Abstract Submitted
for the DPP13 Meeting of
The American Physical Society

Development of a plasma injector for supersonic drag reduction ANGUS MACNAB, AKEL HASHIM, ROBERT GRAHAM, TIMOTHY ZIEMBA, KENNETH MILLER, Eagle Harbor Technologies, Inc. — Eagle Harbor Technologies, Inc. is developing and optimizing a magnetohydrodynamic (MHD) plasma injector, designed to reduce viscous skin friction of supersonic aircraft. The broad goals are to 1. Computationally investigate and verify the dominant physical mechanisms for MHD plasma drag reduction; 2. Develop a proof of concept plasma injector demo, which performs within the power limitations of an onboard flight-relevant system; and 3. Use insights gained through computational investigations to optimize the performance of our MHD plasma injector for maximum efficiency. This investigation focuses on flight-relevant Reynolds and magnetic Reynolds numbers at low supersonic ($1 < M < 3$) speeds. We present numerical and experimental results detailing the development of our plasma injector.

Angus Macnab
Eagle Harbor Technologies, Inc.

Date submitted: 10 Sep 2013 Electronic form version 1.4