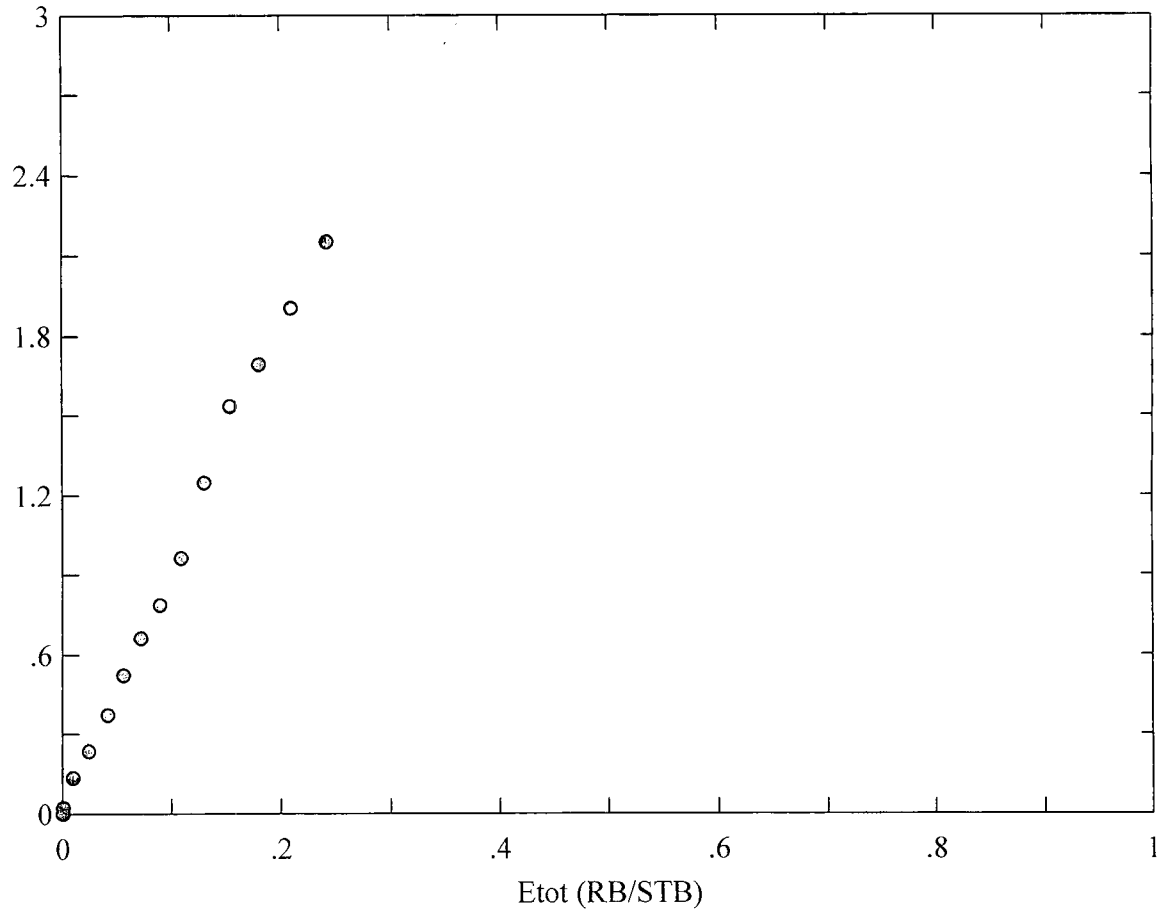


F vs Etot Plot

OOIP = 9.186784 MMSTB OGIP = 10.1973 BCF St. Dev. = 2.275169 %

F (MMRB)



○ Used in Fit
LS Fitting

BEFORE THE OIL CONSERVATION DIVISION
Santa Fe, New Mexico
Case No's. 14145, 14124, Exhibit No. 19
Submitted by:
FASKEN OIL AND RANCH, LTD.
Hearing Date: January 26, 2008

EO, EG, EFW, ETOT Calculations

$$F = OP * (BO + (GORP - RS) * BG) + (WP - WI) * BW - GI * BG$$

$$EO = (BO - BOINIT) + (RSINIT - RS) * BG$$

$$EG = BOINIT * (BG / BGINIT - 1.0)$$

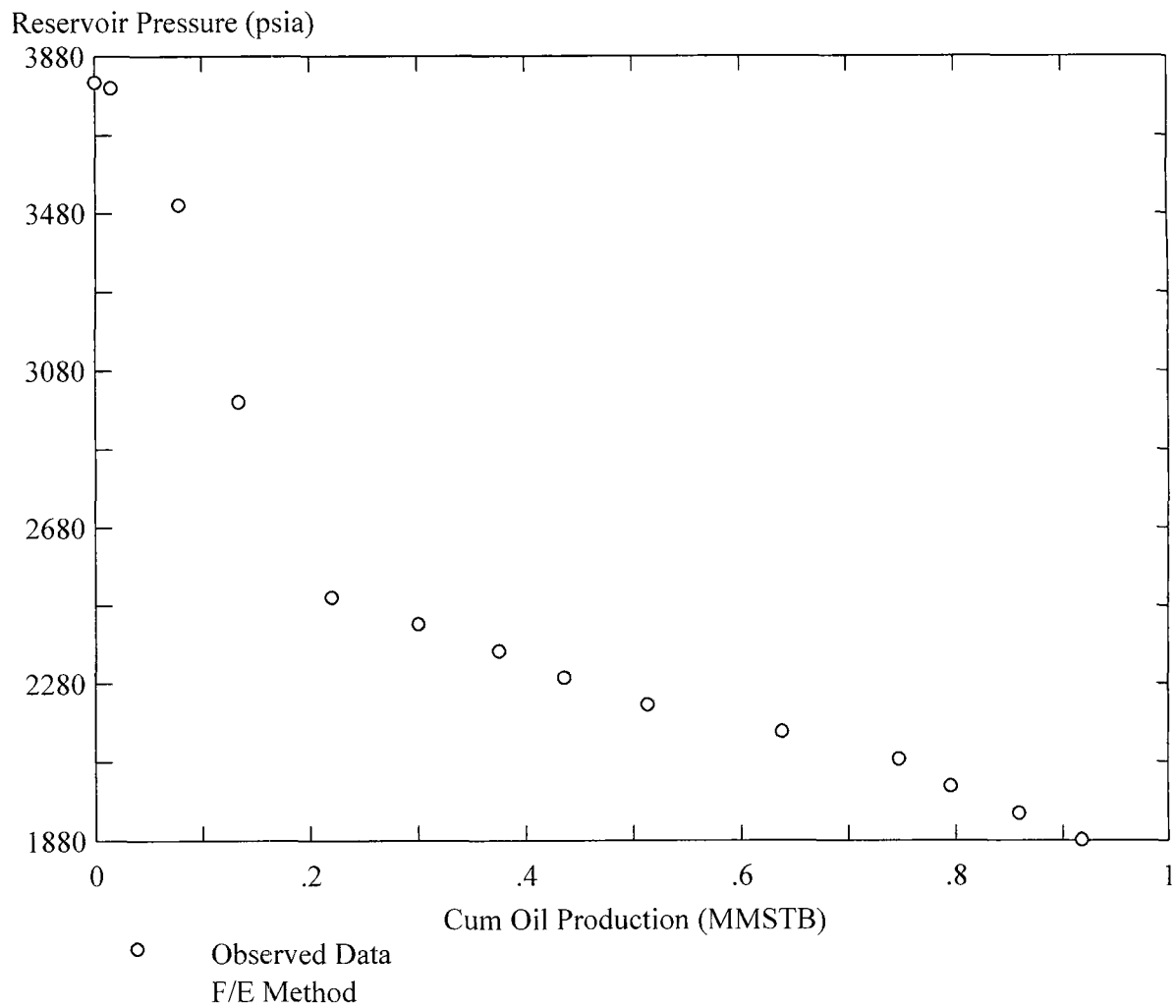
$$EFW = (1.0 + M) * BOINIT * ((CW * SWC + CF) / (1.0 - SWC)) * (PINIT - P)$$

$$ETOT = EO + M * EG + EFW \quad \dots M = \text{Gascap (volumetrics)}$$

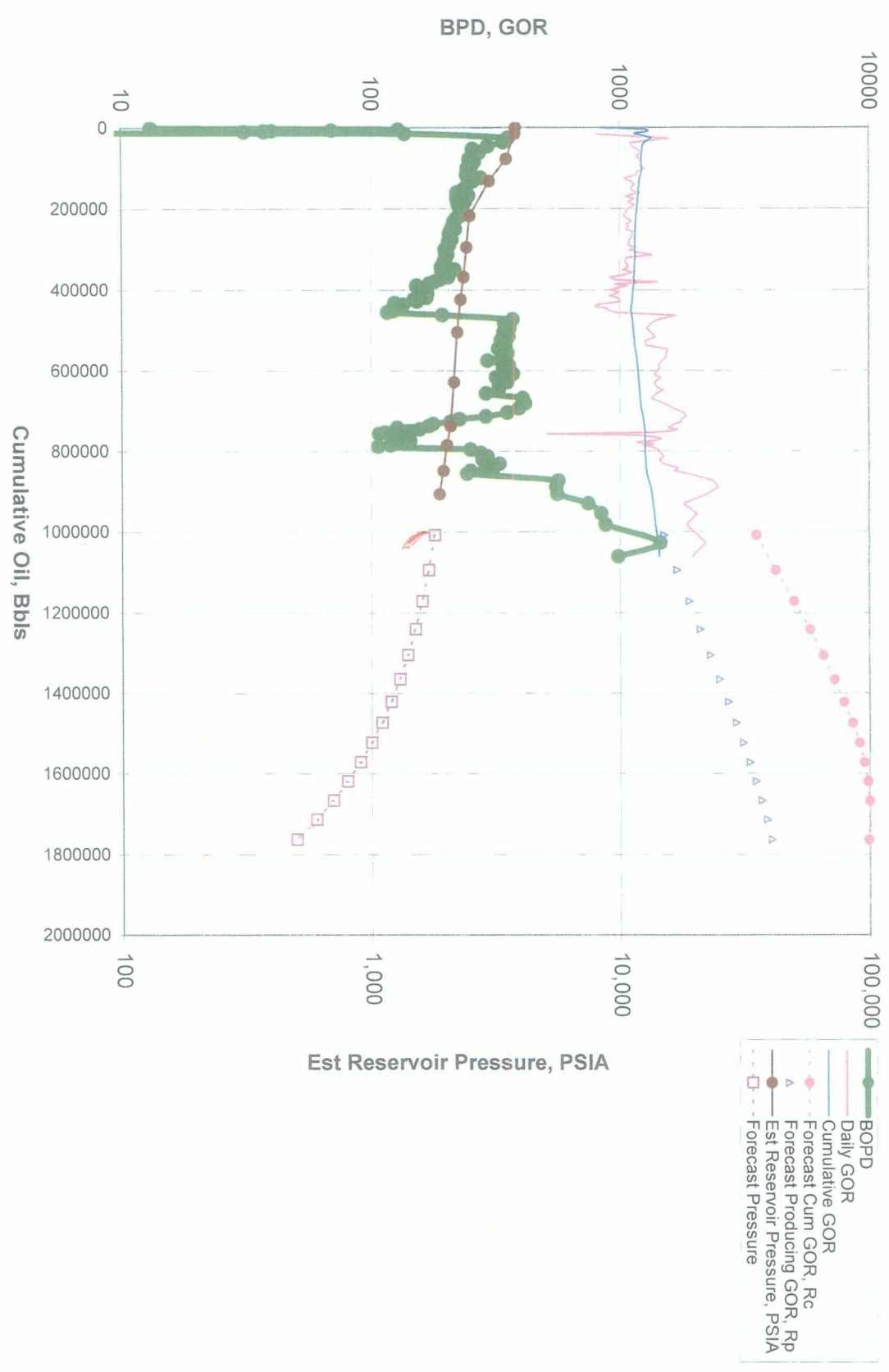
$$WE = F - N * ETOT \quad \dots N = \text{OOIP (Volumetrics)}$$

Time (mm/dd/yyyy)	Pressure (psia)	EO (RB/STB)	EG (RB/STB)	EFW (RB/STB)	ETOT (RB/STB)	F (MMRB)	WE (MMRB)	
07/31/1985	3814.00	0.00000	0.00000	0.00000	0.00000	0.00000	0.0000	1
10/31/1997	3800.00	0.00031	0.00286	0.00011	0.00041	0.02337	0.0000	1
05/31/1998	3500.00	0.00690	0.07292	0.00236	0.00926	0.13587	0.0000	1
12/31/1998	3000.00	0.01796	0.23809	0.00612	0.02408	0.23645	0.0000	1
12/31/1999	2500.00	0.03160	0.51109	0.00988	0.04148	0.37175	0.0000	1
12/31/2000	2431.25	0.04565	0.56379	0.01040	0.05604	0.52209	0.0000	1
12/31/2001	2362.50	0.06107	0.61931	0.01091	0.07199	0.66116	0.0000	1
12/31/2002	2293.75	0.07808	0.68003	0.01143	0.08951	0.78484	0.0000	1
12/31/2003	2225.00	0.09692	0.74738	0.01195	0.10887	0.96072	0.0000	1
12/31/2004	2156.25	0.11781	0.82100	0.01246	0.13027	1.24670	0.0000	1
12/31/2005	2087.50	0.14100	0.90174	0.01298	0.15398	1.53370	0.0000	1
12/31/2006	2018.75	0.16685	0.99047	0.01350	0.18035	1.69168	0.0000	1
08/31/2007	1950.00	0.19571	1.08808	0.01401	0.20973	1.90255	0.0000	1
12/31/2007	1881.25	0.22801	1.19560	0.01453	0.24254	2.14873	0.0000	1

Comparison of Pressure Matches



Apache Ridge Bone Spring Production



Fasken Oil and Ranch, Ltd.
Apache Ridge - Bone Spring Pool
Lea County, New Mexico

Based on "A Statistical Study of Recovery Efficiency",
API BUL D14, October 1967, J. J. Arps, Chairman.
For Solution Gas Drive Reservoirs (Sandstones and Carbonates):

$$RE = 41.815 \times \left[\frac{\phi (1-S_w)}{B_{oi}} \right]^{+0.1611} \times \left[\frac{K}{\mu_{ob}} \right]^{+0.0979} \times \left[S_w \right]^{+0.3722} \times \left[\frac{P_b}{P_a} \right]^{+0.1741}$$

0.63556528 0.740791 0.596916 1.423474

RE =	Recovery Efficiency, Percent STBO in place	%
ϕ =	Porosity	0.08 fraction
S_w =	Water Saturation	0.25 fraction
B_{oi} =	Initial Formation Volume Factor	1.5034 stb/bo
K =	Permeability	0.028 darcy
μ_o =	Viscosity of Oil	0.6 cp
P_i =	Initial Reservoir Pressure	3800 psig
P_a =	Abandonment Reservoir Pressure	500 psig

RE = 17%