Measurement of airspeed:

The result using both pressure devices, pitot-static probe and venturi tube gives similar trends of airspeed for different voltages.

The two measurement devices used, electronic pressure transducer and u-tube water manometer gives different measurement accuracies. Pressure transducer generally has a less accurate measurement compared to u-tube water manometer in the calculation of airspeed simply because it has a lesser accuracy in measuring the differential pressure attributed to a systematic error. However, as what is shown in the plot for voltage vs. airspeed using water manometer, there are bumps and outliers for lower voltage. This is because the measurements are recorded by human eye with a lot of factors that may result in a large random error.

The two plots of airspeed versus voltage shows that the airspeed outcome is a linear function of input voltage characterized by y=6.15x-2.03 where x is the input voltage in volts and y is the airspeed in meters per second.

Measurement of boundary layer:

The boundary layer is steady at ports 1 to 5 with a thickness of 6 mm, and varies between 7 and 8 mm from ports 6 to 10 and has a value of 10 mm at port 11. Theoretical values of a laminar boundary layer would range from 0.07\*10^-4 m to 0.1\*10^-4 m. For turbulent boundary layer, it would range from 7\*10^-4 m to 13\*10^-4 m.

The calculated boundary layer is much larger than theoretical values of a turbulent boundary layer, not to say comparing it with laminar boundary layer. We can account for the big discrepancy to the existing surfaces in the settling chamber and contraction portion of the wind tunnel that may have already reduced the airspeed significantly near the surface.

Seeing the general trends in the thickness of a boundary layer, we may conclude that it represents that of a turbulent boundary layer.