To: Dr. Fletcher

From: Air Flow Engineering Group

Subject: Air Flow Measurement Proposal

Date: October 9th, 2014

Joe Blow, Mary Contrary, Billy Bob

We have been asked to determine the effectiveness of 5 different flow meters under various flow conditions: a pitot tube, venturi meter, rotameter, orifice meter, and a nozzle. We will assume that the mass flow meter is accurate. Pressure changes across each meter will be used to determine the flow rate using standard correlations. The flow rate for each flow meter will be compared to the mass flow meter. The rotameter is currently calibrated to work at specific temperature conditions and will require calculations to adjust the flow rate to standard conditions. All flows will be converted to standard conditions (SCFM) based on the local temperature and pressure.

Experiments will be performed at 100, 200, and 300 SCFM. Discharge coefficients will be adjusted if necessary to match the mass flow meter. If time permits further experiments will be performed at different flow rates to generate a more accurate linear curve fit. We will show 95% confidence intervals and prediction bands for the discharge coefficients.

A supplement with equations, sample calculations, and graphs has been attached to this email.