

45F

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS

RECEIVED BY

Type Test ☒ Initial ☐ Annual ☐ Special		Test Date 12/29/86	
Company HNG OIL COMPANY		Connection HNG Oil Company	
Pool Rustler Bluff-Atoka Gas		Formation Atoka	
Completion Date 5/19/86	Total Depth 12650'	Plug Back TD 12557'	Elevation 2926' GL
Farm or Lease Name Gulf 5 Federal		Well No. 1	
Csg. Size 4 1/2"	Wt. 12.7#	d 3.958	Set At 12650'
Perforations: From 12420' To 12429'		Well No. 1	
Tng. Size 2 3/8"	Wt. 6.5#	d 2.441	Set At 10184
Perforations: Open Ended		Unit H 5 25s 29e	
Type Well - Single - Bradenhead - G.G. or G.O. Multiple Single		Packer Set At 10184	
Producing Thru Tubing		State New Mexico	
L 10133'	H 10133'	Gg 0.573	% CO ₂ 0.589
% N ₂ 0.527	% H ₂ S -	Prover -	Meter Run 3.068
Taps Flg			

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. DWT	Temp. °F	Press. p.s.i.g.	Temp. °F	
SI							4820		PACKER		2.5 hrs
1.	3.068	X	1.125	510	5"	70	4670	61			1.0 hrs
2.	3.068	X	1.125	510	10"	74	4490	62			1.25 hrs
3.	3.068	X	1.125	510	17"	75	4091	61			1.5 hrs
4.	3.068	X	1.125	510	32"	74	3497	60			1.25 hrs
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor Ft.	Gravity Factor Fg	Super Compress. Factor, Fpv	Rate of Flow Q, Mcfd
1	6.095	51.15	523.2	0.9905	1.321	1.039	424
2	6.095	72.33	523.2	0.9868	1.321	1.038	597
3	6.095	94.31	523.2	0.9859	1.321	1.036	776
4	6.095	129.39	523.2	0.9868	1.321	1.038	1067
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NO.	R	Temp. °R	T _r	Z	Gas-Liquid Hydrocarbon Ratio	Dry Gas	Mcft/bbl.
1	.78	530	1.53	0.927	A.P.I. Gravity of Liquid Hydrocarbons		
2	.78	534	1.54	0.929	Specific Gravity Separator Gas	0.573	X X X X X X X X
3	.78	535	1.55	0.931	Specific Gravity Flowing Fluid	X X X X X	
4	.78	534	1.54	0.929	Critical Pressure	672 P.S.I.A.	
5					Critical Temperature	346 °R	

NO.	P ₁ ²	P _w	P _w ²	P _c ² - P _w ²
1	21932	4684.0	21940	1420
2	20279	4503.7	20283	3077
3	16844	4105.1	16851	6509
4	12321	3512.7	12339	11021
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 16.451$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 4.056$

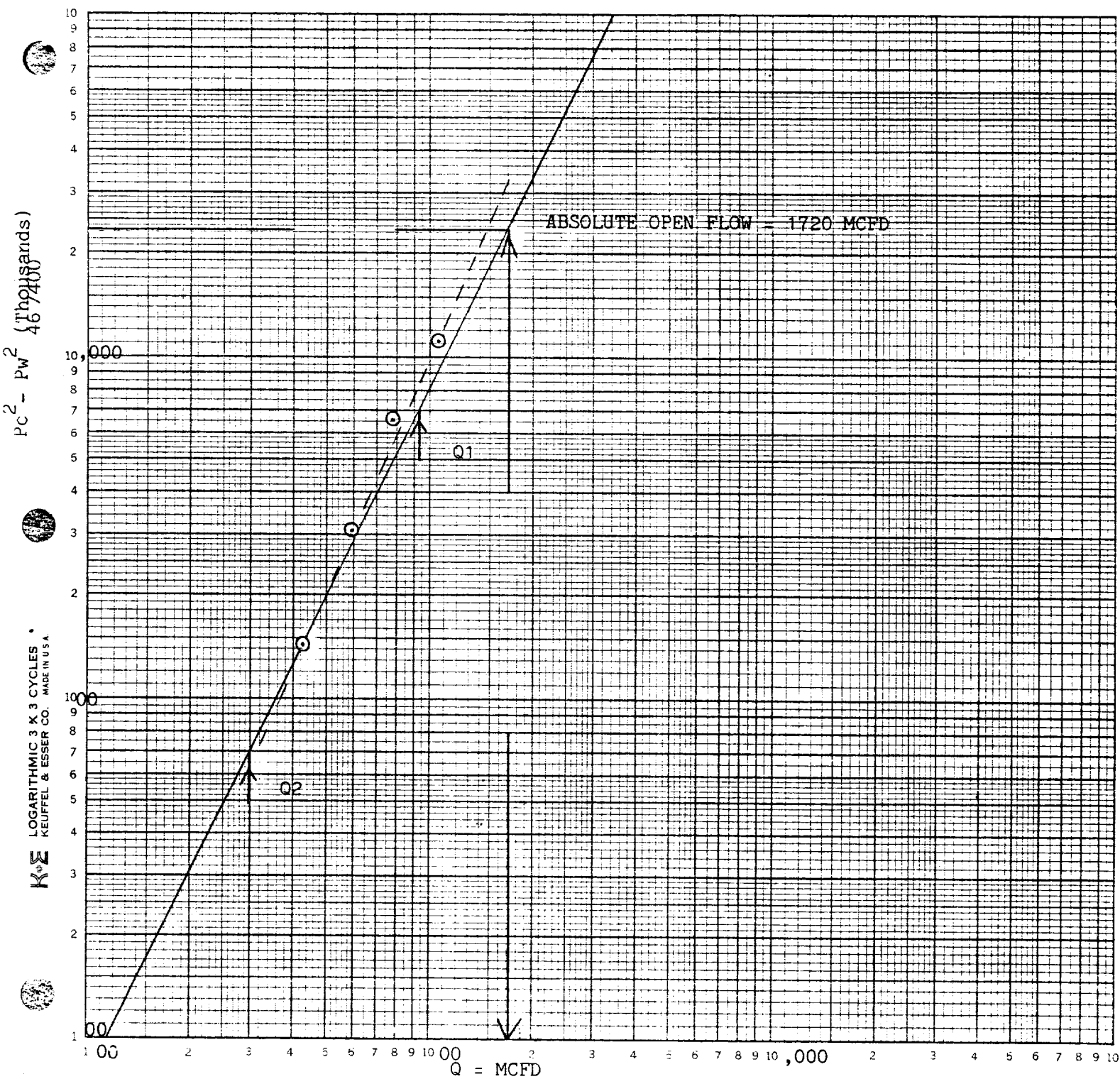
AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1720$

Absolute Open Flow	1720	Mcfd @ 15.025	Angle of Slope @	63.5°	Slope, n	.500
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Remarks: Equivalent ID and Friction Factor were calculated
Well made .75 Barrel H₂O during 4th Rate

Approved By Division	Conducted By: Jarrel Services, Inc.	Calculated By: D. Dickerson	Checked By: D. Dickerson
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COMPANY: HNG OIL COMP
 WELL: Gulf 5 Federal, Well No. 1
 LOCATION: H 5 25s 29e
 COUNTY: Eddy
 DATE: December 29, 1986



$$Q_1 = 945 \text{ MCFD}; \text{Log } Q_1 = 2.975432$$

$$Q_2 = 299 \text{ MCFD}; \text{Log } Q_2 = 2.475432$$

$$N = \frac{0.500000}{0.500000} = 0.500$$