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Neutral Beam Heating On MST J. WAKSMAN, A.F. ALMAGRI, J.K. ANDERSON, D. LIU, UW-Madison, M.D. NORNBERG, G. FIKSEL, University of Rochester, V.I. DAVYDENKO, P. DEICHULI, A.A. IVANOV, N. STUPISHIN, Budker Institute of Nuclear Physics, Novosibirsk, Russia — A 1 MW, 20 ms tangential neutral beam injection system has recently been installed on MST. One of the key impacts that a high-power neutral beam has on a plasma is particle heating. Significant ion heating has been measured, with an increase in core Ti of more than 40 eV occurring after only a few milliseconds in a plasma with an initial ion temperature of approximately 200 eV, and a density of around 1E13 cm^{-3}. Simulations of classical collisional heating were performed, using TRANSP beam deposition simulations in a 1-D temperature profile evolution model. This model assumes a constant stored energy when the beam is not fired, and also assumes an anomalous ion heating source. Variations in parameters such as energy confinement time change the simulated heating results, but it is very difficult to replicate the observed heating by classical collisions alone. Measurement of the evolution of the electron temperature profile is currently underway, and will aid in the understanding of energy balance in MST, and the complete impact of the neutral beam on plasma temperature. Work supported by the USDOE.

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