

DIAMOND TESTING
P. O. Box 157
HOISINGTON, KANSAS 67544
(316) 653-7550

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Company National Development Company Lease & Well No. Miller No. 1
Elevation 1986 KB Formation Arbuckle Effective Pay -- Ft. Ticket No. 758
Date 3-25-91 Sec. 36 Twp. 19S Range 16W County Rush State Kansas
Test Approved By Beth Fuhr Diamond Representative Roger D. Friedly
Formation Test No. 1 Interval Tested from 3,610 ft. to 3,681 ft. Total Depth 3,681 ft.
Packer Depth 3,605 ft. Size 6 3/4 in. Packer Depth ft. Size in.
Packer Depth 3,610 ft. Size 6 3/4 in. Packer Depth ft. Size in.
Depth of Selective Zone Set

Top Recorder Depth (Inside) 3,598 ft. Recorder Number 13386 Cap. 3,875 psi
Bottom Recorder Depth (Outside) 3,678 ft. Recorder Number 13556 Cap. 4,425 psi
Below Straddle Recorder Depth ft. Recorder Number Cap.

Drilling Contractor Duke Drilling Co., Inc. - Rig 1 Drill Collar Length -- I.D. -- in.
Mud Type Chemical Viscosity 45 Weight Pipe Length 632 ft. I.D. 2 7/8 in.
Weight 9.3 Water Loss 8.8 cc. Drill Pipe Length 2,953 ft. I.D. 3 1/2 in.
Chlorides 7,000 P.P.M. Test Tool Length 25 ft. Tool Size 3 1/2 - I.F. in.
Jars: Make Sterling Serial Number N/A Anchor Length 41' perf. w/30' drillpipe Size 4 1/2 - F.H. in.
Did Well Flow? No Reversed Out No Surface Choke Size 1 in. Bottom Choke Size 5/8 in.
Main Hole Size 7 7/8 in. Tool Joint Size 4 1/2 - F.H. in.

Blow: 1st Open: Strong blow. Off bottom of bucket in 30 secs. Gas to surface in 4 mins. Gas
stable at 98,500 CF/D. (SEE GAS VOLUME REPORT)
2nd Open: Strong blow. Off bottom of bucket immediately. Gas stable at 98,500 CF/D. (SEE
GAS VOLUME REPORT)

Recovered 216 ft. of muddy water = 1.5984 bbls. (Grind out: 80%-mud; 20%-water) Chlorides: 14,000 Pp

Recovered ft. of

Recovered ft. of

Recovered ft. of

Recovered ft. of

Remarks

Time Set Packer(s) 1:15 ~~P.M.~~ ^{A.M.} Time Started Off Bottom 4:00 ~~P.M.~~ ^{A.M.} Maximum Temperature 106°

Initial Hydrostatic Pressure (A) 1758 P.S.I.

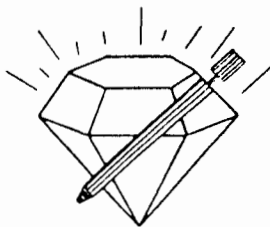
Initial Flow Period Minutes 30 (B) 244 P.S.I. to (C) 167 P.S.I.

Initial Closed In Period Minutes 30 (D) 321 P.S.I.

Final Flow Period Minutes 60 (E) 178 P.S.I. to (F) 156 P.S.I.

Final Closed In Period Minutes 45 (G) 321 P.S.I.

Final Hydrostatic Pressure (H) 1747 P.S.I.



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GAS VOLUME REPORT

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Company National Development Company Lease & Well No. Miller No. 1
Date 3-25-91 Sec. 36 Twp. 19 S Rge. 16 W Location SE SE SW County Rush State KS
Drilling Contractor Duke Drilling Co., Inc. - Rig 1 Formation Arbuckle DST No. 1
Remarks: 1st Open: Gas to surface in 4 mins.

INITIAL FLOW

Open Tool: 1:15 a.m.

Time O'Clock	Orifice Size	Gauge	CF/D
1:25 a.m.	1½ in.	2 in.	98,500
1:35 a.m.	1½ in.	2 in.	98,500
	in.	in.	
	in.	in.	
	in.	in.	
	in.	in.	
	in.	in.	
	in.	in.	
	in.	in.	
	in.	in.	

FINAL FLOW

Open Tool: 2:15 a.m.

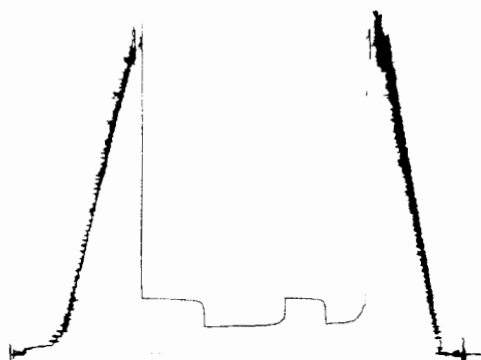
Time O'Clock	Orifice Size	Gauge	CF/D
2:25 a.m.	1½ in.	2 in.	98,500
2:35 a.m.	1½ in.	2 in.	98,500
2:45 a.m.	1½ in.	2 in.	98,500
2:55 a.m.	1½ in.	2 in.	98,500
3:05 a.m.	1½ in.	2 in.	98,500
3:15 a.m.	1½ in.	2 in.	98,500
	in.	in.	
	in.	in.	
	in.	in.	
	in.	in.	

DST #1 Outside 13556

3610 - 3681

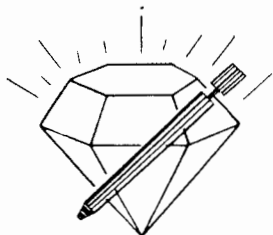
clock 33709

ARB



This is an actual photograph of recorder chart.

POINT	PRESSURE	
	Field Reading	Office Reading
(A) Initial Hydrostatic Mud	1758	1762
(B) First Initial Flow Pressure.....	244	237
(C) First Final Flow Pressure	167	175
(D) Initial Closed-in Pressure	321	321
(E) Second Initial Flow Pressure	178	187
(F) Second Final Flow Pressure.....	156	158
(G) Final Closed-in Pressure.....	321	321
(H) Final Hydrostatic Mud	1747	1740



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Company National Development Company Lease & Well No. Miller No. 1
Elevation 1986 KB Formation Arbuckle Effective Pay -- Ft. Ticket No. 759
Date 3-25-91 Sec. 36 Twp. 19S Range 16W County Rush State Kansas
Test Approved By Beth Fuhr Diamond Representative Roger D. Friedly
Formation Test No. 2 Interval Tested from 3,682 ft. to 3,718 ft. Total Depth 3,718 ft.
Packer Depth 3,677 ft. Size 6 3/4 in. Packer Depth ft. Size in.
Packer Depth 3,682 ft. Size 6 3/4 in. Packer Depth ft. Size in.

Depth of Selective Zone Set

Top Recorder Depth (Inside) 3,670 ft. Recorder Number 13386 Cap. 3,875 psi
Bottom Recorder Depth (Outside) 3,715 ft. Recorder Number 13556 Cap. 4,425 psi
Below Straddle Recorder Depth ft. Recorder Number Cap.
Drilling Contractor Duke Drilling Co., Inc. - Rig 1 Drill Collar Length -- I.D. -- in.
Mud Type Chemical Viscosity 45 Weight Pipe Length 632 ft. I.D. 2 7/8 in.
Weight 9.2 Water Loss 8.8 cc. Drill Pipe Length 3,025 ft. I.D. 3 1/2 in.
Chlorides 2,000 P.P.M. Test Tool Length 25 ft. Tool Size 3 1/2 -IF in.
Jars: Make Sterling Serial Number N/A Anchor Length 36 ft. Size 4 1/2 -FH in.
Did Well Flow? No Reversed Out No Surface Choke Size 1 in. Bottom Choke Size 5/8 in.
Main Hole Size 7 7/8 in. Tool Joint Size 4 1/2 -FH in.

Blow: 1st Open: Strong blow. Off bottom of bucket in 30 secs.
2nd Open: Strong blow. Off bottom of bucket immediately. Gas to surface in 53 mins. too small to measure.

Recovered 30 ft. of heavy oil cut mud = .222 bbls. (Grind out: 40%-oil; 10%-gas; 50%-mud)

Recovered 130 ft. of oil cut mud = .962 bbls. (Grind out: 25%-oil; 15%-gas; 60%-mud)

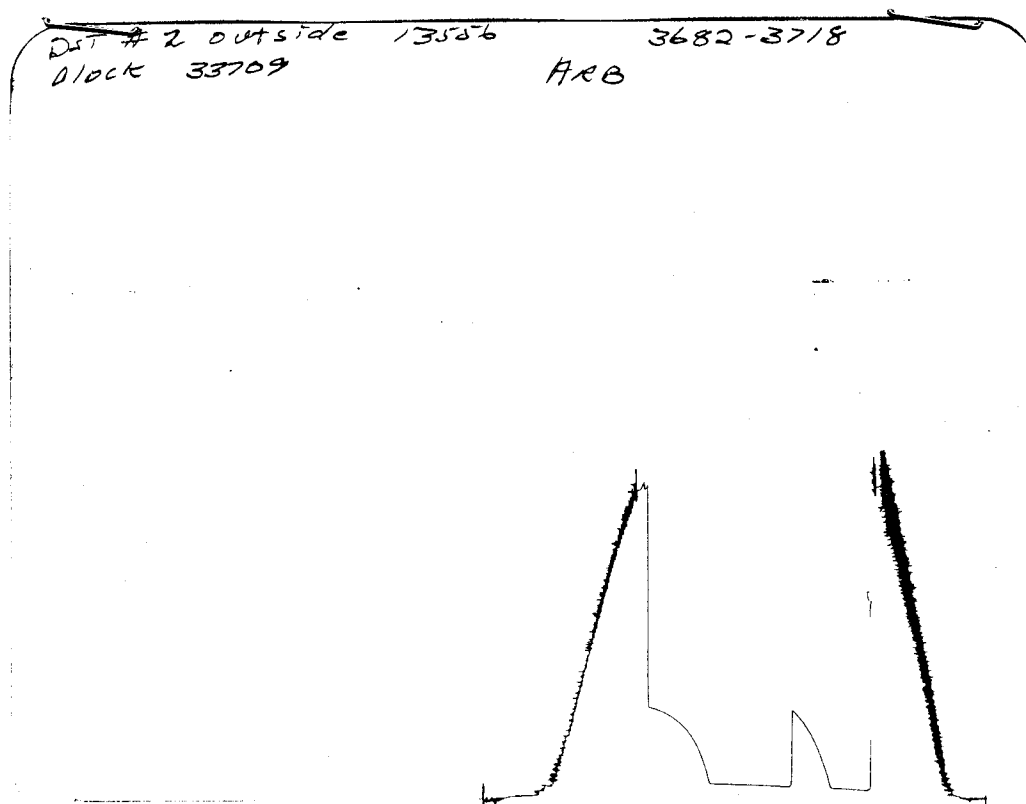
Recovered 160 ft. of TOTAL FLUID = 1.184 bbls.

Recovered ft. of

Recovered ft. of

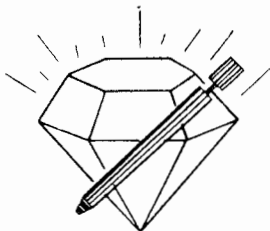
Remarks

Time Set Packer(s) 12:40 ~~AM~~ P.M. Time Started Off Bottom 3:25 ~~AM~~ P.M. Maximum Temperature 110°
Initial Hydrostatic Pressure (A) 1769 P.S.I.
Initial Flow Period Minutes 30 (B) 45 P.S.I. to (C) 56 P.S.I.
Initial Closed In Period Minutes 30 (D) 496 P.S.I.
Final Flow Period Minutes 60 (E) 67 P.S.I. to (F) 78 P.S.I.
Final Closed In Period Minutes 45 (G) 517 P.S.I.
Final Hydrostatic Pressure (H) 1766 P.S.I.



This is an actual photograph of recorder chart.

POINT	PRESSURE		
	Field Reading	Office Reading	
(A) Initial Hydrostatic Mud	1769	1780	PSI
(B) First Initial Flow Pressure.....	45	45	PSI
(C) First Final Flow Pressure	56	56	PSI
(D) Initial Closed-in Pressure	496	496	PSI
(E) Second Initial Flow Pressure	67	69	PSI
(F) Second Final Flow Pressure.....	78	92	PSI
(G) Final Closed-in Pressure.....	517	517	PSI
(H) Final Hydrostatic Mud	1766	1769	PSI



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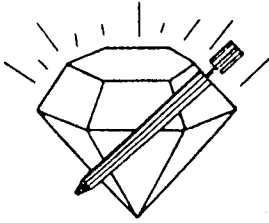
Company National Development Company Lease & Well No. Miller No. 1
Elevation 1986 KB Formation Arbuckle Effective Pay --- Ft. Ticket No. 760
Date 3-26-91 Sec. 36 Twp. 19S Range 16W County Rush State Kansas
Test Approved By Beth Fuhr Diamond Representative Roger D. Friedly
Formation Test No. 3 Interval Tested from 3,715 ft. to 3,760 ft. Total Depth 3,760 ft.
Packer Depth 3,710 ft. Size 6 3/4 in. Packer Depth --- ft. Size --- in.
Packer Depth 3,715 ft. Size 6 3/4 in. Packer Depth --- ft. Size --- in.
Depth of Selective Zone Set ---

Top Recorder Depth (Inside) 3,703 ft. Recorder Number 13386 Cap. 3,875 psi
Bottom Recorder Depth (Outside) 3,757 ft. Recorder Number 13556 Cap. 4,425 psi
Below Straddle Recorder Depth --- ft. Recorder Number --- Cap. ---
Drilling Contractor Duke Drilling Co., Inc. - Rig 1 Drill Collar Length --- I.D. --- in.
Mud Type Chemical Viscosity 45 Weight Pipe Length 632 ft. I.D. 2 7/8 in.
Weight 9.3 Water Loss 8.8 cc. Drill Pipe Length 3,058 ft. I.D. 3 1/2 in.
Chlorides 7,000 P.P.M. Test Tool Length 25 ft. Tool Size 3 1/2-IF in.
Jars: Make Sterling Serial Number N/A Anchor Length 45 ft. Size 4 1/2-FH in.
Did Well Flow? No Reversed Out No Surface Choke Size 1 in. Bottom Choke Size 5/8 in.
Main Hole Size 7 7/8 in. Tool Joint Size 4 1/2-FH in.

1st Open: Strong blow. Off bottom of bucket in 1 min. Gas to surface in 14 mins. (SEE
Blow: GAS VOLUME REPORT)
2nd Open: Strong blow immediately.

Recovered 665 ft. of clean gassy oil = 5.1454 bbls. (Gravity: 45°)
Recovered 221 ft. of oil cut muddy water = 3.1382 bbls. (Grind out: 20%-oil; 60%-mud; 20%-water)
Recovered 127 ft. of water with oil specks = 1.8034 bbls. (Chlorides: 24,000 Ppm)
Recovered 1,013 ft. of TOTAL FLUID = 10.087 bbls.
Recovered --- ft. of ---
Remarks ---

Time Set Packer(s) 12:20 ~~P.M.~~ ^{A.M.} Time Started Off Bottom 3:15 ~~P.M.~~ ^{A.M.} Maximum Temperature 109°
Initial Hydrostatic Pressure (A) 1813 P.S.I.
Initial Flow Period Minutes 30 (B) 156 P.S.I. to (C) 189 P.S.I.
Initial Closed In Period Minutes 30 (D) 875 P.S.I.
Final Flow Period Minutes 60 (E) 233 P.S.I. to (F) 343 P.S.I.
Final Closed In Period Minutes 45 (G) 821 P.S.I.
Final Hydrostatic Pressure (H) 1791 P.S.I.



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Company National Development Company Lease & Well No. Miller No. 1
Date 3-26-91 Sec. 36 Twp. 19 S Rge. 16 W Location SE SE SW County Rush State KS
Drilling Contractor Duke Drilling Co., Inc. - Rig 1 Formation Arbuckle DST No. 3
Remarks: 1st Open: Gas to surface in 14 mins.

INITIAL FLOW

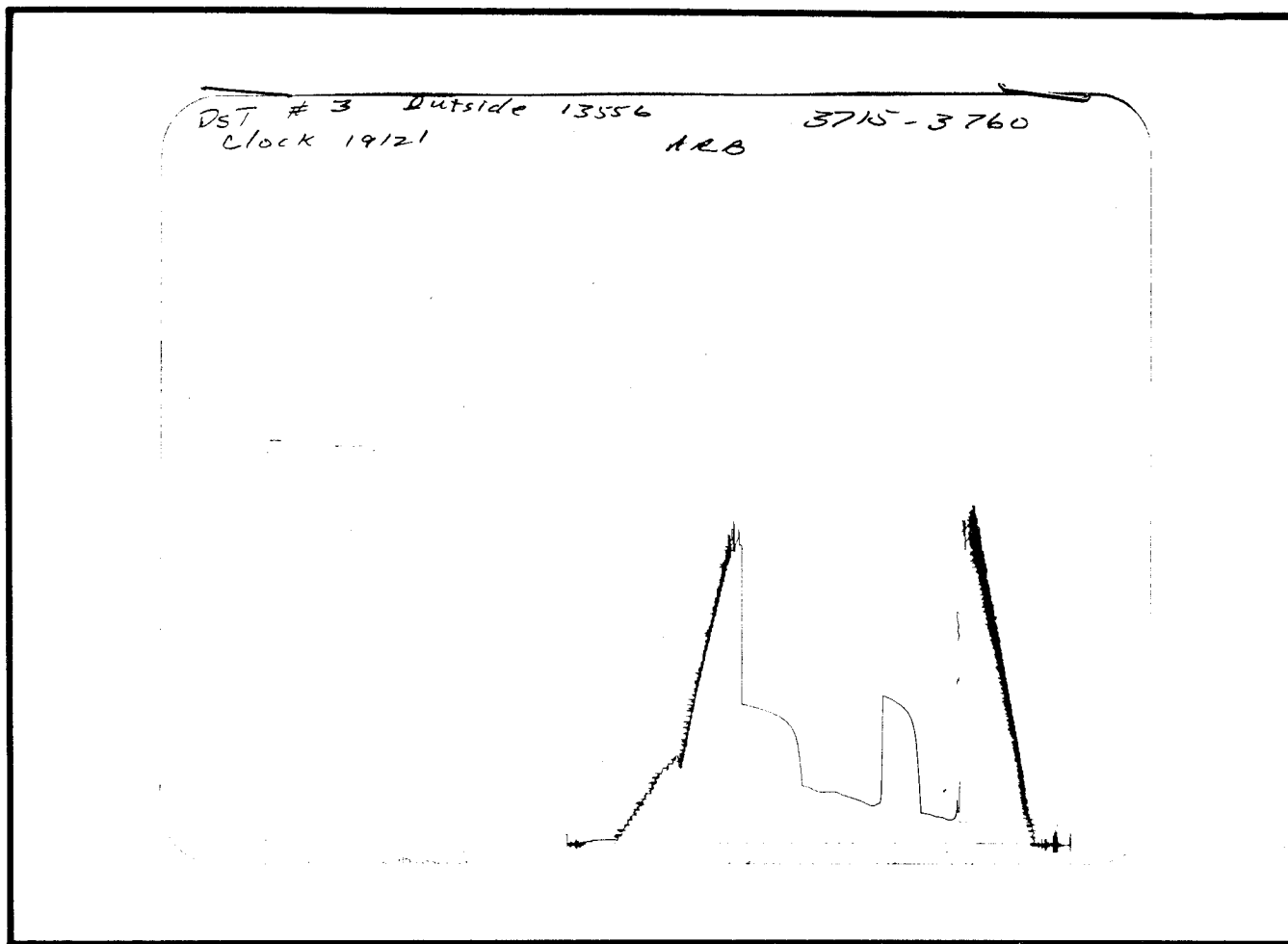
Open Tool: 12:20 a.m.

Time O'Clock	Orifice Size	Gauge	CF/D
12:40 a.m.	1/2 in.	Surging 12-14 in.	21,900-23,700
12:45 a.m.	1/2 in.	Surging 12-14 in.	21,900-23,700
12:50 a.m.	1/2 in.	Surging 12-14 in.	21,900-23,700
	in.	in.	
	in.	in.	
	in.	in.	
	in.	in.	
	in.	in.	
	in.	in.	
	in.	in.	

FINAL FLOW

Open Tool: 1:20 a.m.

Time O'Clock	Orifice Size	Gauge	CF/D
1:30 a.m.	1/4 in.	Surging 10-14 in.	5,320-6,330
1:40 a.m.	1/2 in.	Surging 18-20 in.	26,600-28,000
1:50 a.m.	1/2 in.	Surging 10-12 in.	19,900-21,900
2:00 a.m.	1/4 in.	2 1/2 psi	14,300
2:10 a.m.	1/4 in.	2 1/2 psi	14,300-18,500
2:20 a.m.	1/4 in.	2 1/2-5 psi	14,300-18,500
	in.	in.	
	in.	in.	
	in.	in.	
	in.	in.	



This is an actual photograph of recorder chart.

POINT	PRESSURE	
	Field Reading	Office Reading
(A) Initial Hydrostatic Mud	1813	1802
(B) First Initial Flow Pressure.....	156	158
(C) First Final Flow Pressure	189	187
(D) Initial Closed-in Pressure	875	870
(E) Second Initial Flow Pressure	233	231
(F) Second Final Flow Pressure.....	343	345
(G) Final Closed-in Pressure.....	821	823
(H) Final Hydrostatic Mud.....	1791	1784