

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

Form C-122
 Revised 9-1-65

Type Test ☒ Initial ☐ Annual ☐ Special						Test Date 2/20/76	
Company Atlantic Richfield Company				Connection El Paso Natural Gas Company			
Pool Langlie Mattix				Formation 7 Rivers Queen		Unit B	
Completion Date 11/17/75		Total Depth 3710'		Plug Back TD 3673'		Elevation 3328' GR	
Farm or Lease Name Duthie Andrews Com. WN							
Cas. Size 4 1/2"	Wt. 9.5	d 4.090	Set At 3700	Perforations: From 3463 To 3606		Well No. 4 B	
Tbg. Size 2 3/8"	Wt. 4.7	d 1,995	Set At 3567	Perforations: From open end To		Unit Sec. Twp. Rge. B 19 23S 37E	
Type Well - Single - Bradenhead - G.G. or G.O. Multiple Single				Packer Set At 3404'		County Lea	
Producing Thru Tbg.		Reservoir Temp. °F 89 @ 3600'		Mean Annual Temp. °F 60		Baro. Press. - P _a 13.2	
State New Mexico							
L 3567	H 3567	Cg .694	% CO ₂ ---	% N ₂ ---	% H ₂ S ---	Prover ---	Meter Run 4" 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.	Temp. °F	Press. p.s.i.g.		Temp. °F
SI							230		Pkr.		72 Hr.
1.	4 x 1.250			52	3.6	65	180	74			45 Min.
2.	4 x 1.250			55	7.6	68	162	74			1 Hr.
3.	4 x 1.250			55	13.7	68	130	74			1 Hr.
4.	4 x 1.250			55	26.0	67	110	74			45 Min.
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	7.469	15.32	65.2	.9952	1.200	Nil	137
2	7.469	22.77	68.2	.9924	1.200	Nil.	203
3	7.469	30.57	68.2	.9924	1.200	Nil	272
4	7.469	42.11	68.2	.9933	1.200	Nil	375
5							

NO.	P _t	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio --- Mcf/bbl.	A.P.I. Gravity of Liquid Hydrocarbons --- Deg.
1	.10	525	1.35	Nil	Specific Gravity Separator Gas 0.694	XXXXXXX
2	.10	528	1.36	Nil	Specific Gravity Flowing Fluid XXXXX	
3	.10	528	1.36	Nil	Critical Pressure 669 P.S.I.A.	P.S.I.A.
4	.10	527	1.36	Nil	Critical Temperature 388 R	R
5						

NO.	P _t ²	P _w	P _w ²	P _t ² - P _w ²
1	243.2	194.0	37.6	21.5
2		176.9	31.3	27.8
3		147.0	21.6	37.5
4		131.5	17.3	41.8
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 1.414$

(2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1.414$

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 530$

Absolute Open Flow 530 Mcfd @ 15.025

Angle of Slope @ 45°

Slope, n 1.00

Remarks: Point of alignment too flat, a slope of 45 was drawn through high rate of flow. El Paso conducted test & calculated with computer no fluid with test.

Approved By Commission:	Conducted By: Reginald E. Reston	Calculated By: Reginald E. Reston	Checked By: L. C. Hudry
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WORKSHEET FOR CALCULATION

STATIC COLUMN WELLHEAD PRESSURE (P_w)Form C-12
Adopted 5

DATE 2/20/76

WELL NO. 4-B

COMPANY Atlantic Richfield Co. LEASE Duthie Andrews Com. WN

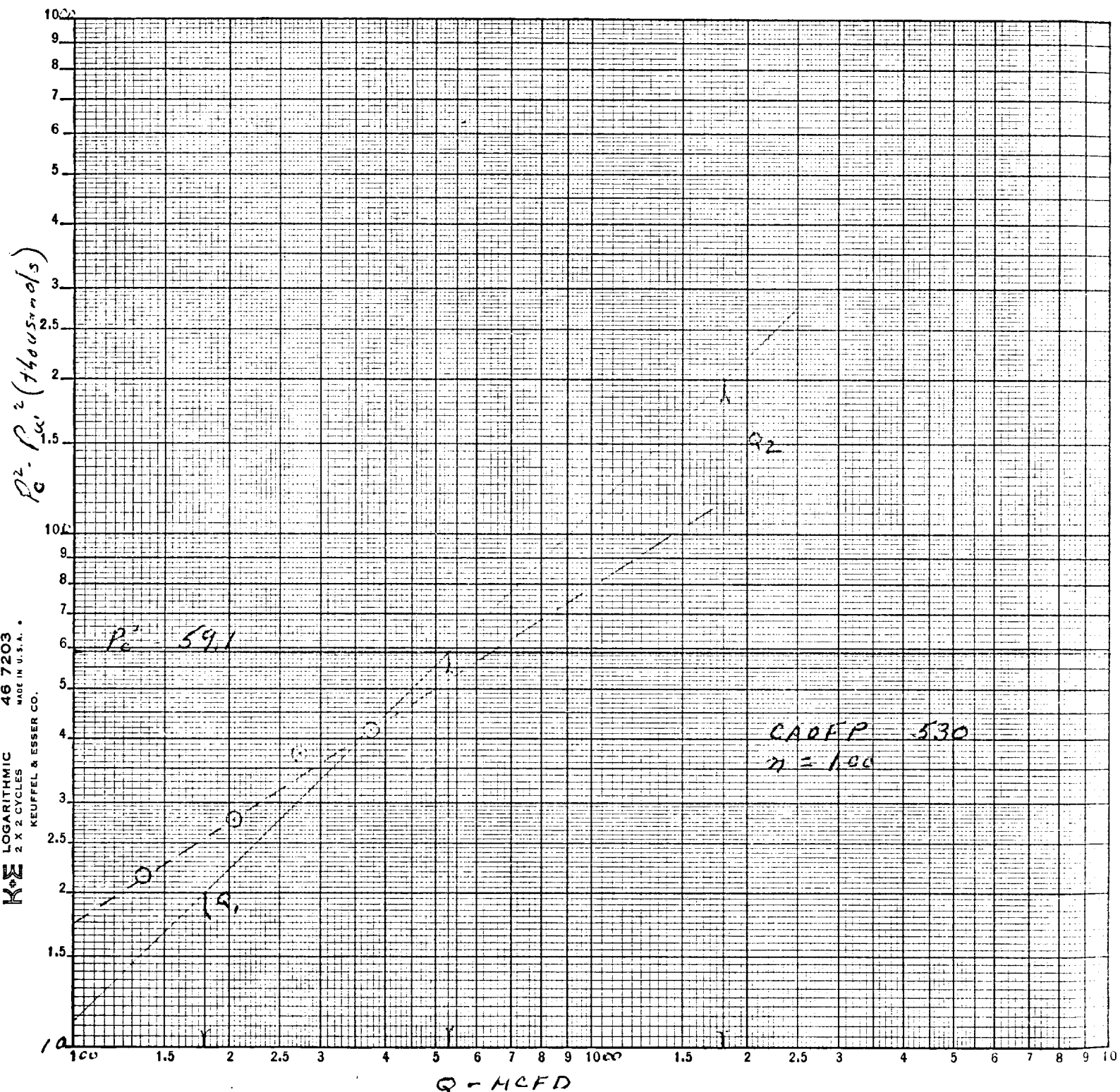
LOCATION: Unit B Section 19 Township 23S Range 37E

L 3567 H 3567 L/H 1.00 G 0.694 % CO₂ --- % N₂ --- % H₂S ---d 1.995 F_r .018231 GH 2475 P_{cr} 669 T_{cr} 388

TABLE IX & X

LINE	-- First --	-- Second --	-- Third --	-- Fourth --	
1 Q _m	0.137	0.203	0.272	0.375	
2 T _w (W.H. °R)	534	534	534	534	
3 T _s (B.H. °R)	549	549	549	549	
4 T = $\frac{(T_w + T_s)}{2}$	541.5	541.5	541.5	541.5	
5 Z (Est.)	0.962	0.964	0.970	0.973	
6 TZ	520.9	522.0	525.3	526.9	
7 GH/TZ	4.75	4.74	4.71	4.70	
8 e ^s (Table XIV)	1.195	1.195	1.194	1.193	
9 1 - e ^s (Table XIV)	0.163	0.163	0.162	0.162	
10 P _t	193.2	175.2	143.2	123.2	
11 P _t ² /1000	37.33	30.70	20.51	15.18	
12 F _r (Table XV)	.018231	.018231	.018231	.018231	
13 F _c = F _r TZ	9.4965	9.5166	9.5767	9.6059	
14 F _c Q _m	1.3010	1.9319	2.6049	3.6022	
15 L/H (F _c Q _m) ²	1.6927	3.7321	6.7854	12.9760	
16 F _w = L/H (F _c Q _m) ² (1 - e ^{-s})	0.2759	0.6083	1.0992	2.1021	
17 P _w ² = P _t ² + F _w	37.61	31.31	21.61	17.28	
18 P _s ² = e ^s P _w ²	44.94	37.41	25.80	20.62	
19 P _s	212.0	193.4	160.6	143.6	
20 P = $\sqrt{\frac{P_t^2 + P_s^2}{2}}$	202.6	184.3	151.9	133.4	
21 P _r = (P/P _{cr})	0.30	0.28	0.23	0.20	
22 T _r = (T/T _{cr})	1.40	1.40	1.40	1.40	
23 Z (Table XI)	0.962	0.964	0.970	0.973	

ATLANTIC RICHFIELD
 DUT... E ANDREWS COM WN 4 E
 B - 19 - 23 S - 37 E
 LEA COUNTY, N.M.
 2-20-76



$$Q_2 \log 1000 = 3.255273$$

$$Q_1 \log 180 = 2.255273$$

$$n = 1.000000$$