

VOLUMETRICS

Superior Federal Well No. 8
Section 1, T20S, R29E
East Burton Flat (Strawn) Field
Eddy County, New Mexico

I. Volumetrics Data

BHT = 160°F
BHP = 4,030 psia (based on DST of 5/6/90)
GOR = 2,915
Bgi = 253 SCF/ft³
S.G. = 0.76 gas
S.G. = 48.5° API oil
Ø = 6.54%
Sw = 37.9%
Zi = 0.889

A. Original Gas in Place = 43.560 (Ø) (1-Sw) (Bgi)
= 43.560 (0.0654) (1-0.379) (253)
= 448 MCF/Acre-Ft.

B. Assume 100 percent depletion drive recovery mechanism with 1,500 psia reservoir abandonment pressure.

BHP = 1,500 psia (assumed abandonment pressure)
Za = 0.879

Recoverable Gas in Place = OGIP $\left[1 - \frac{Z_i}{P_i} \cdot \frac{P_a}{Z_a}\right]$
= 448 $\left[1 - \frac{(0.889)}{(4,030)} \cdot \frac{1,500}{0.879}\right]$
= 279 MCF/Acre-Ft.

C. Recovery Factor = (RGIP/OGIP) x 100
= (279/448) x 100
= 62%

Resido EXHIBIT NO 7A

VOLUMETRICS

Superior Federal Well No. 9
Section 1, T20S, R29E
East Burton Flat (Strawn) Field
Eddy County, New Mexico

I. Volumetrics Data

BHT = 160°F
BHP = 3,699 psia (based on DST of 1/21/91)
GOR = 4,489
Bgi = 240 SCF/ft³
S.G. = 0.76 gas
S.G. = 48.5° API oil
Ø = 6.94%
Sw = 26.3%
Zi = 0.859

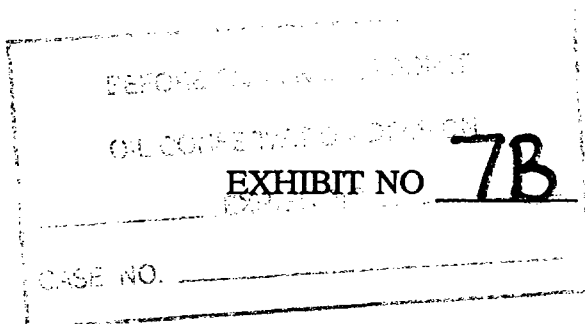
$$\begin{aligned}\text{A. Original Gas in Place} &= 43.560 (\text{Ø}) (1-S_w) (B_{gi}) \\ &= 43.560 (0.0694) (1-0.263) (240) \\ &= 535 \text{ MCF/Acre-Ft.}\end{aligned}$$

B. Assume 100 percent depletion drive recovery mechanism with 1,500 psia reservoir abandonment pressure.

BHP = 1,500 psia (assumed abandonment pressure)
Za = 0.879

$$\begin{aligned}\text{Recoverable Gas in Place} &= \text{OGIP} \left[1 - \frac{(Z_i \cdot P_a)}{(P_i \cdot Z_a)} \right] \\ &= 535 \left[1 - \frac{(0.859 \cdot 1,500)}{(3,699 \cdot 0.879)} \right] \\ &= 322 \text{ MCF/Acre-Ft.}\end{aligned}$$

$$\begin{aligned}\text{C. Recovery Factor} &= (\text{RGIP}/\text{OGIP}) \times 100 \\ &= (322/535) \times 100 \\ &= 60\%\end{aligned}$$



VOLUMETRICS

Superior Federal Well No. 8 & No. 9
Section 1, T20S, R29E
East Burton Flat (Strawn) Field
Eddy County, New Mexico

I. Weighted Average Recoverable Gas In Place

A. Superior Federal Well No. 8
RGIP = 279 MCF/Acre-Ft.
Net Pay = 39 feet

B. Superior Federal No. 9
RGIP = 322 MCF/Acre-Ft.
Net Pay = 10 feet

Weighted Average RGIP =

$$\begin{aligned} & (279 \text{ MCF/Acre-Ft}) (39 \text{ Ft}) \\ + & (322 \text{ MCF/Acre-Ft}) (10 \text{ Ft}) \div 49 \text{ Ft} \\ = & 288 \text{ MCF/Acre-Ft} \end{aligned}$$

II. Volumetric Recoverable Reserves

Productive volume underlying Section 1 = 17,190 Acre-Ft.
Average net pay thickness = 26.9 Ft.

Volumetric Recoverable Reserves = (288 MCF/Acre-Ft) (17,190 Acre-Ft)
Volumetric Recoverable Reserves = 4,950,720 MCF & 1,099,060 BBL's *

* average condensate yield of 222 BBL's/MMCF from
cumulative production in the Superior Federal
No.'s 8 and 9.

EXHIBIT NO 7C

EAST BURTON FLAT FIELD

Eddy County, New Mexico
Strawn "A" Reservoir

Volumetric Calculation underlying Section 1, Township 20 South, Range 29 East
Eddy County, New Mexico

<u>Productive Area</u>	<u>Planimeter Area* (units)</u>	<u>Area (Acres)</u>	<u>Ratio of Areas</u>	<u>Interval h, (feet)</u>	<u>Equation</u>	<u>V (Ac-Ft)</u>
A ₀	0.516	640.000	-	-	-	-
A ₁₀	0.453	561.498	0.877	10	Trap.	6,007.490
A ₂₀	0.355	440.026	0.784	10	Trap.	5,007.620
A ₃₀	0.240	297.482	0.676	10	Trap.	3,687.540
A ₄₀	0.121	149.981	0.504	10	Trap.	2,237.315
A ₅₀	0.000	0.000	0.000	5 est.	Pyr.	<u>249.968</u>
						17,189.933 Acre-Feet

* planimeter constant = 1,239.510 Acres per unit

Trapezoidal equation $V = \frac{h}{2} (A_n + A_{n+1})$

Pyramidal equation $V = \frac{h}{2} (A_n + A_{n+1} + A_n A_{n+1})$

EXHIBIT NO

7D