

John Goldsmith Wellsite Service

Cell and Home Phone:
316-640-0236

427 Roosevelt St.
Cheney, KS 67025

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

Well Name: D. Schumacher #1
API: 15-109-21428
Location: 1830' FNL, 1020' FWL, SECTION 23-15S-36W, E/2 SW NW
License Number: **Region: Logan County**
Spud Date: 08/04/2015 **Drilling Completed: 08/14/2015**
Surface Coordinates: LAT 38.7396344
LONG -101.2948871
Bottom Hole Vertical hole
Coordinates: 3/4 Degree Deviation
Ground Elevation (ft):3294' **K.B. Elevation (ft): 3305'**
Logged Interval (ft):3700' **To: RTD** **Total Depth (ft):4910**
Formation: Mississippian at RTD
Type of Drilling Fluid:Chemical

Printed by STRIP.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: John Goldsmith Wellsite Service
Address: 427 Roosevelt St
Cheney, KS 67025
(316) 640-0236

COMMENTS

Contractor: Murfin Drilling Rig #21
Pusher: Juan Tinoco
Surface Casing: 5 joints of 8 5/8" set at 213'
Production Casing: 5.5" Production Casing was installed.
Mud by: MudCo
DST's by: Trilobite Testing
Logs by: Pioneer Energy Services (DIL, CN-CD)
RTD=4910'
LTD=4909'

FORMATION TOPS

FORMATION	SAMPLE TOPS		LOG TOPS	
	Depth	Datum	Depth	Datum
Heebner Shale	4001'	-696	4001'	-696
Toronto	4018'	-713	4018'	-713
Lansing	4050'	-745	4050'	-745
Muncie Creek Shale	4222'	-917	4221'	-916
Stark Shale	4316'	-1011	4315'	-1010
Hushpuckney Shale	4360'	-1055	4360'	-1055
Base of KC	4397'	-1092	4396'	-1091
Marmaton	4441'	-1136	4440'	-1135
Pawnee	4534'	-1229	4534'	-1229
Little Osage Shale	4565'	-1260	4563'	-1258
Excello Shale	4582'	-1277	4581'	-1276
Cherokee Shale	4613'	-1308	4613'	-1308
Johnson Zone	4697'	-1392	4697'	-1392
Morrow	4748'	-1443	4747'	-1442
Mississippian	4822'	-1517	4822'	-1517
RTD	4910'	-1605		
LTD			4909'	-1604

DSTs

DST #1 3996'-4046' "Toronto" 8/7/2015 30-45-45-60

1st Blw: Blt to 9.5" (No BB)

2nd Blw: Blt to BOB in 37" (No BB)

IFP: 43-157# ISIP: 1082# FFP: 167-232# FSIP: 1074#

HYD: 1976-1838#

Rec: 30' OCM (2% Oil), 186' Mud, 122' OCMW (2% Oil, 85% Wtr), 122' MCW (60% Wtr)

DST #2 4081'-4174' "KC E/F" 8/8/2015 30-45-30-60

1st Blw: Blt to BOB in 4" (No BB)

2nd Blw: Blt to BOB in 5" (No BB)

IFP: 92-381# ISIP: 1176# FFP: 388-542# FSIP: 1177#

HYD: 1995-1916#

Rec: 620' MUD, 248' MCW (70% Wtr), 244' MCW (90% Wtr)

DST #3 4418'-4480' "Altamont A" 8/9/2015 30-45-45-60

1st Blw: Blt to BOB in 3" (BB blt to 1/8")

2nd Blw: Blt to BOB in 3" (No BB)

IFP: 170-394# ISIP: 1021# FFP: 430-618# FSIP: 1021#

HYD: 2248-2084#

Rec: 826' MCGO (85% Oil, 10% Gas), 124' MCGO (65% Oil, 25% Gas), 248' MCGO (50% Oil, 25% Gas), 122' GCMO (60% Oil, 10% Gas), 122' GCMO (80% Oil, 10% Gas)

DST #4 4475'-4500' "Altamont B" 8/10/2015 30-30-30-30

1st Blw: No Blw (No BB)




2nd Blw: No Blw flushed, Wk blw dead instantly (No BB)

IFP: 21-23# ISIP: 48# FFP: 20-23# FSIP: 167#




HYD: 2230-2147#




Rec: 2' Mud

ROCK TYPES

 Anhy
 Cht
 Congl

 Dol
 Lmst
 Shale

 Slstst
 Ss
 Carb sh





 Gry sh
 Sandylms
 Shaly ls

ACCESSORIES

EVENTS

 Circ
 Conn

FOSSIL

 Brach
 Bryozoa
 Crin
 Foram





 F Fossil
 Gastro
 Oolite
 Ostra
 Pellet
 Plant
 Fuss
 Oomold

MINERAL

 Calc
 Chtdk
 Chtlt
 Feldspar
 Glau
 Hvymn
 Nodule
 Pyr

 Sulphur

TEXTURE

 Chalky
 Crslxn
 Finexln
 Microxln

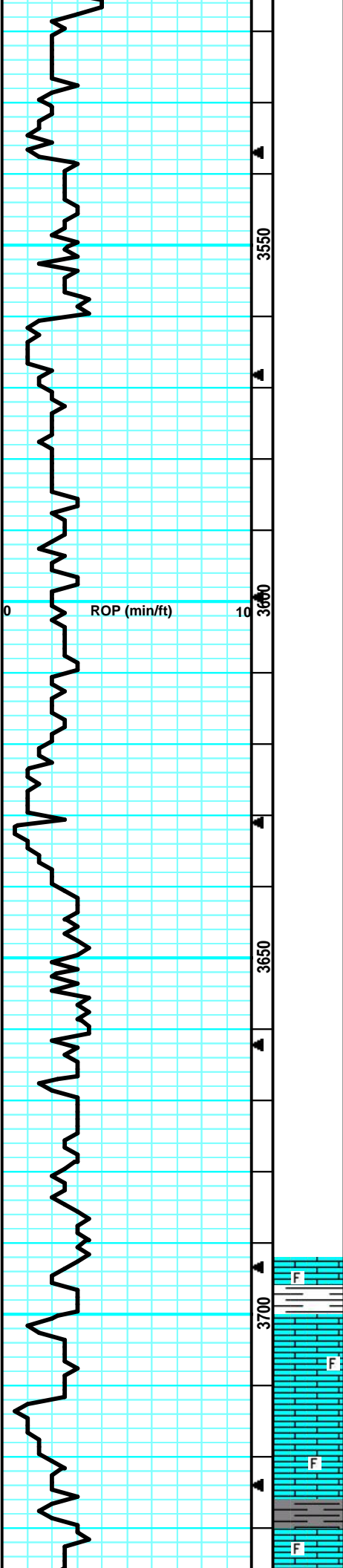
ROP (min/ft)	Depth	Lithology	Oil Shows	Geological Descriptions	Remarks
0	0				Survey @213' = 1/4 Degree
10	2560	Anhydrite		Morning Report Depth/Activity 08/04/2015, Spud 08/05/15, drill @680' 08/06/15, drill @2415' 08/07/15, drill @3345' (DST #1) 08/08/15, drill @3916' (DST #2) 08/09/15, drill @4095' (DST #3) 08/10/15, drill @4315' (DST #4) 08/11/15, drill @4480' 08/12/15, drill @4562' 08/13/15, drill @4851' 08/14/15, drill @4910'	Mud-Co Check #1 @0' 08/01/15 Anhydrite @ 2568' (+737) Survey @1030' = 1/4 Degree B/Anhydrite @ 2587' (+718) Survey @1538' = 1/4 Degree
	2690	B/Anhydrite			Mud-Co Check #2 @ 955' 08/04/15 wt vis pH 8.8 29 8.0 Filt chr LCM NC 200 Tr Mud-Co Check #3 @ 2470' 08/05/15 wt vis pH 9.7 32 7.5 Filt chr LCM NC 81K 2#
	3500			ROP Data begin @ 3500' - 08/06/2015	Mud Displacement @ 3421' Survey @2046' = 1/2 Degree
					Mud-Co Check #4 @ 3385' 08/06/15 wt vis pH 9.7 35 7.0

Filt chr LCM
NC 67K 3#

Survey @2555' = 1 Degree

Survey @3032' = 1 Degree

Survey @3568' = 1/2 Degree



Samples began @ 3700' - 08/06/2015

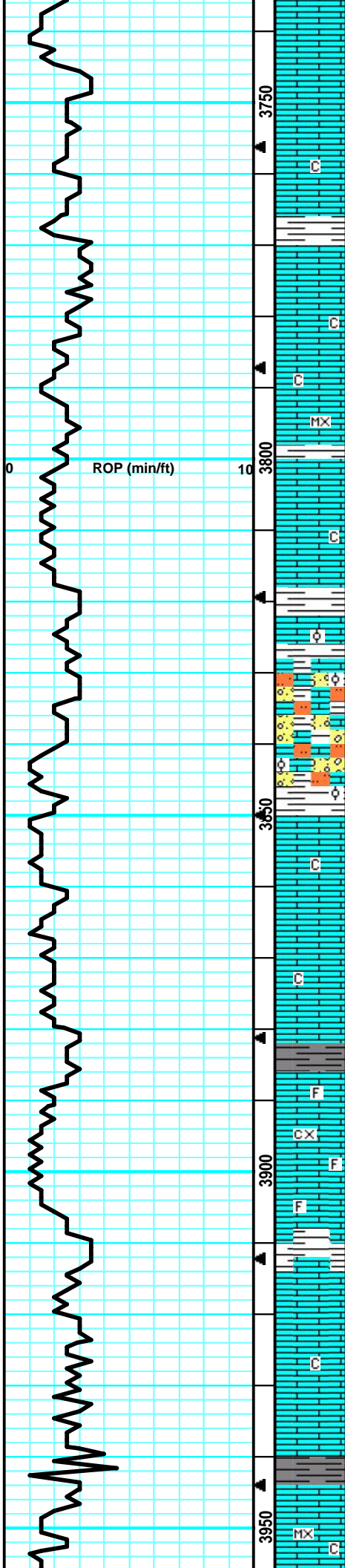
LS: gry/lt tan, slight mott in prt, fn xln, fw foss frags, fw dense, many brittle, sub-chlky, tr-nvp, fw pcs pur chl, no cup odr, ns.

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

LS: tan/gry, slight mott, fn xln, sm foss in prt, fw grainy, tr-pr intxln por in fw, fw SH: brn/gry, silty, soft, no cup odr, ns.

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

LS: gry/lt gry, mott in prt, fn xln, many foss, sm dense, fw firm, tr-nvp, fw pcs SH: drk grv, silty, med crush, no



cup odr, ns.

LS: gry/lt gry, slight mott, fn xln, sm dense, fw brittle, sub-chlky, tr-nvp, fw SHt gry, silty, no cup odr, ns.

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

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

LS: tan/lt tan, sing, fn xln, sm dense, mostly brittle, fw pcs w/ pr inxln por, fw pcs pur chl, no cup odr, ns.

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

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

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

LS: tan/gry, slight mott, fn xln, sm brittle, many sandy/gritty, tr-? inxln por in sm, fw pcs pur chl, no cup odr, ns.

LS: tan/lt tan, slight mott, fn xln, sm dense, sm brittle, fw gritty, tr-nvp, sm pur chl, no cup odr, ns.

LS: tan/lt tan, slight mott, fn xln, fw ool in prt, mostly brittle, fw sandy/gritty, tr-? inxln por in fw, no cup odr, ns.

LS: lt tan, slight mott in prt, fn xln, fw ool, mostly brittle, fw gritty, tr-? inxln por, no cup odr, ns.

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

LS: lt tan, slight mott, fn xln, fw dense, mostly brittle, fw gritty/grainy, sub-chlky, tr-nvp, no cup odr, ns.

LS: tan/lt tan, slight mott, fn xln, sm dense, mostly brittle, sm grainy, sub-chlky, tr-nvp, fw pcs pur chl, no cup odr, ns.

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

LS: gry/tan, mott in prt, fn-crs xln, fw foss frags, sm dense, sm brittle, fw sub-chlky in prt, tr-nvp, fw SHt gry/gm, silty, soft, no cup odr, ns.

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

LS: tan/lt gry, slight mott in prt, fn xln, many dense, sm brittle, fw sub-chlky, tr-nvp, fw SHt brn/gry, silty, no cup odr, ns.

LS: lt tan/lt gry, slight mott, fn xln, sm dense, mostly brittle, fw gritty like, sub-chlky, tr-nvp, fw SHt brn, silty, no cup odr, ns.

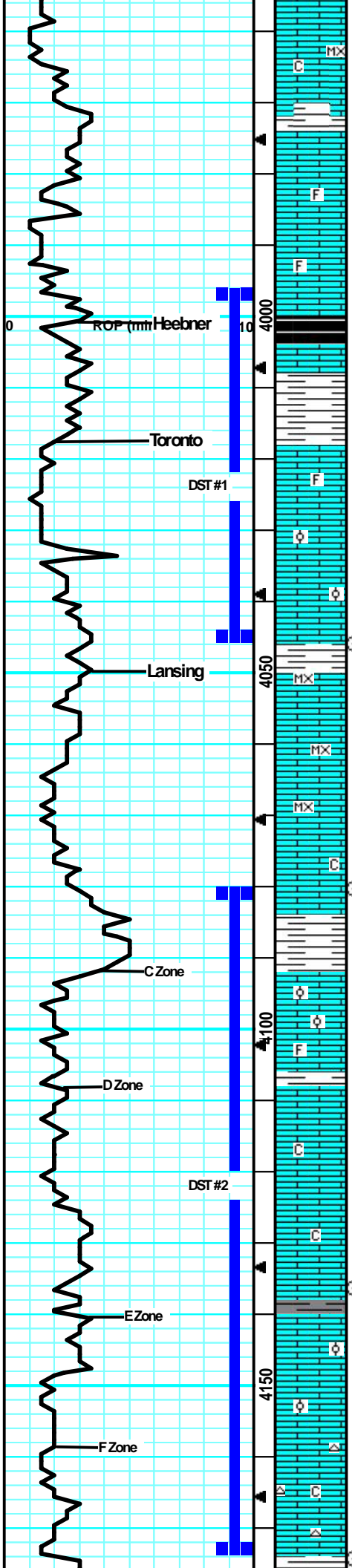
LS: lt tan/gry, slight mott, fn xln, sm dense, many brittle, fw gritty like, sub-chlky in prt, tr-nvp, fw SHt brn, silty, no cup odr, ns.

LS: tra, sing, fn xln, many dense, mostly brittle, sub-chlky in prt, tr-nvp, sm pur chl, sm SHt drk gry, silty, sm soft, no cup odr, ns.

LS: tan/lt tan, sing, micro-fn xln, mostly dense, mostly brittle, sub-chlky, tr-nvp, fw pcs pur chl, fw SHt arv/lt

Mud-Co Check #5 @
3945' 08/07/15

wt	vis	pH
9.0	58	11.5
Flt	chr	LCM
6.4	4K	3#



blu, clay, soft, no cup odr, ns.

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

LS: tan/lt tan, slight mott in prt, fn xln, mostly dense, sm brittle, sub-chlky, tr-nvp, svrl SHt brn/gry, silty, no cup odr, ns.

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

LS: tan/lt tan, slight mott, fn xln, fw foss frags, sm brittle, fw grainy, sub-chlky, tr-nvp, fw pcs pur chlk, fw SHt brn, silty, no cup odr, ns.

LS: tan/lt gry, slight mott, fn xln, fw dense, mostly brittle, fw gritty, tr-? intxn por in sm, abund SHt blk/brn, silty, many carb, no cup odr, ns.

LS: tan/lt tan, slight mott, fn xln, fw foss frags, mostly brittle, fw dense, tr-nvp, abund SHt blk/brn, silty, many carb, no cup odr, ns.

LS: gry/tan, slight mott, fn xln, many brittle, pr-fr por on edges, 2-3 pcs w/ drk stns on edges, dul yel fluor, strn cut, sso on brk, sml glob of oil float on crush in water, faint-? cup odr.

LS: tan/lt tan, slight mott, fn xln, sm ool, mostly brittle, svrl pcs w/ spstd stns in por, fr-gd intool por, svrl sml sphr of oil on wtr, gd fluor/cut, gd cup odr, fr-gd sfo.

LS: crm/lt tan, sing, micro-fn xln, mostly dense, mostly brittle, sub-chlky, tr-nvp, svrl pcs pur chlk, fw SHt gry/brn, silty, no cup odr, ns.

LS: crm/lt tan, sing, micro-fn xln, mostly dense, many brittle, chlky, tr-nvp, svrl pcs pur chlk, fw SHt drk gry/gm, silty, soft, no cup odr, ns.

LS: lt tan/tan, mostly sing, micro-fn xln, mostly brittle, many dense, mostly chlky, tr-nvp, sm pur chlk, fw SHt gry/gm silty, no cup odr, ns.

LS: lt tan/lt gry, mostly sing, micro-fn xln, mostly dense, sm brittle, fw firm, sub-chlky, tr-nvp, svrl pcs pur chlk, no cup odr, ns.

LS: lt gry/lt tan, mostly sing, fn xln, mostly brittle, dense, sub-chlky, fw pcs w/ 2nd rxln, tr-nvp, fw pcs pur chlk, no cup odr, ns.

LS: lt gry/lt tan, sing, fn xln, mostly brittle, mostly dense, sub-chlky, tr-nvp, abund SHt brn/gry, silty, soft, no cup odr, ns.

LS: lt gry/tan, mostly sing, fn xln, fw pcs ool, many brittle, sm dense, sub-chlky, tr-nvp, fw SHt gry/gm, silty, no cup odr, ns.

LS: tan/lt gry, slight mott i prt, fn xln, v fw foss frags, sm brittle, sm pr scat intxn por on edges, lght brn stns on edge in 2 pcs, dul yel fluor, gd cut, vssfo, no cup odr.

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

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

LS: lt gry/tan, mostly sing, fn xln, many dense, sm brittle, fw firm, tr-nvp, fw pcs pur chlk, fw SHt lt gry/gm, silty, no cup odr, ns.

LS: gry/tan, slight mott in prt, fn xln, fw dense, sm brittle, fw firm, sm flakey/mealy, tr-nvp, fw SHt gry, silty, no cup odr, ns.

LS: tan/lt gry, mostly sing, fn xln, mostly dense, sm firm, tr-pr intxn por in fw, lght brn surf stns, dul yel fluor, fr-gd cut resid, nsfo, faint-wk cup odr.

LS: tan/lt gry, mostly sing, fn xln, many dense, sm brittle, 1 pc w/ fr intxn por w/ sho, mostly likely from above, sm SHt: gry/gm, silty, no cup odr, ns.

LS: tan/lt tan, sing, fn xln, mostly dense, many brittle, sub-chlky in prt, tr-nvp, fw pcs pur chlk, svrl Chert: wht/lt gry, foss, sharp, fw SHt: gry, silty, no cup odr, ns.

DST #1 3996'-4046' "Toronto" 8/7/2015
 30-45-45-60
 1st Blw: Blt to 9.5" (No BB)
 2nd Blw: Blt to BOB in 37" (No BB)
 IFP: 43-157# ISIP: 1082# FFP: 167-232#
 FSIIP: 1074#
 HYD: 1976-1838#
 Rec: 30' OCM (2% Oil), 186' Mud, 122' OCMW (2% Oil, 85% Wtr), 122' MCW (60% Wtr)

Heebner @ 4001' (-696)

Toronto @ 4018' (-713)

Survey @ 4046' = 1/2 Degree

CFS @ 4046' (30"/60")

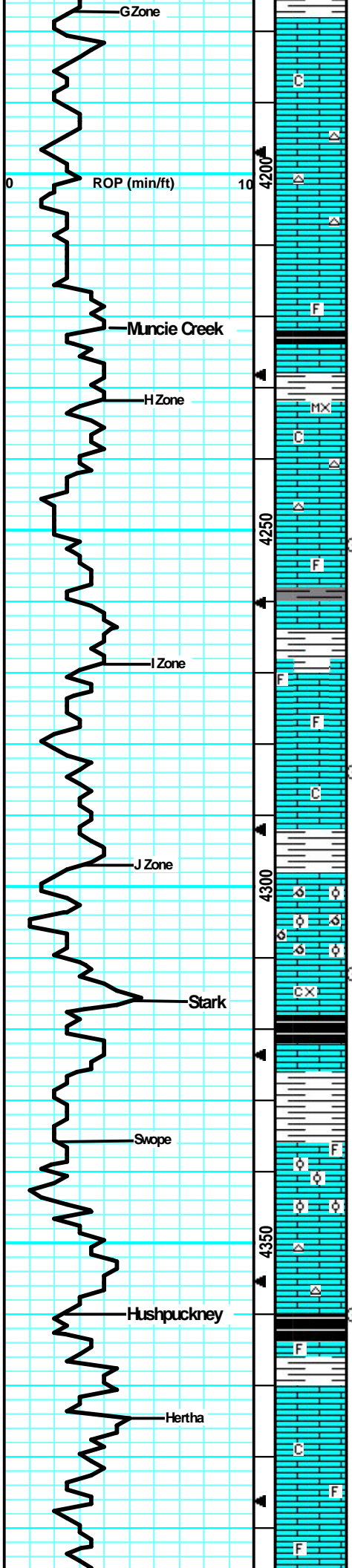
Lansing @ 4050' (-745)

CFS @ 4080' (30"/60")

DST #2 4081'-4174' "KCEF" 8/8/2015
 30-45-30-60
 1st Blw: Blt to BOB in 4" (No BB)
 2nd Blw: Blt to BOB in 5" (No BB)
 IFP: 92-381# ISIP: 1176# FFP: 388-542#
 FSIIP: 1177#
 HYD: 1995-1916#
 Rec: 620' MUD, 248' MCW (70% Wtr), 244' MCW (90% Wtr)

Mud-Co Check #6 @			
CFS @ 4136' (30"/60")	4133'	08/08/15	
	wf	vis	pH
	9.1	67	10.0
	Flt	chl	LCM
	8.8	6K	3#

CFS @ 4174'



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

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

LS: lt tan/crm, sing, fn xln, dense, brittle, sub-chlky, tr-nvp, svrl pcs pur chlk, sm Chert: wht/lt gry, foss, sharp, no cup odr, ns.

LS: lt tan/tan, sing, fn xln, mostly dense, many brittle, sub-chlky in prt, fw pcs pur chlk, fw Chert: wht/opaque, sharp, no cup odr, ns.

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

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

LS: crm/lt tan, mostly sing, micro-fn xln, dense, brittle, fw firm, sub-chlky, tr-nvp, svrl Chert: wht/opaque, sharp, no cup odr, ns.

LS: crm/lt tan/lt gry, mostly sing, micro-fn xln, many dense, mostly brittle, sub-chlky, tr-nvp, svrl pcs pur chlk, sm Chert: wht/opaque, sharp, no cup odr, ns.

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

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

LS: tan/lt brn, slight mott, fn xln, fw foss frags, fw dense, sm flakey, tr-nvp, 1-2 pcs w/ por lght brn stns, ? fluor, no cut, nsfo.

LS: lt tan/lt gry, slight mott, fn xln, mostly brittle, fw dense, fw pcs w/ por in xln por on edges, 2-3 pcs w/ drk hvy stns on edges, wk fluor, fr cut, vss hvy visc o, no cup odr.

LS: lt gry/lt brn, slight mott, mostly dense, fw firm, fw flakey, fw sub-chlky, tr-nvp, fw SH: gry, silty, no cup odr, ns.

LS: tan/gry, mott in prt, fn xln, mostly dense, sm dense, fw firm, fw flakey, tr-nvp, sub-chlky in fw, fw SH: gry/brn, silty, no cup odr, ns.

LS: lt gry, mott in prt, fn xln, svrl ool, mostly brittle, svrl pcs w/ fr oolcast por, fw sub-chlky, tr-nvp, no cup odr, ns.

LS: lt gry, mott, fn xln, ool, brittle, sm fr oolcast por, fw SH: gry, silty, no cup odr, ns.

LS: gry/tan, mott in prt, fn-crs xln, fw brittle, many flakey/mealy, pr-fr in xln por in sm, svrl SH: blk/drk gry, silty, carb, no cup odr, ns.

LS: gry/tan, slight mott in prt, fn xln, many dense, sm firm, fw chlky, tr-nvp, fw SH: brn/gry, silty, no cup odr, ns.

LS: lt tan/lt gry, slight mott, fn xln, sm foss/ool, sm dense, many brittle, chlky, tr-nvp, sm pur chlk, no cup odr, ns.

LS: tan/lt gry, mott in prt, fn xln, sm v foss/ool, mostly brittle, sm firm, tr-pr infoss por in fw, 2nd rxln in prt, svrl pcs pur chlk, no cup odr, ns.

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

LS: gry/tan, mott, fn xln, sm foss, fw dense, sm firm, sm 2nd rxln, flakey, tr-nvp, svrl SH: blk/drk gry, carb, sm silty, no cup odr, ns.

LS: gry/lt gry, most sing, fn xln, many dense, sm firm, sub-chlky in prt, fw flakey, tr-nvp, fw SH: blk, sm carb, no cup odr, ns.

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

LS: lt gry/tan, slight mott, fn xln, fw foss in prt, sm dense, many brittle, sub-chlky, tr-nvp, sm SH: gry,

(30"/60")

Muncie Creek @ 4222' (-917)

CFS @ 4252'
(30"/60")

CFS @ 4254'
(30"/60")

CFS @ 4312'
(30"/60")

Stark @ 4316' (-1011)

Mud-Co Check #7 @
4355' 08/09/15

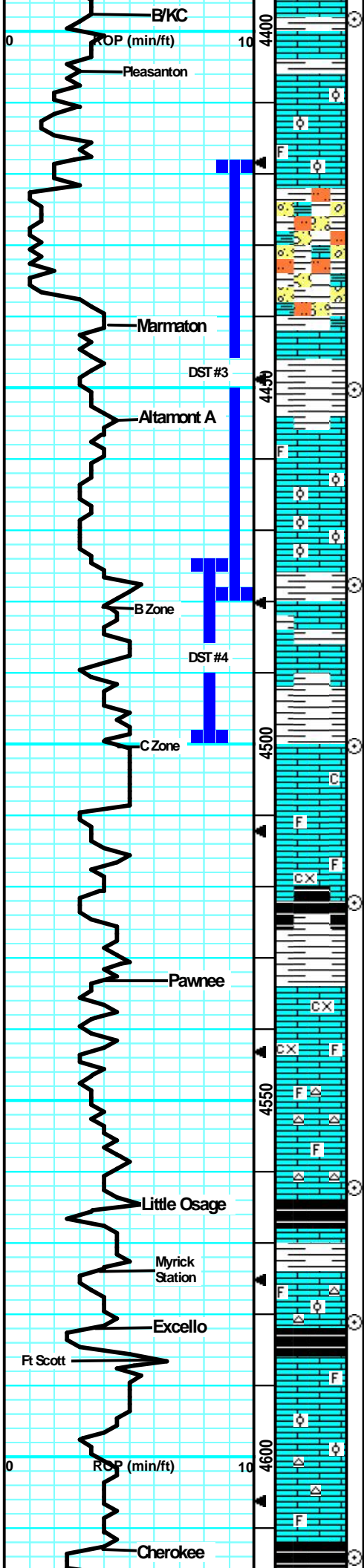
wt	vis	pH
9.3	54	11.0
Flt	chl	LCM
8.8	6.6K	3#

CFS @ 4360'
(30"/60")

Hushpuckney @ 4364' (-1055)

B/KC @ 4397' (-1092)

CFS @ 4398'



On 8/9/2015 Between tour change, no 4420' sample was collected.

LS: lt gry/lt tan, mott in prt, fn xln, sm ool, many brittle, sm flakey like, tr-? intxln por, fw pcs chlk, svrl SH: brn/gry, silty, no cup odr, ns.

LS: lt gry/tan, slight mott, fn xln, sm foss/ool, mostly brittle, sub-chlky, tr-nvp, fw pcs pur chlk, svrl SH: brn/gry, silty, no cup odr, ns.

LS: tan/gry, slight mott, fn xln, dense, sm brittle, tr-nvp, fw SS: gry, fn grn, arg, silty, tr-nvp, fw SltStr: gry/blu, gritty, friable, svrl SH: gry/blu, silty, soft, no cup odr, ns.

LS: tan/lt tan, slight mott, fn xln, many dense, 2 pcs w/ scat fn ppt intxln por, sat stns, dul yel fluor, strn cut, vssfo on brk no cup odr.

LS: tan, mostly sing, fn xln, mostly dense, 3 pcs w/ ppt intxln por. patchy stns, dul yel fluor, vssfo, no cup odr.

LS: tan/lt gry, slight mott, fn xln, fw foss, mostly brittle, sub-chlky, fr-gd intxln por, lght brn spity stain, gld fluor, strn cut, fr sfo on brk, faint-wk cup odr.

LS: tan/lt gry, mott, fn xln, sm v ool, mostly brittle, gd intool/vuggy por in many pcs, drk hvy sat stns, grt fluor/cut, gd cup odr, gd sfo.

30" Smpl: much of the sho desc above, less pieces w/ sho, more, LS: lt gry, dense, brittle, tr-nvp, wk cup odr, fr sfo.

LS: lt gry/lt tan, slight mott in prt, fn xln, mostly dense, sm brittle, sm scat ppt intxln por, fn salt/pep stain in 5-6 pcs, dul yel fluor, strn cut, sml sphr of oil cling on brk, ssfo, fr cup odr.

LS: tan/lt tan, mostly sing, micro-fn xln, mostly dense, many brittle, pr ppt intxln por, scat patchy lght brn stns, dul yel fluor, gd cut, fr odr, vssfo on cruch.

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

LS: gry/tan, slight mott, fn xln fw foss frags, sm dense, many brittle, sm flakey/mealy, 2nd rxln in prt, tr-nvp, sm SH: blk/drk gry, silty fw carb, no cup odr, ns.

LS: gry/tan/lt brn, mott, fn-crs xln, fw dense, many firm, many flakey/mealy, tr-nvp, abund SH: gry/blk, silty, fw carb, no cup odr, ns.

LS: gry/tan, sing, fn xln, mostly dense, sm firm, sub-chlky, fw flakey, tr-nvp, fw pcs pur chlk, no cup odr, sn.

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

LS: tan/gry, mott in prt, fn xln, fw foss frags, many firm, fw flakey, tr-nvp, fw Chert: gry/smokey, sharp, fw SH: gry, silty, med crush, no cup odr, ns.

LS: gry/lt brn, mott in prt, fn xln, fw foss, flakey/mealy, tr-nvp, sm Chert: gry, foss, sharp, svrl SH: blk, carb, friable, no cup odr, ns.

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

LS: gry/tan, mostly mott, fn xln, many profus foss/ool, many dense, sm firm, tr-nvp, fw Chert: gry/wht, foss/ool, sharp, abund SH: blk, carb, no cup odr, ns.

LS: gry/tan, mott in prt, fn xln, sm ool, sm dense, many brittle, sm flakey/mealy, tr-? intxln por in fw, no cup odr, ns.

LS: tan/gry, slight mott, fn xln, fw foss, sm brittle, fw flakey/mealy, tr-nvp, fw Chert: wht/gry, foss, sharp, no cup odr, ns.

LS: gry/lt brn, slight mott, fn xln, sm foss crin/frags, sm dense, fw flakey/mealy, tr-nvp, sm SH: gry/blk, fw silty, sm carb, no cup odr, ns.

(30"/60")

DST #3 4418'-4480' "Altamont A" 8/9/2015
30-45-45-60
1st Blw: Blt to BOB in 3" (BB blt to 1/8")
2nd Blw: Blt to BOB in 3" (No BB)
IFP: 170-394# ISIP: 1021# FFP: 430-618# FSP: 1021#
HYD: 2248-2084#
Rec: 826' MCGO (85% Oil, 10% Gas), 124' MCGO (65% Oil, 25% Gas), 248' MCGO (50% Oil, 25% Gas), 122' GCMO (60% Oil, 10% Gas), 122' GCMO (80% Oil, 10% Gas)

Marmaton @ 4441' (-1136)

CFS @ 4450'
(30"/60")

DST #4 4475'-4500' "Altamont B"
8/10/2015 30-30-30-30
1st Blw: No Blw (No BB)
2nd Blw: No Blw/flushed, Wk blw dead instantly (No BB)
IFP: 21-23# ISIP: 48# FFP: 20-23# FSP: 167#
HYD: 2230-2147#
Rec: 2' Mud

CFS @ 4478'
(30"/60")

Mud-Co Check #8 @
4480' 08/10/15
wt vis pH
9.1 50 10.5
Filt chlr LCM
9.6 7.2K 2#

CFS @ 4500'
(30"/60")

Survey @ 4500' = 3/4 Degree

CFS @ 4522'
(30"/60")

Pawnee @ 4534' (-1229)

Mud-Co Check #9 @
4572' 08/11/15
wt vis pH
9.1 55 11.0
Filt chlr LCM
7.2 6K 2#

CFS @ 4562'
(30"/60")

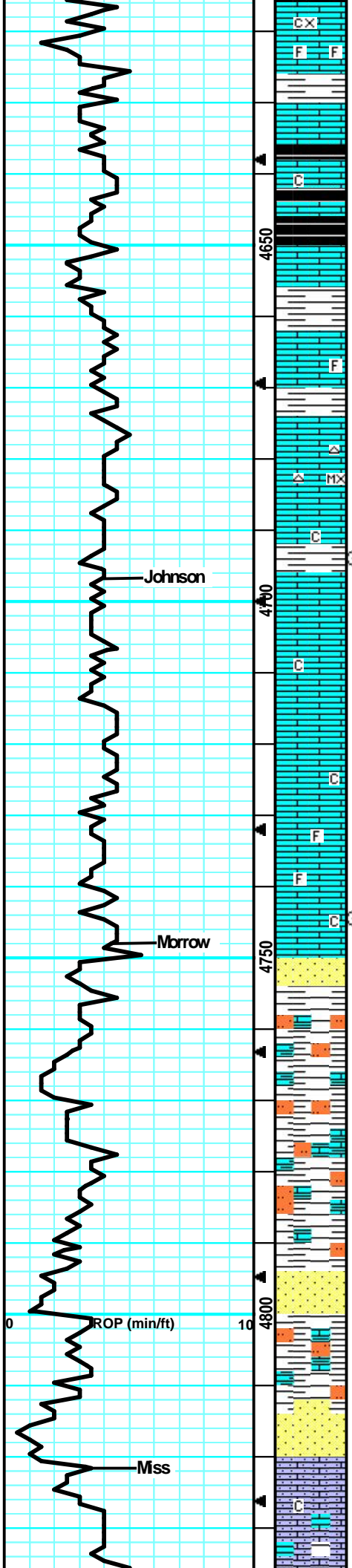
Little Osage @ 4565' (-1260)

CFS @ 4581'
(30"/60")

Excelllo @ 4582' (-1277)

Cherokee @ 4613' (-1308)

CFS @ 4614'



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

LS: tan/lt gry, slight mott, fn xln, fw foss/ool, mostly brittle, fw flakey/mealy, tr-nvp, fw pcs pur chlk, fw SH: drk gry/blk, silty, fw carb, no cup odr, ns.

LS: lt brn/lt gry, slight mott, fn xln, mostly dense, many firm, sub-chlky in prt, tr-nvp, sm SH: gry/blk, many silty, fw carb, no cup odr, ns.

LS: lt brn/gry, slight mott, fn xln, mostly dense, sm firm, sub-chlky, fw flakey, tr-nvp, fw SH: drk gry, silty, sm firm, no cup odr, ns.

LS: lt gry/gry, slight mott, fn xln, mostly dense, sm firm, fw flakey, tr-nvp, fw SH: gry/drk gry, silty, soft, no cup odr, ns.

LS: gry/lt brn, slight mott in prt, fn xln, fw foss, mostly dense, many firm, fw flakey, tr-nvp, svrl SH: drk gry/blk, silty, sm carb, no cup odr, ns.

LS: tan/gry, mostly sing, fn xln, mostly dense, many firm, fw sub-chlky, tr-nvp, fw Chert: brn, foss, trip, sharp, fw SH: gry, silty, no cup odr, ns.

LS: tan/lt tan, sing, micro-fn xln, mostly dense, sub-chlky, fw flakey, tr-nvp, fw Chert: wht/tan, foss, sharp, fw SH: gry, silty, no cup odr, ns.

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

LS: tan/gry, slight mott, fn xln, fwdense, sm brittle, fw flakey, sub-chlky in prt, tr-nvp, abund SH: drk gry/gry, silty, soft, no cup odr, ns.

LS: gry/tan, slight mott, fn xln, mostly dense, sm firm, sub-chlky in fw, tr-nvp, abund SH: gry/grn, silty, soft, no cup odr, ns.

LS: tan/lt tan, slight mott, fn xln, mostly dense, fw firm, sub-chlky, fw flakey, tr-nvp, abund SH: gry/blu/grn, silty, soft, no cup odr, ns.

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

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

LS: tan/gry, slight mott, fn xln, sm dense, many brittle, sm flakey, sub-chlky, tr-nvp, abund SH: gry/blu, silty, soft, fw gritty, no cup odr, ns.

LS: gry/tan, slight mott, fn xln, fw foss frags, mostly dense, sm hard, fw sub-chlky, tr-nvp, svrl SH: gry/grn/brn, silty, sm v soft, fw gritty, no cup odr, ns.

SH: gry/grn/brn, silty, sm soft, fw waxy, fw SS: grn, fn-crs xln, sub-rnd, arg, glauc, firm, tr-nvp, no cup odr, ns.

SH: drk gry/grn/brn, silty, soft, fw waxy, fw StStr: lt gry, gritty friable, soft, fw SS: grn, crs grn, sub-rnd, arg, friable, glauc, tr-nvp, no cup odr, ns.

SH: drk gry/grn, silty, soft, fw StStr: lt gm/lt gry, gritty, friable, fw LS: lt tan, mott, fn xln, sub-chlky, brittle, tr-nvp, no cup odr, ns.

SH: gry/drk gry/grn, silty, soft, fw StStr: lt gry/lt gry, gritty, friable, v soft, fw LS: lt tan/lt gry, mott, fn xln, brittle, tr-nvp, no cup odr, ns.

SH: gry/grn/lt brn, silty, v soft, friable, fw SS: gry/wht, fn grn, arg, sub-chlky, friable, brittle, glauc, tr-? intgrn por, no cup odr, ns.

SH: gry/grn, silty, soft, friable, fw SS: gry/grn, fn-crs xln, arg, sub-rnd, sm firm, glauc, tr-nvp, no cup odr, ns.

SS: gry/grn/lt gry, fn-crs grn, arg, silc, firm, fw friable, sm glauc, tr-nvp, fw StStr: lt gry, v fn grn, gritty, firm, tr-nvp, abund SH: gry/grn, silty, soft, no cup odr, ns.

LS: crm/lt tan, slight mott, fn xln, sandy/gritty, sm brittle, sub-chlky, sm friable, tr-nvp, sm SH: gry/grn, silty, sm soft, no cup odr, ns.

LS: cram/lt tan, slight mott in prt, fn xln, mostly sandy/gritty, sub-chlky, fw brittle, sm flakey/mealy,

(30"/60")

CFS @ 4694'
(30"/60")

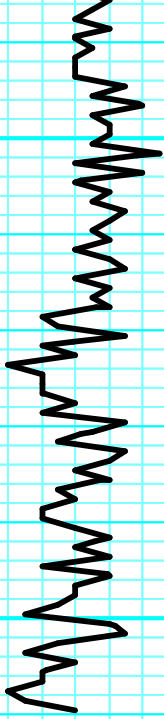
Johnson @ 4697' (-1392)

CFS @ 4744'
(30"/60")

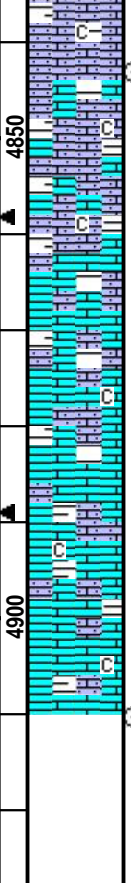
Morrow @ 4748' (-1443)

Miss @ 4822' (-1517)

Abund of shale slto



RTD 4910' (-1605)
LTD 4909' (-1604)



4850
4900

tr-nvp, svrl SHt gry/drk gry, silty, soft, no cup odr, ns.
 SHt gry/drk gry/grn, silty, soft, fw friable, fw LS: crm/lt tan, slight mott, fn xln, sandy/gritty, sub-chlky, fw friable, tr-nvp, no cup odr, ns.
 LS: lt tan, slight mott, fn xln, sandy/gritty in prt, sm dense, mostly brittle, sub-chlky, tr-nvp, svrl SHt drk gry/bm/grn, silty, fw fissile, no cup odr, ns.
 LS: lt tan/crm, slight mott, fn xln, sm sandy/gritty, sub-chlky, fw dense/brittle, tr-nvp, svrl SHt drk gry/bm, silty, fw fissile, no cup odr, ns.
 LS: lt tan, slight mott, fn xln, fw sandy/gritty, sub-chlky, fw dense, tr-nvp, svrl SHt gry/bm, silty, many soft, no cup odr, ns.
 LS: tan/lt tan, mostly sing, fn xln, fw sandy/gritty, sm brittle, fw dense, tr-nvp, svrl SHt gry, silty, soft, no cup odr, ns.
 LS: lt tan, mostly sing, fn xln, dense, sm brittle, sub-chlky in prt, tr-nvp, abund SHt gry/bm, silty, soft, no cup odr, ns.
 LS: lt tan, slight mott, fn xln, many dense, sm brittle, sub-chlky in prt, tr-nvp, abund SHt gry, silty, soft, no cup odr, ns.

CFS @ 4843'
(30"/60")

Mud-Co Check #10 @
4860' 08/12/15

wt	vis	pH
9.3	54	11.0
Filt	chl	LCM
8.0	5K	3#

Survey @ 4910' = 3/4 Degree

CFS @ 4910'
(30"/60")

Length in samples. Most likely Morrow rocks