Fabrication of Multiple Fill Tube Targets for Sandia National Laboratory*

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Target design for the National Ignition Facility (NIF) requires either a glass (SiO_2) or plastic (CH) fill tube. To study the hydrodynamic effects that are introduced by a fill tube during capsule implosion, fill tube targets were fabricated for experiments at the Z-Pinch facility. Three and four fill tube targets were designed and fabricated to maximize data during each experiment. Targets were made with CH and SiO_2 fill tubes on the same capsule to study the shadowing differences between glass and plastic fill tubes. Four tube targets were fabricated with diameters ranging from 10 μm–45 μm to study the effect diameter has on implosion characteristics. Capsules were coated with a Germanium doped layer of glow discharge polymer (GDP). Blind holes were drilled in the capsules using an excimer laser. Fill tubes were fabricated using modified capillary pullers and assembly was done on a specially designed assembly station designed for fill tube fabrication. Targets were characterized by micon-resolution x-ray tomography.

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