

Analysis of activation and dose rates of ITER-Like material samples using LTIS box after DD/DT campaigns at JET

Gediminas Stankunas^{a*}, Igor Lengar^b, Paola Batistoni^c, Sean Conroy^d, and JET Contributors^{*}

EUROfusion Consortium, JET, Culham Science Centre, Abingdon, OX14 3DB, UK

^a*Lithuanian Energy Institute, Laboratory of Nuclear Installation Safety, Breslaujos str. 3, LT-44403 Kaunas, Lithuania*

^b*Jožef Stefan, Institute, Jamova 39, SI-1000 Ljubljana, Slovenia*

^c*ENEA, Via E. Fermi,45, 00044 Frascati,(Rome) Italy*

^d*Department of Physics and Astronomy, Uppsala University, P.O. Box 516, SE-75120 Uppsala, Sweden*

**Corresponding author: gediminas.stankunas@lei.lt*

Activation inventories, decay heat and shut-down radiation doses are important nuclear quantities which need to be assessed on a reliable basis for the safe operation of a fusion nuclear power reactor and its final decommissioning. This paper describes the activation and dose rate calculations performed in the frame of the EUROfusion JET3 programme for the Long Term Irradiation Station (LTIS) components as resulting from neutron irradiation after a whole DD and DTE2 campaigns. In the frame of JET3, samples of real ITER materials used in the manufacturing of the main in vessel components will be irradiated at JET during DTE2 such as ITER-grade W, Be, CuCrZr, 316L(N), but also functional materials used in diagnostics and heating systems that, if strongly activated, may release high dose levels to critical components. Neutron induced activities and dose rates at shutdown are calculated by means of the FISPACT-2010 code using the irradiation scenario specified for JET, with the neutron flux densities and spectra provided by the preceding MCNP neutron transport calculation for LTIS box.

*See the Appendix of F. Romanelli et al., Proceedings of the 25th IAEA Fusion Energy Conference 2014, Saint Petersburg, Russia