Table 4-2 – Ion Concentrations, pH, and Eh Values for Various Uranium Solubility Models Using Visual MINTEQ

Condition	pH[a]	Eh[a]	Total CO_3^{2-} [a]	Br^- (mg/L)[b]	F^- (mg/L)[b]	Cl^- (mg/L)[b]	NO_3^- (mg/L)[b]	SO_4^{2-} (mg/L)[b]	Ca^{2+} (mg/L)[b]	Mg^{2+} (mg/L)[b]	K^+ (mg/L)[b]	Na^+ (mg/L)[b]	Neptune-Reported Total Uranium Solubility Based on U_3O_8 (mol/L)[a]	DEQ-Calculated Total Uranium Solubility without Redox Coupling (mol/L)	DEQ-Calculated Total Uranium Solubility with Uranium Redox Coupling (mol/L)	Neptune-Reported Total Uranium Solubility Based on UO_3 (mol/L)[c]
1	6.5	200	190	20	4.2	24094	1.5	3079	552	793	509	15162	7.85E-16	6.49E-17	1.62E-05	1.18E-04
2	7	200	190	20	4.2	24094	1.5	3079	552	793	509	15162	3.00E-16	1.51E-17	2.23E-05	9.72E-06
3	8	200	300	20	4.2	24094	1.5	3079	552	793	509	15162	1.00E-16	3.76E-18	1.68E-05	1.80E-03
4	7.3	-10	190	20	4.2	24094	1.5	3079	552	793	509	15162	4.98E-12	2.74E-13	4.84E-07	–
5	7.3	-40	190	20	4.2	24094	1.5	3079	552	793	509	15162	2.52E-11	1.30E-12	2.24E-07	–
6	7.3	-100	190	20	4.2	24094	1.5	3079	552	793	509	15162	6.45E-10	2.93E-11	4.74E-08	–
7	7.3	-300	190	20	4.2	24094	1.5	3079	552	793	509	15162	3.18E-05	9.44E-07	9.44E-07	–

Note: Reported values from the geochemical modeling report (Neptune 2014m) are provided. Models with and without redox coupling were performed using the reported pH, Eh, and ion concentrations shown with each condition.
[a] From Neptune (2014m), Table 12.
[b] From Neptune (2014m), Table 8.
[c] From Neptune (2014m), Table 9.