

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special				Test Date 9/21/83	
Company HNG Oil Company			Connection Transwestern Pipeline		
Pool Pitchfork Ranch			Formation Morrow		Unit
Completion Date 7/6/83		Total Depth 15130'		Plug Back TD 15025'	Elevation 3427'GL
Farm or Lease Name Madera 33 Federal Com					
Coal. Size 4 1/2"	Wt. 15.1	d -	Set At 15129	Perforations: From 14944' To 15000'	
Well No. 1					
Trq. Size 2 7/8"	Wt. 6.5	d -	Set At 12809	Perforations: From Open To Ended	
Unit Sec. Twp. Rge. E 33 24s 34e					
Type Well - Single - Bradenhead - G.G. or G.O. Multiple Single				Packer Set At 12809	
Producing Thru Tbg.		Reservoir Temp. °F 224 @ 14971'		Baro. Press. - P _g 13.2	
County Lea					
State New Mexico					
L 14971	H 14971	G _g .5940	% CO ₂ .446	% N ₂ .745	% 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	
1.	4	X	2.250	887	17.0	99	8562	67	PKR		24.0 hrs
2.	4	X	2.250	907	32.0	96	8455	67	PKR		1.0 hr
3.	4	X	2.250	932	55.0	86	8310	67	PKR		1.0 hr
4.	4	X	2.250	937	90.0	75	8087	67	PKR		1.0 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 _{ov}	Rate of Flow Q, Mscf/d
1	25.64	123.71	900.2	.9645	1.298	1.058	4201
2	25.64	171.60	920.2	.9671	1.298	1.061	5860
3	25.64	228.00	945.2	.9759	1.298	1.067	7901
4	25.64	292.43	950.2	.9859	1.298	1.072	10286
5							

NO.	P _r	Temp. °R	T _r	Z	Gas-Liquid Hydrocarbon Ratio	A.P.I. Gravity of Liquid Hydrocarbon	Specific Gravity Separator Gas	Specific Gravity Flowing Fluid	Critical Pressure	Critical Temperature
1	1.34	559	1.58	.894	64.670 Mcf/bbl.	49 @ 60 Deg.	.5940	.643	672 P.S.I.A.	354 °R
2	1.37	556	1.57	.889						
3	1.41	546	1.54	.878						
4	1.41	535	1.51	.870						
5										

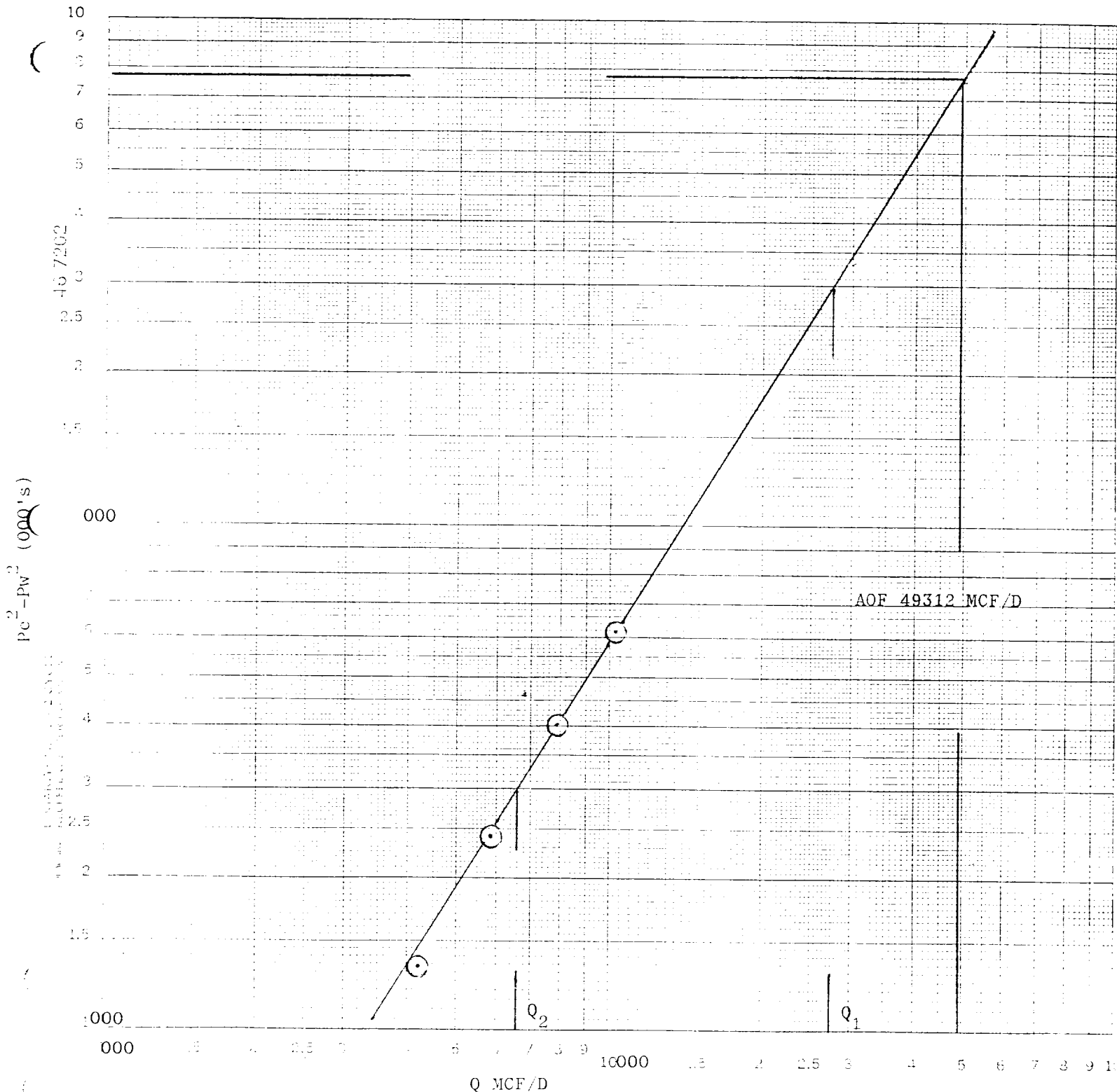
$P_c^2 = 8810.1$ $P_w^2 = 77618.6$				$(1) \frac{P_c^2}{P_c^2 - P_w^2} = 12.529$	$(2) \left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 4.794$
NO	BHP, P_w^2	P_w^2	$P_c^2 - P_w^2$		
1	10731.2	8733.8	76279.5		
2	10666.2	8672.2	75206.6		
3	10567.2	8579.2	73602.5		
4	10431.2	8451.2	71423.5		
5	10814.2	S.I.P.			

$AOF = Q \left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 49312$		
Absolute Open Flow	49312 Mscf/d @ 15.025	Angle of Slope $\theta = 58.25^\circ$
Slope, n = .620		

REMARKS: PRODUCED 18.2 BBLS. DISTILLATE DURING TEST
* CALCULATED FROM BHP RECORDED @ 14971'

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

COMPANY: HNG Oil Company
 WELL: Madera 33 Federal Com, No. 1
 LOCATION: F 33 24s 34e
 COUNTY: Lea
 DATE: September 6 , 1983



$$\begin{aligned}
 Q_1 \text{ Log } 27500 &= 4.439333 \\
 -Q_2 \text{ Log } 6600 &= 3.819544 \\
 N &= \frac{.620}{58.250}
 \end{aligned}$$