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C-2504

Basin Dakota Gas Reservoir
VOLUMETRIC CALCULATION OF GAS
RESERVES

Pubco Petroleum Corporation Exhibit
No. _____ Case 2504

I. Definition of Reserves

A. Initial Recoverable Gas Reserve is that volume of gas to be recovered over a period of time beginning when production is first initiated and ending at some future time corresponding to a minimum producing rate of income equivalent to operating costs.

B. Present Recoverable Reserve is that volume of gas that is defined as Initial Recoverable Gas Reserve less the volume of gas which has been produced to the present time.

II. Volumetric Formula for Calculating Initial Recoverable Gas Reserve,

Initial recoverable gas reserve is,

(1) $gr = Go \times RF$

Where,

(2) $Go = 43560At\phi(1-Sw)\frac{P_o}{15.025}\frac{520}{T_r z_o}$

(3) $RF = 1 - \frac{P_a/z_a}{P_o/z_o}$

= Fraction of original gas in place to be recovered to abandonment when producing rate of income is equivalent to operating costs. ($ 1130/year/well or 27 MCF/day /well)

and,

43560 = Constant, square feet per acre

A = Acres

t = Net pay thickness, feet

ϕ = Porosity, fraction

SW = Connate water saturation, fraction

P_o = Initial reservoir pressure, psia

T_r = Reservoir temperature (^oF + 460), degrees Rankin

Z_o = Initial gas compressibility, fraction

P_a = Abandonment pressure, psia

Z_a = Gas Compressibility at abandonment, fraction

Reference: Sylvain J. Pirson Oil Reservoir Engineering Second Edition, 1958, pages 454 and 466