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Five Hole Probe Sweeping Wake Surveys[1] KYLE HICKMAN, JAMES BRENNER, JAMEY JACOB, Oklahoma State University-Stillwater — As robotic aircraft are increasingly used for atmospheric measurements a cheap and accurate wind sensor is needed. Oklahoma State University has developed a 3D printed multi-hole probe to fill this need. The probes are mounted to a fixed wing aircraft to measure a 3D wind vectors, including transient phenomena such as gusts and turbulence. The probe is calibrated using non-nulling calibration in wind tunnels. A wake survey is conducted with the probe by sweeping in the wake of various objects, such as a cylinder or wing, similar to the flying hot-wire concept. These wake surveys serve as a method to explore and verify the limits of the probes. The results show a reasonable drag profile of the model, without the need for a traversing system. Of interest will be how the probe handles turbulence between the wake of the model and the tunnel free stream. These experiments provide a better understanding of the probe measurements and support the expansion of the probes use in field studies.

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