

Saltstone Production Facility and Saltstone Disposal Facility Website Data - First Quarter, Calendar Year 2017

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

| Permit Condition | Requirement | Estimated Value | Updated Value | Comments |
|------------------|--|---|--|----------|
| B.5 a) | Cumulative process volume of salt waste disposed to date | Not Applicable | 12,380 kgal SDU 4, Cells B, D, E, F, H, J, K, L SDU 2, Cells A and B SDU 5, Cells A and B SDU 3, Cell A | |
| b) | Process volume of saltstone grout disposed and vault/disposal unit location (including cell identity) for the reporting period | Not Applicable | 6.597 x 10 ¹ kgal SDU 5, Cell B 1.319 x 10 ² kgal SDU 3, Cell A | |
| c) | Cumulative process volume of saltstone grout disposed-to-date | Not Applicable | 2.124 x 10 ⁴ kgal SDU 4, Cells B, D, E, F, H, J, K, L SDU 2, Cells A and B SDU 5, Cells A and B SDU 3, Cell A | |
| d) | Remaining vault/disposal unit volume | Not Applicable | 6.597 x 10 ¹ kgal SDU 5, Cells A and B 5.542 x 10 ³ kgal SDU 3, Cells A and B | |
| e) | Curies disposed and vault/disposal unit location for the reporting period | 8.764 x 10 ⁻² kCi SDU 5, Cell B 1.514 x 10 ⁻¹ kCi SDU 3, Cell A | 8.764 x 10 ⁻² kCi SDU 5, Cell B 1.514 x 10 ⁻¹ kCi SDU 3, Cell A | |
| f) | Cumulative inventory of curies disposed-to-date | 469.2 kCi SDU 4, Cells B, D, E, F, H, J, K, L SDU 2, Cells A and B SDU 5, Cells A and B SDU 3, Cell A | 469.2 kCi SDU 4, Cells B, D, E, F, H, J, K, L SDU 2, Cells A and B SDU 5, Cells A and B SDU 3, Cell A | |
| g) | Curies of highly radioactive radionuclides disposed and vault/disposal unit location for the reporting period | 8.396 x 10 ⁻² kCi SDU 5, Cell B 1.450 x 10 ⁻¹ kCi SDU 3, Cell A | 8.396 x 10 ⁻² kCi SDU 5, Cell B 1.450 x 10 ⁻¹ kCi SDU 3, Cell A | |
| h) | Cumulative inventory of highly radioactive radionuclides disposed-to-date | 469.0 kCi SDU 4, Cells B, D, E, F, H, J, K, L SDU 2, Cells A and B SDU 5, Cells A and B SDU 3, Cell A | 469.0 kCi SDU 4, Cells B, D, E, F, H, J, K, L SDU 2, Cells A and B SDU 5, Cells A and B SDU 3, Cell A | |

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

| Chemical Name | Estimated Concentration (mg/L) | Updated Concentration (mg/L) |
|--|--------------------------------|------------------------------|
| Major Constituent | | |
| Water [H ₂ O] | 8.994E+05 | 8.994E+05 |
| Solvated Ions | | |
| Aluminate [Al(OH) ₄] | 1.82E+04 | 1.82E+04 |
| Carbonate [CO ₃ ²⁻] | 1.53E+04 | 1.53E+04 |
| Chloride [Cl ⁻] | 4.96E+02 | 4.96E+02 |
| Fluoride [F ⁻] | <1.00E+02 | <1.00E+02 |
| Hydroxide [OH ⁻] | 3.67E+04 | 3.67E+04 |
| Nitrate [NO ₃ ⁻] | 1.11E+05 | 1.11E+05 |
| Nitrite [NO ₂ ⁻] | 2.79E+04 | 2.79E+04 |
| Sulfate [SO ₄ ²⁻] | 4.72E+03 | 4.72E+03 |
| RCRA Hazardous Metals | | |
| Arsenic [As] | <1.59E-01 | <1.59E-01 |
| Barium [Ba] | <1.85E-01 | <1.85E-01 |
| Cadmium [Cd] | <2.38E+00 | <2.38E+00 |
| Chromium [Cr] | 5.24E+01 | 5.24E+01 |
| Lead [Pb] | <3.31E+01 | <3.31E+01 |
| Mercury [Hg] | 8.05E+01 | 8.05E+01 |
| Selenium [Se] | <5.98E-01 | <5.98E-01 |
| Silver [Ag] | <2.43E+00 | <2.43E+00 |
| Other Metals | | |
| Aluminum [Al] | 5.16E+03 | 5.16E+03 |
| Boron [B] | 5.21E+01 | 5.21E+01 |
| Cobalt [Co] | <1.59E-02 | <1.59E-02 |
| Copper [Cu] | <8.70E+00 | <8.70E+00 |
| Iron [Fe] | 7.88E+00 | 7.88E+00 |
| Lithium [Li] | 7.36E+00 | 7.36E+00 |
| Manganese [Mn] | 3.00E+00 | 3.00E+00 |
| Molybdenum [Mo] | 1.95E+01 | 1.95E+01 |
| Nickel [Ni] | 4.07E+00 | 4.07E+00 |
| Sodium [Na] | 5.44M | 5.44M |
| Strontium [Sr] | <6.72E-02 | <6.72E-02 |
| Zinc [Zn] | 4.37E+00 | 4.37E+00 |
| Organic Compounds | | |
| Tetraphenylborate [B(C ₆ H ₅) ₄ ⁻] | <5.00E+00 | <5.00E+00 |
| Total Organic Carbon | 2.17E+02 | 2.17E+02 |
| Total Insoluble Solids | | |
| Total Insoluble Solids | 0.00E+00 | 0.00E+00 |

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

| Radionuclide | Estimated Concentration (pCi/mL) | Updated Concentration (pCi/mL) |
|--|-------------------------------------|-----------------------------------|
| H-3 | 1.36E+03 | 1.36E+03 |
| C-14 | 6.01E+02 | 6.01E+02 |
| Ni-59 | 1.784E-01 | 1.784E-01 |
| Co-60 | 3.49E-01 | 3.49E-01 |
| Ni-63 | <8.92E+00 | <8.92E+00 |
| Se-79 | 3.05E+01 | 3.05E+01 |
| Sr-90 | 1.36E+05 | 1.36E+05 |
| Y-90 | 1.36E+05 | 1.36E+05 |
| Tc-99 | 4.70E+04 | 4.70E+04 |
| Rh-106 | <2.64E+00 | <2.64E+00 |
| Ru-106 | <2.64E+00 | <2.64E+00 |
| Sb-125 | 1.14E+01 | 1.14E+01 |
| Te-125m | 1.14E+01 | 1.14E+01 |
| I-129 | 4.04E+01 | 4.04E+01 |
| Cs-134 | 1.284E-01 | 1.284E-01 |
| Cs-137 | 2.65E+05 | 2.65E+05 |
| Ba-137m | 2.51E+05 | 2.51E+05 |
| Ce-144 | 1.397E-03 | 1.397E-03 |
| Pr-144 | 1.397E-03 | 1.397E-03 |
| Pm-147 | <4.06E+01 | <4.06E+01 |
| Eu-154 | <6.08E-01 | <6.08E-01 |
| Np-237 (α) ($t_{1/2}$) > 5 yr | <1.12E+01 | <1.12E+01 |
| Pu-238 (α) ($t_{1/2}$) > 5 yr | 2.80E+04 | 2.80E+04 |
| Pu-239 (α) ($t_{1/2}$) > 5 yr | 6.80E+02 | 6.80E+02 |
| Pu-240 (α) ($t_{1/2}$) > 5 yr | 6.80E+02 | 6.80E+02 |
| Pu-241 | 1.05E+04 | 1.05E+04 |
| Pu-242 (α) ($t_{1/2}$) > 5 yr | <6.09E+01 | <6.09E+01 |
| Am-241 (α) ($t_{1/2}$) > 5 yr | 4.52E+00 | 4.52E+00 |
| Am-242m | <2.18E-02 | <2.18E-02 |
| Cm-242 (α) | <1.80E-01 | <1.80E-01 |
| Cm-244 (α) ($t_{1/2}$) > 5 yr | 1.48E+00 | 1.48E+00 |
| Cm-245 (α) ($t_{1/2}$) > 5 yr | <1.98E+00 | <1.98E+00 |
| Total Transuranic Alpha Emitters with ($t_{1/2}$) > 5 years | <2.46E+04 | <2.46E+04 |

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Consent Order of Dismissal, Section III.7 (2) Formulation of Grout Used to Treat and Solidify the Salt Waste

The grout formulation is defined by the proportions of dry premix components (cement, thermally beneficiated flyash, and 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 (0.2 wt% of the overall grout composition).

The formulation used for the reporting period is shown below:

Saltstone Dry Premix Composition

| Component | Weight % |
|-------------------------------|----------|
| Cement | 10 |
| Thermally Beneficiated Flyash | 45 |
| Slag | 45 |

Water to Premix Ratio (by weight) – 0.6329

The water to premix ratio reflects the pounds of free water added to the process for each pound of dry premix fed to the saltstone mixer averaged for the quarter.

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

Overall Grout Composition

| Component | Weight % |
|-------------------------------|----------|
| Salt Waste | 45.17 |
| Cement | 5.483 |
| Slag | 24.675 |
| Thermally Beneficiated Flyash | 24.675 |

Saltstone Production Facility and Saltstone Disposal Facility Website Data – First Quarter, Calendar Year 2017

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

| Chemical Name | Estimated Concentration (mg/L) | Updated Concentration (mg/L) |
|--|-----------------------------------|---------------------------------|
| Major Constituent | | |
| Water [H ₂ O] | 5.69E+05 | 5.69E+05 |
| Cement | 9.486E+04 | 9.486E+04 |
| Thermally Beneficiated Flyash | 4.269E+05 | 4.269E+05 |
| Slag | 4.269E+05 | 4.269E+05 |
| Solvated Ions | | |
| Aluminate [Al(OH) ₄] | 1.15E+04 | 1.15E+04 |
| Carbonate [CO ₃ ²⁻] | 9.68E+03 | 9.68E+03 |
| Chloride [Cl ⁻] | 3.14E+02 | 3.14E+02 |
| Fluoride [F ⁻] | 6.33E+01 | 6.33E+01 |
| Hydroxide [OH ⁻] | 2.32E+04 | 2.32E+04 |
| Nitrate [NO ₃ ⁻] | 7.02E+04 | 7.02E+04 |
| Nitrite [NO ₂ ⁻] | 1.77E+04 | 1.77E+04 |
| Sulfate [SO ₄ ²⁻] | 2.99E+03 | 2.99E+03 |
| RCRA Hazardous Metals | | |
| Arsenic [As] | 1.01E-01 | 1.01E-01 |
| Barium [Ba] | 1.17E-01 | 1.17E-01 |
| Cadmium [Cd] | 1.51E+00 | 1.51E+00 |
| Chromium [Cr] | 3.32E+01 | 3.32E+01 |
| Lead [Pb] | 2.09E+01 | 2.09E+01 |
| Mercury [Hg] | 5.09E+01 | 5.09E+01 |
| Selenium [Se] | 3.78E-01 | 3.78E-01 |
| Silver [Ag] | 1.54E+00 | 1.54E+00 |
| Other Metals | | |
| Aluminum [Al] | 3.27E+03 | 3.27E+03 |
| Boron [B] | 3.30E+01 | 3.30E+01 |
| Cobalt [Co] | 1.01E-02 | 1.01E-02 |
| Copper [Cu] | 5.51E+00 | 5.51E+00 |
| Iron [Fe] | 4.99E+01 | 4.99E+01 |
| Lithium [Li] | 4.66E+00 | 4.66E+00 |
| Manganese [Mn] | 1.90E+00 | 1.90E+00 |
| Molybdenum [Mo] | 1.23E+01 | 1.23E+01 |
| Nickel [Ni] | 2.58E+00 | 2.58E+00 |
| Sodium [Na] | 7.915E+04 | 7.915E+04 |
| Strontium [Sr] | 4.25E-02 | 4.25E-02 |
| Zinc [Zn] | 2.77E+00 | 2.77E+00 |
| Organic Compounds | | |
| Tetraphenylborate [B(C ₆ H ₅) ₄ ⁻] | 3.16E+00 | 3.16E+00 |
| Total Organic Carbon | 1.37E+02 | 1.37E+02 |
| Total Insoluble Solids | | |
| Total Insoluble Solids | 0.00E+00 | 0.00E+00 |

Saltstone Production Facility and Saltstone Disposal Facility Website Data – First Quarter, Calendar Year 2017

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

| Radionuclide | Estimated Concentration (pCi/mL) | Updated Concentration (pCi/mL) |
|--|-------------------------------------|-----------------------------------|
| H-3 | 8.61E+02 | 8.61E+02 |
| C-14 | 3.80E+02 | 3.80E+02 |
| Ni-59 | 1.129E-01 | 1.129E-01 |
| Co-60 | 2.21E-01 | 2.21E-01 |
| Ni-63 | 5.65E+00 | 5.65E+00 |
| Se-79 | 1.93E+01 | 1.93E+01 |
| Sr-90 | 8.61E+04 | 8.61E+04 |
| Y-90 | 8.61E+04 | 8.61E+04 |
| Tc-99 | 2.97E+04 | 2.97E+04 |
| Rh-106 | 1.67E+00 | 1.67E+00 |
| Ru-106 | 1.67E+00 | 1.67E+00 |
| Sb-125 | 7.21E+00 | 7.21E+00 |
| Te-125m | 7.21E+00 | 7.21E+00 |
| I-129 | 2.56E+01 | 2.56E+01 |
| Cs-134 | 8.127E-02 | 8.127E-02 |
| Cs-137 | 1.68E+05 | 1.68E+05 |
| Ba-137m | 1.59E+05 | 1.59E+05 |
| Ce-144 | 8.842E-04 | 8.842E-04 |
| Pr-144 | 8.842E-04 | 8.842E-04 |
| Pm-147 | 2.57E+01 | 2.57E+01 |
| Eu-154 | 3.85E-01 | 3.85E-01 |
| Np-237 (α) ($t_{1/2}$) > 5 yr | 7.09E+00 | 7.09E+00 |
| Pu-238 (α) ($t_{1/2}$) > 5 yr | 1.77E+04 | 1.77E+04 |
| Pu-239 (α) ($t_{1/2}$) > 5 yr | 4.30E+02 | 4.30E+02 |
| Pu-240 (α) ($t_{1/2}$) > 5 yr | 4.30E+02 | 4.30E+02 |
| Pu-241 | 6.65E+03 | 6.65E+03 |
| Pu-242 (α) ($t_{1/2}$) > 5 yr | 3.85E+01 | 3.85E+01 |
| Am-241 (α) ($t_{1/2}$) > 5 yr | 2.86E+00 | 2.86E+00 |
| Am-242m | 1.38E-02 | 1.38E-02 |
| Cm-242 (α) | 1.14E-02 | 1.14E-02 |
| Cm-244 (α) ($t_{1/2}$) > 5 yr | 9.37E-01 | 9.37E-01 |
| Cm-245 (α) ($t_{1/2}$) > 5 yr | 1.25E+00 | 1.25E+00 |
| Total Transuranic Alpha Emitters with ($t_{1/2}$) > 5 years | 1.56E+04 | 1.56E+04 |