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See Rule 401 & Rule 1122

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

Form C-122
Revised October, 1999

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Operator PATTERSON PETROLEUM LP				Lease or Unit Name HEYWARD "32" ST. COM			
Type Test ☒ Initial ☐ Annual ☐ Special				Test Date 11/15/03		Well No. 1	
Completion Date 11/08/03		Total Depth 13,670'		Plug Back TD 13,150'		Elevation 4075' GR	
Unit Ltr - Sec - TWP - Rge L, 32, 17-S, 34-E		County Lea		Pool Vacuum		Formation Atoka	
Csg. Size 5 1/2	Wt. 17 #	d 2.441	Set At 13,643'	Perforations: From: 12921 To: 12931		Baro. Press. - P _a 13.2	
Tbg. Size 2 7/8	Wt. 6.5	d 2.441	Set At 12886	Perforations: From: To:		Connection Duke Energy	
Type Well-Single-Bradenhead-G.G. or G.O. Multiple SINGLE				Packer Set At 12,890'		Meter Run 4.028	
Producing Thru TBG		Reservoir Temp. °F 182.6 @ 12886		Mean Annual Temp. °F 60		Taps FLG	
L 12886	H 12886	Gg 0.632	%CO ₂ 0.378	%N ₂ 1.538	%H ₂ S N/A	Prover N/A	Prover N/A
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	4 X	1.625	501	17	72	4065	PKR
2	4 X	1.625	506	41	74	3963	"
3	4 X	1.625	513	69	66	3887	"
4	4 X	1.625	517	93	58	3789	"
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							1,607
2							2,501
3	METERED	BY		TOTAL	FLOW	METER	3,332
4							3,912
5							
No.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio 225.24 Mcf/bbl.		
1					A.P. I. Gravity of Liquid Hydrocarbons 50.3 @ 60 Deg.		
2					Specific Gravity Separator Gas 0.632		
3		N/A			Specific Gravity Flowing Fluid XXXXXX G MIX = .646		
4					Critical Pressure 670 P.S.I.A.		
5					Critical Temperature 368		
P _c	4209.2	P _{c2}	17717.4				
No.	P _t ²	P _w	P _w ²	P _c ² - P _w ²	(1) P _c ² = 5.832 (2) $\left[\frac{P_c^2 - P_w^2}{P_c^2 - P_w^2} \right]^n =$		
1		4083	16670.5	1046.8	79825		
2		3987.9	15903	1814.3			
3		3921.1	15374.9	2342.5			
4		3831.4	14679.3	3038.1			
5							
Absolute Open Flow 17,536				Mcf @ 15.025		Angle of Slope (°): 49.6	
						Slope n: 0.851	
Remarks: WELL PRODUCED 2.1 BBLs 50.3 API GR. CONDENSATE							
Approved By Division: 		Conducted By: Metering & Testing Serv., Inc.		Calculated By: BM		Checked By: BM	

COMPANY : PATTERSON PETROLE LEASE : HAYWARD "32" ST. WELL NO. : 1
 UNIT : SECTION : TOWNSHIP :
 L : 12886 H : 12886 L/H : 1 G/GMIX : 0.646
 %CO2 : 0.378 %N2 : 1.538 H2S : DATE : 11-15-03
 d : 2.441 Pr : 0.010763 GH : 8324.4 RANGE :

Pc = 4209.2 Pc2 = 17717.4
 Pt2 = ***** Pw = 4083.0
 ***** 3987.9
 ***** 3921.1
 ***** 3831.4

VOL 1 : 1607 PSIA 1 : 4078.2 RESV.TEMP 182.6
 VOL 2 : 2501 PSIA 2 : 3976.2
 VOL 3 : 3332 PSIA 3 : 3900.2 SHUT-IN PR= 4209.2
 VOL 4 : 3912 PSIA 4 : 3802.2

PCR : 670
 TCR : 372

Pc2-Pw2= 1046.8 Pw2 = 16670.5
 1814.3 15903.0
 2342.5 15374.9
 3038.1 14679.3

n = 0.851

Pc2/(Pc2-Pw2) = 16.925
 9.765
 7.564
 5.832

[Pc2/Pc2-Pw2]n = 11.098
 6.951
 5.593
 4.483

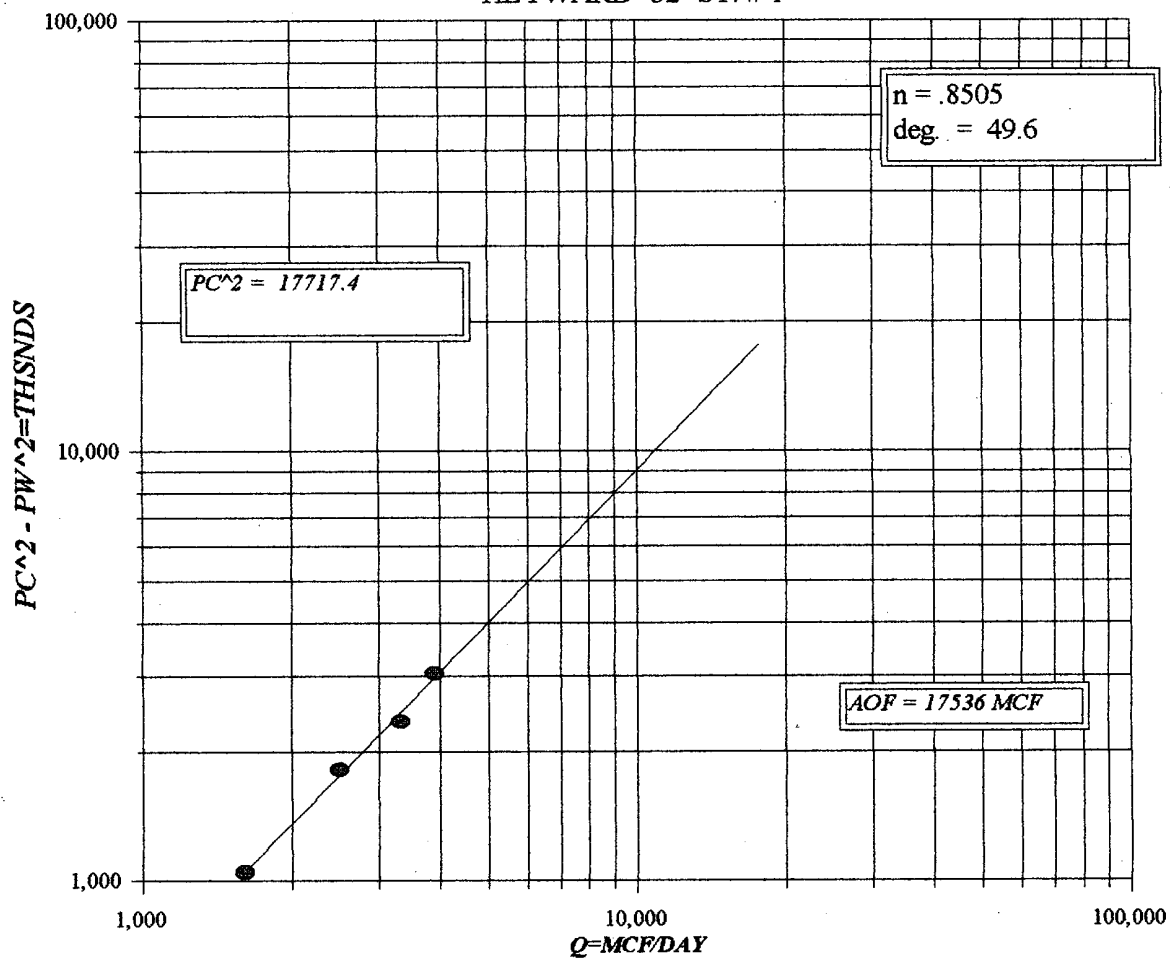
AOF= Q 17.834
 17.383
 18.635
 17.536

LINE		RATE 1		RATE 2		RATE 3		RATE 4	
		1ST	2ND	1ST	2ND	1ST	2ND	1ST	2ND
1	QM	1.607	1.607	2.501	2.501	3.332	3.332	3.912	3.912
2	TW	534	534	534	534	534	534	534	534
3	Ts	642.6	642.6	642.6	642.6	642.6	642.6	642.6	642.6
4	T	588.3	588.3	588.3	588.3	588.3	588.3	588.3	588.3
	PR (est)	6.09		5.93		5.82		5.67	
5	Z(est)	0.870	0.928	0.863	0.919	0.858	0.912	0.851	0.904
6	TZ	511.9	545.8	507.6	540.4	504.5	536.6	500.6	531.7
7	GH/TZ	16.261	15.253	16.399	15.403	16.500	15.513	16.629	15.658
8	eS	1.840	1.772	1.850	1.782	1.857	1.789	1.866	1.799
9	l-e-S	0.457	0.436	0.459	0.439	0.461	0.441	0.464	0.444
10	Pt	4078.2	4078.2	3976.2	3976.2	3900.2	3900.2	3802.2	3802.2
11	Pt2 /1000	16631.7	16631.7	15810.2	15810.2	15211.6	15211.6	14456.7	14456.7
12	Fr	0.010763	0.010763	0.010763	0.010763	0.010763	0.010763	0.010763	0.010763
13	Fc=FrTZ	5.510	5.874	5.464	5.817	5.430	5.776	5.388	5.722
14	FcQm	8.85	9.44	13.66	14.55	18.09	19.24	21.08	22.39
15	L/H(FcQm)	78.4	89.1	186.7	211.6	327.3	370.3	444.3	501.1
16	Fw	35.79109	38.81410	85.76393	92.85582	151.0343	163.3488	206.1377	222.53847
17	Pw2	16667.5	16670.5	15895.9	15903.0	15362.6	15374.9	14662.9	14679.3
18	Ps2	30669.3	29536.4	29400.9	28336.1	28522.5	27507.7	27354.8	26406.0
19	Ps	5538.0	5434.7	5422.3	5323.2	5340.6	5244.8	5230.2	5138.7
20	P	4808.1	4756.5	4699.2	4649.7	4620.4	4572.5	4516.2	4470.4
21	Pr	7.18	7.10	7.01	6.94	6.90	6.82	6.74	6.67
22	Tr	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
23	Z	0.928	0.923	0.919	0.915	0.912	0.908	0.904	0.900

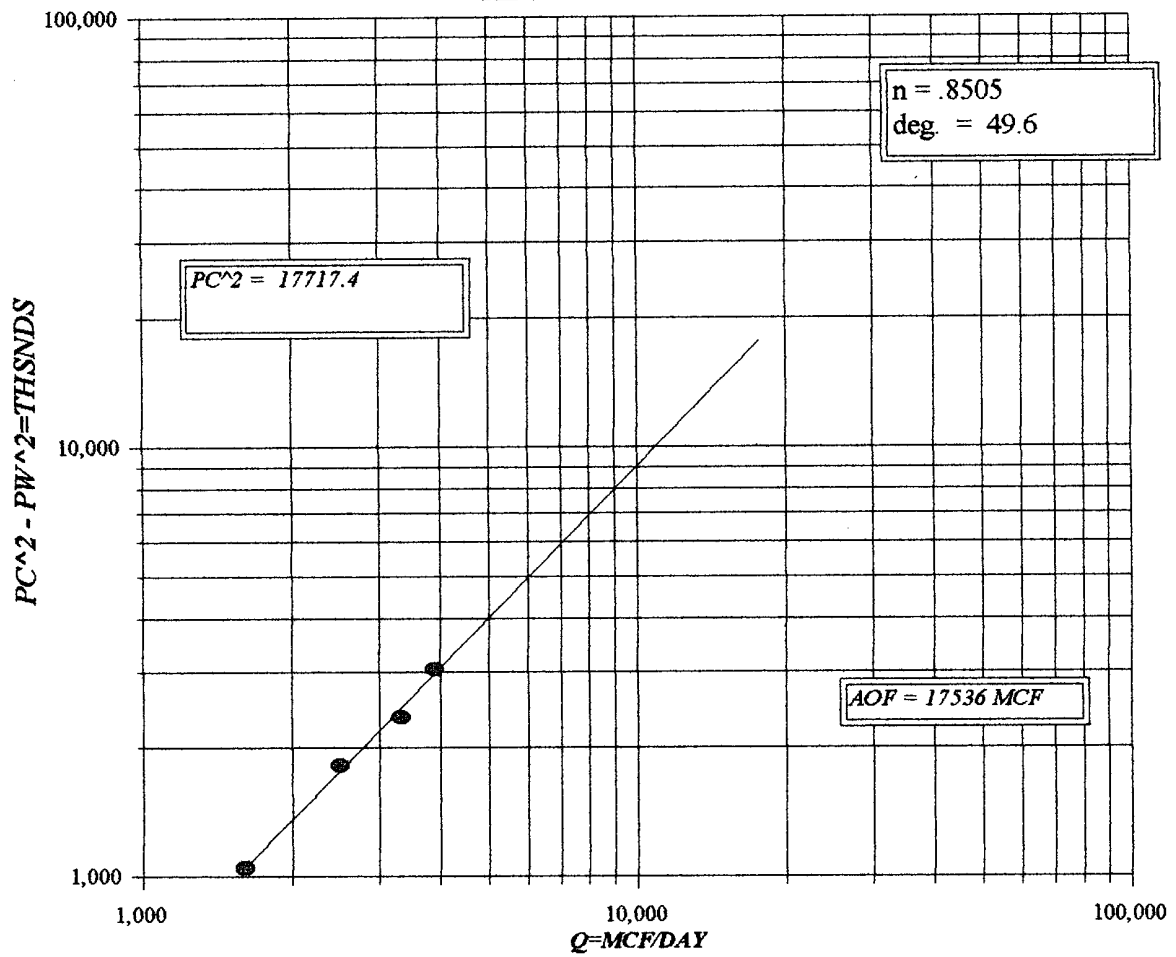
FORM C122-D

PATTERSON PETROLEUM

HEYWARD "32" ST. # 1



PATTERSON PETROLEUM
HEYWARD "32" ST. # 1



NEW MEXICO G.O.R./G. MIX

NO. OF BBLs PRODUCED = 2.1
API GRAVITY @ 60 DEG. = 50.3

.....
SPECIFIC GRAVITY OF GAS = 0.6320

XX

TOTAL GAS PRODUCED = 473

G.O.R. = 225.238

G.MIX = 0.646

**Laboratory Services, Inc.**

4016 Fiesta Drive
Hobbs, New Mexico 88240
Telephone: (505) 397-3713

ASTM DISTILLATION

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

Sample Date: 11/15/03
Sampled By: Dwayne

Patterson Petroleum
Heyward "32" St. #1

Percent DistilledTemperature

IBP	92
5	168
10	191
20	214
30	229
40	260
50	290
60	331
70	388
80	468
90	585
EP	668

% Recovered = 94.0
% Residue = 3.5
% Loss = 2.5

API Gravity @ 60° F = 50.3
Molecular Weight = 133

Rolland Perry

**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: Heyward "32" St. #1
COMPANY: Patterson Petroleum
LEASE:
PLANT:

SAMPLE DATA: DATE SAMPLED: 11/15/03
ANALYSIS DATE: 11/17/03
PRESSURE - PSIG 517
SAMPLE TEMP. °F 61
ATMOS. TEMP. °F

GAS (XX) LIQUID ()
SAMPLED BY: Dwayne
ANALYSIS BY: Vickie Biggs

REMARKS:

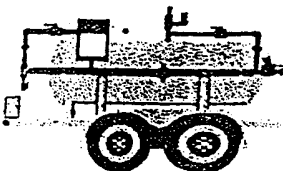
COMPONENT ANALYSIS

COMPONENT	MOL PERCENT	GPM
Hydrogen Sulfide (H2S)		
Nitrogen (N2)	1.538	
Carbon Dioxide (CO2)	0.378	
Methane (C1)	89.245	
Ethane (C2)	5.760	1.537
Propane (C3)	1.886	0.518
I-Butane (IC4)	0.248	0.081
N-Butane (NC4)	0.395	0.124
I-Pentane (IC5)	0.099	0.036
N-Pentane (NC5)	0.101	0.036
Hexane Plus (C6+)	0.350	0.152
	100.000	2.484

BTU/CU.FT. - DRY 1096
AT 14.650 DRY 1093
AT 14.650 WET 1074
AT 14.73 DRY 1099
AT 14.73 WET 1080

MOLECULAR WT. 18.3175

SPECIFIC GRAVITY -
CALCULATED 0.632
MEASURED



COMPANY PATTERSON PETROLEUM LEASE HEYWARD "32" STATE WELL #1
FORMATION _____ FIELD _____ COUNTY _____ STATE A.M.
TEST DATE 11-15-03 COMPLETION DATE _____ TYPE OF TEST 4 point
GAS GRAV _____ TUBING SIZE/IN. 2 7/8" 15 1/2" 17" PERFS FROM 12921' TO 12931'

[illegible]