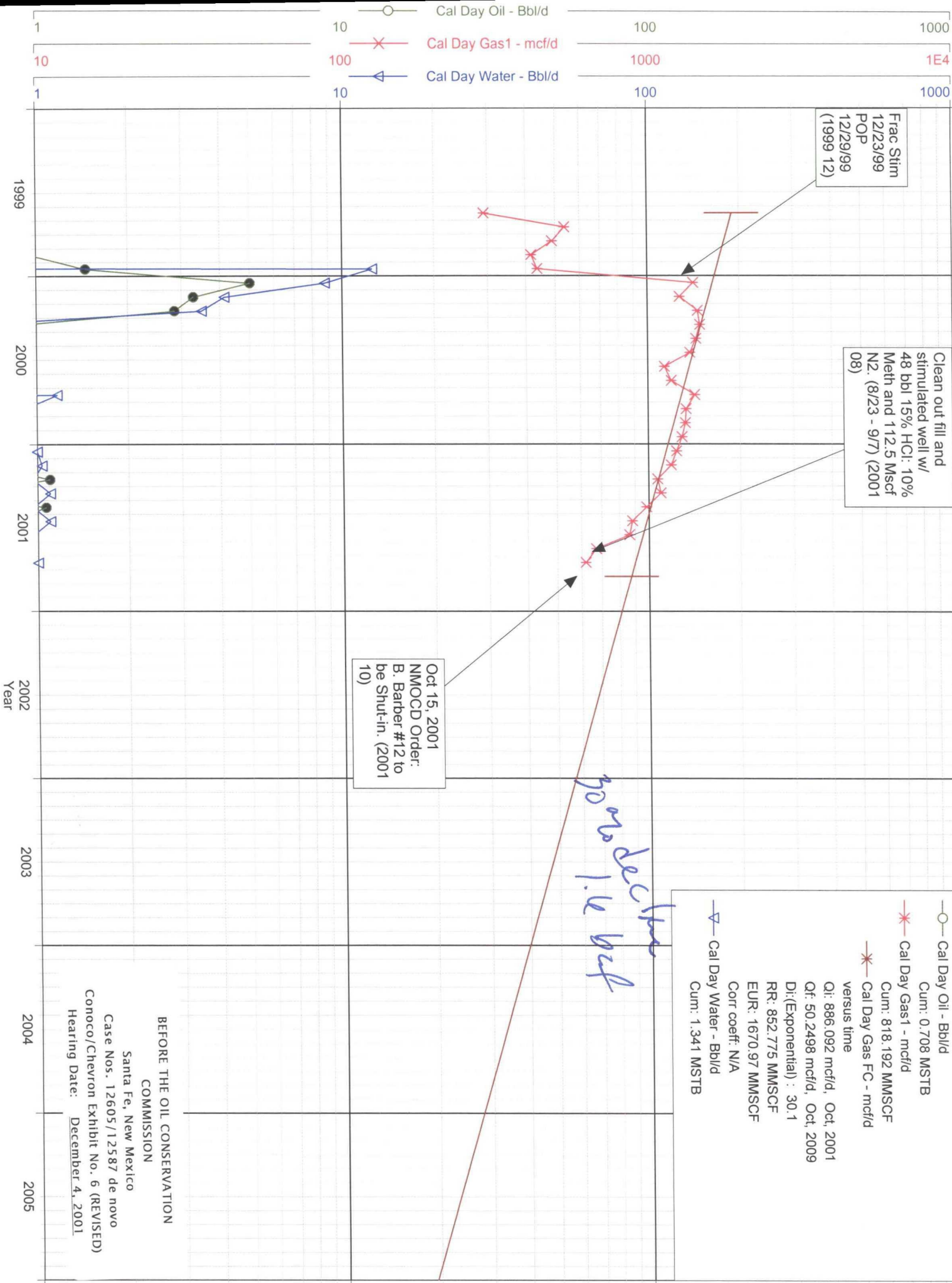




Sapient's Bertha Barber #12
Unit A, 330 FNL, 660 FEL, Section 7, T20S, R37E

Low

Volumetrics

Porosity =	6.6% BV
Swi =	28.0% PV
Net H =	26.5 ft
Area =	160 acres
dP =	0.385 psi/ft
Perf Depth =	6394 ft
T =	105 °F = 565 °R
Pi =	2462 psia
Zi =	0.7687
Bgi =	200.48 SCF/ft ³

side well core

Initial Gas In Place

IGIP =	$43560 \cdot \phi \cdot \text{NetH} \cdot \text{Area} \cdot (1-S_w) \cdot B_{gi}$
=	0.4150 MMCF/Acre-ft
=	1,759.55 MMSCF

Estimated Ultimate Recovery

P[ab] =	250 psia
Z[ab] =	0.9623
Bg[ab] =	16.26 SCF/ft ³
Rec Factor =	$(B_{gi} - B_{g[ab]}) / B_{gi}$
=	91.9%
Est Ult Rec =	$91.9\% \cdot 0.4150 \text{ MMCF/Acre-ft}$
=	0.3813 MMCF/Acre-ft
=	1,616.84 MMSCF

1.6 bcf

Decline Calculations

Const Percent Decl (Di) =	30.00%
Nominal Decline (a) =	35.7%
Proj Oct Rate =	883 MCFPD
Final Rate =	50 MCFPD
Rem Reserves =	852.4 MMSCF
Cum Recovery =	818.2 MMSCF
Est Ult Recovery =	1670.6 MMSCF

As of 9/30/01

1.6 bcf

Est Ult Recovery = 0.3813 MMCF/Acre-ft

$$\text{Drainage Area} = \frac{1670.6 \text{ MMCF}}{26.5 \text{ ft} \cdot 0.3813 \text{ MMCF/Acre-ft}}$$

165 acres

Drain Radius (re) = 1513 feet

For 818.2 MMCF Cum production Sept '01

$$\text{Drain Radius: Sept '01} = \frac{\text{RF} = 49\%}{7444} = 1060 \text{ ft.}$$

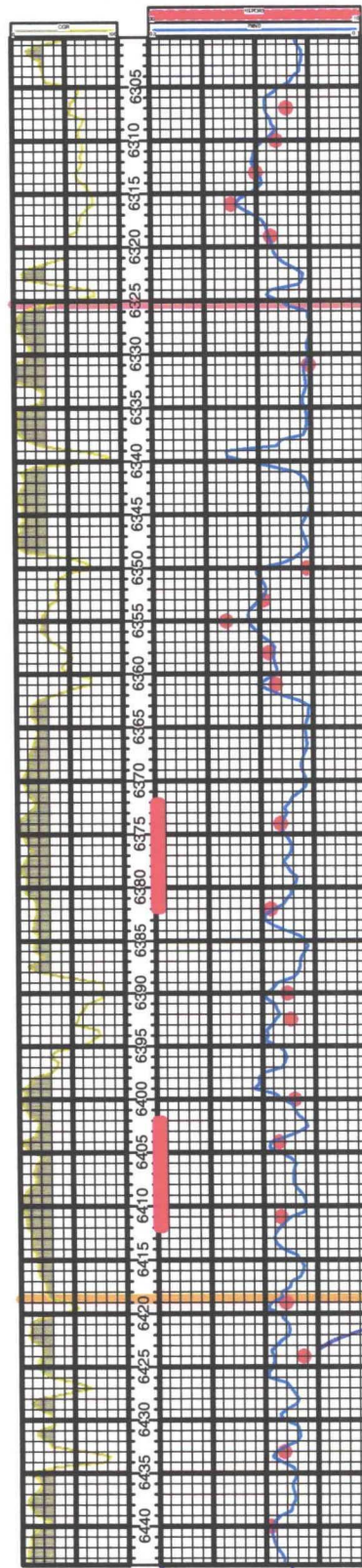
(verified by material balance)

GULF OIL
MATHEWS
12
30025059530000

Denary:

These types of
plots take out
effects of gas
or lithology

CGR<30(olive), PXND(blue), sidewall core(red dots), perfs (red)



TB22-2

TB32-2

sidewall
cores (confirms
porosity
curve)

porosity

GROSS : 93.37
NET : 29.12
PXND AVE PORO : 0.065
PXND PORO FT : 1.906

gamma
ray

perfs

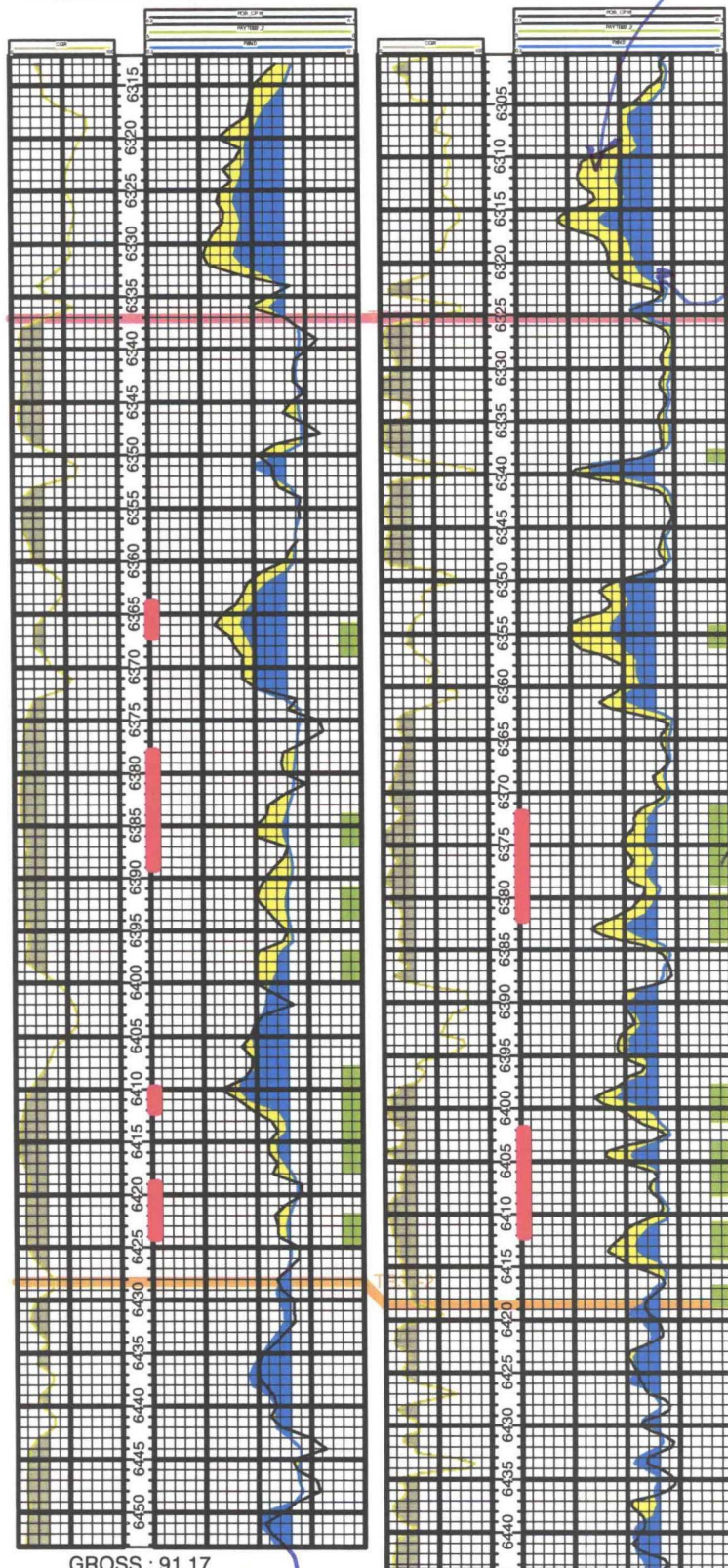
neutron density cross plot
calculated by slumicki-J

BEFORE THE OIL CONSERVATION
COMMISSION
Santa Fe, New Mexico
Case Nos. 12605/12587 de novo
Conoco/Chevron Exhibit No. 11
Hearing Date: December 4, 2001

SAPIENT
BARBER
12
30025059780000

GULF OIL
MATHEWS
12
30025059530000

CGR<30(olive), PXND>.04 (blue), PE(yellow), pay flag (green), perfs (red)



PE curve
difference between 2 approaches
(between yellow and blue)

gamma ray
cutoff and
neutron density
cross plot

GROSS : 91.17
NET : 26.5
PXNDVEPORO : 0.067
PXNDPOROFT : 1.774

GROSS : 93.37
NET : 29.12
PXNDVEPORO : 0.065
PXNDPOROFT : 1.906

porosity
Barber - 6.7%
Mathews - 6.5%

porosity
> 4%

BEFORE THE OIL CONSERVATION
COMMISSION
Santa Fe, New Mexico
Case Nos. 12605/12587 de novo
Conoco/Chevron Exhibit No. 12
Hearing Date: December 4, 2001

Sapien's Bertha Barber #12
Determination of Initial pressure gradient's in Monument Tubb Oil Pool
 New Mexico OCD Hearing, December 3, 2001

Operator	Well Name	Date	DST #	Depth to Tubb Top	Depth to Drinkard Top	DST Interval	Mid-Point DST Interval	SEC	TWN	RANGE	IFP - FFP	BHSIP	Press Grad, psi/ft	Time	Type
Amerada	State F #5	11/4/1948	1	6295	6615 (est)	6480' - 6559'	6519.5	36	19S	36E	720 - 90 psi	2570	0.394202	15'	
Sinclair	Lea '373' UT #	3/16/1966	1	6420	6790	6500' - 6600'	6550.0	34	19S	37E	164 - 239 psi	2548	0.389008	120'	FSIP
			2			6600' - 6700'	6650.0				119 - 119 psi	1183	0.177895	120'	FSIP
Ashmun & Hilliard	Cooper #1	12/13/1963	1	6355	6675 (est)	6445' - 6545'	6574.0	3	20S	37E	79 - 93 psi	1345	0.204594	30'	SIP
			2			6542' - 6606'	6495.0				192 - 255 psi	2664	0.405233	30'	SIP
Skelly	Van Etten #12	6/7/1966	1	6295	6608	6375' - 6600'	6487.5	9	20S	37E	165 - 200 psi	2621	0.404008	30'	ISIP
Conoco	Britt B #24	6/20/1965	1	6379	6711	6488' - 6520'	6504.0	11	20S	37E	337 - 1840 psi	2421	0.372232	30'	FSIP
Conoco	Britt B-15 #9	3/11/1957	1	6300	6618	6400' - 6447'	6423.5	15	20S	37E	370 - 190 psi	2390	0.372071	NR	SIP
			2			6447' - 6544'	6495.5				1325 - 1365 psi	2695	0.414903	15'	SIP

Average = 0.348 psi/ft
 Excluding 2 highest & 2 lowest = 0.386 psi/ft

Sapien's #12: Initial Press @ 6394'
 Using 0.386 psi/ft = 2468 psi

Sapien's #12: Initial Press @ 6394'
 Using 0.3486 psi/ft = 2225 psi

BEFORE THE OIL CONSERVATION
 COMMISSION

Santa Fe, New Mexico

Case Nos. 12605/12587 de novo

Conoco/Chevron Exhibit No. 13

Hearing Date: December 4, 2001

Sapient's Bertha Barber #12

Material Balance Method of Estimated Ultimate Recovery

Initial Conditions

BHPi = 2461.69 psia
Zi = 0.7687
Pi/Zi = 3202.4 psia
BHP[9/06/01] = 1446 psia
Z [9/06/01] = 0.8026
P/Z [9/06/01] = 1801.6 psia

Mathews #12

Differences from Sapient #18:
1. initial pressure regime (gradient)
2. pressure out away from well (Barber)

Well SI for work over from 08/23/01 - 09/08/01

Cum Prod, Gp [8/23/01] = 799.6 MMSCF

$$\text{Slope} = \frac{(3202.4 - 1801.6)}{799.6 \text{ MMSCF}} = 1.7519 \text{ psi/MMSCF}$$

At Economic Limit

BHP[ab] = 250 psia
Z[ab] = 0.962
P/Z[ab] = 259.8 psi

$$\text{EUR} = \frac{P_i/Z_i - P/Z[\text{ab}]}{\text{slope}} = \frac{3202.4 \text{ psi} - 259.8 \text{ psi}}{1.7519 \text{ psi/MMSCF}} = 1679.7 \text{ MMCF}$$

$$\text{EUR/ Acre-ft} = \frac{1679.7 \text{ MMCF}}{26.5 \text{ ft} \times 164 \text{ acres}} = 0.3865 \text{ MMCF/ Acre-ft}$$

