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**Fast imaging and modeling of the C-2U outflow jet and pre-ionization plasmas** ERIK GRANSTEDT, E TRASK, R. J. SMITH, S. KRAUSE, D. SHEFTMAN, AND THE TAE TEAM, Tri Alpha Energy — The C-2U device<sup>1</sup> used neutral beam injection and end-biasing to maintain an advanced beam-driven Field-Reversed Configuration (FRC) plasma. A good electrical connection between the FRC and end-bias was critical for maintaining macroscopic stability. To model this electrical connection, characterization of the outflow jet plasma in this region is necessary. Limited access and the need for non-invasive instruments motivated optical diagnostics to be used for this purpose. High-speed cameras imaged visible light emission from neutral hydrogen and impurities. Tomographic reconstruction and neutral modeling was used to estimate the ionization rate and compare to the particle loss. The plasma macroscopic stability was also investigated. Imaging was also used to study the “pre-ionization” plasma in this region: the seed plasma which trapped the reversed magnetic flux during the initial FRC formation process.

<sup>1</sup>M. Binderbauer, et al. Physics of Plasmas **22**, 056110 (2015)

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