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Measurements of fusion products in the beam-driven field-reversed configuration RICHARD MAGEE, BRIAN FOX, SERGEY KOREPANOV, SCOTT NICKS, TOSHIKI TAJIMA, AND THE TAE TEAM, TAE Technologies, Inc. — In TAE Technologies' current experimental device, C-2W (also called "Norman") [1], record breaking, advanced beam-driven field reversed configuration (FRC) plasmas are produced and sustained in steady state utilizing variable energy neutral beams (15 – 40 keV, total power up to 20 MW), advanced divertors, end bias electrodes, and an active plasma control system. Measurements of fusion products in the C-2W FRC reveal the dynamics of the highest energy fusile ions in the plasma. In the case of deuterium neutral beam injection (NBI) into deuterium plasmas, fast ions born from charge exchange of injected beam neutrals are studied. Measurements of 3 MeV DD protons and 2.45 MeV DD neutrons are used to discern their confinement, accumulation, and spatial distribution in the plasma. In the case of pure hydrogen NBI into deuterium plasma, measurements of fusion products reveal plasma ion acceleration by a beam-driven wave. A fast tail in the bulk ion population is drawn out on sub-collisional timescales. This wave has been identified as an Ion Bernstein Wave though particle-in-cell simulation.[2] [1] H. Gota *et al,* Nucl. Fusion **59,** 112009 (2019) [2] R. Magee *et al*, Nature Physics **15**, 281-286 (2019)

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