

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special						Test Date 3-3-88			
Company MAXUS EXPLORATION						Connection NATURAL GAS PIPELINE			
Pool ANTELOPE RIDGE						Formation ATOKA			
Completion Date 1-13-88		Total Depth 13259		Plug Back TD 13259		Elevation 3395 GL		Farm or Lease Name FEDERAL 24-34	
Ceq. Size 5 1/2		Wi. 17.93		Set At 11368 13426		Perforations: From 12132 To 12164		Well No. 1	
The. Size 2 7/8 2 3/8		Wi. 6.5 4.7		Set At 11279.5 12101		Perforations: From To		Unit Sec. Twp. Rge. N 34 22S 34E	
Type Well - Single - Drilled - G.C. or G.O. Multiple Single						Packer Set At 12025		County Lea	
Producing Thru Tubing		Reservoir Temp. °F 175 @ 12198		Mean Annual Temp. °F 60		Baro. Press. - P _a 13.2		State New Mexico	
L 12148		H 12148		G _g 0.640		% CO ₂ 0.57		% N ₂ 0.96	
						% H ₂ S 0		Prover	
								Meter Run 4.026	
								Taps Flange	

FLOW DATA						TUBING DATA		CASING DATA		Duration of Flow	
NO.	Prover Line Size	X	Orifice 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	456 hours						7002		Pkr		
1.	4.026 x 1.000			740	4	84	6201	48	Pkr		1 hour
2.	4.026 x 1.000			740	11	75	5682	47	Pkr		1 hour
3.	4.026 x 1.000			740	24	83	5012	49	Pkr		1 hour
4.	4.026 x 1.000			740	48	52	4020	49	Pkr		1 hour
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 _{pv}	Rate of Flow Q, Mcfd
1	4.753	54.89	753.2	0.9777	1.250	1.065	339.568
2	4.753	91.02	753.2	0.9859	1.250	1.069	569.935
3	4.753	134.45	753.2	0.9786	1.250	1.065	832.518
4	4.753	190.14	753.2	1.008	1.250	1.082	1232.081
5.							

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio	A.P.I. Gravity of Liquid Hydrocarbons	Specific Gravity Separator Gas	Specific Gravity Flowing Fluid	Critical Pressure	Critical Temperature
1					24.561	57.5	0.640	X X X X X X X X		
2.	USED SIMPLIFIED									
3.	SUPERCOMPRESSIBILITY									
4.	TABLES									
5.										

NO.	P _r	P _s	P _s ²	P _f ² - P _s ²	(1) $\frac{P_f^2}{P_f^2 - P_s^2} =$	(2) $\left[\frac{P_f^2}{P_f^2 - P_s^2} \right]^n =$
1	8910.2	79391.7	66474.7	12917.0	1.85762	1.85762
2						
3						
4						
5						

NO.	P _r	P _s	P _s ²	P _f ² - P _s ²	AOF = Q $\left[\frac{P_f^2}{P_f^2 - P_s^2} \right]^n =$
1					2288.738
2					
3					
4					
5					

Absolute Open Flow 2288.738 Mcfd @ 15.025		Angle of Slope @ 44° 10'		Slope, n 1.0302	
Remarks:					
Approved By Division MAR 22 1988					
Conducted By: Tefteller, Inc.		Calculated By: Farrest Tefteller		Checked By:	

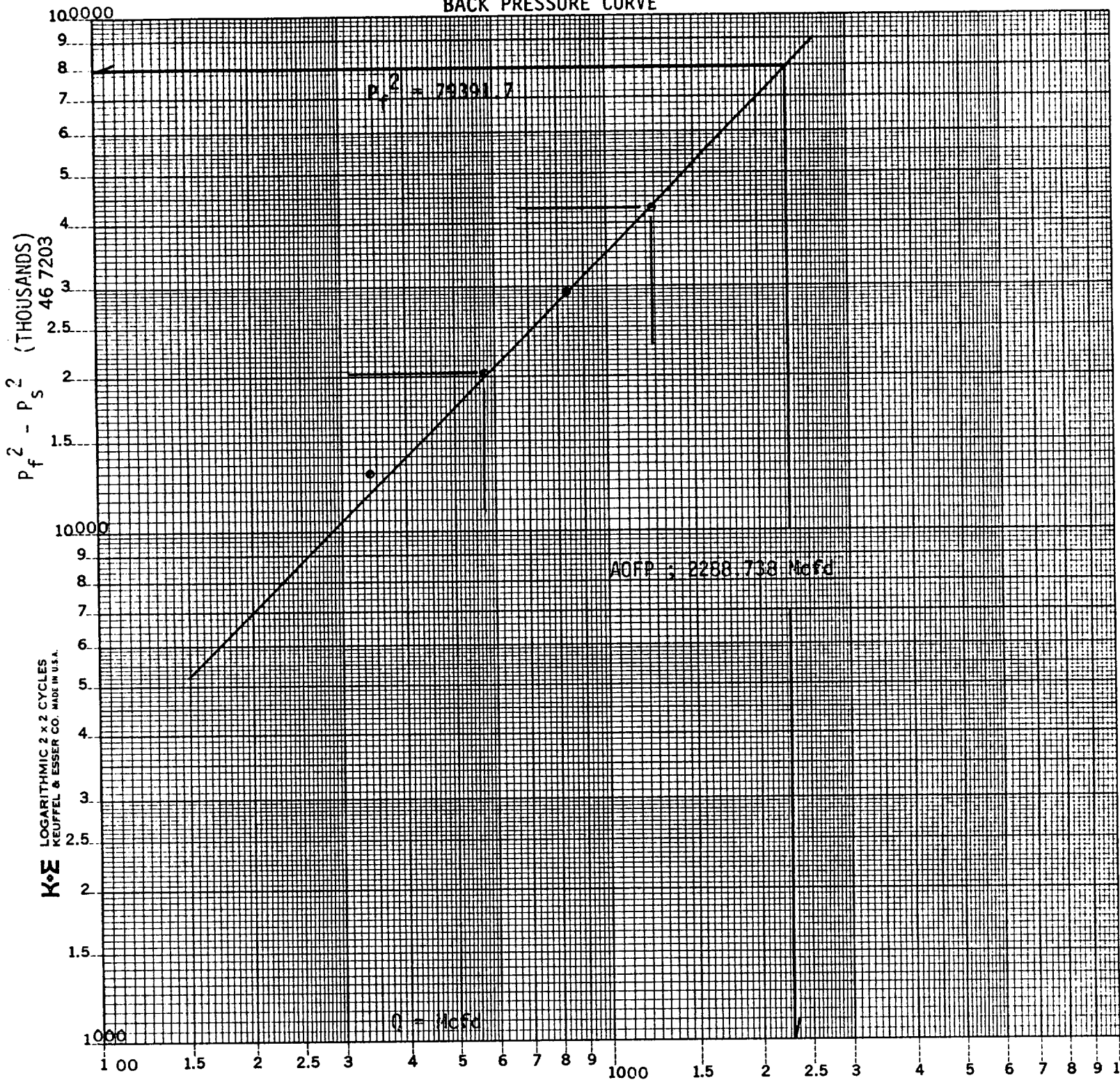
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MAR 21 1988

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HOBBS OFFICE

COMPANY : MAXUS EXPLORATION COMPANY
 WELL : FEDERAL 24-J, NO. 1
 FIELD : ANTELOPE RIDGE
 COUNTY : LEA
 STATE : NEW MEXICO
 DATE : MARCH 3, 1988

BACK PRESSURE CURVE



$Q_1 = 1232.081$; $\log = 3.090639$
 $Q_2 = 569.935$; $\log = 2.755825$
 $P_{f2}^2 - P_{s2}^2 = 42738.4$; $\log = 4.630318$
 $P_{f1}^2 - P_{s1}^2 = 20221.8$; $\log = 4.305820$

$$n = \frac{0.334814}{0.324998} = 1.03020$$