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Vincent E Dimiceli* (vdimiceli@oru.edu), Engineering, Comp. Science, Physics and Math,
7777 S Lewis Ave, Tulsa, OK 74171, and **Steven F Piltz**. *Estimation of Black Globe Temperature
for Calculation of the WBGT Index*. Preliminary report.

– The wet bulb globe temperature (WBGT) index is used in industry, sports and other areas to indicate the heat stress level for humans and animals. One of the values needed to calculate the WBGT index is the black globe temperature. The black globe temperature is measured using a WBGT instrument which includes a black globe with a thermometer inserted in the center. However, the WBGT instrument can be costly and many of these instruments may be needed to get measurements in many locations. The authors have derived a formula to estimate the black globe temperature using readily available data collected by the National Weather Service (NWS). The formula was derived from a formula suggested by Kuehn (1970), which was based on heat transfer theory. The resulting equation was a fourth degree polynomial in terms of the black globe temperature. It was determined that the fourth degree polynomial in terms of the black globe temperature can be very accurately approximated using a linear expression in terms of black globe temperature. Some preliminary tests indicate accuracy within 0.5 –. (Received September 20, 2010)