

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

SEP 07 '90

disf.
File

Type Test ☒ Initial ☐ Annual ☐ Special		Test Date 8/21/90		O. C. D. ADDRESS OFFICE	
Company Pacific Enterprises Oil Co.		Connection Enron		Unit	
Field South Carlsbad		Formation Strawn		Farm or Lease Name Mary Knobel	
Completion Date 7/3/90		Total Depth 12,003		Plug Back TD 11,247	
Elevation 3,167 GL		Well No. 1		Unit Sec. Twp. Rge. J 32 22S 27E	
Casing Size 4 1/2		Set At 11,986		Perforations From 10,570 To 11,086	
Tub. Size 2 3/8		Set At 10,447		Perforations From open To end	
Type Well - Single - Drilled - G.C. or G.C. Multiple Single		Packer Set At 10,447		Country Eddy	
Producing Thru Tbg.		Reservoir Temp. °F 178° 10,447'		Mean Annual Temp. °F 60°	
Baro. Press. - P _a 13.2		State NM		Meter Run 2.067	
L 10,447		H 10,447		G _a .588	
% CO ₂ .67		% N ₂ 1.41		% H ₂ S --	
Prover 10,447		Meter Run 2.067		Flg. Flg.	

FLOW DATA						TUBING DATA		CASING DATA		Duration of Flow	
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. in. Hg	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.		Temp. °F
SI							2134		Pkr.		24 hrs.
1.	2	x	.750	360	14.00	57	1910		Pkr.		1 hr.
2.	2	x	.750	360	29.00	60	1650		Pkr.		1 hr.
3.	2	x	.750	360	35.00	60	1255		Pkr.		1 hr.
4.	2	x	.750	360	62.00	60	1055		Pkr.		1 hr.
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor F _t	Gravity Factor F _g	Super Compress. Factor F _{sp}	Rate of Flow Q, Mcf
1.	2.709	72.28	373.2	1.003	1.304	1.033	265
2.	2.709	104.03	373.2	1.000	1.304	1.033	380
3.	2.709	114.29	373.2	1.000	1.304	1.033	417
4.	2.709	152.11	373.2	1.000	1.304	1.033	555
5.							

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio	Dry Gas	Mcf/bbl.
1.	.55	517	1.47	.937	A.P.I. Gravity of Liquid Hydrocarbons	Dry	Dec.
2.	.55	520	1.48	.937	Specific Gravity Separator Gas	.588	XXXXXXX
3.	.55	520	1.48	.937	Specific Gravity Flowing Fluid	XXXXX	
4.	.55	520	1.48	.937	Critical Pressure	*671	P.S.I.A.
5.					Critical Temperature	*347	R

NO.	P _r	P _w	P _w ²	P _r ² - P _w ²
1.	2147.2	4610.5		
1.		1923.7	3700.7	909.8
2.		1664.5	2770.5	1840.0
3.		1270.3	1613.6	2996.9
4.		1072.7	1150.7	3459.8
5.				

(1) $\frac{P_r^2}{P_r^2 - P_w^2} = 1.332$		(2) $\left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 1.172$	
AOF = Q $\left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = .650$			

Absolute Open Flow		Mcf @ 13.025		Angle of Slope		Slope, n	
650		61		.554			

Remarks: No fluid produced during test
* = corrected to 1.41 % N₂

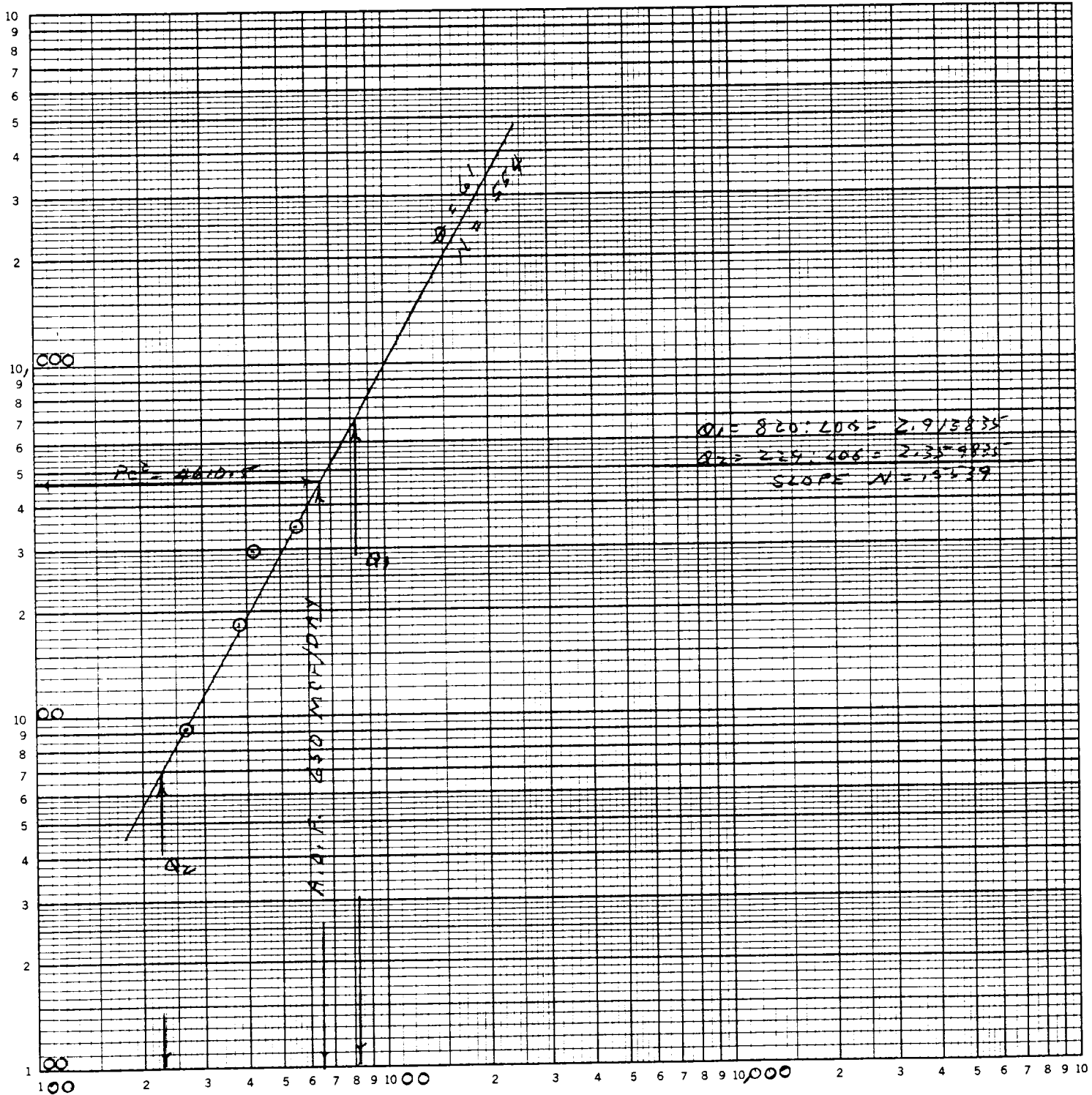
Approved By Division	Conducted By:	Calculated By:	Checked By:
	John West Engineering	BM	BM

PACIFIC ENTERPRISES OIL COMPANY
Mary Knobel No. 1

J - 32 - 22S - 27E
Eddy County, NM
August 21, 1990

Pc2 - Pw2 (Thsnds.)
46 7400

LOGARITHMIC 3 X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.



Q - MCF/DAY

WORKSHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (P_w)

COMPANY PACIFIC ENTERPRISES DEVELOPMENT MARY KNOBEL WELL NO. 1 DATE 8-21-90

LOCATION: Unit 1 Section 32 Township 22S Range 22E

L10447 L/H 1.000 G 588 % CO₂ .67 % N₂ 1.41 % H₂S —

d 1.995 F_r 1018231 GH 6142.8 P_{cr} 671 T_{cr} 342

LINE	1ST	2ND	3RD	4TH	5TH	6TH	7TH	8TH	9TH	10TH	11TH	12TH	13TH	14TH	15TH	16TH	17TH	18TH	19TH	20TH	21TH	22TH	23TH
1 Q _m	1.265	.265	.380	.417	.555	.555	.555	.555	.555	.555	.555	.555	.555	.555	.555	.555	.555	.555	.555	.555	.555	.555	.555
2 T _w (W.H. °H)	5.34	5.34	5.34	5.34	5.34	5.34	5.34	5.34	5.34	5.34	5.34	5.34	5.34	5.34	5.34	5.34	5.34	5.34	5.34	5.34	5.34	5.34	5.34
3 T _s (B.H. °H)	6.38	6.38	6.38	6.38	6.38	6.38	6.38	6.38	6.38	6.38	6.38	6.38	6.38	6.38	6.38	6.38	6.38	6.38	6.38	6.38	6.38	6.38	6.38
4 T = ($\frac{1}{w} + \frac{1}{s}$)	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86	5.86
5 Z (Est.)	.829	.820	.841	.867	.883	.883	.883	.883	.883	.883	.883	.883	.883	.883	.883	.883	.883	.883	.883	.883	.883	.883	.883
6 T ₂	4.857	4.805	4.928	5.081	5.174	5.174	5.174	5.174	5.174	5.174	5.174	5.174	5.174	5.174	5.174	5.174	5.174	5.174	5.174	5.174	5.174	5.174	5.174
7 GH/TZ	12.644	12.783	12.464	12.629	12.050	12.260	12.260	12.260	12.260	12.260	12.260	12.260	12.260	12.260	12.260	12.260	12.260	12.260	12.260	12.260	12.260	12.260	12.260
8 e ^s (Table XIV)	1.606	1.615	1.595	1.605	1.573	1.583	1.583	1.583	1.583	1.583	1.583	1.583	1.583	1.583	1.583	1.583	1.583	1.583	1.583	1.583	1.583	1.583	1.583
9 1-e ^s (Table XIV)	.377	.380	.373	.377	.364	.368	.368	.368	.368	.368	.368	.368	.368	.368	.368	.368	.368	.368	.368	.368	.368	.368	.368
10 P ₁	1923.2	1923.2	1665.2	1665.2	1268.2	1268.2	1268.2	1268.2	1268.2	1268.2	1268.2	1268.2	1268.2	1268.2	1268.2	1268.2	1268.2	1268.2	1268.2	1268.2	1268.2	1268.2	1268.2
11 P ₁ 2/1000	3698.7	3698.7	2766.2	2766.2	1608.3	1608.3	1608.3	1608.3	1608.3	1608.3	1608.3	1608.3	1608.3	1608.3	1608.3	1608.3	1608.3	1608.3	1608.3	1608.3	1608.3	1608.3	1608.3
12 F ₁ (Table XV)	.018231	.018231	.018231	.018231	.018231	.018231	.018231	.018231	.018231	.018231	.018231	.018231	.018231	.018231	.018231	.018231	.018231	.018231	.018231	.018231	.018231	.018231	.018231
13 F _c = F ₁ T ₂	8.856	8.760	8.584	8.567	9.262	9.262	9.262	9.262	9.262	9.262	9.262	9.262	9.262	9.262	9.262	9.262	9.262	9.262	9.262	9.262	9.262	9.262	9.262
14 F _c Q _m	2.346	2.321	3.414	3.369	3.862	3.862	3.862	3.862	3.862	3.862	3.862	3.862	3.862	3.862	3.862	3.862	3.862	3.862	3.862	3.862	3.862	3.862	3.862
15 1/H (F _c Q _m) ²	5.508	5.389	11.656	11.253	14.918	14.918	14.918	14.918	14.918	14.918	14.918	14.918	14.918	14.918	14.918	14.918	14.918	14.918	14.918	14.918	14.918	14.918	14.918
16 F _w = 1/H (F _c Q _m) ² (1-e ^s)	2.079	2.052	4.362	4.283	5.438	5.438	5.438	5.438	5.438	5.438	5.438	5.438	5.438	5.438	5.438	5.438	5.438	5.438	5.438	5.438	5.438	5.438	5.438
17 P _w ² = P ₁ ² + F _w	3700.7	3700.7	2770.5	2770.5	1613.7	1613.7	1613.7	1613.7	1613.7	1613.7	1613.7	1613.7	1613.7	1613.7	1613.7	1613.7	1613.7	1613.7	1613.7	1613.7	1613.7	1613.7	1613.7
18 P _w ² = e ^s P _w ²	5946.0	5946.0	4421.4	4421.4	2539.5	2539.5	2539.5	2539.5	2539.5	2539.5	2539.5	2539.5	2539.5	2539.5	2539.5	2539.5	2539.5	2539.5	2539.5	2539.5	2539.5	2539.5	2539.5
19 P _w	2438.4	2444.7	2102.7	2102.7	1593.5	1593.5	1593.5	1593.5	1593.5	1593.5	1593.5	1593.5	1593.5	1593.5	1593.5	1593.5	1593.5	1593.5	1593.5	1593.5	1593.5	1593.5	1593.5
20 P = ($\frac{1}{1} + \frac{1}{2}$)	2180.8	2183.9	1862.9	1862.9	1430.8	1430.8	1430.8	1430.8	1430.8	1430.8	1430.8	1430.8	1430.8	1430.8	1430.8	1430.8	1430.8	1430.8	1430.8	1430.8	1430.8	1430.8	1430.8
21 P ₁ = (P/P _{cr})	3.25	3.25	2.80	2.80	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13
22 T _r = (T/T _{cr})	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68
23 Z (Table XI)	.820	.820	.830	.830	.855	.855	.855	.855	.855	.855	.855	.855	.855	.855	.855	.855	.855	.855	.855	.855	.855	.855	.855



Laboratory Services

1331 Tasker Drive
Hobbs, New Mexico 88240

Telephone: (505) 397-3713

FOR: John West Engineering
Attention; Mr. Buz Thomason
412 N. Dal Paso
Hobbs, New Mexico 88240

STATION
SAMPLE
IDENTIFICATION: Mary K. Knobel #1
COMPANY: Pacific Enterprises
LEASE: Sec. 32 T 22s R 27 E
PLANT:

SAMPLE DATA:	DATE SAMPLED:	08/21/90 1:06PM	GAS (XX)	LIQUID ()
	ANALYSIS DATE:	08-23-90	SAMPLED BY:	John West Eng.
	PRESSURE - PSIG	360.00	ANALYSIS BY:	Rolland Perry
	SAMPLE TEMP. °F	60.00		
	ATMOS. TEMP. °F	85.00		

REMARKS:

COMPONENT ANALYSIS

COMPONENT	MOL PERCENT	GPM	
Oxygen (O2)			
Hydrogen Sulfide (H2S)			
Nitrogen (N2)	1.41		
Carbon Dioxide (CO2)	0.67		
Methane (C1)	94.77		
Ethane (C2)	2.49	0.664	
Propane (C3)	0.38	0.104	
I-Butane (IC4)	0.06	0.020	
N-Butane (NC4)	0.05	0.017	
I-Pentane (IC5)	0.01	0.004	
N-Pentane (NC5)	0.01	0.004	
Hexane (C6)	0.15	0.062	
Heptanes Plus (C7+)	0.00	0.000	
	100.00	0.875	
BTU/CU.FT. - DRY	1023	MOLECULAR WT	17.0169
AT 14.650 DRY	1019		
AT 14.650 WET	1002	26# GASOLINE -	0.076
AT 15.025 DRY	1046		
AT 15.025 WET	1027		
SPECIFIC GRAVITY -			
CALCULATED	0.588		
MEASURED	0.000		