



Musgrove

Petroleum Geology
212 Main Street, Claflin KS

NOTES

Company: Richlan Drilling

Lease: Kuhlman Farms Inc. A #1

Location: NW-NE-SW-SE(1180' FSL & 1770' FEL)

Sec: 04 Twsp: 12S Rge: 34W

County: Logan State: Kansas

Field: Elaine West

GL: 3221' KB: 3226'

Contractor: White Knight Drilling, LLC

Spud: 08/01/2017 Comp: 08/07/2017

RTD: 4860' LTD: 4858'

Mud Up: 3700' Type Mud: Chemical

API #: 15-109-21514-00-00

Surface Casing: 8 5/8" @ 348'

Production Casing: None

Formation Testing: Trilobite Testing Co.

Electronic Surveys: Pioneer Energy Services: DIL, MEL, DUCPL

Samples Saved From: 3700' to RTD

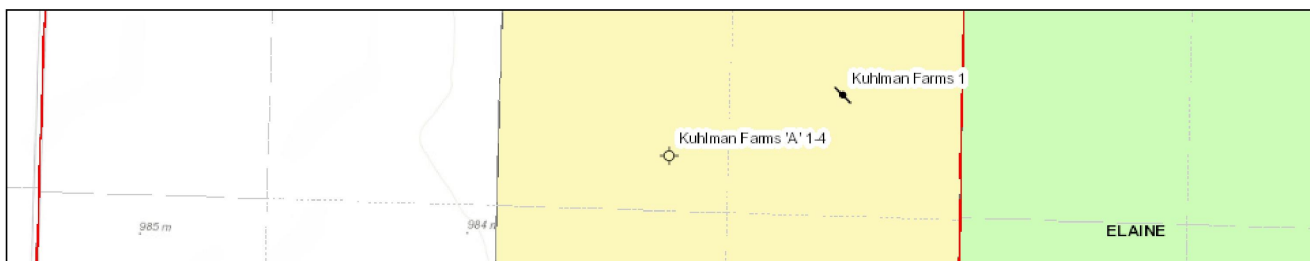
Drilling Time Kept From: 3700' to RTD

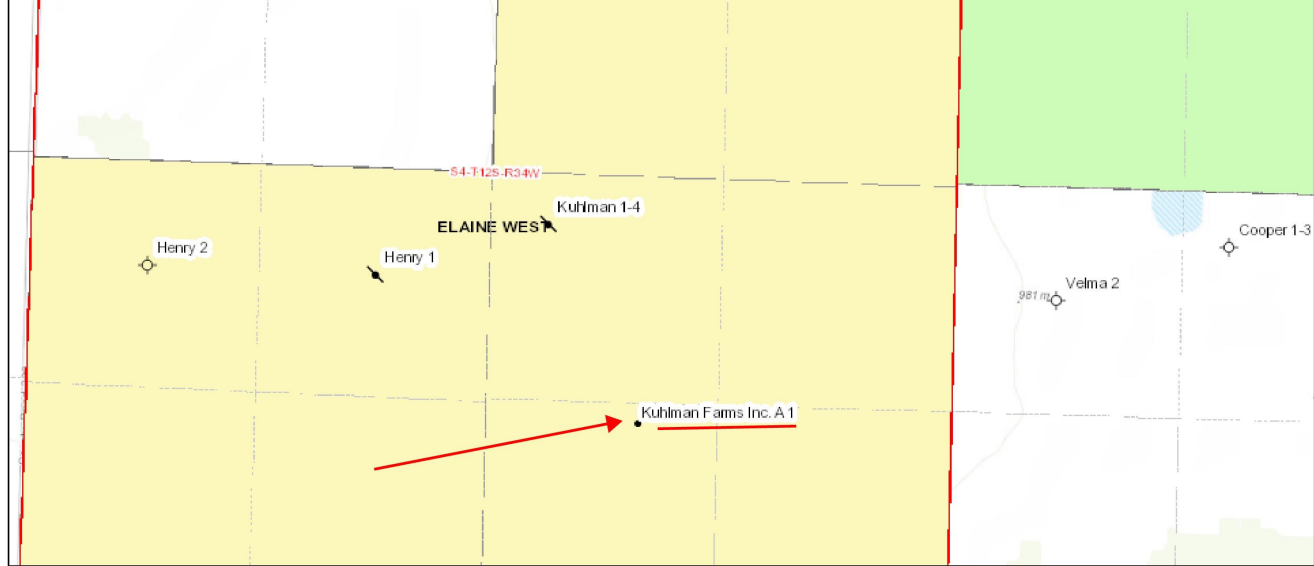
Samples Examined From: 3700' to RTD

Geological Supervision from: 3700' to RTD

Geologist on Well: Jim Musgrove 3700'-4650' & Wyatt Urban 4650'-RTD

Richlan Drilling- Kuhlman Farms Inc. A #1





RICHLAN DRILLING WELL COMPARISON SHEET

Formation	DRILLING WELL				COMPARISON WELL				COMPARISON WELL			
	Richlan Drilling-Kuhlman 1				D.G. Hansen-Kuhlman 1-4				Beren Corp.- Velma #2			
	NW-NE-SW-SE 04-12S-34W				NW-NW-SE 04-12S-34W				C-NW-SW 03-12S-34W			
	3226	KB			3231	KB	Structural Relationship		3222	KB	Structural Relationship	
	Sample	Sub-Sea	Log	Sub-Sea	Log	Sub-Sea	Sample	Log	Log	Sub-Sea	Sample	Log
Anhydrite	2689	537	2936	290	2676	555	-18	-265	2685	537	0	-247
B. Anhydrite	2712	514	2952	274	2700	531	-17	-257	2708	514	0	-240
Topeka	3865	-639	3864	-638	3865	-634	-5	-4				
Heebner	4095	-869	4093	-867	4094	-863	-6	-4	4094	-872	3	5
Toronto	4121	-895	4118	-892	4120	-889	-6	-3	4118	-896	1	4
Lansing	4142	-916	4138	-912	4139	-908	-8	-4	4137	-915	-1	3
Muncie Creek	4286	-1060	4285	-1059								
Stark Shale	4373	-1147	4374	-1148	4375	-1144	-3	-4	4369	-1147	0	-1
BKC	4443	-1217	4439	-1213	4440	-1209	-8	-4	4429	-1207	-10	-6
Pawnee	4570	-1344	4569	-1343	4564	-1333	-11	-10	4560	-1338	-6	-5
Myrick Station	4613	-1387	4609	-1383								
Ft. Scott	4633	-1407	4625	-1399	4624	-1393	-14	-6	4616	-1394	-13	-5
Cherokee Shale	4658	-1432	4658	-1432	4653	-1422	-10	-10	4646	-1424	-8	-8
Johnson	4704	-1478	4692	-1466	4699	-1468	-10	2	4691	-1469	-9	3
Mississippian	4795	-1569	4793	-1567	4804	-1573	4	6	4781	-1559	-10	-8
RTD	4860	-1634	4860	-1634	4837	-1606	-28	-28	4810	-1588	-46	-46
LTD	4858	-1632	4858	-1632	4837	-1606	-26	-26	4811	-1589	-43	-43



Company: Richlan Drilling
Lease: Kuhlman Farms Inc A #1

Tester: Ricky Ray
On-Site Contact: Jim Musgrove

SEC: 4 TWN: 12S RNG: 34W
County: LOGAN
State: Kansas
Drilling Contractor: White Knight Drilling LLC Rig 1
Elevation: 3221 EGL
Field Name: Elaine West
Pool: INFIELD
Job Number: 42

DATE
August
04
2017

DST #1 **Formation: LANS H** **Test Interval: 4281 - 4320'** **Total Depth: 4320'**
Time On: 23:29 08/03 Time Off: 07:08 08/04
Time On Bottom: 01:55 08/04 Time Off Bottom: 04:40 08/04

Mud Properties

Down Hole Makeup

Gas To Surface: NO

Tester Communication

Well Flow: NO

Default View

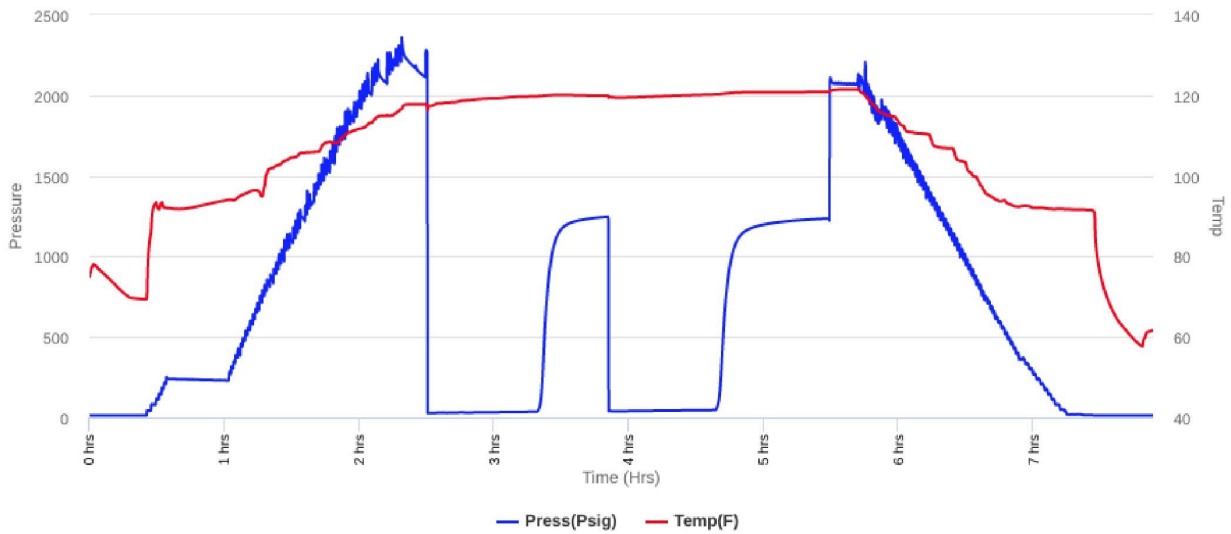
Electronic Volume Estimate:
27'

1st Open
Minutes: 45
1.4" at 45 min

1st Close
Minutes: 30
0" at 30 min

2nd Open
Minutes: 45
.9" at 45 min

2nd Close
Minutes: 45
0" at 45 min



Recovered		Description of Fluid	Gas %	Oil %	Water %	Mud %
Foot	BBLs					
52	0.73996	M	0	0	0	100

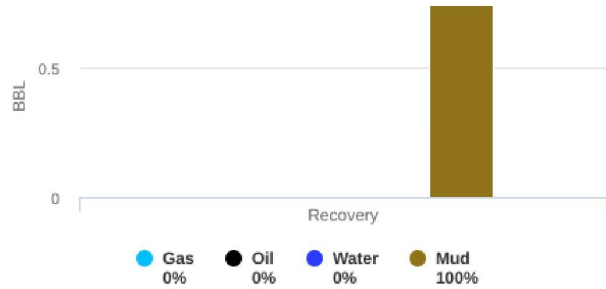
Total Recovered: 52 ft
Total Barrels Recovered: 0.73996

Reversed Out
NO

Recovery at a glance

Exclude Gas

Initial Hydrostatic Pressure	2116	PSI
Initial Flow	28 to 37	PSI
Initial Closed in Pressure	1247	PSI
Final Flow Pressure	40 to 47	PSI
Final Closed in Pressure	1237	PSI
Final Hydrostatic Pressure	2111	PSI
Temperature	121	°F
Pressure Change Initial Close / Final Close	0.9	%



REMARKS:
Tool Sample. 100 % M

Estimated Daily Production

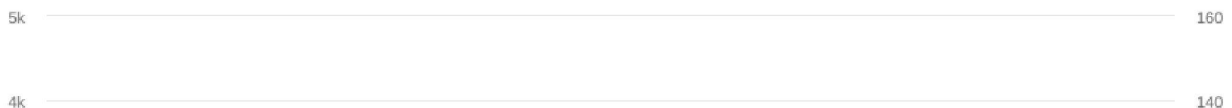


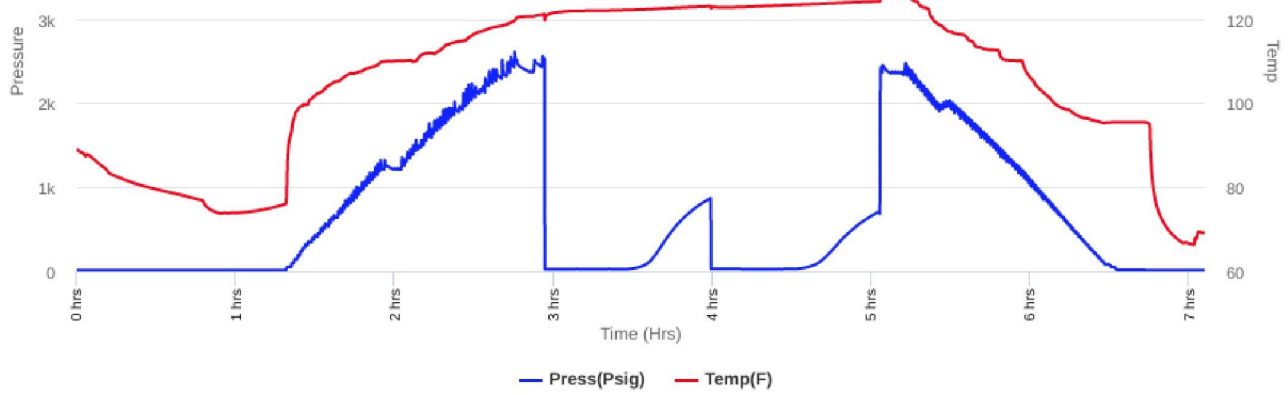
Company: Richlan Drilling
Lease: Kuhlman Farms Inc. A #1

Tester: Ricky Ray
On-Site Contact: Jim Musgrove

SEC: 4 TWN: 12S RNG: 34W
County: LOGAN
State: Kansas
Drilling Contractor: White Knight Drilling, LLC - Rig 1
Elevation: 3221 EGL
Field Name: Elaine West
Pool: Infield
Job Number: 42

DATE August 06 2017	DST #2	Formation: Johnson	Test Interval: 4666 - 4712'	Total Depth: 4712'
		Time On: 21:02 08/05 Time On Bottom: 23:54 08/05	Time Off: 03:56 08/06 Time Off Bottom: 01:54 08/06	
Mud Properties	Down Hole Makeup	Gas To Surface: NO		
	Tester Communication	Well Flow: NO		Default View
Electronic Volume Estimate: 6'	<u>1st Open</u> Minutes: 30 .5" at 30 min	<u>1st Close</u> Minutes: 30 0" at 30 min	<u>2nd Open</u> Minutes: 30 0" at 30 min	<u>2nd Close</u> Minutes: 30 0" at 30 min





Recovered		Description of Fluid	Gas %	Oil %	Water %	Mud %
Foot	BBS					
10	0.1423	M	0	0	0	100

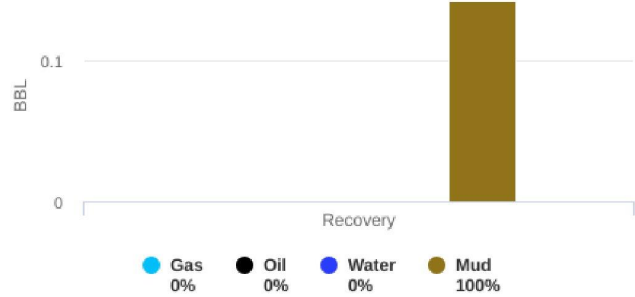
Total Recovered: 10 ft
Total Barrels Recovered: 0.1423

Reversed Out
NO

Recovery at a glance

Exclude Gas

Initial Hydrostatic Pressure	2370	PSI
Initial Flow	27 to 28	PSI
Initial Closed in Pressure	866	PSI
Final Flow Pressure	29 to 29	PSI
Final Closed in Pressure	711	PSI
Final Hydrostatic Pressure	2366	PSI
Temperature	125	°F
Pressure Change Initial Close / Final Close	17.9	%



Estimated Daily Production

REMARKS:

Tool Same: 100 % M

ROCK TYPES

	Dolprim		shale, gry		shale, red
	Lmst fw<7		Carbon Sh		

OTHER SYMBOLS

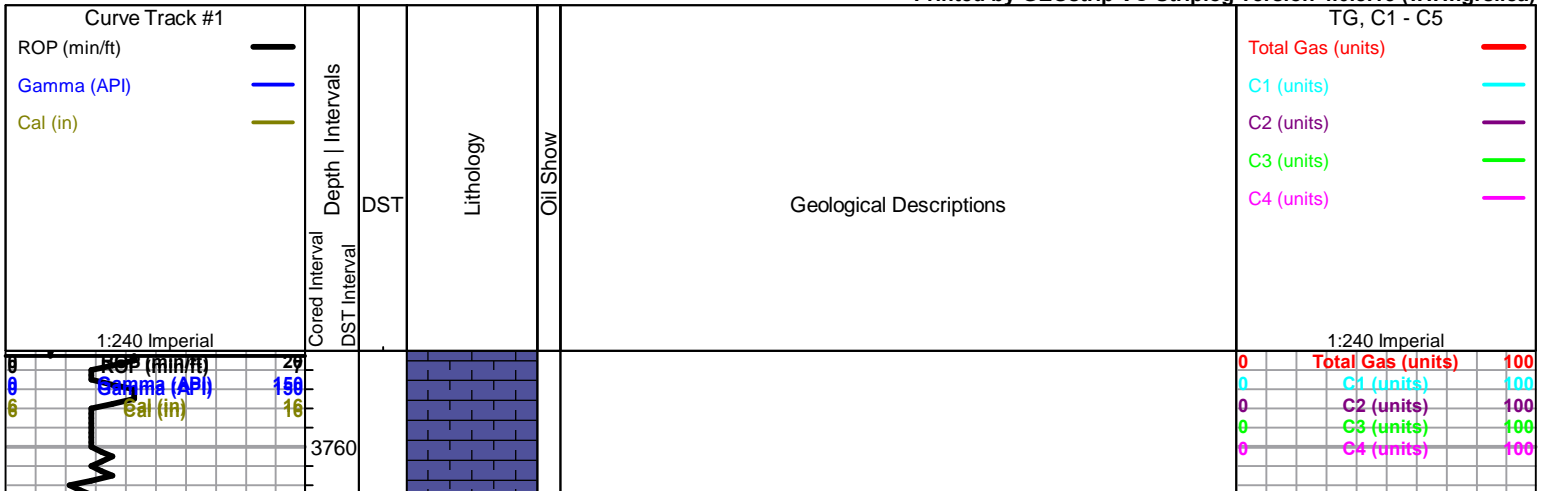
Oil Show

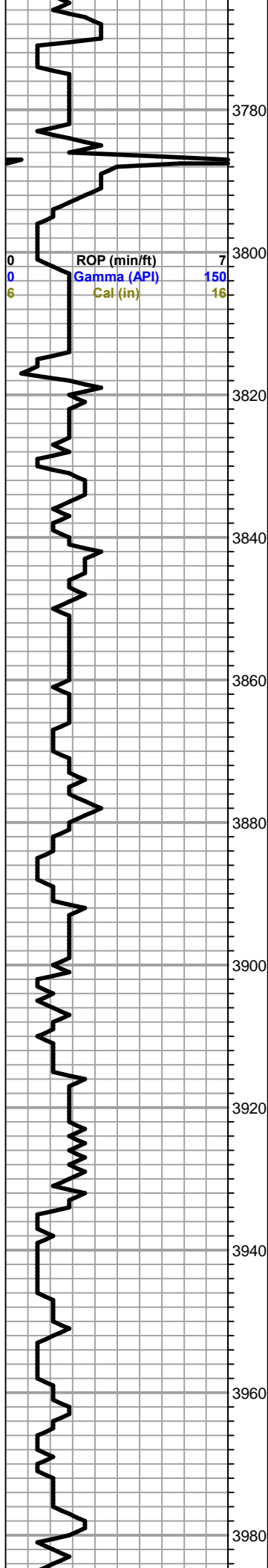
- Good Show
- Fair Show
- Poor Show
- Spotted or Trace
- Questionable Stn
- Dead Oil Stn
- Fluorescence
- * Gas

DST

-
-
-
-

Printed by GEOstrip VC Striplog version 4.0.8.15 (www.grsi.ca)





-Poor Samples-

Howard 3841.0 (-615.0)

Abundt. red, maroon, green, shales, tr. anhy/ gyp.
 Visc. not high enough to catch representative samples

Topeka 3865.0 (-640.0)

LS, white, fxl, gran. in pts, chalky, poor visible porosity
 (slug mar, shale)

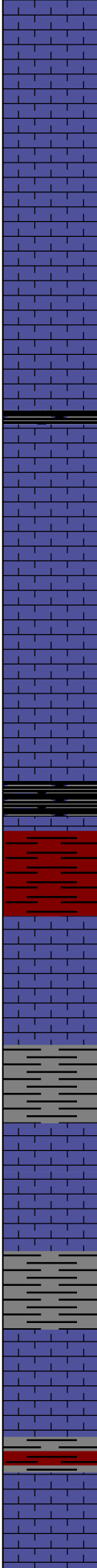
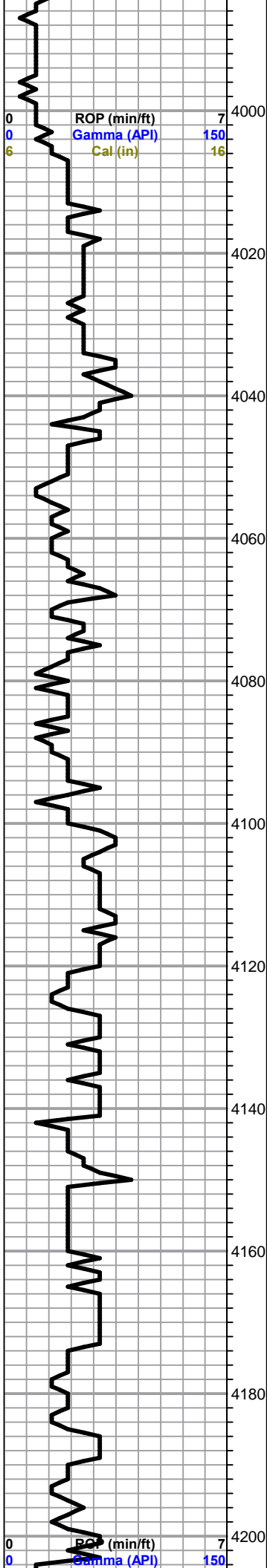
LS, white, cream, chalky

Depth: 3260.0
 Date: 08/01/2017
 MUD: Chemical
 Wt.: 8.3
 Cl: 2500
 pH: 10.6
 VIS: 70+

0	Total Gas (units)	100
0	C1 (units)	100
0	C2 (units)	100
0	C3 (units)	100
0	C4 (units)	100

Depth: 3850.0
 Date: 08/02/2017
 MUD: Chemical
 Wt.: 8.8
 Cl: 5500
 pH: 7.8
 VIS: 57

-Poor Samples



Sand, gry, light gry, silty, few clean & friable, no shows

LS, white, cream, gry, fxl, foss, poor visible porosity, no shows,

LS, gry, white, foss, sparry, calcite, cement,

Sh, black carb

LS, white, gry, slightly cherty, dense, no shows

LS, white, tan, fxl, chalky, cherty, poor visible porosity no shows

Heebner 4095.0 (-869.0)

Black carb shale

Sh, maroon, rusty, brown

Toronto 4121.0 (-895.0)

LS, white, ool, chalky, tr. spty brown stain, nsfo, no odor

Lansing 4142.0 (-916.0)

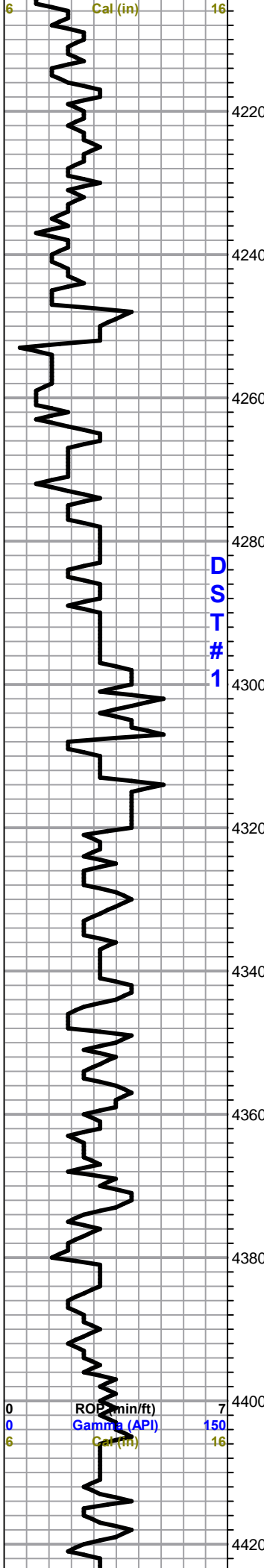
LS, white, fxl, finely ool, dense, no shows

LS, white, gry, f-med xln, scattered porosity (barren)

Sh, maroon, rusty, brown, no shows

Total Gas (units)	100
C1 (units)	100
C2 (units)	100
C3 (units)	100
C4 (units)	100

Total Gas (units)	100
C1 (units)	100



LS, gry, white, ool, poor visible porosity

LS, white, foss, chalky
Slug white chalk

LS, white, f-med xln, foss, chalky, tr. spty stain, nsfo, no odor

LS, white, cream, fxl, few foss, chalky, poorly dev. porosity, no shows

Muncie Creek Sh. 4292.0 (-1066.0)

Sh, black carb

LS, white, cream, ool, scattered visible porosity, brn stain, sfo

LS, white, cream, ool, fair vuggy porosity, brown stain, sfo, fair - good odor

Sh, black carb

LS, white, cream, fxl, ool, dense

LS, a/a, poor visible porosity, no shows

Stark Shale 4373.0 (-1147.0)

Tr. black carb

LS, white, gry, chalky, no shows

LS, white, gry, fxl, few ool, tr. black stain, nsfo, no odor

-Poor Samples- visc. not high enough to catch samples. ??

(95% of up hole cavings- anhydrite, surface sands, red

0	C2 (units)	100
0	C3 (units)	100
0	C4 (units)	100

Depth: 4220.0
Date: 08/03/2017
MUD: Chemical
Wt.: 9.3
Cl: 7000
pH: 7.9
VIS: 56

DST#1 4281-4320
45-30-45-30

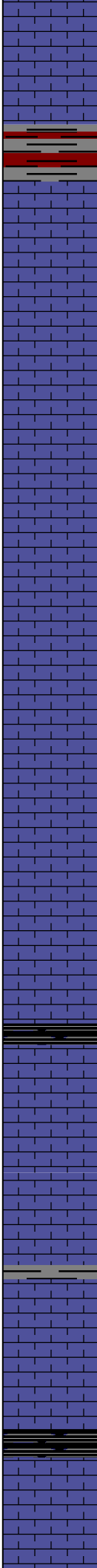
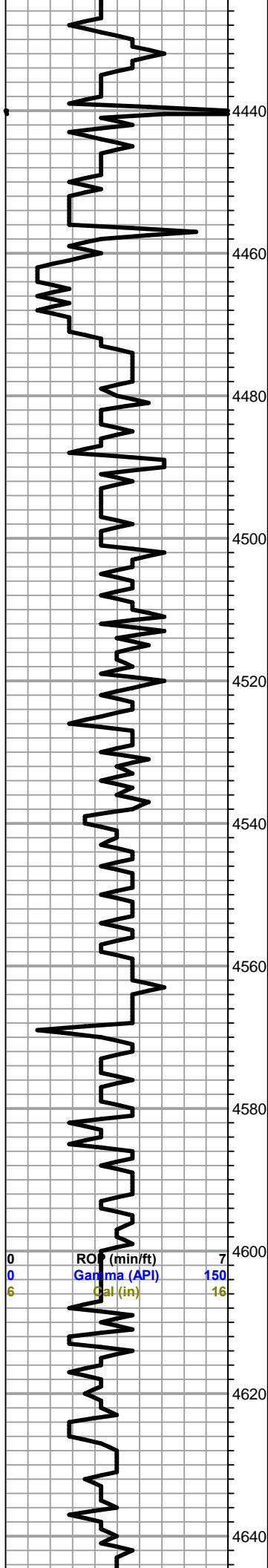
1st Open:
Weak blow

Recovery:
52' mud

Pressures:
ISIP 1248 psi
FSIP 1237 psi
IFP 28-37 psi
FFP 40-47 psi
HSH 2155-2111 psi

Depth: 4320.0
Date: 08/04/2017
MUD: Chemical
Wt.: 9.6
Cl: 8000
pH: 8.5
VIS: 50

0	Total Gas (units)	100
0	C1 (units)	100
0	C2 (units)	100
0	C3 (units)	100
0	C4 (units)	100



beds)

Base Kansas City 4443.0 (-1216.0)

-Poor Samples-

Tr. red silty shale/sd.
Tr. LS, white, fxln, chalky, cherty, no shows

Non representative samples

Poor samples a/a

Poor samples a/a

Pawnee 4570.0 (-1344.0)

Tr. black carb Sh

LS, white, cream, tan, dense, chalky

LS, a/a

Myrick Station 4613.0 (-1387.0)

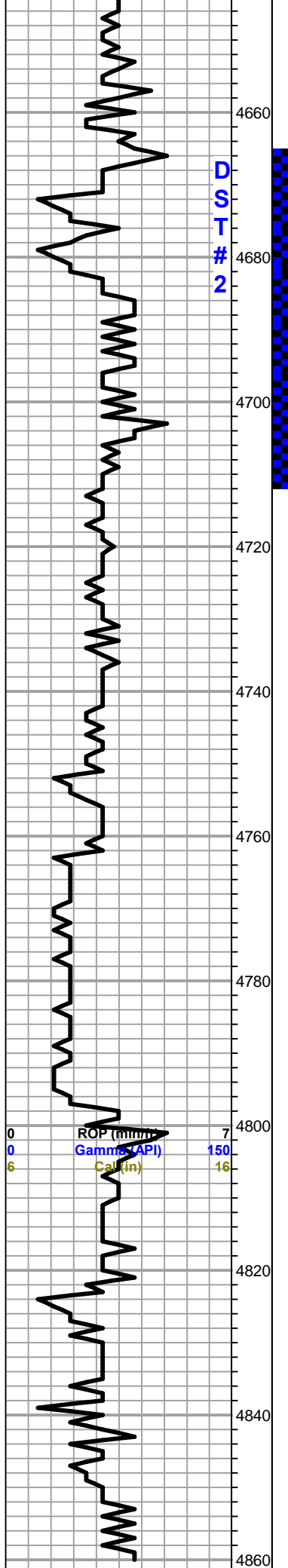
- Poor Samples-

Tr. black carb sh.

Ft. Scott 4633.0 (-1407.0)

Sh, black carb, few maroon, waxey

0	Total Gas (units)	100
0	C1 (units)	100
0	C2 (units)	100
0	C3 (units)	100
0	C4 (units)	100



LS, white, cream, fxl, dense, poor visible porosity, no shows

Cherokee Sh. 4658.0 (-1432.0)

Sh, black carb

Sh, few gry, purp., maroon, tr. pyrite, nsfo, no odor

Sh, a/a
Tr. LS, cream, few foss, poor visible porosity, nsfo, no odor

Johnson 4694.0 (-1468.0)

LS, white, fxl, poor visible porosity, few scattered p.p. porosity, chalky, trc. brn stain, tr. spty sfo, no odor

LS, tan, ool, poor vuggy porosity, cherty in pts, nsfo, no odor

LS, white, fxl, chalky, no shows.
(few rose colored dolomite, suc. no shows)

Sh, maroon, brick red, shales

-Poor Samples-
Tr. clear sand well rounded, friable no shows

Mississippian 4795.0 (-1569.0)

Poor samples - 90% Shales, maroon, black, greenish

Tr. LS, cream, white, fxl, chalky, few ool, no shows

LS, a/a, Tr. white, opaque cherts

90% shales, maroon,
Dol. white, suc. nsfo, no odor, tr. cherts, no shows.

RTD 4860.0 (-1634.0)

DST#2 4666-4712

30-30-30-30

1st Open:
Weak blow

Recovery:
10' Mud

Pressures:
ISIP 866 psi
FSIP 711 psi
IFP 27-28 psi
FFP 29-29 psi
HSH 2370-2366 psi

Depth: 4712.0
Date: 08/05/2017
MUD: Chemical
Wt.: 9.6
Cl: 7000
pH: 9.1
VIS: 50

Depth: 4740.0
Date: 08/06/2017
MUD: Chemical
Wt.: 9.4
Cl: 5000
pH: 11.1
VIS: 51

0	Total Gas (units)	100
0	C1 (units)	100
0	C2 (units)	100
0	C3 (units)	100
0	C4 (units)	100

LTD 4858.0 (-1632.0)

4880

4900

4920

4940

4960

4980

Remarks: Sample quality of the entire well was very poor. After electric Log analysis it was decided to plug & abandon.