surfaces shall be relatively free of dents, scratches, gouges or other damage.

HI-TRAC Main Body:

1. The painted surfaces shall be inspected for corrosion, chipped, cracked or blistered paint.
2. The top lid bolt holes shall be inspected for dirt, debris and thread damage.
3. The top lid lift holes shall be inspected for thread condition.
4. Lifting trunnions shall be inspected for deformation, cracks, end plate damage, corrosion, excessive galling, damage to the locking plate, presence or availability of locking plate and end plate retention bolts.
5. Pocket trunnion recesses shall be inspected for indications of overstressing (i.e., cracks, deformation, and excessive wear).
6. Annulus inflatable seal groove shall be inspected for cleanliness, scratches, dents, gouges, sharp corners, burrs or any other condition that may damage the inflatable seal.
7. The nameplate shall be inspected for presence and general condition.
8. The neutron shield jacket shall be inspected for leaks.
9. Neutron shield jacket pressure relief valve shall be inspected for presence, and general condition.
10. The neutron shield jacket fill and drain plugs shall be inspected for presence, leaks, and general condition.
11. Bottom lid flange surface shall be clean and free of large scratches and gouges.

Table 8.1.10 (Continued)
HI-TRAC OVERPACK INSPECTION CHECKLIST

HI-TRAC Transfer Lid:

1. The doors shall be inspected for smooth actuation.
2. The threads shall be inspected for general condition.
3. The bolts shall be inspected for indications of overstressing (i.e., cracks, deformation, thread damage, excessive wear) and replaced as necessary.
4. Door locking pins shall be inspected for indications of overstressing (i.e., cracks, and deformation, thread damage, excessive wear) and replaced as necessary.
5. Painted surfaces shall be inspected for corrosion and chipped, cracked or blistered paint.
6. Lifting holes shall be inspected for thread damage.

HI-TRAC Pool Lid:

1. Seal shall be inspected for cracks, breaks, cuts, excessive wear, flattening, and general condition.
2. Drain line shall be inspected for blockage and thread condition.
3. The lifting holes shall be inspected for thread damage.
4. The bolts shall be inspected for indications of overstressing (i.e., cracks and deformation, thread damage, and excessive wear).
5. Painted surfaces shall be inspected for corrosion and chipped, cracked or blistered paint.
6. Threads shall be inspected for indications of damage.

LOCATION: CASK RECEIVING AREA
REMOVE HI-TRAC TOP LID
CONFIGURE HI-TRAC WITH POOL LID
INSTALL MPC IN HI-TRAC
INSTALL UPPER FUEL SPACERS
INSTALL LOWER FUEL SPACERS
FILL MPC AND ANNULUS
INSTALL ANNULUS SEAL
PLACE HI-TRAC IN SPENT FUEL POOL
LOCATION: SPENT FUEL POOL
LOAD FUEL ASSEMBLIES INTO MPC
PERFORM ASSEMBLY IDENTIFICATION VERIFICATION
INSTALL DRAIN LINE TO MPC LID
ALIGN MPC LID AND LIFT YOKE TO DRAIN LINE
INSTALL MPC LID
REMOVE HI-TRAC FROM SPENT FUEL POOL AND PLACE IN PREPARATION AREA
LOCATION: CASK PREPARATION AREA
DECONTAMINATE HI-TRAC BOTTOM
SET HI-TRAC IN CASK PREPARATION AREA
FILL NEUTRON WATER JACKET
MEASURE DOSE RATES AT MPC LID
DECONTAMINATE HI-TRAC AND LIFT YOKE
INSTALL TEMPORARY SHIELD RING
REMOVE INFLATABLE ANNULUS SEAL
LOWER ANNULUS WATER LEVEL SLIGHTLY
SMEAR MPC LID TOP SURFACES
INSTALL ANNULUS SHIELD
LOWER MPC WATER LEVEL
WELD MPC LID
PERFORM LIQUID PENETRANT OR UT EXAMINATION OF MPC LID WELD
RAISE MPC WATER LEVEL
PERFORM HYDRO TEST ON MPC
PERFORM LEAKAGE TESTING
DRAIN MPC
MEASURE VOLUME OF WATER DRAINED
~~VACUUM~~-DRY MPC
PERFORM MPC DRYNESS VERIFICATION TEST

BACKFILL MPC
WELD VENT AND DRAIN PORT COVER PLATES
PERFORM A LIQUID PENETRANT EXAMINATION
PERFORM LEAKAGE TEST ON COVER PLATES
WELD MPC CLOSURE RING
PERFORM LIQUID PENETRANT EXAM ON CLOSURE RING ROOT WELDS
DRAIN ANNULUS
INSTALL HI-TRAC TOP LID
PERFORM SURVEYS ON HI-TRAC
REMOVE TEMPORARY SHIELD RING
REPLACE POOL LID WITH TRANSFER LID
INSTALL MPC LIFT CLEAT
PERFORM SURVEYS OF POOL LID
LOCATION: CASK RECIEVING AREA
POSITION HI-STORM FOR MPC TRANSFER
INSTALL HI-STORM VENT DUCT SHIELD INSERTS
INSTALL ALIGNMENT PINS
MATE OVERPACK AND TRANSFER CASK
ATTACH MPC LFT SLINGS
OPEN TRANSFER LID DOORS
LOWER MPC INTO HI-STORM
REMOVE HI-TRAC FROM ON TOP OF HI-STORM
REMOVE MPC LIFT CLEAT
REMOVE HI-STORM VENT DUCT SHIELD INSERTS
INSTALL HI-STORM LID
PERFORM SHIELDING EFFECTIVENESS TESTING
LOCATION: ISFSI
PLACE HI-STORM IN STORAGE
INSTALL GAMMA SHIELD CROSS PLATES AND THERMOCOUPLES IN HI-STORM 100 OVERPACK EXIT VENTS
INSTALL HI-STORM VENT SCREENS
PERFORM THERMAL TESTING

Figure 8.1.1; Loading Operations Flow Diagram

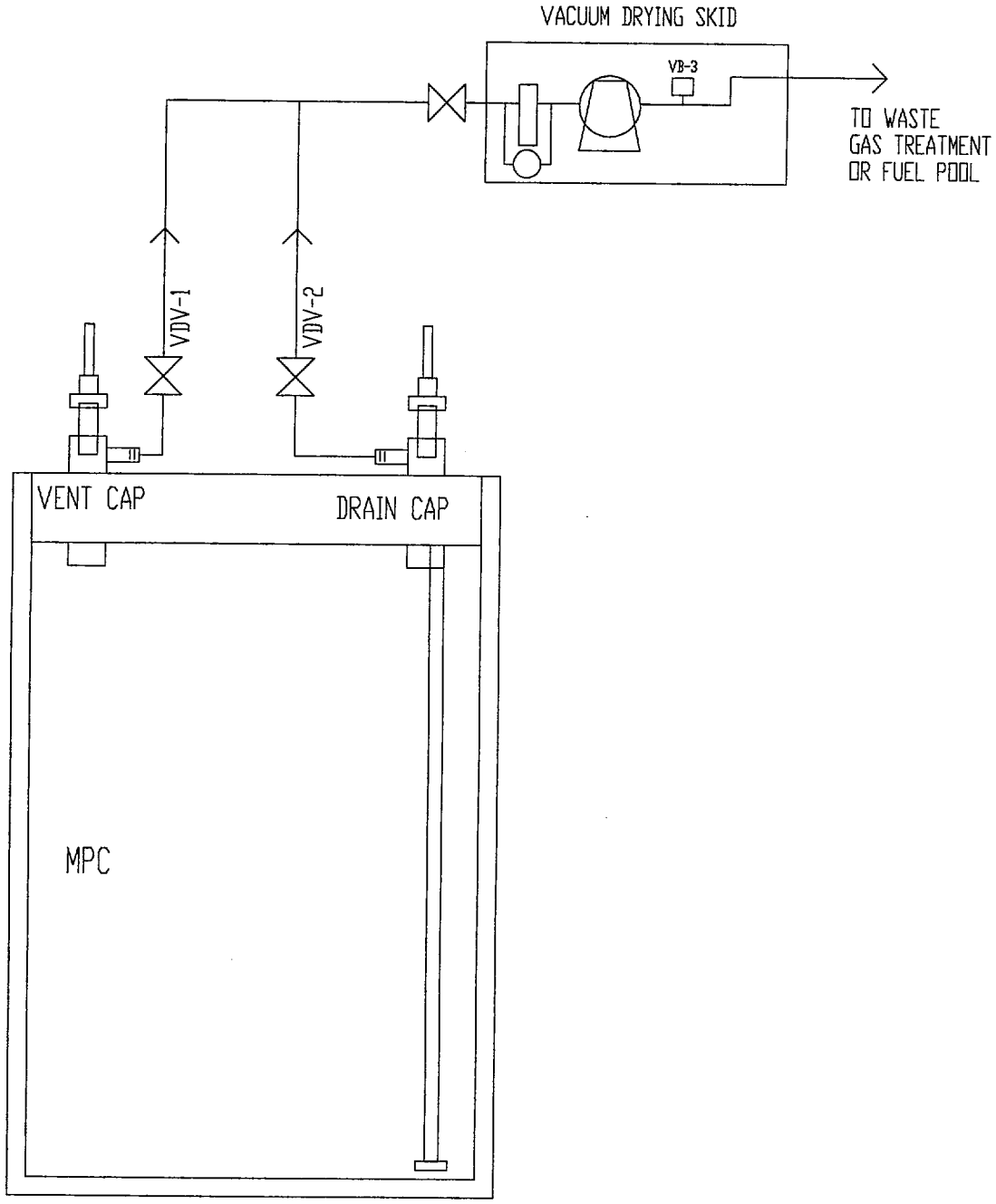

Figure 8.1.22a; Vacuum Drying System

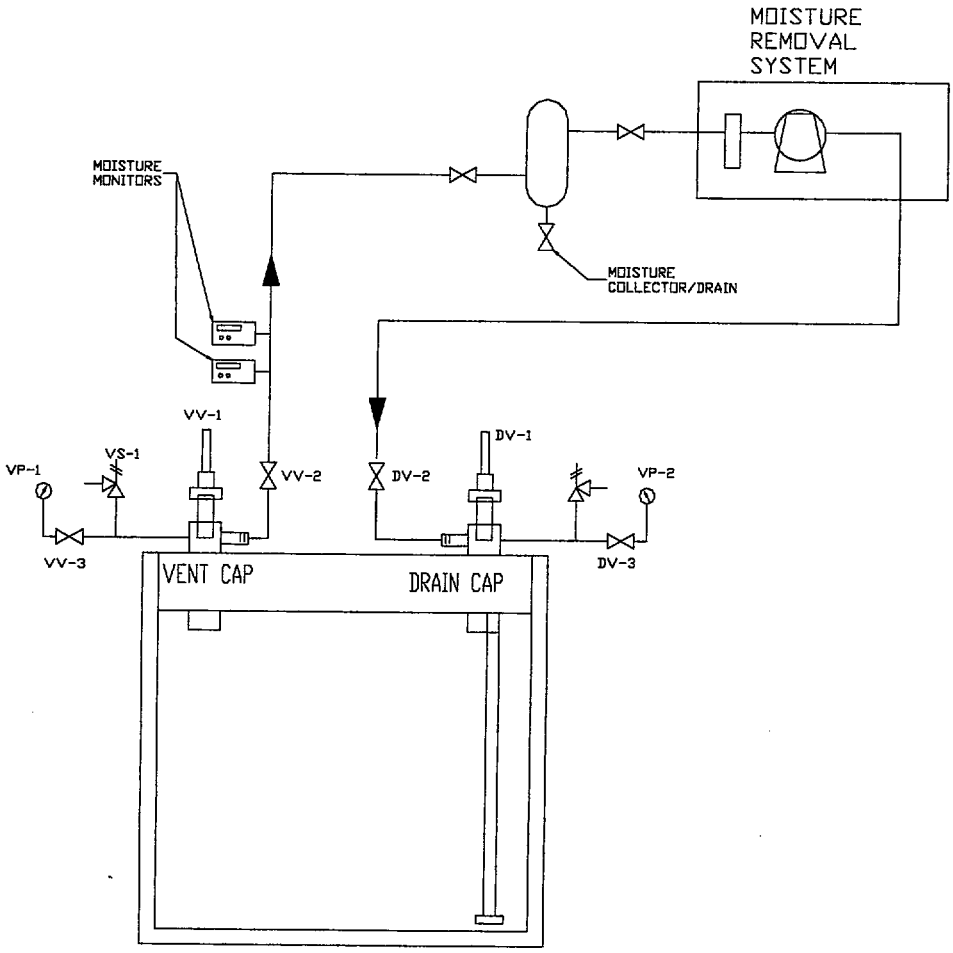

Figure 8.1.22b; Moisture Removal System

8.2 ISFSI OPERATIONS

The HI-STORM 100 System heat removal system is a totally passive system. Maintenance on the HI-STORM system is typically limited to cleaning and touch-up painting of the overpacks, repair and replacement of damaged vent screens, and removal of vent blockages (e.g., leaves, debris). The heat removal system operability surveillance (See Technical Specification LCO 3.1.2) should be performed after any event that may have an impact on the safe functioning of the HI-STORM system. These include, but are not limited to, wind storms, heavy snow storms, fires inside the ISFSI, seismic activity, flooding of the ISFSI, and/or observed animal or insect infestations. The responses to these conditions involve first assessing the dose impact to perform the corrective action (inspect the HI-STORM overpack, clear the debris, check the cask pitch, and/or replace damaged vent screens), perform the corrective action, verify that the system is operable (check ventilation flow paths and radiation). In the event of significant damage to the HI-STORM, the situation may warrant removal of the MPC, and repair or replacement of the damaged HI-STORM overpack. If necessary, the procedures in Section 8.1 may be used to reposition a HI-STORM overpack for minor repairs and maintenance. In extreme cases, Section 8.3 may be used as guidance for unloading the MPC from the HI-STORM.

Note:

The heat removal system operability surveillance involves performing a visual examination on the HI-STORM exit and inlet vent screens to ensure that the vents remain clear or verifying the temperature rise from ambient to outlet is within prescribed limits. The metallic vent screens if damaged may allow leaves, debris or animals to enter the duct and block the flow of air to the MPC.

ALARA Warning:

Operators should practice ALARA principals when inspecting the vent screens. In most cases, binoculars allow the operator to perform the surveillance from a low dose area.

8.2.1 Perform the heat removal operability surveillance in accordance with Technical Specification SR 3.1.2.1.

8.2.2 ISFSI Security Operations shall be performed in accordance with the approved site security program plan.

8.3 PROCEDURE FOR UNLOADING THE HI-STORM 100 SYSTEM IN THE SPENT FUEL POOL

8.3.1 Overview of HI-STORM 100 System Unloading Operations

ALARA Note:

The procedure described below uses the *weld removal system to*~~Weld Removal System, a remotely operated system that~~ removes the welds *necessary to enable the MPC lid to be removed.* Users may opt to remove some or all of the welds using hand operated equipment. The decision should be based on dose rates, accessibility, degree of weld removal, and available tooling and equipment.

The HI-STORM 100 System unloading procedures describe the general actions necessary to prepare the MPC for unloading, cool the stored fuel assemblies in the MPC, flood the MPC cavity, remove the lid welds, unload the spent fuel assemblies, and recover the HI-TRAC and empty MPC. Special precautions are outlined to ensure personnel safety during the unloading operations, and to prevent the risk of MPC over pressurization and thermal shock to the stored spent fuel assemblies. Figure 8.3.1 shows a flow diagram of the HI-STORM unloading operations. Figure 8.3.2 illustrates the major HI-STORM unloading operations.

Refer to the boxes of Figure 8.3.2 for the following description. The MPC is recovered from HI-STORM either at the ISFSI or the fuel building using the same methodologies as described in Section 8.1 (Box 1). The HI-STORM lid is removed and the MPC lift cleats are attached to the MPC to provide redundant lift support. The exit vent screens and gamma shield cross plates are removed *as necessary.* The vent duct shield inserts are installed in the HI-STORM *100 (not the HI-STORM 100S)* exit vent ducts to eliminate the streaming path when the MPC is moved past the HI-STORM exit vent ducts. MPC lift slings are attached to the MPC lift cleat *and positioned on the MPC lid.* HI-TRAC is ~~raised and~~ positioned on top of HI-STORM (Box 2) *and the slings are brought through the HI-TRAC top lid.* The MPC is raised into HI-TRAC, the HI-TRAC doors are closed and the door locking pins are installed. HI-TRAC is removed from on top of HI-STORM. The HI-TRAC is positioned in the transfer slide and the transfer lid is replaced with the pool lid ~~-~~(Box 3) *using the same methodology as with the loading operations.*

HI-TRAC and its enclosed MPC are returned to the designated preparation area and the MPC stays, MPC lift cleat and top lid are removed. The temporary shield ring is installed on the HI-TRAC upper section and filled with plant demineralized water. The HI-TRAC top lid is removed *and a water flush is performed on the annulus. Water is fed into the annulus through the drain port and allowed to cool the MPC shell. - After a predetermined period (based on the fuel conditions),* ~~and~~ the annulus shield is installed to protect the annulus from debris produced from the lid removal process (Box 4). The weld removal system is installed (Box 7) and the MPC vent and drain ports are accessed (Box 5). The vent RVOA is attached to the vent port and an evacuated sample bottle is connected. The vent port is slightly opened to allow the sample bottle to obtain a gas sample from inside the MPC. A gas sample is performed to assess the

condition of the fuel assembly cladding. A vent line is attached to the vent port and the MPC is vented to the fuel building ventilation system or spent fuel pool as determined by the site's radiation protection personnel. The MPC is cooled using the cool-down system to reduce the MPC internal temperature to allow water flooding (Box 6). The cool-down process gradually reduces the cladding temperature to a point where the MPC may be flooded with water without thermally shocking the fuel assemblies or over-pressurizing the MPC from the formation of steam (See Technical Specification LCO 3.1.3). Following the fuel cool-down, the MPC is filled with water at a specified rate. The weld removal system then removes the MPC lid-to-shell weld. The weld removal system is removed with the MPC lid left in place (Box 7).

The top surfaces of the HI-TRAC and MPC are cleared of metal shavings. The inflatable annulus seal is installed and pressurized. The MPC lid is rigged to the lift yoke or lid retention system and the lift yoke is engaged to HI-TRAC lifting trunnions. If weight limitations require, the neutron shield jacket is drained of water. HI-TRAC is placed in the spent fuel pool and the MPC lid is removed (Boxes 8 and 9). All fuel assemblies are returned to the spent fuel storage racks and the MPC fuel cells are vacuumed to remove any assembly debris and crud (Box 10). HI-TRAC and MPC are returned to the designated preparation area (Box 11) where the MPC water is pumped back into the spent fuel pool or liquid radwaste facility. The annulus water is drained and the MPC and overpack are decontaminated (Box 12 and 13).

8.3.2 HI-STORM Recovery from Storage

Note:
The MPC transfer may be performed using the MPC downloader or the overhead crane.

1. Recover the MPC from HI-STORM as follows:

   a. If necessary, perform a transport route walkdown to ensure that the cask transport conditions are met. See Technical Specifications for the on-site lifting requirements.

   b. Transfer HI-STORM to the fuel building or site designated location for the MPC transfer.

   c. Position HI-STORM under the lifting device.

   d. Remove the HI-STORM lid nuts, *washers* and studs.

   e. Remove the HI-STORM lid lifting hole plugs and install the lid lifting sling. See Figure 8.1.27. See Table 8.1.5 for torque requirements.

Note:
The specific sequence for vent screen, ~~*thermocouple*~~*temperature element,* and gamma shield cross plate removal may vary based on the mode(s) or transport.

f. Remove the HI-STORM exit vent screens, ~~thermocouple~~*temperature elements* and gamma shield cross plates. See Figure 8.1.34a and b.

Warning:
Unless the lift is single-failure proof (or equivalent safety factor) the HI-STORM lid, the lid shall be kept less than 2 feet above the top surface of the overpack. This is performed to protect the MPC lid from a potential HI-STORM 100 lid drop.~~When traversing the HI-STORM 100 overpack with the HI-STORM 100 Lid, the lid shall be kept less than 2 feet above the top surface of the overpack. This is performed to protect the MPC lid from a potential HI-STORM 100 lid drop.~~

g. Remove the HI-STORM lid. See Figure 8.1.27~~.~~ *and Section 8.1.1.2 for additional HI-STORM administrative controls related to movement of the loaded overpack without the permanent lid installed.*

h. Install the HI-STORM vent duct shield inserts *(HI-STORM 100 only)*. See Figure 8.1.30.

i. Install *the* alignment guides. See Figure 8.1.31.

j. Remove the MPC lift cleat hole plugs and install the MPC lift cleats to the MPC lid. See Table 8.1.5 for torque requirements.

k. If necessary, install the top lid on HI-TRAC. See Figure 8.1.9 for rigging. See Table 8.1.5 for torque requirements.

l. Attach the MPC lift slings to the MPC lift cleat and lay them on the lid.

2. If necessary, configure HI-TRAC with the transfer lid:

ALARA Warning:
The bottom lid replacement as described below may only be performed on an empty (i.e., no MPC) HI-TRAC.

a. Position HI-TRAC vertically adjacent to the transfer lid. See Section *8.1.2*.

b. Remove the bottom lid bolts and plates and store them temporarily.

c. Raise the empty HI-TRAC and position it on top of the transfer lid.

d. Inspect the pool lid bolts for general condition. Replace worn or damaged bolts with new bolts.

e. Install the transfer lid bolts. See Table 8.1.5 for torque requirements.

~~3. If necessary, install the MPC Downloader on the HI-TRAC Top Lid. See Figure 8.1.32. See Table 8.1.5 for torque requirements.~~

3. ~~4.~~ At the site's discretion, perform a HI-TRAC receipt inspection and cleanliness inspection in accordance with a site-specific inspection checklist.

Note:
If the HI-TRAC is expected to be operated in an environment below 32 °F, the water jacket shall be filled with an ethylene glycol solution (25% ethylene glycol). Otherwise, the jacket shall be filled with demineralized water.

4. If previously drained, fill the neutron shield jacket with plant demineralized water or an ethylene glycol solution (25% ethylene glycol) as necessary. Ensure that the fill and drain plugs are installed not leaking.
5. *Remove the transfer lid door locking pins and open the doors.*
6. Engage the lift yoke to the HI-TRAC lifting trunnions.
7. Align HI-TRAC over HI-STORM and mate the overpacks. See Figure 8.1.31.
8. *If necessary, install the MPC downloader.*
9. Pull the MPC lift slings through the top lid hole using a pole and hook or similar method and attach them to the MPC lifting device.

~~Remove the transfer lid door locking pins and open the doors.~~

10. At the user's discretion, install trim plates to cover the gap above and below the door. The trim plates may be secured using hand clamps or any other method deemed suitable by the user. See Figure 8.1.33.
11. Attach the ends of the MPC lift sling to the lifting device *or MPC downloader.* See Figure 8.1.32.

ALARA Warning:
If trim plates are not used, personnel should remain clear of the immediate door area during MPC downloading since there may be some radiation streaming during MPC raising and lowering operations.

12. Raise the MPC into *HI-TRAC.*~~HI-STORM.~~
13. Verify the MPC is in the full-up position.
14. Close the HI-TRAC doors and install the door locking pins. See Table 8.1.5 for torque requirements.
15. Lower the MPC onto the transfer lid doors.

16. Disconnect the slings from the MPC lift cleats.

17. If necessary, remove the MPC downloader from the top of HI-TRAC.

18. Remove HI-TRAC from the top of HI-STORM.

8.3.3 Preparation for Unloading:

1. Replace the pool lid with the transfer lid as follows:

Note:
The MPC lift cleats and support stays provide redundant support of the MPC during the bottom lid replacement.

a. Lower the lift yoke and attach the MPC support stays between the lift cleats and the lift yoke. See Figure 8.1.25.

b. Engage the lift yoke to the HI-TRAC lifting trunnions.

c. Test the travel and lift features of the transfer slide to ensure its operability.

d. Raise HI-TRAC and position the transfer lid approximately one inch above the transfer step. See Figure 8.1.26.

e. Raise the transfer slide carriage so the transfer carriage is supporting the transfer lid bottom. Remove the transfer lid bolts and store them temporarily.

ALARA Warning:
Clear all personnel away from the immediate operations area. The transfer slide carriage and jacks are remotely operated. The carriage has fine adjustment features to allow precise positioning of the lids.

f. Lower the transfer carriage and position the pool lid under HI-TRAC.

g. Raise the transfer slide carriage to place the pool lid against the HI-TRAC bottom lid bolting flange.

h. Inspect the bottom lid bolts for general condition. Replace worn or damaged bolts with new bolts.

i. Install the pool lid bolts. See Table 8.1.5 for torque requirements.

j. Raise and remove the HI-TRAC from the transfer slide.

k. Disconnect the MPC support stays and lift cleats and store them in an approved plant storage location.

l. Install hole plugs in the empty lift cleat bolt holes.

m. Place the transfer lid in an approved storage location.

n. Place HI-TRAC in the designated preparation area.

Warning:
Unless the lift is single-failure proof (or equivalent safety factor) the HI-TRAC top lid, the top lid shall be kept less than 2 feet above the top surface of the MPC. This is performed to protect the MPC lid from a potential lid drop.~~When traversing the MPC with the HI-TRAC top lid, the lid shall be kept less than 2 feet above the top surface of the MPC. This is performed to protect the MPC lid from a potential lid drop.~~

2. *Prepare for MPC cool-down as follows:*

a. Remove the top lid bolts and remove HI-TRAC top lid. See Figure 8.1.9 for rigging. Store the top lid and bolts in a site-approved location.

Warning:
At the start of annulus filling, the a~~A~~nnulus fill water may flash to steam due to high MPC shell temperatures. *Users may select the location and means of performing the annulus flush. Users may also elect the source of water and method for collecting the water flowing from the annulus.* -Water addition should be preformed in a slow and controlled manner *until water steam generation has ceased. Water flush should be performed for a minimum of 33 hours at a flow rate of 10 GPM or as specified for the particular heat load of the MPC.*~~.~~

b. *Perform annulus flush by injecting water into the HI-TRAC drain port and allowing the water to cool the MPC shell and lid.*

c. *Set the* ~~Slowly fill the annulus area with plant demineralized~~ *annulus* water *level* to approximately 4 inches below the top of the MPC shell and install the annulus shield. The annulus shield reduces the dose around the annulus area and prevents debris from entering the annulus during MPC lid weld removal operations. See Figure 8.1.13.

3. Access the MPC as follows:

ALARA Note:
The following procedures describe weld removal using a machine tool head. Other methods may also be used. The metal shavings may need to be periodically vacuumed.

ALARA Warning:
Weld removal may create an airborne radiation condition. Weld removal must be performed under the direction of the user's Radiation Protection organization.

a. Install bolt plugs and/or waterproof tape from HI-TRAC top bolt holes.

b. Using the marked locations of the vent and drain ports, core drill the closure ring and vent and drain port cover plates.

c. Remove the closure ring section and the vent and drain port cover plates.

ALARA Note:
The MPC vent and drain ports are equipped with metal-to-metal seals to minimize leakage and withstand the long-term effects of temperature and radiation. The vent and drain port design prevents the need to hot tap into the penetrations during unloading operation and eliminate the risk of a pressurized release of gas from the MPC.

4. Take an MPC gas sample as follows:

Note:
Users may select alternate methods of obtaining a gas sample.

a. Attach the RVOA*s* ~~to the vent port~~ (See Figure 8.1.16).

b. Attach a sample bottle to the vent port RVOA as shown on Figure 8.3.3.

c. Using the vacuum drying system, evacuated the RVOA and Sample Bottle.

d. Slowly open the vent port cap using the RVOA and gather a gas sample from the MPC internal atmosphere.

e. Close the vent port cap and disconnect the sample bottle.

ALARA Note:
The gas sample analysis is performed to determine the condition of the fuel cladding in the MPC. The gas sample may indicate that fuel with damaged cladding is present in the MPC. The results of the gas sample test may affect personnel protection and how the gas is processed during MPC depressurization.

f. Turn the sample bottle over to the site's Radiation Protection or Chemistry Department for analysis.

g. Remove the drain port cover plate weld and remove the cover plate.

~~Install the RVOA in the drain port.~~

5. Fill the MPC cavity with water as follows:

a. Configure the cool-down system as shown on Figure 8.3.4.

b. Verify that the helium gas pressure regulator is set to 85+3/-3 psig.

c. Open the helium gas supply valve to purge the gas lines of air.

Note:
The coolant flow direction is into the drain port and out of the vent port.

d. Confirm the heat exchanger coolant flow direction.

e. If necessary, slowly open the helium supply valve and increase the Cool-Down System pressure to 100 +3/-3 psig. Close the helium supply valve.

f. Start the gas coolers.

g. Open the vent and drain port caps using the RVOAs.

h. Start the blower and monitor the gas exit temperature. Continue the fuel cool-down operations until the gas exit temperature meets the requirements of the Technical Specification LCO 3.1.3.

Note:
Water filling should commence immediately at the completion of fuel cool-down operations to prevent fuel assembly heat-up. Prepare the water fill line and the vent line in advance of water filling.

i. Prepare the MPC fill and vent lines as shown on Figure 8.1.20. Route the vent port line several feet below the spent fuel pool surface or to the radwaste gas facility. Turn off the blower and disconnect the gas lines to the vent and drain port RVOAs. Attach the vent line to the MPC vent port and slowly open the vent line valve to depressurize the MPC.

j. Attach the water fill line to the MPC drain port and slowly open the water supply valve and establish a pressure less than 90 psi. Fill the MPC until bubbling from the vent line has terminated. Close the water supply valve on completion.

k. Disconnect both lines from the drain and vent ports and install the drain line to the vent port to allow for thermal expansion of the water during MPC lid weld removal.

l. Remove the MPC lid-to-shell weld using the weld removal system. See Figure 8.1.9 for rigging.

m. Vacuum the top surfaces of the MPC and HI-TRAC to remove any metal shavings.

6. Install the inflatable annulus seal as follows:

Caution:
Do not use any sharp tools or instruments to install the inflatable seal.

a. Remove the annulus shield.

b. Manually insert the inflatable seal around the MPC. See Figure 8.1.13.

c. Ensure that the seal is uniformly positioned in the annulus area.

d. Inflate the seal between 30 and 35 psig or as directed by the manufacturer.

e. Visually inspect the seal to ensure that it is properly seated in the annulus. Deflate, adjust and inflate the seal as necessary.

7. Place HI-TRAC in the spent fuel pool as follows:

a. If necessary for plant weight limitations, drain the water from the neutron shield jacket.

b. Engage the lift yoke to HI-TRAC lifting trunnions, remove the MPC lid lifting hole plugs and attach the MPC lid slings or lid retention system to the MPC lid.

c. If the lid retention system is used, inspect the lid bolts for general condition. Replace worn or damaged bolts with new bolts.

d. Install the lid retention system bolts if the lid retention system is used.

ALARA Note:

The annulus overpressure system is used to provide protection against MPC external shell contamination during in-pool operations. The annulus overpressure system is equipped with double locking quick disconnects to prevent inadvertent draining. The reservoir valve must be closed to ensure that the annulus is not inadvertently drained through the annulus overpressure system when the cask is raised above the level of the annulus reservoir.

e. If used, fill the annulus overpressure system lines and reservoir with demineralized water and close the reservoir valve. Attach the annulus overpressure system to the HI-TRAC via the quick disconnect. See Figure 8.1.14.

f. Position HI-TRAC over the cask loading area with the basket aligned to the orientation of the spent fuel racks.

ALARA Note:

Wetting the components that enter the spent fuel pool may reduce the amount of decontamination work to be performed later.

g. Wet the surfaces of HI-TRAC and lift yoke with plant demineralized water while slowly lowering HI-TRAC into the spent fuel pool.

h. When the top of the HI-TRAC reaches the elevation of the reservoir, open the annulus overpressure system reservoir valve. Maintain the reservoir water level at approximately 3/4 full the entire time the cask is in the spent fuel pool.

i. If the lid retention system is used, remove the lid retention bolts when the top of HI-TRAC is accessible from the operating floor.

j. Place HI-TRAC on the floor of the cask loading area and disengage the lift yoke. Visually verify that the lift yoke is fully disengaged.

Note:
An underwater camera or other suitable viewing device may be used for monitoring the underwater operations.

k. Apply slight tension to the lift yoke and visually verify proper disengagement of the lift yoke from the trunnions.

l. Remove the lift yoke, MPC lid and drain line from the pool in accordance with directions from the site's Radiation Protection personnel. Spray the equipment with demineralized water as they are removed from the pool.

m. Disconnect the drain line from the MPC lid.

n. Store the MPC lid components in an approved location. Disengage the lift yoke from MPC lid. Remove any upper fuel spacers using the same process as was used in the installation.

o. Disconnect the lid retention system if used.

8.3.4 MPC Unloading

1. Remove the spent fuel assemblies from the MPC using applicable site procedures.
2. Vacuum the cells of the MPC to remove any debris or corrosion products.
3. Inspect the open cells for presence of any remaining items. Remove them as appropriate.

8.3.5 Post-Unloading Operations

1. Remove HI-TRAC and the unloaded MPC from the spent fuel pool as follows:
2. Engage the lift yoke to the top trunnions.
3. Apply slight tension to the lift yoke and visually verify proper engagement of the lift yoke to the trunnions.
4. Raise HI-TRAC until HI-TRAC flange is at the surface of the spent fuel pool.

ALARA Warning:
Activated debris may have settled on the top face of HI-TRAC during fuel unloading.

5. Measure the dose rates at the top of HI-TRAC in accordance with plant radiological procedures and flush or wash the top surfaces to remove any highly-radioactive particles.
6. Raise the top of HI-TRAC and MPC to the level of the spent fuel pool deck.
7. Close the annulus overpressure system reservoir valve.
8. Using a water pump, lower the water level in the MPC approximately 12 inches to prevent splashing during cask movement.

ALARA Note:
To reduce contamination of HI-TRAC, the surfaces of HI-TRAC and lift yoke should be kept wet until decontamination can begin.

9. Remove HI-TRAC from the spent fuel pool while spraying the surfaces with plant demineralized water.
10. Disconnect the annulus overpressure system from the HI-TRAC via the quick disconnect.
11. Place HI-TRAC in the designated preparation area.
12. Disengage the lift yoke.
13. Perform decontamination on HI-TRAC and the lift yoke.
14. Carefully decontaminate the area above the inflatable seal. Deflate, remove, and store the seal in an approved plant storage location.
15. Using a water pump, pump the remaining water in the MPC to the spent fuel pool or liquid radwaste system.
16. Drain the water in the annulus area by connecting the drain line to the HI-TRAC drain connector.
17. Remove the MPC from HI-TRAC and decontaminate the MPC as necessary.
18. Decontaminate HI-TRAC.
19. Remove the bolt plugs and/or waterproof tape from HI-TRAC top bolt holes.
20. Return any HI-STORM 100 equipment to storage as necessary.

8.4 MPC TRANSFER TO A HI-STAR 100 OVERPACK FOR TRANSPORT OR STORAGE

8.4.1 Overview of Operations

The MPC is recovered from storage and transferred into HI-TRAC using the *same or similar*~~identical~~ method as described in Section 8.3. Once the MPC is inside HI-TRAC, the HI-STAR 100 is brought to the transfer location and positioned for receiving of the MPC. *If used, t*~~T~~he temporary shield ring is installed and filled with water and the transfer collar is installed on the HI-STAR 100 Overpack. The temporary shield ring reduces operator dose rates during MPC transfer operations. The transfer collar adapts the top surface of the HI-STAR 100 Overpack to mate with the bottom of HI-TRAC. HI-TRAC is raised and positioned over the HI-STAR 100 Overpack. HI-TRAC and the HI-STAR 100 Overpack are mated and the downloader is extended to take the MPC weight off of the transfer lid doors. Depending on the site's crane and door configuration, the MPC downloader may be attached to either the HI-TRAC lid or the overhead lifting device (See Figure 8.1.32). The door locking pins are removed and the doors are opened. The MPC ~~piston~~ is *lowered* ~~the MPC~~ into the HI-STAR 100 Overpack. The slings are disconnected and lowered onto the MPC lid. HI-TRAC is removed from on top of the HI-STAR 100 Overpack. The MPC lift cleat, downloader slings, and transfer collar are removed. Hole plugs are installed in the empty MPC lid bolt holes. The HI-STAR 100 Overpack is prepared for storage or transport in accordance with the Certificate of Compliance for storage or transport, as applicable.

8.4.2 Recovery from Storage

1. Recover the MPC from storage and position it inside of HI-TRAC in accordance with Section 8.3.2. See the Technical Specifications for lifting requirements.

2. If necessary, remove HI-STORM from the operations area and remove the HI-STORM vent duct shield inserts. See Figure 8.1.30.

8.4.3 MPC Transfer into the HI-STAR 100 Overpack

Note:
The following steps outline the HI-STAR 100 operating steps. Refer to the HI-STAR 100 System Final Safety Analysis Report (Docket No. 72-1008) and the HI-STAR 100 System Safety Analysis Report (Docket No. 71-9261) for HI-STAR 100 Overpack specific operations.

1. If necessary, remove the HI-STAR 100 closure plate and the removable shear ring segments. Perform a radiological survey of the inside of the HI-STAR 100 Overpack to verify there is no residual contamination from previous uses. If contamination levels are above specified limits, the HI-STAR 100 Overpack shall be decontaminated appropriately prior to use.

2. Discard any used metallic seals.

3. Perform a HI-STAR 100 receipt inspection in accordance with site-specific procedures.

4. Install the temporary shield ring on HI-STAR 100 and fill it with water, *if used.* See Figure 8.1.18.

5. Install the HI-STAR transfer collar. See Figure 8.4.1.

6. Position HI-STAR adjacent to HI-TRAC.

Note:
Lifting of the loaded HI-TRAC shall be performed in accordance with the Technical Specification.

7. Raise and align HI-TRAC over HI-STAR and mate the overpacks.

Note:
The MPC lift cleats and MPC downloader slings are still installed from the previous operation.

8. ~~8. Extend the MPC Downloader to its fully extended position~~*Attach the MPC downloader (if used).*

9. Remove the transfer lid door locking pins and open the doors.

ALARA Warning:
If trim plates are not used, personnel should remain clear of the immediate door area during MPC downloading since there may be radiation streaming during MPC raising and lowering operations.

10. At the user's discretion, install trim plates to cover the gap above and below the door. The trim plates may be secured using hand clamps or any other method deemed suitable by the user. See Figure 8.1.33.

11. Lower the MPC into HI-STAR.

12. When the MPC is fully seated, disconnect the slings from the MPC lifting device and lower them on to the MPC lid.

13. Remove HI-TRAC from on top of HI-STAR 100 Overpack.

14. Remove the HI-STAR 100 transfer collar.

15. Remove the MPC lift cleat from the MPC and install hole plugs in the empty bolt holes. See Table 8.1.5 for torque requirements.

16. Drain and remove the temporary shield ring *(if used)* and store it in an approved plant storage location.

17. Complete HI-STAR preparation for transport in accordance with the HI-STAR 100 Safety Analysis Report (Docket 71-9261) and the Certificate of Compliance, or complete HI-STAR preparation for storage in accordance with the HI-STAR 100 Final Safety Analysis Report (Docket 72-1008) and the Certificate of Compliance, as applicable.

8.5 MPC TRANSFER INTO THE HI-STORM 100 OVERPACK DIRECTLY FROM TRANSPORT

8.5.1 Overview of Operations

HI-STAR 100 Dual-Purpose Cask System arrives at the receiving location and is surveyed for dose rates and contamination levels. The receiver reviews the shipping paperwork to ensure that the HI-STAR 100 Overpack met the internal contamination limits prior to transportation. The personnel barrier is removed, the impact limiters are removed, the tie-down is removed, and the HI-STAR 100 Overpack is upended. The HI-STAR 100 Overpack is positioned at the designated transfer area and the temporary shield ring is installed. The temporary shield ring reduces operator dose rates during MPC transfer operations. A gas sample is drawn from the annulus and analyzed. The gas sample provides an indication of MPC closure performance. The annulus is depressurized and the closure plate is removed. The transfer collar is installed and the MPC lift cleat is attached to the MPC. The transfer collar is used to provide the mating surface on top of the HI-STAR 100 Overpack. The MPC lift slings are attached to the MPC lift cleat.

HI-TRAC is configured with the transfer lid and the top lid is installed, if necessary. HI-TRAC is raised and positioned on top of HI-STAR. The MPC lift slings are attached to the lifting device using a pole and hook. The MPC is raised into HI-TRAC. The HI-TRAC doors are closed and the door locking pins are installed. HI-TRAC is raised and the HI-STAR 100 Overpack is removed from under HI-TRAC. The HI-STAR 100 Overpack is repositioned at the user's discretion.

HI-STORM is positioned for MPC receipt with the lid removed, the *alignment guides* installed, and the vent duct shield inserts installed in the exit vent ducts. HI-TRAC is raised and positioned on top of HI-STORM. The door locking pins are removed and the doors are opened. The MPC is lowered into HI-STORM . The MPC lift slings are disconnected and lowered onto the MPC lid. HI-TRAC is raised and positioned at the site's discretion. The MPC lift cleat, lift slings, vent duct shield inserts, and transfer collar are removed and hole plugs are installed in the empty bolt holes. HI-STORM is prepared for storage and transferred to the ISFSI pad in the same manner as described in Section 8.1.

8.5.2 HI-STAR 100 SYSTEM Receipt and Preparation for MPC Transfer

Note:
The following provides a general description of the HI-STAR 100 System operations. Refer to the HI-STAR 100 System Topical Safety Analysis Report (Docket 72-1008) and the Safety Analysis Report (Docket 71-9261) for HI-STAR-specific operations.

1. Review the shipping paperwork and verify that the HI-STAR 100 Overpack met the required internal contamination limits prior to transportation.
2. Measure the HI-STAR 100 dose rates in accordance with 10CFR20.205 [8.5.1].
3. Remove the personnel barrier.
4. Perform removable contamination surveys in accordance with 10CFR20.205 [8.5.1].
5. Remove the impact limiters.

6. Remove the tie-down.

7. Perform a visual inspection of the overpack for obvious signs of shipping damage.

8. Remove the removable shear ring segments from the overpack. (Approximate weight is 50 lbs each).

9. Transfer the HI-STAR 100 Overpack to the location for MPC transfer and position it vertically.

10. Install the temporary shield ring on the overpack top flange *if used.*

ALARA Warning:
Gas sampling is performed to assess the condition of the MPC confinement boundary. If a leak is discovered in the ~~MPC~~*MPC* boundary, the MPC may not be placed into HI-STORM. If no leak is detected, the annulus may be vented directly.

11. Perform gas sampling as follows:

    a. Remove the overpack vent port cover plate and attach the backfill tool with a sample bottle attached. See Figure 8.5.1. Store the cover plate in a site-approved location.

    b. Using a vacuum pump, evacuate the sample bottle and backfill tool.

    c. Slowly open the vent port plug and gather a gas sample from the annulus. Reinstall the overpack vent port plug.

12. Evaluate the gas sample and determine the condition of the MPC confinement boundary.

13. If the confinement boundary is intact (i.e., no radioactive gas is measured) then vent the overpack annulus by removing the overpack vent port seal plug (using the backfill tool). Otherwise return the HI-STAR 100 to the spent fuel pool for MPC unloading in accordance with the HI-STAR 100 SAR.

14. Remove the closure plate bolts and remove the overpack closure plate. Store the closure plate on cribbing to protect the seal seating surfaces. Store the closure plate bolts in a site-approved location.

15. Install the HI-STAR 100 Seal Surface Protector.

16. Install the transfer collar on HI-STAR. See Figure 8.4.1.

Note:
The location of MPC transfer may be selected at the user's discretion.

17. Remove the MPC lift cleat hole plugs and install the MPC lift cleats. See Figure 8.1.24. See Table 8.1.5 for torque requirements.

18. Attach the MPC lift slings to the MPC lift cleat and lay them on the MPC lid.

Warning:
Unless the lift is single-failure proof (or equivalent safety factor) the HI-TRAC top lid, the lid shall be kept less than 2 feet above the top surface of the MPC. This is performed to protect the MPC lid from a potential lid drop.~~When traversing the MPC with the HI-TRAC top lid, the lid shall be kept less than 2 feet above the top surface of the MPC. This is performed to protect the MPC lid from a potential lid drop.~~

19. If necessary, install the HI-TRAC top lid. See Figure 8.1.9. See Table 8.1.5 for torque requirements.

20. If necessary, configure HI-TRAC with the transfer lid as follows:

ALARA Note:
The bottom lid replacement as described below may be performed only on an empty HI-TRAC.

21. Position HI-TRAC vertically adjacent to the transfer lid.

22. Remove the pool lid bolts and plates and store them in an approved plant storage location.

23. Raise the empty HI-TRAC and position it on top of the transfer lid.

24. Install the bottom lid bolts. See Table 8.1.5 for torque requirements.

25. Position HI-TRAC adjacent to HI-STAR.

26. Raise HI-TRAC above HI-STAR.

27. Align HI-TRAC over HI-STAR 100 and mate the overpacks. See Figure 8.1.31.

28. Remove the door locking pins and open the doors.

ALARA Warning:
If trim plates are not being used, personnel should remain clear of the door area during MPC downloading since there may be some radiation streaming during MPC raising and lowering operations.

29. At the users discretion, install trim plates to cover the gap above and below the door. The trim plates may be secured using clamps or any other method deemed suitable by the user. See Figure 8.1.33.

8.5.3 <u>Perform MPC Transfer into HI-STORM 100</u>

1. Raise the MPC into HI-TRAC by extending the MPC downloader.

2. Verify the MPC is in the full-up position.
3. Remove the trim plates (if used), close the doors and install the locking pins.
4. Close the HI-TRAC doors and install the door locking pins.
5. Raise HI-TRAC and remove the HI-STAR 100 Overpack from the operations area.
6. Transfer the MPC into HI-STORM in accordance with the steps provided in Section 8.1.
7. Place HI-STORM in storage in accordance with the steps provided in Section 8.1.
8. Perform shielding effectiveness testing in accordance with the HI-STORM 100 System Technical Specification LCO 3.2.3.
9. Perform an air temperature rise test per Step 8.1.7.22 if required by the Technical Specifications.

9.1 ACCEPTANCE CRITERIA

This section provides the workmanship inspections and acceptance tests to be performed on the HI-STORM 100 System prior to and during first loading of the system. These inspections and tests provide assurance that the HI-STORM 100 System has been fabricated, assembled, inspected, tested, and accepted for use under the conditions specified in this FSAR and the Certificate of Compliance issued by the NRC in accordance with the requirements of 10CFR72 [9.0.1].

These inspections and tests are also intended to demonstrate that the operation of the HI-STORM 100 System complies with the applicable regulatory requirements and the Technical Specifications contained in Appendix A to CoC 72-1014. Noncompliances encountered during the required inspections and tests shall be corrected or dispositioned to bring the item into compliance with this FSAR. Identification and resolution of noncompliances shall be performed in accordance with the Holtec International Quality Assurance Program as described in Chapter 13 of this FSAR, or the licensee's NRC-approved Quality Assurance Program.

The testing and inspection acceptance criteria applicable to the MPCs, the HI-STORM 100 overpack, and the 100-ton HI-TRAC and 125-ton HI-TRAC transfer casks are listed in Tables 9.1.1, 9.1.2, and 9.1.3, respectively, and discussed in more detail in the sections that follow. Chapters 8 and 12 provide details on operating procedures and the bases for the Technical Specifications, respectively. These inspections and tests are intended to demonstrate that the HI-STORM 100 System has been fabricated, assembled, and examined in accordance with the design criteria contained in Chapter 2 of this FSAR.

This section summarizes the test program required for the HI-STORM 100 System.

9.1.1 Fabrication and Nondestructive Examination (NDE)

The design, fabrication, inspection, and testing of the HI-STORM 100 System is performed in accordance with the applicable codes and standards specified in Tables 2.2.6 and 2.2.7 and on the Design Drawings. Additional details on specific codes used are provided below.

The following fabrication controls and required inspections shall be performed on the HI-STORM 100 System, including the MPCs, overpacks, and HI-TRAC transfer casks, in order to assure compliance with this FSAR and the Certificate of Compliance.

1. Materials of construction specified for the HI-STORM 100 System are identified in the drawing Bills-of-Material in Chapter 1 and shall be procured with certification and supporting documentation as required by ASME Code [9.1.1] Section II (when applicable); the requirements of ASME Section III (when applicable); Holtec procurement specifications; and 10CFR72, Subpart G. Materials and components shall be receipt inspected for visual and dimensional acceptability, material conformance to specification requirements, and traceability markings, as applicable. Controls shall be in place to assure material traceability is maintained throughout fabrication. Materials for the confinement boundary (MPC baseplate, lid, closure

ring, port cover plates and shell) shall also be inspected per the requirements of ASME Section III, Article NB-2500.

2. The MPC confinement (helium retention) boundary shall be fabricated and inspected in accordance with ASME Code, Section III, Subsection NB, with exceptions as noted below. The MPC basket and basket supports shall be fabricated and inspected in accordance with ASME Code, Section III, Subsection NG, with exceptions as noted below. Metal components of the HI-TRAC transfer cask and the HI-STORM overpack, as applicable, shall be fabricated and inspected in accordance with ASME Code, Section III, Subsection NF, Class 3 or AWS D1.1, as shown on the Design Drawings, with exceptions as noted below.

   NOTE: Exceptions to these Code requirements are provided in FSAR Chapter 2 and in Table 3-1 of Appendix B to CoC 72-1014.

3. ASME Code welding shall be performed using welders and weld procedures that have been qualified in accordance with ASME Code Section IX and the applicable ASME Section III Subsections (e.g., NB, NG, or NF, as applicable to the SSC). AWS code welding may be performed using welders and weld procedures that have been qualified in accordance with applicable AWS requirements or in accordance with ASME Code Section IX

4. Welds shall be visually examined in accordance with ASME Code, Section V, Article 9 with acceptance criteria per ASME Code, Section III, Subsection NF, Article NF-5360, except the MPC fuel basket cell plate-to-cell plate welds and fuel basket support-to-canister welds which shall have acceptance criteria to ASME Code Section III, Subsection NG, Article NG-5360, (as modified by the Design Drawings). Table 9.1.4 identifies additional nondestructive examination (NDE) requirements to be performed on specific welds, and the applicable codes and acceptance criteria to be used in order to meet the inspection requirements of the applicable ASME Code, Section III. Acceptance criteria for NDE shall be in accordance with the applicable Code for which the item was fabricated. These additional NDE criteria are also specified on the Design Drawings provided in Chapter 1 for the specific welds. Weld inspections shall be detailed in a weld inspection plan which shall identify the weld and the examination requirements, the sequence of examination, and the acceptance criteria. The inspection plan shall be reviewed and approved by Holtec in accordance with its QA program. NDE inspections shall be performed in accordance with written and approved procedures by personnel qualified in accordance with SNT-TC-1A [9.1.2] or other site-specific, NRC-approved program for personnel qualification.

5. Machined surfaces of the metal components of the HI-STORM 100 System shall be visually examined in accordance with ASME Section V, Article 9, to verify they are free of cracks and pin holes.

6. ASME Code welds requiring weld repair shall be repaired in accordance with the requirements of the ASME Code, Section III, Article NB-4450, NG-4450, or NF-4450, as applicable to the SSC, and examined after repair in the same manner as the original weld.

7. Base metal repairs shall be performed and examined in accordance with the applicable fabrication Code.

8. Grinding and machining operations on the MPC confinement boundary shall be controlled through written and approved procedures and quality assurance oversight to ensure grinding and machining operations do not reduce base metal wall thicknesses of the confinement boundary beyond that allowed per the Design Drawings in Chapter 1. The thicknesses of base metals shall be ultrasonically tested, as necessary, in accordance with written and approved procedures to verify base metal thickness meets Design Drawing requirements. A nonconformance shall be written for areas found to be below allowable base metal thickness and shall be evaluated and repaired per the applicable ASME Code, Subsection NB requirements.

9. Dimensional inspections of the HI-STORM 100 System shall be performed in accordance with written and approved procedures in order to verify compliance to Design Drawings and fit-up of individual components. All dimensional inspections and functional fit-up tests shall be documented.

10. Required inspections shall be documented. The inspection documentation shall become part of the final quality documentation package.

11. The HI-STORM 100 System shall be inspected for cleanliness and proper packaging for shipping in accordance with written and approved procedures.

12. Each cask shall be durably marked with the appropriate model number, a unique identification number, and its empty weight per 10CFR72.236(k) at the completion of the acceptance test program.

13. A documentation package shall be prepared and maintained during fabrication of each HI-STORM 100 System to include detailed records and evidence that the required inspections and tests have been performed. Prior to shipment of a HI-STORM 100 System or component, the completed documentation package shall be reviewed to verify that the HI-STORM 100 System or component has been properly fabricated and inspected in accordance with the design and Code construction requirements. The documentation package shall include, but not be limited to:

    - Completed Shop Travelers (as applicable)
    - Inspection Records
    - Nonconformance Reports
    - Material Test Reports

- NDE Reports
- As-Built Report

9.1.1.1 MPC Lid-to-Shell Weld Volumetric Inspection

1. The MPC lid-to-shell (LTS) weld shall be volumetrically or multi-layer liquid penetrant (PT) examined following completion of welding. If volumetric examination is used, the ultrasonic testing (UT) method shall be employed. Ultrasonic techniques (including, as appropriate, Time-of-Flight Diffraction, Focussed Phased Array, and conventional pulse-echo) shall be supplemented, as necessary, to ensure substantially complete coverage of the examination volume.

2. If volumetric examination is used, then a PT examination of the root and final pass of the LTS weld shall also be performed and unacceptable indications shall be documented, repaired and re-examined.

3. If volumetric examination is not used, a multi-layer PT examination shall be employed. The multi-layer PT must, at a minimum, include the root and final weld layers and one intermediate PT after each approximately 3/8 inch weld depth has been completed. The 3/8 inch weld depth corresponds to the maximum allowable flaw size determined in Holtec Position Paper DS-213 [9.1.6].

4. It is recognized that welding of the LTS weld may result in indications in the root pass that are not detected by the root pass PT. The overall minimum thickness of the LTS weld has been increased by 0.125 inch such that it is not necessary to take structural credit for the root pass on the Design Drawings in Chapter 1 (actual weld to be a minimum of 0.75 inch). A 0.625-inch J-groove weld was assumed in structural analyses in Chapter 3.

5. For either UT or PT, the maximum detectable flaw size must be demonstrated to be less than the critical flaw size. The critical flaw size must be determined in accordance with ASME Section XI methods. The critical flaw size shall not cause the primary stress limits of NB-3000 to be exceeded. The inspection process, including findings (indications) shall be made a permanent part of the cask user's records by video, photographic, or other means which provide an equivalent retrievable record of weld integrity. The video or photographic records should be taken during the final interpretation period described in ASME Section V, Article 6, T-676. The inspection of the weld shall be performed by qualified personnel and shall meet the acceptance requirements of ASME Section III, NB-5350 for PT and NB-5332 for UT.

6. Evaluation of any indications shall include consideration of any active flaw mechanisms. However, cyclic loading on the LTS weld is not significant, so fatigue is not a factor. The LTS weld is protected from the external environment by the closure ring and the root of the LTS weld is dry and inert (He atmosphere), so stress

corrosion cracking is not a concern for the LTS weld.

7. The volumetric or multi-layer PT examination of the LTS weld, in conjunction with other examinations performed on this weld (PT of root and final layer, hydrostatic test, and a helium leakage test); the use of ASME Section III acceptance criteria, and the additional weld material added to account for potential defects in the root pass of the weld, in total, provide reasonable assurance that the LTS weld is sound and will perform its design function under all loading conditions. The volumetric (or multi-layer PT) examination and evaluation of indications provides reasonable assurance that leakage of the weld or structural failure under the design basis normal, off-normal, and accident loading conditions will not occur.

9.1.2 Structural and Pressure Tests

9.1.2.1 Lifting Trunnions

Two trunnions (located near the top of the HI-TRAC transfer cask) are provided for vertical lifting and handling. The trunnions are designed in accordance with ANSI N14.6 [9.1.3] using a high-strength and high-ductility material (see Chapter 1). The trunnions contain no welded components. The maximum design lifting load of 250,000 pounds for the 125-ton HI-TRAC and 200,000 pounds for the 100-ton HI-TRAC will occur during the removal of the HI-TRAC from the spent fuel pool after the MPC has been loaded, flooded with water, and the MPC lid is installed. The high-material ductility, absence of materials vulnerable to brittle fracture, large stress margins, and a carefully engineered design to eliminate local stress risers in the highly-stressed regions (during the lift operations) ensure that the lifting trunnions will work reliably. However, pursuant to the defense-in-depth approach of NUREG-0612 [9.1.4], the acceptance criteria for the lifting trunnions must be established in conjunction with other considerations applicable to heavy load handling.

Section 5 of NUREG-0612 calls for measures to "provide an adequate defense-in-depth for handling of heavy loads...". The NUREG-0612 guidelines cite four major causes of load handling accidents, of which rigging failure (including trunnion failure) is one:

i. operator errors
ii. rigging failure
iii. lack of adequate inspection
iv. inadequate procedures

The cask loading and handling operations program shall ensure maximum emphasis to mitigate the potential load drop accidents by implementing measures to eliminate shortcomings in all aspects of the operation including the four aforementioned areas.

In order to ensure that the lifting trunnions do not have any hidden material flaws, the trunnions shall be tested at 300% of the maximum design (service) lifting load. The load (750,000 lbs for the 125-ton HI-TRAC and 600,000 lbs for the 100-ton HI-TRAC) shall be applied for a minimum of 10 minutes. The accessible parts of the trunnions (areas outside the HI-TRAC cask), and the adjacent

HI-TRAC cask trunnion attachment area shall then be visually examined to verify no deformation, distortion, or cracking occurred. Any evidence of deformation, distortion or cracking of the trunnion or adjacent HI-TRAC cask trunnion attachment areas shall require replacement of the trunnion and/or repair of the HI-TRAC cask. Following any replacements and/or repair, the load testing shall be performed and the components re-examined in accordance with the original procedure and acceptance criteria. Testing shall be performed in accordance with written and approved procedures. Certified material test reports verifying trunnion material mechanical properties meet ASME Code Section II requirements will provide further verification of the trunnion load capabilities. Test results shall be documented. The documentation shall become part of the final quality documentation package.

The acceptance testing of the trunnions in the manner described above will provide adequate assurance against handling accidents.

9.1.2.2 Hydrostatic Testing

9.1.2.2.1 HI-TRAC Transfer Cask Water Jacket

The 125-Ton and 100-Ton HI-TRAC transfer cask water jackets shall be hydrostatically tested to 75 psig +3,-0 psig, and 71 psig +3, -0 psig, respectively, in accordance with written and approved procedures. The water jacket fill port will be used for filling the cavity with water and the vent port for venting the cavity. The approved test procedure shall clearly define the test equipment arrangement.

The hydrostatic test shall be performed after the water jacket has been welded together. The test pressure gage installed on the water jacket shall have an upper limit of approximately twice that of the test pressure. The hydrostatic test pressure shall be maintained for ten minutes. During this time period, the pressure gage shall not fall below the applicable minimum test pressure. At the end of ten minutes, and while the pressure is being maintained at the minimum pressure, weld joints shall be visually examined for leakage. If a leak is discovered, the cavity shall be emptied and an examination to determine the cause of the leakage shall be made. Repairs and retest shall be performed until the hydrostatic test criteria are met.

After completion of the hydrostatic testing, the water jacket exterior surfaces shall be visually examined for cracking or deformation. Evidence of cracking or deformation shall be cause for rejection, or repair and retest, as applicable. Liquid penetrant (PT) or magnetic particle (MT) examination of accessible welds shall be performed in accordance with ASME Code, Section V, Articles 6 and 7, respectively, with acceptance criteria per ASME Code, Section III, Subsection NF, Articles NF-5350 and NF-5340, respectively. Unacceptable areas shall require repair and re-examination per the applicable ASME Code. The HI-TRAC water jacket hydrostatic test shall be repeated until all examinations are found to be acceptable.

If a hydrostatic retest is required and fails, a nonconformance report shall be issued and a root cause evaluation and appropriate corrective actions taken before further repairs and retests are performed.

Test results shall be documented. The documentation shall become part of the final quality documentation package.

9.1.2.2.2 MPC Confinement Boundary

Hydrostatic testing of the MPC confinement boundary shall be performed in accordance with the requirements of the ASME Code Section III, Subsection NB, Article NB-6000, when field welding of the MPC lid-to-shell weld is completed. The hydrostatic pressure for the test is 125 +5,-0 psig, which is 125% of the design pressure of 100 psig. The MPC vent and drain ports will be used for pressurizing the MPC cavity. The loading procedures in FSAR Chapter 8 define the test equipment arrangement. The calibrated test pressure gage installed on the MPC confinement boundary shall have an upper limit of approximately twice that of the test pressure. Following completion of the 10-minute hold period at the hydrostatic test pressure, and while maintaining a minimum test pressure of 125 psig, the surface of the MPC lid-to-shell weld shall be visually examined for leakage and then re-examined by liquid penetrant examination in accordance with ASME Code, Section III, Subsection NB, Article NB-5350 acceptance criteria. Any evidence of cracking or deformation shall be cause for rejection, or repair and retest, as applicable. The performance and sequence of the test is described in FSAR Section 8.1 (loading procedures).

If a leak is discovered, the test pressure shall be reduced, the MPC cavity water level lowered, the MPC cavity vented (to the pool or the licensee's off-gas system), and the weld shall be examined to determine the cause of the leakage and/or cracking. Repairs to the weld shall be performed in accordance with written and approved procedures prepared in accordance with the ASME Code, Section III, Subsection NB, NB-4450.

The MPC confinement boundary hydrostatic test shall be repeated until all visual and liquid penetrant examinations are found to be acceptable in accordance with the acceptance criteria. Test results shall be documented and maintained as part of the loaded MPC quality documentation package.

9.1.2.3 Materials Testing

The majority of materials used in the HI-TRAC transfer cask and a portion of the material in the HI-STORM overpack are ferritic steels. ASME Code, Section II and Section III require that certain materials be tested in order to assure that these materials are not subject to brittle fracture failures.

Materials of the HI-TRAC transfer cask and HI-STORM overpack, as required, shall be Charpy V-notch tested in accordance with ASME Section IIA and/or ASME Section III, Subsection NF, Articles NF-2300, and NF-2430. The materials to be tested include the components identified in Table 3.1.18 and applicable weld materials. Table 3.1.18 provides the test temperatures and test acceptance criteria to be used when performing the material testing specified above.

The concrete utilized in the construction of the HI-STORM overpack shall be mixed, poured, and tested as described in FSAR Appendix 1.D in accordance with written and approved procedures.

Testing shall verify the composition, compressive strength, and density meet design requirements.

Concrete testing shall be performed for each lot of concrete. Concrete testing shall comply with ACI 349, as described in Table 1.D.2. Test specimens shall be in accordance with ASTM C39.

Test results shall be documented and become part of the final quality documentation package.

9.1.3 Leakage Testing

Leakage testing shall be performed in accordance with the requirements of ANSI N14.5 [9.1.5]. Testing shall be performed in accordance with written and approved procedures.

At completion of welding the MPC shell to the baseplate, an MPC confinement boundary weld helium leakage test shall be performed using a helium mass spectrometer leak detector (MSLD). A temporary test closure lid is used in order to provide a sealed MPC. The confinement boundary welds shall have indicated helium leakage rates less than or equal to 5×10^{-6} atm cm^3/s (helium). If a leakage rate exceeding the acceptance criterion is detected, then the area of leakage shall be determined and the area repaired per ASME Code Section III, Subsection NB, Article NB-4450 requirements. Re-testing shall be performed until the leakage rate acceptance criteria is met.

If failure of the leakage rate retest occurs after initial repairs are completed, a nonconformance report shall be issued, and a root cause evaluation and appropriate corrective actions taken before further repairs and retest are performed.

Leakage testing of the field welded MPC lid-to-shell weld shall be performed following the successful completion of the MPC hydrostatic test performed per Section 9.1.2.2.2. Leakage testing of the vent and drain port cover plate welds shall be performed after welding of the cover plates and subsequent NDE. The description and procedures for these field leakage tests are provided in FSAR Section 8.1, and the acceptance criteria are defined in the Technical Specifications in Appendix A to CoC 72-1014.

Leak testing results for the MPC shall be documented and shall become part of the quality record documentation package.

9.1.4 Component Tests

9.1.4.1 Valves, Rupture Discs, and Fluid Transport Devices

There are no fluid transport devices or rupture discs associated with the HI-STORM 100 System. The only valve-like components in the HI-STORM 100 System are the specially designed caps installed in the MPC lid for the drain and vent ports. These caps are recessed inside the MPC lid and covered by the fully-welded vent and drain port cover plates. No credit is taken for the caps' ability to confine helium or radioactivity. After completion of drying and backfill operations, the drain and vent port cover plates are welded in place on the MPC lid and are leak tested to verify the MPC confinement boundary.

There is a pressure relief valve installed in the upper ledge surface of the HI-TRAC transfer cask water jacket. This pressure relief valve is provided for venting of the neutron shield jacket fluid under hypothetical fire accident conditions in which the design pressure of the water jacket may be exceeded. The pressure relief valve shall relieve at 60 psig.

9.1.4.2 Seals and Gaskets

There are no confinement seals or gaskets included in the HI-STORM 100 System.

9.1.5 Shielding Integrity

The HI-STORM 100 overpack and MPC have two designed shields for neutron and gamma ray attenuation. The HI-STORM overpack concrete provides both neutron and gamma shielding. Additional neutron shielding is provided by the encased Boral neutron absorber attached to the fuel basket cell surfaces inside the MPCs. The overpack's inner and outer steel shells, and the steel shield shell, provide radial gamma shielding. Concrete and steel plates provide axial neutron and gamma shielding. A concrete ring attached to the top of the overpack lid provides additional gamma and neutron shielding in the axial direction. Steel gamma shield cross plates, installed in the overpack air inlet and outlet vents, provide additional shielding for radiation through the vent openings.

The HI-TRAC transfer cask uses three different materials for primary shielding. The HI-TRAC's radial lead shield, and the top, in-pool, and transfer lids (which contain steel and lead) provide gamma shielding. The water jacket provides radial neutron shielding. Additionally, the top lid and transfer lid use Holtite-A to provide axial neutron shielding. Testing requirements for the shielding items are described below.

9.1.5.1 Fabrication Testing and Control

Holtite-A:

Neutron shield properties of Holtite-A are provided in Chapter 1, Section 1.2.1.3.2. Each *manufactured* lot ~~(mixed batch)~~ of neutron shield material shall be tested to verify the material composition (aluminum and hydrogen), boron concentration and neutron shield density (or specific gravity) meet the requirements specified in Chapter 1 and the Bill-of-Material. *A manufactured lot is defined as the total amount of material used to make any number of mixed batches comprised of constituent ingredients from the same lot/batch identification numbers supplied by the constituent manufacturer.* Testing shall be performed in accordance with written and approved procedures *and/or standards*. Material composition, boron concentration and density (or specific gravity) data for each *manufactured* lot of neutron shield material shall become part of the quality documentation package.

The installation of the neutron shielding material shall be performed in accordance with written and qualified procedures. The procedures shall ensure that mix ratios and mixing methods are controlled

in order to achieve proper material composition, boron concentration and distribution, and that pours are controlled in order to prevent gaps from occurring in the material. Samples of each *manufactured* lot of neutron shield material shall be maintained by Holtec International as part of the quality record documentation package.

Concrete:

The dimensions of the HI-STORM overpack steel shells and the density of the concrete shall be verified to be in accordance with FSAR Appendix 1.D and the Design Drawings prior to concrete installation. The dimensional inspection and density measurements shall be documented. Also, see Subsection 9.1.2.3 for concrete material testing requirements.

Lead:

The installation of the lead in the HI-TRAC transfer cask shall be performed using written and qualified procedures in order to ensure voids are minimized. Stand pipes or similar devices (as applicable) shall be placed on the upper portion of the cask to ensure the presence of an excess head of liquid lead. Vent risers shall be provided to allow for the air to escape. The HI-TRAC cask components shall be uniformly preheated prior to a lead pour. The temperature of the lead shall be verified to be in the correct temperature range and the lead shall be poured or pumped into place in the annulus (as applicable). The lead pour shall be followed by a controlled cooldown to minimize the gap between the lead and steel shells. The lead shall be cooled from the bottom up and additional molten lead shall be added to the standpipes as necessary to account for lead shrinkage. Each lot of lead shall be tested for chemical composition.

As an alternative to pouring molten lead, the HI-TRAC lead shielding may be installed as pre-cast sections. If pre-cast sections are used, the design of the sections and the installations instructions shall minimize the gaps between adjacent lead sections and between the lead and the transfer cask walls to the extent practicable.

Steel:

Steel plates utilized in the construction of the HI-STORM 100 System shall be dimensionally inspected to assure compliance with the requirements specified on the Design Drawings.

General Requirements for Shield Materials:

1. Test results shall be documented and become part of the quality documentation package.

2. Dimensional inspections of the cavities containing the shielding materials shall assure that the design required amount of shielding material is being incorporated into the fabricated item.

Shielding effectiveness tests shall be performed during fabrication and again after initial loading

operations in accordance with Section 9.1.5.2 below and the operating procedures in Chapter 8.

9.1.5.2 Shielding Effectiveness Tests

The effectiveness of the lead pours in the HI-TRAC transfer cask body, pool lid, and transfer lid doors shall be verified during fabrication by performing gamma scanning on all accessible surfaces of the cask in the lead pour region. The gamma scanning ~~shall~~ *may* be performed prior to, *or after* installation of the water jacket. The purpose of the gamma scanning test is to demonstrate that the gamma shielding of the transfer cask body, pool lid, and transfer lid doors is at least as effective as that of a lead and steel test block. For the test block, the steel thickness shall be equivalent to the minimum design thickness of steel in the transfer cask component and the lead thickness shall be 5 percent lower than the minimum design thickness of lead in the transfer cask component (see the Design Drawings for the design values). Data shall be recorded on a 6-inch by 6-inch (nominal) grid pattern over the surfaces to be scanned. Should the measured gamma dose rates exceed those established with the test block, the shielding of that transfer cask component shall be deemed unacceptable. Corrective actions shall be taken as appropriate and the testing re-performed until successful results are achieved. Gamma scanning shall be performed in accordance with written and approved procedures. Dose rate measurements shall be documented and shall become part of the quality documentation package.

Following the first fuel loading of each HI-STORM 100 System (HI-TRAC transfer cask and HI-STORM storage overpack), a shielding effectiveness test shall be performed at the loading facility site to verify the effectiveness of the radiation shield. This test shall be performed after the HI-STORM overpack and HI-TRAC transfer cask have been loaded with an MPC containing spent fuel assemblies and the MPC has been drained, *moisture removed,* ~~vacuum dried~~, and backfilled with helium.

Operational neutron and gamma shielding effectiveness tests shall be performed after fuel loading using written and approved procedures. Calibrated neutron and gamma dose rate meters shall be used to measure the actual neutron and gamma dose rates at the surface of the HI-STORM overpack and HI-TRAC. Measurements shall be taken at the locations specified in the Technical Specifications in Appendix A to CoC 72-1014 and, if necessary, average dose rates computed for comparison against the prescribed limits. The results of the dose rate measurements shall be compared to the limits specified in the Technical Specifications. The test is considered acceptable if the dose rate readings are less than or equal to limits in the Technical Specifications. If dose rates are higher than the limits, the Required Actions provided in the Technical Specifications shall be completed. Dose rate measurements shall be documented and shall become part of the quality documentation package.

9.1.5.3 Neutron Absorber Tests

Each plate of Boral shall be visually inspected by the manufacturer for damage (e.g., scratches, cracks, burrs, and peeled cladding) and foreign material embedded in the surfaces. In addition, the MPC fabricator shall visually inspect the Boral plates on a lot sampling basis. The sample size shall be determined in accordance with MIL-STD-105D or equivalent. The selected Boral plates shall be inspected for damage such as inclusions, cracks, voids, delamination, and surface finish.

After manufacturing, a statistical sample of each lot of Boral shall be tested using wet chemistry and/or neutron attenuation techniques to verify a minimum ^{10}B content (areal density) at the ends of the panel. *The minimum ^{10}B loading of the Boral panels for each MPC model is provided in Table 2.1.15.* Any panel in which ^{10}B loading is less than the minimum allowed shall be rejected. Testing shall be performed using written and approved procedures. Results shall be documented and become part of the cask quality records documentation package.

Installation of Boral panels into the fuel basket shall be performed in accordance with written and approved instructions. Travelers and quality control procedures shall be in place to assure each required cell wall of the MPC basket contains a Boral panel in accordance with Design Drawings in Chapter 1. These quality control processes, in conjunction with Boral manufacturing testing, provide the necessary assurances that the Boral will perform its intended function. No additional testing or in-service monitoring of the Boral will be required.

9.1.6 Thermal Acceptance Tests

The thermal performance of the HI-STORM 100 System, including the MPCs and HI-TRAC transfer casks, is demonstrated through analysis in Chapter 4 of the FSAR. Dimensional inspections to verify the item has been fabricated to the dimensions provided in the Design Drawings shall be performed prior to system loading. Following the loading and placement on the storage pad of the first HI-STORM System placed in service, the operability of the natural convective cooling of the HI-STORM 100 System shall be verified by the performance of an air temperature rise test. A description of the test is described in FSAR Chapter 8.

In addition, the Technical Specifications require periodic surveillance of the overpack air inlet and outlet vents or, optionally, implementation of an overpack air temperature monitoring program to provide continued assurance of the operability of the HI-STORM 100 heat removal system.

9.1.7 Cask Identification

Each MPC, HI-STORM overpack, and HI-TRAC transfer cask shall be marked with a model number, identification number (to provide traceability back to documentation), and the empty weight of the item in accordance with the marking requirements specified in the Design Drawings in Chapter 1.

Table 9.1.1

MPC INSPECTION AND TEST ACCEPTANCE CRITERIA

Function	Fabrication	Pre-operation	Maintenance and Operations
Visual Inspection and Nondestructive Examination (NDE)	a) Examination of MPC components per ASME Code Section III, Subsections NB and NG, as defined on design drawings, per NB-5300 and NG-5300, as applicable. b) A dimensional inspection of the internal basket assembly and canister shall be performed to verify compliance with design requirements. c) A dimensional inspection of the MPC lid and MPC closure ring shall be performed prior to inserting into the canister shell to verify compliance with design requirements. d) NDE of weldments are defined on the design drawings using standard American Welding Society NDE symbols and/or notations. e) Cleanliness of the MPC shall be verified upon completion of fabrication. f) The packaging of the MPC at the completion of fabrication shall be verified prior to shipment.	a) The MPC shall be visually inspected prior to placement in service at the licensee's facility. b) MPC protection at the licensee's facility shall be verified. c) MPC cleanliness and exclusion of foreign material shall be verified prior to placing in the spent fuel pool.	a) None.

Table 9.1.1 (continued)

MPC INSPECTION AND TEST ACCEPTANCE CRITERIA

Function	Fabrication	Pre-operation	Maintenance and Operations
Structural	a) Assembly and welding of MPC components shall be performed per ASME Code Section IX and III, Subsections NB and NG, as applicable. b) Materials analysis (steel, Boral, etc.), shall be performed and records shall be kept in a manner commensurate with "important to safety" classifications.	a) None.	a) An ultrasonic (UT) examination or multi-layer liquid penetrant (PT) examination of the MPC lid-to-shell weld shall be performed per ASME Section V, Article 5 (or ASME Section V, Article 2). Acceptance criteria for the examination are defined in Subsection 9.1.1.1 and in the Design Drawings. b) ASME Code NB-6000 hydrostatic test shall be performed after MPC closure welding. Acceptance criteria are defined in Subsection 9.1.2.2.2.
Leak Tests	a) Helium leak rate testing shall be performed on all MPC pressure boundary shop welds.	a) None.	a) Helium leak rate testing shall be performed on MPC lid-to-shell, and vent and drain ports-to-MPC lid field welds after closure welding. Acceptance criteria are defined in ~~Subsection 8.1.3.2~~*Appendix A to the CoC.*

Table 9.1.1 (continued)

MPC INSPECTION AND TEST ACCEPTANCE CRITERIA

Function	Fabrication	Pre-operation	Maintenance and Operations
Criticality Safety	a) The boron content shall be verified at the time of neutron absorber material manufacture. b) The installation of Boral panels into MPC basket plates shall be verified by inspection.	a) None.	a) None.
Shielding Integrity	a) Material compliance shall be verified through CMTRs. b) Dimensional verification of MPC lid thickness shall be performed.	a) None.	a) None.
Thermal Acceptance	a) None.	a) None.	a) None.
Fit-Up Tests	a) Fit-up of the following components is to be tested during fabrication. - MPC lid - vent/drain port cover plates - MPC closure ring b) A gauge test of all basket fuel compartments.	a) Fit-up of the following components shall be verified during pre-operation. - MPC lid - MPC closure ring - vent/drain cover plates	a) None.
Canister Identification Inspections	a) Verification of identification marking applied at completion of fabrication.	a) Identification marking shall be checked for legibility during pre-operation.	a) None.

Table 9.1.2
HI-STORM 100 STORAGE OVERPACK INSPECTION AND TEST ACCEPTANCE CRITERIA

Function	Fabrication	Pre-operation	Maintenance and Operations
Visual Inspection and Nondestructive Examination (NDE)	Structural Steel Components: a) All ASME and AWS welds shall be visually examined per ASME Section V, Article 9 with acceptance criteria per ASME Section III, Subsection NF, NF-5360. b) All welds requiring PT examination as shown on the Design Drawings shall be PT examined per ASME Section V, Article 6 with acceptance criteria per ASME Section III, Subsection NF, NF-5350. c) All welds requiring MT examination as shown on the Design Drawings shall be MT examined per ASME Section V, Article 7 with acceptance criteria per ASME Section III, Subsection NF, NF-5340. d) NDE of weldments shall be defined on design drawings using standard AWS NDE symbols and/or notations. Concrete Components: The following processes related to concrete components shall be implemented per ACI 349 as clarified in FSAR Appendix 1.D. Concrete testing shall be in accordance with Table 1.D.2. Activities shall be conducted in accordance with written and approved procedures. a) Assembly and examination. b) Materials verification. c) Mixing, pouring, and testing.	a) The overpack shall be visually inspected prior to placement in service. b) Fit-up with mating components (e.g., lid) shall be performed directly whenever practical or using templates or other means. c) Overpack protection at the licensee's facility shall be verified. d) Exclusion of foreign material shall be verified prior to placing the overpack in service at the licensee's facility.	a) Indications identified during visual inspection shall be corrected, reconciled, or otherwise dispositioned . b) Exposed surfaces shall be monitored for coating deterioration and repair/recoat as necessary.

Table 9.1.2 (continued)

HI-STORM 100 STORAGE OVERPACK INSPECTION AND TEST ACCEPTANCE CRITERIA

Function	Fabrication	Pre-operation	Maintenance and Operations
Visual Inspection and Nondestructive Examination (NDE) (continued)	General: a) Cleanliness of the overpack shall be verified upon completion of fabrication. b) Packaging of the overpack at the completion of shop fabrication shall be verified prior to shipment.		
Structural	a) No structural or pressure tests are required for the overpack during fabrication. b) Concrete compressive strength tests shall be performed per ASTM C39.	a) No structural or pressure tests are required for the overpack during pre-operation.	a) No structural or pressure tests are required for the overpack during operation.
Leak Tests	a) None.	a) None.	a) None.
Criticality Safety	a) No neutron absorber tests of the overpack are required for criticality safety during fabrication.	a) None.	a) None.
Shielding Integrity	a) Concrete density shall be verified per ACI-349 as clarified by FSAR Appendix 1.D, at time of placement. b) Shell thicknesses and dimensions between inner and outer shells shall be verified as conforming to design drawings prior to concrete placement. c) Verification of material composition shall be performed.	a) None	a) A shielding effectiveness shall be performed after the initial fuel loading in accordance with the Technical Specifications. Repeat shielding effectiveness test every five years as part of the Maintenance Program described in FSAR Section 9.2.

Table 9.1.2 (continued)

HI-STORM 100 STORAGE OVERPACK INSPECTION AND TEST ACCEPTANCE CRITERIA

Function	Fabrication	Pre-operation	Maintenance and Operations
Thermal Acceptance	a) Inner shell I.D. and vent size, configuration and placement shall be verified.	a) No pre-operational testing related to the thermal characteristics of the overpack is required.	a) Air temperature rise test(s) shall be performed after initial loading of the first HI-STORM 100 System in accordance with the operating procedures in Chapter 8. b) Periodic surveillance shall be performed by either (1) or (2) below, at the licensee's discretion in accordance with the Technical Specifications: (1) Inspection of overpack inlet and outlet air vent openings for debris and other obstructions. (2) Temperature monitoring.
Cask Identification	a) Verification that the overpack identification plate contains the required information and has been attached shall be performed upon completion of assembly.	a) The overpack identification plate shall be checked prior to loading..	a) The overpack identification plate shall be periodically inspected per licensee procedures and repaired or replaced if damaged.
Fit-up Tests	a) Lid fit-up with the overpack shall be verified following fabrication.	a) None.	a) None.

Table 9.1.3

100 TON HI-TRAC AND 125-TON HI-TRAC TRANSFER CASK INSPECTION AND TEST ACCEPTANCE CRITERIA

Function	Fabrication	Pre-operation	Maintenance and Operations
Visual Inspection and Nondestructive Examination (NDE)	a) All ASME and AWS welds shall be visually examined per ASME Section V, Article 9 with acceptance criteria per ASME Section III, Subsection NF, NF-5360. b) All welds requiring PT examination as shown on the Design Drawings shall be PT examined per ASME Section V, Article 6 with acceptance criteria per ASME Section III, Subsection NF, NF-5350. c) All welds requiring MT examination as shown on the Design Drawings shall be MT examined per ASME Section V, Article 7 with acceptance criteria per ASME Section III, Subsection NF, NF-5340. d) NDE of weldments shall be defined on design drawings using standard AWS NDE symbols and/or notations e) Cleanliness of the transfer cask shall be verified upon completion of fabrication. f) Packaging of the transfer cask at the completion of fabrication shall be verified prior to shipment.	a) The transfer cask shall be visually inspected prior to placement in service. b) Transfer cask protection at the licensee's facility shall be verified. c) Transfer cask cleanliness and exclusion of foreign material shall be verified prior to use.	a) Annual visual inspections of the transfer cask shall be performed to assure continued compliance with Design Drawing requirements. (See footnote for Table 9.2.1).

Table 9.1.3 (continued)

100-TON HI-TRAC AND 125-TON HI-TRAC TRANSFER CASK INSPECTION AND TEST ACCEPTANCE CRITERIA

Function	Fabrication	Pre-operation	Maintenance and Operations
Structural	a) Verification of structural materials shall be performed through receipt inspection and review of certified material test reports (CMTRs) obtained in accordance with the item's quality category. a) A load test of the lifting trunnions shall be performed during fabrication per ANSI N14.6. b) A pressure test of the neutron shield water jacket shall be performed during fabrication.	a) None.	a) Annual load testing of the lifting trunnions shall be performed per ANSI N14.6. (See footnote to Table 9.2.1). b) The set pressure of the relief valve on the neutron shield water jacket shall be verified by calibration annually. (See footnote to Table 9.2.1)
Leak Tests	a) None.	a) None.	a) None.
Criticality Safety	a) None.	a) None.	a) None.
Shielding Integrity	a) Material verifications (lead, Holtite-A, shell plates, etc.) shall be performed in accordance with the item's quality category. The required material certifications shall be obtained. b) The placement of lead shall be controlled through written special process procedures. c) A gamma scan test shall be performed on the cask body, pool lid, and transfer lid doors to verify lead continuity after pouring. The test shall be performed using a 6 in. by 6 inch (nominal) test grid before the water jacket is installed.	a) None	a) A shielding effectiveness shall be performed after the initial fuel loading in accordance with the Technical Specifications. b) Neutron shield water jacket water level shall be verified prior to use.

Table 9.1.3 (continued)

100-TON HI-TRAC AND 125-TON HI-TRAC TRANSFER CASK INSPECTION AND TEST ACCEPTANCE CRITERIA

Function	Fabrication	Pre-operation	Maintenance and Operations
Thermal Acceptance	a) The thermal properties of the transfer cask are established by calculation and inspection, and are not tested during fabrication.	a) None.	a) None
Cask Identification	a) Verification that the transfer cask identification plate contains the required information and has been attached shall be performed upon completion of assembly.	a) The transfer cask identification plate shall be checked prior to loading..	a) The transfer cask identification plate shall be periodically inspected per licensee procedures and repaired or replaced if damaged.
Fit-up Tests	a) Fit-up tests of the transfer cask components (top, in-pool, and transfer lids) shall be performed during fabrication.	a) Fit-up test of the transfer cask lifting trunnions with the transfer cask lifting yoke shall be performed. b) Fit-up test of the transfer cask pocket trunnions with the horizontal transfer skid shall be performed.	a) Fit-up of the top, in-pool, and transfer lids shall be verified prior to use.

Table 9.1.4

HI-STORM 100 NDE REQUIREMENTS

MPC			
Weld Location	**NDE Requirement**	**Applicable Code**	**Acceptance Criteria (Applicable Code)**
Shell longitudinal seam	RT	ASME Section V, Article 2 (RT)	RT: ASME Section III, Subsection NB, Article NB-5320
	PT (surface)	ASME Section V, Article 6 (PT)	PT: ASME Section III, Subsection NB, Article NB-5350
Shell circumferential seam	RT	ASME Section V, Article 2 (RT)	RT: ASME Section III, Subsection NB, Article NB-5320
	PT (surface)	ASME Section V, Article 6 (PT)	PT: ASME Section III, Subsection NB, Article NB-5350
Baseplate-to-shell	RT or UT	ASME Section V, Article 2 (RT) ASME Section V, Article 5 (UT)	RT: ASME Section III, Subsection NB, Article NB-5320 UT: ASME Section III, Subsection NB, Article NB-5330
	PT (surface)	ASME Section V, Article 6 (PT)	PT: ASME Section III, Subsection NB, Article NB-5350

Table 9.1.4 (continued) HI-STORM 100 NDE REQUIREMENTS			
MPC			
Weld Location	**NDE Requirement**	**Applicable Code**	**Acceptance Criteria (Applicable Code)**
Lid-to-shell	PT (root and final pass) and multi-layer PT (if UT is not performed). PT (surface following hydrostatic test) UT (if multi-layer PT is not performed)	ASME Section V, Article 6 (PT) ASME Section V, Article 5 (UT)	PT: ASME Section III, Subsection NB, Article NB-5350 UT: ASME Section III, Subsection NB, Article NB-5332
Closure ring-to-shell	PT (~~root and~~ final pass)	ASME Section V, Article 6 (PT)	PT: ASME Section III, Subsection NB, Article NB-5350
Closure ring-to-lid	PT (~~root and~~ final pass)	ASME Section V, Article 6 (PT)	PT: ASME Section III, Subsection NB, Article NB-5350
Closure ring radial welds	PT (~~root and~~ final pass)	ASME Section V, Article 6 (PT)	PT: ASME Section III, Subsection NB, Article NB-5350
Port cover plates-to-lid	PT (root and final pass)	ASME Section V, Article 6 (PT)	PT: ASME Section III, Subsection NB, Article NB-5350
Lift lug, lift lug baseplate, and fuel spacers	PT (surface)	ASME Section V, Article 6 (PT)	PT: ASME Section III, Subsection NG, Article NG-5350

Table 9.1.4 (continued)

HI-STORM 100 NDE REQUIREMENTS

HI-STORM OVERPACK			
Weld Location	**NDE Requirement**	**Applicable Code**	**Acceptance Criteria (Applicable Code)**
Inner shell circumferential and longitudinal welds	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340

HI-TRAC TRANSFER CASK			
Weld Location	**NDE Requirement**	**Applicable Code**	**Acceptance Criteria (Applicable Code)**
HI-TRAC Body: Radial channel-to-outer shell	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340
HI-TRAC Body: Water jacket end plate-to-radial channel or enclosure shell panel	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340
Pool Lid: Pool lid top plate-to-pool lid outer ring [125-Ton HI-TRAC only]	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340
Pool Lid: Pool lid bottom plate-to-pool lid outer ring [125-Ton HI-TRAC only]	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340

Table 9.1.4 (continued) HI-STORM 100 NDE REQUIREMENTS			
HI-TRAC TRANSFER CASK			
Weld Location	**NDE Requirement**	**Applicable Code**	**Acceptance Criteria (Applicable Code)**
HI-TRAC Body: Water jacket end plate-to-outer shell	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340
HI-TRAC Body: Outer shell-to-outer shell longitudinal and circumferential welds	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340
HI-TRAC Body: Radial channel –to-enclosure shell panel	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340
HI-TRAC Body: Jacket drain pipe and couplings	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340
HI-TRAC Body: Outer shell-to-bottom flange	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340

Table 9.1.4 (continued)

HI-STORM 100 NDE REQUIREMENTS

HI-TRAC TRANSFER CASK			
Weld Location	**NDE Requirement**	**Applicable Code**	**Acceptance Criteria (Applicable Code)**
HI-TRAC Body: Outer shell-to-top flange	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340
HI-TRAC Body: Lifting trunnion block-to-top flange (1" groove)	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340
HI-TRAC Body: Lifting trunnion block-to-outer and inner shells	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340
HI-TRAC Body: Pocket trunnion-to-outer shell	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340
HI-TRAC Body: Top lid welds except as noted on applicable drawings	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340
HI-TRAC Body: Pocket trunnion-to-enclosure shell panel and radial channel	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340

Table 9.1.4 (continued)

HI-STORM 100 NDE REQUIREMENTS

HI-TRAC TRANSFER CASK			
Weld Location	**NDE Requirement**	**Applicable Code**	**Acceptance Criteria (Applicable Code)**
HI-TRAC Body: Lower water jacket welds	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340
Transfer Lid: Lid intermediate plate and lead cover plate-to-lid top plate & lid bottom plate	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340
Transfer Lid: Door top plate-to-door wheel housing	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340
Transfer Lid: Door side plate-to-door wheel housing	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340
Transfer Lid: Door side plate-to-door end plate	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340
Transfer Lid: Lead cover plate-to-lead cover side plate	PT (surface) or MT	ASME Section V, Article 6 (PT) ASME Section V, Article 7 (MT)	PT: ASME Section III, Subsection NF, Article NF-5350 MT: ASME Section III, Subsection NF, Article NF-5340