

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

FORM APPROVED
OMB NO. 1004-0137
Expires: March 31, 2007

1a. Type of Well ☐ Oil Well ☒ Gas Well ☐ Dry ☐ Other		5. Lease Serial No. NMNM-109754
b. Type of Completion: ☐ New Well ☐ Work Over ☐ Deepen ☐ Plug Back ☐ Diff. Resvr., Other _____		6. If Indian, Allottee or Tribe Name
2. Name of Operator PATTERSON PETROLEUM LP		7. Unit or CA Agreement Name and No. 33048
3. Address P.O. DRAWER 1416 SNYDER, TX 79550		8. Lease Name and Well No. MILLER FEDERAL NO. 2
3a. Phone No. (include area code) 325/573-1938		9. AFI Well No. 30-015-33060
4. Location of Well (Report location clearly and in accordance with Federal requirements)* At surface 840' FNL & 1830 FWL At top prod. interval reported below 1011.2' FNL & 2024.1' FWL At total depth 1009.8 FNL & 2026.6 FWL		10. Field and Pool, or Exploratory BURTON FLAT - MORROW
14. Date Spudded 01/04/2004		11. Sec., T., R., M., on Block and Survey or Area SEC 3, T21S, R27E LOT 6
15. Date T.D. Reached 02/25/2004		12. County or Parish EDDY
16. Date Completed 05/18/2004 ☐ D & A ☒ Ready to Prod.		13. State NM
17. Elevations (DF, RKB, RT, GL)* 3192' GR		

18. Total Depth: MD 11,570' TVD 11,550.8'	19. Plug Back T.D.: MD 11,534' TVD 11,514.8'	20. Depth Bridge Plug Set: MD TVD
21. Type Electric & Other Mechanical Logs Run (Submit copy of each) CNL/LD/LL/GR		22. Was well cored? ☐ No ☒ Yes (Submit analysis) Was DST run? ☒ No ☐ Yes (Submit report) Directional Survey? ☐ No ☒ Yes (Submit copy)

23. Casing and Liner Record (Report all strings set in well)

Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sks. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
17-1/2"	13-3/8"	48	0	630.8'		500 "C"	156	SURFACE	0
12-1/4"	9-5/8"	40	0	2804'		1200 "C"	408	SURFACE	0
8-3/4"	5-1/2"	17	0	11,569'	8030'	2300 "H"	792	3050'	0

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
2-7/8"	11,185'	11,165'						

25. Producing Intervals

Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A) MORROW	11,262'	11,336'	11,262-84'	.34	88	OPEN
B)			11,332-36'	.34	16	OPEN
C)						
D)						

27. Acid, Fracture, Treatment, Cement Squeeze, etc.

Depth Interval	Amount and Type of Material
11,262 - 11,336'	3000 GALS CLAYS SAFE H ACID + 97,000 SCF N2
	35,633 GALS MEDALLION 3500 BINARY FOAM + 41,250 LBS 20/40 INTERPROP

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
05/18/2004	06/17/2004	4	→	0	128	0		0.619	FLOWING
Choke Size 14/64"	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	FLOWING
			→	0	1012	0			

28a. Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	
			→						

*(See instructions and spaces for additional data on page 2)

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status	

29. Disposition of Gas (Sold, used for fuel, vented, etc.)

SOLD

30. Summary of Porous Zones (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31. Formation (Log) Markers

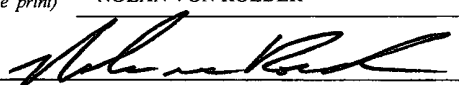
Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top Meas. Depth
1ST BONE SPRINGS	6408'	6482'	PROBABLE OIL	DELAWARE	2860'
STRAWN LIME	10,216'	10,228'	PROBABLE OIL OR SW	BONE SPRINGS LIME	5138'
STRAWN LIME	10,292'	10,302'	PROBABLE OIL OR SW	BONE SPRINGS SAND	6406'
MORROW SAND	11,240'	11,256' TVD	GAS PRODUCTIVE	WOLFCAMP	8990'
				STRAWN	10,132'
				ATOKA	10,440'
				MORROW CLASTICS	11,192'

32. Additional remarks (include plugging procedure):

33. Indicate which items have been attached by placing a check in the appropriate boxes:

- ☒ Electrical/Mechanical Logs (1 full set req'd.)
 ☐ Geologic Report
 ☐ DST Report
 ☒ Directional Survey
☐ Sundry Notice for plugging and cement verification
☒ Core Analysis
☐ Other:

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions)*

Name (please print) NOLAN VON ROEDERTitle ENGINEERSignature Date 07/07/2004

Title 18 U.S.C Section 1001 and Title 43 U.S.C Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

OPERATOR: PATTERSON PETROLEUM
WELL/LEASE: MILLER FED. 2
COUNTY: EDDY

500-0126

STATE OF NEW MEXICO
DEVIATION REPORT

204	0.50	8,742	8.97
386	0.75	8,835	8.50
630	0.75	8,930	9.13
909	1.50	9,024	8.69
1,122	1.00	9,125	9.53
1,411	0.50	9,214	9.48
1,697	1.00	9,309	9.35
1,984	1.00	9,373	8.49
2,335	1.25	9,468	7.39
2,654	1.00	9,563	5.96
2,783	1.00	9,658	4.98
3,282	1.00	9,753	4.69
3,767	1.00	9,898	3.21
4,275	1.00	9,912	2.02
4,751	0.75	10,139	3.50
5,226	1.25	10,338	3.50
5,543	0.50	10,510	4.50
6,016	0.50	10,629	2.89
6,490	1.00	10,756	2.19
6,961	1.25	10,860	0.55
7,451	3.00	10,923	0.64
7,515	3.00	11,034	0.72
7,577	3.00	11,113	1.13
7,700	2.75	11,306	0.50
7,765	3.00	11,465	0.75
7,892	2.00	11,570	0.75
8,037	2.25		
8,300	6.23		
8,395	7.04		
8,481	8.20		
8,647	9.11		

RECEIVED

JUL 20 2004

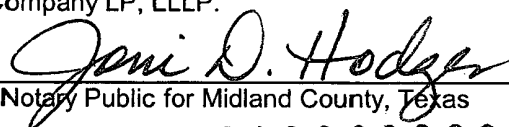
OPP-ARTESIA

By: 

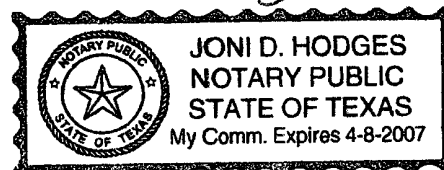
STATE OF TEXAS

COUNTY OF MIDLAND

The foregoing instrument was acknowledged before me on this 26th day of February, 2004, by Steve Moore on behalf of Patterson-UTI Drilling Company LP, LLLP.


Notary Public for Midland County, Texas

My Commission Expires: 4/08/2007



Submit in duplicate to
appropriate district office.
See Rule 401 & Rule 1122

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
2040 South Pacheco
Santa Fe, NM 87505

RECEIVED

JUL 20 2004

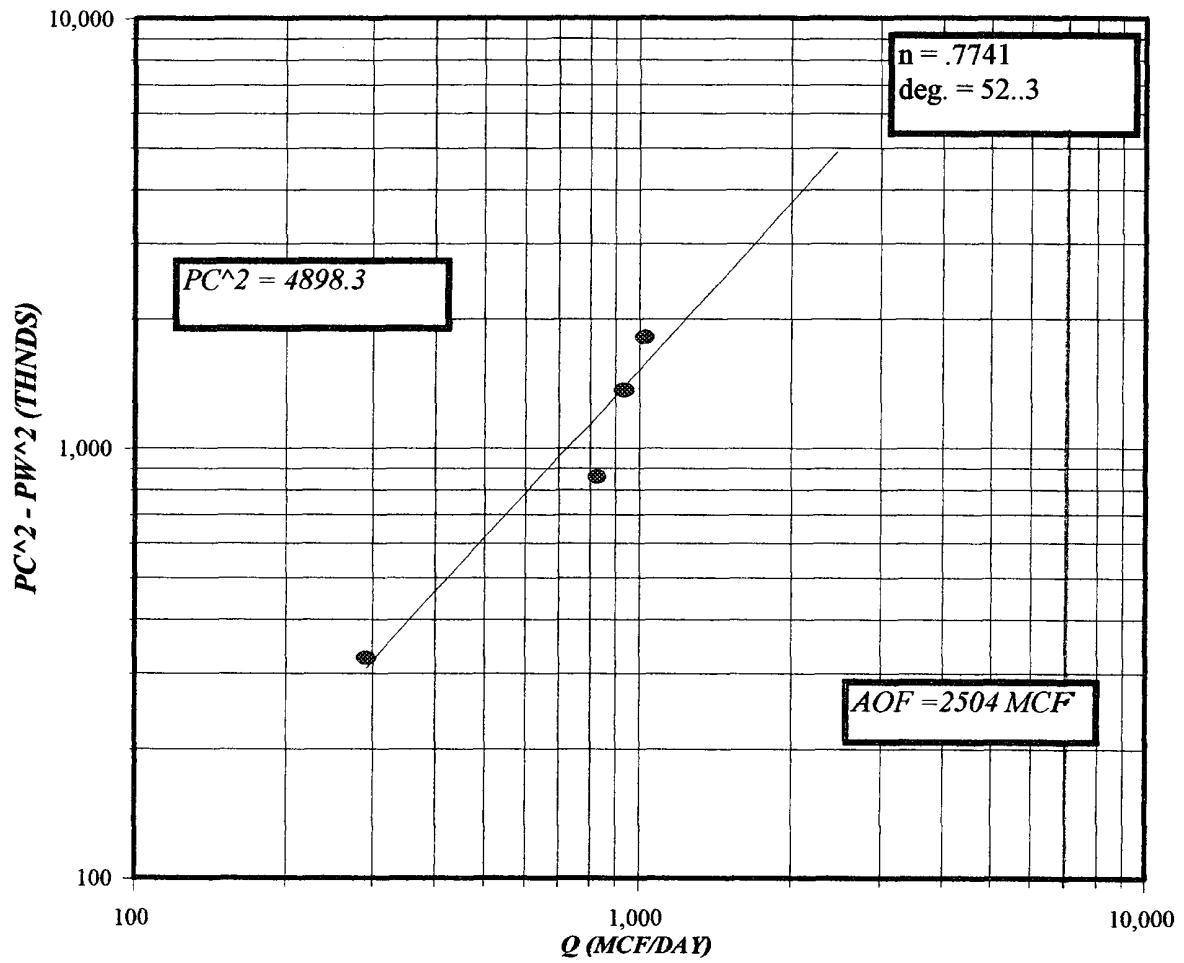
OCD-ARTESIA

Form C-122
Revised October, 1999

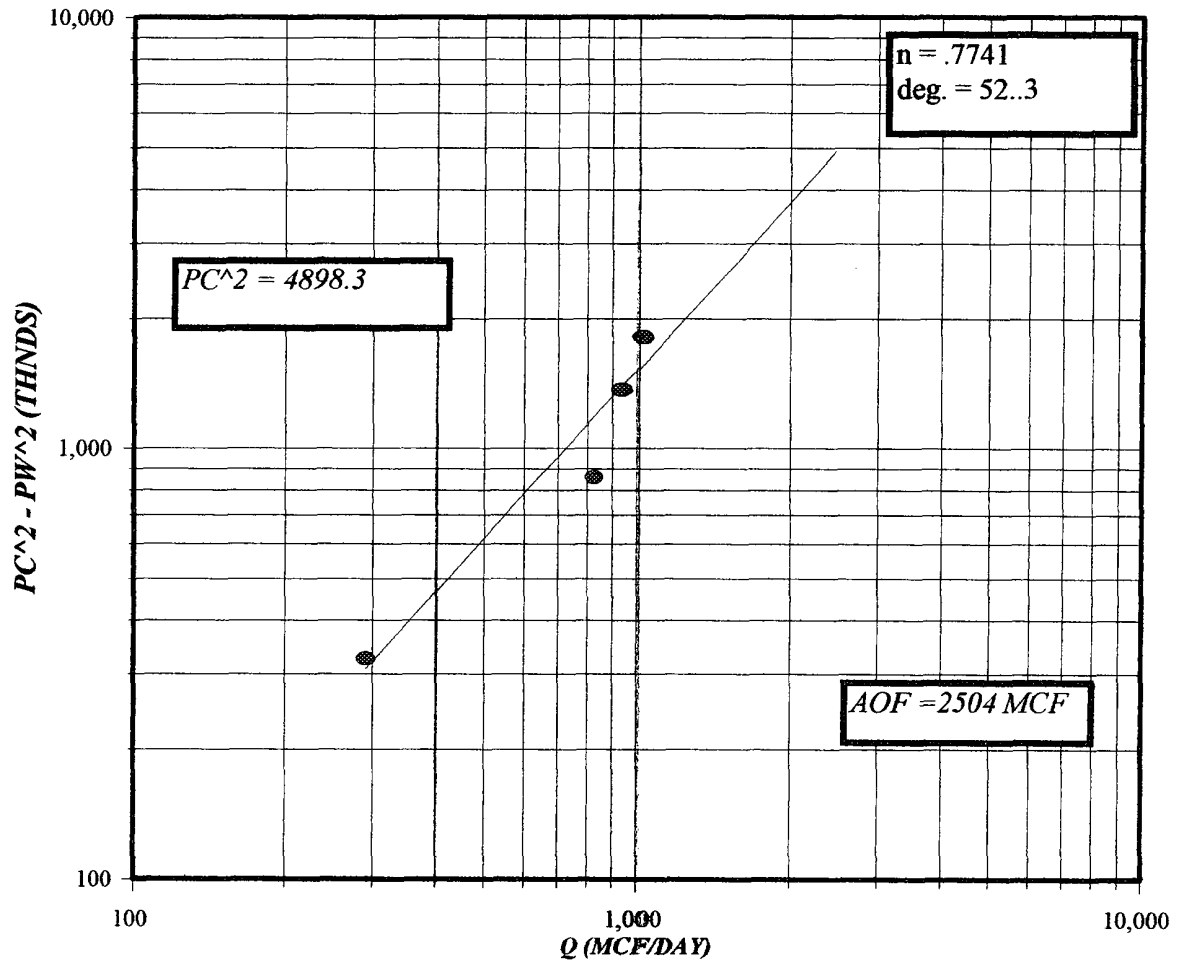
MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Operator PATTERSON PETROLEUM LP				Lease or Unit Name MILLER FEDERAL			
Type Test ☒ Initial ☐ Annual ☐ Special						Test Date 6-17-04	Well No. 2
Completion Date 05/18/2004		Total Depth 11,570'		Plug Back TD 11,534'		Elevation 3192' GR	Unit Ltr - Sec - TWP - Rge Lot 6, Sec 3, T21S, R27E
Csg. Size 5 1/2	Wt. 17 #	d 11,569'	Set At	Perforations: From: 11262 To: 11336		County EDDY	
Tbg. Size 2 7/8	Wt. 6.5	d 2.441	Set At 11185	Perforations: From: To:		Pool Burton Flat	
Type Well-Single-Bradenhead-G.G. or G.O. Multiple SINGLE				Packer Set At 11,165'		Formation MORROW	
Producing Thru TBG		Reservoir Temp. °F 167.4 @ 11262	Mean Annual Temp. °F 60	Baro. Press. - P _a 13.2		Connection VENTED	
L 11262	H 11262	Gg 0.619	%CO ₂ 1.926	%N ₂ 0.563	%H ₂ S N/A	Prover N/A	Meter Run 3.068
Taps FLG							
FLOW DATA				TUBING DATA		CASING DATA	
No.	Prover Line Size	Orifice x Size	Press p.s.i.g.	Diff. h _w	Temp. °F	Press p.s.i.g.	Temp. °F
SI							
1	3 X	1.250	33	21	98	2125	
2	3 X	1.250	36	159	92	1995	
3	3 X	1.250	36	199	85	1863	
4	3 X	1.250	44	204	83	1740	
5							
RATE OF FLOW CALCULATIONS							
No.	COEFFICIENT (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor Ft.	Gravity Factor F _g	Super Compress Factor F _{pv}	Rate of Flow Q, Mcfd
1	7.577	31.15	46.2	0.9653	1.271	1.002	290
2	7.577	88.45	49.2	0.9706	1.271	1.002	828
3	7.577	98.95	49.2	0.9768	1.271	1.002	933
4	7.577	47.12	57.2	0.9786	1.271	1.006	1,024
5							
No.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio DRY GAS Mcf bbl.		
1	0.06	558	1.56	0.996	A.P. I. Gravity of Liquid Hydrocarbons DRY Deg.		
2	0.07	552	1.54	0.996	Specific Gravity Separator Gas 0.619 XXXXXXXX		
3	0.07	545	1.52	0.996	Specific Gravity Flowing Fluid XXXXXX N/A		
4	0.08	546	1.52	0.989	Critical Pressure *667 P.S.I.A. P.S.I.A.		
5					Critical Temperature *357 R R		
P _c 1213.2		P ₂ 1471.9					
No.	P _i ²	P _w	P _w ²	P _c ² - P _w ²	(1) $P_c^2 = \frac{3.579}{P_c^2 - P_w^2}$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 2.683$		
1		2138.4	4572.8	325.4			
2		2010.1	4040.4	857.8			
3		1878.8	3529.7	1368.5			
4		1756.5	3085.3	1813			
5							
AOF = Q				$\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 2.504$			
79825							
Absolute Open Flow 2,504		Mcf @ 15.025		Angle of Slope (°): 52.3		Slope n: 0.7741	
Remarks: NO FLUID PRODUCED---* CORRECTED TO 1.926 % CO2							
Approved By Division:		Conducted By: Metering & Testing Ser., Inc.		Calculated By: BM		Checked By: BM	

PATTERSON PETROLEUM
MILLER FEDERAL # 2



PATTERSON PETROLEUM
MILLER FEDERAL # 2





Laboratory Services, Inc.

4016 Fiesta Drive
Hobbs, New Mexico 88240

Telephone: (505) 397-3713

FOR: Metering & Testing Services Inc.
Attention: Mr. Tom Duncan
2807 West County Road
Hobbs, New Mexico 88240

SAMPLE:
IDENTIFICATION: Miller Federal #2
COMPANY: Patterson Petroleum
LEASE:
PLANT:

SAMPLE DATA: DATE SAMPLED: 6/17/04 12:00 pm
ANALYSIS DATE: 6/18/04
PRESSURE - PSIG 53
SAMPLE TEMP. °F 86
ATMOS. TEMP. °F 100

GAS (XX) LIQUID ()
SAMPLED BY: Al Lewis
ANALYSIS BY: Vickie Biggs

REMARKS:

COMPONENT ANALYSIS

COMPONENT		MOL PERCENT	GPM
Hydrogen Sulfide	(H2S)	0.000	
Nitrogen	(N2)	0.536	
Carbon Dioxide	(CO2)	1.926	
Methane	(C1)	91.971	
Ethane	(C2)	3.674	0.980
Propane	(C3)	1.073	0.295
I-Butane	(IC4)	0.160	0.052
N-Butane	(NC4)	0.218	0.069
I-Pentane	(IC5)	0.081	0.030
N-Pentane	(NC5)	0.046	0.017
Hexane Plus	(C6+)	0.315	0.137
		100.000	1.580

BTU/CU.FT. - DRY 1053
AT 14.650 DRY 1050
AT 14.650 WET 1032
AT 14.73 DRY 1056
AT 14.73 WET 1038

MOLECULAR WT. 17.9305

SPECIFIC GRAVITY -
CALCULATED 0.619
MEASURED

Metering & Testing Data Sheet:

Company: Patterson Petroleum Meter Run Size: 3.063 x 1.25 plate
 Well No: Miller Federal #2 Orifice Meter Range: 100# x 150"
 Test Date: June 17, 2004 Tbg Size: 2 7/8
 Formation: Morrow Csg Size:
 County: Eddy Perfs:
 State: New Mexico Packer Depth:
 Test Type: 4-Point TD / PBTD:

Phone No: (505) - 397 - 1631
 Fax No: (505) - 397 - 0990

Running Totals:

Oil: _____
 Water: _____

Total flow

Date	Time	Choke	TBG PX	CSG PX	Oil Meter	Oil Per Hr	Total Oil	Water Meter	H2O- Per Hr	Total Water	Diff Press	Static Px	Gas - MCF	Comments:
	9:45	5"	2200	NA										open on 10/64
	10:00	10/64	2152								20	44	297	92° F
	10:15	10/64	2140								10	45	211	98°
	10:30	10/64	2125								21	46	277	99°
	10:45	10/64	2125								21	46	297	98°
	11:00	12/64	2077								43	45	441	98°
	11:15	12/64	2050								151	48	710	96°
	11:30	12/64	2026								153	47	854	92°
	11:45	12/64	1995								159	49	926	92°
	12:00	13/64	1961								199	53	980	86°
	12:15	13/64	1911								198	53	977	83°
	12:30	13/64	1880								195	52	968	83°
	12:45	13/64	1863								199	49	909	85°
	1:00	14/64	1820								204	53	969	82°
	1:15	14/64	1798								204	55	999	82°
	1:30	14/64	1764								204	55	1002	81°
	1:45	14/64	1740								204	57	1012	83°

Ø oil

Ø water



P.O. Box 791
Hobbs, New Mexico 88241
(505) 397-3590

April 5, 2004

Mr. Nolan VonRoeder
Patterson Petroleum
P.O. Drawer 1416
Snyder, Texas 79550

RECEIVED

JUL 20 2004

OCB-ARTESIA

Mr. VonRoeder,

I have looked at the data from the 83-hour buildup that was run on the **Miller Federal #2** well in Eddy County, New Mexico. I have analyzed the data as a **Two-Layer Reservoir with well bore storage and skin**.

The third page is the results page, which has the parameters that were used and the answers that were calculated. The pressure that was calculated was **4049.75 psi**. The permeability was **0.0231 md.**, skin was **-2.56 for the first layer and -2.56 for the second layer**, the radius of investigation was **68.9 feet**. These calculations used **200 mcf/day**. The **net interval of 26 feet** was used for the reservoir height. The **porosity** that was used was **9%**.

The fourth page is the Cartesian simulation plot, which takes the model and plots it against the data. The pressure is in green and the model is in red. When this plot, the Semi-Log plot and the Log-Log with derivative plot match the data, then we have an increased confidence level as to the model that we have chosen. This model matches the data fairly well.

The fifth and sixth pages are the Semi-Log plots. This plot has data in green and the model in red. The model matched the data fairly well. You can see from the plot that the data has the normal "S" curve, but did not end up in a shallow slope. I have drawn a straight line on the plot for comparison purposes. The straight line gives us a pressure of **4012.55 psi**, a **permeability of 0.0244 md.**, and a **skin of -2.32**. These numbers are very close to the Log-Log analysis and are considered a good comparison.

The seventh page is the Log-Log plot with derivative. The data is in green, the derivative is in red, the delta pressure model is the solid red line and the derivative model is the solid black line. The dotted horizontal line is the radial flow line as indicated by the model. The model follows the data fairly well and is a good match. There is changing well bore storage in the early time and probably some liquid falling back. The static gradient confirms that there was still some liquid in the pipe at the end of the buildup.

I ran a nodal plot for a frac on this well. The plot assumes that if you are able to achieve a **200 ft. fracture half-length, then the well should make 700 mcf/day after 30 days, 600 mcf/day after 60 days and 500 mcf/day after 90 days.**

We appreciate this work and look forward to working more with you in the near future. If you have any questions, please give me a call at 432-697-2932 or at our office in Hobbs, New Mexico at (505) 397-3590. Thank you.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert E. Shafer Jr.", with a stylized, cursive script.

Robert E. Shafer Jr.
Pro Well Testing and Wireline

Disclaimer:

We do not accept any responsibility for any actions taken as a result of this interpretation. This is a best estimate of reservoir parameters and due to the short flow time of this well, conditions could change.

Main Results

Analysis 1

Company Patterson Petroleum
Well Miller Federal #2

Field
Test Name / #

Test date / time
Formation interval Morrow
Perforated interval 11262-84, 11332-336
Gauge type / #
Gauge depth

TEST TYPE Standard

Porosity Phi (%) 9
Well Radius rw 0.33 ft
Pay Zone h 26 ft

Water Salt (ppm) 10000
Form. compr. 3E-6 psi-1
Reservoir T 189.66 °F
Reservoir P 5000 psia

FLUID TYPE Gas

Gas
Gas Gravity 0.7
Pseudo-Critical P 663.573 psia
Pseudo-Critical T 377.584 °R
Sour gas composition
Hydrogen sulphide 0
Carbon dioxide 0
Nitrogen 0

Water
Salinity, ppm 10000

Temperature 189.66 °F
Pressure 5000 psia

Properties @ Reservoir T&P

Gas
Z 0.98887
Mug 0.0274003 cp
Bg 0.00363116 cf/scf
cg 1.23632E-4 psi-1
Rhog 0.236109 g/cc

Water

Rsw 21.2545 cf/bbl
Bw 1.01609 B/STB
cw 3.33933E-6 psi-1
Muw 0.343433 cp
Rhow 0.991734 g/cc

Total Compr. ct 9.05443E-5 psi-1
Connate Water (%) 30

Selected Model

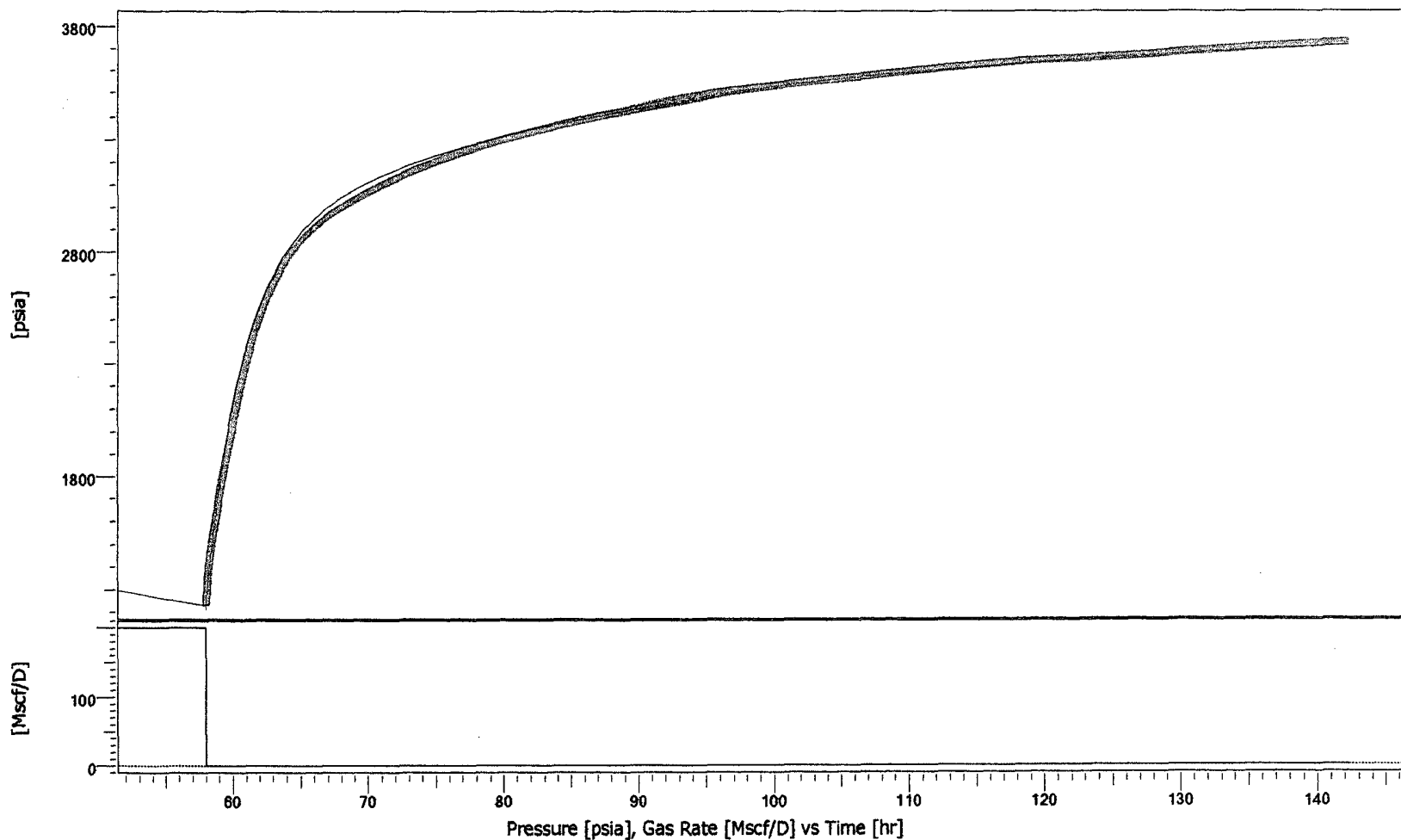
PseudoTime used
Model Option Standard Model
Well Storage + Skin
Reservoir Two Layers
Boundary Infinite
Time Transform Pseudo-Time

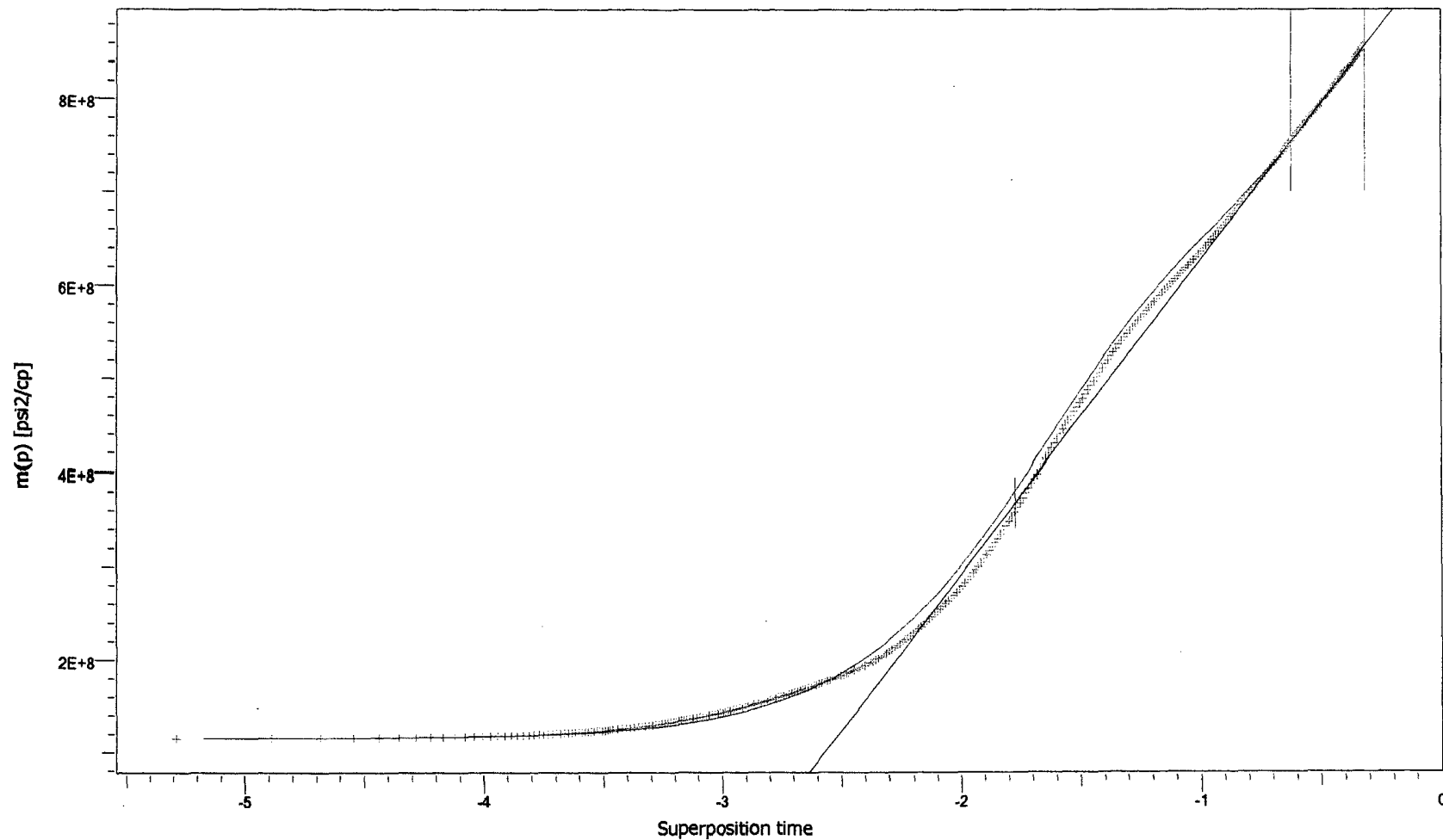
Results

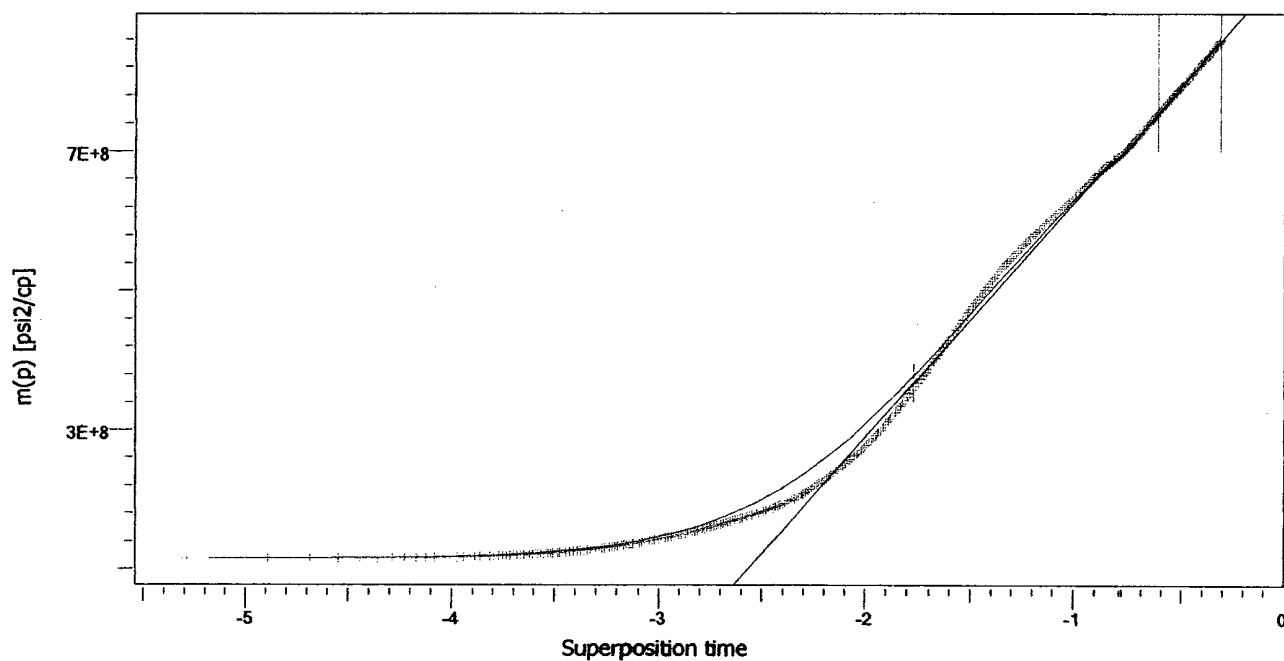
TMatch 1.63 [hr]**-1
PMatch 3.24E-9 [psi2/cp]**-1
C 0.00396 bbl/psi
Skin1 -2.56
Skin2 -2.56
Pi 4049.75 psia
k.h 0.599 md.ft
k 0.0231 md
Omega 0.581
Lambda 2.68E-4
Kappa 0.99
Rinv 68.9 ft
Test. Vol. 6217.42 Barrels

Company Patterson Petroleum
Well Miller Federal #2

Field
Test Name / #







76576 build-up #1

Rate 0 Mscf/D
 Rate Change 200 Mscf/D
 P@dt=0 1228.5 psia
 Pi 4049.75 psia
 Smoothing 0.05

Selected Model

PseudoTime used

Model Option Standard Model
 Well Storage + Skin
 Reservoir Two Layers
 Boundary Infinite
 Time Transform Pseudo-Time

Semilog Line (76576 build-up #1)

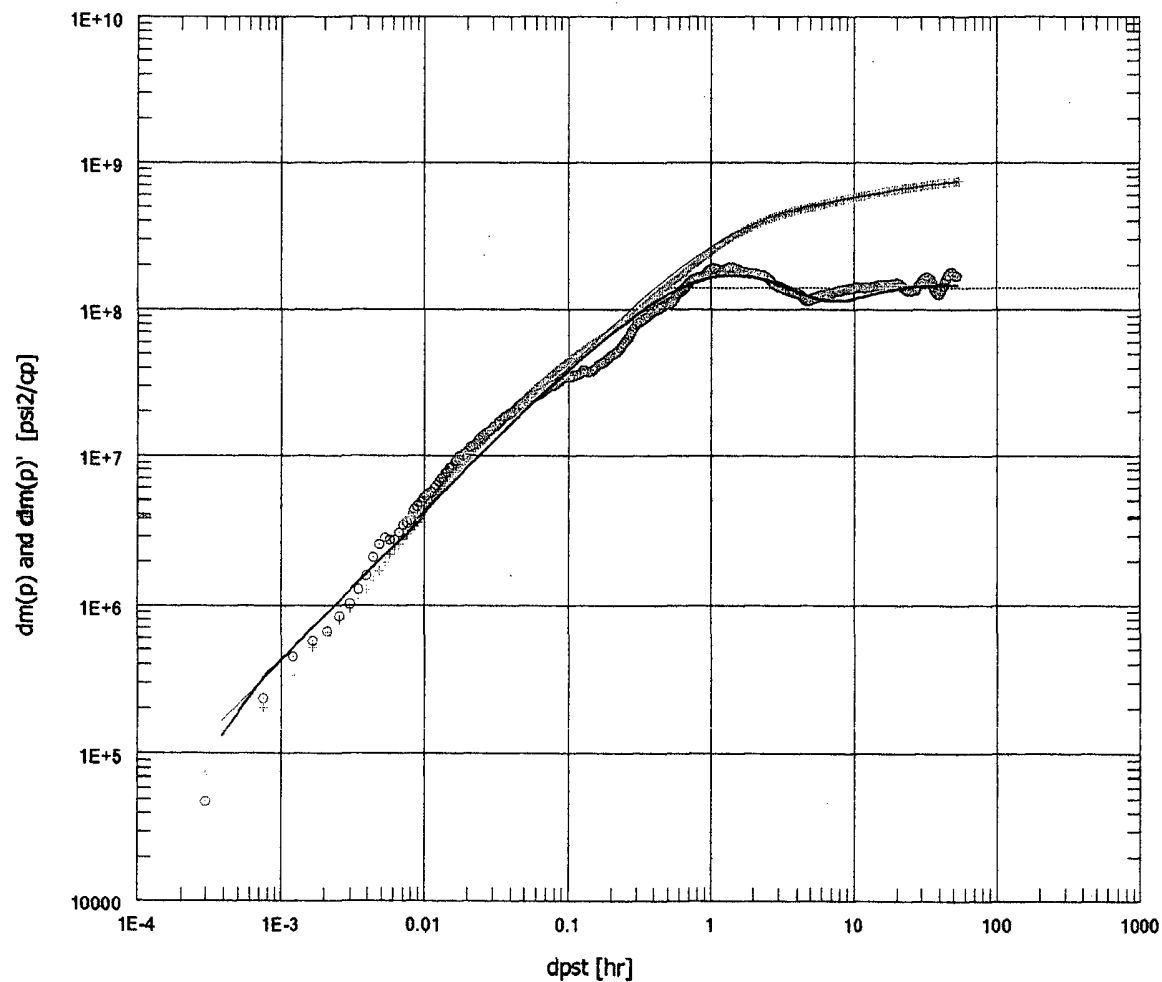
From 89.5833 hr
 To 142.232 hr
 Slope 3.35332E+8 psi2/cp
 Intercept 9.61624E+8 psi2/cp
 M(p)@1hr 3.678E+8 psi2/cp
 PMatch 3.43E-9 [psi2/cp]**-1
 k.h 0.634 md.ft
 k 0.0244 md
 p* 4012.55 psia
 Skin -2.32
 Delta P Skin -1834.48 psi

Results

TMatch 1.63 [hr]**-1
 PMatch 3.24E-9 [psi2/cp]**-1
 C 0.00396 bbl/psi
 Skin1 -2.56
 Skin2 -2.56
 Pi 4049.75 psia
 k.h 0.599 md.ft
 k 0.0231 md
 Omega 0.581
 Lambda 2.68E-4
 Kappa 0.99
 Rinv 68.9 ft
 Test. Vol. 6217.42 Barrels

Company Patterson Petroleum
Well Miller Federal #2

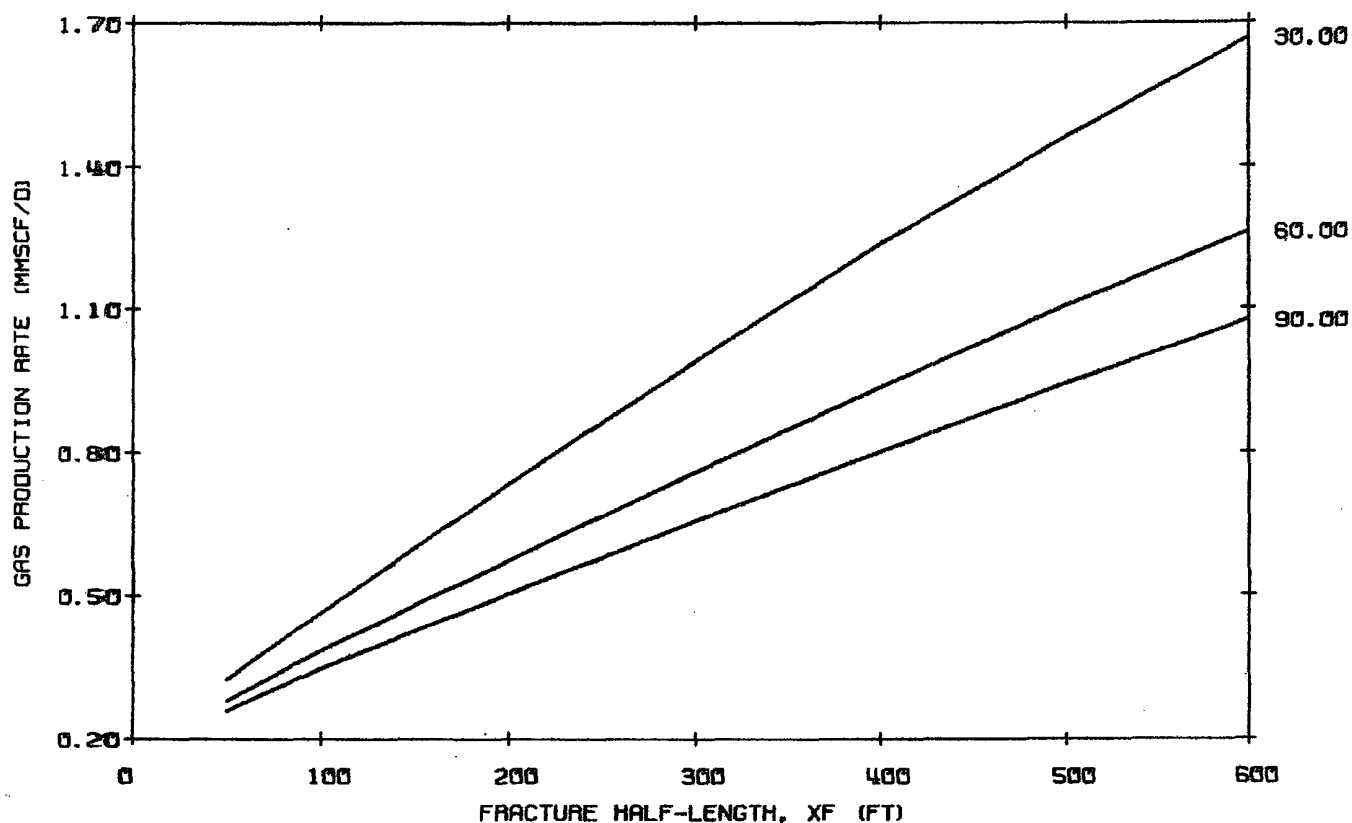
Field
Test Name / #



WELL TEST INTERPRETATION REPORT #:miller#2		PAGE: 14,
CLIENT : Patterson Petroleum		5-APR-***
REGION :	SENSITIVITY ANALYSIS RATE VS. XF (VS. TIME)	FIELD:
DISTRICT:		ZONE :Morrow
BASE :		WELL :Miller Fed. #2
ENGINEER:		LOCATION:

RESERVOIR PRESSURE: 4002 PSI LIQUID/GAS RATIO: 5.00 STB/MMSCF
 PERMEABILITY: 0.025 MD TUBING SIZE: 2.441 IN (ID)
 NET THICKNESS: 26 FT WELLHEAD PRESSURE: 200 PSI

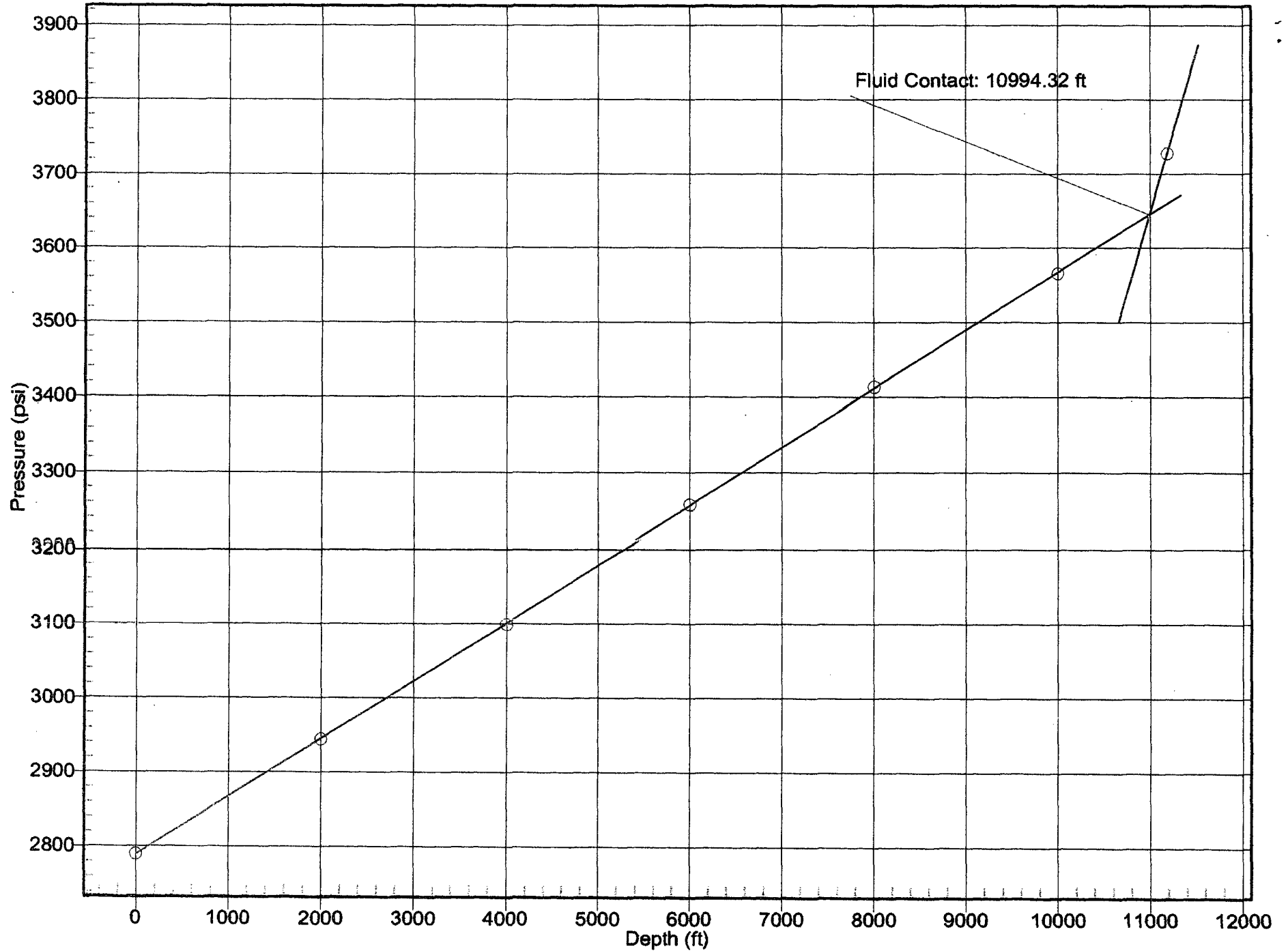
FRACTURE CONDUCTIVITY, $KF \times W$: 500 MD.FT

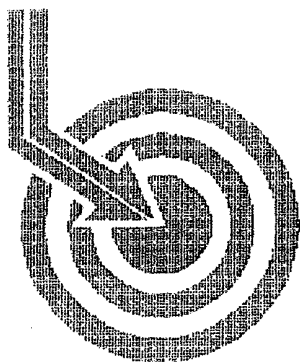


PRODUCTION RATE VS. FRAC. HALF-LENGTH, TRANSIENT CONDITIONS
 30.00 TO 90.00 DAYS:

Pressure vs. Depth

STATIC GRADIENT





Scientific Drilling

PATTERSON PETROLEUM

Field: Burton Flats
Site: Eddy County, NM
Well: Miller Fed. #2
Wellpath: DH - Job #32D0104066
Survey: 02/01/04-02/23/04

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JUL 20 2004

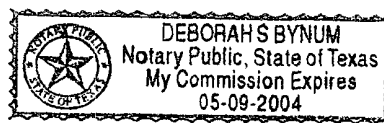
ODD-ARTESIA

This survey is correct to the best of my knowledge
and is supported by actual field data.

Lead Noel Company Representative

Notorized this date 16th of April, 2004.

Deborah S. Bynum
Notary Signature
County of Midland
State of Texas





Scientific
Drilling

Scientific Drilling Survey Report

Company: PATTERSON PETROLEUM
Field: Burton Flats
Site: Eddy County, NM
Well: Miller Fed. #2
Wellpath: VH - Job #32K0104063

Date: 4/16/2004 Time: 11:58:22 Page: 1
Co-ordinate(NE) Reference: Site: Eddy County, NM, Grid North
Vertical (TVD) Reference: SITE 0.0
Section (VS) Reference: Well (0.00N,0.00E,135.00Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: 01/29/04
KSRG 0'-7224'

Start Date: 1/29/2004

Company: Scientific Drilling
Tool: Keeper, Keeper Gyro

Engineer: Drake/Parker
Tied-to: From Surface

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.0	0.00
100.0	0.48	39.52	100.0	0.0	0.3	0.3	0.48	0.4	39.52
200.0	0.61	45.42	200.0	-0.1	1.0	0.9	0.14	1.4	41.81
300.0	0.70	34.10	300.0	-0.2	1.9	1.6	0.16	2.5	40.70
400.0	0.33	57.34	400.0	-0.2	2.6	2.2	0.42	3.4	40.91
500.0	0.27	244.94	500.0	-0.3	2.6	2.2	0.60	3.4	40.67
600.0	0.82	261.90	600.0	-0.8	2.4	1.3	0.57	2.8	28.76
700.0	1.06	244.10	700.0	-1.5	1.9	-0.2	0.38	1.9	353.59
800.0	1.12	234.56	799.9	-2.0	0.9	-1.8	0.19	2.1	297.02
900.0	1.27	235.42	899.9	-2.3	-0.3	-3.6	0.15	3.6	265.88
1000.0	1.37	237.59	999.9	-2.8	-1.5	-5.5	0.11	5.7	254.43
1100.0	1.24	237.37	1099.9	-3.3	-2.7	-7.4	0.13	7.9	249.60
1200.0	0.95	231.40	1199.9	-3.6	-3.9	-9.0	0.31	9.7	246.73
1300.0	0.94	230.78	1299.8	-3.8	-4.9	-10.2	0.01	11.3	244.48
1400.0	0.91	229.24	1399.8	-3.9	-5.9	-11.5	0.04	12.9	242.69
1500.0	0.93	220.29	1499.8	-3.9	-7.1	-12.6	0.14	14.4	240.73
1600.0	0.96	206.70	1599.8	-3.6	-8.4	-13.5	0.23	15.9	238.02
1700.0	1.18	204.28	1699.8	-3.0	-10.1	-14.3	0.22	17.5	234.73
1800.0	1.12	205.00	1799.8	-2.3	-11.9	-15.1	0.06	19.3	231.73
1900.0	1.04	216.07	1899.7	-1.8	-13.6	-16.1	0.22	21.0	229.87
2000.0	0.94	219.40	1999.7	-1.6	-14.9	-17.1	0.12	22.7	228.95
2100.0	0.98	225.08	2099.7	-1.5	-16.2	-18.3	0.10	24.4	228.49
2200.0	1.14	256.61	2199.7	-2.0	-17.0	-19.8	0.60	26.1	229.41
2300.0	1.20	261.86	2299.7	-3.2	-17.4	-21.8	0.12	27.9	231.50
2400.0	1.32	253.07	2399.7	-4.3	-17.9	-24.0	0.23	29.9	233.32
2500.0	0.87	273.78	2499.6	-5.4	-18.1	-25.8	0.59	31.6	234.92
2600.0	0.89	280.77	2599.6	-6.7	-18.0	-27.4	0.11	32.7	236.73
2700.0	0.86	277.29	2699.6	-7.9	-17.7	-28.9	0.06	33.9	238.47
2800.0	0.83	284.57	2799.6	-9.1	-17.4	-30.3	0.11	35.0	240.10
2900.0	0.68	281.01	2899.6	-10.2	-17.1	-31.6	0.16	35.9	241.53
3000.0	0.83	278.94	2999.6	-11.3	-16.9	-32.9	0.15	37.0	242.79
3100.0	0.75	276.57	3099.6	-12.4	-16.7	-34.3	0.09	38.1	243.98
3200.0	0.81	277.95	3199.6	-13.5	-16.6	-35.6	0.06	39.3	245.07
3300.0	0.77	275.75	3299.6	-14.6	-16.4	-37.0	0.05	40.4	246.10
3400.0	0.76	264.91	3399.5	-15.5	-16.4	-38.3	0.14	41.7	246.85
3500.0	0.82	267.32	3499.5	-16.4	-16.5	-39.7	0.07	43.0	247.46
3600.0	0.75	281.01	3599.5	-17.4	-16.4	-41.0	0.20	44.2	248.24
3700.0	0.66	266.43	3699.5	-18.4	-16.3	-42.3	0.20	45.3	248.92
3800.0	0.71	266.37	3799.5	-19.2	-16.4	-43.5	0.05	46.4	249.36
3900.0	0.79	280.01	3899.5	-20.1	-16.3	-44.7	0.20	47.6	250.00
4000.0	0.77	270.28	3999.5	-21.2	-16.2	-46.1	0.13	48.9	250.68
4100.0	0.91	279.41	4099.5	-22.3	-16.0	-47.6	0.19	50.2	251.37
4200.0	0.78	257.74	4199.5	-23.3	-16.0	-49.0	0.34	51.6	251.87
4300.0	0.75	277.42	4299.5	-24.2	-16.1	-50.3	0.26	52.8	252.25
4400.0	0.92	275.40	4399.5	-25.3	-15.9	-51.8	0.17	54.2	252.88
4500.0	0.82	274.89	4499.4	-26.5	-15.8	-53.3	0.10	55.6	253.48
4600.0	0.79	271.88	4599.4	-27.5	-15.7	-54.7	0.05	56.9	253.96
4700.0	0.97	281.66	4699.4	-28.8	-15.5	-56.2	0.23	58.3	254.55
4800.0	0.78	273.21	4799.4	-30.0	-15.3	-57.7	0.23	59.7	255.13



Scientific
Drilling

Scientific Drilling Survey Report

Company: PATTERSON PETROLEUM
Field: Burton Flats
Site: Eddy County, NM
Well: Miller Fed. #2
Wellpath: VH - Job #32K0104063

Date: 4/16/2004
Co-ordinate(NE) Reference:
Vertical (TVD) Reference:
Section (VS) Reference:
Survey Calculation Method:

Time: 11:58:22
Page: 2
Site: Eddy County, NM, Grid North
SITE 0.0
Well (0.00N,0.00E,135.00Azi)
Minimum Curvature
Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
4900.0	0.76	274.59	4899.4	-31.0	-15.2	-59.0	0.03	61.0	255.54
5000.0	0.88	268.75	4999.4	-32.0	-15.2	-60.5	0.15	62.4	255.90
5100.0	0.86	277.58	5099.4	-33.1	-15.1	-62.0	0.14	63.8	256.30
5200.0	0.77	282.89	5199.4	-34.3	-14.9	-63.4	0.12	65.1	256.81
5300.0	0.71	275.01	5299.4	-35.4	-14.7	-64.7	0.12	66.3	257.23
5400.0	0.44	264.46	5399.4	-36.1	-14.6	-65.7	0.29	67.3	257.43
5500.0	0.29	185.71	5499.4	-36.2	-14.9	-66.1	0.48	67.7	257.27
5600.0	0.16	109.03	5599.4	-35.9	-15.2	-66.0	0.30	67.7	257.00
5700.0	0.33	95.88	5699.4	-35.5	-15.3	-65.5	0.18	67.3	256.86
5800.0	0.43	110.24	5799.4	-35.0	-15.5	-64.9	0.14	66.7	256.60
5900.0	0.27	114.93	5899.4	-34.4	-15.7	-64.3	0.16	66.2	256.30
6000.0	0.24	165.09	5999.3	-34.0	-16.0	-64.1	0.22	66.0	255.99
6100.0	0.22	130.62	6099.3	-33.6	-16.3	-63.9	0.14	65.9	255.67
6200.0	0.17	129.20	6199.3	-33.3	-16.5	-63.6	0.05	65.7	255.43
6300.0	0.16	145.09	6299.3	-33.0	-16.7	-63.4	0.05	65.6	255.21
6400.0	0.22	275.53	6399.3	-33.0	-16.8	-63.5	0.35	65.7	255.15
6500.0	0.40	213.79	6499.3	-33.1	-17.1	-63.9	0.35	66.2	255.01
6600.0	0.14	45.62	6599.3	-33.0	-17.3	-64.0	0.54	66.3	254.86
6700.0	0.27	348.56	6699.3	-33.2	-17.0	-64.0	0.23	66.2	255.12
6800.0	0.77	125.56	6799.3	-32.8	-17.2	-63.5	0.98	65.8	254.87
6900.0	1.16	142.22	6899.3	-31.1	-18.4	-62.3	0.48	65.0	253.59
7000.0	1.50	148.11	6999.3	-28.8	-20.3	-61.0	0.37	64.3	251.62
7100.0	1.64	173.98	7099.3	-26.4	-22.8	-60.2	0.72	64.3	249.24
7200.0	1.63	172.00	7199.2	-24.2	-25.6	-59.8	0.06	65.1	246.80
7224.0	1.54	186.14	7223.2	-23.7	-26.3	-59.8	1.67	65.3	246.27



Scientific
Drilling

Scientific Drilling Survey Report

Company: PATTERSON PETROLEUM
Field: Burton Flats
Site: Eddy County, NM
Well: Miller Fed. #2
Wellpath: DH - Job #32D0104066

Date: 4/16/2004 Time: 12:03:44 Page: 1
Co-ordinate(NE) Reference: Site: Eddy County, NM, Grid North
Vertical (TVD) Reference: SITE 0.0
Section (VS) Reference: Well (0.00N,0.00E,135.00Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: 02/01/04-02/23/04
MWD & SS 7319'-11570'
Company: Scientific Drilling
Tool: MWD,MWD

Start Date: 2/1/2004
Engineer: Hoffman/Breaux
Tied-to: From: Definitive Path

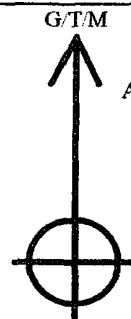
Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
7224.0	1.54	186.14	7223.2	-23.7	-26.3	-59.8	0.00	65.3	246.27
7319.0	2.19	186.90	7318.2	-21.8	-29.4	-60.2	0.68	66.9	243.98
7504.0	3.13	192.35	7503.0	-16.9	-37.8	-61.7	0.53	72.3	238.49
7691.0	2.81	193.19	7689.7	-11.7	-47.3	-63.8	0.17	79.4	233.47
7880.0	1.87	183.67	7878.6	-7.2	-54.8	-65.0	0.54	85.1	229.87
7987.0	2.43	162.20	7985.5	-4.0	-58.7	-64.5	0.91	87.2	227.66
8048.0	2.64	165.27	8046.4	-1.7	-61.3	-63.7	0.41	88.4	226.09
8143.0	4.82	148.49	8141.2	4.1	-66.9	-61.1	2.54	90.5	222.41
8206.0	5.40	135.82	8204.0	9.6	-71.2	-57.6	2.01	91.6	218.97
8300.0	6.23	122.44	8297.5	19.0	-77.1	-50.2	1.69	92.1	213.07
8395.0	7.04	116.26	8391.9	29.6	-82.5	-40.7	1.14	92.0	206.24
8489.0	8.12	109.25	8485.0	41.0	-87.2	-29.2	1.51	92.0	198.53
8585.0	9.24	111.57	8579.9	54.2	-92.3	-15.7	1.22	93.6	189.63
8647.0	9.11	112.95	8641.1	63.3	-96.0	-6.5	0.41	96.3	183.88
8742.0	8.97	106.50	8735.0	76.8	-101.1	7.5	1.08	101.3	175.75
8835.0	8.50	107.80	8826.9	89.3	-105.2	21.0	0.55	107.3	168.71
8930.0	9.13	106.00	8920.8	102.1	-109.5	34.9	0.72	114.9	162.29
9120.0	9.50	108.12	9108.3	129.3	-118.5	64.3	0.27	134.8	151.50
9214.0	9.48	107.25	9201.0	143.0	-123.2	79.1	0.15	146.4	147.30
9309.0	9.35	107.73	9294.7	156.8	-127.9	93.9	0.16	158.7	143.70
9373.0	8.49	113.12	9357.9	165.8	-131.3	103.2	1.87	167.0	141.83
9468.0	7.39	113.60	9452.0	178.0	-136.5	115.3	1.16	178.7	139.82
9563.0	5.96	102.60	9546.4	187.9	-140.0	125.7	2.01	188.2	138.09
9658.0	4.98	105.28	9640.9	195.6	-142.2	134.5	1.07	195.7	136.60
9753.0	4.69	119.74	9735.6	203.0	-145.2	141.8	1.31	203.0	135.67
9848.0	3.21	136.97	9830.4	209.4	-149.1	147.0	1.98	209.4	135.40
9943.0	1.75	114.97	9925.3	213.4	-151.6	150.1	1.81	213.4	135.28
10139.0	3.50	123.00	10121.1	222.0	-156.2	157.9	0.91	222.1	134.69
10338.0	3.50	115.00	10319.7	233.7	-162.0	168.5	0.25	233.7	133.88
10510.0	4.50	100.00	10491.3	244.2	-165.4	179.9	0.84	244.4	132.60
10629.0	2.89	98.33	10610.0	250.4	-166.7	187.4	1.36	250.8	131.64
10694.0	2.69	92.67	10674.9	252.8	-167.0	190.6	0.52	253.4	131.22
10756.0	2.19	91.68	10736.9	254.8	-167.1	193.2	0.81	255.4	130.85
10860.0	0.55	182.98	10840.9	256.5	-167.6	195.2	2.18	257.3	130.66
10923.0	0.64	180.30	10903.9	257.0	-168.3	195.2	0.15	257.7	130.77
11034.0	0.72	249.60	11014.9	257.1	-169.1	194.5	0.70	257.8	131.01
11113.0	1.13	185.82	11093.8	257.4	-170.1	194.0	1.31	258.0	131.25
11306.0	0.50	20.00	11286.8	258.3	-171.2	194.1	0.84	258.8	131.42
11465.0	0.75	73.00	11445.8	258.5	-170.2	195.3	0.38	259.1	131.08
11570.0	0.75	73.00	11550.8	259.1	-169.8	196.6	0.00	259.8	130.82



**Scientific
Drilling**

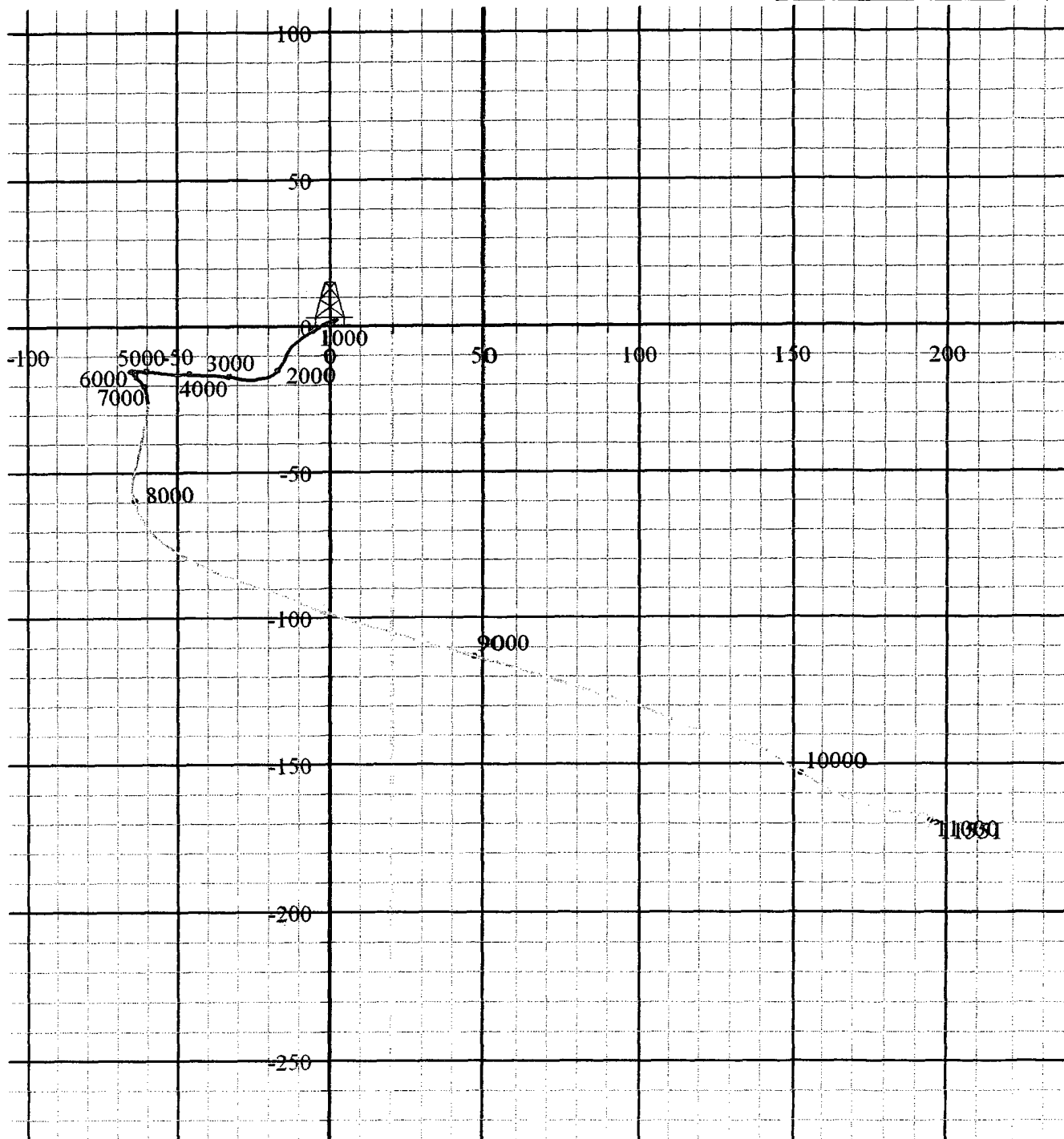
Field: Burton Flats
Site: Eddy County, NM
Well: Miller Fed. #2
Wellpath: DH - Job #32D0104066
Survey: 02/01/04-02/23/04



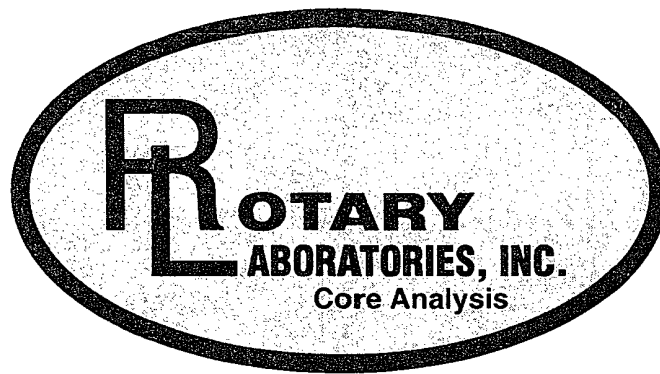
Azimuths to Grid North
True North: 0.00°
Magnetic North: 0.00°

Magnetic Field
Strength: 0nT
Dip Angle: 0.00°
Date: 4/16/2004
Model: igrf2000

South(-)/North(+) [50ft/in]



West(-)/East(+) [50ft/in]



Rotary Sidewall Core Analysis Report

For

PATTERSON PETROLEUM LP

MILLER FEDERAL # 2

EDDY COUNTY, NEW MEXICO

RECEIVED

JUL 20 2004

OCD-ARTESIA

ROTARY SIDEWALL CORE ANALYSIS

PATTERSON PETROLEUM LP
MILLER FEDERAL # 2
EDDY COUNTY, NEW MEXICO

A.P.I. NUMBER :
FIELD :
LOCATION :

FILE NO. : 040225-1
DATE : February 26, 2004
ANALYSTS : WH, SB, PK

DEAN STARK EXTRACTION

SAMPLE NO.	DEPTH ft	GRAIN DENSITY	POROSITY %	PERM mD	SATURATIONS Sw	So	GAS UNITS	FLUORESCENCE %	LITHOLOGY
1	6,408.0	2.67	8.9	0.05	32.4	25.4	183	80	Yl-grn-bl lam Ss opaq-brn lam vf-fgr sbrnd-sbang mod-ssity calc tr pyr
2	6,420.0	2.68	9.3	0.05	36.2	20.3	165	90	Yl-grn-bl lam Ss opaq-brn lam vf-fgr sbrnd-sbang mod-ssity calc tr pyr
3	6,427.0	2.68	8.7	0.03	39.6	22.9	146	60	Yl-grn-bl lam Ss opaq-brn lam vf-fgr sbrnd-sbang mod-ssity calc tr pyr
4	6,452.0	2.67	11.2	0.25	39.6	10.2	180	90	Brt yl-grn-bl lam Ss opaq-brn lam vf-fgr sbrnd-sbang mod-ssity calc tr pyr
5	6,482.0	2.67	10.8	0.11	46.3	11.2	43	20	Brt yl-yl Ss opaq-brn vf-fgr sbrnd-sbang mod-ssity calc fd frac
6	6,552.0	2.66	11.0	0.07	55.4	0.0	92	0	DI mf Ss opaq-brn vf-fgr sbrnd-sbang mod-ssity calc tr pyr
7	6,587.0	2.62	11.7	0.19	57.7	0.0	306	0	Ss opaq-dk brn arg vf-fgr sbrnd-sbang slty calc tr pyr
8	6,616.0	2.62	14.9	2.63	69.5	0.0	105	0	Ss opaq-dk brn arg vf-fgr sbrnd-sbang slty calc tr pyr
9	6,618.0	2.66	10.6	0.11	51.4	0.0	193	0	Ss opaq-dk brn arg vf-fgr sbrnd-sbang slty calc tr pyr
10	8,248.0	2.70	0.3	<.01	91.4	0.0	5	0	Ls dk brn-brn dns slty ssdy foss tr pyr
11	10,240.0	2.73	4.7	0.10	16.2	0.0	87	0	Ls tn-brn ssity ssdy tr ppp-sml vug foss pyr
12	10,242.0	2.72	8.5	tbfa	14.9	0.0	66	0	Ls tn-brn ssity ssdy sc ppp-sml vug foss frac
13	10,244.0	2.73	3.3	0.01	15.0	0.0	38	0	Ls tn-brn ssity ssdy sc ppp-sml vug foss pyr
14	10,314.0	2.72	7.9	0.69	32.0	10.1	31	20	Brt yl-wht vug Ls tn-brn ssity ssdy sc ppp-vug foss frac
15	10,316.0	2.70	11.1	1.27	40.9	5.3	50	10	Brt yl-wht vug Ls tn-brn ssity ssdy sc ppp-sml vug foss
16	10,318.0	2.70	7.5	0.12	43.1	Tr	32	Tr	Brt yl Ls tn-brn ssity ssdy sc ppp foss pyr
17	10,737.0	2.64	3.7	0.01	12.7	0.0	117	0	Tr dl mf Ss opaq-tn vf-fgr sbrnd-ang ssity sc ppp
18	10,739.0	2.72	11.2	0.04	50.6	0.0	51	0	DI mf Ss opaq-brn vf-fgr sbrnd-ang ssity calc sc sty sc s/p



ROTARY SIDEWALL CORE ANALYSIS

PATTERSON PETROLEUM LP
MILLER FEDERAL # 2
EDDY COUNTY, NEW MEXICO

A.P.I. NUMBER :
FIELD :
LOCATION :

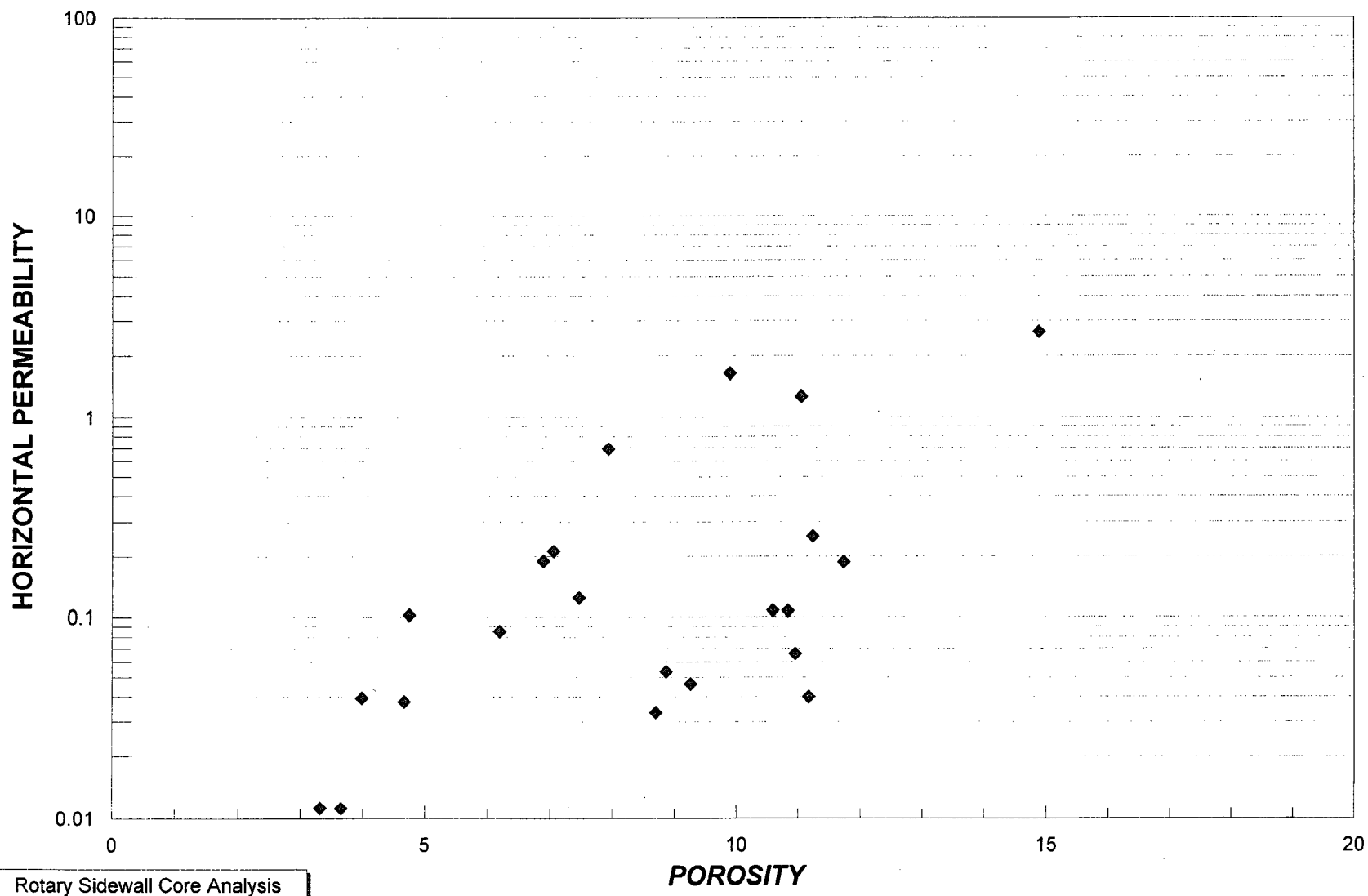
FILE NO. : 040225-1
DATE : February 26, 2004
ANALYSTS : WH, SB, PK

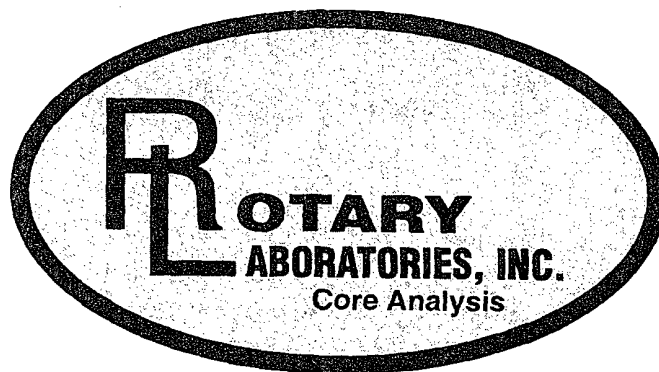
DEAN STARK EXTRACTION

SAMPLE NO.	DEPTH ft	GRAIN DENSITY	POROSITY %	PERM mD	SATURATIONS Sw	So	GAS UNITS	FLUORESCENCE %	LITHOLOGY
19	11,233.0	2.66	5.4	0.01	59.0	0.0	26	0	Ss opaq-tn vf-fgr sbrnd-ang sslty scalc
20	11,262.0	2.67	7.1	0.21	23.4	0.0	15	0 cont	Ss opaq-brn vf-mgr sbrnd-ang sslty sc ppp sty
21	11,274.0	2.66	6.9	0.19	37.3	0.0	22	0 cont	Ss opaq-brn vf-mgr sbrnd-ang sslty sc ppp
22	11,278.0	2.66	4.0	0.04	27.7	0.0	9	0	Ss opaq-brn vf-mgr sbrnd-ang sslty sc ppp
23	11,281.0	2.66	6.2	0.09	20.2	0.0	10	0	Ss opaq-brn vf-mgr sbrnd-ang sslty sc ppp
24	11,284.0	2.67	4.7	0.04	34.3	0.0	30	0	Ss opaq-brn vf-mgr sbrnd-ang sslty sc ppp sty tr pyr
25	11,335.0	2.89	9.9	1.64	47.2	0.0	103	0	Ss opaq-tn-brn vf-fgr sbrnd-sbang mod-sslty frac



**PATTERSON PETROLEUM LP
MILLER FEDERAL # 2**





PATTERSON PETROLEUM LP
MILLER FEDERAL # 2
03/01/2004

QUALITY CONTROL RERUN DATA

Sample No.	GRAIN DENSITY		POROSITY		<i>k</i> standard Test Sample	PERMEABILITY	
	original	reruns	original	reruns		original	reruns
2	2.682	2.683	9.26	9.30	2.619	0.046	0.046
5	2.667	2.669	10.84	10.90			
8	2.624	2.621	14.89	14.80		2.632	2.667
10	2.697	2.697	0.29	0.27		<.01	<.01
13	2.728	2.727	3.31	3.28			
16	2.696	2.693	7.46	7.38		0.124	0.121
18	2.719	2.716	11.17	11.07			
21	2.657	2.658	6.89	6.95			
25	2.889	2.891	9.90	9.96	2.612	1.639	1.634