

ORIGINAL OIL IN PLACE CALCULATIONS

CROSSROADS, SOUTH FIELD

DATA:

PRODUCTIVE ACREAGE (A) =	600 ACRES
AVERAGE POROSITY (ϕ) =	10 %
AVG. WATER SATURATION (S_w) =	25 %
NET PAY THICKNESS (H) =	25 FT
OIL FORMATION VOLUME FACTOR (B_o) =	1.27 RB/STB

$$OOIP = (7758 * H * A * \phi * (1 - S_w)) / B_o$$

$$OOIP = \underline{\underline{6,872,244 \text{ STB}}}$$

$$\text{TOTAL FIELD RECOVERY} = \underline{\underline{3,051,000 \text{ STB}}}$$

$$\text{RECOVERY FACTOR} = \underline{\underline{44.40\%}}$$

BOUGH FIELD

DATA:

PRODUCTIVE ACREAGE (A) =	300 ACRES
AVERAGE POROSITY (ϕ) =	6 %
AVG. WATER SATURATION (S_w) =	26 %
NET PAY THICKNESS (H) =	118 FT
OIL FORMATION VOLUME FACTOR (B_o) =	1.25 RB/STB

$$OOIP = (7758 * H * A * \phi * (1 - S_w)) / B_o$$

$$OOIP = \underline{\underline{9,754,971 \text{ STB}}}$$

$$\text{TOTAL FIELD RECOVERY} = \underline{\underline{3,758,000 \text{ STB}}}$$

$$\text{RECOVERY FACTOR} = \underline{\underline{38.52\%}}$$

BEFORE THE
OIL CONSERVATION DIVISION
Santa Fe, New Mexico

Case No. 10670 (Reopened) Exhibit No. 5

Submitted by: Maralo, Inc.

Hearing Date: June 9, 1994

ORIGINAL OIL IN PLACE CALCULATIONS

BARNES "20" #1 PRORATION UNIT

DATA:

PRODUCTIVE ACREAGE (A) =	40 ACRES
AVERAGE POROSITY (ϕ) =	6 %
AVG. WATER SATURATION (S_w) =	25 %
NET PAY THICKNESS (H) =	10 FT
OIL FORMATION VOLUME FACTOR (B_o) =	1.25 RB/STB

$$OOIP = (7758 * H * A * \phi * (1 - S_w)) / B_o$$

$$OOIP = \underline{\underline{111,715 \text{ STB}}}$$

$$EST. \text{ ULT. RECOVERY} = \underline{\underline{46,920 \text{ STB}}}$$

$$RECOVERY \text{ FACTOR} = \underline{\underline{42.00\%}}$$

BARNES "20" #1 PRORATION UNIT

DATA:

PRODUCTIVE ACREAGE (A) =	80 ACRES
AVERAGE POROSITY (ϕ) =	6 %
AVG. WATER SATURATION (S_w) =	25 %
NET PAY THICKNESS (H) =	13 FT
OIL FORMATION VOLUME FACTOR (B_o) =	1.25 RB/STB

$$OOIP = (7758 * H * A * \phi * (1 - S_w)) / B_o$$

$$OOIP = \underline{\underline{290,460 \text{ STB}}}$$

$$EST. \text{ ULT. RECOVERY} = \underline{\underline{121,993 \text{ STB}}}$$

$$RECOVERY \text{ FACTOR} = \underline{\underline{42.00\%}}$$

ORIGINAL OIL IN PLACE CALCULATIONS

Bonds # 1 Proration Unit

Data:

Productive Acreage	(A)	=	80 acres
Average Porosity	($\emptyset$)	=	6 %
Average Water Saturation	(S_w)	=	25 %
Net Pay Thickness	(H)	=	40 ft.
Oil Formation Volume Factor	(B_o)	=	1.25 RB/STB

$$\begin{aligned}\text{OOIP} &= [7758 * H * A * \emptyset * (1 - S_w)] / B_o \\ &= 893,722 \text{ STB}\end{aligned}$$

$$\text{Recovery factor} = 42 \%$$

$$\text{Est. Ult. Recovery} = 375,363 \text{ STB}$$

Date: 05/27/94
Time: 10:02:49

PRODUCTION HISTORY

File: CURVES.DS
Get#: 12

BARNES 20 000001

LEA COUNTY, NM

JENKINS (DEVONIAN) DV FIELD

MARALO INC

CUM OIL - 9076. CUM GAS -

18%

1000
10000
100

OIL (BBL/MO.)
WATER (BBL/MO.)

10
100

10
100

YEARS

1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012

MARALO, INC.

BEFORE THE
OIL CONSERVATION DIVISION
Santa Fe, New Mexico

Case No. 10670 (Reopened) Exhibit No. 6

Submitted by: Maralo, Inc.

Hearing Date: June 9, 1994

Date: 05/27/94
Time: 10:02:49

PRODUCTION HISTORY

File: CURVES.DS
Get#: 13

BONDS 000001

LEA COUNTY, NM

JENKINS NE (DEVONIAN) DV FIELD

MARALO INC

CUM OIL - 97728. CUM GAS -

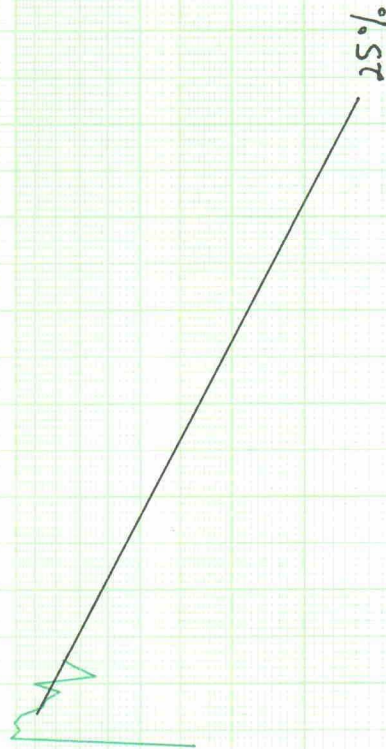
100000

10000

OIL (BBL/MO.)

1000

100



YEARS

1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012

MARALO, INC.

PRODUCTION HISTORY

JENKINS, N.E. (DEVONIAN) FIELD

	BARNES "20" #1			BONDS #1		
	<u>OIL(bbls)</u>	<u>GAS (MCF)</u>	<u>WATER (bbls)</u>	<u>OIL (bbls)</u>	<u>GAS (MCF)</u>	<u>WATER (bbls)</u>
9/92	2,087	0	339			
10/92	1,586	0	1,300			
11/92	767	0	1,069			
12/92	997	0	1,284			
1/93	722	0	1,241			
2/93	639	0	926			
3/93	692	0	997			
4/93	465	0	1,007	3,646	0	0
5/93	550	0	1,249	10,170	0	0
6/93	1,000	0	1,037	9,699	0	0
7/93	764	0	1,261	10,030	0	0
8/93	833	0	1,271	9,604	0	0
9/93	565	0	1,012	8,539	0	0
10/93	485	0	1,139	8,375	0	0
11/93	333	0	863	7,750	0	0
12/93	160	0	827	8,970	0	0
1/94	507	0	1,135	6,341	0	0
2/94	508	0	1,078	7,004	0	0
3/94	<u>854</u>	<u>0</u>	<u>1,114</u>	<u>7,600</u>	<u>0</u>	<u>0</u>
TOTALS	14,514	0	20,149	97,728	0	0

DECLINE CURVE ANALYSIS

BARNES "20" # 1

$$\text{Remaining Recovery} = \frac{[\text{Initial Rate} - \text{Final Rate}] 365}{-\ln(1 - AY)}$$

Where AY is the exponential decline rate

$$\begin{aligned} N &= (26 - 5) 365 / -\ln(1 - .18) \\ N &= 38,624 \text{ STB} \end{aligned}$$

$$\begin{aligned} \text{Ultimate Recovery} &= \text{Remaining recovery} + \text{cumulative recovery} \\ &= 38,624 + 9,076 \\ &= 47,700 \text{ STB} \end{aligned}$$

DECLINE CURVE ANALYSIS

BONDS # 1

$$\text{Remaining Recovery} = \frac{[\text{Initial Rate} - \text{Final Rate}] 365}{-\ln(1 - AY)}$$

Where AY is the exponential decline rate

$$\begin{aligned} N &= \frac{(250 - 5) 365}{-\ln(1 - .25)} \\ N &= 310,846 \text{ STB} \end{aligned}$$

$$\begin{aligned} \text{Ultimate Recovery} &= \text{Remaining recovery} + \text{cumulative recovery} \\ &= 310,846 + 97,728 \\ &= 408,574 \text{ STB} \end{aligned}$$

BOTTOM-HOLE PRESSURE DATA

JENKINS, N.E. (DEVONIAN) FIELD

Initial shut-in Bottom-hole pressure (determined by DST in Barnes "20" #1 run 7/31/92) -

4807 psia

Current shut-in Bottom-hole pressure (determined by 70 hr. build-up in Bonds #1 run 4/12/94) -

4699 psia

Current flowing Bottom-hole pressure in Bonds #1 -

4633 psia

**BEFORE THE
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Case No. 10670 (Reopened) Exhibit No. 7

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Hearing Date: June 9, 1994