

Lizzie Howard H#1, K-13-16S-25E, Eddy County
Calculations of Remaining Reserves and Allocation of
Future Recovery by Commingling.

Undesignated ^{Wildcat} Atoka, Perfs 7178-7184 KB; $P_{cr} = 674.5$, $T_{cr} = 372$

Orig. BHP = 2823.2 psia, BHP = 128°F @ 7170, $P_R = 4.186$, $T_R = 1.554$, $Z_o = 0.842$

1-8-79 BHP = 1588.2 psia, $P_R = 2.356$, $T_R = 1.554$, $Z_i = 0.8645$

1-8-79 Cum. Production = 8089 mcf + 15 bbls condensate

Abandonment Pressure assumed 10% of Orig BHP or 282.3 psia, $P_R = 0.418$, $T_R = 1.554$, $Z_u = 0.970$

$$\begin{aligned} \text{Remaining Reserves} &= \frac{P_i - P_u}{P_o - P_i} N_p = \frac{1588.2/0.8645 - 282.3/0.970}{2823.2/0.842 - 1588.2/0.8645} (8089) \text{ mcf} \\ &= \frac{1837.1 - 291.0}{3353.0 - 1837.1} (8089) \text{ mcf} \\ &= \frac{1546.1}{1515.9} (8089) = 8250 \text{ mcf} + \left(\frac{8250 \times 15}{8089} \right) \approx 1580 \end{aligned}$$

East Cottonwood Creek Wolfcamp, Perfs 5055-5072 KB; $P_{cr} = 668$, $T_{cr} = 374^\circ R$

Orig. BHP = 1410.2 psia, BHP = 108°F @ 5063'; $P_R = 2.111$, $T_R = 1.519$, $Z_o = 0.862$

4/5/79 BHP = 1316.2 psia, $P_R = 1.970$, $T_R = 1.519$, $Z_i = 0.869$

4/5/79 Cum. Production = 8084 mcf + 21 bbls Condensate

Abandonment Pressure assumed 20% of orig BHP or 282.0 psia, $P_R = 0.422$, $Z_u = 0.9675$

$$\begin{aligned} \text{Remaining Reserves} &= \frac{P_i - P_u}{P_o - P_i} N_p = \frac{1316.2/0.869 - 282.0/0.9675}{1410.2/0.862 - 1316.2/0.869} (8084) \text{ mcf} \\ &= \frac{1514.6 - 291.5}{1436.0 - 1514.6} (8084) \text{ mcf} \\ &= \frac{1223.1}{121.4} (8084) = 81,446 \text{ mcf} + \left(\frac{81446 \times 21}{8084} \right) \approx 2128 \end{aligned}$$

Allocation of Future Commingled Production Proposed:

East Cottonwood Creek Wolfcamp: 81446 mcf = 91% Gas; 2128 = 93% Oil

Undesignated ^{Wildcat} Atoka 8250 mcf = 9% Gas; 1580 = 7% Oil

Yates Petroleum Corp
 by Eddie L. Malynd 4-9-79