

Wellsite Services, LLC

John Goldsmith
(316) 640-0236

427 Roosevelt St.
Cheney, KS 67025

Scale 1:240 (5"=100') Imperial Measured Depth Log

Well Name: #1 Martin 4D
API: 15-203-20324
Location: 2265' FSL & 1895' FEL, N2 NW SE, 4-16S-36W
License Number: #4767
Spud Date: 10/14/2017
Surface Coordinates: LAT 38.6914863
LONG -101.3002921
Bottom Hole Vertical hole
Coordinates: 1 Degree Deviation
Ground Elevation (ft): 3287'
Logged Interval (ft): 3700' To: RTD
Formation: Mississippian at RTD
Type of Drilling Fluid: Chemical

Region: Wichita County
Drilling Completed: 10/26/2017
K.B. Elevation (ft): 3300'
Total Depth (ft): 4880'

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: Ritchie Exploration, Inc.
Address: 8100 E. 22nd St. N. #700
Wichita, KS 67226
(316) 691-9500

GEOLOGIST

Name: John Goldsmith
Company: Wellsite Services, LLC
Address: 427 Roosevelt St.
Cheney, KS 67025
(316) 640-0236

RIG RECORDS

Contractor: Sterling Drilling Rig #5
Pusher: Alan Loftis

Collar Tally: 651'

Pump: Continental-Emsco D-375
Stroke and Liner: 6.5" x 14"

BIT RECORDS

Size:	Type:	Footage:	Condition:	Hours:	Serial #:
12 1/4"	Sm-tooth	0-272'	New	1.75	I706873
7 7/8"	Sm-tooth	272'-4779'	New	134.75	1611002
7 7/8"	Sm-tooth	4779'-4880'	RR	7	1426611002

COMMENTS

Surface Casing: 6 joints of 8 5/8" set at 272'
Production Casing: No Production Casing was installed.
Mud by: MudCo
DST's by: Diamond Testing
Logs by: Pioneer Wireline Services (DIL, CN-CD, ML)
RTD=4880' LTD=4881'

FORMATION TOPS

FORMATION	SAMPLE TOPS		LOG TOPS	
	Depth	Datum	Depth	Datum
Stotler	3632'	-332	3632'	-332
Heebner Shale	3996'	-696	3995'	-695
Toronto	4010'	-710	4010'	-710
Lansing	4048'	-748	4048'	-748
Muncie Creek Shale	4214'	-914	4214'	-914
Stark Shale	4304'	-1004	4304'	-1004
Hushpuckney Shale	4347'	-1047	4347'	-1047
Base of KC	4384'	-1084	4385'	-1085
Marmaton	4428'	-1128	4428'	-1128
Altamont	4452'	-1152	4452'	-1152
Pawnee	4516'	-1216	4516'	-1216
Myrick Station	4558'	-1258	4558'	-1258
Ft Scott	4574'	-1274	4574'	-1274
Cherokee Shale	4603'	-1303	4603'	-1303
Johnson Zone	4694'	-1394	4694'	-1394
Morrow	4756'	-1456	4756'	-1456
Mississippian	4805'	-1505	4806'	-1506
RTD	4880'	-1580		
LTD			4881'	-1581

DSTs

DST #1 "LKC I/J" 4247'-4312' 10/21/17 30-45-45-60

1st Blw: Blw blt to BOB in 18min (No BB)

2nd Blw: Blw blt to BOB in 22min (No BB)

IFP: 33-119# ISIP: 1208# FFP: 1377-236# FSIP: 1193#

Hyd: 2159-2139#

Rec: 500' MCW w/ oil spots in tool (85%Wtr).

DST #2 "Altamont A" 4430'-4460' 10/22/17 30-45-30-30

1st Blw: 1/4" blw fell to surf (No BB)

2nd Blw: No blw (No BB)

IFP: 23-21# ISIP: 1233# FFP: 24-26# FSIP: 1150#

Hyd: 2268-2241#

Rec: 5' Oil, 5' OCM (30%Oil).

DST #3 "Altamont B" 4460'-4477' 10/22/17 30-30-30-30

1st Blw: 1/4" blw dead @ 27min (No BB)

2nd Blw: No blw (No BB)

IFP: 22-39# ISIP: 1088# FFP: 45-59# FSIP: 1023#

Hyd: 2264-2233#

Rec: 30' Oil, 55' WOCM (20%WTR, 20%Oil).

DST #4 "Pawnee" 4508'-4546' 10/23/17 30-30-30-30

1st Blw: Surf blw dead @ 20min (No BB)

2nd Blw: No blw (No BB)

IFP: 23-20# ISIP: 57# FFP: 20-21# FSIP: 40#

Hyd: 2365-2276#

Rec: 5' Mud with oil spots.

DST #5 "Morrow" 4733'-4779' 10/25/17 30-45-45-60

1st Blw: 1/2" blw fell to 1/4" (No BB)



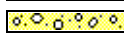
2nd Blw: No blw after intial bubble (No BB)

IFP: 22-23# ISIP: 44# FFP: 23-25# FSIP: 34#




Hyd: 2437-2425#




Rec: 15' Mud with oil spots.

ROCK TYPES

-  Anhy
-  Cht
-  Congl

-  Dol
-  Lmst
-  Shale







-  Sltst
-  Ss
-  Carb sh







-  Gry sh
-  Sandylms
-  Shaly ls





ACCESSORIES

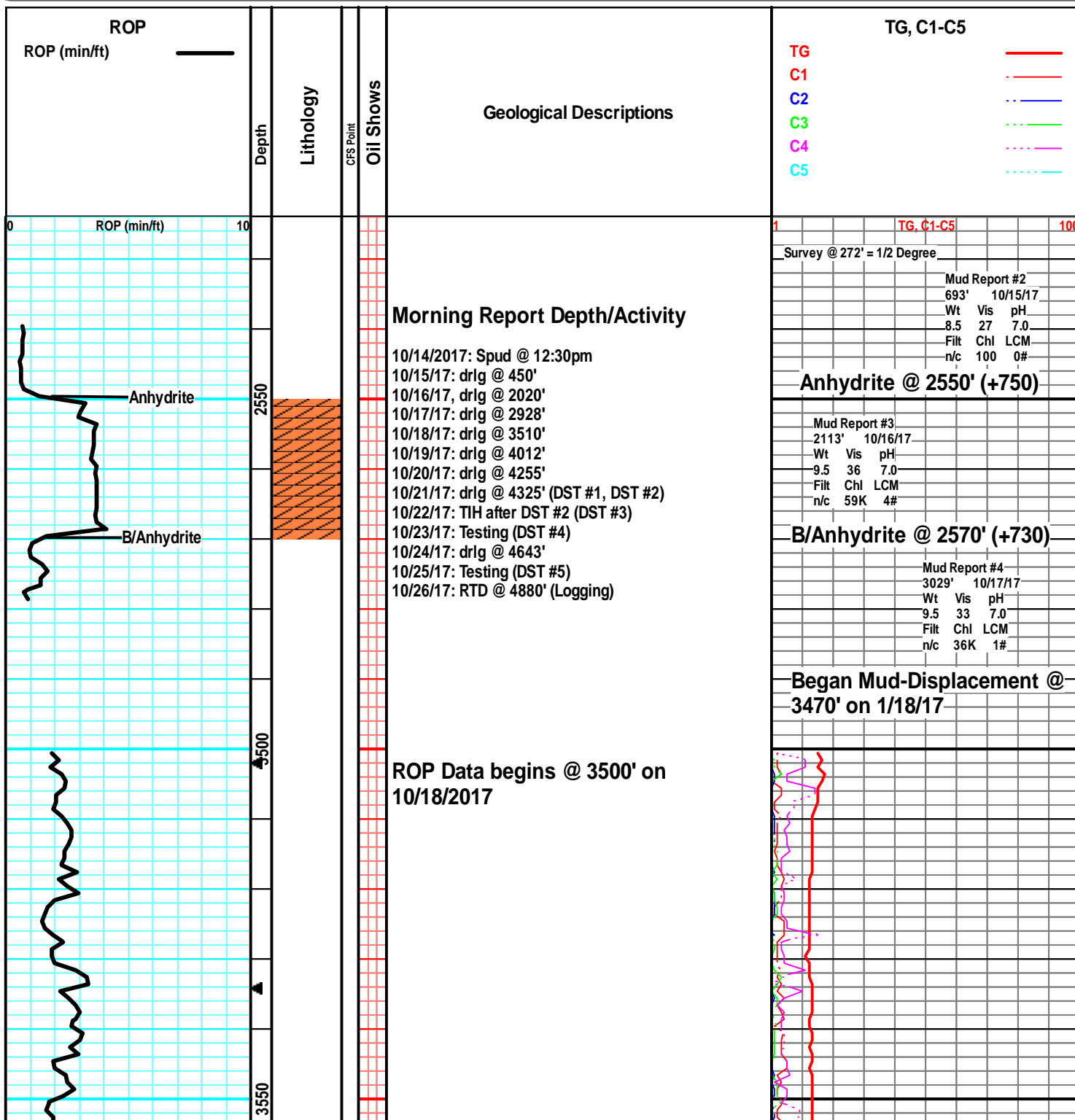
- EVENTS**
-  Circ
 -  Conn

- FOSSIL**
-  Brach
 -  Bryozoa
 -  Crin

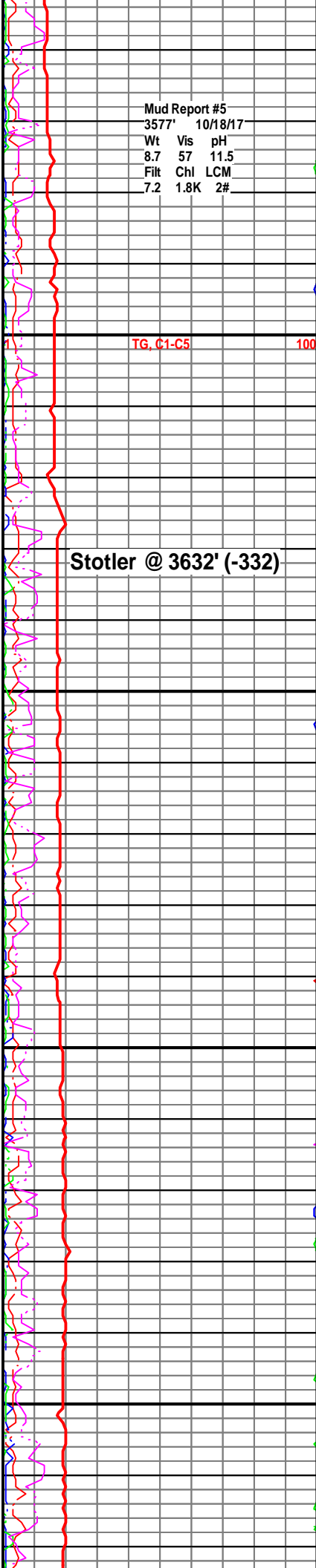
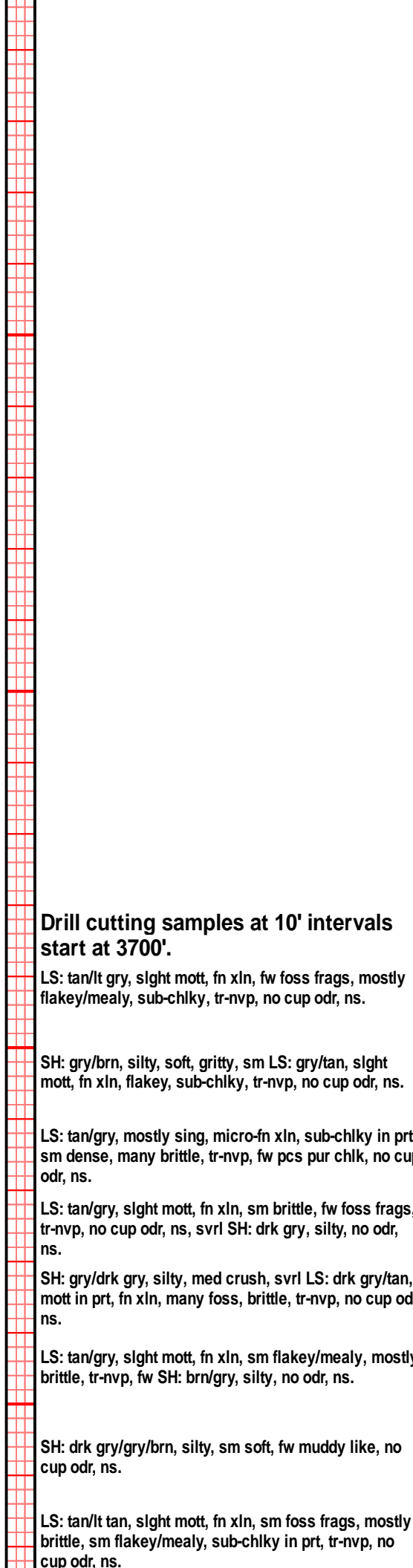
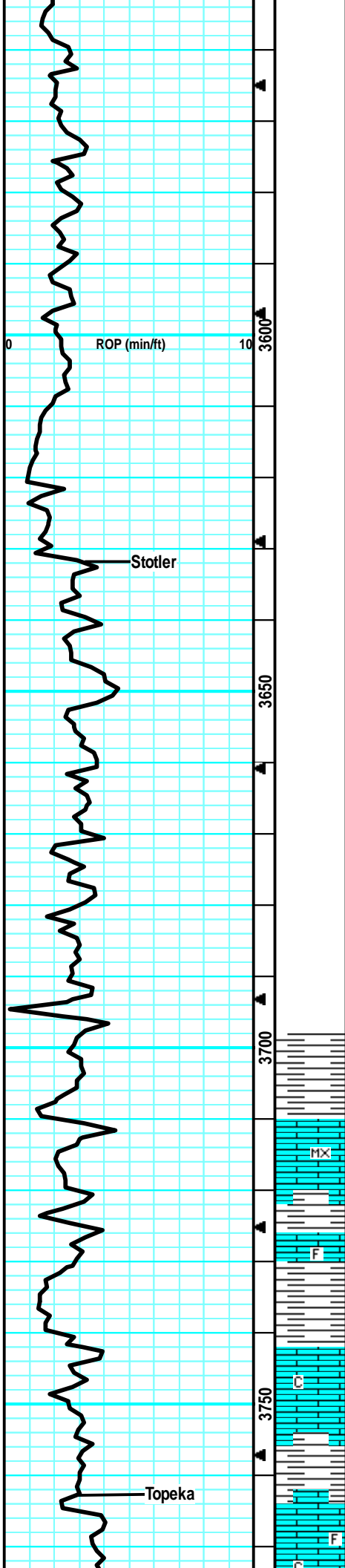
-  Foram
-  Fossil
-  Gastro
-  Oolite
-  Plant
-  Fuss
-  Oolcast

- MINERAL**
-  Calc
 -  Chtdk
 -  Chtlt
 -  Glau
 -  Pyr
 -  Sil

- TEXTURE**
-  Chalky
 -  Crxsln
 -  Finexln
 -  Microxln



Mud Report #5
 3577' 10/18/17
 Wt Vis pH
 8.7 57 11.5
 Filt Chl LCM
 7.2 1.8K 2#



Drill cutting samples at 10' intervals start at 3700'.

LS: tan/lt gry, slight mott, fn xln, fw foss frags, mostly flakey/mealy, sub-chlky, tr-nvp, no cup odr, ns.

SH: gry/brn, silty, soft, gritty, sm LS: gry/tan, slight mott, fn xln, flakey, sub-chlky, tr-nvp, no cup odr, ns.

LS: tan/gry, mostly sing, micro-fn xln, sub-chlky in prt, sm dense, many brittle, tr-nvp, fw pcs pur chl, no cup odr, ns.

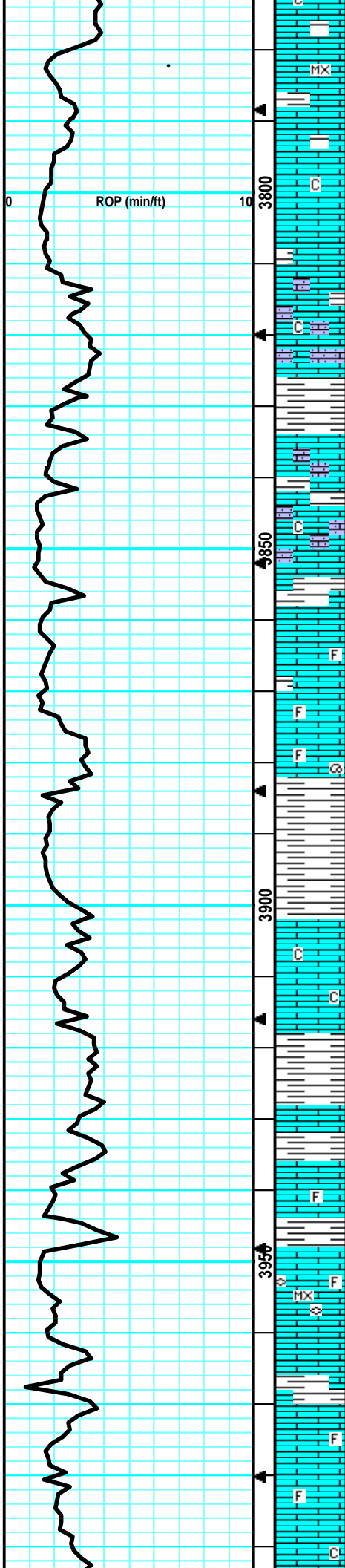
LS: tan/gry, slight mott, fn xln, sm brittle, fw foss frags, tr-nvp, no cup odr, ns, svrl SH: drk gry, silty, no odr, ns.

SH: gry/drk gry, silty, med crush, svrl LS: drk gry/tan, mott in prt, fn xln, many foss, brittle, tr-nvp, no cup odr, ns.

LS: tan/gry, slight mott, fn xln, sm flakey/mealy, mostly brittle, tr-nvp, fw SH: brn/gry, silty, no odr, ns.

SH: drk gry/gry/brn, silty, sm soft, fw muddy like, no cup odr, ns.

LS: tan/lt tan, slight mott, fn xln, sm foss frags, mostly brittle, sm flakey/mealy, sub-chlky in prt, tr-nvp, no cup odr, ns.



LS: crm/lt tan, mostly sing, micro-fn xln, brittle, chlky in prt, tr-nvp, svrl pcs pur chlk, fw pcs w/ drk sptd min stns, no fluor/cut, nsfo.

LS: gry/tan, slight mott, fn xln, many brittle, sm flakey, fw grainy, sub-chlky, tr-nvp, no cup odr, ns.

LS: crm/lt tan, mostly sing, fn xln, sub-chlky, brittle, tr-nvp, no cup odr, ns.

LS: tan, mostly sing, fn xln, sm dense, sm brittle, sub-chlky in prt, fw sandy/gritty, tr-nvp, no cup odr, ns.

LS: tan/gry, fn xln, many sandy/gritty, brittle in prt, tr-pr intxln por in sm, fw SH: drk gry/blk, silty, fw carb, no cup odr, ns.

LS: tan, sing, fn xln, sandy/gritty, sm firm, tr-? intxln por in fw, abund pur chlky, no cup odr, ns.

Much of the same sandy/gritty LS and chlk, slight inflix of drk gry, SH, no cup odr, ns.

LS: tan/gry, slight mott, fn xln, fw foss frags, many brittle, sub-chlky, tr-pr intxln por in sm, fw pcs pur chlk, no cup odr, ns.

LS: gry/tan, mott in prt, fn xln, sm foss in prt, sub-chlky, tr-nvp, fw pcs pur chlk, fw SH: drk gry, silty, no cup odr, ns.

LS: gry, mosty mott, v foss w/ gast/frags, sm firm, tr-nvp, sm SH: gry/blu, silty, no cup odr, ns.

LS: gry/tan, mott in prt, fn xln, sm foss frags, sm dense, many flakey/mealy, tr-nvp, fw pcs pur chlk, sm SH: brn, silty, soft, no odr, ns.

LS: tan, slight mott, fn xln, many flakey/mealy, sub-chlky, tr-nvp, svrl SH: brn, silty, v soft, no cup odr, ns.

LS: lt gry/lt tan, slight mott, fn xln, many brittle, sub-chlky, pr intxln por in sm, svrl pcs pur chlk, no odr, ns.

LS: lt tan, sing, fn xln, mostly brittle, sub chlky, tr-nvp, 2-3 pcs w/ drk sptd surf stns, no fluor/cut, pos drk ded o, no cup odr, ns.

LS: lt tan/lt gry, sing, fn xln, many dense, sm brittle, sub-chlky in prt, tr-nvp, fw pcs pur chlk, no cup odr, ns.

LS: tan/lt gry, sing, fn xln, fw foss frags, mostly dense, sub-chlky in prt, tr-nvp, fw pcs pur chlk, fw SH: drk gry, silty, no cup odr, ns.

LS: crm/lt tan, sing, micro-fn xln, foss w/ fuss/frags, mostly dense, brittle, chlky, tr-nvp, abund pur chlky, no cup odr, ns.

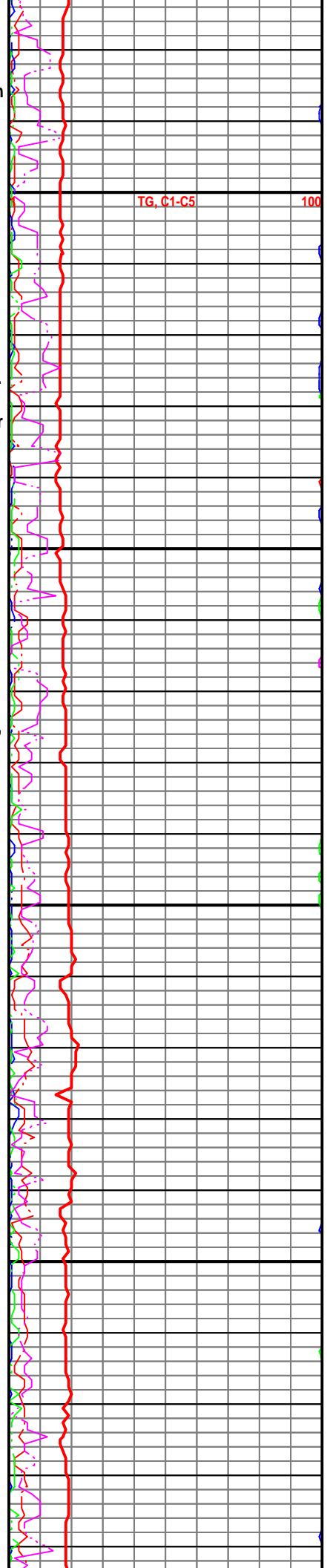
LS: tan/lt gry, slight mott, fn xln, sub-chlky in prt, sm brittle, tr-nvp, fw pcs pur chlk, fw SH: drk gry, silty, no cup odr, ns.

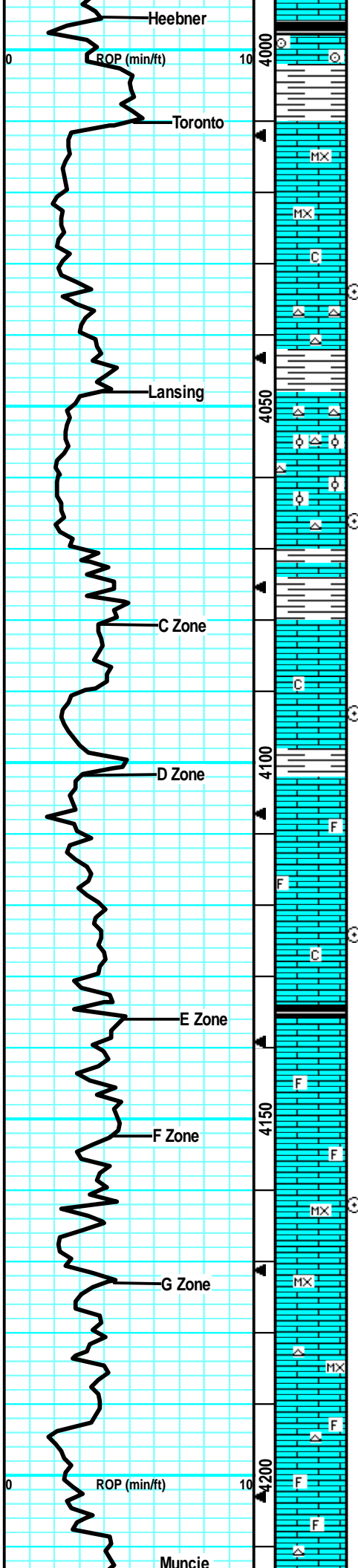
LS: lt gry/tan, mott in prt, fn xln, sm foss in prt, brittle, sub-chlky, tr-nvp, fw pcs pur chlk, no cup odr, ns.

LS: gry/tan, mott, fn xln, foss in prt, flakey/mealy, brittle, chlky, tr-nvp, abund pur chlk, no cup odr, ns.

TG. C1-C5

100





Much of the same LS, influx of SH: blk, carb, silty, soft, no cup odr, ns.

LS: gry/tan, mott, fn xln, foss w/ crin/frags, dense, sm brittle, tr-nvp, svrl SH: gry/brn/blu, silty, soft, no cup odr, ns.

LS: tan/lt tan, sing, micro-fn xln, sm dense, many brittle, chlky, tr-nvp, abund pur chl, no cup odr, ns.

LS: crm/lt tan, sing, micro-fn xln, mostly dense, mostly brittle, chlky, tr-nvp, abund pur chl, no cup odr, ns.

60" Smpl: much of the same chlky, britty LS, no cup odr, ns.

LS: lt tan, sing, fn xln, mostly dense, sm brittle, fw firm, cherty, tr-nvp, fw pcs Chert: wht/opaq, sharp, fw SH: brn, silty, no cup odr, ns.

LS: tan, slight mott in prt, fw ool, mostly dense, sub-chlky in prt, brittle, tr-nvp, fw Chert: wht/opaq, sharp, no cup odr, ns.

LS: tan/lt gry, sing, fn xln, fw ool in prt, mostly brittle, sm dense, sub-chlky in prt, tr-nvp, no cup odr, ns.

60" Smpl: LS: tan, sing, fn xln, dense, sub-chlky, tr-nvp, fw Chert: wht/opaq, sharp, no odr, ns.

LS: tan, mostly sing, fn xln, sm lrg rxln inclus, mostly dense, sub-chlky in prt, tr-nvp, fw pcs pur chl, fw SH: gry, silty, no cup odr, ns.

LS: gry/lt tan, mostly sing, fn xln, sub-chlky, mostly brittle, fw flakey/mealy, tr-nvp, fw pcs pur chl, no cup odr, ns.

LS: tan/lt gry, sing, fn xln, mostly dense, sm brittle, sub-chlky in fw, tr-nvp, no cup odr, ns.

LS: lt gry/tan, slight mott, fn xln, sm lrg inclus, sm flakey/mealy, tr-nvp, fw pcs pur chl, no cup odr, ns.

LS: lt tan/lt gry, mostly sing, fn xln, mostly dense, fw lrg inclus, sub-chlky in prt, tr-nvp, no cup odr, ns.

LS: lt tan/lt gry, sing, fn xln, fw foss frags, mostly dense, sm brittle, sub-chlky in prt, tr-nvp, fw pcs pur chl, no odr, ns.

60" Smpl: Much of the same lt tan/lt gry LS, no odr, ns.

LS: lt gry, slight mott in prt, fn xln, mostly flakey, sub-chlky in prt, tr-nvp, fw pcs pur chl, no odr, ns.

LS: tan/lt gry, slight mott, fn xln, mostly dense, sub-chlky in prt, tr-pr intxln por in v fw pcs, fw SH: blk, silty, carb, hint-? odr, nsfo.

LS: lt tan/lt gry, sing, fn xln, mostly brittle, fw dense, sub-chlky in prt, tr-nvp, fw pcs pur chl, no odr, ns.

LS: lt gry/tan, slight mott, fn xln, fw foss frags, sm brittle, sub-chlky in prt, tr-nvp, no cup odr, ns.

60" Smpl LS: lt tan, slight mott, fn xln, many brittle, sub-chlky, tr-nvp, no cup odr, ns.

LS: crm/lt tan, sing, micro-fn xln, dense, brittle, sub-chlky, tr-nvp, svrl pcs pur chl, tr-nvp, SH: gry/grn, silty, no cup odr, ns.

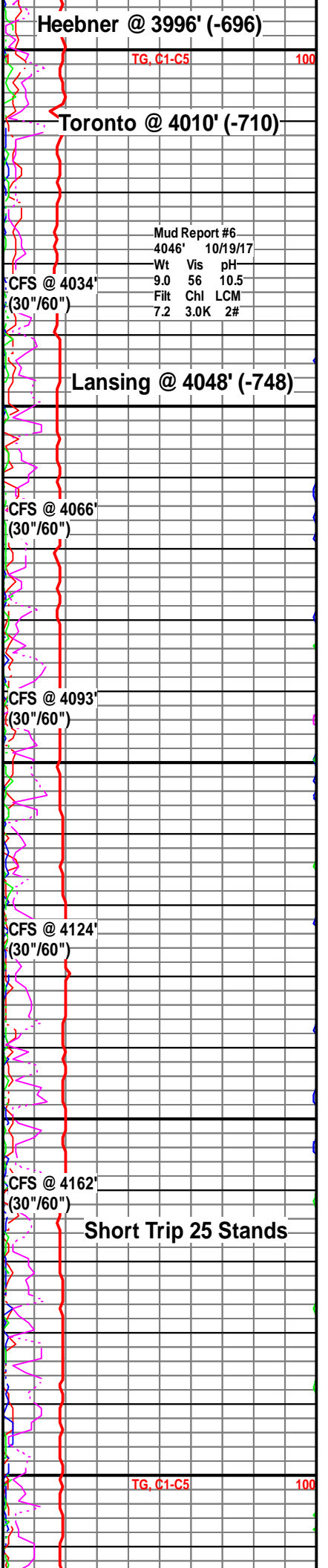
LS: crm/lt tan, mostly sing, micro-fn xln, sub-chlky, mostly dense, sm brittle, tr-nvp, fw SH: gry/grn, silty, no cup odr, ns.

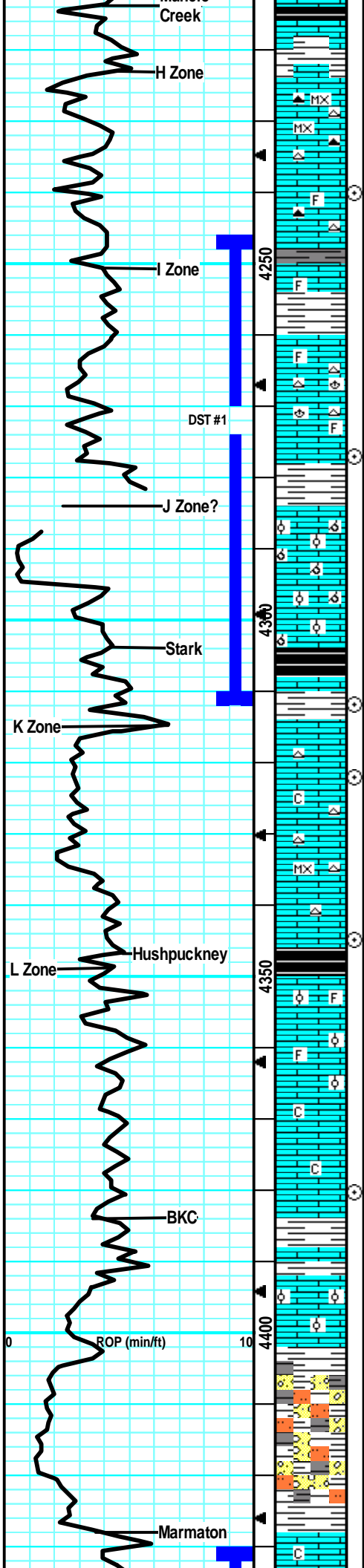
LS: crm/lt tan, mostly sing, micro-fn xln, mostly dense, many brittle, sub-chlky, sm brittle, tr-nvp, fw pcs pur chl, no cup odr, ns.

LS: lt tan/lt gry, slight mott, fn xln, mostly brittle, sub-chlky, sm flakey/mealy, tr-nvp, fw pcs SH: gry, silty, no cup odr, ns.

LS: lt tan/gry, slight mott, fn xln, v fw foss frags, mostly dense, sm brittle, sub-chlky in prt, tr-nvp, fw SH: gry/drk gry/grn, silty, no odr, ns.

LS: arv/tan, slight mott, fn xln, fw foss frags, mostly





dense, sm brittle, sub-chlky, tr-nvp, fw SH: blk, silty, carb, no cup odr, ns.

LS: lt tan, sing, micro-fn xln, mostly dense, sm firm, v fw sub-chlky, tr-nvp, svrl Chert: gry/tan, smokey, sharp, no cup odr, ns.

LS: lt tan, mostly sing, fn xln, mostly brittle, sm dense, sub-chlky, tr-nvp, fw Chert: gry/wht, sharp, no cup odr, ns.

LS: tan/lt gry, slight mott in prt, fn xln, fw foss frags, mostly dense, sm brittle, tr-nvp, fw Chert: gry/wht, foss, sharp, no odr, ns.

LS: gjry/lt tan, mott in prt, fn xln, fw foss frags, mostly dense, sm firm, fw flakey, tr-nvp, fw SH: gry/drk gry, silty, no cup odr, ns.

LS: tan/gry, mott in prt, fn xln, fw foss/bach, sm flakey, sm firm, tr-nvp, sm Chert: gry/wht, foss, sharp, no odr, ns.

LS: gry/lt tan, slight mott, fn xln, fw foss frags, mostly flakey, sub-chlky, tr-pr ppt por in fw, 2 pcs w/ spttd drk tarry stn on edges, wk-? fluor, no cut, pos drk dead oil, nsfo, no cup odr.

LS: tan, slight mott, fn xln, sm v ool, sm brittle, sub-chlky in prt, gd oolcast-sm vuggy por, fw pcs pur chl, no odr, ns.

LS: tan/lt tan, mott in prt, fn xln, sm foss, sm v ool, mostly brittle, gd oolcast por in svrl, 2 pcs w/ vuggy por, hvy sat stns in por, gd fluor/cut, most likely from above in "I Zone," no cup odr, ssfo.

LS: tan/lt gry, slight mott, fn xln, mostly brittle, sm v gd oolcast por, ns, no odr, fw pcs SH: blk, carb, silty.

60" Smpl: Sm of the same ool LS, more LS: gry, dense, tr-nvp, infix of SH: blk, silty, carb, no cup odr, ns.

LS: tan, mostly sing, fn xln, mostly brittle, fw sub-chlky, tr-pr intxln por in fw pcs, abund pur chl, 1 pcs w/ lght brn edge stns, wk-? fluor, pos cut resid, no cup odr, nsfo.

LS: lt gry/tan, mostly sing, fn xln, dense, sub-chlky, tr-nvp, fw pcs SH: gry/brn grn, no cup odr, ns.

LS: lt tan, sing, fn xln, mostly dense, brittle, chlky, in prt, tr-nvp, svrl pcs pur chl, fw Chert: wht/opaq, foss, sharp, no cup odr, ns.

LS: crm/lt tan, sing, micro-fn xln, mostly dense, v brittle, sm soft, chlky, tr-ppt intxln por in fw, svrl pcs pur chl, no cup odr, ns.

LS: tan/lt gry, slight mott, fn xln, mostly dense, sm hard, tr-nvp, fw Chert: gry, foss, sharp, no cup odr, ns.

LS: gry/lt tan, slight mott, fn xln, fw foss frags, sub-chlky in prt, flakey/mealy in prt, tr-nvp, fw SH: blk, silty, carb, no cup odr, ns.

LS: lt tan/lt gry, slight mott, fn xln, fw ool/foss frags, sub-chlky, fw brittle, tr-nvp, fw SH: blk, carb, silty, no cu odr, ns.

LS: lt gry/lt tan, sing, fn xln, mostly dense, sub-chlky in prt, tr-nvp, fw pcs pur chl, no odr, ns.

LS: lt gry/lt tan, sing, fn xln, mostly dense, sub-chlky, fw firm, tr-nvp, v fw pcs pur chl, no cup odr, ns.

LS: gry/tan, slight mott, fn xln, sm foss/ool, mostly dense, sm brittle, tr-nvp, fw pcs pur chl, no cup odr, ns.

LS: lt gry/tan, mott in prt, fn xln, many foss/ool, sm dense, many brittle, fw pcs w/ pr scat infoss por, fw SH: drk gry/grn, silty, no cup odr, ns.

LS: gry/tan, sing, fn xln, mostly dense, sm brittle, sub-chlky in prt, 2-3 pcs w/ vuggy por, lght patchy stns, in por, no cup odr, vssfo.

LS: gry/tan, mott, fn xln, sm sandy/grny, 1 pc LS: gry, dense, pr frac por on edge, lght brn stn, v sml sphr oil on brk, no cup odr.

SH: brn, soft, fw SitStn: lt gry, gritty, sm muddy like, v soft, no odr, ns.

LS: tan/lt tan, sing, fn xln, mostly dense, sm brittle, fw sub-chlky, tr-nvp, no cup odr, ns.

LS: tan, mostly sing, fn xln, mostly dense, sub-chlky in prt, fw firm, only 1 pc w/ fr vuggy por, drk stn in

Muncie Creek @ 4214' (-914)

CFS @ 4240' (30"/60")

DST #1 "LKC I/J" 4247'-4312'
10/21/17 30-45-45-60"
1st Blw: Blw blt to BOB in 18min (No BB)
2nd Blw: Blw blt to BOB in 22min (No BB)
IFP: 33-119# ISIP: 1208# FFP: 1377-236# FSIP: 1193#
Hyd: 2159-2139#
Rec: 500' MCW w/ oil spots in tool (85%Wtr).

CFS @ 4277' (30"/60")

Footage Sensor Failed on rig.

Mud Report #7
4310' 10/20/17
Wt Vis pH
9.3 54 10.0
Filt Chl LCM
8.0 4.0K 2#

Stark @ 4304' (-1004)

CFS @ 4312' (30"/60") Survey @ 4312' = 1 1/4 Degree

CFS @ 4322' (30"/60")

Mud Report #8
4341' 10/21/17
Wt Vis pH
9.3 54 10.0
Filt Chl LCM
8.8 5.0K 2#

CFS @ 4345' (30"/60")

Hushpuckney @ 4347' (-1047)

CFS @ 4380' (30"/60")

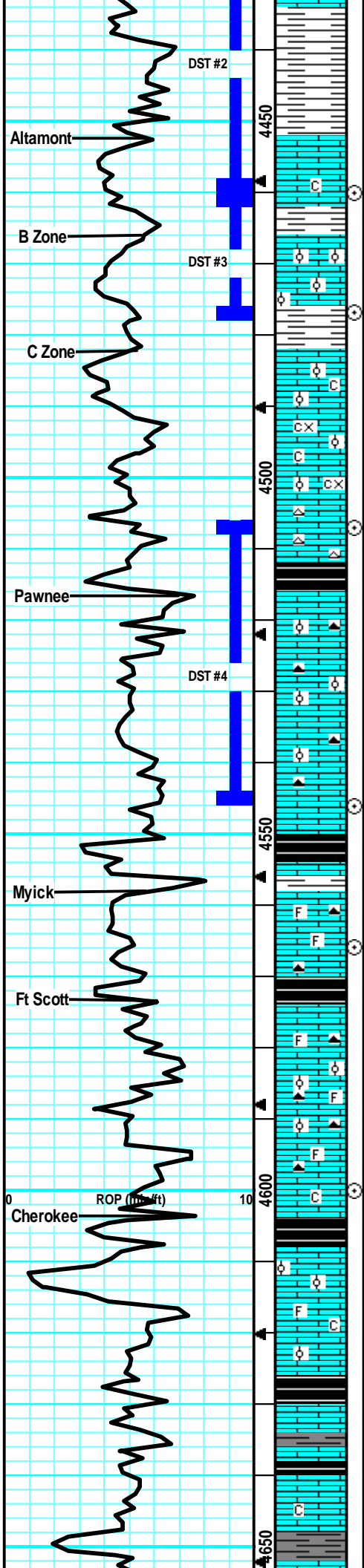
BKC @ 4384' (-1084)

DST #2 "Altamont A"
4430'-4460' 10/22/17
30-45-30-30
1st Blw: 1/4" blw fell to surf (No BB)
2nd Blw: No blw (No BB)
IFP: 23-21# ISIP: 1233# FFP: 24-26# FSIP: 1150#
Hyd: 2268-2241#
Rec: 5' Oil, 5' OCM (30%Oil).

Marmaton @ 4428' (-1128)

Mud Report #9
4460' 10/22/17
Wt Vis pH

9.5 58 10.0
Filt Chl LCM
8.8 4.5K 1#



LS: tan/gry, slight mott, fn xln, sm ool, mostly dense, sub-chlky in prt, sm brittle, tr-nvp, fw SH: gry, silty, no cup odr, ns.
LS: gry/tan, mott, fn xln, mostly brittle, sub-chlky in prt, fr intxn por in 5-6 pcs, lght brn stning, dul yel fluor, strm cut, wk cup odr, ssfo.
60 Min Smpl: had fw more pcs of LS: w/ fr intxn por, lght brn stns, w/ ssfo in 4 pcs, wk cup odr.
LS: lt gry/lt tan, sing, fn xln, mostly dense, sub-chlky, tr-ppt intxn por in fw, 1 pc w/ patchy lght brn stns, gd fluor, slw cut, vssfo, no cup odr.
LS: tan/lt gry, slight mott, fn xln, sm v ool, mostly dense, many brittle, tr-? intool por in fw, 1 pcs w/ drk brn stns, ? fluor, no cut, pos drk ded oil, no cup odr, nsfo.
LS: tan/lt gry, sing, fn xln, mostly dense, sub-chlky in prt, sm brittle, tr-nvp, svrl SH: brn/gry/grn, silty, soft, fw waxy, no cup odr, ns.
LS: tan/gry, mott, fn xln, fn-crs xln, mostly brittle, v flakey/mealy, sub-chlky, svrl lrg qrtz/sand grains, tr-nvp, no cup odr, ns.
LS: tan/gry, mott, fn-crs xln, mostly flakey/mealy, sm firm, tr-nvp, fw SH: gry/grn, silty, soft, no cup odr, ns.
60" Smpl: Much of the same Flakey LS, w/ influx of gry/wht ool Chert, no cup odr, ns.
LS: drk gry/lt brn, mott, crs xln, mostly firm, lrg crs flake like xls, tr-nvp, fw Chert: gry, sharp, svrl SH: drk gry/blk, silty, soft, fw carb, no odr, ns.
LS: gry/lt tan, sing, fn xln, mostly dense, sm brittle, tr-nvp, fw Chert: gry, sharp, no ucp odr, ns.
LS: gry/lt tan, slight mott, fn xln, sm ool, molsty firm, fr intxn & tght intool por in fw, 6-7 pcs wk lght brn sat stns in por, gd fluor, strm cut, ssfo on brk, fr cup odr.
LS: gry/tan, slight mott, fn xln, fw ool, mostly dense, many firm, tr-pr intool por in fw pcs, only 2 pcs of ool sho rx, fw Chert: gry, sharp, faint-? cup odr, vssfo in 2 pcs.
LS: gry/tan, slight mott, fn xln, dense, fw flakey, tr-nvp, sm SH: drk gry/blk, silty, sm carb, o cup odr, ns.
LS: gry/tan, mott, fn xln, foss in prt, many dense, fw firm, svrl flakey/mealy, tr-nvp, fw Chert: gry, foss, sharp, no cup odr, ns.
LS: gry/tan, mostly mott, fn xln, foss, sm firm, tr-nvp, svrl Chert: gry, foss, sharp, fw SH: drk gry/blk, silty, soft, fw carb, no cup odr, ns.
LS: gry, mott, fn xln, foss, mostly dense, many firm, fw hard, tr-nvp, fw Chert: gry, foss, sharp, fw SH: drk gry, silty, soft, no cup odr, ns.
LS: tan/gry/lt brn, mott in prt, fn xln, sm foss/ool, mostly dense, many firm, tr-v pr intool por in v fw pcs, sm Chert: lt brn/gry, foss, sharp, sm SH: gry/blk, silty, carb, no cup odr, ns.
LS: gry/lt tan, sing, fn xln, sub-chlky, tr-nvp, fw pcs pur chl, fw Chert: gry/smoke, foss, sharp, fw SH: drk gry/blk, silty, carb, no cup odr, ns.
LS: tan/gry, slight mott in prt, fn xln, mostly dense, sub-chlky in prt, sm firm/flakey, tr-nvp, svrl SH: drk gry, med crush, fw Chert: crm/gry, sharp, no odr, ns.
LS: tan/gry, slight mott, fn xln, fw foss frags, mostly dense, fw sub-chlk, tr-nvp, fw Chert: wht/gry, sharp, no odr, ns.
LS: gry/lt tan, mott, fn xln, sm foss in prt, many dense, many firm, tr-nvp, abund SH: drk gry/blk, silty, carb, no cup odr, ns.
LS: gry/tan, slight mott, fn xln, mostly dense, sm firm, sub-chlky in prt, tr-nvp, fw SH: drk gry, silty, soft, fw carb, no cup odr, ns.
LS: tan/lt gry, slight mott, fn xln, sub-chlky, many brit, tr-nvp, 2 pcs w/ pr scat vuggy por, sptd brn stns, gd fluor, strm cut on brk, no cup odr, vssfo.
LS: gry/tan, slight mott, fn xln, mostly dense, many firm, tr-nvp, fw SH: drk gry, silty, no cup odr, ns.
LS: lt tan/lt gry, mostly sing, fn xln, many dense, sub-chlky in prt, fw firm, tr-nvp, fw SH: drk gry, silty, no cup odr, ns.
LS: gry/lt tan, slight mott, fn xln, mostly dense, many

Altamont @ 4452' (-1152)

CFS @ 4460' (30"/60")
DST #3 "Altamont B"
4460'-4477' 10/22/17
30-30-30-30
1st Blw: 1/4" blw dead @ 27min (No BB)
2nd Blw: No blw (No BB)
IFP: 22-39# ISIP: 1088# FFP: 45-59# FSIP: 1023#
Hyd: 2264-2233#

CFS @ 4477' (30"/60")
DST #4 "Pawnee"
4508'-4546' 10/23/17
30-30-30-30
1st Blw: Surf blw dead @ 20min (No BB)
2nd Blw: No blw (No BB)
IFP: 23-20# ISIP: 57# FFP: 20-21# FSIP: 40#
Hyd: 2365-2276#
Rec: 30' Oil, 55' WOCM (20%WTR, 20%Oil).

CFS @ 4507' (30"/60")

Pawnee @ 4516' (-1216)

Mud Report #10
4546' 10/23/17
Wt Vis pH
9.5 60 10.0
Filt Chl LCM
8.8 5.6K 2#

CFS @ 4546' (30"/60")

Myrick @ 4558' (-1258)

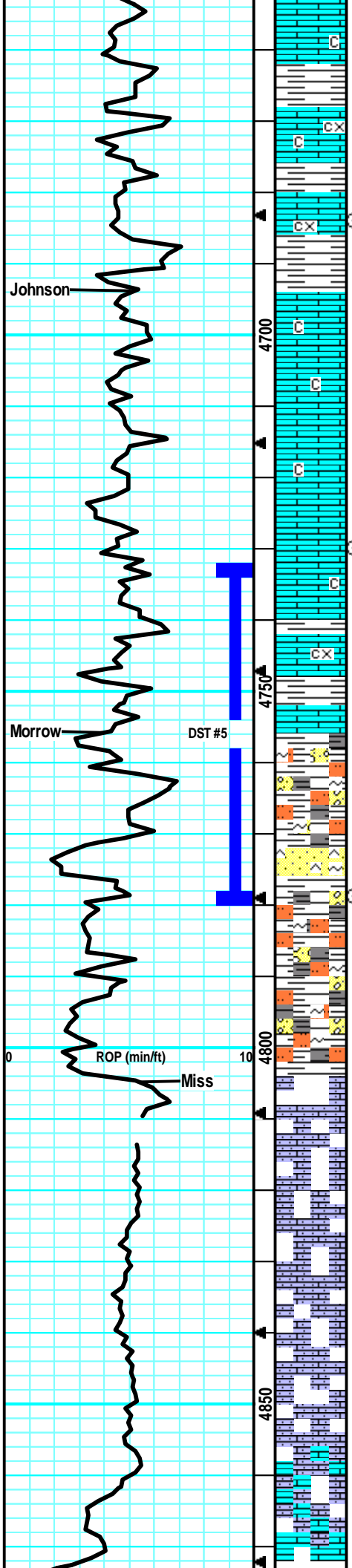
CFS @ 4566' (30"/60")

Ft Scott @ 4574' (-1274)

CFS @ 4600' (30"/60")

Cherokee @ 4603' (-1303)

Mud Report #11
4638' 10/24/17
Wt Vis pH
9.4 52 10.0
Filt Chl LCM
8.8 6.3K 2#



firm, sm flakey/mealy, tr-nvp, fw SH: gry, silty, no cup odr, ns.

LS: gry/tan, mott in prt, fn xln, fw foss in prt, many flakey/mealy, firm, tr-nvp, svrl SH: drk gry/blk, silty, carb, no cup odr, ns.

LS: gry/tan, mott in prt, fn-crs xln, mostly dense, many firm, flakey/mealy, tr-nvp, sm SH: drk gry/grn, med crush, no cup odr, ns.

LS: gry/tan, mott, fn-crs xln, mostly dense, flakey/mealy, many firm, tr-nvp, fw SH: drk gry, silty, no cup odr, ns.

LS: tan/gry, slght mott, fn xln, mostly dense, sub-chlky in prt, sm brittl, tr-nvp, svrl SH: drk gry/blk, silty, fw carb, no cup odr, ns.

LS: gry/tan, slght mott, fn-crs xln, mostly dense, many firm, flakey/mealy, tr-nvp, fw SH: drk gry, silty, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, sm flakey/mealy, dense, fw firm, tr-nvp, fw SH: drk gry/brn, silty, no cup odr, ns.

LS: tan/lt gry, slght mott, fn xln, mostly dense, sub-chlky in prt, tr-nvp, fw pcs pur chl, sm SH: drk gry, silty, no cup odr, ns.

LS: tan/gry, mott in prt, fn xln, sm sub-chlky/britl, many flakey/mealy and firm, tr-nvp, svrl SH: drk gry/blk, silty, fw carb, no odr, ns.

LS: gry/tan, mott in prt, fn xln, svrl dense, many brittle, sub-chlky in prt, tr-nvp, svrl SH: drk gry, silty, no cup odr, ns.

LS: gry/drk gry, mott, fn-crs xln, sm flakey/mealy, tr-nvp, abund SH: gry/drk gry, silty, no cup odr, ns.

SH: gry/brn, silty, soft, fw SS: wht/blu/grn, fn grn, arg, brittle, sm firm, tr-nvp, fw LS: gry, mott, fn-crs xln, tr-nvp, no cup odr, ns.

SH: gry/brn/yel/grn, silty, soft, fw gritty, sm SS: blu/grn/wht, fn grn, mostly firm, arg, many glauc, well sort, tr-nvp, no cup odr, ns.

SS: crm/lt gry, crs grn, sub-ang, arg, sil cem, sm friab, tr-pr intgrn por, ? fluor, no stains/shows, abund SH: gry/brn, silty, soft, no cup odr, nsfo.

SH: gry/grn/yel, soft, silty, sm wthrd, fw fissile, fw StStn: gry, gritty, friabl, silty, no cup odr, ns.

SH: gry/grn/brn, silty, soft, sm wthrd, sm fissile, fw StStn: gry, gritty, silty, fw SS: grn, fn grn, sub-rnd, arg, tr-? intgrn por, sm glau, no odr, ns.

SH: gry/grn/blu, silty, soft, fw waxy, fw fissile, sm LS: crm/lt tan, sandy/gritty, chlky, many brittle, tr-nvp, no cup odr, ns.

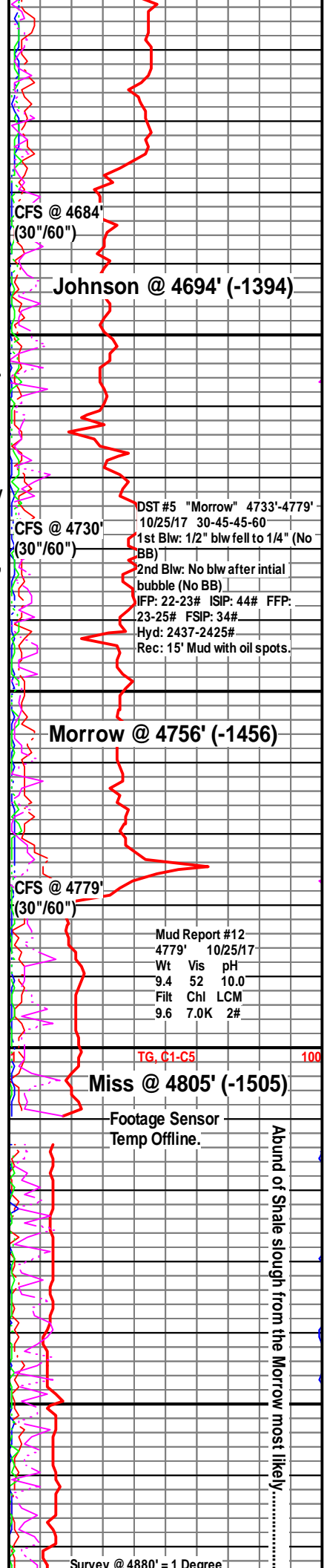
LS: crm/wht/lt tan, sing, fn xln, sandy/gritty, chlky, sm brittle, tr-nvp, svrl SH slough from above, no cup odr, ns.

LS: crm/lt tan, sing, fn xln, sandy/gritty, sm chlky, sm brittle, tr-nvp, abund SH slough, no cup odr, ns.

Much of the same sandy/gritty LS, still large amounts of slough SH from above.

Much of same sandy/gritty LS, large amount of slough SH, no cup odr, ns.

Influx of LS: lt tan, sing, fn xln, mostly dense, fw flakey/mealy, sub-chlky in prt, tr-nvp, abund of SH slough, no cup odr, ns.



Johnson @ 4694' (-1394)

DST #5 "Morrow" 4733'-4779'
 10/25/17 30-45-45-60
 1st Blw: 1/2" blw fell to 1/4" (No BB)
 2nd Blw: No blw after intial bubble (No BB)
 IFP: 22-23# ISIP: 44# FFP: 23-25# FSIP: 34#
 Hyd: 2437-2425#
 Rec: 15' Mud with oil spots.

Morrow @ 4756' (-1456)

Mud Report #12
 4779' 10/25/17
 Wt Vis pH
 9.4 52 10.0
 Filt Chl LCM
 9.6 7.0K 2#

Miss @ 4805' (-1505)

Footage Sensor
 Temp Offline.

Abund of Shale slough from the Morrow most likely.....

RTD @ 4880' (-1580)
LTD @ 4881' (-1581)

Lost Circulation, no return samples.

CFS @ 4880'
(30"/60")

Lost Circulation on Circ
Samples. Mixed tank of
mud and got back.