

CHENEY TESTING COMPANY, INC.

P. O. Box 367

HILL CITY, KANSAS 67642

DRILL-STEM TEST DATA

Company <u>Viking Resources</u>	Test No. <u>1</u>
Well Name & Number <u>Collins #2</u>	Zone Tested <u>Topeka</u>
Company Address <u>120 S. Market #518, Wichita, Kan. 67202</u>	Date <u>10-30-87</u>
Company Rep. _____	Tester <u>Don Anderson</u>
Contractor <u>White & Ellis Drlg. #8</u>	Elevation <u>2031 K.B.</u>
Location: Sec. <u>5</u> Twp. <u>10</u> Rge. <u>16</u> Co. <u>Rooks</u> State <u>Kan</u>	Est. Feet of Pay _____

Recorder No. 13769 Type AK-1 Range 4200 PSI

Recorder Depth 3098 Clock # 25559

(A) Initial Hydrostatic Mud 1583 PSI

(B) First Initial Flow Pressure 78 PSI

(C) First Final Flow Pressure 78 PSI

(D) Initial Shut-in Pressure 1052 PSI

(E) Second Initial Flow Pressure 131 PSI

(F) Second Final Flow Pressure 131 PSI

(G) Final Shut-in Pressure 1025 PSI

(H) Final Hydrostatic Mud 1562 PSI

Temperature 98°

Mud Weight 9.0 Viscosity 42

Fluid Loss 12.4

Interval Tested 3088-3108

Anchor Length 20'

Top Packer Depth 3083

Bottom Packer Depth 3088

Total Depth 3108

Drill Pipe Size 4½ EX.H.

Wt. Pipe I. D. Collars 2.25 Ft. Run 454

Recovery-Total Feet 390 Fluid

Recovered 240 Feet Of G.I.P.

Recovered 150 Feet Of C.G.O.

Recovered 120 Feet Of M.C.G.O. (85% Oil 15% Mud)

Recovered 120 Feet Of M.S.W.

Recovered _____ Feet Of _____

Recovered _____ Feet Of _____

Extra Equipment _____

Recorder No. 7456 Type AK-1 Range 4150 PSI

Recorder Depth 3103 Clock # 25826

Tool Open Before I.S.I. 30 Mins.

Initial Shut-in 30 Mins.

Flow Period 60 Mins.

Final Shut-in 60 Mins.

Top Choke Size 1" Hole Size 7 7/8"

Bottom Choke Size 3/4" Rubber Size 6 3/4"

Tool Open @ 8:40 A.M.

Blow Remarks Steady bldg. blow off bottom of bucket in 26 min on both openings.

Price of Job _____

CHENEY TESTING CO, INC.
CALCULATION OF FORMATION CHARACTERISTICS
FROM DST DATA

FOR: VIKING RESOURCES
COLLINS #2
5-10S-16W
ROOKS CO., KS.
DST # 1
FORMATION: TOPEKA
ELEVATION: 2031 KB

TEST PARAMETERS

TEST INTERVAL: 3088 - 3108	EST PAY: 5
TIME INTERVAL: 30 - 30 - 60 - 60	VISCOSITY OF FLUID: 3
INITIAL FLOW PRESS: 84.7- 84.7	HOLE SIZE: 7.875
FINAL FLOW PRESS: 109.1- 148.3	D.C. CAPACITY:0.00492
SHUT-IN PRESS(I-F): 982.0- 991.5	W.P. CAPACITY:0.00000
BOTTOM HOLE TEMPERATURE: 98	D.P. CAPACITY:0.01402
TOTAL FEET OF RECOVERY: 390	TOTAL BARRELS RECOVERY: 1.9170

EXTRAPOLATED INITIAL SHUT-IN PRESSURE (PSI): 1065
SLOPE (PSI-CYCLE): 265 POINTS USED: 4

EXTRAPOLATED FINAL SHUT-IN PRESSURE (PSI): 1033
SLOPE (PSI-CYCLE): 93 POINTS USED: 6

CALCULATIONS

PRODUCTION POTENTIAL (B/D)	: 30.67
TRANSMISSIBILITY (MD-FT/CP)	: 53.63
EFFECTIVE PERMEABILITY (MD)	: 32.18
PRODUCTIVITY INDEX (B/D/PSI)	: 0.0606
DAMAGE RATIO	: 1.741
APPROXIMATE RADIUS OF INVESTIGATION (FT)	: 53.8
DRAWDOWN FACTOR (%)	: 3.005
POTENTIOMETRIC SURFACE (FT)	:1318.53

INITIAL SHUT-IN

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RECORDER NO: 7456 DEPTH: 3108 FT.
INITIAL FLOW TIME (T): 30 MIN.

DT(MIN)	LOG((T+DT)/DT)	PRESSURE(P SIG)
0	0.000	84.7
5	0.845	678.0
10	0.602	895.1
15	0.477	932.2
20	0.398	960.8
25	0.342	971.4
30	0.301	982.0

FINAL SHUT-IN

=====

RECORDER NO: 7456 DEPTH: 3108 FT.
TOTAL FLOW TIME: 90 MIN.

DT(MIN)	LOG((T+DT)/DT)	PRESSURE(P SIG)
0	0.000	148.3
5	1.279	572.0
10	1.000	863.3
15	0.845	914.2
20	0.740	942.8
25	0.663	953.4
30	0.602	966.1
35	0.553	972.5
40	0.512	978.8
45	0.477	982.0
50	0.447	985.2
55	0.421	988.3
60	0.398	991.5

HORNER PLOT
 VIKING RESOURCES
 COLLINS #2
 DST # 1 DEPTH: 3108
 RECORDER NO. 7456
 INITIAL SHUT-IN: \diamond
 FINAL SHUT-IN: \square

$F = 940$

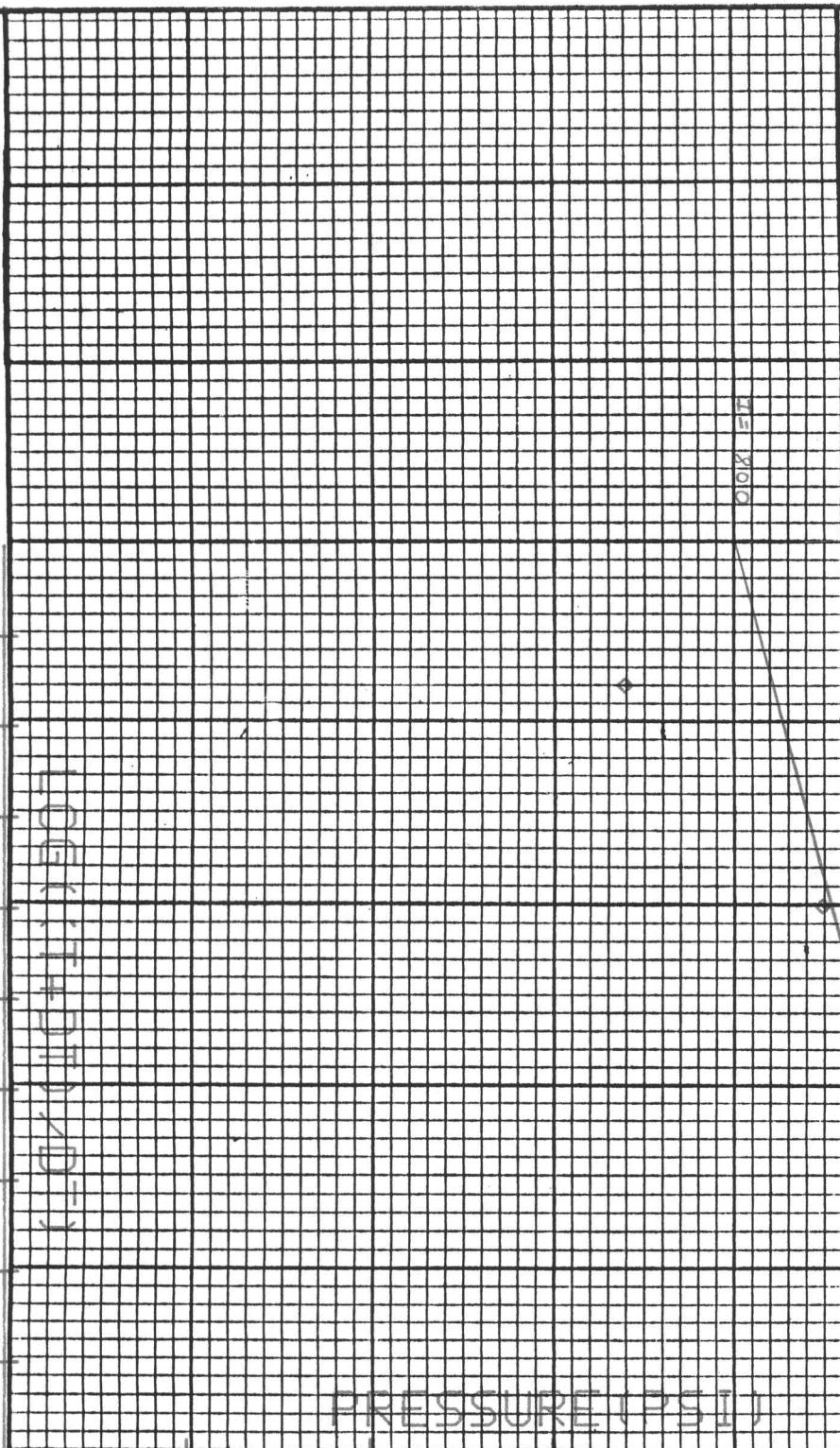
215 X100

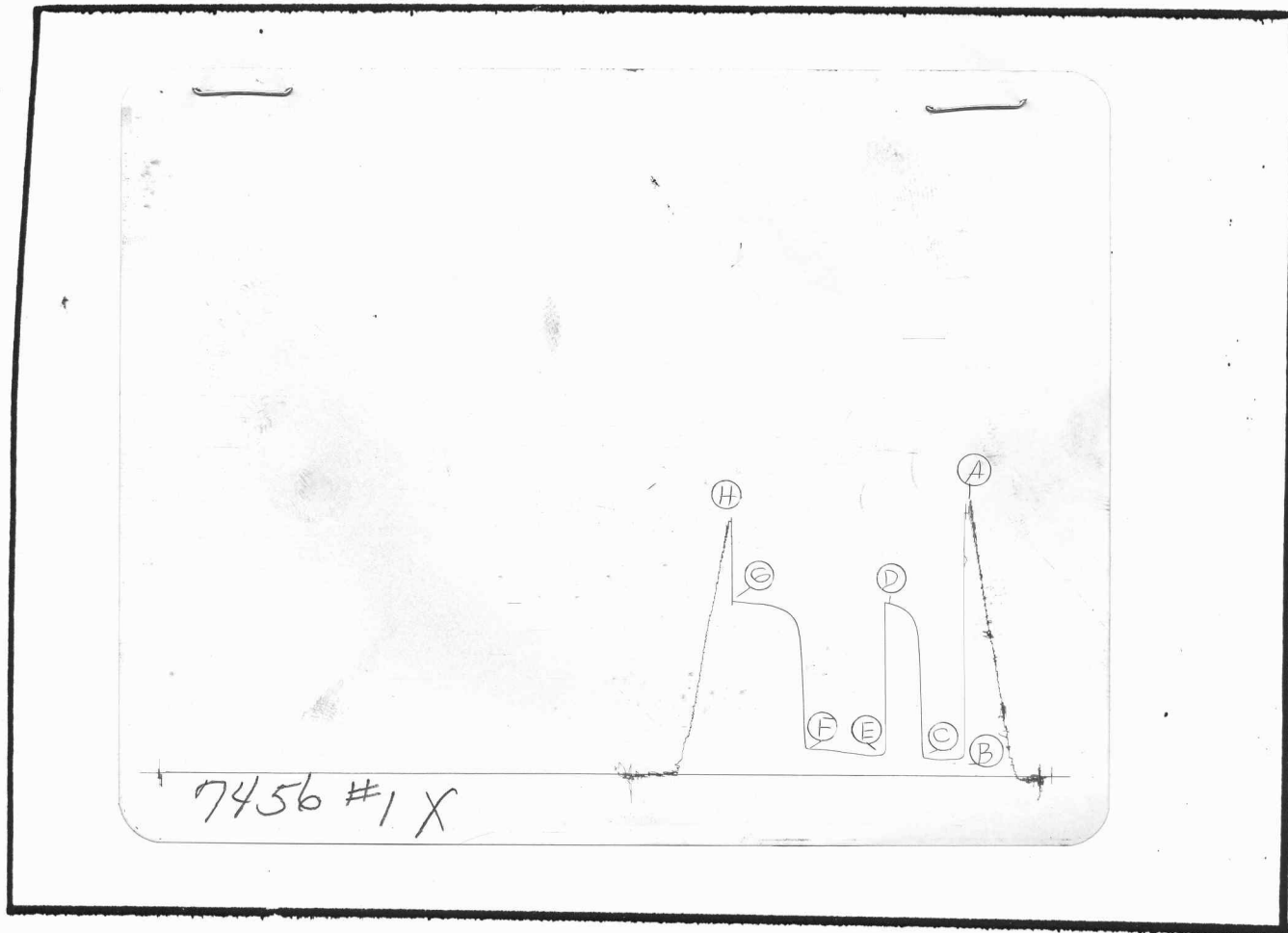
LOG (t + DT) / D = 1

PRESSURE (PSI)

1.0 0.9 0.8 0.7 0.6 0.5 0.4 0.3 0.2 0.1 0.0

1200
1033 = F
1000
1065 = I
800
600
400
200





This is an actual photograph of recorder chart.

POINT	PRESSURE		PSI
	Field Reading	Office Reading	
(A) Initial Hydrostatic Mud	1583	1580	PSI
(B) First Initial Flow Pressure	78	84.7	PSI
(C) First Final Flow Pressure	78	84.7	PSI
(D) Initial Closed-in Pressure	1052	982.0	PSI
(E) Second Initial Flow Pressure	131	109.1	PSI
(F) Second Final Flow Pressure	131	148.3	PSI
(G) Final Closed-in Pressure	1025	991.5	PSI
(H) Final Hydrostatic Mud	1562	1560	PSI

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HILL CITY, KANSAS 67642

DRILL-STEM TEST DATA

Company <u>Viking Resources</u>	Test No. <u>2</u>
Well Name & Number <u>Collins #2</u>	Zone Tested <u>Lansing A & B</u>
Company Address <u>120 S. Market #518, Wichita, Kan. 67202</u>	Date <u>10-30-87</u>
Company Rep. <u>Marvin Douglas</u>	Tester <u>Don Anderson</u>
Contractor <u>White & Ellis Drlg. #8</u>	Elevation <u>2031 K.B.</u>
Location: Sec. <u>5</u> Twp. <u>10</u> Rge. <u>16</u> Co. <u>Rooks</u> State <u>Kan</u>	Est. Feet of Pay _____

Recorder No. 13769 Type AK-1 Range 4200 PSI

Recorder Depth 3216 Clock # 25559

(A) Initial Hydrostatic Mud 1593 PSI

(B) First Initial Flow Pressure 169 PSI

(C) First Final Flow Pressure 169 PSI

(D) Initial Shut-in Pressure 884 PSI

(E) Second Initial Flow Pressure 169 PSI

(F) Second Final Flow Pressure 169 PSI

(G) Final Shut-in Pressure 884 PSI

(H) Final Hydrostatic Mud 1516 PSI

Temperature 102°

Mud Weight 9.1 Viscosity 42

Fluid Loss 12.6

Interval Tested 3169-3226

Anchor Length 57

Top Packer Depth 3164

Bottom Packer Depth 3169

Total Depth 3226

Drill Pipe Size 4½ EX.H.

Wt. Pipe I. D. Collars 2.25 Ft. Run 454

Recovery-Total Feet 195

Recovered 285 Feet Of Gas in Pipe.

Recovered 75 Feet Of Clean Gassy Oil. (GR 40)

Recovered 120 Feet Of Oil-Cut Gassy Mud. (45% Oil, 55% Mud)

Recovered _____ Feet Of _____

Recovered _____ Feet Of _____

Recovered _____ Feet Of _____

Extra Equipment _____ Price of Job _____

Recorder No. 7456 Type AK-1 Range 4150 PSI

Recorder Depth 3221 Clock # 25826

Tool Open Before I.S.I. 30 Mins.

Initial Shut-in 30 Mins.

Flow Period 60 Mins.

Final Shut-in 60 Mins.

Top Choke Size 1" Hole Size 7 7/8"

Bottom Choke Size 3/4" Rubber Size 6 3/4"

Tool Open @ 11:50 P.M.

Blow Remarks 1st Open: Steady build to 7".

2nd Open: Steady Build off bottom of bucket
in 40 min.

CHENEY TESTING CO, INC.
CALCULATION OF FORMATION CHARACTERISTICS
FROM DST DATA

FOR: VIKING RESOURCES
COLLINS #2
5-10S-16W
ROOKS CO., KS.
DST # 2
FORMATION: LANSING
ELEVATION: 2031 KB

TEST PARAMETERS

TEST INTERVAL: 3169 - 3226
TIME INTERVAL: 30 - 30 - 60 - 60
INITIAL FLOW PRESS: 164.2- 164.2
FINAL FLOW PRESS: 169.5- 169.5
SHUT-IN PRESS(I-F): 886.7- 882.4
BOTTOM HOLE TEMPERATURE: 102
TOTAL FEET OF RECOVERY: 195
EST PAY: 5
VISCOSITY OF FLUID: 3
HOLE SIZE: 7.875
D.C. CAPACITY:0.00492
W.P. CAPACITY:0.00000
D.P. CAPACITY:0.01402
TOTAL BARRELS RECOVERY: 0.9585

EXTRAPOLATED INITIAL SHUT-IN PRESSURE (PSI): 1016
SLOPE (PSI-CYCLE): 416 POINTS USED: 4

EXTRAPOLATED FINAL SHUT-IN PRESSURE (PSI): 1005
SLOPE (PSI-CYCLE): 320 POINTS USED: 6

CALCULATIONS

PRODUCTION POTENTIAL (B/D) : 15.34
TRANSMISSIBILITY (MD-FT/CP) : 7.79
EFFECTIVE PERMEABILITY (MD) : 4.68
PRODUCTIVITY INDEX (B/D/PSI) : 0.0088
DAMAGE RATIO : 0.478
APPROXIMATE RADIUS OF INVESTIGATION (FT) : 20.5
DRAWDOWN FACTOR (%) : 1.083
POTENTIOMETRIC SURFACE (FT) :1135.60

INITIAL SHUT-IN

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RECORDER NO: 7456 DEPTH: 3226 FT.
INITIAL FLOW TIME (T): 30 MIN.

DT(MIN)	LOG((T+DT)/DT)	PRESSURE(P SIG)
0	0.000	164.2
5	0.845	587.9
10	0.602	757.4
15	0.477	817.8
20	0.398	849.6
25	0.342	873.9
30	0.301	886.7

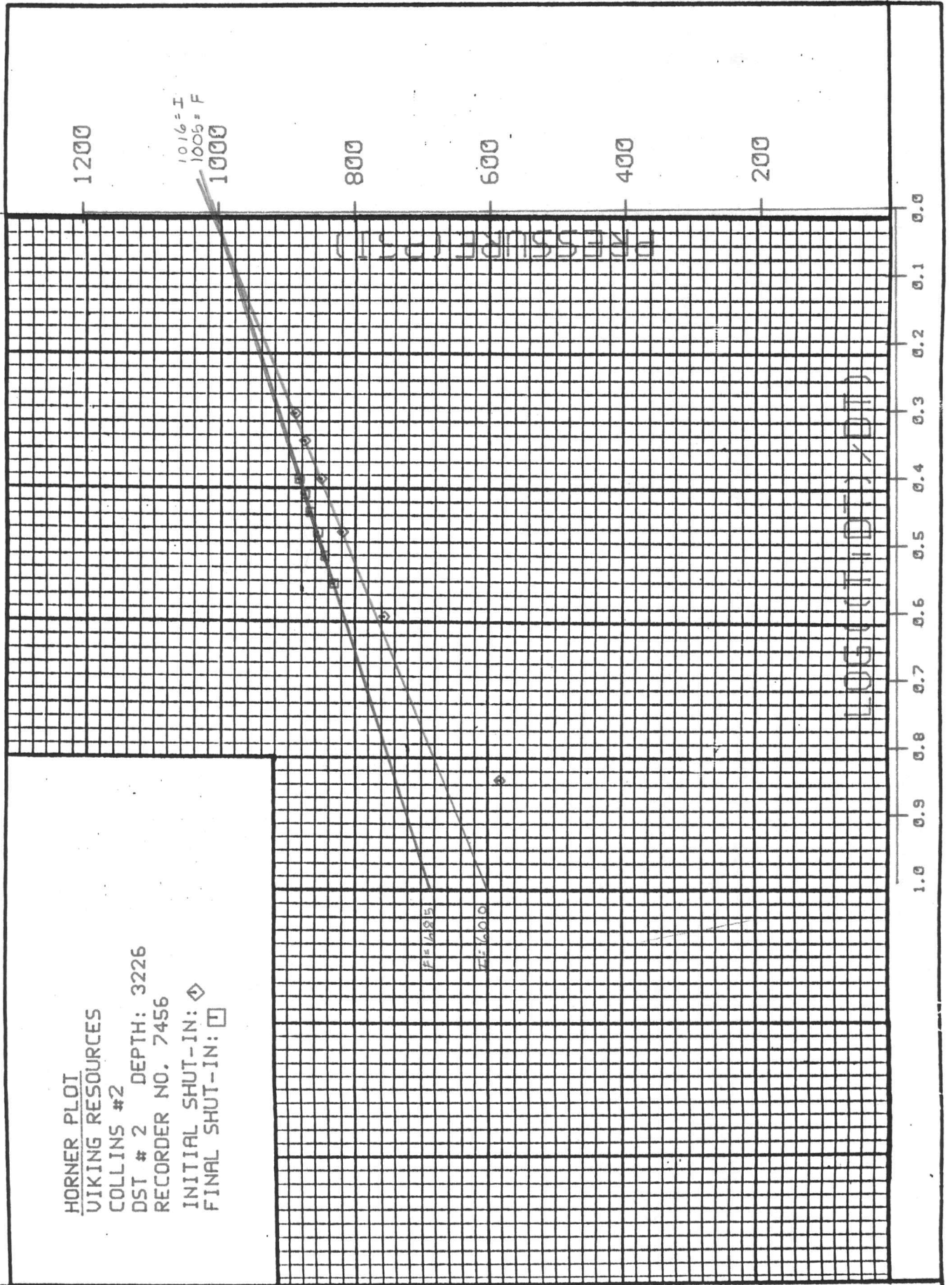
FINAL SHUT-IN

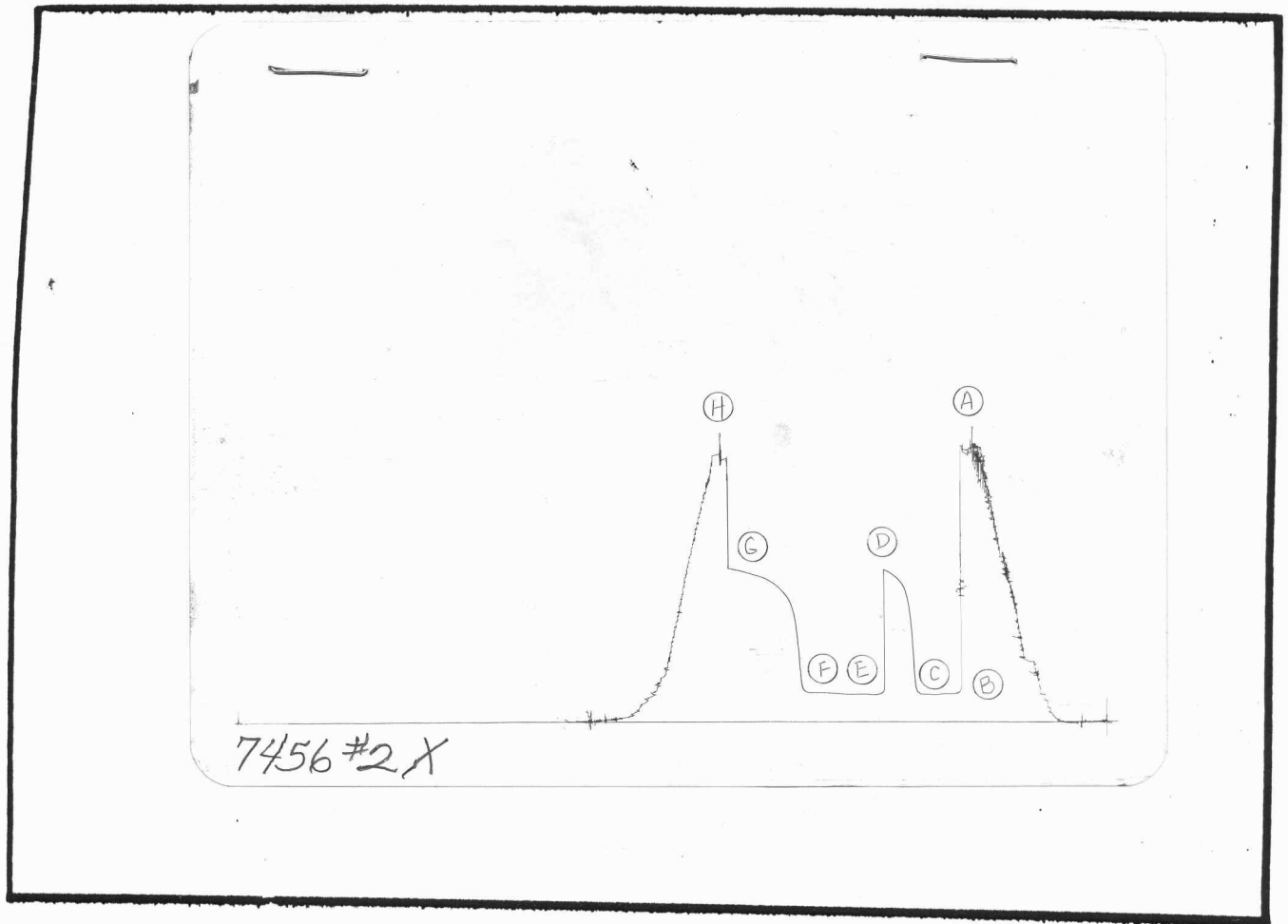
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RECORDER NO: 7456 DEPTH: 3226 FT.
TOTAL FLOW TIME: 90 MIN.

DT(MIN)	LOG((T+DT)/DT)	PRESSURE(P SIG)
0	0.000	169.5
5	1.279	344.3
10	1.000	598.5
15	0.845	699.2
20	0.740	752.1
25	0.663	783.9
30	0.602	805.1
35	0.553	831.6
40	0.512	844.3
45	0.477	854.9
50	0.447	865.5
55	0.421	873.9
60	0.398	882.4

HORNER PLOT
 VIKING RESOURCES
 COLLINS #2
 DST # 2 DEPTH: 3226
 RECORDER NO. 7456
 INITIAL SHUT-IN: \diamond
 FINAL SHUT-IN: \square





This is an actual photograph of recorder chart.

POINT	PRESSURE		PSI
	Field Reading	Office Reading	
(A) Initial Hydrostatic Mud	1593	1610.0	PSI
(B) First Initial Flow Pressure	169	164.2	PSI
(C) First Final Flow Pressure	169	164.2	PSI
(D) Initial Closed-in Pressure	884	886.7	PSI
(E) Second Initial Flow Pressure	169	169.5	PSI
(F) Second Final Flow Pressure	169	169.5	PSI
(G) Final Closed-in Pressure	884	882.4	PSI
(H) Final Hydrostatic Mud	1516.5	1551.0	PSI

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DRILL-STEM TEST DATA

Company <u>Viking Resources</u>	Test No. <u>3</u>
Well Name & Number <u>Collins #2</u>	Zone Tested <u>Lansing</u>
Company Address <u>120 S. Market #518, Wichita, Kan. 67202</u>	Date <u>10-31-87</u>
Company Rep. <u>Marvin Douglas</u>	Tester <u>Don Anderson</u>
Contractor <u>White & Ellis Drlg. #8</u>	Elevation <u>2031 K.B.</u>
Location: Sec. <u>5</u> Twp. <u>10</u> Rge. <u>16</u> Co. <u>Rooks</u> State <u>Kan</u>	Est. Feet of Pay _____

Recorder No. 13769 Type AK-1 Range 4200 PSI
 Recorder Depth 3288 Clock # 25559
 (A) Initial Hydrostatic Mud 1625 PSI
 (B) First Initial Flow Pressure 158 PSI
 (C) First Final Flow Pressure 186 PSI
 (D) Initial Shut-in Pressure 612 PSI
 (E) Second Initial Flow Pressure 205 PSI
 (F) Second Final Flow Pressure 254 PSI
 (G) Final Shut-in Pressure 633 PSI
 (H) Final Hydrostatic Mud 1531 PSI
 Temperature 112^o
 Mud Weight 9.1 Viscosity 42
 Fluid Loss 11.8
 Interval Tested 3228-3298
 Anchor Length 70
 Top Packer Depth 3223
 Bottom Packer Depth 3228
 Total Depth 3298
 Drill Pipe Size 4½ EX.H.
 Wt. Pipe I. D. Collars 2.25 Ft. Run 454
 Recovery-Total Feet 420

Recorder No. 7456 Type AK-1 Range 4150 PSI
 Recorder Depth 3293 Clock # 25826
 Tool Open Before I.S.I. 30 Mins.
 Initial Shut-in 30 Mins.
 Flow Period 60 Mins.
 Final Shut-in 60 Mins.
 Top Choke Size 1" Hole Size 7 7/8"
 Bottom Choke Size 3/4" Rubber Size 6 3/4"
 Tool Open @ 1:30 P.M.

Blow Remarks 1st Open: Weak steady blow 2"
decreasing. 2nd Open: Steady building blow
off bottom of bucket in 30 min. Strong build-
ing blow after shut-in for 2nd close to 8"
throughout closed.

Recovered 480 Feet Of Gas in Pipe.
 Recovered 180 Feet Of Clean Gassy Oil. (GR 42)
 Recovered 120 Feet Of Mud-Cut Oil. (70% Oil, 30% Mud)
 Recovered 120 Feet Of Oil-Cut Mud. (35% Oil, 65% Mud)
 Recovered _____ Feet Of _____
 Recovered _____ Feet Of _____

Extra Equipment _____ Price of Job _____

CHENEY TESTING CO, INC.
CALCULATION OF FORMATION CHARACTERISTICS
FROM DST DATA

FOR: VIKING RESOURCES
COLLINS #2 DST # 3
5-10S-16W FORMATION: LANSING
ROOKS CO., KS. ELEVATION: 2031 KB

TEST PARAMETERS

TEST INTERVAL: 3228 - 3298	EST PAY: 5
TIME INTERVAL: 30 - 30 - 60 - 60	VISCOSITY OF FLUID: 3
INITIAL FLOW PRESS: 143.0- 196.0	HOLE SIZE: 7.875
FINAL FLOW PRESS: 190.7- 238.3	D.C. CAPACITY:0.00492
SHUT-IN PRESS(I-F): 609.1- 626.1	W.P. CAPACITY:0.00000
BOTTOM HOLE TEMPERATURE: 112	D.P. CAPACITY:0.01402
TOTAL FEET OF RECOVERY: 420	TOTAL BARRELS RECOVERY: 2.0644

EXTRAPOLATED INITIAL SHUT-IN PRESSURE (PSI): 670
SLOPE (PSI-CYCLE): 215 POINTS USED: 4

EXTRAPOLATED FINAL SHUT-IN PRESSURE (PSI): 682
SLOPE (PSI-CYCLE): 144 POINTS USED: 6

CALCULATIONS

PRODUCTION POTENTIAL (B/D)	: 33.03
TRANSMISSIBILITY (MD-FT/CP)	: 37.30
EFFECTIVE PERMEABILITY (MD)	: 22.38
PRODUCTIVITY INDEX (B/D/PSI)	: 0.0421
DAMAGE RATIO	: 0.564
APPROXIMATE RADIUS OF INVESTIGATION (FT)	: 44.9
DRAWDOWN FACTOR (%)	: -1.791
POTENTIOMETRIC SURFACE (FT)	: 314.56

INITIAL SHUT-IN

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RECORDER NO: 7456 DEPTH: 3298 FT.
INITIAL FLOW TIME (T): 30 MIN.

DT(MIN)	LOG((T+DT)/DT)	PRESSURE(P SIG)
0	0.000	196.0
5	0.845	482.0
10	0.602	550.8
15	0.477	572.0
20	0.398	587.9
25	0.342	598.5
30	0.301	609.1

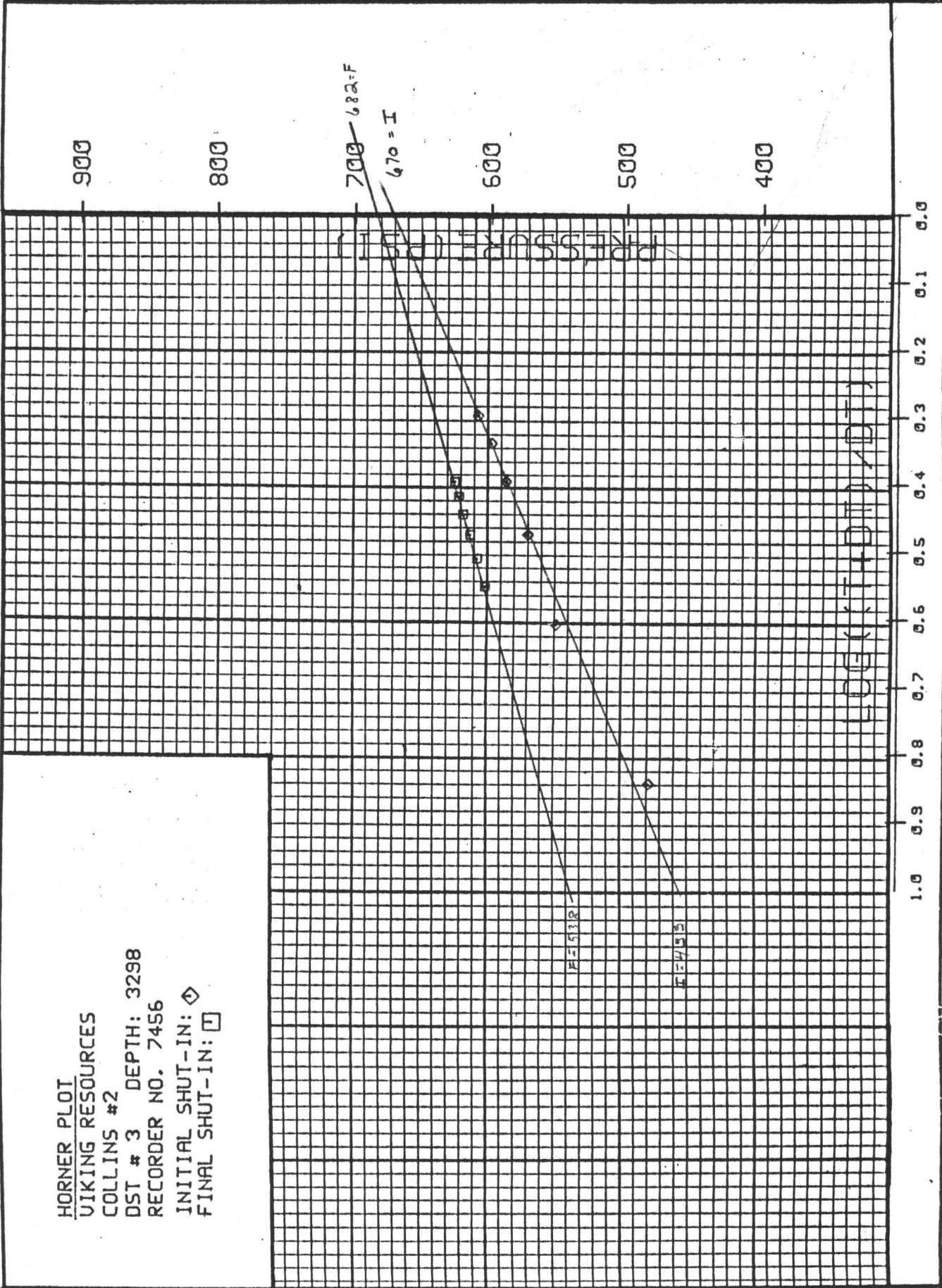
FINAL SHUT-IN

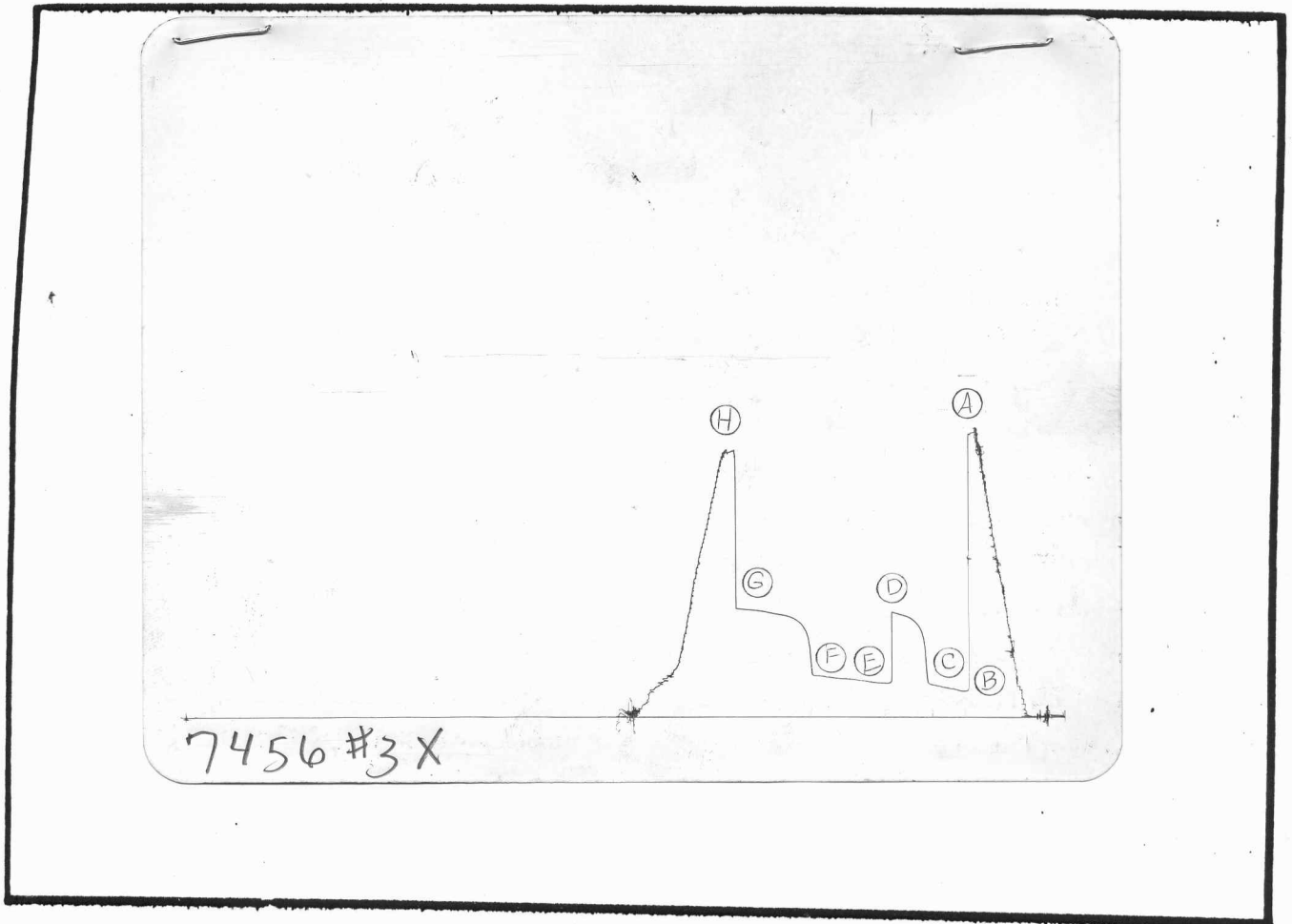
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RECORDER NO: 7456 DEPTH: 3298 FT.
TOTAL FLOW TIME: 90 MIN.

DT(MIN)	LOG((T+DT)/DT)	PRESSURE(P SIG)
0	0.000	238.3
5	1.279	478.8
10	1.000	542.4
15	0.845	565.7
20	0.740	582.6
25	0.663	593.2
30	0.602	598.5
35	0.553	603.8
40	0.512	609.1
45	0.477	614.4
50	0.447	619.7
55	0.421	622.9
60	0.398	626.1

HORNER PLOT
 VIKING RESOURCES
 COLLINS #2
 DST # 3 DEPTH: 3298
 RECORDER NO. 7456
 INITIAL SHUT-IN: \diamond
 FINAL SHUT-IN: \square





This is an actual photograph of recorder chart.

POINT	PRESSURE		PSI
	Field Reading	Office Reading	
(A) Initial Hydrostatic Mud	1625	1668.0	PSI
(B) First Initial Flow Pressure	158	143	PSI
(C) First Final Flow Pressure	186	196	PSI
(D) Initial Closed-in Pressure	612	609	PSI
(E) Second Initial Flow Pressure	205	190.7	PSI
(F) Second Final Flow Pressure	254	238.3	PSI
(G) Final Closed-in Pressure	633	626.1	PSI
(H) Final Hydrostatic Mud	1531	1546.0	PSI

CHENEY TESTING COMPANY, INC.

P. O. Box 367 HILL CITY, KANSAS 67642

DRILL-STEM TEST DATA

Company Viking Resources	Test No. 4
Well Name & Number Collins #2	Zone Tested
Company Address 120 S. Market #518, Wichita, Kan. 67202	Date 11-1-87
Company Rep. Marvin Douglas	Tester Don Anderson
Contractor White & Ellis Drlg. #8	Elevation 2031 K.B.
Location: Sec. 5 Twp. 10 Rge. 16 Co. Rooks State Kan	Est. Feet of Pay

Recorder No. 13769 Type AK-1 Range 4200 PSI
 Recorder Depth 3547 Clock # 25559

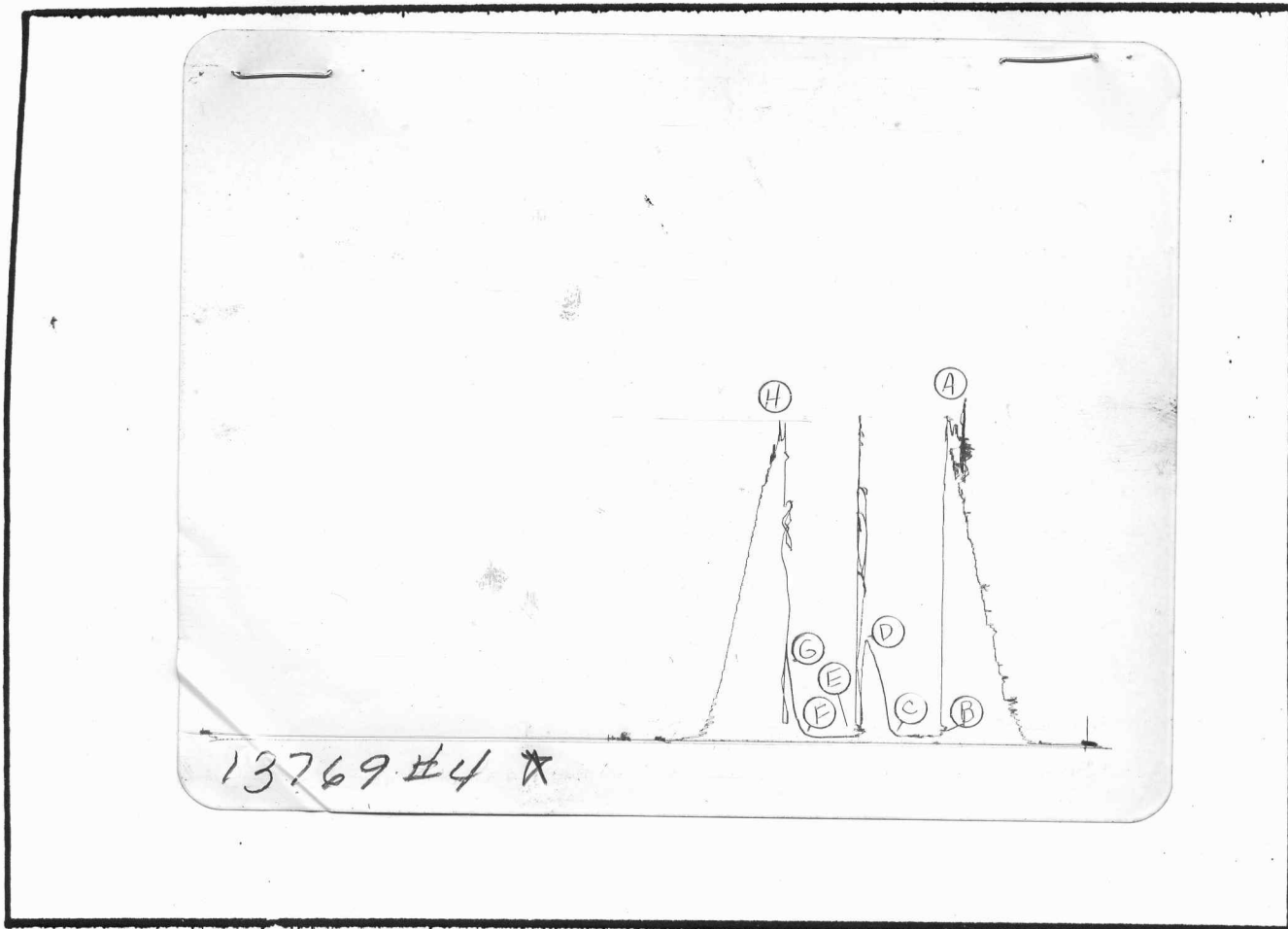
(A) Initial Hydrostatic Mud 1846 PSI
 (B) First Initial Flow Pressure 42 PSI
 (C) First Final Flow Pressure 42 PSI
 (D) Initial Shut-in Pressure 582 PSI
 (E) Second Initial Flow Pressure 31 PSI
 (F) Second Final Flow Pressure 21 PSI
 (G) Final Shut-in Pressure 550 PSI
 (H) Final Hydrostatic Mud 1804 PSI

Temperature 114°
 Mud Weight 9.2 Viscosity 44
 Fluid Loss 12.4
 Interval Tested 3560-3567
 Anchor Length 7
 Top Packer Depth 3553
 Bottom Packer Depth 3560
 Total Depth 3567
 Drill Pipe Size 4½ EX.H.
 Wt. Pipe I. D. Collars 2.25 Ft. Run 454
 Recovery-Total Feet 5

Recorder No. 7456 Type AK-1 Range 4150 PSI
 Recorder Depth 563562 Clock # 25826

Tool Open Before I.S.I. 30 Mins.
 Initial Shut-in 30 Mins.
 Flow Period 30 Mins.
 Final Shut-in 30 Mins.
 Top Choke Size 1" Hole Size 7 7/8"
 Bottom Choke Size 3/4" Rubber Size 6 3/4"
 Tool Open @ 7:42 P.M.
 Blow Remarks Weak ¼" Blow on 1st Open.
 No Blow on 2nd Open. Flushed tool - No Blow.

Recovered 5 Feet Of Oil-Specked Mud.
 Recovered Feet Of
 Recovered Feet Of
 Recovered Feet Of
 Recovered Feet Of
 Recovered Feet Of
 Extra Equipment Price of Job



This is an actual photograph of recorder chart.

POINT	PRESSURE		PSI
	Field Reading	Office Reading	
(A) Initial Hydrostatic Mud	1846		PSI
(B) First Initial Flow Pressure	42		PSI
(C) First Final Flow Pressure	42		PSI
(D) Initial Closed-in Pressure	582		PSI
(E) Second Initial Flow Pressure	31		PSI
(F) Second Final Flow Pressure	21		PSI
(G) Final Closed-in Pressure	550		PSI
(H) Final Hydrostatic Mud	1804		PSI