Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

Laser coupling and window mixing in NIF MagLIF gas pipe experiments BRADLEY POLLOCK, Lawrence Livermore Natl Lab, MICHAEL GLINSKY, MATTHEW WEISS, STEPHANIE HANSEN, Sandia National Lab, STEVEN ROSS, JOHN MOODY, Lawrence Livermore Natl Lab — Recent MagLIF gas pipe experiments at the NIF have continued to investigate laser energy coupling into the target gas fill. One of the most significant uncertainties in the coupling is the energy deposition into the window material, which is predicted in simulations to be or order ˜few kJ but which is difficult to measure directly. By employing the NIF Visar system to measure the shock strength when the heated plasma reaches the wall of the target, the total energy deposited into the gas can be accurately determined. Additionally, in some experiments the target entrance window has had a mid-Z tracer added to track the depth of window material propagation into the target, allowing for assessments of window mixing with the gas fill. Preliminary data indicate that the window material does not propagate further than ˜2 mm into the target, and that the mixing depth is dependent on the initial gas pressure inside the pipe.\This work was performed under theauspices of the U.S. Department of Energy by LLNL under Contract DE-AC52-07NA27344.

Bradley Pollock
Lawrence Livermore Natl Lab

Date submitted: 01 Jul 2020 Electronic form version 1.4