OIL CONSERVATION DIVIS

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-122
Revised 10-1-78

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test: [X] Initial [ ] Annual [ ] Special				Test Date: 03-11-93	
Company: BRIGHT & COMPANY			Connection: VENTED		
Pool: WILD CAT			Formation: ATOKA		Unit: E
Completion Date: 3-3-93	Total Depth: 12233		Plug Back TD: 12605	Elevation: 4321 KB	Farm or Lease Name: APACHE
Csg. Size: 5½" / Wt.: 17 / d: 4.892	Set At: 1204		Perforations: From 10998 To 11034		Well No.: 1
Tbg. Size: 2 7/8" / Wt.: 6.5 / d: 2.441	Set At: 10906		Perforations: From To		Unit: E / Sec.: 5 / Twp.: 9 / Rge.: 34
Type Well – Single – Bradenhead – G.G. or G.O. Multiple: SINGLE			Packer Set At: 10893		County: LEA
Producing Thru: TBG	Reservoir Temp. °F	Mean Annual Temp. °F: 60°	Baro. Press. – P_a: 13.2		State: NM

** L	H	Gg	% CO_2	% N_2	% H_2S	Prover	Meter Run	Taps
11016	11016	.763	4.476	3.041			4.026	FLG

NO.	FLOW DATA: Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	TUBING DATA: Press. p.s.i.g.	Temp. °F	CASING DATA: Press. p.s.i.g.	Temp. °F	Duration of Flow
SI							2013		PKR		48 HRS
1.	4	X	2.000	150	4.00	64	1915		"		1 HR
2.	4	X	2.000	150	8.00	56	1862		"		1 HR
3.	4	X	2.000	150	22.00	61	1803		"		1 HR
4.	4	X	2.000	150	35.00	58	1743		"		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	19.81	25.55	163.2	.9962	1.145	1.020	589
2.	19.81	36.13	163.2	1.004	1.145	1.020	839
3.	19.81	59.92	163.2	.9990	1.145	1.020	1,385
4.	19.81	75.58	163.2	1.002	1.145	1.020	1,752
5.							

NO.	P_t	Temp. °R	T_t	Z
1.	.24	524	1.32	.962
2.	.24	516	1.30	.962
3.	.24	521	1.31	.962
4.	.24	518	1.30	.962
5.				

Gas Liquid Hydrocarbon Ratio: 95.1 Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons: 54.0 @ 60 Deg.
Specific Gravity Separator Gas: .763 XXXXXXXXX
Specific Gravity Flowing Fluid: XXXXX
Critical Pressure: *679 P.S.I.A. ____ P.S.I.A.
Critical Temperature: *395 R ____ R

*** P_c 2173.1 P_c^2 4722.4

NO	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1		2116.0	4477.5	244.9
2		2071.8	4292.4	430.0
3		1989.5	3958.1	764.3
4		1909.4	3645.8	1076.6
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 4.386$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 3.371$

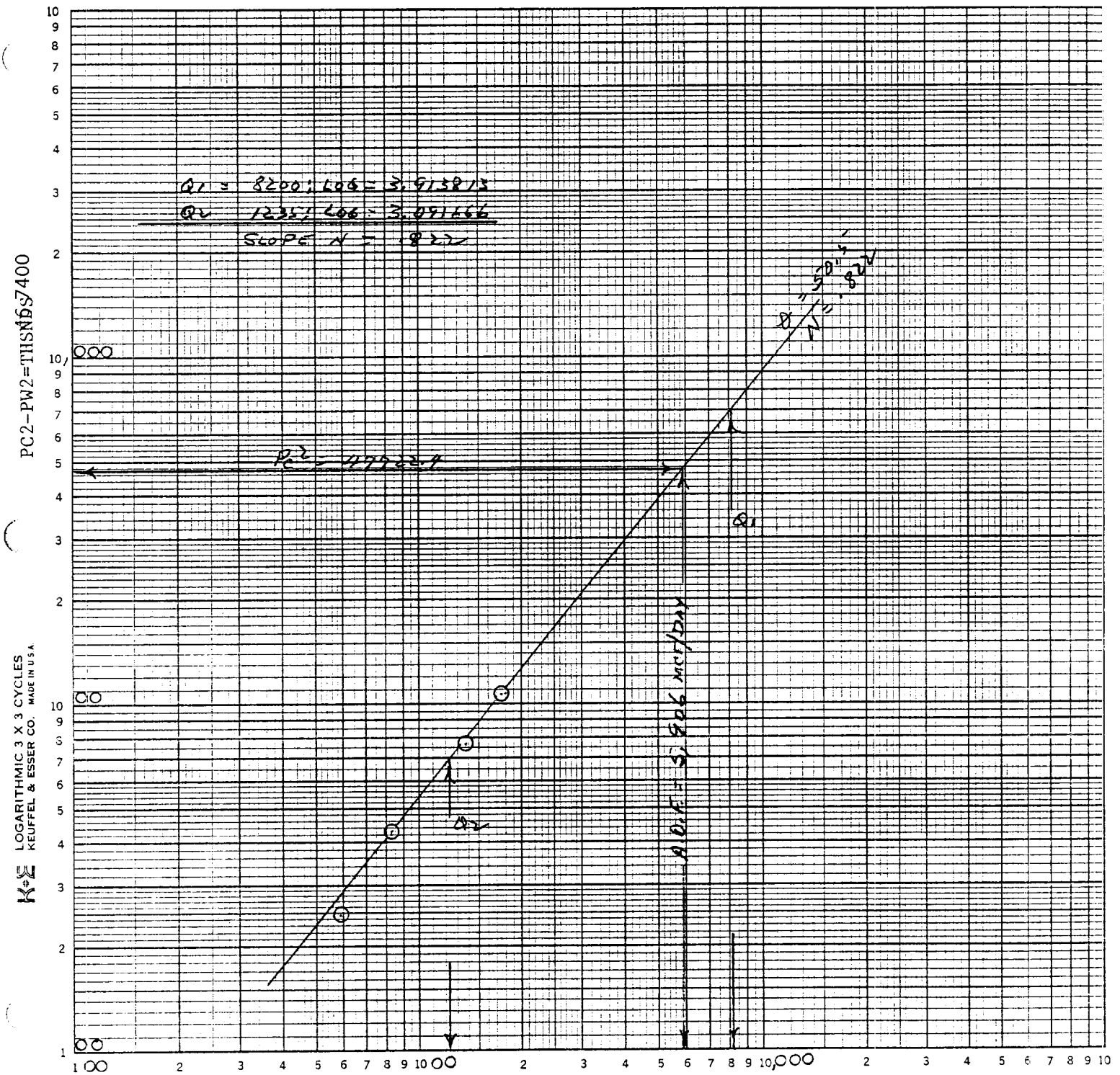
AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 5.906$

Absolute Open Flow: 5,906 Mcfd @ 15.025 Angle of Slope θ: 50.5 Slope, n: .822

Remarks: *=CORRECTED TO 4.476% CO2 & 3.041 % N2. **=BHP INSTRUMENT @ THIS DEPTH.
***=CALCULATED FROM KNOWN BHP'S. WELL MADE 2.00 BBLS 54.0 API GR FLUID DURING TEST.

Approved By Division	Conducted By:	Calculated By:	Checked By:
	JOHN WEST ENGINEERING	BM	BM

BRIGHT & COMPANY
APACHE WELL NO. 1
UNIT E, SEC. 5, TWP. 9, RGE. 34
LEA COUNTY, NEW MEXICO
MARCH 11, 1993



WORK SHEET FOR CALCULATION OF WELLHEAD PRESSURE (Pc or Pw) FORM C-122F
FROM KNOWN BOTTOM HOLE PRESSURE (Pf or Ps)

COMPANY	BRIGHT & CO.	LEASE :	APACHE	WELL NO. :	1	DATE	3 11 93
UNIT	E	SECTION :	5	TWNSHP :	9	RANGE :	34
	L 11016	H :	11016	L/H :	1	G/GMIX :	0.7630
		CO2 :	4.476	N2 :	3.041	H2S :	
		GH :	8405.2	PCR :	679	TCR :	395

LINE		1	2	3	4	5	6	7	8
1	TW(W.H. R)	534	534	534	534	534	534	534	534
2	Ts(B.H. R)	644.2	644.2	644.2	644.2	644.2	644.2	644.2	644.2
3	T=(Tw+Ts/2)	589.1	589.1	589.1	589.1	589.1	589.1	589.1	589.1
4	Z (EST.)	0.827	0.753	ERR	ERR	ERR	ERR	ERR	ERR
5	TZ	487	444	ERR	ERR	ERR	ERR	ERR	ERR
6	GH/TZ	17.260	18.950	ERR	ERR	ERR	ERR	ERR	ERR
7	eS(TABLE XIV)	1.910	2.035	ERR	ERR	ERR	ERR	ERR	ERR
8	Pf or Ps	3100.2	3100.2	0	0	0	0	0	0
9	Pf2 or Ps2	9611.2	9611.2	0.0	0.0	0.0	0.0	0.0	0.0
10	Pc2=Pf/eS or Pw2=Ps2/eS	5031.3	4722.3	ERR	ERR	ERR	ERR	ERR	ERR
11	Pc or Pw	2243	2173	ERR	ERR	ERR	ERR	ERR	ERR
12	P=(Pw+Ps/2)or(Pc+Pf/2)	2672	2637	ERR	ERR	ERR	ERR	ERR	ERR
13	Pr=(P/Pcr)	3.93	3.88	ERR	ERR	ERR	ERR	ERR	ERR
14	Tr(T/Tcr)	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49
15	Z (TABLE XI)	0.753	0.752	ERR	ERR	ERR	ERR	ERR	ERR

Pc ➨ 1 : 2173.1 PW 2 : ERR PW 3 : ERR PW 4 : ERR

WORK SHEET FOR CALCULATION OF WELLHEAD PRESSURE (Pc or Pw) FORM C-122F
FROM KNOWN BOTTOM HOLE PRESSURE (Pf or Ps)

COMPANY	BRIGHT & CO.	LEASE :	APACHE	WELL NO. :	1	DATE	3 11 93
UNIT	E	SECTION :	5	TWNSHP :	9	RANGE :	34
	L 11016	H :	11016	L/H :	1	G/GMIX :	0.7630
		CO2 :	4.476	N2 :	3.041	H2S :	
		GH :	8405.2	PCR :	679	TCR :	395

LINE		1	2	3	4	5	6	7	8
1	TW(W.H. R)	534	534	534	534	534	534	534	534
2	Ts(B.H. R)	644.2	644.2	644.2	644.2	644.2	644.2	644.2	644.2
3	T=(Tw+Ts/2)	589.1	589.1	589.1	589.1	589.1	589.1	589.1	589.1
4	Z (EST.)	0.822	0.751	0.763	0.750	0.759	0.749	0.755	0.748
5	TZ	484	443	450	442	447	441	445	441
6	GH/TZ	17.350	18.994	18.690	19.032	18.809	19.062	18.908	19.070
7	eS(TABLE XIV)	1.917	2.039	2.016	2.041	2.025	2.044	2.032	2.044
8	Pf or Ps	3021.2	3021.2	2960.2	2960.2	2844.2	2844.2	2730.2	2730.2
9	Pf2 or Ps2	9127.6	9127.6	8762.8	8762.8	8089.5	8089.5	7454.0	7454.0
10	Pc2=Pf/eS or Pw2=Ps2/eS	4762.2	4477.4	4347.6	4292.3	3995.7	3958.0	3668.2	3646.0
11	Pc or Pw	2182	2116	2085	2072	1999	1989	1915	1909
12	P=(Pw+Ps/2)or(Pc+Pf/2)	2602	2569	2523	2516	2422	2417	2323	2320
13	Pr=(P/Pcr)	3.83	3.78	3.72	3.71	3.57	3.56	3.42	3.42
14	Tr(T/Tcr)	1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49
15	Z (TABLE XI)	0.751	0.751	0.750	0.750	0.749	0.748	0.748	0.748

PW 1 : 2116.0 PW 2 : 2071.8 PW 3 : 1989.5 PW 4 : 1909.4