

CHENEY TESTING COMPANY, INC.

P. O. Box 367

HILL CITY, KANSAS 67642

DRILL-STEM TEST DATA

Company	Ritchie Exploration	Test No.	1
Well Name & Number	#1 Wyrill 19-B	Zone Tested	Topeka
Company Address	125 N. Market, #1000 Wichita, Kan. 67202	Date	3-10-89
Company Rep.	Bob Mathieson	Tester	Huck Smith
Contractor	Murfin Drlg. #8	Elevation	2278 K.B.
Location: Sec. 19 Twp. 6S Rge. 20W Co.Rooks State Kan.	Est. Feet of Pay		

Recorder No. 7456 Type AK-1 Range 4150 PSI

Recorder Depth 3438 Clock # 25559

(A) Initial Hydrostatic Mud 1750 PSI

(B) First Initial Flow Pressure 243 PSI

(C) First Final Flow Pressure 696 PSI

(D) Initial Shut-in Pressure 1062 PSI

(E) Second Initial Flow Pressure 895 PSI

(F) Second Final Flow Pressure 968 PSI

(G) Final Shut-in Pressure 1083 PSI

(H) Final Hydrostatic Mud 1739 PSI

Temperature 106°

Mud Weight 9.4 Viscosity 50

Fluid Loss 10.0 c.c.

Interval Tested 3422-3446

Anchor Length 24'

Top Packer Depth 3417

Bottom Packer Depth 3422

Total Depth 3446

Drill Pipe Size 4½ EX.H.

Wt. Pipe I. D. - Ft. Run -

Recovery-Total Feet 2140

Recovered 2140 Feet Of S.W.

Recovered Feet Of

Recovered Feet Of

Recovered Feet Of

Recovered Feet Of

Recovered Feet Of

Extra Equipment Cir. Sub.

Recorder No. 13364 Type AK-1 Range 3825 PSI

Recorder Depth 3441 Clock # 26193

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

Initial Shut-in 30 Mins.

Flow Period 30 Mins.

Final Shut-in 30 Mins.

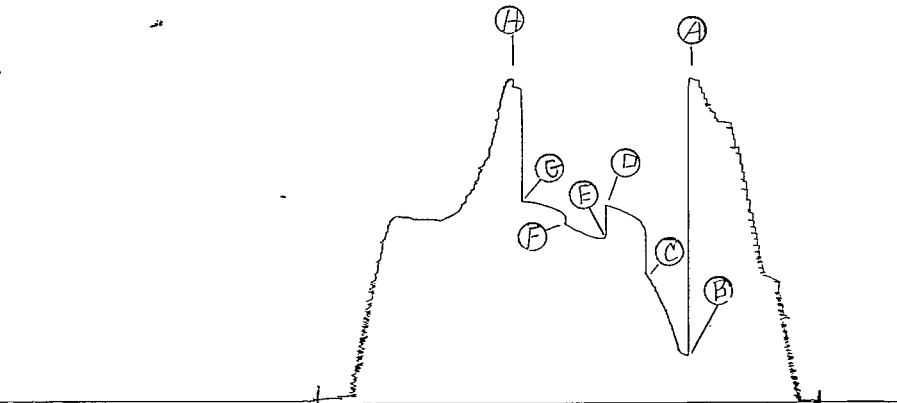
Top Choke Size 1" Hole Size 7 7/8"

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

Tool Open @ 1:15 A.M.

Blow Remarks Strong blow throughout test.

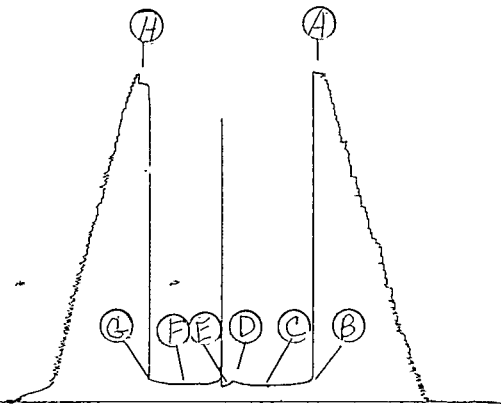
Chlorides; 55,000 P.P.M.



7456 #1 X

POINT	PRESSURE	
	Field Reading	Office Reading
(A) Initial Hydrostatic Mud	1750	PSI
(B) First Initial Flow Pressure	243	PSI
(C) First Final Flow Pressure	696	PSI
(D) Initial Closed-in Pressure	1062	PSI
(E) Second Initial Flow Pressure	895	PSI
(F) Second Final Flow Pressure	968	PSI
(G) Final Closed-in Pressure	1083	PSI
(H) Final Hydrostatic Mud	1739	PSI

POINT	PRESSURE	
	Field Reading	Office Reading
(A) Initial Hydrostatic Mud	1791	PSI
(B) First Initial Flow Pressure	84	PSI
(C) First Final Flow Pressure	84	PSI
(D) Initial Closed-in Pressure	105	PSI
(E) Second Initial Flow Pressure	84	PSI
(F) Second Final Flow Pressure	84	PSI
(G) Final Closed-in Pressure	105	PSI
(H) Final Hydrostatic Mud	1729	PSI



7456 #2x

CHENEY TESTING COMPANY, INC.

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DRILL-STEM TEST DATA

Company	Ritchie Exploration	Test No.	2
Well Name & Number	#1 Wyrill 19-B	Zone Tested	Toronto & A
Company Address	125 N. Market, #1000 Wichita, Kan. 67202	Date	3-10-89
Company Rep.	Bob Mathieson	Tester	Huck Smith
Contractor	Murfin Drlg. #8	Elevation	2278 K.B.
Location: Sec. 19 Twp. 6S Rge. 20W Co. Rooks State Kan.		Est. Feet of Pay	

Recorder No. 7456 Type AK-1 Range 4150 PSI

Recorder Depth 3529 Clock # 25559

(A) Initial Hydrostatic Mud 1791 PSI

(B) First Initial Flow Pressure 84 PSI

(C) First Final Flow Pressure 84 PSI

(D) Initial Shut-in Pressure 105 PSI

(E) Second Initial Flow Pressure 84 PSI

(F) Second Final Flow Pressure 84 PSI

(G) Final Shut-in Pressure 105 PSI

(H) Final Hydrostatic Mud 1729 PSI

Temperature 107°

Mud Weight 9.4 Viscosity 48

Fluid Loss 10.4

Interval Tested 3473-3537

Anchor Length 64'

Top Packer Depth 3468

Bottom Packer Depth 3473

Total Depth 3537

Drill Pipe Size 4½ EX.H.

Wt. Pipe I. D. - Ft. Run -

Recovery-Total Feet 10

Recovered 10 Feet Of Mud w/few oil spots

Recovered Feet Of

Recovered Feet Of

Recovered Feet Of

Recovered Feet Of

Recovered Feet Of

Extra Equipment Price of Job

Recorder No. 13364 Type AK-1 Range 3825 PSI

Recorder Depth 3532 Clock # 26193

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 @ 7:00 P.M.

Blow Remarks Weak blow died in 7 min.

Flushed tool

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DRILL-STEM TEST DATA

Company	Ritchie Exploration	Test No.	3
Well Name & Number	#1 Wyrill 19-B	Zone Tested	C & D
Company Address	125 N. Market, #1000 Wichita, Kan. 67202	Date	3-11-89
Company Rep.	Bob Mathieson	Tester	Huck Smith
Contractor	Murfin Drlg. #8	Elevation	2278 K.B.
Location: Sec. 19 Twp. 6S Rge. 20W Co. Rooks State Kan.	Est. Feet of Pay		

Recorder No. 7456 Type AK-1 Range 4150 PSI

Recorder Depth 3573 Clock # 25559

(A) Initial Hydrostatic Mud 1885 PSI

(B) First Initial Flow Pressure 105 PSI

(C) First Final Flow Pressure 105 PSI

(D) Initial Shut-in Pressure 1125 PSI

(E) Second Initial Flow Pressure 127 PSI

(F) Second Final Flow Pressure 127 PSI

(G) Final Shut-in Pressure 1125 PSI

(H) Final Hydrostatic Mud 1833 PSI

Temperature 109

Mud Weight 9.5 Viscosity 47

Fluid Loss 10.0 c.c.

Interval Tested 3537-3581

Anchor Length 44'

Top Packer Depth 3532

Bottom Packer Depth 3537

Total Depth 3581

Drill Pipe Size 4 1/2 EX.H.

Wt. Pipe I. D. - Ft. Run -

Recovery-Total Feet 125

Recovered 125 Feet Of M.W.

Recovered Feet Of

Recovered Feet Of

Recovered Feet Of

Recovered Feet Of

Recovered Feet Of

Extra Equipment Price of Job

Recorder No. 13364 Type AK-1 Range 3825 PSI

Recorder Depth 3576 Clock # 26193

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

Initial Shut-in 45 Mins.

Flow Period 30 Mins.

Final Shut-in 45 Mins.

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

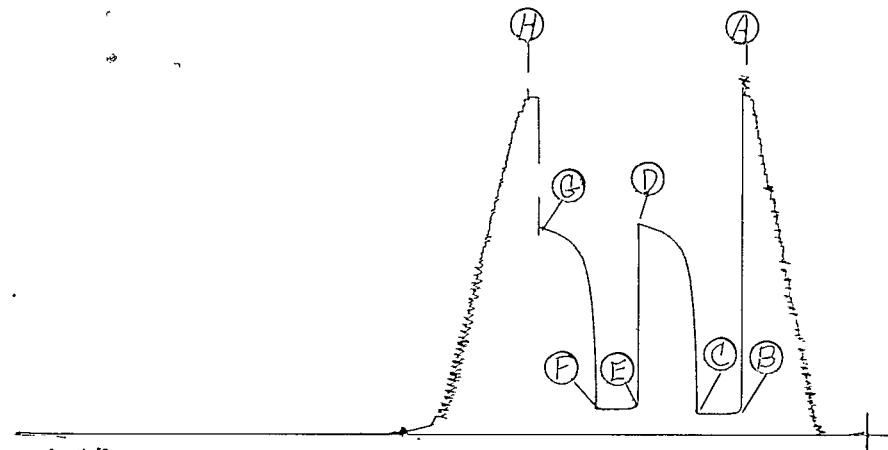
Bottom Choke Size 3/4" Rubber Size 6 3/4"

Tool Open @ 9:30 A.M.

Blow Remarks Medium blow 4 1/2", 1st open.

2nd open; 4" blow.

Chlorides; 33,000 P.P.M.



7456#3x

POINT	PRESSURE	
	Field Reading	Office Reading
(A) Initial Hydrostatic Mud	1885	PSI
(B) First Initial Flow Pressure	105	PSI
(C) First Final Flow Pressure	105	PSI
(D) Initial Closed-in Pressure	1125	PSI
(E) Second Initial Flow Pressure	127	PSI
(F) Second Final Flow Pressure	127	PSI
(G) Final Closed-in Pressure	1125	PSI
(H) Final Hydrostatic Mud	1833	PSI

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DRILL-STEM TEST DATA

Company	Ritchie Exploration	Test No.	4
Well Name & Number	#1 Wyrill 19-B	Zone Tested	H-I-J
Company Address	125 N. Market, #1000 Wichita, Kan. 67202	Date	3-12-89
Company Rep.	Bob Mathieson	Tester	Huck Smith
Contractor	Murfin Drlg. #8	Elevation	2278 K.B.
Location: Sec. 19 Twp. 6S Rge. 20W Co. Rooks State Kan.		Est. Feet of Pay	

Recorder No. 7456 Type AK-1 Range 4150 PSI

Recorder Depth 3682 Clock # 25559

(A) Initial Hydrostatic Mud 1916 PSI

(B) First Initial Flow Pressure 105 PSI

(C) First Final Flow Pressure 105 PSI

(D) Initial Shut-in Pressure 1031 PSI

(E) Second Initial Flow Pressure 105 PSI

(F) Second Final Flow Pressure 116 PSI

(G) Final Shut-in Pressure 979 PSI

(H) Final Hydrostatic Mud 1885 PSI

Temperature 110

Mud Weight 9.7 Viscosity 46

Fluid Loss 11.2

Interval Tested 3625-3690

Anchor Length 65

Top Packer Depth 3620

Bottom Packer Depth 3625

Total Depth 3690

Drill Pipe Size 4 1/2 EX.H.

Wt. Pipe I. D. - Ft. Run -

Recovery-Total Feet 15

Recovered 15 Feet Of Mud w/oil spots

Recovered Feet Of

Recovered Feet Of

Recovered Feet Of

Recovered Feet Of

Recovered Feet Of

Extra Equipment

Recorder No. 13364 Type AK-1 Range 3825 PSI

Recorder Depth 3685 Clock # 26193

Tool Open Before I.S.I. 45 Mins.

Initial Shut-in 45 Mins.

Flow Period 45 Mins.

Final Shut-in 45 Mins.

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

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

Tool Open @ 6:35 A.M.

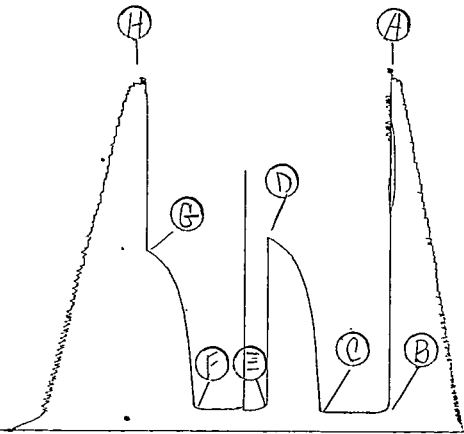
Blow Remarks 1st open; Weak blow 1 1/2"

2nd open; No blow

Flushed tool

Slid tool 5' to bottom.

Price of Job



7456 #4 x

POINT	PRESSURE	
	Field Reading	Office Reading
(A) Initial Hydrostatic Mud	1916	PSI
(B) First Initial Flow Pressure	105	PSI
(C) First Final Flow Pressure	105	PSI
(D) Initial Closed-in Pressure	1031	PSI
(E) Second Initial Flow Pressure	105	PSI
(F) Second Final Flow Pressure	116	PSI
(G) Final Closed-in Pressure	979	PSI
(H) Final Hydrostatic Mud	1885	PSI

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DRILL-STEM TEST DATA

Company	Ritchie Exploration	Test No.	5
Well Name & Number	#1 Wyrill 19-B	Zone Tested	Marmaton
Company Address	125 N. Market, #1000 Wichita, Kan. 67202	Date	3-13-89
Company Rep.	Bob Mathieson	Tester	Huck Smith
Contractor	Murfin Drlg. #8	Elevation	2278 K.B.
Location: Sec. 19 Twp. 6S Rge. 20W Co. Rooks State Kan.		Est. Feet of Pay	

Recorder No. 7456 Type AK-1 Range 4150 PSI

Recorder Depth 3765 Clock # 25559

(A) Initial Hydrostatic Mud 1958 PSI

(B) First Initial Flow Pressure 148 PSI

(C) First Final Flow Pressure 211 PSI

(D) Initial Shut-in Pressure 822 PSI

(E) Second Initial Flow Pressure 286 PSI

(F) Second Final Flow Pressure 307 PSI

(G) Final Shut-in Pressure 738 PSI

(H) Final Hydrostatic Mud 1906 PSI

Temperature 111°

Mud Weight 9.7 Viscosity 47

Fluid Loss 10.4

Interval Tested 3686-3772

Anchor Length 86'

Top Packer Depth 3681

Bottom Packer Depth 3686

Total Depth 3772

Drill Pipe Size 4½ EX.H.

Wt. Pipe I. D. - Ft. Run -

Recovery-Total Feet 465

Recovered 315 Feet Of G.I.P.

Recovered 465 Feet Of M.C.O. (60% Oil 40% Mud)

Recovered Feet Of

Recovered Feet Of

Recovered Feet Of

Recovered Feet Of

Extra Equipment

Recorder No. 13364 Type AK-1 Range 3825 PSI

Recorder Depth 3769 Clock # 26193

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 @ 12:50 A.M.

Blow Remarks Strong blow

Price of Job

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

FOR: RITCHIE EXPLORATION
#1 WYRILL 19-B
19-6S-20W
ROOKS CO., KS.

DST # 5
FORMATION: MARMATON
ELEVATION: 2278 KB

TEST PARAMETERS

TEST INTERVAL: 3686 - 3772	EST PAY: 8
TIME INTERVAL: 30 - 30 - 30 - 30	VISCOSITY OF FLUID: 3.5
INITIAL FLOW PRESS: 149.4- 217.2	HOLE SIZE: 7.875
FINAL FLOW PRESS: 280.7- 307.2	D.C. CAPACITY: 0.00000
SHUT-IN PRESS(I-F): 833.7- 743.6	W.P. CAPACITY: 0.00000
BOTTOM HOLE TEMPERATURE: 111	D.P. CAPACITY: 0.01402
TOTAL FEET OF RECOVERY: 465	TOTAL BARRELS RECOVERY: 6.5194

EXTRAPOLATED INITIAL SHUT-IN PRESSURE (PSI): 925
SLOPE (PSI-CYCLE): 310 POINTS USED: 3

EXTRAPOLATED FINAL SHUT-IN PRESSURE (PSI): 878
SLOPE (PSI-CYCLE): 287 POINTS USED: 2

CALCULATIONS

PRODUCTION POTENTIAL (B/D)	: 156.47
TRANSMISSIBILITY (MD-FT/CP)	: 88.65
EFFECTIVE PERMEABILITY (MD)	: 38.78
PRODUCTIVITY INDEX (B/D/PSI)	: 0.1002
DAMAGE RATIO	: 0.364
APPROXIMATE RADIUS OF INVESTIGATION (FT)	: 48.2
DRAWDOWN FACTOR (%)	: 5.081
POTENTIOMETRIC SURFACE (FT)	: 542.08

INITIAL SHUT-IN

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RECORDER NO: 7456 DEPTH: 3772 FT.
 INITIAL FLOW TIME (T): 30 MIN.

DT(MIN)	LOG((T+DT)/DT)	PRESSURE(P SIG)
0	0.000	217.2
5	0.845	688.6
10	0.602	744.7
15	0.477	771.2
20	0.398	803.0
25	0.342	819.9
30	0.301	833.7

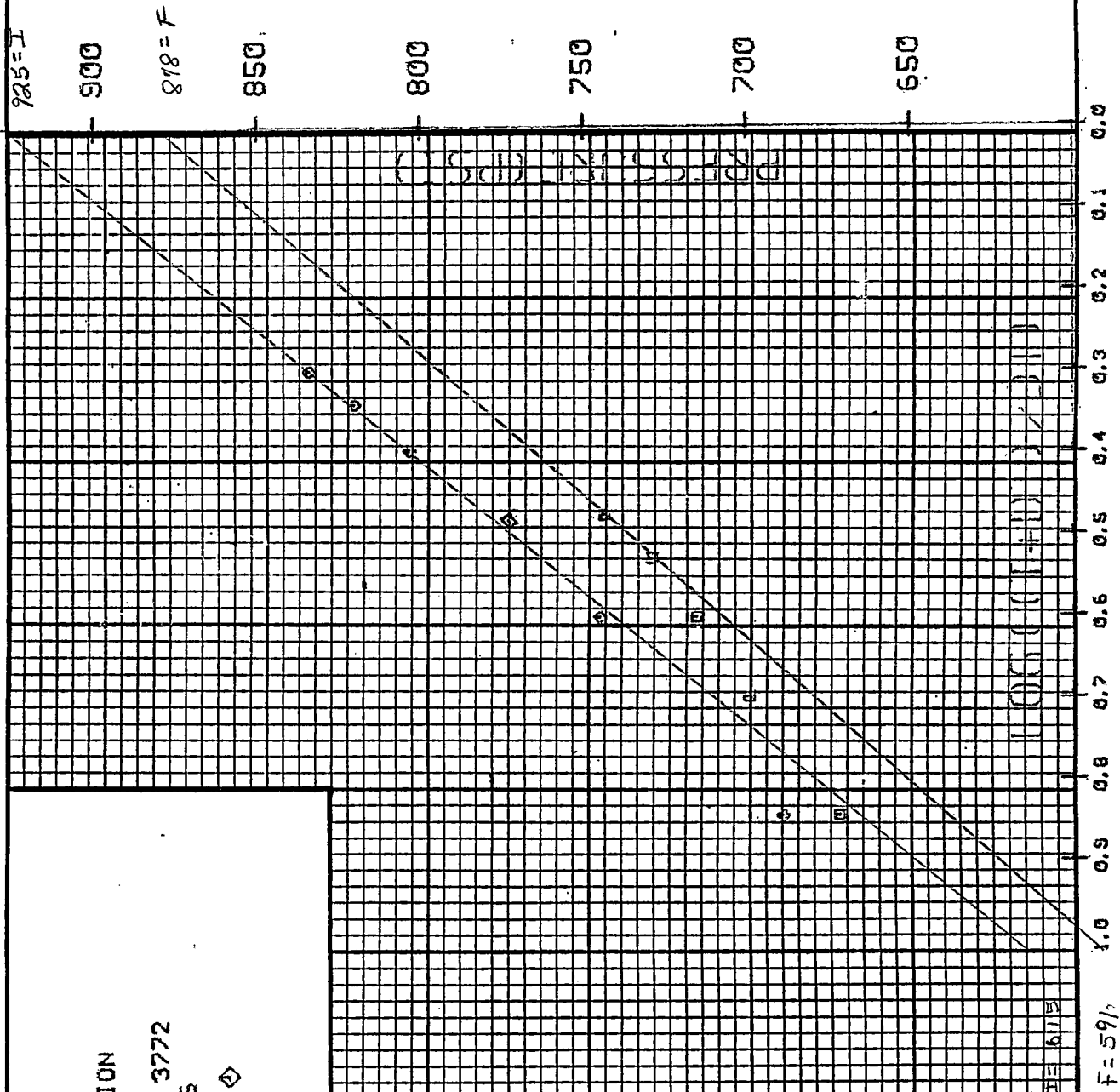
FINAL SHUT-IN

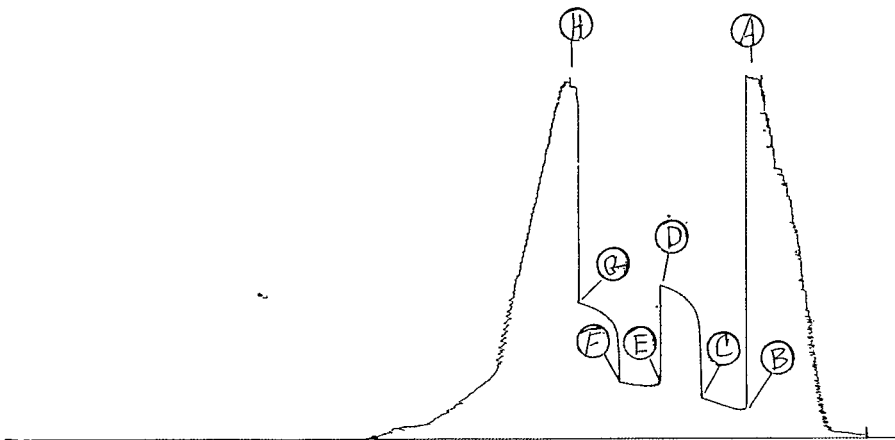
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RECORDER NO: 7456 DEPTH: 3772 FT.
 TOTAL FLOW TIME: 60 MIN.

DT(MIN)	LOG((T+DT)/DT)	PRESSURE(P SIG)
0	0.000	307.2
5	1.114	630.3
10	0.845	671.6
15	0.699	699.2
20	0.602	715.0
25	0.531	728.8
30	0.477	743.6

HORNER PLOT
 RITCHIE EXPLORATION
 #1 WYRILL 19-B
 DST # 5 DEPTH: 3772
 RECORDER NO. 7456
 INITIAL SHUT-IN: $\diamond$
 FINAL SHUT-IN: $\square$





7456 #5 x

POINT	PRESSURE	
	Field Reading	Office Reading
(A) Initial Hydrostatic Mud	1958	1925
(B) First Initial Flow Pressure	148	149.4
(C) First Final Flow Pressure	211	217.2
(D) Initial Closed-in Pressure	822	833.7
(E) Second Initial Flow Pressure	286	280.7
(F) Second Final Flow Pressure	307	307.2
(G) Final Closed-in Pressure	738	743.6
(H) Final Hydrostatic Mud	1906	1954.16

CHENEY TESTING COMPANY, INC.

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HILL CITY, KANSAS 67642

DRILL-STEM TEST DATA

Company	Ritchie Exploration	Test No.	6
Well Name & Number	#1 Wyrill 19-B	Zone Tested	Cong.
Company Address	125 N. Market, #1000 Wichita, Kan. 67202	Date	3-13-89
Company Rep.	Bob Mathieson	Tester	Huck Smith
Contractor	Murfin Drlg. #8	Elevation	2278 K.B.
Location: Sec. 19 Twp. 6S Rge. 20W Co. Rooks State Kan.		Est. Feet of Pay	

Recorder No. 7456 Type AK-1 Range 4150 PSI

Recorder Depth 3774 Clock # 25559

(A) Initial Hydrostatic Mud 1968 PSI

(B) First Initial Flow Pressure 95 PSI

(C) First Final Flow Pressure 95 PSI

(D) Initial Shut-in Pressure 127 PSI

(E) Second Initial Flow Pressure 84 PSI

(F) Second Final Flow Pressure 84 PSI

(G) Final Shut-in Pressure 95 PSI

(H) Final Hydrostatic Mud 1885 PSI

Temperature 111°

Mud Weight 9.8 Viscosity 43

Fluid Loss 10.4 c.c.

Interval Tested 3759-3782

Anchor Length 23'

Top Packer Depth 3754

Bottom Packer Depth 3759

Total Depth 3782

Drill Pipe Size 4½ EX.H.

Wt. Pipe I. D. - Ft. Run -

Recovery-Total Feet 10

Recovered 10 Feet Of Mud few oil spots

Recovered Feet Of

Recovered Feet Of

Recovered Feet Of

Recovered Feet Of

Recovered Feet Of

Extra Equipment Safety joint

Recorder No. 13364 Type AK-1 Range 3825 PSI

Recorder Depth 3777 Clock # 26193

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"

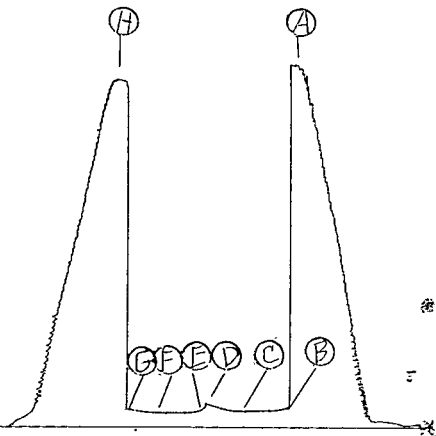
Bottom Choke Size 3/4" Rubber Size 6 3/4"

Tool Open @ 2:30 P.M.

Blow Remarks 1st open; Weak blow 1"

2nd open; ½" blow

Price of Job



7456 #6 x

POINT	PRESSURE	
	Field Reading	Office Reading
(A) Initial Hydrostatic Mud	1968	PSI
(B) First Initial Flow Pressure	95	PSI
(C) First Final Flow Pressure	95	PSI
(D) Initial Closed-in Pressure	127	PSI
(E) Second Initial Flow Pressure	84	PSI
(F) Second Final Flow Pressure	84	PSI
(G) Final Closed-in Pressure	95	PSI
(H) Final Hydrostatic Mud	1885	PSI