

Tenneco Oil
A Tenneco Company

Suite 1200
Lincoln Tower Building
Denver, Colorado 80203
(303) 292-9920



September 5, 1974

RECEIVED

SEP - 9 1974

O. C. C.
ARTESIA, OFFICE

New Mexico Oil
Conservation Commission
Drawer DD
Artesia, New Mexico 88210

RE: State I No. 16
Empire Abo Field
Unit Letter P, Sec. 29, T17, R29E
Eddy County, New Mexico

Attention: Mr. W. A. Gressett

Gentlemen:

In reference to our telephone conversation of September 5, 1974 concerning the captioned well, I am enclosing the results of an open flow test ran in October, 1972 by West Texas Engineering Service, Inc. of Midland, Texas.

The only other well work done by Tenneco has been to run a packer which was set at 6120' $\pm$ KB and load the casing-tubing annulus with treated water.

Yours very truly,

TENNECO OIL COMPANY

A handwritten signature in cursive script, appearing to read "J. L. Gaskill".

J. L. Gaskill
Division Production Engineer

CAM:hk

Attach.

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

Form O-111
Rev. 10-9-1-65

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☒ Initial ☐ Annual ☐ Special		Test Date 10-30-72		SEP - 9 1974	
Company Tenneco Oil Company			Connection None		O. C. C. ARTESIA, OFFICE
Pool Wildcat			Formation		
Completion Date 6-1-62		Total Depth 6235		Flow Back TD 6235	
Elevation 3584 DF		Farm or Lease Name State "I"			
Casing Size 5 1/2	Wt. 15.5	ID 	Set At 6223	Perforations: From 6152 To 6188	
Well No. 16					
Casing Size None	Wt. 	ID 	Set At 	Perforations: From To	
Unit 29		Sec. 17S		Twp. 29E	
Type Well - Single - Brad - Lead - G.G. or G.O. Multiple Single			Packer Set At		County Eddy
Producing Thru Casing		Reservoir Temp. °F 120° 6170		Mean Annual Temp. °F 60°	
Baro. Press. - P _a 13.2		State New Mexico			
L 6170	H 6152	Cg .708	% CO ₂ 1.36	% N ₂ 2.46	% H ₂ O
Prover 		Meter Run X		Pass 	

FLOW DATA							TUBING DATA		CASING DATA		Duration of Flow
NO.	Prover Line Size	X	Casing 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							1545	63			
1.	3"	1.	50	41	36	53	1534	72			1 Hr
2.	3"	1.	50	41	68	22	1522	74			1 Hr
3.	3"	1.	5	42	35	18	1492	72			1 Hr
4.	3"	1.	5	42	62	16	1433	72			1 Hr
5.	3"	1.	5	42	74	10	1360	72			1 Hr

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, Mcf
1	8.403	44.17	54.2	1.007	1.188	*	440.0
2	8.403	60.71	54.2	1.039	1.188	*	625.6
3	19.27	44.55	55.2	1.043	1.188	*	1064.3
4	19.27	58.50	55.2	1.045	1.193	*	1353.5
5							

NO.	P _r	Temp.	T _r	Z	Gas Liquid Hydrocarbon Ratio	A.P.I. Gravity of Liquid Hydrocarbons	Specific Gravity Separator Gas	Specific Gravity Flowing Fluid	Critical Pressure	Critical Temperature
					420	66.7 @ 60°	.703	XXXXXX	669	385
1	2.56	5	1.4	.762						
2	2.54	5	1.45	.763						
3	2.49	5	1.45	.767						
4	2.39	5	1.4	.772						
5										

NO.	P _c	P _c ²	P _w	P _w ²	P _c ² - P _w ²
1	2330.8	5432.6	2393.6	5727.3	37.2
2	2356.8	5553.6	2356.8	5553.6	74.2
3	2265.6	5112.8	2265.6	5112.8	165.4
4	2091.4	4373.9	2091.4	4373.9	339.6
5					

$$(1) \frac{P_c^2}{P_c^2 - P_w^2} = \frac{2431}{165.4}$$

$$AOF = Q \left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 5281$$

$$(2) \left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 4.962$$

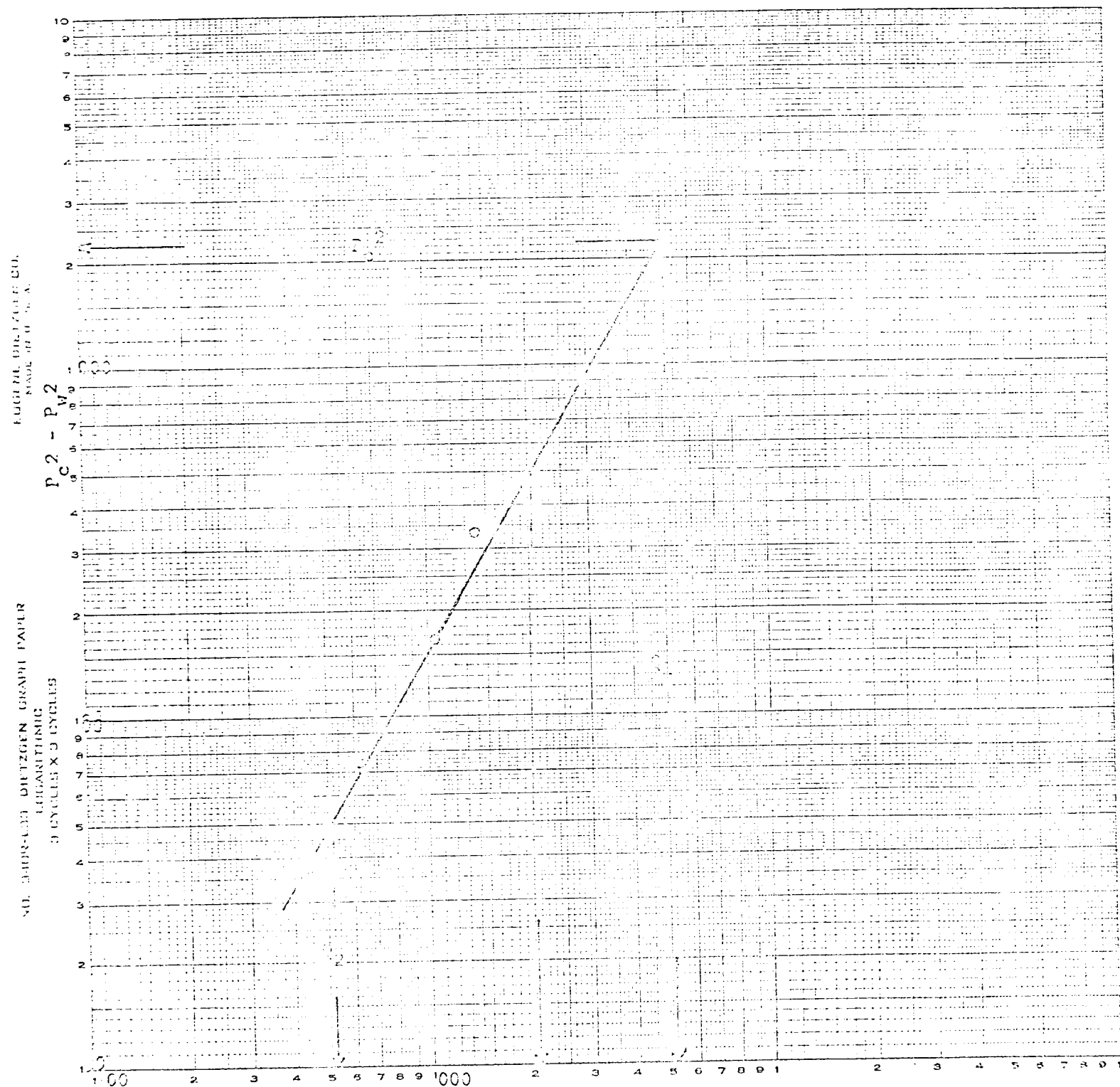
Absolute Open Flow 5281 Mcfd @ 15.025	Angle of Slope θ 59° 13'	Slope, n .596
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Remarks: Gas was measured thru Low Pressure Separator so Super Compressibility Factor has been corrected.

Approved By Commission:	Conducted By: D. F. Jones	Calculated By: H. L. Hagler	Checked By:
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West Texas Engineering Service, Inc.
P. O. Box 4456 Midland, Texas 79701

OPERATOR Tenneco Oil Company
 LEASE State "H"
 WELL NO. 15
 FIELD Wilcoat
 COUNTY McKittrick
 STATE New Mexico
 DATE October 30, 1972



$$Q_1 = 5020 \text{ Mcf} \quad \log Q_1 = 3.31175$$

$$n = .596$$

$$Q_2 = 520 \text{ Mcf} \quad \log Q_2 = 2.71600$$

$$\theta = 59^\circ 13'$$

$$.59575 = .596$$

Absolute Open Flow = 5281 Mcf/Day

WORKSHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (P_{WC})

COMPANY Tenneco Oil Company Lease State "I" WELL NO. 15 DATE 10-30-72

LOCATION: Unit 6170 Section 29 Township Range 29-1E

L H 6170 L/H 1.0 G .714 % CO₂ 1.36 % H₂S 2.46 % H₂S .79

d 4.950 F_r .0017508 CH 4405 Per 669 Ter 385
TABLE IX & X

LINE	1st Trial	2nd Trial	1st Trial	2nd Trial	1st Trial	2nd Trial	1st Trial	2nd Trial	1st Trial	2nd Trial
1 N_a	.440	.440	.629	.629	1.064	1.064	1.399	1.399		
2 P_w (W.H. 9R)	532	532	534	534	532	532	532	532		
3 P_s (B.H. 9R)	532	582	582	582	582	582	582	582		
4 $T = \frac{(L_w + F_s)}{2}$	557	557	558	558	557	557	557	557		
5 Z (Part)	.760	.762	.764	.763	.765	.767	.770	.772		
6 TZ	423.3	424.4	426.3	425.7	426.1	427.2	428.2	430.0		
7 CH/TZ	10.405	10.373	10.332	10.346	10.337	10.311	10.279	10.244		
8 e^3 (Table XIV)	1.477	1.476	1.473	1.474	1.473	1.472	1.470	1.468		
9 $1 - e^3$ (Table XIV)	.323	.322	.321	.322	.321	.321	.320	.319		
10 P_t	1547.2	1547.2	1535.2	1535.2	1505.2	1505.2	1495.2	1486.2		
11 P_1 47000	2393.8	2393.8	2356.8	2356.8	2265.6	2265.6	2251.4	2091.4		
12 P_1 (Table XV)	.0017508	.0017508	.0017508	.0017508	.00.7508	.0017508	.0017508	.0017503		
13 $P_c = P_t$ TZ	.7407	.7427	.7460	.7449	.7456	.7476	.7504	.7525		
14 $P_c O_{H_2}$	.3259	.3267	.4692	.4685	.7933	.7954	1.0493	1.0527		
15 $L/H (P_c O_{H_2})^2$	.1062	.1067	.2202	.2195	.6294	.6327	1.1020	1.1082		
16 $P_w - L/H (P_c O_{H_2})^2 (1 - e^3)$	.0343	.0343	.0706	.0707	.2020	.2031	.3225	.3535		
17 $P_w^2 = P_t^2 + P_w$	2392.8	2393.8	2356.8	2356.8	2265.6	2265.6	2221.4	2091.4		
18 $P_s^2 = e^3 P_w^2$	3535.6	3533.2	3471.6	3473.9	3337.2	3335.0	3274.5	3070.3		
19 P_s	1880.3	1879.7	1863.2	1863.2	1826.8	1826.1	1752.4	1752.2		
20 $P = \frac{P_t + P_s}{2}$	1713.7	1713.4	1699.2	1699.5	1666.0	1665.6	1595.8	1599.2		
21 $P_t (P/P_c)$	2.56	2.56	2.54	2.54	2.49	2.49	2.39	2.39		
22 $P_s (1/P_c)$	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45		
23 Z (Table XI)	.762	.762	.763	.763	.767	.767	.772	.772		