# Appendix A

Data for storage models S1–S3.

Table 1. Axial Fuel Zone Description

|  |  |  |  |
| --- | --- | --- | --- |
| Zone Number | Bottom of Zone\* | Midpoint of Zone\* | Top of Zone\* |
| 1 | 0.00 | 10.16 | 20.32 |
| 2 | 20.32 | 30.48 | 40.64 |
| 3 | 40.64 | 50.80 | 60.96 |
| 4 | 60.96 | 71.12 | 81.28 |
| 5 | 81.28 | 91.44 | 101.60 |
| 6 | 101.60 | 111.76 | 121.92 |
| 7 | 121.92 | 132.08 | 142.24 |
| 8 | 142.24 | 152.40 | 162.56 |
| 9 | 162.56 | 172.72 | 182.88 |
| 10 | 182.88 | 193.04 | 203.20 |
| 11 | 203.20 | 213.36 | 223.52 |
| 12 | 223.52 | 233.68 | 243.84 |
| 13 | 243.84 | 254.00 | 264.16 |
| 14 | 264.16 | 274.32 | 284.48 |
| 15 | 284.48 | 294.64 | 304.80 |
| 16 | 304.80 | 314.96 | 325.12 |
| 17 | 325.12 | 335.28 | 345.44 |
| 18 | 345.44 | 355.60 | 365.76 |

\*Dimensions provided from bottom of active fuel

Table 2. Isotopic Number Densities for Fuel Zone 1

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| U-234 | 9.4752E-08 |
| U-235 | 5.9111E-04 |
| U-236 | 1.0785E-04 |
| U-238 | 2.1940E-02 |
| Np-237 | 7.1966E-06 |
| Pu-238 | 1.4174E-06 |
| Pu-239 | 1.2909E-04 |
| Pu-240 | 3.3016E-05 |
| Pu-241 | 1.4695E-05 |
| Pu-242 | 3.4692E-06 |
| Am-241 | 4.6203E-06 |
| Am-243 | 4.4882E-07 |
| Mo-95 | 3.8441E-05 |
| Tc-99 | 3.8305E-05 |
| Ru-101 | 3.4304E-05 |
| Rh-103 | 2.0873E-05 |
| Ag-109 | 1.9588E-06 |
| Cs-133 | 4.0510E-05 |
| Nd-143 | 3.0873E-05 |
| Nd-145 | 2.2745E-05 |
| Sm-147 | 8.0239E-06 |
| Sm-149 | 1.5259E-07 |
| Sm-150 | 8.0039E-06 |
| Sm-151 | 6.1470E-07 |
| Eu-151 | 2.5473E-08 |
| Sm-152 | 3.6930E-06 |
| Eu-153 | 2.5782E-06 |
| Gd-155 | 5.5487E-08 |
| O-16 | 4.6952E-02 |

Table 3. Isotopic Number Densities for Fuel Zone 2

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| U-234 | 2.0406E-07 |
| U-235 | 3.9441E-04 |
| U-236 | 1.3836E-04 |
| U-238 | 2.1740E-02 |
| Np-237 | 1.2507E-05 |
| Pu-238 | 3.7041E-06 |
| Pu-239 | 1.4229E-04 |
| Pu-240 | 5.0587E-05 |
| Pu-241 | 2.4097E-05 |
| Pu-242 | 9.5484E-06 |
| Am-241 | 7.4800E-06 |
| Am-243 | 1.8718E-06 |
| Mo-95 | 5.4568E-05 |
| Tc-99 | 5.4484E-05 |
| Ru-101 | 5.0478E-05 |
| Rh-103 | 2.9593E-05 |
| Ag-109 | 3.6285E-06 |
| Cs-133 | 5.7282E-05 |
| Nd-143 | 4.0542E-05 |
| Nd-145 | 3.1744E-05 |
| Sm-147 | 9.7270E-06 |
| Sm-149 | 1.7828E-07 |
| Sm-150 | 1.2663E-05 |
| Sm-151 | 7.0322E-07 |
| Eu-151 | 2.8529E-08 |
| Sm-152 | 5.2706E-06 |
| Eu-153 | 4.5325E-06 |
| Gd-155 | 1.0677E-07 |
| O-16 | 4.6950E-02 |

Table 4. Isotopic Number Densities for Fuel Zone 3

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| U-234 | 2.5108E-07 |
| U-235 | 3.3898E-04 |
| U-236 | 1.4601E-04 |
| U-238 | 2.1667E-02 |
| Np-237 | 1.4332E-05 |
| Pu-238 | 4.7249E-06 |
| Pu-239 | 1.4389E-04 |
| Pu-240 | 5.5812E-05 |
| Pu-241 | 2.6698E-05 |
| Pu-242 | 1.2235E-05 |
| Am-241 | 8.2419E-06 |
| Am-243 | 2.6573E-06 |
| Mo-95 | 5.9698E-05 |
| Tc-99 | 5.9611E-05 |
| Ru-101 | 5.5884E-05 |
| Rh-103 | 3.2252E-05 |
| Ag-109 | 4.2588E-06 |
| Cs-133 | 6.2528E-05 |
| Nd-143 | 4.3052E-05 |
| Nd-145 | 3.4512E-05 |
| Sm-147 | 1.0068E-05 |
| Sm-149 | 1.8693E-07 |
| Sm-150 | 1.4310E-05 |
| Sm-151 | 7.3025E-07 |
| Eu-151 | 2.9493E-08 |
| Sm-152 | 5.7656E-06 |
| Eu-153 | 5.2325E-06 |
| Gd-155 | 1.2708E-07 |
| O-16 | 4.6949E-02 |

Table 5. Isotopic Number Densities for Fuel Zone 4

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| U-234 | 2.6458E-07 |
| U-235 | 3.2492E-04 |
| U-236 | 1.4786E-04 |
| U-238 | 2.1647E-02 |
| Np-237 | 1.4821E-05 |
| Pu-238 | 5.0202E-06 |
| Pu-239 | 1.4415E-04 |
| Pu-240 | 5.7147E-05 |
| Pu-241 | 2.7344E-05 |
| Pu-242 | 1.3010E-05 |
| Am-241 | 8.4285E-06 |
| Am-243 | 2.8978E-06 |
| Mo-95 | 6.1058E-05 |
| Tc-99 | 6.0967E-05 |
| Ru-101 | 5.7340E-05 |
| Rh-103 | 3.2945E-05 |
| Ag-109 | 4.4340E-06 |
| Cs-133 | 6.3910E-05 |
| Nd-143 | 4.3665E-05 |
| Nd-145 | 3.5237E-05 |
| Sm-147 | 1.0142E-05 |
| Sm-149 | 1.8927E-07 |
| Sm-150 | 1.4760E-05 |
| Sm-151 | 7.3736E-07 |
| Eu-151 | 2.9748E-08 |
| Sm-152 | 5.8968E-06 |
| Eu-153 | 5.4235E-06 |
| Gd-155 | 1.3275E-07 |
| O-16 | 4.6949E-02 |

Table 6. Isotopic Number Densities for Fuel Zone 5

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| U-234 | 2.6694E-07 |
| U-235 | 3.2253E-04 |
| U-236 | 1.4817E-04 |
| U-238 | 2.1644E-02 |
| Np-237 | 1.4905E-05 |
| Pu-238 | 5.0719E-06 |
| Pu-239 | 1.4419E-04 |
| Pu-240 | 5.7374E-05 |
| Pu-241 | 2.7453E-05 |
| Pu-242 | 1.3146E-05 |
| Am-241 | 8.4599E-06 |
| Am-243 | 2.9405E-06 |
| Mo-95 | 6.1292E-05 |
| Tc-99 | 6.1199E-05 |
| Ru-101 | 5.7591E-05 |
| Rh-103 | 3.3063E-05 |
| Ag-109 | 4.4643E-06 |
| Cs-133 | 6.4146E-05 |
| Nd-143 | 4.3768E-05 |
| Nd-145 | 3.5361E-05 |
| Sm-147 | 1.0154E-05 |
| Sm-149 | 1.8968E-07 |
| Sm-150 | 1.4837E-05 |
| Sm-151 | 7.3858E-07 |
| Eu-151 | 2.9792E-08 |
| Sm-152 | 5.9193E-06 |
| Eu-153 | 5.4564E-06 |
| Gd-155 | 1.3373E-07 |
| O-16 | 4.6949E-02 |

Table 7. Isotopic Number Densities for Fuel Zone 6

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| U-234 | 2.6599E-07 |
| U-235 | 3.2348E-04 |
| U-236 | 1.4804E-04 |
| U-238 | 2.1645E-02 |
| Np-237 | 1.4871E-05 |
| Pu-238 | 5.0512E-06 |
| Pu-239 | 1.4418E-04 |
| Pu-240 | 5.7283E-05 |
| Pu-241 | 2.7410E-05 |
| Pu-242 | 1.3091E-05 |
| Am-241 | 8.4474E-06 |
| Am-243 | 2.9234E-06 |
| Mo-95 | 6.1198E-05 |
| Tc-99 | 6.1107E-05 |
| Ru-101 | 5.7491E-05 |
| Rh-103 | 3.3016E-05 |
| Ag-109 | 4.4522E-06 |
| Cs-133 | 6.4051E-05 |
| Nd-143 | 4.3726E-05 |
| Nd-145 | 3.5312E-05 |
| Sm-147 | 1.0149E-05 |
| Sm-149 | 1.8952E-07 |
| Sm-150 | 1.4806E-05 |
| Sm-151 | 7.3809E-07 |
| Eu-151 | 2.9774E-08 |
| Sm-152 | 5.9103E-06 |
| Eu-153 | 5.4433E-06 |
| Gd-155 | 1.3334E-07 |
| O-16 | 4.6949E-02 |

Table 8. Isotopic Number Densities for Fuel Zone 7

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| U-234 | 2.6411E-07 |
| U-235 | 3.2539E-04 |
| U-236 | 1.4779E-04 |
| U-238 | 2.1648E-02 |
| Np-237 | 1.4804E-05 |
| Pu-238 | 5.0099E-06 |
| Pu-239 | 1.4415E-04 |
| Pu-240 | 5.7101E-05 |
| Pu-241 | 2.7323E-05 |
| Pu-242 | 1.2983E-05 |
| Am-241 | 8.4223E-06 |
| Am-243 | 2.8893E-06 |
| Mo-95 | 6.1012E-05 |
| Tc-99 | 6.0921E-05 |
| Ru-101 | 5.7290E-05 |
| Rh-103 | 3.2921E-05 |
| Ag-109 | 4.4279E-06 |
| Cs-133 | 6.3862E-05 |
| Nd-143 | 4.3644E-05 |
| Nd-145 | 3.5213E-05 |
| Sm-147 | 1.0139E-05 |
| Sm-149 | 1.8919E-07 |
| Sm-150 | 1.4744E-05 |
| Sm-151 | 7.3712E-07 |
| Eu-151 | 2.9739E-08 |
| Sm-152 | 5.8923E-06 |
| Eu-153 | 5.4169E-06 |
| Gd-155 | 1.3255E-07 |
| O-16 | 4.6949E-02 |

Table 9. Isotopic Number Densities for Fuel Zone 8

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| U-234 | 2.6176E-07 |
| U-235 | 3.2779E-04 |
| U-236 | 1.4748E-04 |
| U-238 | 2.1651E-02 |
| Np-237 | 1.4720E-05 |
| Pu-238 | 4.9585E-06 |
| Pu-239 | 1.4411E-04 |
| Pu-240 | 5.6873E-05 |
| Pu-241 | 2.7213E-05 |
| Pu-242 | 1.2848E-05 |
| Am-241 | 8.3906E-06 |
| Am-243 | 2.8471E-06 |
| Mo-95 | 6.0778E-05 |
| Tc-99 | 6.0688E-05 |
| Ru-101 | 5.7039E-05 |
| Rh-103 | 3.2802E-05 |
| Ag-109 | 4.3976E-06 |
| Cs-133 | 6.3625E-05 |
| Nd-143 | 4.3540E-05 |
| Nd-145 | 3.5088E-05 |
| Sm-147 | 1.0127E-05 |
| Sm-149 | 1.8879E-07 |
| Sm-150 | 1.4667E-05 |
| Sm-151 | 7.3590E-07 |
| Eu-151 | 2.9695E-08 |
| Sm-152 | 5.8698E-06 |
| Eu-153 | 5.3840E-06 |
| Gd-155 | 1.3157E-07 |
| O-16 | 4.6949E-02 |

Table 10. Isotopic Number Densities for Fuel Zone 9

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| U-234 | 2.6036E-07 |
| U-235 | 3.2924E-04 |
| U-236 | 1.4729E-04 |
| U-238 | 2.1653E-02 |
| Np-237 | 1.4669E-05 |
| Pu-238 | 4.9278E-06 |
| Pu-239 | 1.4408E-04 |
| Pu-240 | 5.6736E-05 |
| Pu-241 | 2.7146E-05 |
| Pu-242 | 1.2768E-05 |
| Am-241 | 8.3715E-06 |
| Am-243 | 2.8219E-06 |
| Mo-95 | 6.0638E-05 |
| Tc-99 | 6.0548E-05 |
| Ru-101 | 5.6889E-05 |
| Rh-103 | 3.2731E-05 |
| Ag-109 | 4.3794E-06 |
| Cs-133 | 6.3483E-05 |
| Nd-143 | 4.3478E-05 |
| Nd-145 | 3.5014E-05 |
| Sm-147 | 1.0120E-05 |
| Sm-149 | 1.8855E-07 |
| Sm-150 | 1.4620E-05 |
| Sm-151 | 7.3516E-07 |
| Eu-151 | 2.9669E-08 |
| Sm-152 | 5.8562E-06 |
| Eu-153 | 5.3642E-06 |
| Gd-155 | 1.3098E-07 |
| O-16 | 4.6949E-02 |

Table 11. Isotopic Number Densities for Fuel Zone 10

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| U-234 | 2.6036E-07 |
| U-235 | 3.2924E-04 |
| U-236 | 1.4729E-04 |
| U-238 | 2.1653E-02 |
| Np-237 | 1.4669E-05 |
| Pu-238 | 4.9278E-06 |
| Pu-239 | 1.4408E-04 |
| Pu-240 | 5.6736E-05 |
| Pu-241 | 2.7146E-05 |
| Pu-242 | 1.2768E-05 |
| Am-241 | 8.3715E-06 |
| Am-243 | 2.8219E-06 |
| Mo-95 | 6.0638E-05 |
| Tc-99 | 6.0548E-05 |
| Ru-101 | 5.6889E-05 |
| Rh-103 | 3.2731E-05 |
| Ag-109 | 4.3794E-06 |
| Cs-133 | 6.3483E-05 |
| Nd-143 | 4.3478E-05 |
| Nd-145 | 3.5014E-05 |
| Sm-147 | 1.0120E-05 |
| Sm-149 | 1.8855E-07 |
| Sm-150 | 1.4620E-05 |
| Sm-151 | 7.3516E-07 |
| Eu-151 | 2.9669E-08 |
| Sm-152 | 5.8562E-06 |
| Eu-153 | 5.3642E-06 |
| Gd-155 | 1.3098E-07 |
| O-16 | 4.6949E-02 |

Table 12. Isotopic Number Densities for Fuel Zone 11

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| U-234 | 2.6082E-07 |
| U-235 | 3.2876E-04 |
| U-236 | 1.4736E-04 |
| U-238 | 2.1653E-02 |
| Np-237 | 1.4686E-05 |
| Pu-238 | 4.9380E-06 |
| Pu-239 | 1.4409E-04 |
| Pu-240 | 5.6782E-05 |
| Pu-241 | 2.7168E-05 |
| Pu-242 | 1.2795E-05 |
| Am-241 | 8.3779E-06 |
| Am-243 | 2.8303E-06 |
| Mo-95 | 6.0684E-05 |
| Tc-99 | 6.0594E-05 |
| Ru-101 | 5.6939E-05 |
| Rh-103 | 3.2755E-05 |
| Ag-109 | 4.3855E-06 |
| Cs-133 | 6.3530E-05 |
| Nd-143 | 4.3499E-05 |
| Nd-145 | 3.5039E-05 |
| Sm-147 | 1.0122E-05 |
| Sm-149 | 1.8863E-07 |
| Sm-150 | 1.4636E-05 |
| Sm-151 | 7.3541E-07 |
| Eu-151 | 2.9678E-08 |
| Sm-152 | 5.8607E-06 |
| Eu-153 | 5.3708E-06 |
| Gd-155 | 1.3118E-07 |
| O-16 | 4.6949E-02 |

Table 13. Isotopic Number Densities for Fuel Zone 12

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| U-234 | 2.6129E-07 |
| U-235 | 3.2828E-04 |
| U-236 | 1.4742E-04 |
| U-238 | 2.1652E-02 |
| Np-237 | 1.4703E-05 |
| Pu-238 | 4.9482E-06 |
| Pu-239 | 1.4410E-04 |
| Pu-240 | 5.6828E-05 |
| Pu-241 | 2.7191E-05 |
| Pu-242 | 1.2821E-05 |
| Am-241 | 8.3843E-06 |
| Am-243 | 2.8387E-06 |
| Mo-95 | 6.0731E-05 |
| Tc-99 | 6.0641E-05 |
| Ru-101 | 5.6989E-05 |
| Rh-103 | 3.2779E-05 |
| Ag-109 | 4.3915E-06 |
| Cs-133 | 6.3578E-05 |
| Nd-143 | 4.3519E-05 |
| Nd-145 | 3.5063E-05 |
| Sm-147 | 1.0125E-05 |
| Sm-149 | 1.8871E-07 |
| Sm-150 | 1.4651E-05 |
| Sm-151 | 7.3565E-07 |
| Eu-151 | 2.9686E-08 |
| Sm-152 | 5.8652E-06 |
| Eu-153 | 5.3774E-06 |
| Gd-155 | 1.3137E-07 |
| O-16 | 4.6949E-02 |

Table 14. Isotopic Number Densities for Fuel Zone 13

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| U-234 | 2.6082E-07 |
| U-235 | 3.2876E-04 |
| U-236 | 1.4736E-04 |
| U-238 | 2.1653E-02 |
| Np-237 | 1.4686E-05 |
| Pu-238 | 4.9380E-06 |
| Pu-239 | 1.4409E-04 |
| Pu-240 | 5.6782E-05 |
| Pu-241 | 2.7168E-05 |
| Pu-242 | 1.2795E-05 |
| Am-241 | 8.3779E-06 |
| Am-243 | 2.8303E-06 |
| Mo-95 | 6.0684E-05 |
| Tc-99 | 6.0594E-05 |
| Ru-101 | 5.6939E-05 |
| Rh-103 | 3.2755E-05 |
| Ag-109 | 4.3855E-06 |
| Cs-133 | 6.3530E-05 |
| Nd-143 | 4.3499E-05 |
| Nd-145 | 3.5039E-05 |
| Sm-147 | 1.0122E-05 |
| Sm-149 | 1.8863E-07 |
| Sm-150 | 1.4636E-05 |
| Sm-151 | 7.3541E-07 |
| Eu-151 | 2.9678E-08 |
| Sm-152 | 5.8607E-06 |
| Eu-153 | 5.3708E-06 |
| Gd-155 | 1.3118E-07 |
| O-16 | 4.6949E-02 |

Table 15. Isotopic Number Densities for Fuel Zone 14

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| U-234 | 2.5663E-07 |
| U-235 | 3.3311E-04 |
| U-236 | 1.4679E-04 |
| U-238 | 2.1659E-02 |
| Np-237 | 1.4534E-05 |
| Pu-238 | 4.8462E-06 |
| Pu-239 | 1.4401E-04 |
| Pu-240 | 5.6368E-05 |
| Pu-241 | 2.6968E-05 |
| Pu-242 | 1.2554E-05 |
| Am-241 | 8.3202E-06 |
| Am-243 | 2.7554E-06 |
| Mo-95 | 6.0263E-05 |
| Tc-99 | 6.0174E-05 |
| Ru-101 | 5.6487E-05 |
| Rh-103 | 3.2540E-05 |
| Ag-109 | 4.3311E-06 |
| Cs-133 | 6.3102E-05 |
| Nd-143 | 4.3309E-05 |
| Nd-145 | 3.4814E-05 |
| Sm-147 | 1.0099E-05 |
| Sm-149 | 1.8790E-07 |
| Sm-150 | 1.4496E-05 |
| Sm-151 | 7.3320E-07 |
| Eu-151 | 2.9598E-08 |
| Sm-152 | 5.8200E-06 |
| Eu-153 | 5.3115E-06 |
| Gd-155 | 1.2942E-07 |
| O-16 | 4.6949E-02 |

Table 16. Isotopic Number Densities for Fuel Zone 15

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| U-234 | 2.4422E-07 |
| U-235 | 3.4642E-04 |
| U-236 | 1.4502E-04 |
| U-238 | 2.1678E-02 |
| Np-237 | 1.4077E-05 |
| Pu-238 | 4.5751E-06 |
| Pu-239 | 1.4373E-04 |
| Pu-240 | 5.5107E-05 |
| Pu-241 | 2.6353E-05 |
| Pu-242 | 1.1842E-05 |
| Am-241 | 8.1421E-06 |
| Am-243 | 2.5375E-06 |
| Mo-95 | 5.8990E-05 |
| Tc-99 | 5.8904E-05 |
| Ru-101 | 5.5129E-05 |
| Rh-103 | 3.1889E-05 |
| Ag-109 | 4.1689E-06 |
| Cs-133 | 6.1807E-05 |
| Nd-143 | 4.2724E-05 |
| Nd-145 | 3.4133E-05 |
| Sm-147 | 1.0026E-05 |
| Sm-149 | 1.8572E-07 |
| Sm-150 | 1.4078E-05 |
| Sm-151 | 7.2654E-07 |
| Eu-151 | 2.9360E-08 |
| Sm-152 | 5.6972E-06 |
| Eu-153 | 5.1339E-06 |
| Gd-155 | 1.2417E-07 |
| O-16 | 4.6950E-02 |

Table 17. Isotopic Number Densities for Fuel Zone 16

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| U-234 | 2.0573E-07 |
| U-235 | 3.9224E-04 |
| U-236 | 1.3867E-04 |
| U-238 | 2.1737E-02 |
| Np-237 | 1.2576E-05 |
| Pu-238 | 3.7402E-06 |
| Pu-239 | 1.4237E-04 |
| Pu-240 | 5.0790E-05 |
| Pu-241 | 2.4201E-05 |
| Pu-242 | 9.6437E-06 |
| Am-241 | 7.5106E-06 |
| Am-243 | 1.8983E-06 |
| Mo-95 | 5.4763E-05 |
| Tc-99 | 5.4680E-05 |
| Ru-101 | 5.0681E-05 |
| Rh-103 | 2.9695E-05 |
| Ag-109 | 3.6516E-06 |
| Cs-133 | 5.7482E-05 |
| Nd-143 | 4.0643E-05 |
| Nd-145 | 3.1850E-05 |
| Sm-147 | 9.7417E-06 |
| Sm-149 | 1.7861E-07 |
| Sm-150 | 1.2724E-05 |
| Sm-151 | 7.0426E-07 |
| Eu-151 | 2.8566E-08 |
| Sm-152 | 5.2894E-06 |
| Eu-153 | 4.5585E-06 |
| Gd-155 | 1.0751E-07 |
| O-16 | 4.6950E-02 |

Table 18. Isotopic Number Densities for Fuel Zone 17

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| U-234 | 1.2001E-07 |
| U-235 | 5.3226E-04 |
| U-236 | 1.1741E-04 |
| U-238 | 2.1888E-02 |
| Np-237 | 8.6098E-06 |
| Pu-238 | 1.9286E-06 |
| Pu-239 | 1.3431E-04 |
| Pu-240 | 3.8072E-05 |
| Pu-241 | 1.7471E-05 |
| Pu-242 | 4.8327E-06 |
| Am-241 | 5.4772E-06 |
| Am-243 | 7.1532E-07 |
| Mo-95 | 4.2996E-05 |
| Tc-99 | 4.2879E-05 |
| Ru-101 | 3.8754E-05 |
| Rh-103 | 2.3376E-05 |
| Ag-109 | 2.3822E-06 |
| Cs-133 | 4.5280E-05 |
| Nd-143 | 3.3849E-05 |
| Nd-145 | 2.5327E-05 |
| Sm-147 | 8.6023E-06 |
| Sm-149 | 1.5967E-07 |
| Sm-150 | 9.2384E-06 |
| Sm-151 | 6.4046E-07 |
| Eu-151 | 2.6344E-08 |
| Sm-152 | 4.1440E-06 |
| Eu-153 | 3.0880E-06 |
| Gd-155 | 6.7916E-08 |
| O-16 | 4.6951E-02 |

Table 19. Isotopic Number Densities for Fuel Zone 18

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| U-234 | 5.1156E-08 |
| U-235 | 7.3574E-04 |
| U-236 | 8.3243E-05 |
| U-238 | 2.2051E-02 |
| Np-237 | 4.2992E-06 |
| Pu-238 | 5.9219E-07 |
| Pu-239 | 1.1129E-04 |
| Pu-240 | 2.1520E-05 |
| Pu-241 | 8.4162E-06 |
| Pu-242 | 1.2994E-06 |
| Am-241 | 2.6575E-06 |
| Am-243 | 1.1447E-07 |
| Mo-95 | 2.7972E-05 |
| Tc-99 | 2.7796E-05 |
| Ru-101 | 2.4394E-05 |
| Rh-103 | 1.5063E-05 |
| Ag-109 | 1.1307E-06 |
| Cs-133 | 2.9483E-05 |
| Nd-143 | 2.3406E-05 |
| Nd-145 | 1.6708E-05 |
| Sm-147 | 6.4009E-06 |
| Sm-149 | 1.3675E-07 |
| Sm-150 | 5.4074E-06 |
| Sm-151 | 5.5094E-07 |
| Eu-151 | 2.3390E-08 |
| Sm-152 | 2.6313E-06 |
| Eu-153 | 1.5533E-06 |
| Gd-155 | 3.3200E-08 |
| O-16 | 4.6953E-02 |

Table 20. Isotopic Number Densities for Water (density = 0.998 g/cm3)

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| H-1 | 6.67400E-02 |
| O-16 | 3.33700E-02 |

Table 21. Isotopic Number Densities for Zircaloy-4 Cladding (density = 6.5601 g/cm3)

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| Cr-50 | 3.3012E-06 |
| Cr-52 | 6.3662E-05 |
| Cr-53 | 7.2179E-06 |
| Cr-54 | 1.7969E-06 |
| Fe-54 | 8.7650E-06 |
| Fe-56 | 1.3626E-04 |
| Fe-57 | 3.1198E-06 |
| Fe-58 | 4.1597E-07 |
| Zr-90 | 2.1887E-02 |
| Zr-91 | 4.7729E-03 |
| Zr-92 | 7.2955E-03 |
| Zr-94 | 7.3934E-03 |
| Zr-96 | 1.1911E-03 |
| Sn-112 | 4.6807E-06 |
| Sn-114 | 3.1365E-06 |
| Sn-115 | 1.7371E-06 |
| Sn-116 | 7.0113E-05 |
| Sn-117 | 3.7059E-05 |
| Sn-118 | 1.1687E-04 |
| Sn-119 | 4.1402E-05 |
| Sn-120 | 1.5726E-04 |
| Sn-122 | 2.2342E-05 |
| Sn-124 | 2.7939E-05 |
| Hf-174 | 3.5856E-09 |
| Hf-176 | 1.1523E-07 |
| Hf-177 | 4.1182E-07 |
| Hf-178 | 6.0418E-07 |
| Hf-179 | 3.0166E-07 |
| Hf-180 | 7.7688E-07 |

Table 22. Isotopic Number Densities for Stainless Steel (density = 7.9205 g/cm3)

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| Cr-50 | 7.5733E-04 |
| Cr-52 | 1.4605E-02 |
| Cr-53 | 1.6559E-03 |
| Cr-54 | 4.1222E-04 |
| Mn-55 | 1.7400E-03 |
| Fe-54 | 3.5022E-03 |
| Fe-56 | 5.4445E-02 |
| Fe-57 | 1.2466E-03 |
| Fe-58 | 1.6621E-04 |
| Ni-58 | 5.2704E-03 |
| Ni-60 | 2.0149E-03 |
| Ni-61 | 8.7236E-05 |
| Ni-62 | 2.7715E-04 |
| Ni-64 | 7.0252E-05 |

**Table 23. Isotopic Number Densities for Neutron Absorber Panels (density = 2.6489 g/cm3)**

|  |  |
| --- | --- |
| Species | Number density(atoms/barn-cm) |
| B-10 | 6.57950E-03 |
| B-11 | 2.72600E-02 |
| C | 8.45470E-03 |
| Al-27 | 4.17950E-02 |

Table 24. Isotopic Number Density for Aluminum Absorber Cladding (density = 2.6972 g/cm3)

|  |  |
| --- | --- |
| Isotope | Number density(atoms/barn-cm) |
| Al-27 | 6.02000E-02 |

Table 25. Fuel Assembly Dimensions

|  |  |
| --- | --- |
| Component | Dimension (cm) |
| Fuel pellet outer radius | 0.3922 |
| Cladding inner radius | 0.4001 |
| Cladding outer radius | 0.4572 |
| Fuel rod pitch (center-to-center) | 1.2598 |
| Guide tube inner radius | 0.5613 |
| Guide tube outer radius | 0.602 |

Table 26. Fuel Basket Dimensions

|  |  |
| --- | --- |
| Component | Dimension (cm) |
| Storage Cell Inner Dimension | 22.0 |
| Storage Cell Wall Thickness | 0.75 |
| Neutron Absorber Thickness | 0.20574 |
| Neutron Absorber Cladding Thickness | 0.0254 |
| Neutron Absorber and Cladding Width | 19.05 |
| Assembly pitch (center-to-center) | 23.75654 |
| Basket Height | 365.76 |
| Neutron Absorber Height | 365.76 |
| Bottom of Fuel Relative to Basket | 0.0 |

Table 27. Cask Dimensions

|  |  |
| --- | --- |
| Component | Dimension (cm) |
| Cask Wall Inner Radius | 87.5 |
| Cask Wall Outer Radius | 107.5 |
| Cask Inside Height | 410.76 |
| Cask Baseplate Thickness | 30.0 |
| Cask Lid Thickness | 30.0 |
| Distance from Top of Baseplate to Bottom of Basket | 15.0 |