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Formation of FRCs on the Pulsed High Density Experiment SAMUEL ANDREASON, JOHN SLOUGH, University of Washington — The Pulsed High Density (PHD) experiment has been reassembled at a new facility with sufficient space to continue through the full acceleration and compression stages to reach breakeven. The intention here is to produce a large FRC, but remain in the kinetic regime where the FRC is stable and the transport sufficiently low that a Q > 1 plasma can be attained at moderate densities $\sim 10^{23}$ m^{-3}. During reassembly a more complete analysis of previous experimental results has been made. One of the issues in the early phase of the experiment was inefficient flux trapping during field reversal due to the large scale of the FRC source (0.4 m radius). The on-axis seed plasma was unable to diffuse out to the walls on a timescale commensurate with the introduction of bias fields. This resulted in more than half of the initial bias flux lost before sheath formation halted flux loss. An annular array of plasma sources has been constructed that solves this problem and greatly enhances the flux retention. Dynamic formation has been employed on PHD and analysis tools capable of interpreting the magnetic loop diagnostic array have been developed. Results with comparison to numerical models will be presented.

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