FEDERAL REFERENCE METHOD 3
Gas Analysis for the Determination of Dry Molecular Weight

Plant _____ **Date** _____

Location _____ **Test No.** _____

INPUT PARAMETERS

Percent Oxygen (O_2) by volume, dry basis = **$\%O_2$** = _____

Percent Carbon Dioxide (CO_2) by volume, dry basis = **$\%CO_2$** = _____

Percent Carbon Monoxide (CO) by volume, dry basis = **%CO** = _____

Percent N_2 = 100 – ($\%O_2$ + $\%CO_2$ + %CO) = **$\%N_2$** = _____

CALCULATIONS

M_d = Dry molecular weight, lb/lb-mole

$$M_d = 0.440(\%CO_2) + 0.320(\%O_2) + 0.280(\%N_2 + \%CO)$$

$$M_d = 0.440(\quad) + 0.320(\quad) + 0.280(\quad + \quad) = \_\_\_\_\_ \text{lb/lb-mole}$$

M_s = Wet molecular weight, lb/lb-mole

$$M_s = M_d(1 - B_{ws}) + 18.0(B_{ws})$$

$$M_s = (\quad)(1 - (\quad)) + 18.0(\quad) = \_\_\_\_\_ \text{lb/lb-mole}$$

%EA = Excess Air, %

$$\%EA = \frac{(\%O_2) - (0.5\%CO)}{0.0264(\%N_2) - (\%O_2 - 0.5\%CO)} \times 100$$

$$\%EA = \frac{(\quad) - (0.5(\quad))}{0.0264(\quad) - ((\quad) - 0.5(\quad))} \times 100 = \_\_\_\_\_ \%$$