An acceptable target design exists for a shot temperature of 21K. Meniscus height tracking therefore only sees the foam edge up until the point where the shroud opens and the switch temperature increases by 5-6K. At shot times the shroud opens and the switch temperature increases by 4-6K. The Cu cooling rod to target base power output decreases to 7K to 4K, depending on arm heater power. The target base must operate at a temperature of 7.5K to 10.5K. Above 11K, the Cu cooling rod will fail.

NIF now fields two types of layered targets, ice layer targets freeze the fuel in place when full inventory is reached. The windows on the cold target shrouds are therefore changed from gold to black. The Cu cooling rod to target base then fails, and the heaters turn off at some point in the shot. The heater turn-off point is up to 10K higher than the 21K design point. Before Critical Fill, Liquid shroud ~125K IR. Ice layer targets on the CryoTARPOS were therefore observed with the foam edge up. Inventory stability measurements are therefore performed with the foam edge up. The Cu cooling rod to target base power output decreases to 7K to 4K, depending on arm heater power. The target base must operate at a temperature of 7.5K to 10.5K. Above 11K, the Cu cooling rod will fail.

Development of an improved thermal switch design is in progress. Before Critical Fill, Ice layer targets on the CryoTARPOS were therefore observed with the foam edge up. Inventory stability measurements are therefore performed with the foam edge up. The Cu cooling rod to target base power output decreases to 7K to 4K, depending on arm heater power. The target base must operate at a temperature of 7.5K to 10.5K. Above 11K, the Cu cooling rod will fail.

Target Installed on CryoTARPOS Positioner

Thermal Switch Temperature at Shot-Time

High and Low Temperature Target Design

Conclusions and Future Work