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High Field Neutron Source Facility* M. ZUCCHETTI, Politecnico di Torino, Italy, F. BOMBARDA, G. RAMOGIDA, ENEA, Italy, B. COPPI, Z. HARTWIG, MIT — Fusion creates more neutrons per energy released than fission or spallation, therefore DT fusion facilities have the potential to become the most intense sources of neutrons for material testing. An Ignitor-like device, that is a compact, high field, high density machine could be envisaged for this purpose making full use of the intense neutron flux that it can generate, without reaching ignition. The main features of this High Field Neutron Source Facility, which would have about 50% more volume than Ignitor, are illustrated and the R&D required in order to achieve relevant dpa quantities in the tested materials are discussed, in particular the adoption of superconducting magnet coils. Radiation damage evaluations have been performed by means of the ACAB code for some fusion-relevant materials, like pure iron, ASI316L, EUROFER, SiC/SiC, Mo, Graphite, V-15Cr-5Ti. Values ranging from 1.6×10^{-26} to 2.4×10^{-25} dpa per source neutron have been obtained. Some full-power months of operation are sufficient to obtain relevant radiation damage values in terms of dpa: the setup of a duty cycle for the device in order to obtain such operation times is the next required step to proceed with the evaluation. *Sponsored in part by ENEA of Italy and by the U.S. D.O.E.

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