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Disruption Mitigation by Massive Gas Injection on DIII–D[1] T.C. JERNIGAN, L.R. BAYLOR, S.K. COMBS, S.L. MILORA, Oak Ridge National Laboratory, T.E. EVANS, D.A. HUMPHREYS, R.L. LEE, A.G. KELLMAN, M.J. SCHAFFER, P.L. TAYLOR, General Atomics, D.G. WHYTE, University of California, San Diego — Massive bursts of helium gas at 50 kPa m^3/s have been used to mitigate the deleterious effect of Vertical Displacement Event (VDE) and density limit disruptions in the DIII–D tokamak. The gas was injected through a pellet injector propellant valve from a 300 ml reservoir filled to 130 kPa with helium gas. Both the axisymmetric component and toroidal peaking factor of the poloidal halo current were reduced by a factor of 2. The plasma thermal energy as measured by soft x–rays was lost within 3 ms of the start of the gas puff, and electron densities approached 10^{21} m^{-3}. The plasma density increase accounts for most of the input gas until the end of the thermal quench. The plasma shape and position measured by magnetic probes were maintained through most of the current ramp down. Due to the high plasma densities achieved, no runaway electron production was expected and none was observed.

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T.C. Jernigan
jernigantc@gav.gat.com
Oak Ridge National Laboratory

☐ Prefer Oral Session
☒ Prefer Poster Session

Special instructions: DIII–D Poster Session II (divertor physics, disruptions, RF, & diagnostics), immediately following Hyatt

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