

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special						Test Date 9/23/83			
Company HNG Oil Company				Connection Transwestern Pipeline					
Pool Pitchfork Ranch				Formation Morrow				Unit	
Completion Date 6/13/83		Total Depth 15300'		Plug Back TD 15250'		Elevation 3410'GL		Farm or Lease Name Diamond 5 Federal	
Coq. Size 4 1/2"	Wt. 15.1	d	Set At 15300'	Perforations: From 15051' To 15131'				Well No. 1	
Trq. Size 2 7/8"	Wt. 6.5	d	Set At 13013'	Perforations: From Open To Ended				Unit Sec. Twp. Rge. C 5 25s 34e	
Type Well - Single - Bradenhead - G.G. or G.O. Multiple Single Gas						Packer Set At 13013'		County Lea	
Producing Thru Tubing		Reservoir Temp. °F 225# 15091'		Mean Annual Temp. °F 60°		Baro. Press. - P _a 13.2		State New Mexico	
L 15091	H 15091	G _g .5794	% CO ₂ .761	% N ₂ .243	% H ₂ S	Prover	Meter Run 4.026	Taps F	

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							6745	60	1500		24.0 hrs
1.	4	X	1.750	870	3.0	83	6300	60	1500		1.0 hr
2.	4	X	1.750	895	7.0	81	5945	60	1500		1.0 hr
3.	4	X	1.750	900	14.0	70	5500	60	1550		1.0 hr
4.	4	X	1.750	920	25.0	78	4958	60	1550		1.0 hr
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, Mcf/d
1	14.93	51.47	883.2	.9786	1.314	1.061	1048
2	14.93	79.73	908.2	.9804	1.314	1.063	1630
3	14.93	113.07	913.2	.9905	1.314	1.070	2351
4	14.93	152.74	933.2	.9831	1.314	1.065	3137
5							

NO.	P _t	Temp. °R	T _t	Z	Gas Liquid Hydrocarbon Ratio	Dry	Mcf/bbl.
1	1.31	543	1.55	.888	A.P.I. Gravity of Liquid Hydrocarbons	-	Deg.
2	1.35	541	1.55	.885	Specific Gravity Separator Gas	.5794	X X X X X X X X
3	1.36	530	1.51	.874	Specific Gravity Flowing Fluid	X X X X X	
4	1.39	538	1.54	.882	Critical Pressure	672	P.S.I.A. P.S.I.A.
5					Critical Temperature	350	R R

NO	BHPP, P ₁ ²	P _w ²	P _c ²	P _c ² - P _w ²
1	8081.2	6432.7	41379.2	4294.1
2	7706.2	6100.2	37212.6	8460.7
3	7192.2	5637.0	31775.4	13897.9
4	6715.2	5217.6	27223.3	18450.0
5	8566.2	SIP		

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 2.476$

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 6997$

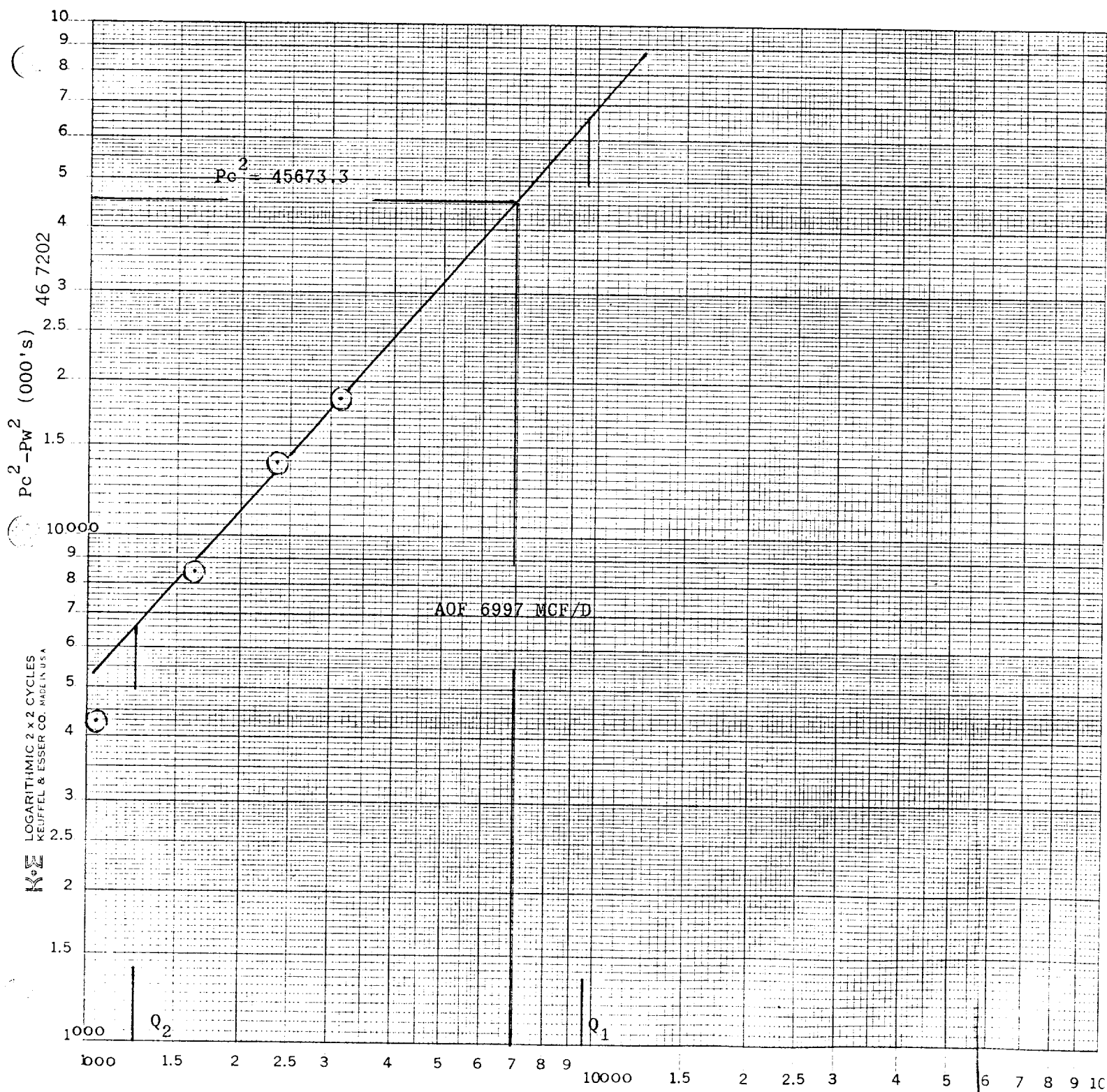
(2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 2.230$

Absolute Open Flow	6997	Mcf/d @ 15.025	Angle of Slope @ 48.5°	Slope, n 885
--------------------	------	----------------	------------------------	--------------

Remarks: DISTILLATE PRODUCED DURING THE TEST WAS TOO SMALL TO MEASURE.

Approved By Division	Conducted By: JARREL WELL TESTING INC.	Calculated By: Rick Pagan	Checked By:
----------------------	---	------------------------------	-------------

COMPANY: HNG Oil Company
 WELL: Diamond 5 Federal No. 1
 LOCATION: C 5 25s 34e
 COUNTY: Lea
 DATE: September 23, 1983



$$\begin{aligned}
 Q_1 \text{ Log } 9600 &= 3.982271 \\
 -Q_2 \text{ Log } 1250 &= 3.096910 \\
 N &= .885 \\
 \theta &= 48.5^\circ
 \end{aligned}$$