

Type Test		☒ Initial		☐ Annual		☐ Special		Test Date		9-6-78	
Company				Connection							
Cabot Corporation				None							
Pool				Formation				Unit			
King (Mississippian)				Mississippian				H			
Completion Date		Total Depth		Plug Back TD		Elevation		Farm or Lease Name			
8-4-78		12670		11600		3856 DF		J. L. Reed			
Case Size	Wt.	d	Set At	Perforations:		Well No.					
5 1/2"	20#	4.778	12590	From 11,421 To 11,471		1					
Case Size	Wt.	d	Set At	Perforations:		Unit		Sec. Top. Hgt.			
2 7/8 EUE	6.4	2.441	10568	From To		H		35 13S 37E			
Type Well - Single - Broadhead - G.G. or G.O. Multiple				Packer Set At				County			
Single				10568				Lea			
Producing thru		Reservoir Temp. °F		Mech Annual Temp. °F		Scro. Press. - P _a		State			
Tubing		169 ° 10630		60°		13.2		New Mexico			
L	H	G _g	% CO ₂	% N ₂	% H ₂ S	Provor	Meter Run	Taps			
10630	10630	.662	0	0	0		X	Flange			

FLOW DATA

NO.	Packer Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	TUBING DATA		CASING DATA		Direction of Flow
							Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	
SI							2160	79			
1.	3.0	1.5	510	3	60		1904	74			1 hr.
2.	3.0	1.5	510	8	54		1972	76			1 hr.
3.	3.0	1.5	510	14	46		1876	76			1 hr.
4.	3.0	1.5	510	20	44		1556	76			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 F _g	Super. Compress. Factor, F _{pv}	Rate of Flow Q, Mcfd
1.	11.13	39.61	523.2	1.000	1.2291	1.057	573
2.	11.13	64.70	523.2	1.0058	1.2291	1.061	944
3.	11.13	85.59	523.2	1.0137	1.2291	1.064	1263
4.	11.13	102.29	523.2	1.0157	1.2291	1.065	1514
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.	.78	520	1.38	.895	6.627	61.7 @ 60°	.662	X X X X X X X X	670	378
2.	.78	514	1.36	.889				X X X X X	P.S.I.A. 656	P.S.I.A. 504
3.	.78	506	1.34	.883						
4.	.78	504	1.33	.881						
5.										

NO.	P _r ²	P _w	P _w ²	P _c ² - P _w ²	(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 1.27339$	(2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1.22537$
1.		1883.7	3548	1175		
2.		1624.2	2638	2085		
3.		1475.0	2176	2547		
4.		1006.9	1014	3709		
5.						

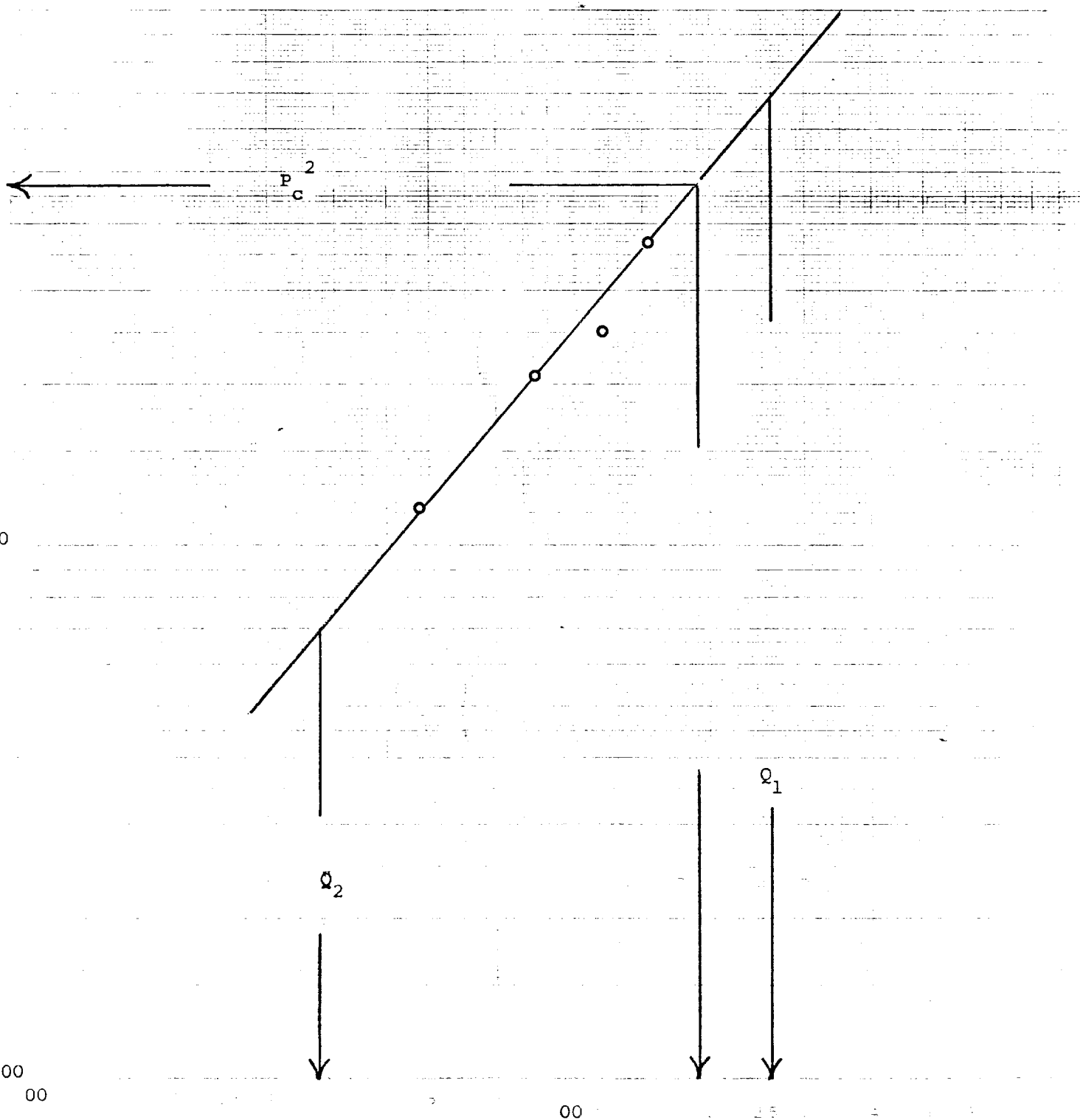
$$AOF = Q \left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1855$$

Absolute Open Flow 1855 Mcfd @ 15.025 Angle of Slope 49.9 Slope, n .841

Remarks: Sub Surface Pressures Recorded with RPG-3 Sub Surface Recording Pressure Gauge

Approved By: *John A. Runyan* Conducted By: WEST TEXAS CONSULTING SERVICE, INC. Calculated By: H. L. Hagler Checked By:

OPERATOR: CABOT CORPORATION
 LEASE: J. L. Reed
 WELL NO.: 1
 FIELD: King (Mississippi)
 COUNTY: Lea
 DATE: 9-6-78



Q in MCF/Day
 $Q_1 = 2600 \text{ MCF} \log Q_1 = 3.41497$
 $Q_2 = 375 \text{ MCF} \log Q_2 = 2.57403$
 $\quad \quad \quad .84094$
 ABSOLUTE OPEN FLOW 1855 MCF/Day

WORK SHEET FOR STEPWISE CALCULATION

Form C-122-E

XXXXXXXXXXXXXXXXXXXX

PRESSURE

(SURFACE)
Rate #1

(P & P)
C W

4PANY Cabot Corporation LEASE J. L. Reed TOWNSHIP RANGE

SECTION

10630 H 10630 L/H 1.0 G 1.039 % CO₂ %N₂ %H₂S

d 2.441 F_r Q_m M² cfd (L/H) (F_r Q_m)² P_{cr} 656 T_{cr} 378

ITEM	SOURCE	1	2	3	4	5	6	7	8	9	10
1	H	10630	5315			0					
2	GH	11045	5523			0					
3	37.5GH	414171	207113			0					
4	P or P _n	3529.2	2744.1	2729.1	2714.3	1901.2	1851.8	1795.5	1799.5		
5	P _r	5.38	4.18	4.16	4.14	2.90	2.82	2.74	2.74		
6	T	629	581.5	581.5	581.5	534	534	534	534		
7	T _r	1.25	1.15	1.15	1.15	1.06	1.06	1.06	1.06		
8	Z	.740	.599	.597	.595	.401	.391	.382	.382		
9	P/Z P/Z	4769.19	4581.17	4571.34	4561.93	4741.24	4736.17	4700.31	4710.73		
10	P/TZ	7.5822	7.8782	7.8613	7.8451	8.8786	8.8692	8.8021	8.8216		
11	(P/TZ) ² /1000										
12	L/H(F _r Q _m) ²										
13	11 + 12										
14	10 ÷ 13	131.888	125.932	127.206	127.468	127.630	112.749	113.610	113.358		
15	M = P - P _n		785.1	800.1	814.8	813.1	862.5	918.8	914.8		
16	N = 1 + 1 _n		263.776	258.821	254.138	254.674	240.098	225.380	226.358		
17	M x N				207072				207072		
18	Σ (M x N)				207072				414144		

delta P = $\frac{3(414171)}{131.888 + 4(127.468) + 113.358} = \frac{1242514}{755.118} = 1645.5$ P = 3529.2 - 1645.5 = 1883.7

WORK SHEET FOR STEPWISE CALCULATION

Form C-122-E

PRESSURE

(P_c & P_w)

(SURFACE)

Rate #2

COMPANY Cabot Corporation LEASE J. L. Reed WELL NO. 1 DATE 9-6-78

SECTION 10630 TOWNSHIP H RANGE 10630

ITEM 10630 L/H 1.0 G 1.039 % CO₂ 0 %H₂S 0

d 2.441 F Q_m M² cfd (L/H) (F_r Q_m)² P cr 656 T cr 504

ITEM	SOURCE	1	2	3	4	5	6	7	8	9	10
H		10630	5315			0					
GH		11045	5523			0					
37.5GH		414171	207113			0					
P _c or P _n		3194.2	2441.9	2431.3	2431.4	1649.8	1591.6	1526.9	1534.3	1537.4	
P _r		4.87	3.72	3.71	3.69	2.52	2.43	2.33	2.34	2.34	
T		629	582.5	582.5	582.5	536	536	536	536	536	
T _r		1.25	1.16	1.16	1.16	1.06	1.06	1.06	1.06	1.06	
Z		.699	.561	.560	.558	.355	.345	.334	.335	.335	
P/Z P/Z		4 ÷ 8	4352.88	4341.71	4339.51	4647.54	4613.47	4571.71	4580.00	4589.25	
P/TZ		9 ÷ 6	7.4727	7.4536	7.4497	8.6708	8.6072	8.5293	8.4480	8.5622	
(P/TZ) ² /1000											
L/H (F _r Q _m) ²											
I _n		137.646	133.820	134.163	134.232	115.330	115.181	117.243	117.031	115.795	
M = P _n - P _{n-1}			752.2	762.8	772.7	771.5	829.7	894.5	887.1	884.0	
N = 1 + 1 _{n-1}			275.293	271.466	267.983	268.396	249.562	231.512	233.424	234.274	
M x N					207070					207098	
Σ (M x N)					207070					414168	

$$\text{delta } P = \frac{3(414171)}{137.646 + 4(134.232) + 116.795} = \frac{1242514}{791.369} = 1570.0 \quad P = 3194.2 - 1570.0 = 1624.2$$

WORK SHEET FOR STEPWISE CALCULATION

Form C-122-E

PRESSURE
(P_c & P_w)

(SURFACE)

Rate #3

PANY Cabot Corporation

LEASE J. L. Reed

WELL NO. 1

DATE 9-6-78

SECTION		TOWNSHIP				RANGE									
UNIT		SECTION		TOWNSHIP				RANGE							
10630		10630		1.0		G		1.039		% CO ₂		% N ₂		% H ₂ S	
d 2.441		F _r		Q _m		L/H		M ² cfd		(L/H) (F _r Q _m) ²		P		T	
												cr		cr	

$$\Delta P = \frac{3(414171)}{141.609 + 4(138.600) + 119.696} = \frac{1242513}{815.705} = 1523.2 \text{ P} = 2998.2 - 1523.2 = 1475.0$$

WORK SHEET FOR STEPWISE CALCULATION

Form C-122-E

PRESSURE

(P_c & P_w)

(SURFACE)

Rate #4

MPANY Cabot Corporation LEASE J. L. Reed WELL NO. 1 DATE 9-6-78

CATION: UNIT SECTION TOWNSHIP RANGE

10630 H 10630 L/H 1.0 G 1.039 M^2 cfd $(L/H) (F Q)^2$ $\% CO_2$ $\% N_2$ $\% H_2 S$

NE	ITEM	SOURCE	1	2	3	4	5	6	7	8	9	10
1	H		10630	5315			0					
2	GH		11045	5523			0					
3	37.5GH		414171	207113			0					
4	P_c or P_n		2555.2	1884.3	1876.6	1869.5	1185.1	1128.3	1073.1	1105.1	1112.3	1098.5
5	P_r		3.90	2.87	2.86	2.85	1.81	1.72	1.63	1.69	1.69	1.67
6	T		629	582.5	582.5	582.5	536	536	536	536	536	536
7	T_r		1.25	1.16	1.16	1.16	1.06	1.06	1.06	1.06	1.06	1.06
8	Z		.627	.488	.487	.486	.283	.278	.278	.278	.278	.279
9	P/Z P/Z		4075.28	3861.36	3855.53	3846.73	4187.74	4058.95	3860.34	3980.91	4001.07	3937.27
0	P/TZ		6.4789	6.6289	6.6155	6.6038	7.8129	7.5727	7.2021	7.4291	7.4647	7.3457
1	$(P/TZ)^2 / 1000$		$(10^2 / 1000)$									
2	$L/H (F Q)^2$											
3	$\frac{11 + 12}{10 \div 13}$											
4	I_n		154.345	150.853	151.159	151.426	127.992	132.054	138.847	134.643	133.964	136.135
5	$M = P_n - P_{n-1}$											
6	$N = \frac{1}{n} + \frac{1}{n-1}$											
7	$M \times N$		15 x 16									
8	$\sum (M \times N)$		$\sum 17$									

$$\text{delta } P = \frac{3(414171)}{154.345 + 4(127.992) + 136.135} = \frac{1242513}{802.448} = 1548.3 \quad P = 2555.2 - 1438.3 = 1006.9$$

SOUTHWESTERN LABORATORIES
FORT WORTH - DALLAS - HOUSTON - MIDLAND - BEAUMONT - TEXARKANA
CONSULTING, ANALYTICAL CHEMISTS
AND TESTING ENGINEERS

Midland Texas 9-8-78 File No. C-1950-GD

Report of tests on Fluid

To Cabot Corporation

Date Rec'd. 9-7-78

Received from

Identification Marks J. C. Reed No. 1, 9-6-78, by W.T.C.S.

DISTILLATION, ASTM D-86

<u>Percent Distilled</u>	<u>Observed Temperature° F</u>
I.B.P.-----	83
5 -----	107
10 -----	121
20 -----	148
30 -----	164
40 -----	198
50 -----	221
60 -----	247
70 -----	289
80 -----	341
90 -----	443
95 -----	528
	538 (End Point)

Percent Recovery----- 95.5
Percent Residue ----- 1.0
Percent Loss ----- 3.5
Gravity ----- 61.7 ° A.P.I. @ 60° F
Color----- Clear

Bar. Press. ---- 688 mm Hg

3cc Cabot Corporation
1cc West Texas Consulting Service

SOUTHWESTERN LABORATORIES

Jack H. Barton

Lab. No. 42067

SOUTHWESTERN LABORATORIES

1703 West Industrial — P. O. Box 2150

MIDLAND, TEXAS 79701

(915) 683-3348

FRACTIONAL ANALYSIS REPORT

SAMPLE MARKED J. C. Reed No. 1

DATE RECEIVED 9-7-78

FILE NO. C-1950-G

LAB. NO. 42066

SAMPLE FROM Cabot Corporation

DATE SECURED 9-6-78

DATE OF RUN 9-7-78

SECURED BY W.T.C.S.

COMPONENT	MOL. %	G. P. M.	LIQUID VOL. %
Oxygen			
Nitrogen	3.60		
Carbon Dioxide	0.86		
Methane	84.20		
Ethane	7.30	1.946	
Propane	2.64	0.724	
Butane	0.34	0.111	
Isobutane	0.62	0.195	
Pentane	0.16	0.058	
Isopentane	0.15	0.054	
Hexanes	0.02	0.008	
Heptanes & Heavier	0.11	0.051	
Hydrogen Sulfide *	none det.		
Helium			
Hydrogen			
Carbon Monoxide			
TOTALS	100.00		

CONDENSATE VALUES, G.P.M.

Propane _____
Butane _____
Gasoline _____

HEATING VALVE, B.T.U. Per Cu. Ft. *

Calculated from % Composition 1097
Calculated water saturated 1077

SULPHUR CONTENT, Grains Per 100 Cu. Ft. *

Hydrogen Sulfide _____
Mercaptans _____

SPECIFIC GRAVITY*

Calculated from % Composition 0.662

*14,696 lbs./sq. in., 60° F

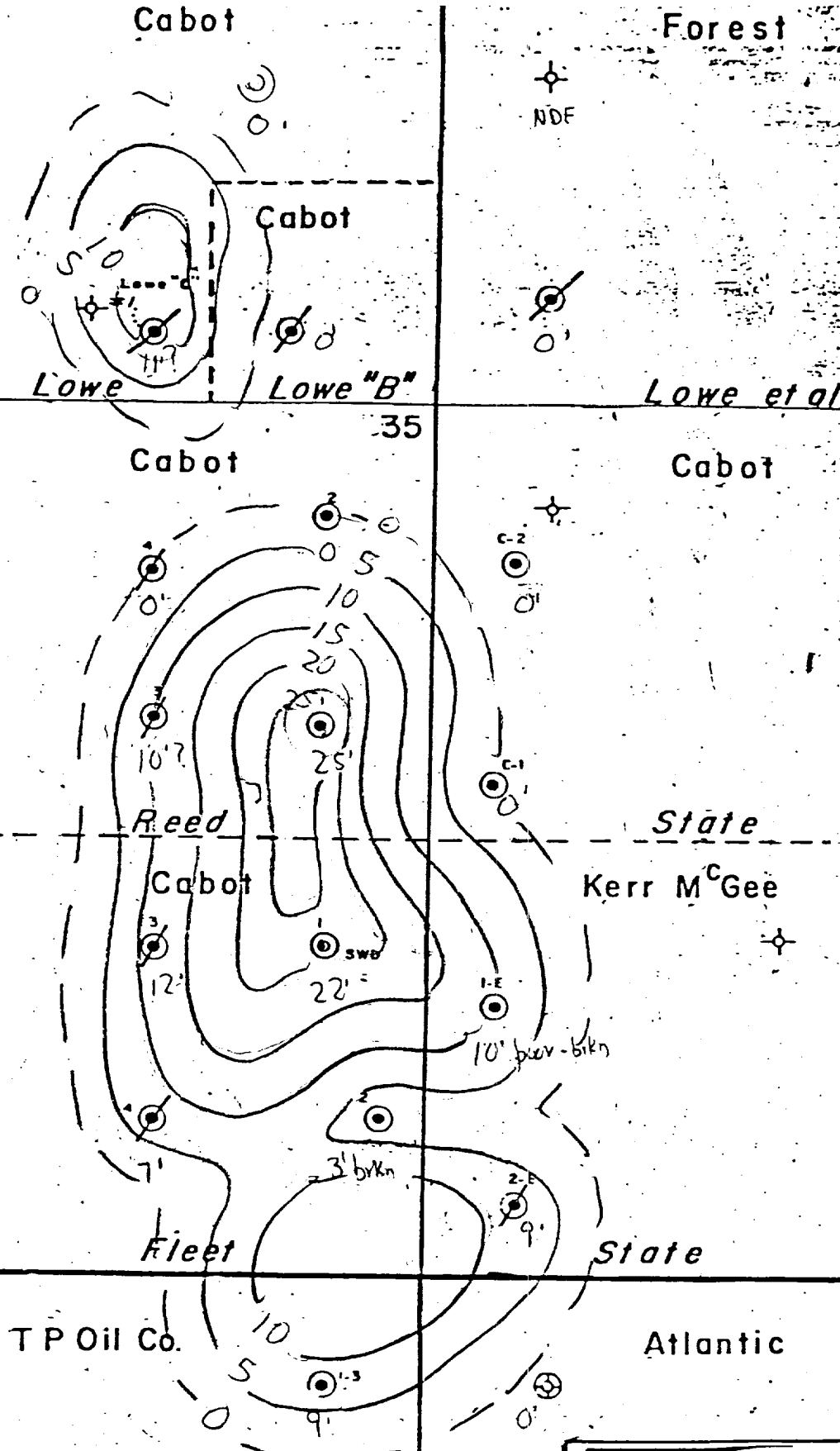
REMARKS * Determined on laboratory sample.

Propane plus GPM ---- 1.201

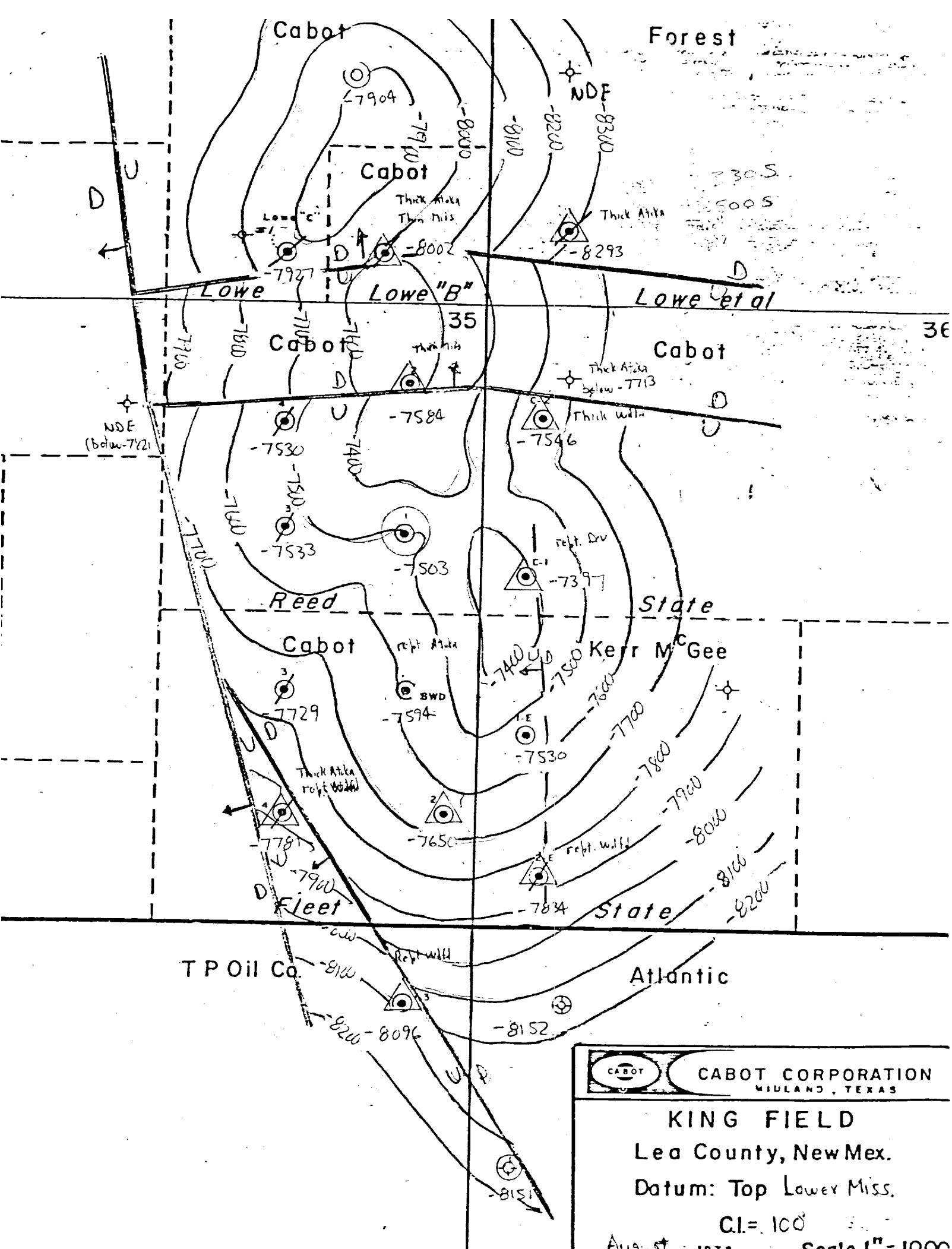
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1cc West Texas Consulting Service

SOUTHWESTERN LABORATORIES

Jack H. Barton



	CABOT CORPORATION MIDLAND, TEXAS	
	KING FIELD	
	Lea County, New Mex.	
	Datum:	Isobach Lower Miss. Porosity
CL= 5'		Scale 1"=100'



CABOT CORPORATION
MIDLAND, TEXAS

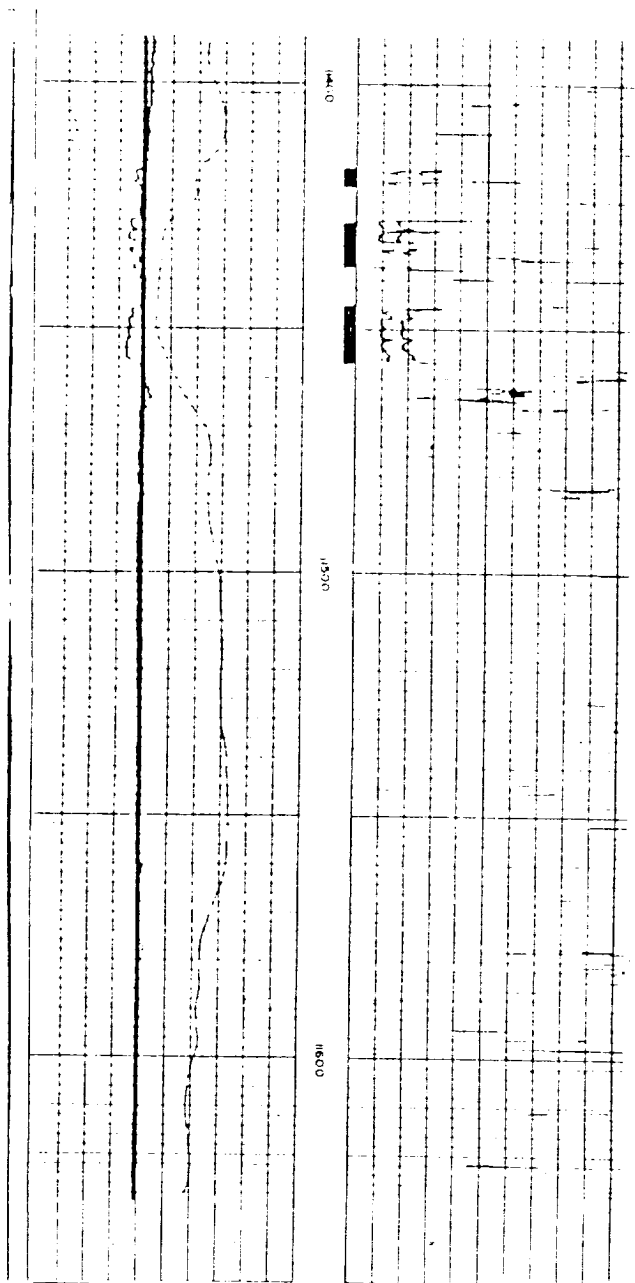
KING FIELD
Lea County, New Mex.
Datum: Top Lower Miss.

$$C.I. = 100$$

August 1872 Scale 1" = 1000

REED No. 1

MISS ML



FLEET No. 1

MISS ML

