

Table 3 Assessment of Maximum NSTX Activation Products for Upgrade Scenar

A. 2nd NBI Only (2E17 Neutrons/yr; 4E16 Neutrons 1st week, 1.6E17 Neutrons 2nd week)

Isotope	Half-Life	Cat 3 Threshold (Ci)	Maximum Total Ci after 1st Week ¹	Max Ci/Cat 3 after 1st Week	Residual Ci @ Start of 2nd Week ²	Maximum Total Ci after 2nd Week + Residual ³	Max Ci/Cat : after 2nd Week
Na-24	1.50E+01 Hr	3.00E+02	4.72E-02	1.57E-04	2.95E-03	1.92E-01	6.40E-04
Mn-56	2.58E+00 Hr	2.80E+03	1.16E+01	4.14E-03	1.16E-06	4.62E+01	1.65E-02
Cu-64	1.27E+01 Hr	1.54E+05	8.08E+01	5.25E-04	3.05E+00	3.26E+02	2.12E-03
Summation of Radionuclide Threshold Ratios				4.82E-03		1.93E-02	

Table 3 Assessment of Maximum NSTX Activation Products for Upgrade Scenar

B. New CS Only (2E18 Neutrons/yr; 8E17 Neutrons 1st week, 1.2E18 Neutrons 2nd week)

Isotope	Half-Life	Cat 3 Threshold (Ci)	Maximum Total Ci after 1st Week ¹	Max Ci/Cat 3 after 1st Week	Residual Ci @ Start of 2nd Week ²	Maximum Total Ci after 2nd Week + Residual ³	Max Ci/Cat : after 2nd Week
Na-24	1.50E+01 Hr	3.00E+02	9.44E-01	3.15E-03	5.90E-02	1.48E+00	4.93E-03
Mn-56	2.58E+00 Hr	2.80E+03	2.31E+02	8.25E-02	2.31E-05	3.47E+02	1.24E-01
Cu-64	1.27E+01 Hr	1.54E+05	1.62E+03	1.05E-02	6.12E+01	2.49E+03	1.62E-02
Summation of Radionuclide Threshold Ratios				9.62E-02			1.45E-01

Table 3 Assessment of Maximum NSTX Activation Products for Upgrade Scenar

C. New CS + 2nd NBI (4E18 Neutrons/yr; 1.6E18 Neutrons 1st week, 2.4E18 Neutrons 2nd

Isotope	Half-Life	Cat 3 Threshold (Ci)	Maximum Total Ci after 1st Week ¹	Max Ci/Cat 3 after 1st Week	Residual Ci @ Start of 2nd Week ²	Maximum Total Ci after 2nd Week + Residual ³	Max Ci/Cat : after 2nd Week
Na-24	1.50E+01 Hr	3.00E+02	1.89E+00	6.30E-03	1.18E-01	2.95E+00	9.83E-03
Mn-56	2.58E+00 Hr	2.80E+03	4.62E+02	1.65E-01	4.61E-05	6.94E+02	2.48E-01
Cu-64	1.27E+01 Hr	1.54E+05	3.23E+03	2.10E-02	1.22E+02	4.97E+03	3.23E-02

Summation of Radionuclide Threshold Ratios

1.92E-01

2.90E-01

NOTES

1 Calculated by multiplying Maximum Total Ci in Table 1 for each isotope by ratio of 1st week neutrons generated to 1E17.

2 Calculated from product of maximum total Ci after 1st Week and exp (-Lambda*T), where T=60 hours, and Lambda= ln2/half-life to account for isotope decay over the weekend between the two run weeks.

3 Calculated by multiplying Maximum Total Ci in Table 1 for each isotope by ratio of 2nd week neutrons generated to 1E17 then adding residual Ci at start of 2nd week.