Boundary plasma heat flux width measurements for poloidal magnetic fields above 1 Tesla in the Alcator C-Mod tokamak DAN BRUNNER, BRIAN LABOMBARD, ADAM KUANG, JIM TERRY, MIT PSFC, ALCATOR C-MOD TEAM — The boundary heat flux width, along with the total power flowing into the boundary, sets the power exhaust challenge for tokamaks. A multi-machine boundary heat flux width database found that the heat flux width in H-modes scaled inversely with poloidal magnetic field ($B_p$) and was independent of machine size. The maximum $B_p$ in the database was ~0.8 T, whereas the ITER 15 MA, Q=10 scenario will be 1.2 T. New measurements of the boundary heat flux width in Alcator C-Mod extend the international database to plasmas with $B_p$ up to ~1.3 T. C-Mod was the only experiment able to operate at ITER-level $B_p$. These new measurements are from over 300 plasma shots in L-, I-, and EDA H-modes spanning essentially the whole operating space in C-Mod. We find that the inverse-$B_p$ dependence of the heat flux width in H-modes continues to ITER-level $B_p$, further reinforcing the empirical projection of ~500 μm heat flux width for ITER. We find ~50% scatter around the inverse-$B_p$ scaling and are searching for the ‘hidden variables’ causing this scatter. Supported by USDoE award DE-FC02-99ER54512.