

OIL CONSERVATION DIVISION

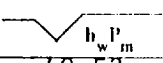
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Confidential

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Operator POGO PRODUCING					Lease or Unit Name R. T. FED 34				
Type Test ☒ Initial ☐ Annual ☐ Special					Test Date 1-16-93		Well No. 1		
Completion Date 1-1-93		Total Depth 15300		Plug Back TD 14128		Elevation		Unit Lr. - Sec. - TWP - Rgs. 34 - 22 - 32	
Csg. Size 5"	Wt. 18#	d	Set At 15300	Perforations: From: 13969 To: 13974			County LEA		
Tbg. Size 2 7/8 - 2 3/8	Wt. 8.7	d	Set At 11463' 2400'	Perforations: From: To:			Pool		
Type Well - Single - Bradenhead - G.G. or G.O. Multiple single				Packer Set At 13863			Formation UPPER ATOKA		
Producing Thru tbg		Reservoir Temp. °F 213 @ 13863		Mean Annual Temp. °F 60		Baro. Press - P _a 13.2		Connection Vented	
L 13863	H 13863	Gg .633	% CO ₂ .49	% N ₂ 1.05	% H ₂ S	Prover		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						7627		PKR		72 hr.
1.	4 X 2.000		600	4.00	99	7049		"		1 hr.
2.	4 X 2.000		615	8.50	104	6565		"		1 hr.
3.	4 X 2.000		615	10.50	102	6325		"		1 hr.
4.	4 X 2.000		615	17.00	97	5860		"		1 hr.
5.										

RATE OF FLOW CALCULATIONS							
NO.	COEFFICIENT (24 HOUR)		Pressure P _m	Flow Temp. Factor Ft.	Gravity Factor Fg.	Super Compress. Factor, F _{pv} .	Rate of Flow Q, Mcfd
1.	19.81	49.53	613.2	.9645	1.257	1.048	1,247
2.	19.81	73.07	628.2	.9602	1.257	1.049	1,833
3.	19.81	81.22	628.2	.9619	1.257	1.049	2,041
4.	19.81	103.34	628.2	.9662	1.257	1.049	2,608
5.							

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio	Mcf/bbl.
1.	.91	559	1.53	.910	161.1	
2.	.93	564	1.54	.908	67.7 @ 60°	Deg.
3.	.93	562	1.53	.908	.633	XXXXXXXXXX
4.	.93	557	1.52	.908	Specific Gravity Separator Gas	GMIX = .649
5.					Specific Gravity Flowing Fluid	XXXXXX
					Critical Pressure	*669 P.S.I.A.
					Critical Temperature	*365 R

P_c **7640.2** P_c² **58372.7**

NO.	P _t ²	P _w	P _w ²	P _c ² - P _w ²
1.		7066.6	49936.6	8436.1
2.		6587.8	43399.7	14973.0
3.		6349.8	40320.4	18052.3
4.		5893.5	34733.0	23639.7
5.				

1) $\frac{P_c^2}{P_c^2 - P_w^2} = \underline{2.469}$

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = \underline{5.336}$

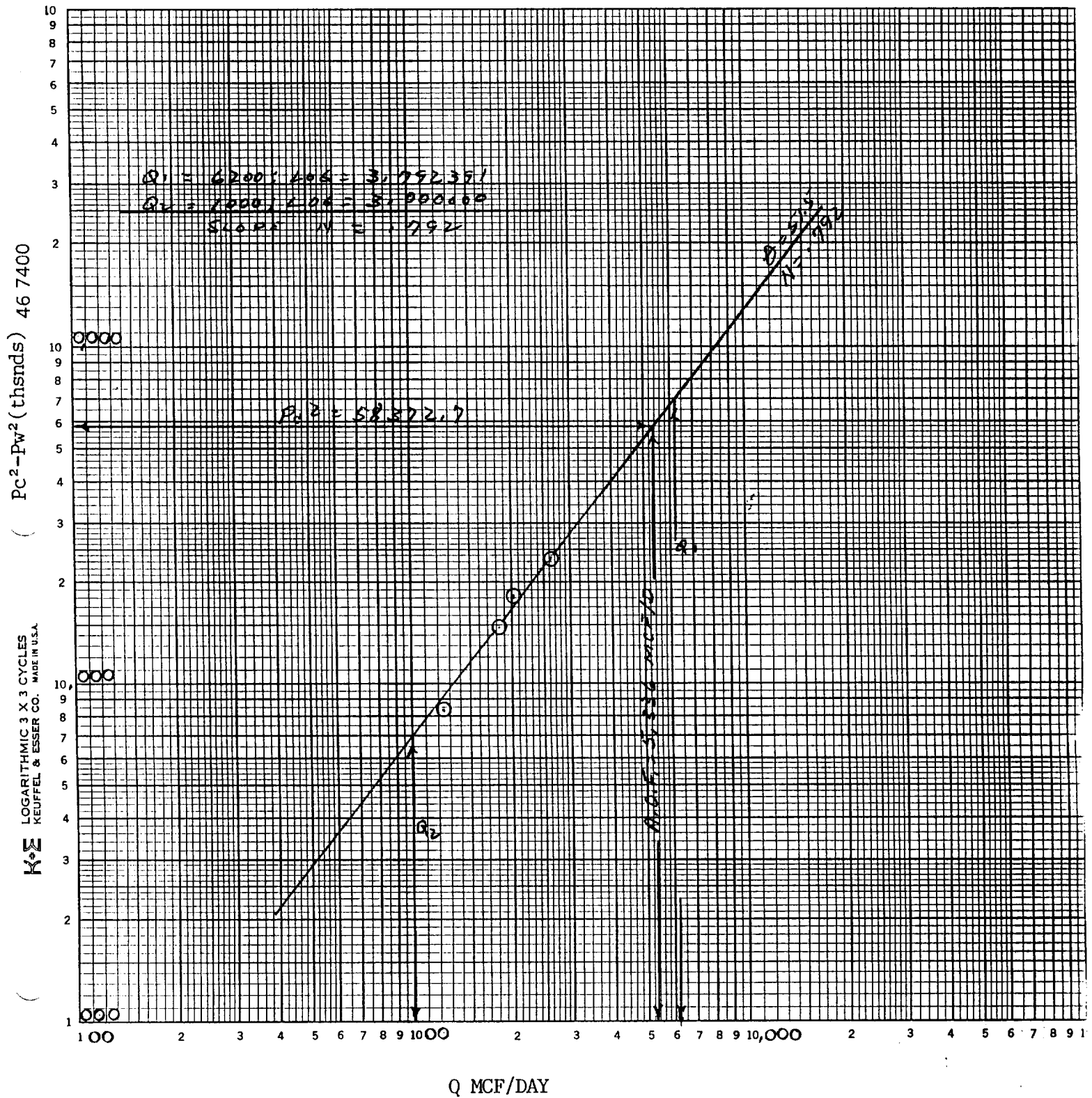
2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = \underline{2.046}$

Absolute Open Flow 5,336	Mcf/d @ 15.025	Angle of Slope θ 51.5	Slope, n .792
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Remarks: *** corrected to 1.05% N₂**
Well made 2.00 BBLS of 67.7 API Gr. Condensate during test.

Approved By Division	Conducted By: PRO WELL TESTERS	Calculated By: BM	Checked By: BM
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POGO PRODUCING
R. T. Federal 34, Well #1
34-22-32
Lea County, New Mexico
1-16-93



Laboratory Services1331 Tasker Drive
Hobbs, New Mexico 88240

Telephone: (505) 397-3713

FOR:

Pro Well Testing & Wireline
Attention: Mr. Bruce Stingley
P. O. Box 791
Hobbs, New Mexico 88240

SAMPLE

IDENTIFICATION: RT Federal 34 - 1
COMPANY: Pogo Producing Co.
LEASE:
PLANT:

SAMPLE DATA:	DATE SAMPLED:	1/10/93 9:00AM	GAS (XX)	LIQUID ()
	ANALYSIS DATE:	01-10-93	SAMPLED BY:	Stingley-Pro Well
	PRESSURE - PSIG	590.00	ANALYSIS BY:	Rolland Perry
	SAMPLE TEMP. °F	87.00		
	ATMOS. TEMP. °F	30.00		

REMARKS:

COMPONENT ANALYSIS

COMPONENT	MOL PERCENT	GPM	
Hydrogen Sulfide (H2S)			
Nitrogen (N2)	1.05		
Carbon Dioxide (CO2)	0.49		
Methane (C1)	90.53		
Ethane (C2)	4.99	1.327	
Propane (C3)	1.28	0.351	
I-Butane (IC4)	0.25	0.081	
N-Butane (NC4)	0.28	0.088	
I-Pentane (IC5)	0.22	0.079	
N-Pentane (NC5)	0.12	0.043	
Hexane (C6)	0.79	0.341	
Heptanes Plus (C7+)	0.00	0.000	
	100.00	2.310	
BTU/CU.FT. - DRY	1103	MOLECULAR WT.	18.3301
AT 14.650 DRY	1107		
AT 14.650 WET	1087	26# GASOLINE -	0.492
AT 15.025 DRY	1079		
AT 15.025 WET	1060		
SPECIFIC GRAVITY -			
CALCULATED	0.633		
MEASURED			

WORKSHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (P_w)

Form C-122D
Adapted 9-1-65

COMPANY POSCO PRODUCING LEASE R.T. FED. 34 WELL NO. 1 DATE 1-16-93

LOCATION: Unit 13863 Section 34 Township 22 Range 32

L 13863 H 13863 L/H 1.000 G 645 M/A 645 % CO₂ .49 % N₂ 1.05 % H₂S

$2\frac{7}{8} = 11463'$ $2\frac{7}{8} = 2400'$ $\frac{2400}{11463} = .21$ $F_1 = .013834$ GH 8997.1 P_{cr} 669 T_{cr} 369

① RATE

② RATE

③ RATE

TABLE IX & X
(4) RATE

LINE	1ST	2ND	1ST	2ND	1ST	2ND	1ST	2ND
1 Q _m	1.247	1.247	1.833	1.833	2.041	2.041	2.668	2.668
2 T _w (W.H. °R)	534	534	534	534	534	534	534	534
3 T _g (B.H. °R)	673	673	673	673	673	673	673	673
4 T = ($\frac{T_w + T_g}{2}$)	603.5	603.5	603.5	603.5	603.5	603.5	603.5	603.5
5 Z (Est.)	1.165	1.265	1.119	1.212	1.095	1.187	1.049	1.139
6 T ₂	703.0	763.4	673.3	735.0	661.8	716.3	633.0	687.3
7 GH/T ₂	12.796	11.785	13.322	12.306	13.614	12.559	14.211	13.688
8 e ^s (Table XIV)	1.615	1.555	1.648	1.586	1.666	1.601	1.703	1.633
9 1-e ^s (Table XIV)	.381	.357	.393	.369	.399	.375	.413	.387
10 P ₁	7062.2	7062.2	6578.2	6578.2	6338.2	6335.2	5873.2	5873.2
11 P ₁ 2/1000	49874.7	49874.7	43272.7	43272.7	40172.8	40172.8	34494.5	34494.5
12 F ₁ (Table XV)	.013834	.013834	.013834	.013834	.013834	.013834	.013834	.013834
13 F ₂ = F ₁ T ₂	9.726	10.561	9.342	10.113	9.141	9.910	9.757	9.509
14 F ₃ Q _m	12.128	13.169	17.124	18.538	18.658	20.226	22.840	24.860
15 L/H (F ₃ Q _m) 2	147.1	173.4	293.2	343.6	348.1	409.1	521.6	615.0
16 F ₄ = L/H (F ₃ Q _m) ² (1-e ^{-s})	56.06	61.95	115.31	127.04	135.20	153.66	215.52	238.56
17 P _w 2 = P ₁ 2 + F ₄	49930.7	<u>49936.6</u>	43358.0	<u>43399.7</u>	40311.9	<u>40320.4</u>	34716.0	<u>34733.0</u>
18 P _w 2 = e ^s P _w 2	80681.9	77687.7	71506.4	68851.4	67168.4	64585.5	59143.7	56742.5
19 F ₅	8982.3	8814.0	8456.1	8297.6	8195.6	8036.5	7690.4	7532.7
20 P = ($\frac{P_1 + P_w}{2}$)	8022.2	7938.1	7517.1	7437.9	7266.9	7187.5	6781.8	6702.9
21 P ₁ = (P/P _{cr})	11.99	11.86	11.23	11.11	10.86	10.74	10.13	10.01
22 T ₁ = (T/T _{cr})	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63
23 Z (Table XI)	1.265	1.256	1.212	1.203	1.187	1.178	1.139	1.131

* = P_{atm}