Saltstone Production and Disposal Facility
Website Data - Second Quarter 2008

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	1443 kilogallons (kgals)	
b)	Process volume of saltstone grout disposed and vault location (cell identity) for the reporting period	220 kgals, Vault 4, Cell D	
c)	Cumulative process volume of saltstone grout disposed to date	2626 kgals	
d)	Remaining vault volume	1.00×10^4 kgals	73 kgals of non-radioactive grout was poured into Cell D during the period. (Clean Cap used to reduce radiation rates in preparation for outage).
e)	Curies disposed and vault location for the reporting period	34 kilocuries (kCi), Vault 4, Cell D	
f)	Cumulative inventory of curies disposed to date	134 kCi, Vault 4, Cells D, E, F, L	
g)	Curies of highly radioactive radionuclides disposed and vault location for the reporting period	34 kCi, Vault 4, Cell D	
h)	Cumulative inventory of highly radioactive radionuclides disposed to date	133 kCi, Vault 4, Cells D, E, F, L	

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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]	8.92E+05
Solvated Ions	
Aluminate [$Al(OH)_4$]	1.70E+04
Carbonate [$C0_3^2$]	9.09E+03
Chloride [Cl]	2.79E+02
Fluoride [F]	2.44E+02
Hydroxide [OH]	9.006E+03
Nitrate [NO_3]	9.87E+04
Nitrite [NO_2]	8.77E+03
Sulfate [SO_4^2]	5.16E+03
RCRA Hazardous Metals	
Arsenic [As]	4.59E-01
Barium [Ba]	1.47E+00
Cadmium [Cd]	1.17E+01
Chromium [Cr]	3.99E+01
Lead [Pb]	1.20E+01
Mercury [Hg]	1.53E+01
Selenium [Se]	8.78E-01
Silver [Ag]	1.36E+01
Other Metals	
Aluminum [Al]	4.83E+03
Boron [B]	6.91E+00
Cobalt [Co]	9.18E-02
Copper [Cu]	<1.59E+00
Iron [Fe]	1.09E+02
Lithium [Li]	<8.36E-01
Manganese [Mg]	6.43E+01
Molybdenum [Mo]	4.49E+00
Nickel [Ni]	1.19E+01
Sodium [Na]	7.21E+04
Strontium [Sr]	7.57E-01
Zinc [Zn]	7.81E+00
Organic Compounds	
Tetraphenyl borate [$B(C_6H_5)^4$]	3.22E+00
Total Organic Carbon	3.01E+02
Total Insoluble Solids	
Total Insoluble Solids	2.41E+03

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

Radionuclide	Concentration (pCi/mL)
H-3	2.27E+03
C-14	4.17E+02
Co-60	1.06E+01
Ni-59	<6.71E+01
Ni-63	1.41E+02
Se-79	4.73E+02
Sr-90	2.19E+05
Y-90	2.19E+05
Tc-99	3.07E+04
Ru-106	<9.50E+01
Rh-106	<9.50E+01
Sb-125	8.69E+03
Te-125m	8.69E+03
I-129	8.17E+00
Cs-134	<5.90E+03
Cs-137	2.96E+07
Ba-137m	2.80E+07
Ce-144	<1.34E+02
Pr-144	<1.34E+02
Pm-147	<1.47E+03
Eu-154	3.62E+02
Np-237 (a) ($t_{1/2}$)>5yr	<3.16E+01
Pu-238 (a) ($t_{1/2}$) > 5 yr	3.18E+04
Pu-239 (a) ($t_{1/2}$) >5 yr	1.05E+03
Pu-240 (a) ($t_{1/2}$) >5 yr	1.05E+03
Pu-241	1.00E+04
Pu-242 (a) ($t_{1/2}$) >5 yr	<8.56E+01
Am-241 (a) ($t_{1/2}$) >5 yr	1.08E+03
Am-242m	1.68E+00
Cm-242 (a)	1.39E+00
Cm-244 (a) ($t_{1/2}$)>5yr	2.81E+03
Cm-245 (a) ($t_{1/2}$) >5 yr	<3.40E+01
Total Transuranic Alpha Emitters with ($t_{1/2}$)> 5 years	<2.76E+04

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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	42
Type II Portland cement	6
Grade 120/100 slag	26
Class F flyash	26

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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]	5.7E+05
Portland (II) Cement	1.0E+05
Class F Flyash	4.5E+05
Grade 100/120 Slag	4.5E+05
Solvated Ions	
Aluminate [$Al(OH)_4$]	1.1E+04
Carbonate [$C0_3^{2}$]	5.8E+03
Chloride [Cl]	1.8E+02
Fluoride [F]	1.6E+02
Hydroxide [OH]	5.79E+03
Nitrate [NO_3]	6.4E+04
Nitrite [NO_2]	5.6E+03
Sulfate [SO_4^{2}]	3.3E+03
RCRA Hazardous Metals	
Arsenic [As]	3.0E-01
Barium [Ba]	9.4E-01
Cadmium [Cd]	7.5E+00
Chromium [Cr]	2.6E+01
Lead [Pb]	7.7E+00
Mercury [Hg]	9.9E+00
Selenium [Se]	5.6E-01
Silver [Ag]	8.8E+00
Other Metals	
Aluminum [Al]	3.1E+03
Boron [B]	4.4E+00
Cobalt [Co]	5.9E-02
Copper [Cu]	1.0E+00
Iron [Fe]	7.0E+01
Lithium [Li]	5.4E-01
Manganese [Mg]	4.1E+01
Molybdenum [Mo]	2.9E+00
Nickel [Ni]	7.7E+00
Sodium [Na]	4.6E+04
Strontium [Sr]	4.9E-01
Zinc [Zn]	5.0E+00
Organic Compounds	
Tetraphenyl borate [$B(C_6H_5)^4$]	2.1E+00
Total Organic Carbon	1.9E+02
Total Insoluble Solids	
Total Insoluble Solids	1.6E+03

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

Radionuclide	Concentration (pCi/mL)
H-3	1.5E+03
C-14	2.7E+02
Co-60	6.8E+00
Ni-59	4.3E+01
Ni-63	9.1E+01
Se-79	3.0E+02
Sr-90	1.4E+05
Y-90	1.4E+05
Tc-99	2.0E+04
Ru-106	6.1E+01
Rh-106	6.1E+01
Sb-125	5.6E+03
Te-125m	5.6E+03
I-129	5.3E+00
Cs-134	3.8E+03
Cs-137	1.9E+07
Ba-137m	1.8E+07
Ce-144	8.6E+01
Pr-144	8.6E+01
Pm-147	9.5E+02
Eu-154	2.3E+02
Np-237 (a) ($t_{1/2}$) > 5 yr	2.0E+01
Pu-238 (a) ($t_{1/2}$) >5 yr	2.0E+04
Pu-239 (a) ($t_{1/2}$) >s yr	6.8E+02
Pu-240 (a) ($t_{1/2}$) >s yr	6.8E+02
Pu-241	6.5E+03
Pu-242 (a) ($t_{1/2}$) >5 yr	5.5E+01
Am-241 (a) ($t_{1/2}$)> 5 yr	6.9E+02
Am-242m	1.1E+00
Cm-242 (a)	8.9E-01
Cm-244 (a) ($t_{1/2}$) > 5 yr	1.8E+03
Cm-245 (a) ($t_{1/2}$) > **5** yr	2.2E+01
Total Transuranic Alpha Emitters with ($t_{1/2}$)> 5 years	<1.8E+04