

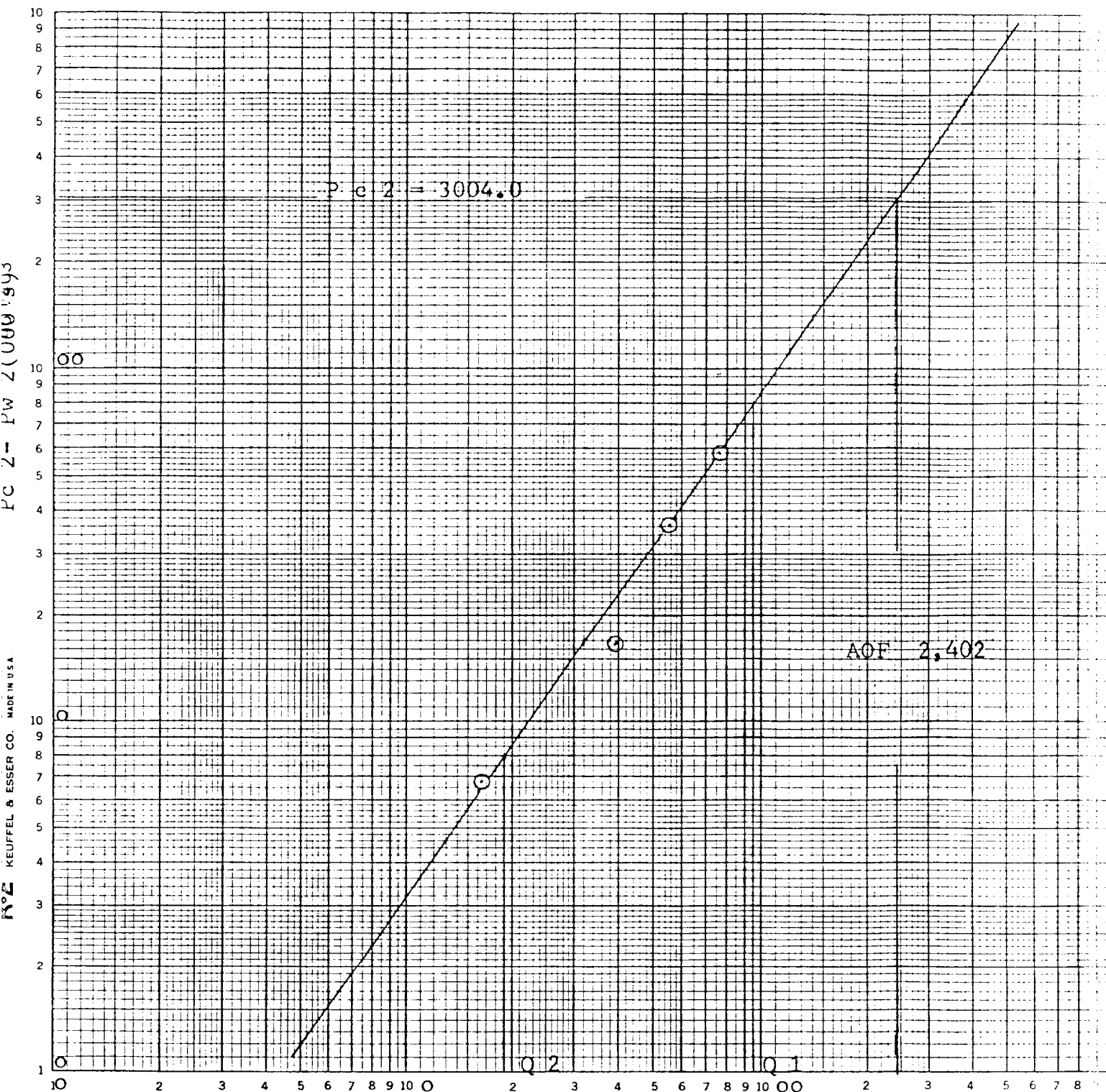
NEW MEXICO OIL CONSERVATION COMMISSION
MULTIPOINT AND ONE POINT BACK PRESSURE TEST, FOR GAS WELL

Form O-122
Revised 6-80

RECEIVED

Test Type: ☒ Initial ☐ Annual ☐ Special Test Date: 12-01-80				DEC 8 1980							
Company: GULF OIL CORP.				Operator: E.P.N.G.							
Well: EAGLE CREEK				Formation: UPPER PENN							
Completion Date:		Total Depth: 8400		Flow Rate: 7465		Elevation: 3602 G.L.					
Lease: GRYNBERG A. FED.				Well No.: # 1							
Casing Size: 5 1/2	ID:	Set At: 8400	Perforations: From 6485 To 6600	Unit: B 5 18s 25e							
Tubing Size: 2 3/8	ID:	Set At: 6440	Perforations: From To	County: EDDY							
Type well - Single - Bradenhead - G.G. or G.O. Multiple: SINGLE GAS WELL				Header Set At: 6440		State: NEW MEXICO					
Producing thru: TBG.		Reservoir Temp. °F: 138° 6440		Mean Annual Temp. °F: 60°		Zero. Press. - P ₀ : 13.2					
L: 6440	H: 6440	G ₀ : .670	% CO ₂ :	% N ₂ :	% H ₂ S:	Prover:	Meter Run: 4"				
FLOW DATA				TUBING DATA		CASING DATA					
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	Location of Flow
SI							1720				72 hr.
1.	4	X 1.000		181	4.0	62	1700				30 min.
2.	4	X 1.000		181	23.0	67	1670				1 hr.
3.	4	X 1.000		185	44.9	69	1610				1 hr.
4.	4	X 1.000		185	84.6	69	1540				1 hr.
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. Compens. Factor, F _{spv}	Rate of Flow Q, Mhd				
1	4.753	27.87	194.2	.9981	1.222	1.021	165				
2	4.753	66.83	194.2	.9933	1.222	1.020	393				
3	4.753	94.34	198.2	.9915	1.222	1.021	555				
4	4.753	129.49	198.2	.9915	1.222	1.021	761				
5											
NO.	P _f	Temp. °R	T _f	Z	Gas Liquid Hydrocarbon Ratio dry Mol/Lb.						
1	.29	522	1.37	.960	A.P.I. Gravity of Liquid Hydrocarbons:						
2	.29	527	1.38	.961	Specific Gravity Separator Gas: .670 X X X X X X X X						
3	.30	529	1.38	.960	Specific Gravity Flowing Fluid: X X X X X						
4	.30	529	1.38	.960	Critical Pressure: 669 P.S.I.A. P.S.I.A.						
5					Critical Temperature: 382 R R						
P_c 1733.2 P_c^2 3004.0											
NO.	P _f	P _w	P _w ²	P _c ² - P _w ²	(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 5.179$						
1		1713.4	2935.6	68.4	(2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 3.157$						
2		1684.1	2836.2	167.8							
3		1625.1	2640.9	363.1	AOF = C $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 2.402$						
4		1556.9	2424.0	580.0							
5											
Absolute Open Flow: 2,402 Mhd @ 15.025				Angle of Slope θ : 55°		Slope, n: .699					
Remarks:											
Approved by Conservation:		Conducted By: DAVIS SERVICES INC.		Calculated By: RICK PAGAN		Checked By:					

COMPANY : GULF OIL CORP.
 LEASE : GRYNBERG A. F .
 WELL NO. : # 1
 UNIT : B / sec. 5/ twp. 18s / / rge. 25e
 COUNTY : EDDY
 STATE : NEW MEXICO
 DATE : DECEMBER 1, 1980



Q = MCF / DAY
 Q 1 = 950; LOG OF Q 1 = 2.977724
 Q 2 = 190; LOG OF Q 2 = 2.278754
 N = .699
 θ = 55

TYPE ANALYSIS	Pod	Mass Spec.	Chromatograph	Other	Analysis No. 45949
Sample From Grynberg A Federal #1					
Owner Gulf Oil Corp.			State New Mexico	County Eddy	
Location or Field Cagle Creek		Formation Upper Penn		Depth	From To

Date Secured 12-1-80	Secured by Tuten	Department	
Date Run 12-1-80	Run by Jacobs	Checked by	
Source Press.	Bomb Press.	Source Temp.	Atmos. Temp.

BTU @ 14.696	Actual	Calculated, Dry	SP. GR. @ 14.696 & 60° F	Actual	Calculated
		1171.81			.670
Hydrogen Sulphide as grs. H ₂ S/100 SCF		Mercaptan as grs. Sulfur/100 SCF		Total	Weight
.03		.06		.09	
VAPOR PRESS. @ 100° F	Actual, Reid	Calculated			

COMPONENT		MOLE %	GPM	LIQ. VOL. %
Helium	HE ₂			
Hydrogen Sulphide	H ₂ S			
Carbon Dioxide	CO ₂	.10		
Nitrogen	N ₂	1.04		
Methane	C ₁	85.70		
Ethane	C ₂	7.69		
Propane	C ₃	3.19	.878	
Iso Butane	IC ₄	.42	.137	
Normal Butane	C ₄	.89	.280	
Iso Pentane	IC ₅	.25	.091	
Normal Pentane	C ₅	.28	.101	
Hexane	C ₆	.20	.082	
Heptane	C ₇	.24	.117	
		100.00	1.686	

DISTRIBUTION

HH	LB	ES
REJ	AJD	RTW
SS	CLW	Res. Engr. - Test Section
JWC	HOW	File

ENGLER	
IBP	% @ 96
5	% @ 140
10	% @ 275
20	End Point
30	Recovery
40	Residue
50	Loss
60	
70	
80	
90	

REMARKS

Sec 135, Twp 18, Rge 25

WORKSHEET FOR CALCULATION OF STATIC COLUMN WELHEAD PRESSURE (F_w)

Form 05-100
Adopted 9-1-85

COMPANY GULF OIL CORP. LEASE GRYNBERG A. FED. WELL NO. # 1 DATE 12/01/80

LOCATION: Unit B Section 5 Township 18s Range 25e

L 6440 H 6440 L/H 1.000 G .670 % CO₂ _____ % N₂ _____ % H₂S _____

d 1.995 F_r .018231 GH 4315

P_{cr} 669 T_{cr} 382
TABLE IX & X

LINE	1 st rate		2 nd rate		3rd rate		4 th rate			
	1st	2 nd	1st	2 nd	1 st	2 nd	1 st	2 nd		
1 Q _m	.165	.165	.393	.393	.555	.555	.761	.761		
2 T _w (W.H. °R)	534	534	534	534	534	534	534	534		
3 T _s (B.H. °R)	598	598	598	598	598	598	598	598		
4 T = ($\frac{1}{2} T_w + T_s$)	566	566	566	566	566	566	566	566		
5 Z (Est.)	.781	.770	.783	.771	.787	.776	.793	.781		
6 TZ	442.0	435.8	443.2	436.4	445.4	439.2	448.8	442.0		
7 GH/TZ	9.761	9.901	9.736	9.888	9.687	9.824	9.614	9.761		
8 e ^s (Table XIV)	1.442	1.450	1.441	1.449	1.438	1.445	1.434	1.442		
9 1-e ^{-s} (Table XIV)	.307	.310	.306	.310	.305	.308	.303	.307		
10 P _t	1713.2	1713.2	1683.2	1683.2	1623.2	1623.2	1553.2	1553.2		
11 P _t 2/1000	2935.1	2935.1	2833.2	2833.2	2634.8	2634.8	2412.4	2412.4		
12 F _r (Table XV)	.018231	.018231	.018231	.018231	.018231	.018231	.018231	.018231		
13 F _c = F _r TZ	8.0589	7.9454	8.0795	7.9558	8.1209	8.0023	8.1828	8.0589		
14 F _c Q _m	1.330	1.311	3.175	3.127	4.507	4.444	6.227	6.133		
15 L/H (F _c Q _m) ²	1.768	1.719	10.082	9.776	20.314	19.750	38.777	37.612		
16 F _w = L/H (F _c Q _m) ² (1-e ^{-s})	.542	.533	3.084	3.029	6.187	6.086	11.737	11.529		
17 P _w ² = P _t ² + F _w	2935.6	2935.6	2836.2	2836.2	2641.0	2640.9	2424.2	2424.0		
18 P _s ² = e ^s P _w ²	4233.2	4255.4	4086.1	4109.3	3797.7	3817.2	3476.4	3495.4		
19 P _s	2057.5	2062.9	2021.4	2027.2	1948.8	1953.8	1864.5	1869.6		
20 P = ($\frac{P_t + P_s}{2}$)	1885.3	1888.0	1852.3	1855.2	1786.0	1788.5	1708.9	1711.4		
21 P _r = (P/P _{cr})	2.82	2.82	2.77	2.77	2.67	2.67	2.55	2.56		
22 T _r = (T/T _{cr})	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48		
23 Z (Table XI)	.770	.770	.771	.771	.776	.776	.781	.781		