

ESTIMATED RESERVES
(Material Balance Method)
East Saunders Permo-Penn Pool
Lea County, New Mexico

Case No. 2678
Exhibit No. 9
10/28/64

BASIC DATA:

Oil Reserves ~~1318~~²²¹¹ bbl./acre (Volumetric Method)
Compressibility of reservoir fluid, connate water and formation,
 24.4×10^{-6} psi⁻¹ in pressure range 3914-2631 psig
Reservoir pressure decline to 1/25/63, 1283 psi
Oil production to 1/25/63, 103,100 ST bbl.
Formation volume factor at 1/25/63 pressure, 1.557 bbl./bbl.
Formation volume factor at original pressure, 1.527 bbl./bbl.
Recovery factor 42.2 (Material Balance - Schilthius Method)

CALCULATION:

$$\text{Original Oil in Place} = \frac{(N_p) (B_o)}{(C_e) (\Delta P) (B_{oi})}$$

$$\text{Original Oil in Place} = \frac{(103,100) (1.557)}{(24.4 \times 10^{-6}) (1283) (1.527)}$$

$$\text{Original Oil in Place} = 3,360,000 \text{ ST bbls.}$$

Where:

Np = Stock-tank oil production
Ce = Compressibility of reservoir fluid, connate water and formation
 ΔP = Pressure decline accompanying production
Bo = Formation volume factor at final pressure.
Boi = Formation volume factor at original pressure

$$\text{Ultimate Oil Recovery} = (3,360,000 \text{ ST bbl.}) (0.422) = 1,418,000 \text{ ST bbl.}$$

$$\text{Indicated Drainage Area} = \frac{1,418,000 \text{ ST bbl.}}{2211 \text{ ST bbl./acre}} = 642 \text{ acres}$$

$$\text{Ultimate Gas Recovery} = 3,360 \times .939 \times .79 = 2,490 \text{ MMcf}$$

