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Reduced Compression and Yield for Direct Drive ICF Capsules GEORGE KYRALA, JOHN BENAGE, EVAN DODD, DOUGLAS WILSON, Los Alamos National Lab — We report on a series of experiments conducted at the LLE's Omega Laser to study the effect of high z dopant gases on the performance of D2 filled capsules. The experiments all consisted of thin, ~ 4.5 microns, glass capsules filled with 7-10 atm. of gas that were imploded using the direct drive laser beams at Omega. The laser conditions for these experiments were 1 ns flat pulses with a total energy of ~ 23 kJ. The typical implosion times were ~ 1.3 ns and yields ranged from 10^9 neutrons to $> 10^{11}$ neutrons. The capsules were doped with varying levels of Kr gas and also in several cases contained He3. A key finding of these experiments was that the capsules did not reach the full compression predicted by simulation. Specifically, we found that the capsule diameter matched the simulation until the time when the main reflected shock reached the shell. After that time, the capsule diameter is measured to be larger than predicted. In this presentation, we quantify the effect of this reduced compression on the yield of the capsule.

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