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Quasi-Isentropic drive development for peak pressure > 10 Mbar¹ SHON PRISBREY, BRIAN MADDOX, HYE-SOOK PARK, BRUCE REMING-TON, MARK MAY, ROBERT CAVALLO, ROBERT RUDD, KERRI BLOBAUM, TED PERRY, Lawrence Livermore National Laboratory, ANDREW COMLEY, Atomic Weapons Establishment — We have tested key components necessary to the development of a quasi-isentropic pressure drive with a peak pressure greater than 10 Mbar at the National Ignition Facility. The quasi-isentropic pressure drive is produced by the recompression of a multi-material reservoir undergoing shock release across a gap. The magnitude of the initial shock, the initial density profile, and the materials' behavior under release and recompression of the reservoir define the pressure profile created in the sample during reservoir stagnation. Previously shown results have confirmed the ability to create a 5 Mbar drive for 50 – 100 μ m thick samples from a three-layer reservoir with an initial peak density of 2 g/cc (BrC_4H_3) [1]. This paper presents the results of a four-layer reservoir with peak density of 8.94 g/cc (Cu). We correlate the measured results with the development of a quasi-isentropic drive that will induce peak pressures of greater than 10 Mbar in 100 μ m thick samples while maintaining the sample well below its melt temperature.

[1] S. T. Prisbrey et al, Phys. of Plasmas, vol. **19**, pp. 056311 (2012).

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