

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

Form C-122
 Revised 9-1-65

C/SF C-122 USGS

RECEIVED

Type Test ☒ Initial ☐ Annual ☐ Special						Test Date 3-19-82		APR 1 1982	
Company T X O Production Company				Connection Cabot Corp.					
Pool Wildcat Empire Penn				Formation Penn Morrow				Unit O. C. D. ARTESIA, OFFICE	
Completion Date 2-13-82		Total Depth 10,020		Plug Back TD 10,020		Elevation 3563.8 G1.		Farm or Lease Name Empire State Com.	
Cas. Size 4 1/2"	Wt. 11.6#	d 4.000	Set At 10,020	Perforations: From 9876 To 9890				Well No. 1	
Tbg. Size 2 3/8	Wt. 4.7#	d 1.995	Set At 9733	Perforations: From OPENENDED To				Unit Sec. Twp. Rge. M 20 17S 28E	
Type Well - Single - Bradenhead - G.G. or G.O. Multiple Single						Packer Set At 9733		County Eddy	
Producing Thru Tubing		Reservoir Temp. °F 182° 9883		Mean Annual Temp. °F 60°		Baro. Press. - P _a 13.2		State New Mexico	
L 9833'	H 9833'	G _g .6253	% CO ₂ .327	% N ₂ .359	% H ₂ S -0-	Prover	Meter Run 4.026	Taps Flange	

FLOW DATA							TUBING DATA		CASING DATA		Duration of Flow
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. hw	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	
SI							2385		PKR	CHOKE	24 HRS.
1.	4	x	2.250	384	2.25	82°	2264	70°		10.5/64	45 Min.
2.	4	x	2.250	422	11.56	72	1975	73		16/64	1 Hr.
3.	4	x	2.250	449	22.09	67	1601	76		19/64	1 Hr.
4.	4	x	2.250	468	28.09	69	1331	73		23/64	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 Compress. Factor, Fpv	Rate of Flow Q, Mcfd
1	22.60	29.89	397.2	.9795	1.265	1.033	864
2	22.60	70.93	435.2	.9887	1.265	1.038	2081
3	22.60	101.04	462.2	.9933	1.265	1.043	2993
4	22.60	116.26	481.2	.9915	1.265	1.042	3434
5.							

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio	Mcf/bbl.
1	.59	542	1.48	.937	53.84	
2	.65	532	1.46	.928	A.P.I. Gravity of Liquid Hydrocarbons 59.6 @ 60°	Deg.
3	.69	527	1.44	.920	Specific Gravity Separator Gas .6253	XXXXXXXXXX
4	.70	529	1.45	.921	Specific Gravity Flowing Fluid XXXXX	.6783
5					Critical Pressure 671 P.S.I.A.	669 P.S.I.A.
					Critical Temperature 365 °R	385 °R

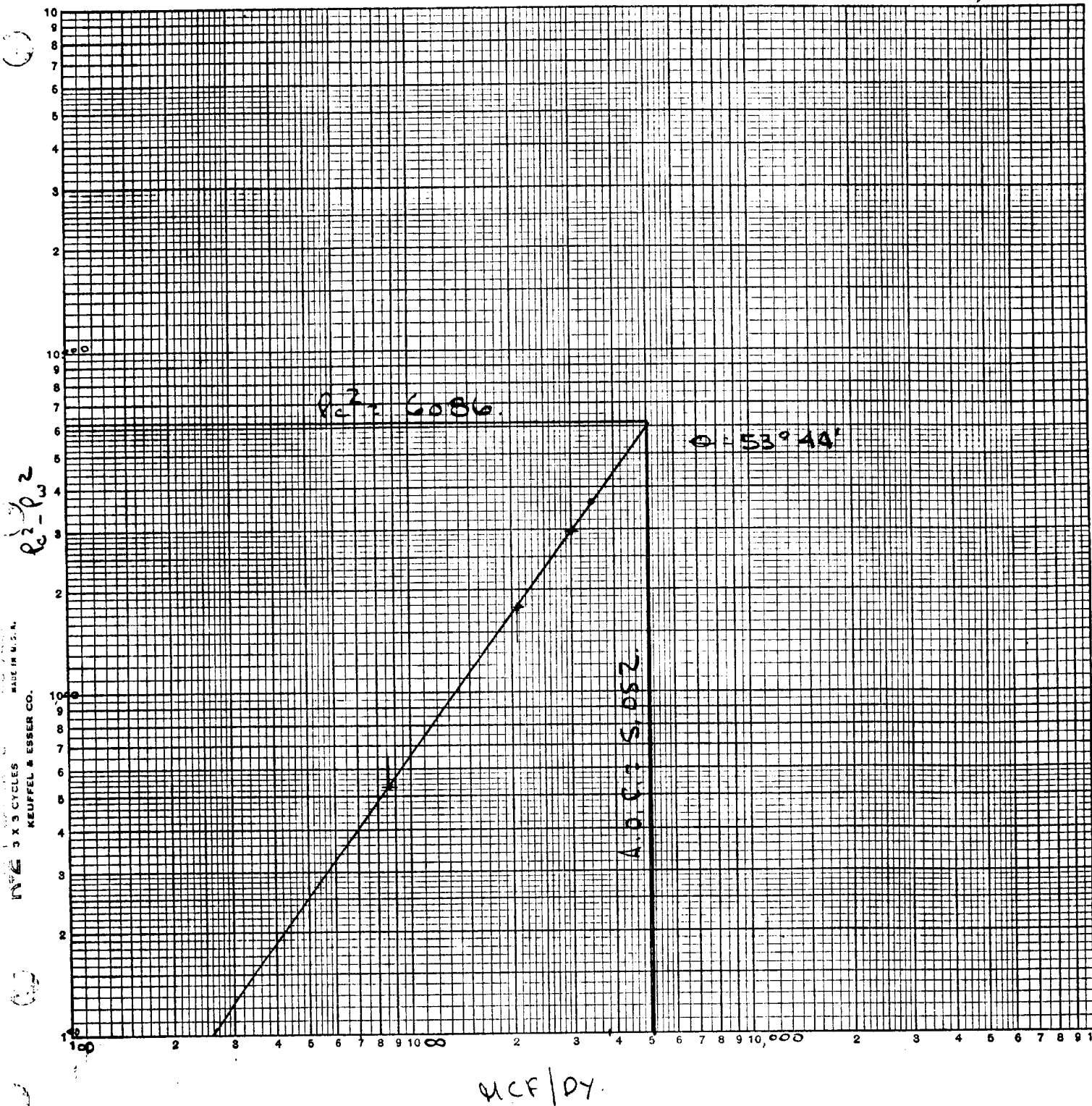
NO.	P _i ²	P _w	P _w ²	P _e ² - P _w ²	$(1) \frac{P_e^2}{P_e^2 - P_w^2} = 1.6924$ $(2) \left[\frac{P_e^2}{P_e^2 - P_w^2} \right]^n = 1.4710$ $AOF = Q \left[\frac{P_e^2}{P_e^2 - P_w^2} \right]^n = 5,052$
1		2351	5527	559	
2		2076	4310	1776	
3		1772	3140	2946	
4		1578	2490	3596	

Absolute Open Flow		5052 Mcfd @ 15.025	Angle of Slope @ 53° 44'	Slope, n .73354
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Remarks: Calculated from known bottom hole pressures. Made 6.8 Bbls. of condensate during test.	
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Approved By Commission:	Conducted By: T.B.	Calculated By: M.K.	Checked By: M.K.
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$$3434 \left(\frac{6086}{3596} \right)^{.73354} = 5,052$$



WORK SHEET FOR CALCULATION OF WELLHEAD PRESSURES (P_c or P_w)

FROM KNOWN BOTTOM HOLE PRESSURE (P_f or P_s)

COMPANY TXO Production Co. Empire State WELL NO. 1 DATE 3-19-82

LOCATION: Unit N Section 20 Township 17S Range R28E

L H L/H G_{MX} 6783 % CO_2 32.7 % N_2 35.9 % H_2S

GH P_{CT} 669 T_{CT} 385

SI. 1 2 3 4 5 6 7 8

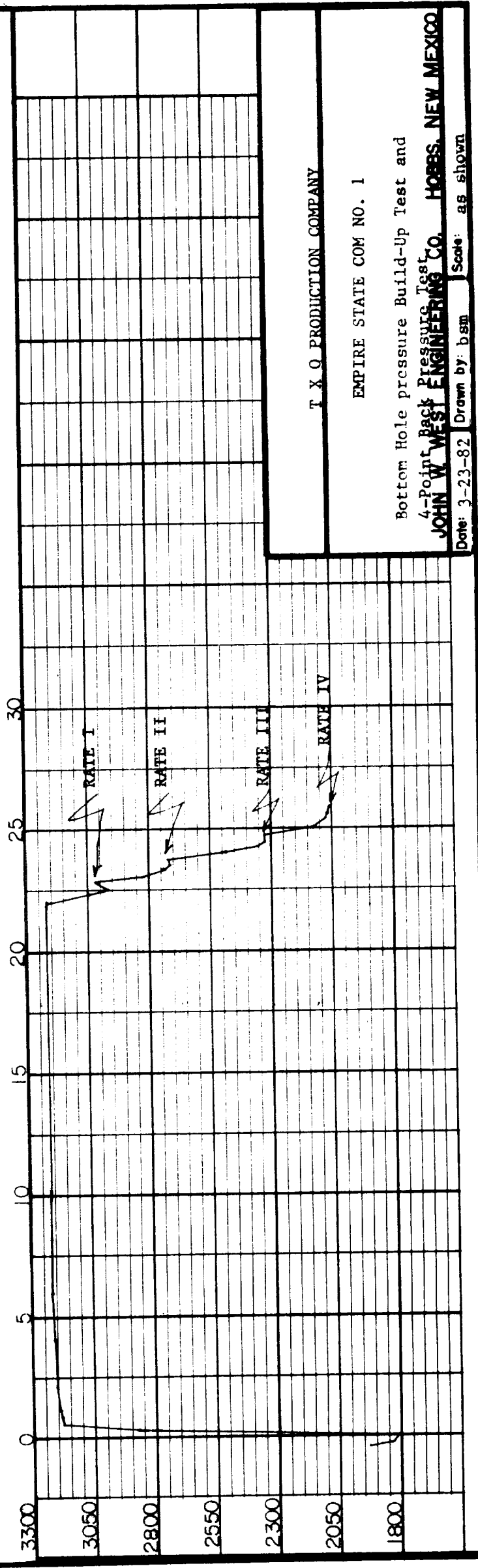
LINE	1	2	3	4	5	6	7	8
1	$T_w (W.H. \cdot R)$	542	532	527	529			
2	$T_s (B.H. \cdot R)$	642	642	642	642			
3	$T = \frac{T_w + T_s}{2}$	592	587	584.5	585.2			
4	Z (Est.)	7136	7110	6902	6960	7132		
5	TZ	491.95	489.58	481.34	480.46	487.14		
6	GH/TZ	12.56	12.62	12.84	12.86	12.69		
7	e^S (Table XIV)	1.60	1.60	1.62	1.62	1.61		
8	P_f or P_s	3229.2	3082.2	2741.2	2339.2	2049.2		
9	P_f^2 or P_s^2	10427.73	9499.96	7514.18	5471.86	4281.59		
10	$P_c^2 = P_f^2 / e^S$ or $P_w^2 = P_s^2 / e^S$	6510.39	5917.65	4642.88	3377.99	2660.72		
11	P_c or P_w	2467	2351	2076	1772	1578		
12	$P = \frac{P_w + P_s}{2}$ or $\frac{P_c + P_f}{2}$							
13	$P_f = (P / P_{CT})$	3.67	3.52	3.10	2.65	2.36		
14	$T_f = (T / T_{CT})$	1.41	1.41	1.30	1.37	1.37		
15	Z (Table XI)							

TEST DATE: March 18 to 19, 1982
TEST DEPTH: 9883 FEET

ELEMENT NO: 23057
RANGE: 0-5100 PSI
CLOCK NO: 26609
RANGE: 0-72 HOURS

NOTE: SEE TABULATION OF TIMES AND PRESSURES ON ATTACHED SHEET.

TIME IN HOURS



T X Q PRODUCTION COMPANY

EMPIRE STATE COM NO. 1

Bottom Hole pressure Build-Up Test and
4-Point Back Pressure Test
JOHN W. WEST ENGINEERING CO. HOBBS, NEW MEXICO

Date: 3-23-82 Drawn by: bsm Scale: as shown