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appropriate district office.
See Rule 401 & Rule 1122

3.005-63272

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

455

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Operator RELIANCE ENERGY				Lease or Unit Name WILLOW SPRING "21"			
Type Test ☒ Initial ☐ Annual ☐ Special						Test Date ES/11/99	Well No. 1
Completion Date 1-13-01		Total Depth 4050		Plug Back TD 4006		Elevation 3876'	Unit Ltr - Sec - TWP - Rge D 21 4S-25E
Csg. Size 5 1/2	Wt. 17	d 4.892	Set At 4006	Perforations: From: 3716 To: 4002		Country CHAVES	
Tbg. Size 2 3/8	Wt. 4.7	d 1.995	Set At 3682	Perforations: From: To:		Pool PECOS SLOPE ABO	
Type Well-Single-Bradenhead-G.G. or G.O. Multiple SINGLE				Packer Set At NONE		Formation ABO SAND	
Producing Thru TUBING		Reservoir Temp. °F	Mean Annual Temp. °F 60	Baro. Press. - P _a 13.2		Connection SALES	
L 3682	H 3682	Gg 0.841	%CO ₂ 0.102	%N ₂ 60.369	%H ₂ S N/A	Prover N/A	Meter Run 2.067
						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						980	N/A	PKR	N/A			
1	2.067 X .500		95	9	60	100				24 HRS		
2												
3												
4												
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	1.189	31.2	108.2	1	1.09	1.04	42
2							
3							
4							
5							

No.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio	N/A	Mcf bbl.
1	0.85	520	1.53	0.925	A.P.I. Gravity of Liquid Hydrocarbons	N/A	Deg.
2					Specific Gravity Separator Gas	0.841	XXXXXXX
3					Specific Gravity Flowing Fluid	N/A	XXXXXX N/A
4					Critical Pressure	607	P.S.I.A. P.S.I.A.
5					Critical Temperature	339	R R

P _c 993.2		P _{c2} 986.4	
No.	P _t ²	P _w	P _w ²
1	12.8	113.3	12.8
2			
3			
4			
5			

(1) $P_c^2 = \frac{1.013}{P_c^2 - P_w^2}$

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 43$

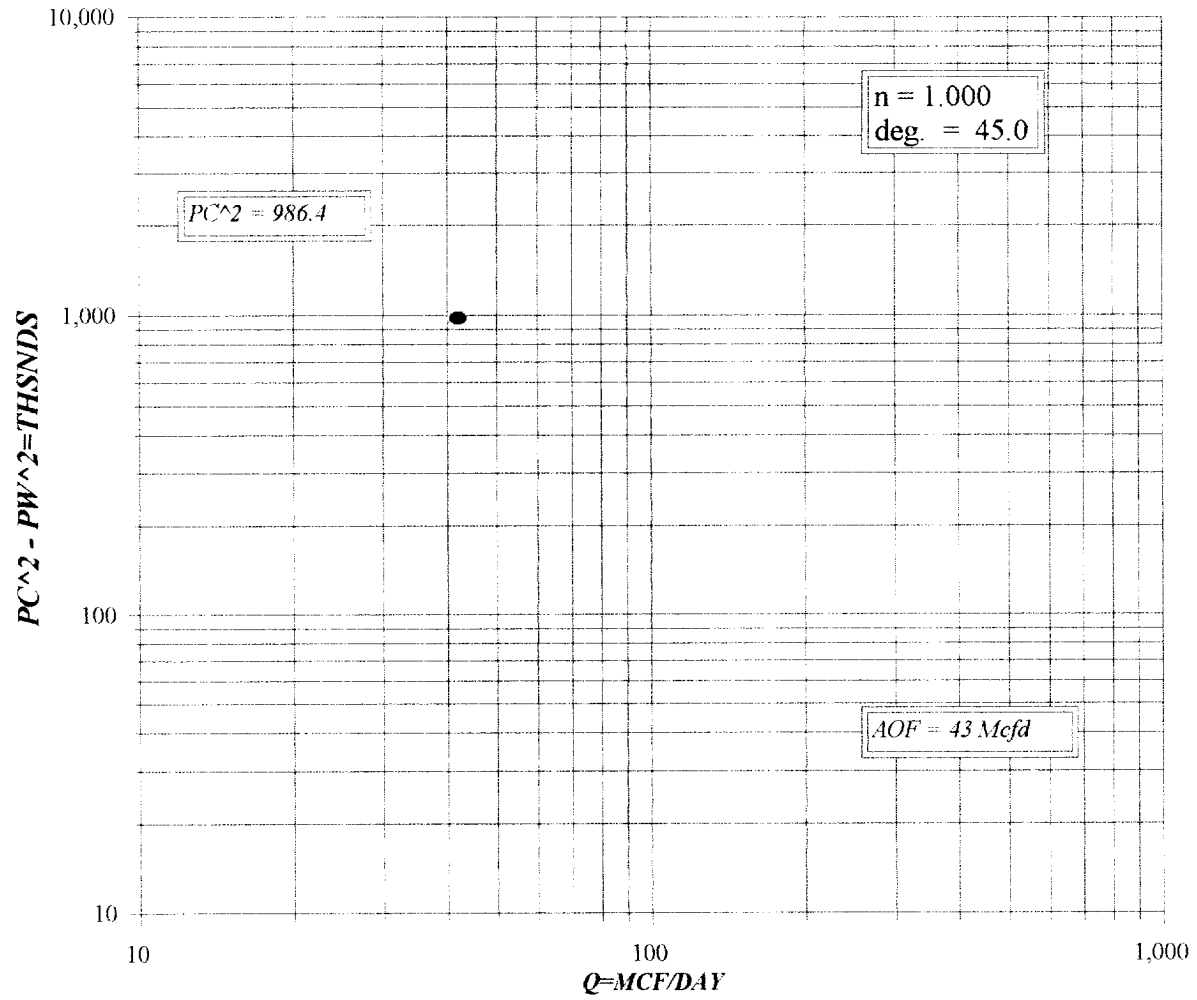
(2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1.013$

Absolute Open Flow	43	Mcf/d @ 15.025	Angle of Slope (°)	45	Slope n:	1
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Remarks: *** NO LIQUID MADE DURING TEST.**

Approved By Division:	Conducted By: PRO WELL TESTING	Calculated By: MERV BUECKER	Checked By: BM
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RELIANCE ENERGY
WILLOW SPRING "21" #1



UNIT : SECTION : TOWNSHIP :
 L : 3682 H : 3682 L/ 1 G/GMIX : 0.841
 WCO2 : 0.102 W2 : 60.369 H2S : DATE :
 d : 1.995 Pr : 0.018231 GH : 3096.6 RANGE :

VOL 1 : 42 PSIA 1 : 113.2 RESV.TEMP 110.8
 VOL 2 : PSIA 2 :
 VOL 3 : PSIA 3 : SHUT-IN PR= 993.2
 VOL 4 : PSIA 4 :

PCR : 607
 TCR : 339

LINE	RATE 1		RATE 2		RATE 3		RATE 4	
	1ST	2ND	1ST	2ND	1ST	2ND	1ST	2ND
1 QM	0.042	0.042	0.000	0.000	0.000	0.000	0.000	0.000
2 TW	534	534	534	534	534	534	534	534
3 Ts	570.8	570.8	570.8	570.8	570.8	570.8	570.8	570.8
4 T	552.4	552.4	552.4	552.4	552.4	552.4	552.4	552.4
PR (est)	0.19		0.00		0.00		0.00	
5 z(est)	0.962	0.961	ERR	ERR	ERR	ERR	ERR	ERR
6 TZ	531.3	530.8	ERR	ERR	ERR	ERR	ERR	ERR
7 GH/TZ	5.829	5.834	ERR	ERR	ERR	ERR	ERR	ERR
8 eS	1.244	1.245	ERR	ERR	ERR	ERR	ERR	ERR
9 l-e-S	0.196	0.196	ERR	ERR	ERR	ERR	ERR	ERR
10 Pt	113.2	113.2	0.0	0.0	0.0	0.0	0.0	0.0
11 Pt2 /1000	12.8	12.8	0.0	0.0	0.0	0.0	0.0	0.0
12 Pr	0.018231	0.018231	0.018231	0.018231	0.018231	0.018231	0.018231	0.018231
13 Pc=PrTZ	9.685	9.677	ERR	ERR	ERR	ERR	ERR	ERR
14 PcQm	0.41	0.41	ERR	ERR	ERR	ERR	ERR	ERR
15 J/H(PcQm)	0.2	0.2	ERR	ERR	ERR	ERR	ERR	ERR
16 Pw	0.032489	0.032459	ERR	ERR	ERR	ERR	ERR	ERR
17 Pw2	12.8	12.8	ERR	ERR	ERR	ERR	ERR	ERR
18 Ps2	16.0	16.0	ERR	ERR	ERR	ERR	ERR	ERR
19 Ps	126.4	126.4	ERR	ERR	ERR	ERR	ERR	ERR
20 P	119.8	119.8	ERR	ERR	ERR	ERR	ERR	ERR
21 Pr	0.20	0.20	ERR	ERR	ERR	ERR	ERR	ERR
22 Tr	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63
23 Z	0.961	0.961	ERR	ERR	ERR	ERR	ERR	ERR

Pt2 = Pw = 113.3
 0.0 ERR
 0.0 ERR
 0.0 ERR
 Pc2-Pw2= 973.6 Pw2 = 12.8
 ERR ERR
 ERR ERR
 ERR ERR
 n = 1.000
 Pc2/(Pc2-Pw2) = 1.013
 ERR
 ERR
 ERR
 [Pc2/Pc2-Pw2]n = 1.013
 ERR
 ERR
 ERR
 AOF= Q 0.043
 ERR
 ERR
 ERR

FORM C122-D