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Inflight radiography of metal graded Pushered Single Shell implosions using the Advanced Radiographic Capability[1] DAVID MARTINEZ, EDUARD DEWALD, SHAHAB KHAN, STEPHAN MACLAREN, CHRIS YOUNG, ROBERT TIPTON, DARWIN HO, JESSE PINO, GREG MILLOS, STEVE JOHNSON, DAN KALANTAR, Lawrence Livermore Natl Lab, SCOTT VONHOF, General Atomics — The Pushered Single Shell concept uses a mid- or high-Z pusher at the fuel-ablator interface together with a graded density profile to enhance confinement time, thus making the ignition threshold more accessible. This concept is being studied at the National Ignition Facility using a hohlraum driven with 192 laser beams [Dewald, et al. Phys. Plasmas (2019)]. Initial experiments with novel opaque Be/Cr graded capsules (50% Cr in the pusher layer) utilize the Advanced Radiographic Capability (ARC) short pulse laser [J. M. Di Nicola, et al. Proc. of SPIE (2015)] to measure the symmetry of the implosion near peak velocity. Two Au 25m diameter wire backlighters placed inside a two-dimensional plastic parabolic structure [R Tommasini et. al., to be submitted] are illuminated by the ARC beamlets to generate two inflight hard x-ray bremmstrahlung (30-70 keV) radiographs recorded on image plates and on the AXIS diagnostic [G. N. Hall et al Rev. Sci. Instrum. (2014)]. Backlighter performance and implosion symmetry results from ARC will be presented.

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