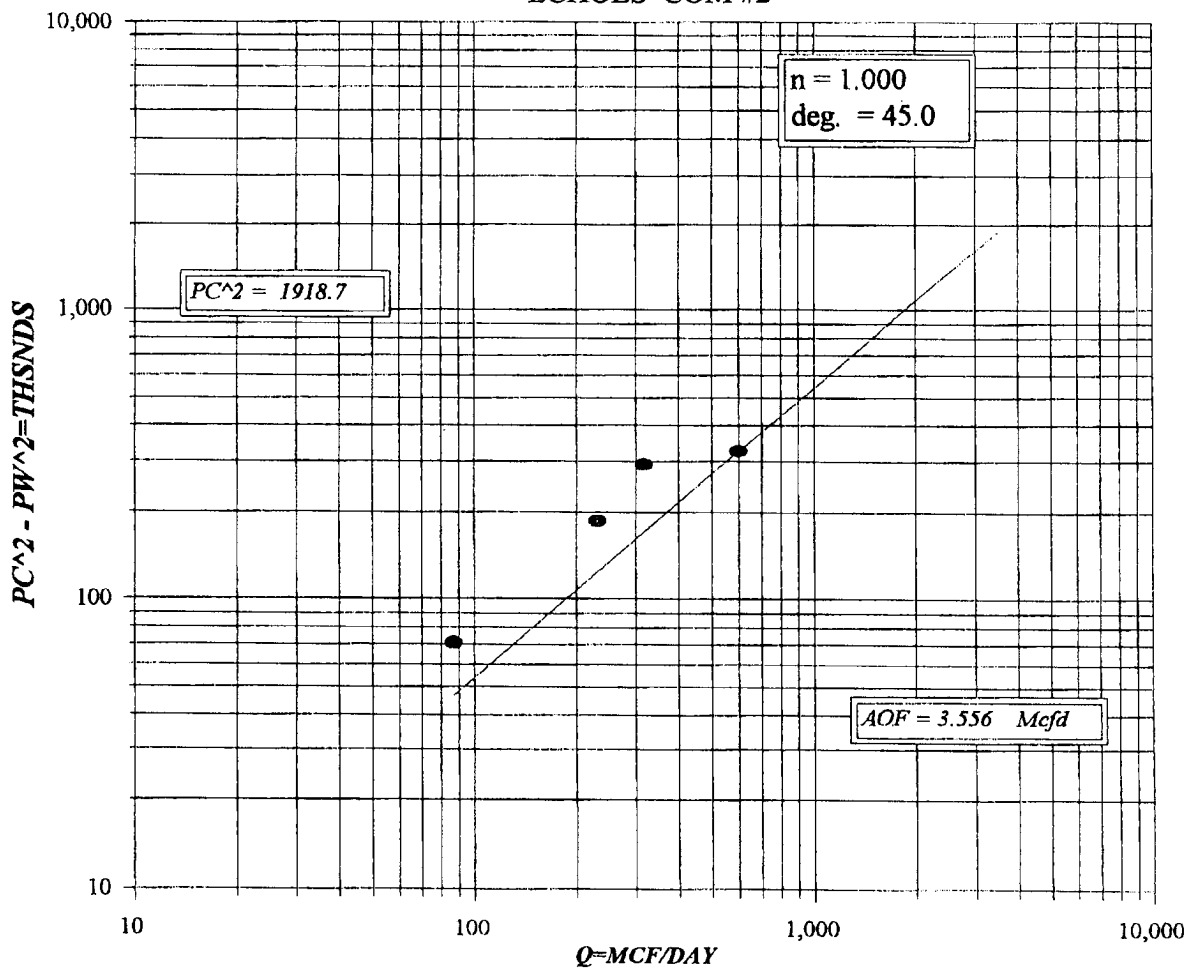


MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Operator GRUY PET. CO.					Lease or Unit Name ECHOLS COM								
Type Test ☒ Initial ☐ Annual ☐ Special										Test Date 4/19/03		Well No. 2	
Completion Date			Total Depth 12063			Plug Back TD 12019			Elevation		Unit Ltr - Sec - TWP - Rge 12 23S 26E		
Csg. Size 5 1/2		Wt. 17	d 4.892	Set At 12063		Perforations: From: 11474 To: 11866					County EDDY		
Tbg. Size 2 3/8		Wt. 4.6	d 1.995	Set At 11403		Perforations: From: To:					Pool S Carlsbad Marco		
Type Well-Single-Bradenhead-G.G. or G.O. Multiple SINGLE						Packer Set At 11403				Formation MORROW			
Producing Thru Tubing		Reservoir Temp. °F 188		Mean Annual Temp. °F 60		Baro. Press.-P _s 13.2				Connection SALES			
L 11403	H 11403	Gg 0.654	%CO ₂ 9.02	%N ₂ 0.446	%H ₂ S N/A	Prover N/A	Meter Run 4.026		Taps FLG				
FLOW DATA					TUBING DATA			CASING DATA			Duration of Flow		
No.	Prover Line Size	Orifice x Size	Press p.s.i.g.	Diff. h _w	Temp. °F	Press p.s.i.g.	Temp. °F	Press p.s.i.g.	Temp. °F				
SI						1372	N/A	PKR	N/A				
1	4.026 X 1.250		200	0.4	75	1346							
2	4.026 X 1.250		201	2.6	77	1302							
3	4.026 X 1.250		208	4.5	79	1261							
4	4.026 X 1.250		207	18.1	77	1244							
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									87				
2									231				
3	TOTAL		FLOW	METER					317				
4									601				
5													
No.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio N/A Mcf bbl.								
1					A.P. I. Gravity of Liquid Hydrocarbons Deg.								
2					Specific Gravity Separator Gas 0.654 xxxxxxxx								
3	TOTAL	FLOW	METER		Specific Gravity Flowing Fluid N/A xxxxxx								
4					Critical Pressure 673 P.S.I.A. P.S.I.A.								
5					Critical Temperature 371 R. R.								
P _c	1385.2	P _{c2}	1918.7										
No.	P _t ²	P _w	P _w ²	P _c ² -P _w ²	(1) $\frac{P_c^2}{P_c^2 - P_w^2} = \frac{5.917}{\quad}$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = \frac{5.917}{\quad}$								
1		1359.3	1847.7	71									
2		1316	1731.8	186.9									
3		1275.7	1627.4	291.3									
4		1262.7	1594.4	324.3									
5					AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = \frac{3.556}{\quad}$								
Absolute Open Flow 3556					Mcf/d @ 15.025		Angle of Slope (°): 45		Slope n: 1				
Remarks: * NO LIQUID MADE DURING TEST.													
Approved By Division:			Conducted By: PRO WELL TESTING			Calculated By: MERV BUECKER			Checked By: MB				

GRUY PET. CO.
ECHOLS COM #2

COMPANY : GRUY PET. MANAGEMENT CI		LEASE : ECHOLS COM		WELL NO. : 2		Pc = 1385.2		Pc2 = 1918.7			
UNIT :		SECTION : 12		TOWNSHIP : 26E							
L :	11403	H :	11403	L/H :	1	G/GMIX :	0.654	P12 = 1847.4	Pw = 1359.3		
%CO2 :	9.02	%N2 :	0.446	H2S :		DATE :	4/13/03	1729.8	1316.0		
d :	1.995	Fr :	0.018183	GH :	8197.0	RANGE :	26E	1623.6	1275.7		
								1580.6	1262.7		
VOL 1 :		87	PSIA 1 :	1359.2	RESV TEMP :		188.0	Pc2-Pw2 =	71.0	Pw2 = 1847.7	
VOL 2 :		231	PSIA 2 :	1315.2					186.9	1731.8	
VOL 3 :		317	PSIA 3 :	1274.2	SHUT-IN PRE(:		1385.2		291.3	1627.4	
VOL 4 :		601	PSIA 4 :	1257.2					324.3	1594.4	
			PCR :	708							
			TCR :	356							
									n =	1.000	
LINE		RATE 1		RATE 2		RATE 3		RATE 4		Pc2/(Pc2-Pw2) =	27.029
		1ST	2ND	1ST	2ND	1ST	2ND	1ST	2ND		10.266
											6.588
											5.917
1	QM	0.087	0.087	0.231	0.231	0.317	0.317	0.601	0.601		
2	TW	534	534	534	534	534	534	534	534		
3	Ts	648.0	648.0	648.0	648.0	648.0	648.0	648.0	648.0	Pc2/Pc2-Pw2)n =	27.029
4	T	591.0	591.0	591.0	591.0	591.0	591.0	591.0	591.0		10.266
	PR (est)	1.92	1.86	1.80	1.80	1.80	1.80	1.78	1.78		6.588
5	Z(est)	0.862	0.849	0.864	0.851	0.867	0.854	0.868	0.855		5.917
6	TZ	509.3	501.6	510.9	503.1	512.4	504.6	513.1	505.2		
7	GH/ITZ	16.095	16.342	16.045	16.292	15.997	16.244	15.977	16.226	AOF=Q	2.352
8	eS	1.829	1.846	1.825	1.842	1.822	1.839	1.821	1.838		2.371
9	I-e-S	0.453	0.458	0.452	0.457	0.451	0.456	0.451	0.456		2.088
10	PI	1359.2	1359.2	1315.2	1315.2	1274.2	1274.2	1257.2	1257.2		3.556
11	PI2 /1000	1847.4	1847.4	1729.8	1729.8	1623.6	1623.6	1580.6	1580.6		
12	Fr	0.018183	0.018183	0.018183	0.018183	0.018183	0.018183	0.018183	0.018183		
13	Fc=FrTZ	9.260	9.120	9.289	9.148	9.317	9.175	9.329	9.186		
14	FcQm	0.81	0.79	2.15	2.11	2.95	2.91	5.61	5.52		
15	L/H(FcQm)2	0.6	0.6	4.6	4.5	8.7	8.5	31.4	30.5		
16	Fw	0.2941242	0.2884748	2.0818102	2.0416433	3.9353935	3.8593847	14.168248	13.8918793		
17	Pw2	1847.7	1847.7	1731.8	1731.8	1627.5	1627.4	1594.7	1594.4		
18	Ps2	3378.8	3410.2	3160.9	3190.3	2965.2	2992.7	2903.2	2930.0		
19	Ps	1838.1	1846.7	1777.9	1786.1	1722.0	1729.9	1703.9	1711.7		
20	P	1598.7	1602.9	1546.5	1550.7	1498.1	1502.1	1480.5</			

**Laboratory Services, Inc.**

4016 Fiesta Drive
Hobbs, New Mexico 88240

Telephone: (505) 397-3713

FOR: Pro Well Testing & Wireline
P. O. Box 791
Hobbs, New Mexico 88241

SAMPLE:
IDENTIFICATION: Echols Com. #2
COMPANY: Gruy Petroleum
LEASE:
PLANT:

SAMPLE DATA: DATE SAMPLED: 4/9/03
ANALYSIS DATE: 4/10/03
PRESSURE ~ PSIG 209
SAMPLE TEMP. °F 74
ATMOS. TEMP. °F

GAS (XX) LIQUID ()
SAMPLED BY: B. P.
ANALYSIS BY: Vickie Biggs

REMARKS: Sample taken @ the meter run.
Morrow Formation

COMPONENT ANALYSIS

COMPONENT	MOL PERCENT	GPM
Hydrogen Sulfide (H ₂ S)		
Nitrogen (N ₂)	0.446	
Carbon Dioxide (CO ₂)	9.020	
Methane (C ₁)	88.711	
Ethane (C ₂)	1.514	0.404
Propane (C ₃)	0.222	0.061
I-Butane (IC ₄)	0.047	0.015
N-Butane (NC ₄)	0.040	0.013
I-Pentane (IC ₅)	0.000	0.000
N-Pentane (NC ₅)	0.000	0.000
Hexane Plus (C ₆ +)	0.000	0.000
	100.000	0.493

BTU/CU.FT. - DRY 931
AT 14.650 DRY 928
AT 14.650 WET 912
AT 14.73 DRY 933
AT 14.73 WET 917

MOLECULAR WT. 13.9276

SPECIFIC GRAVITY -
CALCULATED 0.654
MEASURED