

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Revised 9-1-63

Type Test ☒ Initial ☐ Annual ☐ Special						Test Date 3-26-84			
Company Energy Reserves Group, Inc.				Connection To Air					
Pool				Formation South Peterson Penn Associated				Unit	
Completion Date		Total Depth 7900		Plug Back TD 7680		Elevation 4402.3 GL.		Farm or Lease Name Bledsoe	
Cas. Size 4 1/2"	Wt. 11.6	d 4.000	Set At 7900	Perforations: From 7577 To 7638				Well No. 1	
Tub. Size 2 3/8"	Wt. 4.6	d 1.995	Set At 7572	Perforations: From OPENENDED To				Unit Sec. Trp. Age. H 11 6S 33E	
Type Well - Single - Brdenhead - G.G. or G.O. Multiple Single						Packer Set At 7572'		County Roosevelt	
Producing Thru Tubing		Reservoir Temp. °F 178 @ 7608'		Mean Annual Temp. °F 60°		Baro. Press. - P _a 13.2		State New Mexico	
L 7608	H 7608	G _g .7743	% CO ₂ 0.155	% N ₂ 5.223	% H ₂ S	Prover	Meter Run 3.668	Taps flange	

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							383	55°	PKR	CHOKE	1 Week
1.	3.668	x	1.500	50	12	39	355	56		15/64	1 Hr.
2.	3.668	x	1.500	50	23	40	325	56		17/64	1 Hr.
3.	3.668	x	1.500	50	41	43	277	57		21/64	1 Hr.
4.	3.668	x	1.500	50	74	51	197	57		28/64	1 Hr.
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, Mcfd
1	10.88	27.54	63.2	1.021	1.140	NIL	349
2	10.88	38.13	63.2	1.020	1.140	NIL	482
3	10.88	50.90	63.2	1.017	1.140	NIL	642
4	10.88	68.39	63.2	1.009	1.140	NIL	856
5							

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio 194.083 Mcf/bbl.	
					A.P.I. Gravity of Liquid Hydrocarbons 66.9 @ 60° Deg.	
1	.10	499	1.24	NIL	Specific Gravity Separator Gas .7743	XXXXXXXXXX
2	.10	500	1.25	NIL	Specific Gravity Flowing Fluid XXXXX	
3	.10	503	1.25	NIL	Critical Pressure 657 P.S.I.A.	P.S.I.A.
4	.10	511	1.27	NIL	Critical Temperature 401 R	R
5						

P _r 416.5 P _c ² 173.5					(1) $\frac{P_c^2}{P_r^2 - P_w^2} = 23.48$		(2) $\left[\frac{P_c^2}{P_r^2 - P_w^2} \right]^n = 1.881$	
NO.	P _r ²	P _w	P _w ²	P _c ² - P _w ²	AOF = Q $\left[\frac{P_c^2}{P_r^2 - P_w^2} \right]^n = 1.610$			
1		400.6	160.5	13.0				
2		372.6	138.8	34.7				
3		353.3	124.8	48.7				
4		315.6	99.6	73.9				
5								

Absolute Open Flow 1.610 Mcfd @ 15.025		Angle of Slope @ 53.5		Slope, n 740	
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Remarks: Calculated from known B.H.P. Measured with a Kuster gauge. Well made 1/2 bbl. of condensate during test.	
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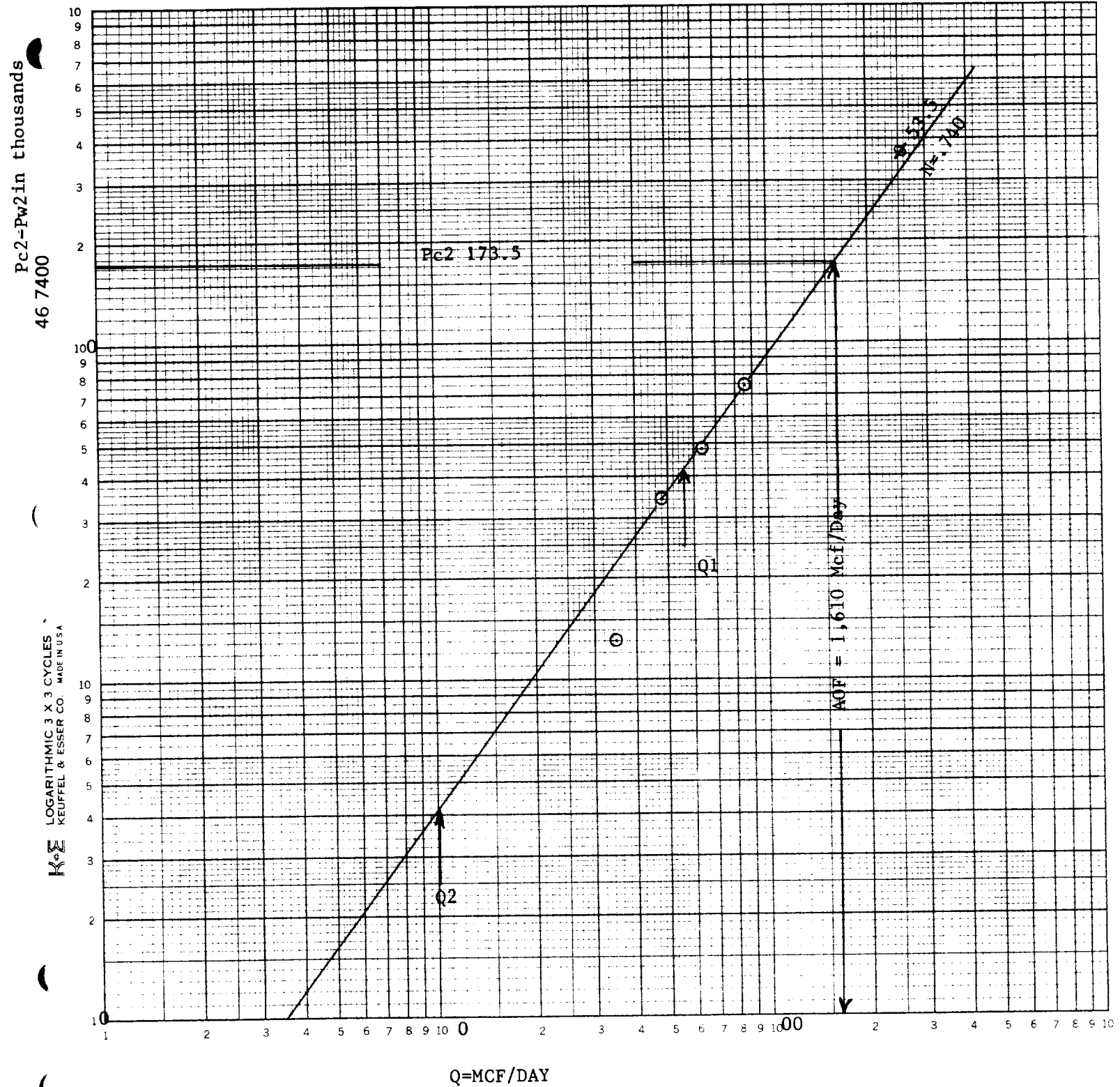
Approved By Commission:	Conducted By: W.S.	Calculated By: R.R.	Checked By: R.R.
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$$\text{CAOF} = 856 \frac{(173.5)}{73.9} = 1,610 \text{ Mcf/day}$$

ENERGY RESERVES GROUP, INC.
 BLEDSOE : 1
 March 26, 1984

$$\begin{aligned} Q_1 &= 560 = 2.748188 \\ Q_2 &= 102 = 2.008188 \\ N &= .740000 \end{aligned}$$



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WORK SHEET FOR CALCULATION OF WELLHEAD PRESSURES (P_c or P_{cl})

Form C-122F
Adopted 9-1-65

FROM KNOWN BOTTOM HOLE PRESSURE (P_f or P_{gl})

COMPANY

Energy Services Lease

WELL NO.

1

DATE

3-26-84

LOCATION: Unit

H

Section

11

Township

65

Range

33E

L 7608

H 7608

L/H 1.00

G .770

% CO₂ .155

% N₂ 5.223

% H₂S

GH 5858

P_{cr} 657

TABLE IX & X

T_{cr} 401

TABLE IX & X

LINE	1	2	3	4	5	6	7	8
1	T_w (W.H. °R)	534	534					
2	T_g (B.H. °R)	610	610					
3	$T = (\frac{T_w + T_g}{2})$	572	572					
4	Z (Est.)	.912	.920					
5	TZ	521.7	526.2					
6	GH/TZ	11.2	11.1					
7	e^s (Table XIV)	1.52	1.52					
8	P_f or P_s	513.2	513.2					
9	P_f^2 or P_s^2	263.4	263.4					
10	$P_c^2 = P_f^2/e^s$ or $P_w^2 = P_s^2/e^s$	172.9	173.5					
11	P_c or P_w	415.8	416.5					
12	$P = (\frac{P_w + P_s}{2})$ or $(\frac{P_c + P_f}{2})$	464.5	464.9					
13	$P_r = (P/P_{cr})$	.71	.71					
14	$T_r = (T/T_{cr})$	1.43	1.43					
15	Z (Table XI)	.920						

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

Form C-122F
Adopted 9-1-65

FROM KNOWN BOTTOM HOLE PRESSURE (P_s)

COMPANY Energy Services WELL NO. 65 DATE 3-26-84

LOCATION: Unit H Section 11 Township 6S Range 33E

L 7608 H 7608 L/H 1.00 G .770 % CO₂ .155 % N₂ 5.223 % H₂S

GH 5858 P_{cr} 657 T_{cr} 401

Rate #1 #2 #3 #4

NE	1	2	3	4	5	6	7	8
1	$T_w(W.H. \cdot R)$	534	534	534	534	534	534	534
2	$T_s(B.H. \cdot R)$	610	610	610	610	610	610	610
3	$T = \left(\frac{T_w + T_s}{2} \right)$	572	572	572	572	572	572	572
4	Z (Est.)	.916	.923	.921	.928	.925	.931	.932
5	TZ	523.9	527.9	526.8	530.8	529.1	532.5	533.1
6	GH/TZ	11.2	11.1	11.1	11.0	11.1	11.0	11.0
7	e^s (Table XIV)	1.52	1.52	1.52	1.51	1.51	1.51	1.51
8	P_s or P_s	493.2	493.2	458.2	458.2	434.2	434.2	389.2
9	P_f^2 or P_s^2	243.2	243.2	209.9	209.9	188.5	188.5	149.9
10	$P_c^2 = P_f^2 / e^s$ or $P_w^2 = P_s^2 / e^s$	159.9	160.5	138.4	138.8	124.5	124.8	99.3
11	P_w or P_w	399.9	400.6	372.6	372.6	352.8	353.3	315.1
12	$P = \left(\frac{P_w + P_s}{2} \right)$ or $\left(\frac{P_c + P_f}{2} \right)$	446.6	446.9	415.1	415.4	393.5	393.7	351.4
13	$P_1 = (P/P_{cr})$	.68	.68	.63	.63	.60	.60	.53
14	$T_1 = (T/T_{cr})$	1.43	1.43	1.43	1.43	1.43	1.43	1.43
15	Z (Table XI)	.923	.923	.928	.928	.931	.931	.939

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NEW-TEX LAB

PHONE 505/393-3561

P. O. BOX 1161

611 W. SNYDER

HOBBS, NEW MEXICO 88240

ANALYSIS CERTIFICATE

CLIENT: WEST ENGINEERING
ADDRESS: 412 N DAL PASO STREET
CITY, STATE: HOBBS NM 88240

ANALYSIS NUMBER: 2860
DATE OF RUN: 03/27/84
DATE SECURED: 03/26/84

SAMPLE IDENT: ENERGY RESERVE GROUP INC - BLEDSOE #1
SAMPLING PRESS: SAMPLING TEMP:

REMARKS: UNIT H - SEC 11 - T6S - R33E
REMARKS: ROOSEVELT CO

***** GAS ANALYSIS *****

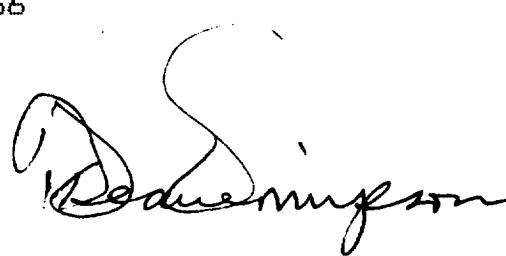
	MOLE PERCENT	GAL/ MCF
NITROGEN	5.223	
CARBON DIOXIDE	0.155	
METHANE	71.410	
ETHANE	11.430	3.048
PROPANE	7.576	2.080
ISO-BUTANE	0.792	0.258
NORMAL BUTANE	2.243	0.705
ISO-PENTANE	0.372	0.136
NORMAL PENTANE	0.509	0.184
HEXANES	0.290	0.119
HEPTANES PLUS	0.000	0.000
TOTAL	100.000	6.530

PROPANE GPM:	2.08	BUTANES GPM:	0.96
ETHANE GPM:	3.05	PENTANES PLUS GPM:	0.44

SPECIFIC GRAV (CALC): 0.7743
MOLE WEIGHT: 22.42

HHV-BTU/CU FT	PRESSURE (PSIA)	WET	DRY
14.696		1240	1263
14.650		1237	1259
14.730		1243	1265
14.735		1244	1266

DEANE SIMPSON



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