

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: #1 Wing Trust-D. Schumacher
API: 15-109-21415

Location: 2560' FSL, 1260' FWL, SECTION 23-15S-36W

License Number:

Region: Logan County

Spud Date: 06/15/2015

Drilling Completed: 06/26/2015

Surface Coordinates: LAT 38.7371961
LONG -101.2940622

Bottom Hole Vertical hole

Coordinates: 1 1/2 Degree Deviation

Ground Elevation (ft): 3294'

K.B. Elevation (ft): 3299'

Logged Interval (ft): 3700' To: RTD Total Depth (ft): 4930'

Formation: Mississippian at RTD

Type of Drilling Fluid: Chemical

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

COMMENTS

Contractor: WW Drilling Rig #2
Pusher: Lonnie
Surface Casing: 5 joints of 8 5/8" set at 221'
Production Casing: 5.5" Production casing was ran.
Mud by: KDT
DST's by: Trilobite Testing
Logs by: Pioner Energy Services (DIL, CN-CD, ML)
RTD=4930'
LTD=4931'

FORMATION TOPS

FORMATION	SAMPLE TOPS		LOG TOPS	
	Depth	Datum	Depth	Datum
Stottler	3636'	-337	3636'	-337
Heebner Shale	3997'	-698	3997'	-698
Toronto	4021'	-722	4021'	-722
Lansing	4050'	-751	4050'	-751
Muncie Creek Shale	4217'	-918	4217'	-918
Stark Shale	4313'	-1014	4311'	-1012
Hushpuckney Shale	4357'	-1058	4358'	-1059
Base of KC	4397'	-1098	4399'	-1100
Marmaton	4438'	-1139	4438'	-1139
Altamont	4446'	-1147	4446'	-1147
Pawnee	4526'	-1227	4526'	-1227
Little Osage Shale	4561'	-1262	4561'	-1262
Excello Shale	4579'	-1280	4579'	-1280
Cherokee Shale	4611'	-1312	4611'	-1312
Johnson Zone	4696'	-1397	4696'	-1397
Morrow	4745'	-1446	4745'	-1446
Mississippian	4820'	-1521	4820'	-1521
RTD	4930'	-1631		
LTD			4931'	-1632

DSTs

DST #1 3992-4040' "Toronto" 6/19/2015 30-45-45-60

1st Blw: Wk surf blw blt to 6" (No BB)

2nd Blw: Wk surf blw blt to 1.5" (No BB)

IFP: 19-92# ISIP: 1067# FFP: 95-145# FSIP: 1044#

HYD: 1965-1870#

Rec: 161' MCW (20% Wtr), 121' MCW (30% Wtr).

DST #2 4129-4164' "KC E/F" 6/20/2015 30-45-45-60

1st Blw: Wk surf blw blt to 9" (No BB)

2nd Blw: Wk surf blw blt to 1/2" (No BB)

IFP: 21-127# ISIP: 1160# FFP: 113-188# FSIP: 1137#

HYD: 2060-1952#

Rec: 257' MCW (20% Wtr), 122' MCW (40% Wtr).

DST #3 4206-4304' "KC H/I/J" 6/21/2015 30-45-45-60

1st Blw: Wk surf blw blt to 3" (No BB)

2nd Blw: Wk surf blw blt to 1 1/2" (No BB)

IFP: 22-72# ISIP: 1197# FFP: 73-100# FSIP: 1173#

HYD: 2134-2002#

Rec: 55' WCM (35% Wtr), 122' WCM (30% Wtr).

DST #4 4411-4472' "Altamont A" 6/22/2015 30-45-45-60

1st Blw: BOB in 4" (Surf BB blt to 8.5")

2nd Blw: BOB in 4" (No BB)

IFP: 66-303# ISIP: 1257# FFP: 315-555# FSIP: 1252#

HYD: 2270-2110#

Rec: 221' GIP, 1071' CO, 225' GMCO (10% Gas, 85% Oil), 122' GMCO (10% Gas, 80% Oil).

DST #5 4473-4494' "Altamont B" 6/23/2015 30-30-30-30

1st Blw: Surf blw dead in 4" (No BB)

2nd Blw: No blw (No BB)

IFP: 17-18# ISIP: 26# FFP: 18-22# FSIP: 23#

HYD: 2251-2104#

Rec: 5' OCM (5% Oil).

DST #6 4486-4558' "Pawnee" 6/24/2015 30-45-45-60

1st Blw: BOB in 12" (No BB)

2nd Blw: BOB in 14" (No BB)

IFP: 38-206# ISIP: 1256# FFP: 213-386# FSIP: 1244#

HYD: 2299-2128#

Rec: 252' OMCW (5% Oil, 75% Wtr), 447' MCW w/ oil spots (90% Wtr).

ROCK TYPES



Anhy



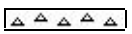
Lmst



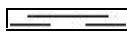
Carb sh



Sdy dolo



Cht



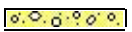
Shale



Dol



Shy dolo



Congl



Sltst



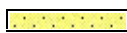
Gry sh



Shaly ls



Dol



Ss



Sandylms

ACCESSORIES

FOSSIL

- Algae
- Amph
- Belm
- Bioclst
- Brach
- Bryozoa
- Cephal
- Coral
- Crin
- Echin
- Fish
- Foram
- Fossil
- Gastro
- Oolite
- Ostra
- Pelec
- Pellet
- Pisolite

- Plant
- Strom
- Fuss
- Oomold

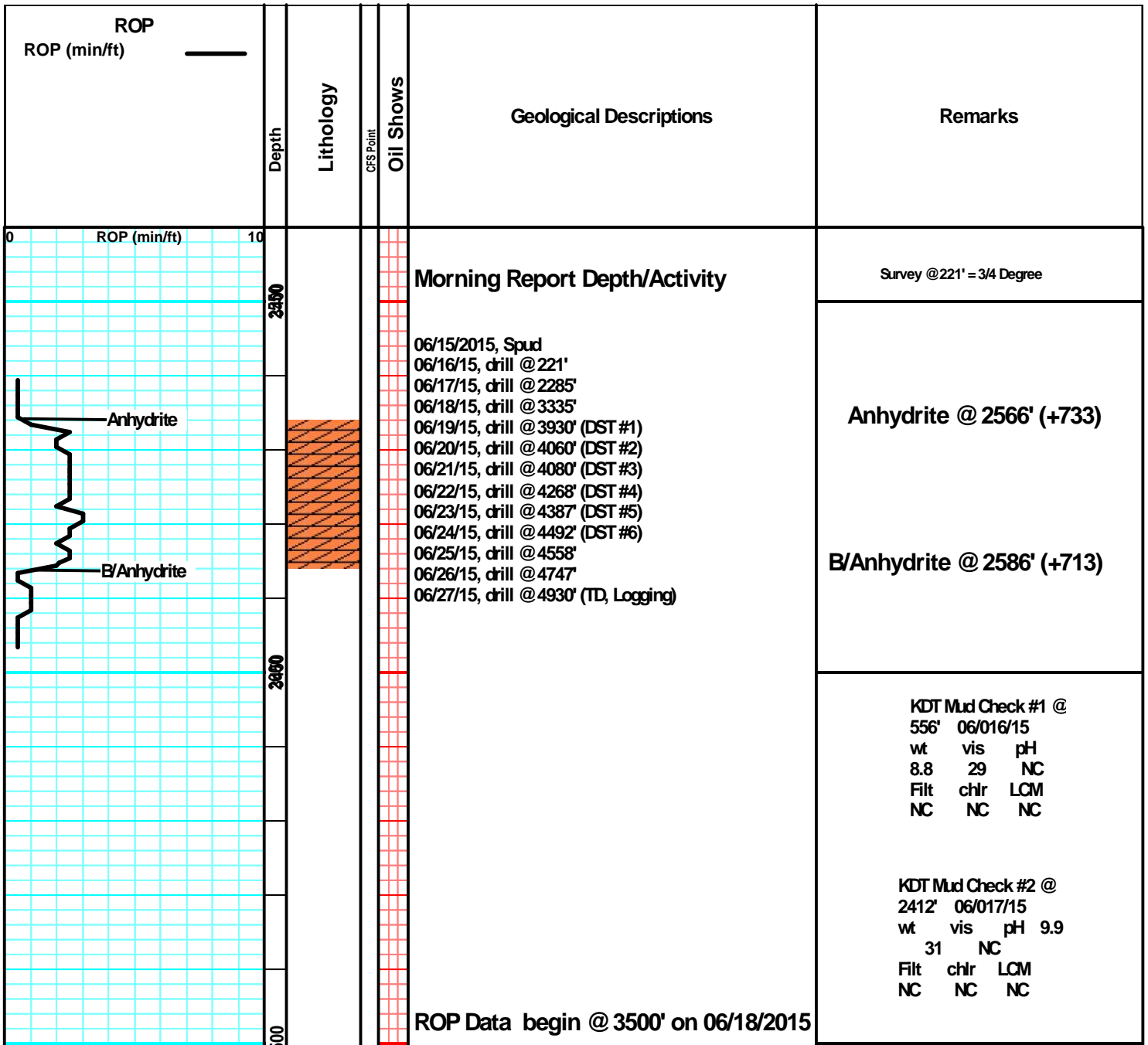
MINERAL

- Anhy
- Arggrn
- Arg
- Bent
- Bit
- Breclrag
- Calc
- Carb
- Chtdk
- Chtlt
- Dol
- Feldspar
- Ferrpel
- Ferr

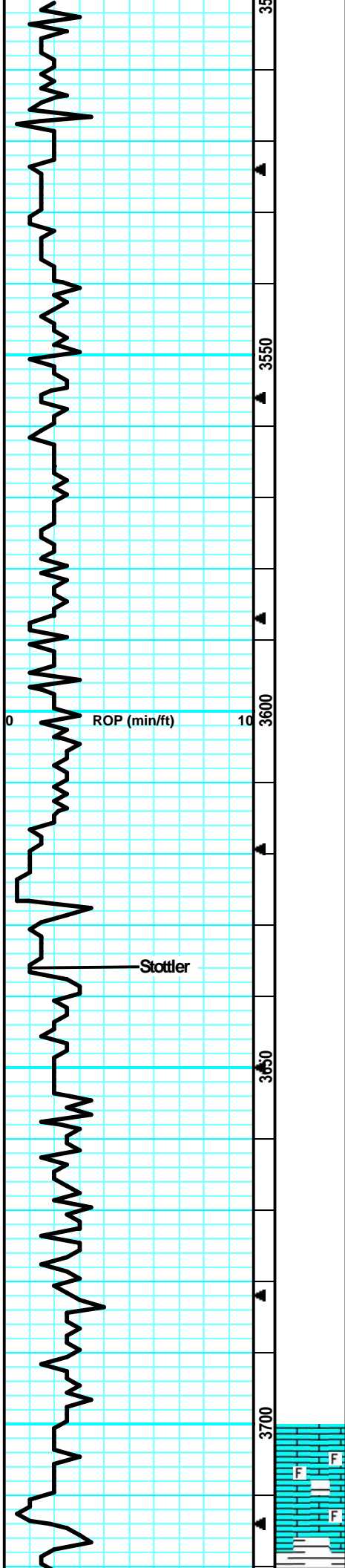
- Glau
- Gyp
- Hvymin
- Kaol
- Marl
- Minxl
- Nodule
- Phos
- Pyr
- Salt
- Sandy
- Silt
- Sil
- Sulphur
- Tuff
- Chlorite
- Dol
- Sand
- Sltly

STRINGER

- Anhy
- Arg
- Bent
- Coal
- Dol
- Gyp
- Ls
- Mrst
- Sltstrg
- Ssstrg
- Carbsh
- Clystn
- Dol
- Grysh
- Gryslt
- Lms
- Sandylms
- Sh
- Sltstn



KDT Mud Check #3 @
 3437' 06/018/15
 wt vis pH
 8.5 58 11.0
 Filr chr LCM
 7.2 4K 2#



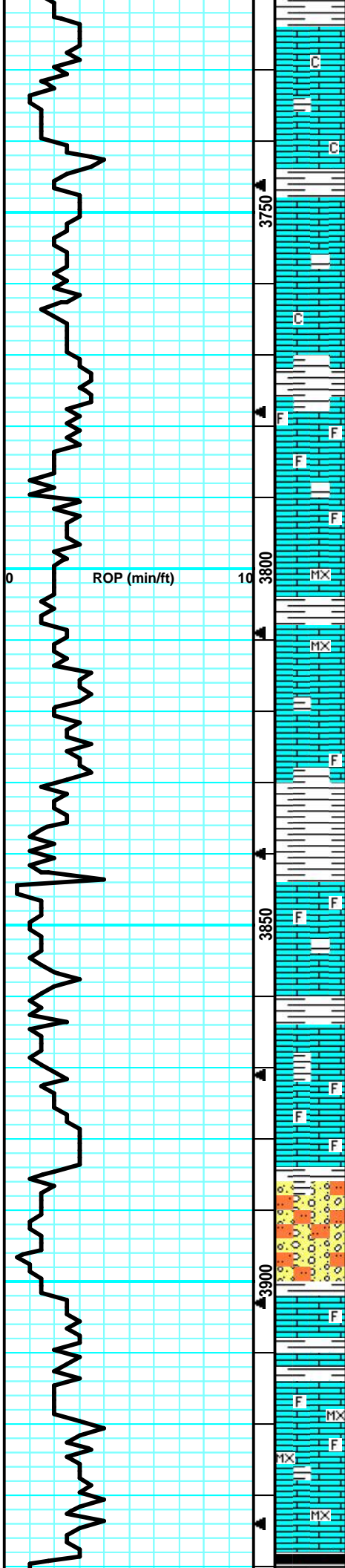
Stottler @ 3636' (-337)

Sample began @ 3700' on 06/18/2015

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

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

LS: lt tan/gry, slight mott in prt, fn xln, sm dense, fw calc nod, slight chlk in prt, tr-nvp, fw SH: lt gry, no cup odr, ns.



LS: tan/lt tan, slight mott, fn xln, dense, fw calc not, slight chlky, tr-nvp, fw SHt gry, silty, no cup odr, ns.

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

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

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

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

LS: lt tan, slight mott, fn xln, fw foss frags, mostly brittle, sub-chlky, tr-nvp, fw SHt drk gry, silty, med crush, no cup odr, ns.

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

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

LS: crm/lt tan, sing, micro-fn xln, many dense, brittle, chlky, fw foss frags, tr-nvp, sm pur chlk, no cup odr, ns.

LS: lt tan, sing, fn xln, many dense, svrl brittle, sub-chly, tr-nvp, fw SHt gry, silty, sm soft, no cup odr, ns.

LS: lt tan/lt gry, mostly sing, fn xln, many dense, fw brittle, tr-nvp, fw SHt gry, silty, med crush, no cup odr, ns.

LS: tan/lt tan, mostly sing, fn xln, fw foss frags, fw dense, many brittle, tr-nvp, fw SHt gry, silty, med crush, no cup odr, ns.

LS: tan/lt gry, slight mott, fn xln, fw foss frags, sm dense, many brittle, sub-chlky, tr-nvp, fw SttStr: brn, friable, gritty, no cup odr, ns.

LS: tan/lt gry, slight mott, fn xln, fw dense, many brittle, sub-chlky, tr-nvp, fw SttStr: brn, gritty, friable, med crush, no cup odr, ns.

LS: tan/lt gry, slight mott, fn xln, fw foss frags, many dense, sm brittle, tr-nvp, fw SttStr: brn, gritty, sm friable, no cup odr, ns.

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

LS: lt tan, sing, fn xln, fw foss frags, many dense, sm brittle, sub-chlky, fw pcs w/ infoss por, no cup odr, ns.

LS: lt tan, sing, fn xln, sm foss in prt, many brittle, sm scat fr infoss por, fw gritty, sm pur chlk, no cup odr, ns.

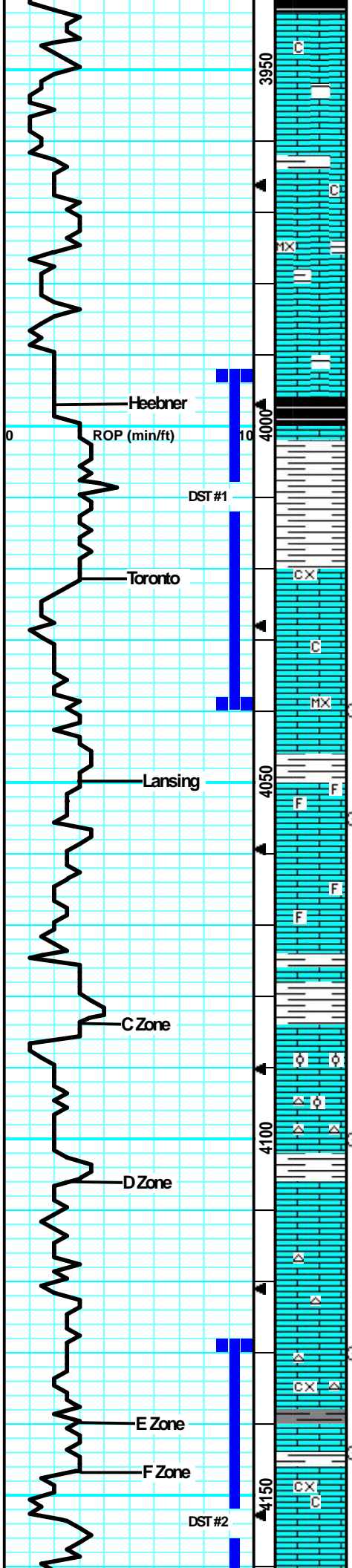
LS: lt tan, sing, fn xln, fw foss frags, sm dense, many brittle, tr-nvp, fw pcs pur chlk, no cup odr, ns.

LS: lt tan, sing, micro-fn xln, sm foss fust/brach, sub chlky, dense, brittle, tr-nvp, fw pcs pur chlk, no cup odr, ns.

LS: lt tan, sing, micro-fn xln, v fw foss, many dense, brittle, sub-chlky, tr-nvp, svrl pcs pur chlk, no cup odr, ns.

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

KDT Mud Check #4 @
 3966' 06/19/15
 wt vis pH 8.9
 67 10.5
 Flt chlr LCM
 7.2 7K 1.5#



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

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

LS: lt tan/lt gry, mostly sing, fn xln, sm dense, many brittle, sub-chlky, tr-pr inbxdn por on fw edges, 1 pcs w/ drk hvy stn on edge, wk-? flour no cut, pos DDO, no cup odr, nsfo.

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

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

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

LS: gry/lt tan, slight mott, fn xln, mostly brittle, v fw dense, sub-chlky, tr-nvp, fw pcs pur chl, fw SH: blk/drk gry, silty, carb, no cup odr, ns.

LS: gry/tan, slight mott, fn-crs xln, sm dense, sm brittle, fw flakey/mealy, tr-nvp, fw pcs pur chl, fw SH: blk/gry, silty, sm carb, no cup odr, ns.

LS: lt tan, slight mott, fn xln, many brittle, 2-3 pcs w/ spttd salt/pep stns, fr inbxdn por, dul yel fluor, strm cut, fr sfo on brk, no cup odr.

LS: tan/gry, sing, fn xln, mostly dense, fw brittle, sub-chlky in prt, tr-nvp, abund SH: brn/gm, silty, no cup odr, ns.

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

LS: tan/lt tan, mott in prt, fn xln, foss in prt, sm v ool, mostly brittle, fw dense, tr-nvp, fw SH: gry/gm/brn, silty, sm waxy, no cup odr, ns.

LS: tan/gry, slight mott, fn xln, fw foss frags, many brittle, tr-nvp, no cup odr, ns.

LS: tan/gry, slight mott, fn xln, fw foss frags, sm pr ool devl, many brittle, tr-nvp, svrl pcs pur chl, fw SH: gry/brn, silty, no cup odr, ns.

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

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

LS: tan/lt tan, sing, micro-fn xln, pr ool devl, many dense, v fw pcs w/ pr-fr inbxdn por, dul yel fluor, gd cut, ssfo on brk, sm oil glob in por, no-? cup odr, fw Chert: wht/gry, sharp.

LS: tan/lt gry, sing, fn xln, fw dense, many brittle, sub-chlky, tr-pr inbxdn por, dul yel fluor, gd cut, vssfo on rx chp, ss on brk, faint-? cup odr.

LS: tan/lt tan, sing, fn xln, many brittle, sm fr-gd inbxdn por/slight vuggy, drk hvy tarry oil in por, dul yel fluor, strm cut, faint cup odr, ssfo.

LS: tan/lt gry, slight mott, fn xln, mostly brittle, sm dense, fr inbxdn por in fw, 1-2 pcs w/ drk hvy tar stns in por, wk fluor, strm cut, faint-? cup odr, ssfo.

LS: gry/lt tan, slight mott, fn-crs xln, mostly brit, sub-chlky, flakey/mealy, tr-? inbxdn por in fw, fw pcs Chert: wht/lt gry, sharp, no cup odr, ns.

LS: gry/tan, slight mott, fn-crs xln, fwdense, mostly brittle, sm fr inbxdn por, 3-4 pcs w/ drk stns in por, gas bub cling to por, dul yel fluor, strm cut, fr odr incrs on brk, fr sfo.

LS: gry/tan, slight mott, fn-crs xln, flakey, pr inbxdn/scat vuggy por on edges, hvy stns in por vugs, bright yel fluor, strm cut, gd cup odr, ssfo.

LS: tan/lt gry, slight mott, fn xln, sm dense, many brittle, sm scat fr inbxdn por, slight cup odr, 2-3 pcs w/

DST #1 3992-4040' "Toronto" 6/19/2015
 30-45-45-60
 1st Blw: Wk surf blwblt to 6" (No BB)
 2nd Blw: Wk surf blwblt to 1.5" (No BB)
 IFP: 19-92# ISIP: 1067# FFP: 95-145# FSIP: 1044#
 HYD: 1965-1870#
 Rec: 161' MCW (20%Wtr), 121' MCW (30% Wtr).

Heebner @ 3997' (-698)

Toronto @ 4021' (-722)

Survey @ 4040' = 1/2 Degree

CFS @ 4040' Strap was 2.93' short to (30"/60") the board.

Lansing @ 4050' (-751)

CFS @ 4055' (30"/60")

CFS @ 4100' (30"/60")

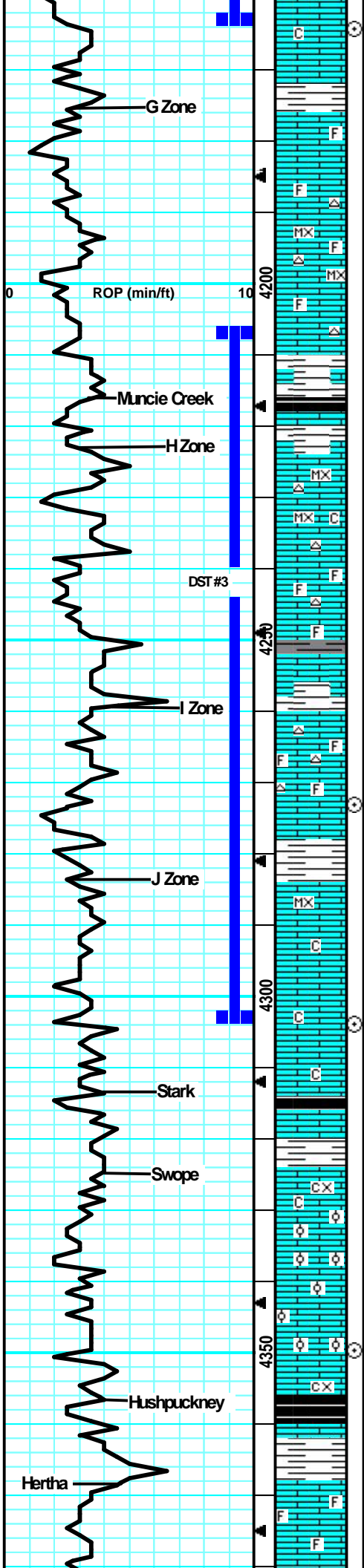
DST #2 4129-4164' "KC EF" 6/20/2015
 30-45-45-60
 1st Blw: Wk surf blwblt to 9" (No BB)
 2nd Blw: Wk surf blwblt to 1/2" (No BB)
 IFP: 21-127# ISIP: 1160# FFP: 113-188# FSIP: 1137#
 HYD: 2060-1952#
 Rec: 257' MCW (20%Wtr), 122' MCW (40%Wtr).

CFS @ 4130' (30"/60")

KDT Mud Check #5 @ 4130' 06/20/15

wt	vis	pH	8.9
Flt	chl	LCM	
8.8	10K	1.5#	

CFS @ 4144' (30"/60")



drk fld hrs in por, gold flur, strm cut, sso.

LS: lt tan/lt gry, mostly sing, fn xln, sm dense, many brittle, sub-chlky in prt, fw pcs w/ pr intxln por in prt, fw pcs pur chl, no cup odr, ns.

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

LS: lt tan/crm, sing, micro-fn xln, dense, sm brittle, chlky in prt, tr-nvp, fw pcs pur chl, fw Chert: lt tan, sharp, no cup odr, ns.

LS: crm/lt tan, sing, micro-fn xln, mostly dense, brittle, chlky, tr-nvp, svrl pcs pur chl, fw Chert: lt tan/lt gry, sharp, no cup odr, ns.

LS: lt tan/crm, sing, fn xln, fw foss frags, many dense, brittle, chlky in prt, tr-nvp, fw Chert: wht/lt tan, foss, sharp, no cup odr, ns.

LS: lt gry/crm, sing, fn xln, fw foss frags, sm dense, sm brittle, sub-chlky, tr-nvp, fw Chert: wht/gry, foss, fw SH: drk gry/blk, silty, carb, no cup odr, ns.

LS: gry/lt tan, slight mott, fn xln, fw den, many brittle, sub-chlky, sm flakey/mealy, tr-nvp, fw Chert: gry, sharp, sm SH: blk, silty, carb, no cup odr, ns.

LS: tan/gry, sing, micro-fn xln, many dense, sm brittle, tr-pr ppt intxln por, 3-4 pcs w/ fn spk drk hvy tar stns in por, wk fluor, fr cut, no cup odr, vssfo in wtr on high mag.

LS: gry/tan, sing, fn xln, fw foss, many dense, sm brittle, sub-chlky in fw, sm 2nd rxln, tr-nvp, fw Chert: gry/crm, foss, fw SH: gry/brn, silty, no cup odr, ns.

LS: gry/lt tan, sing, fn xln, sm dense, many brittle, chlky in prt, tr-nvp, smpur chl, fw Chert: gry/lt tan, sharp, fw SH: drk gry/blk, silty, soft, no cup odr, ns.

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

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

LS: lt gry/tan, slight mott, fn xln, v fw foss frags, mostly brittle, fw flakey, sm lrg xln incl, tr-nvp, fw Chert: gry/wht, foss, sharp, no cup odr, ns.

LS: lt tan, sing, micro-fn xln, many dense, scat vuggy pos, hvy drk stns in por, globs of fo on surf, faint cup odr, dul yel fluor, strm cut, fr-gd sfo on brk.

LS: lt tan/gry, slight mott, fn xln, many dense, fw brittle, sub-chlky in prt, fw flakey/melay, tr-nvp, fw SH: gry, silty, 1 pcs w/ scat vug and sho, mostly like from above, no cup odr.

LS: lt tan/lt gry, sing, fn xln, sm dense, mostly brittle, many flakey/mealy, chlky in prt, tr-nvp, abund SH: gry, drk gry/brn, silty, no cup odr, ns.

LS: lt tan, slight mott, fn xln, mostly brittle, 2-3 pcs w/ fr-gd vuggy por, drk hvy stns in por w/ gd oil glob, gas bub cling to rx chip, gd fluor/cut, fr sfo, faint/wk cup odr, fw pcs SH: blk, silty, carb.

LS: tan/gry, mott in prt, fn-crs xln, mostly dense, fw brittle, sm flakey/mealy, tr-nvp, fw SH: gry/blk, silty, fw carb, 1-2 sm pcs w/ sho disc above, faint-? cup odr, vssfo.

LS: tan/lt gry, slight mott, fn xln, sm v ool, sm dense, sm brittle, tr-pr intool por in fw pcs, mostly tr-nvp, fw pcs pur chl, no cup odr, ns.

LS: tan/lt gry, slight mott, fn xln, mostly dense, sm brittle, fw ool, mostly tr-nvp, 2-3 pcs w/ pr intool por, fw pcs pur chl, no cup odr, ns. 60" Smpl: much more dense LS, only 1-2 pcs brittle/ool, no cup odr, ns.

LS: gry/lt tan, mott in prt, fn-crs xln, sm dense, fw brittle, many flakey/mealy, sub-chlky in prt, tr-nvp, fw SH: blk, silty, carb, no cup odr, ns.

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

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

LS: gry/lt tan, slight mott, fn xln, mostly dense, fw hard

CFS @ 4164'
(30"/60")

Muncie Creek @ 4217' (-918)

DST #3 4206-4304' "KC HWJ" 6/21/2015
30-45-45-60
1st Blw: Wk surf blw blt to 3" (No BB)
2nd Blw: Wk surf blw blt to 1 1/2" (No BB)
IFP: 22-72# ISIP: 1197# FFP: 73-100#
FSIP: 1173#
HYD: 2134-2002#
Rec: 55' WCM (35% Wtr), 122' WCM (30% Wtr).

KDT Mud Check #6 @ 4284' 06/21/15

wt	vis	pH	9.0
52	10.5		
Filt	chl	LCM	
9.2	12K	1.5#	

CFS @ 4273'
(30"/60")

CFS @ 4304'
(30"/60")

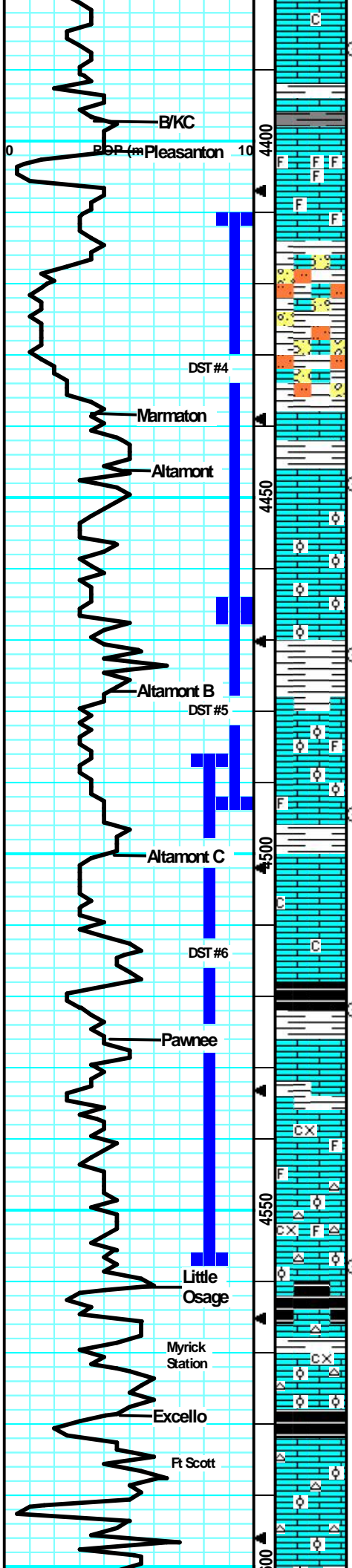
Stark @ 4313' (-1014)

CFS @ 4350'
(30"/60")

Hushpuckney @ 4357' (-1058)

KDT Mud Check #7 @ 4421' 06/22/15

wt	vis	pH	8.8
55	10.0		
Filt	chl	LCM	
8.0	12K	1.5#	



LS: gry/tan, mott, fr-crs xln, sm dense, sm hard, sm brittle, tr-nvp, fw pcs pur chlk, fw SH: gry/grn, silty, no cup odr, ns.

LS: gry/tan, mott, fr-crs xln, sm dense, sm hard, sm 2nd rxln, sm drk min stns, tr-nvp, fw SH: gry, silty, no cup odr, ns.

LS: gry/tan, mott, fr-crs xln, sm dense, sm brittle, many flakey/mealy, tr-nvp, svrl pcs pur chlk, no cup odr, ns.

LS: gry/lt tan, slight mott, fr xln, svrl v foss, sm v brittle, fw friable, fr intfoss por in fw, svrl pcs pur chlk, no cup odr, ns.

LS: tan/gry, slight mott in prt, fr xln, foss in prt, sm fr intxln/intfoss por in svrl pcs, 2-3 pcs w/ drk min stns, ? fluor, no cut resid, fw pcs pur chlk, no cup odr, ns.

LS: tan/gry, slight mott, fr xln, dense, sub-chlky, fw flakey, tr-nvp, fw SH: gry, gritty, friable, fw SS: lt gry/crm, fr gm, sub-rnd, arg, tr-? intgrn por, no cup odr, ns.

LS: tan/lt gry, slight mott in prt, fr xln, fw foss frags, many dense, fw hard, fw flakey, tr-nvp, svrl SH: gry/bm, silty, soft, no cup odr, ns, 60" Smpl: LS: gry, dense, flakey, sm hard, no cup odr/ns.

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

LS: tan, slight mott, fr xln, sm v ool, fw dense, sm brittle, pr-fr intool, dul yel fluor, strm cut, lght brn stns in por, ssfo on faint-wk cup odr, 60" Smpl contained less sho piecs and more dense, flakey LS, no cup odr.

LS: tan/lt tan, mott, fr xln, sm ool, fw brittle, pr-fr scat intool/slight vuggy por, lght brn stns on surf, dul yel fluor, stream cut/ssfo on brk, faint cup odr.

LS: tan/lt tan, mott in prt, fr xln, sm foss, sm ool, mostly brittle, scat fr intfoss/intool por, sm slight vuggy, slight brn stns in por, dul yel fluor, strm cut, ssfo on brk, faint-wk cup odr.

LS: gry/lt tan, slight mott, fr xln, fwdense, most brittle, sub-chlky, sm smll fr intxln por, salt/pep stns, dul yel fluor, strm cut, ssfo on brk, wk cup odr, abund SH: blk/bm/gry, silty, soft.

LS: gry/tan, slight mott, fr xln, many dense, sm brittle, fr ppt-intxln por, salt/pep stns, dul yel fluor, strm cut, ssfo on brk, faint-? cup odr.

LS: gry/tan, slight mott, fr xln, mostly dense, sm flakey/mealy, sub-chlky, 1 pcs w/ lght brn patchy stns, wk fluor, gd cut, no sfo, faint-? cup odr.

LS: tan/gry, slight mott, fr xln, many dense, fw brittle, tr-nvp, patchy drk brn stns, nsfo on brk, abund SH: blk, silty carb, no cup odr.

LS: tan/gry, slight mott, fr xln, mostly dense, sm brittle, tr-pr intxln por, 1-2 pcs w/ lght brn stns, small sphr of oil float on wtr, vssfo on brk, no cup odr.

LS: gry/lt brn, sing, fr-crs xln, mostly dense, sm hard, fw flakey/mealy, tr-nvp, fw SH: gry, silty, soft, no cup odr, ns.

LS: gry/tan, mott, fr-crs xln, fw foss, sm hard, many flakey/mealy, tr-? intxln por in fw, sm Chert: gry, foss, sharp, no cup odr, ns.

LS: gry, mott, fr-crs xln, fw foss frags, many hard, sm brittle, many flakey/mealy, tr-nvp, fw Chert: gry, sharp, no cup odr, ns.

LS: gry/tan, mott in prt, fr-crs xln, fw foss, sm hard, many flakey/mealy, tr-nvp, fw Chert: gry, smokey, foss, svrl SH: gry/bm/blk, silty, soft, sm carb, no cup odr, ns.

LS: tan/gry, mott in prt, fr-crs xln, sm ool, many dense, sm hard, tr-nvp, fw Chert: gry/tan, foss, sharp, svrl SH: gry/blk, silty, carb, no cup odr, ns.

LS: gry/tan, mott, fr xln, sm ool, fw foss, mostly dense, hard, tr-nvp, svrl Chert: gry, foss/ool, sharp, fw SH: gry/blk, silty, fw carb, no cup odr, ns.

LS: gry/tan, mott in prt, fr xln, sm ool, mostly dense, fw brittle, sm hard, tr-nvp, svrl Chert: wht/gry, foss/ool, sharp, v hard, fw SH: gry, silty, sm soft, no cup odr, ns.

CFS @ 4387' (30"/60")

Base of KC @ 4397' (-1098)

DST #4 4411-4472' "Altamont A" 6/22/2015
30-45-45-60
1st Blw: BOB in 4" (Surf BB bit to 8.5")
2nd Blw: BOB in 4" (No BB)
IFP: 66-303# ISIP: 1257# FFP: 315-555#
FSIP: 1252#
HYD: 2270-2110#
Rec: 221' GIP, 1071' CO, 225' GMCO (10% Gas, 85% Oil), 122' GMCO (10% Gas, 80% Oil).

Marmaton @ 4438' (-1139)

CFS @ 4448' (30"/60")

DST #5 4473-4494' "Altamont B"
6/23/2015 30-45-45-60
1st Blw: Surf blw dead in 4" (No BB)
2nd Blw: No blw (No BB)
IFP: 17-18# ISIP: 26# FFP: 18-22# FSIP: 23#
HYD: 2251-2104#
Rec: 5' OCM (5% Oil).

CFS @ 4472' (30"/60")

KDT Mud Check #8 @ 4494' 06/23/15

wt	vis	pH	8.8
54	10.0		
Filt	chl'r	LCM	
8.8	10K	1.5#	

CFS @ 4494' (30"/60")

Pawnee @ 4526' (-1227)

CFS @ 4522' (30"/60")

DST #6 4486-4558' "Pawnee"
6/24/2015 30-45-45-60
1st Blw: BOB in 12" (No BB)
2nd Blw: BOB in 14" (No BB)
IFP: 38-206# ISIP: 1256# FFP: 213-386#
FSIP: 1244#
HYD: 2299-2128#
Rec: 252' OMCW (5% Oil, 75% Wtr), 447' MCW w/ oil spots (90% Wtr).

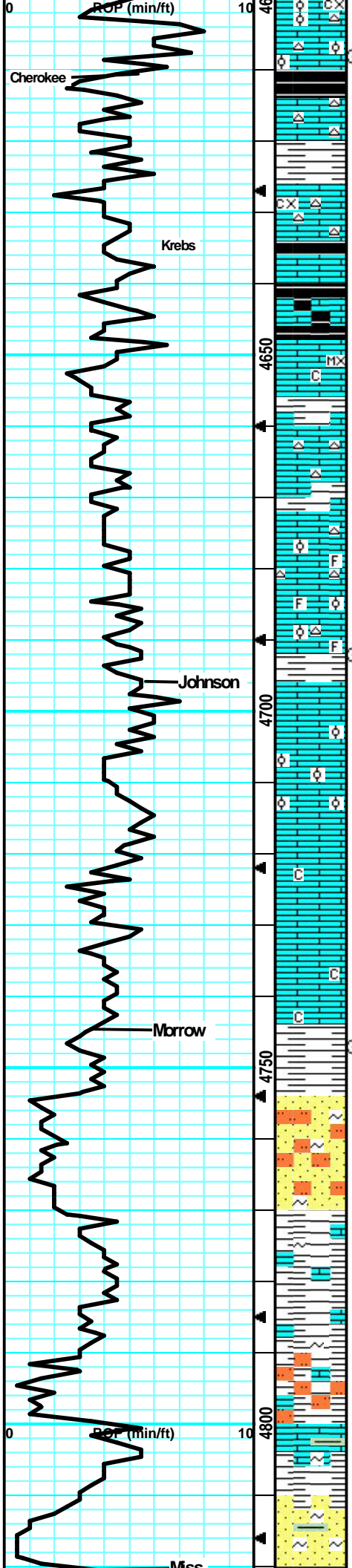
CFS @ 4558' (30"/60")

Little Osage @ 4561' (-1262)

Excello @ 4579' (-1280)

KDT Mud Check #9 @ 4558' 06/24/15

wt	vis	pH	9.1
53	9.5		
Filt	chl'r	LCM	
8.8	11K	1.5#	



LS: tan/gry, mostly mott, fn-crs xln, sm ool, fw dense, hard, many flakey/mealy, tr-nvp, svrl Chert: gry, foss, sharp, no cup odr, ns.

LS: gry/tan, mott, fn-crs xln, sm brittle, many flakey/mealy, lrg 2nd rxln in prt, tr-pr intxln por, fw Chert: gry, smoke, sharp, svrl SH: gry/blk, silty, carb, no cup odr, ns.

LS: gry/lt brn, mott in prt, fn-crs xln, sm dense, sm brittle, fw hard, tr-nvp, fw Chert: gry, smokey, sharp, fw SH: gry/blk, silty, sm carb, no cup odr, ns.

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

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

LS: tan/lt tan, slight mott in prt, micro-fn xln, fw foss, many dense, sm brittle, fw flakey, fw sub-chlky, fw SH: gry, silty, no cup odr, ns.

LS: tan/gry, slight mott, fn xln, many dense, sm brittle, sub-chlky, tr-nvp, fw Chert: brn/drk brn, sharp, fw SH: gry/drk gry, silty, no cup odr, ns.

LS: gry/tan, mostly sing, fn xln, fw foss frags, many dense, sm hard, fw flakey/mealy, like, tr-nvp, fw Chert: brn, sharp, svrl SH: gry/blk, silty, fw carb, no cup odr, ns.

LS: gry/tan, slight mott in fw, fn xln, fw foss frags, mostly dense, many hard, fw flakey, fw sub-chlky, tr-nvp, fw Chert: lt brn/gry/fw wht, foss, sharp, fw SH: gry, silty, no cup odr, ns.

gry/tan/lt brn, slight mott, fn xln, fw ool, mostly dense, sm hard, fw flakey, tr-nvp, svrl SH: gry, silty, soft, no cup odr, ns.

LS: lt brn/gry, slight mott, fn xln, fw ool, mostly dense, may hard, fw flakey/mealy, tr-nvp, fw pcs pur chl, no cup odr, ns.

LS: tan/gry, mostly sing, fn xln, mostly dense, many hard, fw brittle, sm flakey/mealy, tr-nvp, fw sub-chlky, 2-3 pcs w/ drk min stns, no fluor/cut, no cup odr, nsfo.

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

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

LS: gry/tan, slight mott, fn xln, fw foss, fw dense, fw brittle, sub-chlky in prt, tr-nvp, fw pcs w/ drk min stns, no fluor/cut, svrl SH: gry/blk, silty, fw carb, no cup odr, ns.

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

SS: blu/gm, fn gm, sub-rnd, sm arg, silc cem, brittle, friable, glauc, tr-? intgrn por in fw, abund SH: gry/gm, silty, soft, fw LS: tan/gry, fn gm, hard, tr-nvp, no cup odr, ns.

LS: tan/gry, slight mott, fn xln, sm hard, tr-nvp, svrl SH: gry/gm/blu, silty, med crush, fw SS: gm/blu, fn gm, sub-rnd, friable, tr-? intgrn por, no cup odr, ns.

LS: tan/gry, slight mott, fn xln, sm brittle, fw flakey, tr-nvp, fw SS: gm/blu, fn gm, silc cem, glauc, tr-? intgrn por, fw StStn: brn/gry, gritty, friable, no cup odr, ns.

SH: gry/gm/blu, silty, soft, sm waxy, fw StStn: gry/brn, gritty, friable, sm LS: tan/gry, slight mott, fn xln, dense, sub-chlky, tr-nvp, no cup odr, ns.

SH: lt gry/gm, silty, soft, fw StStn: brn, gritty, friable, svrl LS: gry/lt tan, slight mott, fn xln, many dense, sub-chlky, tr-nvp, no cup odr, ns.

SS: blu/gm, fn gm, sub-rnd, silc cem, friable, tr intgrn por, abund SH: gry/gm/blu, silty, soft, sm waxy, fw LS: gry/tan, fn xln, mostly dense, sm brittle, tr-nvp, no cup odr, ns.

CFS @ 4608'
(30"/60")

Cherokee @ 4611' (-1312)

Johnson @ 4696' (-1397)

CFS @ 4692'
(30"/60")

Morrow @ 4745' (-1446)

CFS @ 4747'
(30"/60")

KDT Mud Check #10 @
4767' 06/25/15
wt vis pH 9.1
58 9.5
Filt chr LCM
10.8 12K 1.5#

Abund of Shale in Samples -----

CFS @ 4840'
(30"/60")

LS: tan/lt gry, fn xln, sm sandy/gritty, many dense, hard, tr-nvp, svrl SH: gry/bm, silty, soft, fw SS: crm/lt gry, arg, chalky, brittle, friab, fn gm, tr-nvp, no cup odr, ns.

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

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

LS: crm/lt tan, sing, fn xln, mostly sandy/gritty, sm dense, sm brittle, fw friable, sub-chlky in prt, tr-nvp, fw SH: gry/drk gry, silty, fw fissile, no cup odr, ns.

LS: crm/lt tan, sing, fn xln, sandy/gritty, sm brittle, sub-chlky, friable, tr-nvp, fw LS: lt brn/tan, sing, fn xln, dense, hard, tr-nvp, abund SH: gry, silty, no cup odr, ns.

LS: crm/lt tan, sing, fn xln, many sandy/gritty, brittle, friable, tr-nvp, fw tan/gry, slight mott, fn xln, dense, fw brittle, tr-nvp, no cup odr, ns.

LS: lt tan/crm/lt gry, sing, fn xln, many sandy/gritty, sub-chlky, fw brittle, tr-nvp, fw dense, hard, tr-nvp, abund SH: gry, silty, no cup odr, ns.

LS: lt gry/lt tan, sing, fn xln, fw sandy/gritty, sm dense, fw brittle, sub-chlky in prt, tr-nvp, abund SH: gry, silty, fw fissile, no cup odr, ns.

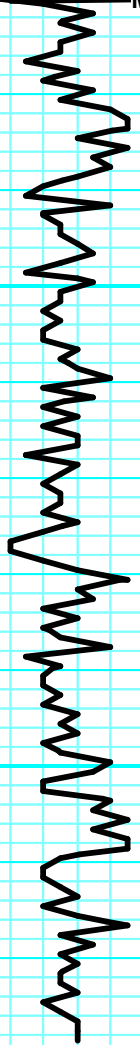
LS: lt gry/lt tan, sing, fn xln, many dense, sm sandy/gritty, sub-chlky in prt, tr-nvp, fw SH: gry, silty, fw fissile, no cup odr, ns.

LS: lt gry/tan, slight mott, fn xln, svrl dense, fw sandy/gritty, sub-chlky, fw brittle, tr-nvp, svrl SH: gry/drk gry, silty, soft, no cup odr, ns.

LS: lt gry/tan, slight mott, fn xln, mostly dense, sm sandy/gritty, fw sub-chlky, tr-nvp, fw SH: gry, silty, fw fissile, no cup odr, ns.

4850

4900



RTD 4930' (-1631)
LTD 4931' (-1632)

CFS @ 4930'
(30"/60")

Survey @ 4930' = 1 1/2 Degrees