

Hearing Notes for Special Pool Rule Hearings

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Querecho Plains Strawn Pool and Young Strawn Pool

PVT Data

Initial Stock Tank Oil Gravity (API)	43
Initial Gas Gravity	0.75
Bottom Hole Temperature (F)	165
Initial GOR (scf/stb)	1300

Calculated Data:

Bubble Point Pressure (psia)	4034
Initial Form. Vol. Fac. Boi (rb/stb)	
Querecho Plains Pool:	1.658
Young Pool:	1.659
Vasquez and Beggs correlations	

Recovery Factors

From PVT Data

Above the Bubble Point Pressure

Initial pressure to bubble point pressure

$$RF = (Bo_{bp} - Bo_i) / Bo_{bp}$$

Querecho Plains Pool (Pi = 5820 psia, Boi = 1.658 rb/stb)

$$RF = (1.694 - 1.658) / 1.694 = 0.021$$

Strawn Pool (Pi = 5710 psia, Boi = 1.659 rb/stb)

$$RF = (1.694 - 1.659) / 1.694 = 0.021$$

Below the Bubble Point Pressure

Initial pressure to abandonment pressure (720 psia):

$$RF = [Bo - Bo_i + Bg * (R_{si} - R_s)] / [Bo + Bg * (R_p - R_s)]$$

Bo in rb/stb; Rs, Rp in scf/stb; Bg in rb/scf

Craft and Hawkins pg 110 - 112 - "Black Oil" Calculations

For the Querecho Plains Strawn Pool (Pa = 1350 psia)

Cum oil = 546,451 stb

Cum Gas = 1,124,702 Mcf

Rp = 2058 scf/stb (cum gas/cum oil)

RF = $[1.234 - 1.658 + 0.002007 * (1300 - 345)] / [1.234 + 0.002007 * (2058 - 345)]$

RF = 32%

For the Young Strawn Pool (Pa = 720 psia - estimated)

Cum oil = 103,468 stb

Cum Gas = 201,063 Mcf

Rp = 1943 scf/stb (cum gas/cum oil)

RF = $[1.149 - 1.658 + 0.003958 * (1300 - 168)] / [1.149 + 0.003958 * (1943 - 168)]$

RF = 49%

General Comments

PVT derived recovery factors will usually give higher recoveries than observed due to the effect

Based on analogous Strawn pools in the area a reasonable estimate for oil recovery factor is 31

Drainage Calculations

Original Stock Tank Oil In Place per acre (OOIP) = $7758 * h * \rho_{oi} * (1 - S_w) / B_{oi}$

For the Querecho Plains Strawn Pool

Por-ft = 4.82 ft, Sw = 0.15 (arithmetic average of 22K & 22E logs)

OOIP = $7758 * 4.82 * (1 - 0.15) / 1.658 = 19,170$ stb/ac

Using 30% rec fac and 546,451 stb

Area = 95 ac

For the Young Strawn Pool

Por-ft = 1.68 ft, Sw = 0.15 (20G logs)

OOIP = $7758 * 1.68 * (1 - 0.15) / 1.659 = 6,678$ stb/ac

Using 30% rec fac and 103,468 stb

Area = 51 ac