In the Spallation Neutron Source based neutron Electric Dipole Moment (SNS nEDM) experiment, spins of polarized ultracold neutrons and polarized 3He will be manipulated in a 0.3 - 0.5 K superfluid 4He bath. Measurements will be made using two different modes: free precession and critical dressed spin. In the former, both spin species undergo a \( \pi/2 \) flip and then precess at their Larmor frequency in a \( B_0 \sim 30 \) mG field. In the latter, after a \( \pi/2 \) flip, a large off-resonance RF-field is used to make the two species have the same effective precession frequency. The PULSTAR test apparatus will investigate the techniques required to perform these operations experimentally using a full-sized measurement cell without an electric field, and using neutrons from the NC State PULSTAR ultracold neutron source. This apparatus allows significantly shorter cooling and turn-around times than the full-size SNS nEDM experiment. Other planned investigations using this apparatus include: the difference in motion between the \(^3\)He and neutron in superfluid helium that can cause a false EDM signal, and the pseudo-magnetic field caused by the spin-dependent difference of the n-\(^3\)He scattering length. The apparatus is currently under construction with commissioning beginning towards the end of this year.