Saltstone Production and Disposal Facility
Website Data - First Quarter 2009

Consent Order of Dismissal, Section III.7
Z-Area Saltstone Disposal Facility Permit
General Condition B.5.a-h Information

Permit Condition	Requirement	Value	Comments
B.5 a)	Cumulative process volume of salt waste disposed to date	1,805 kilogallons (kgals)	
b)	Process volume of saltstone grout disposed and vault location (cell identity) for the reporting period	631 kgals, Vault 4, Cells D, K	
c)	Cumulative process volume of saltstone grout disposed to date	3,257 kgals	
d)	Remaining vault volume	9.37×10^3 kgals	
e)	Curies disposed and vault location for the reporting period	61 kilocuries (kCi), Vault 4, Cell D, K	
f)	Cumulative inventory of curies disposed to date	195 kCi, Vault 4, Cells D, E, F, L, K	
g)	Curies of highly radioactive radionuclides disposed and vault location for the reporting period	61 kCi, Vault 4, Cell D, K	
h)	Cumulative inventory of highly radioactive radionuclides disposed to date	194 kCi, Vault 4, Cells D, E, F, L, K	

Saltstone Production and Disposal Facility
Website Data - First Quarter 2009

Consent Order of Dismissal, Section III.7 (1)
Chemical and Radiological Composition of Salt Waste

Chemical Name	Concentration (mg/L)
Major Constituent	
Water [H_20]	8.12E+05
Solvated Ions	
Aluminate [$Al(OH)_4$]	1.59E+04
Carbonate [$C0_3^{2}$]	8.71E+03
Chloride [Cl]	4.84E+02
Fluoride [F]	2.40E+02
Hydroxide [OH]	1.52E+04
Nitrate [NO_3]	1.33E+05
Nitrite [NO_2]	8.29E+03
Sulfate [SO_4^{2}]	5.47E+03
RCRA Hazardous Metals	
Arsenic [As]	2.05E-01
Barium [Ba]	9.59E-01
Cadmium [Cd]	2.68E-01
Chromium [Cr]	3.98E+01
Lead [Pb]	1.00E+00
Mercury [Hg]	1.41E+01
Selenium [Se]	3.12E-01
Silver [Ag]	8.53E-01
Other Metals	
Aluminum [Al]	4.53E+03
Boron [B]	5.95E+00
Cobalt [Co]	7.43E-02
Copper [Cu]	9.67E-01
Iron [Fe]	1.24E+02
Lithium [Li]	<2.36E-01
Manganese [Mg]	6.22E+01
Molybdenum [Mo]	4.83E+00
Nickel [Ni]	1.03E+01
Sodium [Na]	8.51E+04
Strontium [Sr]	7.21E-01
Zinc [Zn]	9.97E+00
Organic Compounds	
Tetraphenyl borate [$B(C_6H_5)^4$]	9.85E+00
Total Organic Carbon	7.42E+02
Total Insoluble Solids	
Total Insoluble Solids	4.55E+03

Saltstone Production and Disposal Facility
Website Data - First Quarter 2009

Consent Order of Dismissal, Section III.7 (1)
Chemical and Radiological Composition of Salt Waste (continued)

Radionuclide	Concentration (pCi/mL)
H-3	1.60E+03
C-14	5.27E+02
Co-60	6.65E+00
Ni-59	<1.36E+02
Ni-63	1.19E+02
Se-79	5.32E+02
Sr-90	2.64E+05
Y-90	2.64E+05
Tc-99	3.41E+04
Ru-106	<9.19E+01
Rh-106	<9.19E+01
Sb-125	7.12E+03
Te-125m	7.12E+03
I-129	9.01E+00
Cs-134	<7.21E+02
Cs-137	2.25E+07
Ba-137m	2.13E+07
Ce-144	<1.20E+02
Pr-144	<1.20E+02
Pm-147	<3.317E+03
Eu-154	2.82E+02
Np-237 (a) ($t_{1/2}$)>5yr	<1.63E+01
Pu-238 (a) ($t_{1/2}$) > 5 yr	3.41E+04
Pu-239 (a) ($t_{1/2}$) >5 yr	1.07E+03
Pu-240 (a) ($t_{1/2}$) >5 yr	1.07E+03
Pu-241	2.72E+04
Pu-242 (a) ($t_{1/2}$) >5 yr	<8.82E+01
Am-241 (a) ($t_{1/2}$) >5 yr	7.75E+02
Am-242m	8.29E+01
Cm-242 (a)	6.89E+01
Cm-244 (a) ($t_{1/2}$)>5yr	2.23E+03
Cm-245 (a) ($t_{1/2}$) >5 yr	<1.86E+01
Total Transuranic Alpha Emitters with ($t_{1/2}$)> 5 years	<4.43E+04

Saltstone Production and Disposal Facility
Website Data - First Quarter 2009

Consent Order of Dismissal, Section III.7 (1)
Chemical and Radiological Composition of Salt Waste

The grout formulation is defined by the proportions of dry premix components (Type II Portland cement, Class F flyash, and Grade 120/100 slag) and the ratio of the water content in the salt waste to dry premix. Small quantities of admixtures are added as required for the purposes of set retardant and anti-foam. These have an insignificant effect on the overall grout composition (less than 0.2 wt% of the overall grout composition).

The formulation used for the reporting period is shown below:

Saltstone Dry Premix Composition

Component	Weight %
Type II Portland cement	10
Class F flyash	45
Grade 120/100 slag	45

Water to Premix Ratio (by weight) — 0.60

Utilizing this grout formulation leads to an overall grout composition as shown below:

Overall Grout Composition

Component	Weight %
Salt Waste	41
Type II Portland cement	6
Grade 120/100 slag	27
Class F flyash	27

Saltstone Production and Disposal Facility
Website Data - First Quarter 2009

Consent Order of Dismissal, Section III.7 (3)
Chemical and Radiological Composition of Saltstone (continued)

Chemical Name	Concentration (mg/L)
Major Constituent	
Water [H_2O]	5.3E+05
Portland (II) Cement	1.0E+05
Class F Flyash	4.7E+05
Grade 100/120 Slag	4.7E+05
Solvated Ions	
Aluminate [$Al(OH)_4$]	1.0E+04
Carbonate [$C0_3^{2}$]	5.7E+03
Chloride [Cl]	3.1E+02
Fluoride [F]	1.6E+02
Hydroxide [OH]	9.9E+03
Nitrate [NO_3]	8.7E+04
Nitrite [NO_2]	5.4E+03
Sulfate [SO_4^{2}]	3.6E+03
RCRA Hazardous Metals	
Arsenic [As]	1.3E-01
Barium [Ba]	6.2E-01
Cadmium [Cd]	1.7E-01
Chromium [Cr]	2.6E+01
Lead [Pb]	6.5E-01
Mercury [Hg]	9.2E+00
Selenium [Se]	2.0E-01
Silver [Ag]	5.6E-01
Other Metals	
Aluminum [Al]	2.9E+03
Boron [B]	3.9E+00
Cobalt [Co]	4.8E-02
Copper [Cu]	6.3E-01
Iron [Fe]	8.1E+01
Lithium [Li]	1.5E-01
Manganese [Mg]	4.0E+01
Molybdenum [Mo]	3.1E+00
Nickel [Ni]	6.7E+00
Sodium [Na]	5.5E+04
Strontium [Sr]	4.7E-01
Zinc [Zn]	6.5E+00
Organic Compounds	
Tetraphenyl borate [$B(C_6H_5)^{4}$]	6.4E+00
Total Organic Carbon	4.8E+02
Total Insoluble Solids	
Total Insoluble Solids	3.0E+03

Saltstone Production and Disposal Facility
Website Data - First Quarter 2009

Consent Order of Dismissal, Section III.7 (3)
Chemical and Radiological Composition of Saltstone (continued)

Radionuclide	Concentration (pCi/mL)
H-3	1.0E+03
C-14	3.4E+02
Co-60	4.3E+00
Ni-59	8.9E+01
Ni-63	7.8E+01
Se-79	3.5E+02
Sr-90	1.7E+05
Y-90	1.7E+05
Tc-99	2.2E+04
Ru-106	6.0E+01
Rh-106	6.0E+01
Sb-125	4.6E+03
Te-125m	4.6E+03
I-129	5.9E+00
Cs-134	4.7E+02
Cs-137	1.5E+07
Ba-137m	1.4E+07
Ce-144	7.8E+01
Pr-144	7.8E+01
Pm-147	2.2E+03
Eu-154	1.8E+02
Np-237 (a) ($t_{1/2}$) > 5 yr	1.1E+01
Pu-238 (a) ($t_{1/2}$) >5 yr	2.2E+04
Pu-239 (a) ($t_{1/2}$) >s yr	7.0E+02
Pu-240 (a) ($t_{1/2}$) >s yr	7.0E+02
Pu-241	1.8E+04
Pu-242 (a) ($t_{1/2}$) >5 yr	5.7E+01
Am-241 (a) ($t_{1/2}$)> 5 yr	5.0E+02
Am-242m	5.4E-01
Cm-242 (a)	4.5E-01
Cm-244 (a) ($t_{1/2}$) > 5 yr	1.5E+03
Cm-245 (a) ($t_{1/2}$) > **5** yr	1.2E+01
Total Transuranic Alpha Emitters with ($t_{1/2}$)> 5 years	<2.9E+04