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Ignition relevant ablator response of boron carbide and high-density carbon driven by multiple shocks[1] SHON T. PRISBREY, KEVIN BAKER, PETER CELLIERS, TOM DITTRICH, ALASTAIR MOORE, KUANG JEN WU, PEGGY KERVIN, OMAR HURRICANE, Lawrence Livermore National Laboratory — The attainment of self-propagating fusion burn in an inertial confinement target at the National Ignition Facility will require the use of an ablator with high rocket-efficiency and ablation pressure. The current ablation material, a glow-discharge polymer (GDP), does not couple as efficiently as simulations indicated to the multiple-shock inducing radiation drive environment created by laser power profile. In an effort to evaluate the performance of other possible ablators that could be suitable for achieving self-propagating fusion burn we have inferred the ablation performance of two possible ablators, boron carbide and high-density carbon, by measuring the shock speed of induced shocks while subjecting the ablators to a multiple-shock inducing radiation drive environment similar to a generic three-shock ignition drive. We present the platform used, velocity measurements used to infer the ablation response, and matching simulations to show the relative performance of boron carbide and high-density carbon with a general comparison to current performance of the currently used glow-discharge polymer ablator.

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Shon T. Prisbrey
Lawrence Livermore National Laboratory

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