

BASIN DAKOTA
SECTION 28-T28N-R10W
1st SAND

Fluid Properties

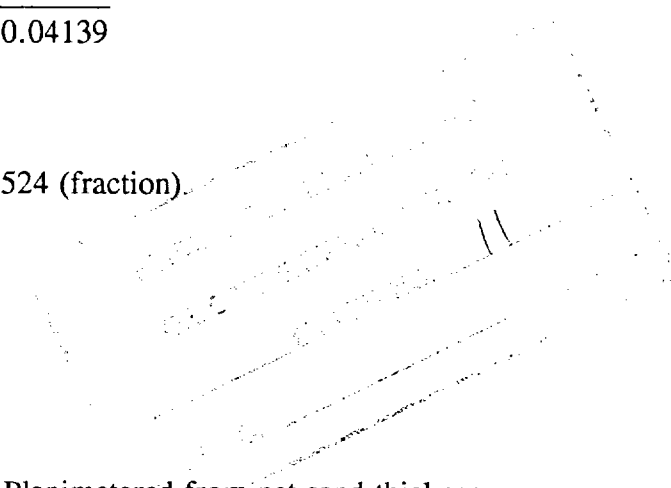
| | | | |
|-----------------|---|------------------------------|-------------------------------|
| Gas Gravity | = | 0.646 | Gas Analysis |
| T _c | = | 365°R | Standing's Correlation |
| P _c | = | 678 psi | Standing's Correlation |
| T _r | = | 150 °F | Log Measurement |
| P _{ri} | = | 2,400 psi | Public Data |
| P _{ra} | = | 400 psi | Estimate |
| B _{gi} | = | 0.00611 ft ³ /SCF | Standing & Katz's Correlation |
| B _{ga} | = | 0.04139 ft ³ /SCF | Standing & Katz's Correlation |

Calculate Theoretical Recovery Factor:

$$RF_t = 1 - \frac{B_{gi}}{B_{ga}}$$

$$RF_t = 1 - \frac{0.00611}{0.04139}$$

$$RF_t = 0.8524 \text{ (fraction)}$$



Rock Properties

| | | | |
|------------------|---|-------|---|
| Acre - Feet | = | 1,615 | Planimetered from net sand thickness maps |
| Average Porosity | = | 0.09 | (Fraction) ϕ_{dn} Avg. of offsets |
| Water Saturation | = | 0.44 | (Fraction) Avg. of offsets |

Calculate GIP, Theoretical and Actual EUR:

$$GIP = \frac{.04356Ah_{\phi}(1-S_w)}{B_{gi}} MMCF$$

$$GIP = \frac{.04356(1,615)(0.09)(1-0.44)}{0.00611} MMCF$$

$$GIP = 580 \text{ MMCF}$$

$$EUR_t = RF_t \times GIP$$

$$EUR_t = (0.8524)(580)$$

$$EUR_t = 495 \text{ MMCF}$$

CROSS TIMBERS OIL COMPANY

Barry Voigt

11/13/00

BASIN DAKOTA
SECTION 28-T28N-R10W
2nd SAND

Fluid Properties

| | | | |
|-----------------|---|------------------------------|-------------------------------|
| Gas Gravity | = | 0.646 | Gas Analysis |
| T _c | = | 365°R | Standing's Correlation |
| P _c | = | 678 psi | Standing's Correlation |
| T _r | = | 150 °F | Log Measurement |
| P _{ri} | = | 2,400 psi | Public Data |
| P _{ra} | = | 400 psi | Estimate |
| B _{gi} | = | 0.00611 ft ³ /SCF | Standing & Katz's Correlation |
| B _{ga} | = | 0.04139 ft ³ /SCF | Standing & Katz's Correlation |

Calculate Theoretical Recovery Factor:

$$RF_t = 1 - \frac{B_{gi}}{B_{ga}}$$

$$RF_t = 1 - \frac{0.00611}{0.04139}$$

$$RF_t = 0.8524 \text{ (fraction)}$$

Rock Properties

| | | | |
|------------------|---|-------|---|
| Acre - Feet | = | 6,102 | Planimetered from net sand thickness maps |
| Average Porosity | = | 0.12 | (Fraction) ϕ_{dn} Avg. of offsets |
| Water Saturation | = | 0.46 | (Fraction) Avg. of offsets |

Calculate GIP, Theoretical and Actual EUR:

$$GIP = \frac{.04356Ah_{\phi}(1-S_w)}{B_{gi}} MMCF$$

$$GIP = \frac{.04356(6,102)(0.12)(1-0.46)}{0.00611} MMCF$$

$$GIP = 2,819 \text{ MMCF}$$

$$EUR_t = RF_t \times GIP$$

$$EUR_t = (0.8524)(2,819)$$

$$EUR_t = 2,403 \text{ MMCF}$$

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11/13/00

BASIN DAKOTA
SECTION 28-T28N-R10W
3rd SAND

Fluid Properties

| | | | |
|-----------------|---|------------------------------|-------------------------------|
| Gas Gravity | = | 0.646 | Gas Analysis |
| T _c | = | 365°R | Standing's Correlation |
| P _c | = | 678 psi | Standing's Correlation |
| T _r | = | 150 °F | Log Measurement |
| P _{ri} | = | 2,400 psi | Public Data |
| P _{ra} | = | 400 psi | Estimate |
| B _{gi} | = | 0.00611 ft ³ /SCF | Standing & Katz's Correlation |
| B _{ga} | = | 0.04139 ft ³ /SCF | Standing & Katz's Correlation |

Calculate Theoretical Recovery Factor:

$$RF_t = 1 - \frac{B_{gi}}{B_{ga}}$$

$$RF_t = 1 - \frac{0.00611}{0.04139}$$

$$RF_t = 0.8524 \text{ (fraction)}$$

Rock Properties

| | | | |
|------------------|---|--------|--|
| Acre - Feet | = | 49,398 | Planimetered from net sand thickness maps |
| Average Porosity | = | 0.08 | (Fraction) $\bar{\phi}_{dn}$ Avg. of offsets |
| Water Saturation | = | 0.27 | (Fraction) Avg. of offsets |

Calculate GIP, Theoretical and Actual EUR:

$$GIP = \frac{.04356Ah_{\phi}(1-S_w)}{B_{gi}} MMCF$$

$$GIP = \frac{.04356(49,398)(0.08)(1-0.27)}{0.00611} MMCF$$

$$GIP = 20,567 \text{ MMCF}$$

$$EUR_t = RF_t \times GIP$$

$$EUR_t = (0.8524)(20,567)$$

$$EUR_t = 17,531 \text{ MMCF}$$