## Practice Problems

**36-1** Propane, C3H8 is burning with 130% theoretical air in a camp stove. Determine:  
 (a) the reaction equation  
 (b) the molar air/fuel ratio  
 (c) the volumetric analysis of the combustion products  
 (d) the dew point temperature of the combustion products if the total pressure is 14.7 psia

**36-2** The Orsat analysis of the (dry) products of combustion of an unknown hydrocarbon is  
 9.10% CO2, 8.90% CO, and 82.0% N2. There is no O2 present. Determine:  
 (a) the fuel model (CnHm)  
 (b) the mass percentages of C and H present in the fuel  
 (c) the molar air/fuel ratio and percent theoretical air used in combustion  
 (d) the dew point temperature at .106 MPa

## Some of the Answers

**36-1:** Molar AFR ~30.9:1, T\_dp ~ 121.7 [F]

**36-2:** Fuel is roughly C­18H33, or 87% Carbon and 13% Hydrogen (by mass). Actual conditions are in ~83% of theoretical air (rich conditions), and T\_dp ~ 54 [C]