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4/22/04

Dave –

Drainage calculations re: Case Nos. 12133 and 12134. (Mewbourne Oil Co.)

Jim

Hearing Notes for Special Pool Rule Hearings

Mewbourne Oil Company - Bryan Montgomery (Reservoir Engineer)

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 = (Bobp-Boi)/Bobp

Querecho Plains Pool (Pi = 3820 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-Boi+Bg*(Rsi-Rs)]/[Bo+Bg*(Rp-Rs)]

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+.002007*(1300-345)]/[1.234+.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 = [1.149-1.659+.003958*(1300-168)]/[1.149+.003958*(1943-168)

RF = 49%

General Comments

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

Based on analogous Strawn pools in the area a reasonalble estimate for oil recovery factor is 3

Drainage Calculations

Original Stock Tank Oil In Place per acre (OOIP) = 7758*h*por*(1-Sw)/Boi

For the Querecho Plains Strawn Pool

Por-ft = 4.82 ft, Sw = 0.15 (arithmatic 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