Development of MiniRailguns for the Plasma Liner Experiment (PLX)\textsuperscript{1} F.D. WITHERSPOON, S. BROCKINGTON, A. CASE, S.J. MESSER, L. WU, R. ELTON, HyperV Technologies Corp., S.C. HSU, LANL, J.T. CASSIBRY, UAH, M.A. GILMORE, UNM, THE PLX TEAM — Plasma guns are being developed for use on the Plasma Liner Experiment (PLX) located at LANL. The collapsing plasma liner will be formed via merging of 30 dense, high Mach number plasma jets ($n \sim 10^{16-17}$ cm$^{-3}$, $M \sim 10-35$, $v \sim 50-70$ km/s, $r_{\text{jet}} \sim 5$ cm) in a spherically convergent geometry. Small parallel-plate railguns are being developed for this purpose. Each gun will operate at $\sim 300-600$ kA peak current, and launch up to $\sim 8000 \mu$g of high-Z plasma (Ar, Xe) using a $\sim 50$ kJ pfn. We now routinely operate with very fast gas valve injection of Ar, and have recently achieved $\sim 4000 \mu$g at 40 km/s at $\sim 400$ kA. Work continues to increase both the mass and velocity using higher current and pulse shaping aided by MACH2 simulations. We describe these experimental efforts and the first prototype gun recently installed on PLX.

\textsuperscript{1}Supported by the U.S. DOE Joint Program in HEDLP.