

OIL CONSERVATION DIVISION

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENTP. O. BOX 2088
SANTA FE, NEW MEXICO 87501Form C-122
Revised 10-1-78

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special						Test Date 4/7/91			
Company Exploration, Inc. SEAY & ASSOCIATES				Connection FLARE					
Pool HOUSE				Formation YATES				Unit	
Completion Date 4/2/91		Total Depth 7660		Plug Back TD 3270		Elevation 3607 KB		Farm or Lease Name BILBERRY	
Coq. Size 4.500	Wt. 10.5	d 4.052	Set At 4600	Perforations: From 2884 To 3119		Well No. #1			
Thq. Size 2.375	Wt. 4.7	d 1.995	Set At 2798	Perforations: From 0 To 0		Unit Sec. Twp. Rge. G 56-T20S-R39E			
Type Well - Single - Bradenhead - G.G. or G.O. Multiple SINGLE (GAS)						Packer Set At 0		County LEA	
Producing Thru TBG. (GAS)		Reservoir Temp. °F 90 3002		Mean Annual Temp. °F 60.0		Baro. Press. - P _a 13.2		State NM	
L 3002	H 3002	G _g .813	% CO ₂ .50	% N ₂ 37.28	% H ₂ S 0	Prover 0	Meter Run 2.000	Tops FLANGE	

FLOW DATA						TUBING DATA		BHP 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									1300	90	72
1.	2.00 X 1.250			40	14.0	60	0	0	1160	90	1.0
2.	2.00 X 1.250			40	16.0	60	0	0	1093	90	1.0
3.	2.00 X 1.250			40	20.0	60	0	0	1024	90	1.0
4.	2.00 X 1.250			42	26.0	60	0	0	917	90	1.0
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor F _t	Gravity Factor F _g	Super Compress. Factor, F _{pv}	Rate of Flow Q, Mscf/d
1	8.22	27.29	53.2	1.0000	1.109	1.0040	250
2	8.22	29.18	53.2	1.0000	1.109	1.0040	267
3	8.22	32.62	53.2	1.0000	1.109	1.0040	298
4	8.22	37.88	53.2	1.0000	1.109	1.0040	347
5							

NO.	P _r	Temp. °R	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
1	.09	520	1.61	.992	0	0	.813	XXXXXX	600	323
2	.09	520	1.61	.992						
3	.09	520	1.61	.992						
4	.09	520	1.61	.992						
5										

NO.	P _c	P _w	P _r	P _c ² - P _w ²
1	1190.9	1065	1135	283
2	1223	1005	1000	409
3	1076	943	889	529
4	865	846	716	702
5				

$$(1) \frac{P_c^2}{P_c^2 - P_w^2} = 2.0192$$

$$AOF = Q \left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 493$$

$$(2) \left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1.4210$$

Absolute Open Flow	493	Mscf @ 15.025	Angle of Slope	63.4	Slope, n	.500
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Remarks:	CHOKE SIZES: 1ST RATE: 13/64	2ND RATE: 13.5/64
	3RD RATE: 14/64	4TH RATE: 16/64

Approved By Division	Conducted By: BENNETT-CATHEY	Calculated By: JIM SMITH P.E.	Checked By: M.R. RANDOLPH G.M.
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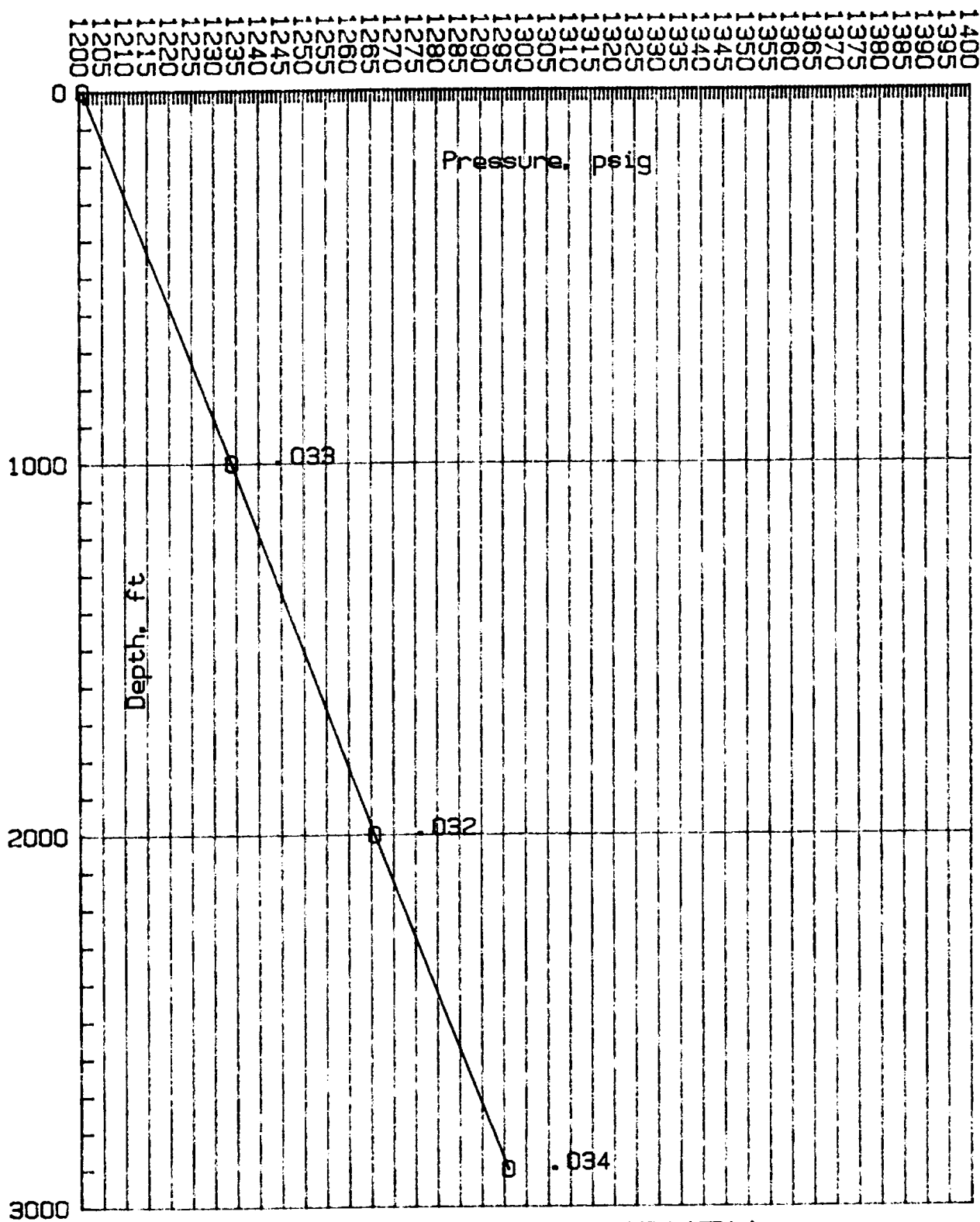
HOME OFFICE

DEPTH ft	dDEPTH ft	PRESSURE psig	dPRESSURE psig	GRADIENT psig/ft
0		1200.6		
1000	1000	1234.0	33.3	.033
2000	1000	1265.7	31.8	.032
2900	900	1296.0	30.2	.034
EXTRAPOLATION TO MIDPOINT OF PERFORATIONS ;				
3002		1299.4		.034

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HOBBS CLAYCE



GRADIENT SURVEY

SEAY & ASSOCIATES

Field : N/A

Well # 1

Lease : BILBERRY

County : LEA

State : N.M.

Date of Run : 4/7/91

Gauge # 27626

Run by : RAY

REC-111

APR 25 1991

CC

HOBBS OFFICE

COMPANY: BENNETT-CATHEY
CLIENT: SEAY & ASSOCIATES
GAUGE NUMBER: 27626
WELL NAME: BILBERRY
WELL NUMBER: #1
TEST NUMBER: 1
LOCATION: S6-T20S-R39E
TEST OPERATOR: KEN SHIPMAN
COMMENTS: 4PT. WITH BOMBS ON BOTTOM
SHUT-IN DEAD WGT = 1200 PSI

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PAGE START DATE: 4/ 7/91

GAUGE S/N: 27626

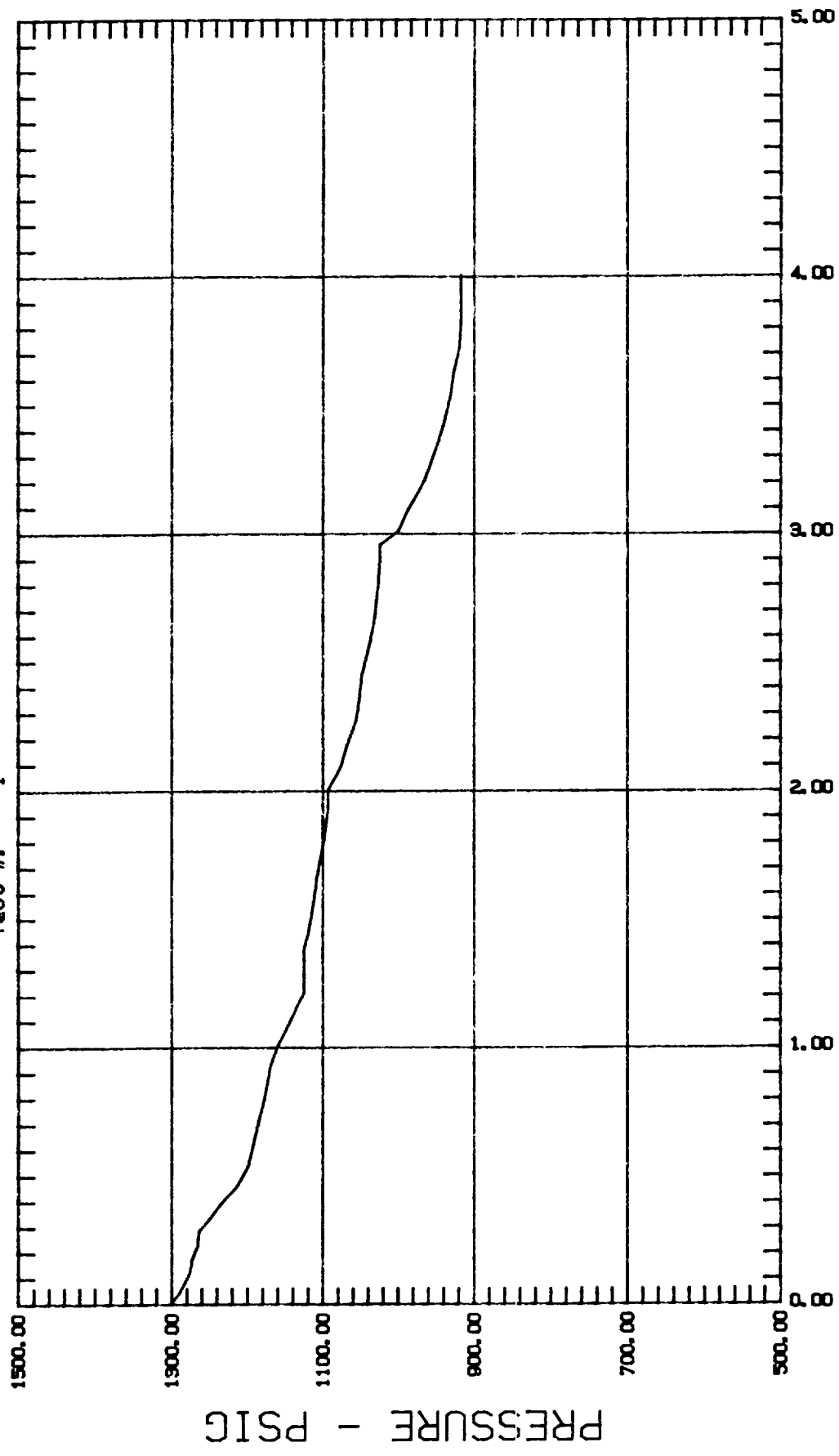
DATA FILE: 3

DATA POINT	REAL TIME	DELTA TIME HRS	DEFLECTION IN	PRESSURE PSIG	COMMENTS
1	13:15: 0	0.000	0.4208	1300.52	START 4 FT.
2	13:17:39	0.044	0.4174	1289.92	
3	13:22: 2	0.117	0.4132	1276.83	
4	13:25:24	0.173	0.4120	1273.09	
5	13:28:45	0.229	0.4096	1265.61	
6	13:32: 4	0.284	0.4090	1263.74	
7	13:34:52	0.331	0.4046	1250.03	
8	13:38: 8	0.386	0.4002	1236.32	
9	13:42:41	0.461	0.3928	1213.25	
10	13:46:59	0.533	0.3884	1199.54	
11	13:52:20	0.622	0.3860	1192.06	
12	13:56:20	0.689	0.3844	1187.07	
13	14: 2:50	0.797	0.3814	1177.72	
14	14:10:52	0.931	0.3786	1168.99	
15	14:15:10	1.003	0.3758	1160.26	END FIRST RATE
16	14:20: 2	1.084	0.3712	1145.92	
17	14:24:10	1.153	0.3678	1135.31	
18	14:27:49	1.214	0.3644	1124.71	
19	14:31:12	1.270	0.3644	1124.71	
20	14:35: 5	1.335	0.3644	1124.71	
21	14:38:19	1.389	0.3644	1124.71	
22	14:41:53	1.448	0.3626	1119.10	
23	14:48:55	1.565	0.3604	1112.24	
24	14:54:50	1.664	0.3590	1107.88	
25	15: 3:18	1.805	0.3560	1098.52	
26	15:10:47	1.930	0.3542	1092.91	
27	15:15: 8	2.002	0.3542	1092.91	END SECOND RATE
28	15:20:34	2.093	0.3488	1076.07	
29	15:25:29	2.175	0.3462	1067.96	
30	15:30:52	2.264	0.3426	1056.73	
31	15:35:44	2.346	0.3410	1051.74	
32	15:42:21	2.456	0.3396	1047.38	
33	15:49: 9	2.569	0.3366	1038.02	
34	15:55:13	2.670	0.3344	1031.16	
35	16: 3:45	2.813	0.3328	1026.17	
36	16: 8:20	2.889	0.3322	1024.29	
37	16:12:18	2.955	0.3322	1024.29	END THIRD RATE
38	16:15:39	3.011	0.3242	999.34	
39	16:20:40	3.094	0.3200	986.24	
40	16:26:55	3.199	0.3136	966.27	
41	16:33:31	3.309	0.3092	952.54	
42	16:39:56	3.416	0.3054	940.69	
43	16:46:55	3.532	0.3024	931.33	
44	16:53: 1	3.634	0.3008	926.34	
45	16:58:36	3.727	0.2984	918.85	
46	17: 4:43	3.829	0.2978	916.97	
47	17: 8:56	3.899	0.2978	916.97	
48	17:11:37	3.944	0.2978	916.97	
49	17:13:27	3.974	0.2978	916.97	
50	17:15:13	4.004	0.2978	916.97	END FOURTH RATE

Plot starting date: 4/7/91
time: 13:15:00
Gauge S/N 27626

Company: BENNETT-CATHEY
Client: SEAY & ASSOCIATES
Well name: BILBERRY
Well #: #1
Teet #: 1

Location: S8-T20S-R39E
Operator: KEN SHIPMAN
Comments: 4PT. WITH BOMBS ON BOTTOM
SHUT-IN DEAD WGT = 1200 PSI



DELTA TIME - HRS

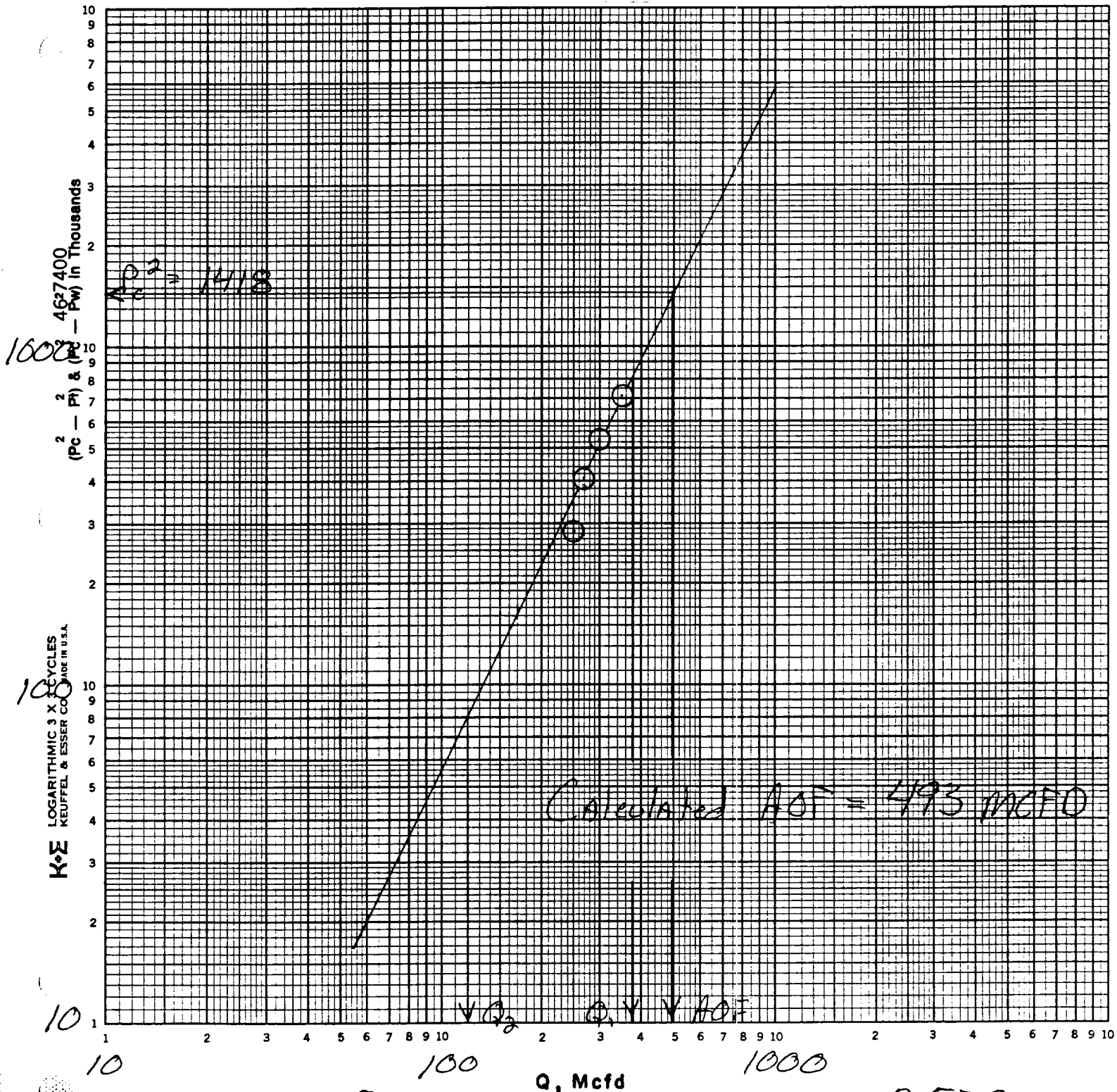
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HONORABLE CAROL

C & W WIRELINE, INC. d/b/a BENNETT-CATHEY WELL TESTING
BACK PRESSURE CURVE

Operator Seay & Associates Lease Bilberry Well No. #1
 County Lea Field House Location S6-T20S-R39E
 Date of Test 4-7-91 Slope "n" 0.500 Angle of Slope 63.4
 Calc. Abs. Potential 493 MCF/D



$$\overline{\Delta P}_1^2 \quad P_c^2 - P_w^2 = 800$$

$$\overline{\Delta P}_2^2 \quad P_c^2 - P_w^2 = 80$$

$$Q_1 = 379$$

$$Q_2 = 120$$

$$\text{LOG } Q_1 = 2.579$$

$$\text{LOG } Q_2 = 2.079$$

$$n = 0.500$$

Laboratory Services

1331 Tasker Drive
Hobbs, New Mexico 88240

Telephone: (505) 397-3713

FOR:

Bennett & Cathay
P. O. Box 1784
Hobbs, New Mexico 88241

SAMPLE

IDENTIFICATION: Billberry #1

COMPANY: Seay Association

LEASE:

PLANT:

SAMPLE DATA: DATE SAMPLED: 4/1/91
ANALYSIS DATE: 04-02-91
PRESSURE - PSIG 42.00
SAMPLE TEMP. °F 60.00
ATMOS. TEMP. °F 75.00

GAS (XX) LIQUID ()
SAMPLED BY: K. V. Shippman
ANALYSIS BY: Rolland Perry

REMARKS:

COMPONENT ANALYSIS

COMPONENT		MOL PERCENT	GPM
Oxygen	(O2)		
Hydrogen Sulfide	(H2S)		
Nitrogen	(N2)	37.28	
Carbon Dioxide	(CO2)	0.50	
Methane	(C1)	49.61	2.014
Ethane	(C2)	7.55	0.877
Propane	(C3)	3.19	0.111
i-Butane	(IC4)	0.34	0.252
n-Butane	(NC4)	0.80	0.058
i-Pentane	(IC5)	0.16	0.061
n-Pentane	(NC5)	0.17	0.164
Hexane	(C6)	0.40	0.000
Heptanes Plus	(C7+)	0.00	3.537
		100.00	

BTU/CU.FT. - DRY
AT 14.650 DRY
AT 14.650 WET
AT 15.025 DRY
AT 15.025 WET

784
782
788
802
788

MOLECULAR WT 23.5415
25% GASOLINE - 0.367

SPECIFIC GRAVITY -
CALCULATED
MEASURED

0.813
0.000

BENNETT-CATHEY

BOTTOM HOLE
PRESSURE / GRADIENT
REPORT

FOR:
SEAY & ASSOCIATES
4/ 1/91

WELL INFORMATION :

LEASE : BILBERRY	WELL # 1	FIELD : N/A
LOCATION : S6-T20S-R39E	FILE # SBI	
COUNTY : LEA	STATE : N.M.	
ELEVATION : 3596.00	ZERO POINT : G.L.	
TUBING SIZE : 2 3/8	DEPTH : 3000.0	
CASING SIZE : 4.5 10.5#	DEPTH : 4600.0	
PACKER TYPE : 0	@ 0.00 feet	
PERFORATED 2884.0 to 3119.0 feet	TOTAL DEPTH : 3270.0	

TEST INFORMATION :

WELL CONDITION : SHUT-IN	WELL TYPE : GAS
SURFACE TUBING PRESSURE 1200 psig by DWT	
SURFACE CASING PRESSURE 0 psig by N/A	
BOTTOM HOLE TEMPERATURE 0 deg. F. at 2900.0 feet	
BOTTOM HOLE PRESSURE 1296.0 psig at 2900.0 feet	
INSTRUMENT TYPE : RPG-3	NUMBER : 27626 RUN BY : RAY

C&W WIRELINE dba BENNETT-CATHEY, P.O. BOX 787 ARTESIA, NM 88210

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