

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 VMW Land 16C
API: 15-203-20313
Location: 1400' FSL & 695' FWL, Sec 16-16S-38W, W/2 SW
License Number: REI #4767
Spud Date: 3/11/2017
Surface Coordinates: LAT: 38.6591044
LONG: -101.5292289
Bottom Hole Vertical Hole
Coordinates: 3/4 Degree Deviation
Ground Elevation (ft): 3449'
Logged Interval (ft): 3750' To: RTD
Formation: Mississippian at RTD
Type of Drilling Fluid: Chemical

Region: Wichita County
Drilling Completed: 3/20/2017
K.B. Elevation (ft): 3452'
Total Depth (ft): 5120'

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
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RIG RECORDS

Contractor: WW Drilling Rig #10
Pusher: Ricky Hilgers

Collar Tally: 537'

Pump: National K-380
Liner & Stroke: 6 x 14

BIT RECORDS

Size:	Type:	Footage:	Condition:	Hours:	Serial #:
12 1/4"	Sm-tooth	0-229'	RR	2.75	RH 6605
7 7/8"	Sm-F27	229'-5120'	New	129	RJ 1106

COMMENTS

Surface Casing: 5 joints of 8 5/8" set @ 229'
Production Casing: It was not recommended to set casing.
Mud by: MudCo
DST's by: Diamond Testing
Logs by: Pioneer Energy Services (DIL, CN-CD)
RTD=5120' LTD=5119'

FORMATION TOPS

FORMATION	SAMPLE TOPS		LOG TOPS	
	Depth	Datum	Depth	Datum
Heebner Shale	4042'	-590	4040'	-588
Toronto	4066'	-614	4065'	-613
Lansing	4094'	-642	4096'	-644
Muncie Creek Shale	4285'	-833	4283'	-831
Stark Shale	4389'	-937	4389'	-937
Hushpuckney Shale	4434'	-982	4435'	-983
Base of KC	4475'	-1023	4475'	-1023
Marmaton	4524'	-1072	4524'	-1072
Altamont	4534'	-1082	4534'	-1082
Pawnee	4610'	-1158	4610'	-1158
Myrick Station	4655'	-1203	4654'	-1202
Ft Scott	4666'	-1214	4666'	-1214
Cherokee Shale	4698'	-1246	4697'	-1245
Johnson Zone	4798'	-1346	4796'	-1344
Morrow	4868'	-1416	4870'	-1418
Mississippian	4987'	-1535	4988'	-1536
RTD	5120'	-1668		
LTD			5119'	-1667

DST's






















DST #1 "Altamont" 4510'-4592' 3/17/2017 30-30-30-30
 1st Blw: Wk surf blw (No BB)
 2nd Blw: No blw (No BB)
 IFP: 11-14# ISIP: 61# FFP: 14-16# FSIP: 39#
 Hyd: 2184-2180#
 Rec: 5' Mud.

DST #2 "Pawnee" 4590'-4712' 3/18/2017 30-30-30-30
 1st Blw: Wk surf blw blt to 1/4" (No BB)
 2nd Blw: V Wk surf blw died in 4.5min (No BB)
 IFP: 14-19# ISIP: 708# FFP: 21-29# FSIP: 632#
 Hyd: 2260-2249#
 Rec: 30' Mud.

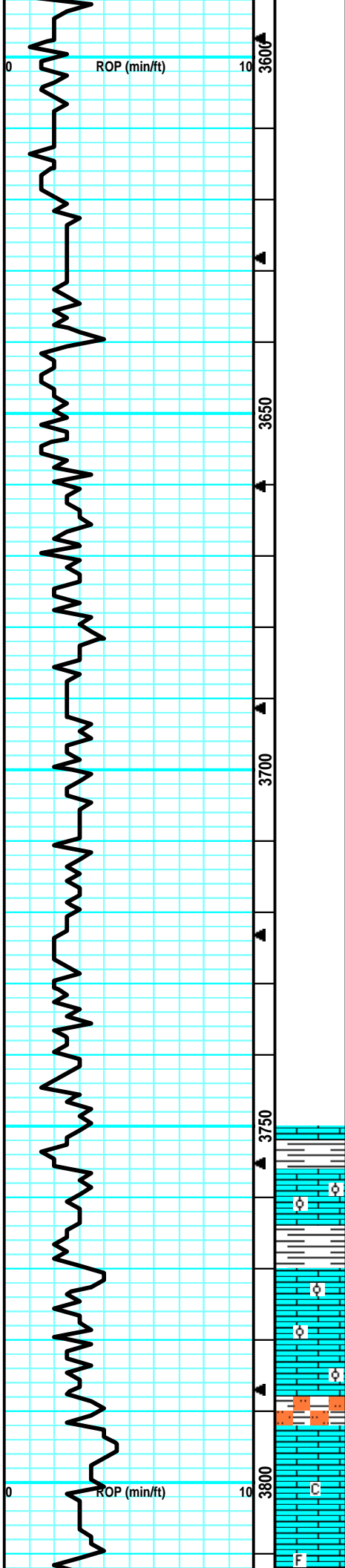
ROCK TYPES

 Anhy	 Dol	 Slst	 Sandylms
 Cht	 Lmst	 Ss	 Shaly ls
 Congl	 Shale	 Carb sh	

ACCESSORIES

EVENTS	 Foram	MINERAL	 Chalky
 Circ	 Fossil	 Calc	 Crsxl
 Conn	 Gastro	 Chtdk	 Finexln
FOSSIL	 Oolite	 Chtlt	 Microxln
 Brach	 Ostra	 Glau	
 Bryozoa	 Fuss	 Pyr	
 Crin	 Oolcast	 Sil	

Drilling Time ROP (min/ft)	Depth Lithology	CFS Point Oil Shows	Geological Descriptions	Remarks
			<p align="center">Morning Activity/Report</p> <p>03/11/2017: Spud and run surface casing. 03/12/17: Waiting on cement. 03/13/17: Drlg @ 2310' 03/14/17: Drlg @ 3365' 03/15/17: Drlg @ 3905' 03/16/17: Drlg @ 4220' 03/17/17: Drlg @ 4560' 03/18/17: CFS @ 4632' (DST #1) 03/19/17: Drlg @ 4735' (DST #2) 03/20/17: Drlg @ 5035' (TD @ 1:00pm)</p>	<p>MudCo Check #1 @ 0' 03/11/17 @ 10:00am</p> <p>Survey @ 229' = 1 Degree</p> <p>MudCo Check #2 @ 2423' 03/13/17 @ 8:35am Wt: 9.4 Vis: 31 pH: 7.0 Filt: n/c Chr: 59K LCM: 2#</p> <p>Anhydrite @ 2628' (+824)</p> <p>B/Anhydrite @ 2646' (+806)</p>
			<p align="center">DT recorded @ 3500' on 3/14/17</p>	<p>Lost returns @ 3335', pulled 5 stands (120 bbls fluid lost).</p> <p>Lost circ @ 3427' (80 bbls).</p> <p>Displaced @ 3437' w/ 720 bbls.</p> <p>MudCo Check #3 @ 3449' 03/14/17 @ 10:50am Wt: 8.6 Vis: 68 pH: 11.5 Filt: 6.8 Chr: 2.5K LCM: 4#</p>



Samples Caught @ 3750' on 3/14/2017

LS: lt tan/gry, mott in prt, fn xln, flakey, sm dense, tr-nvp, no odr, ns.

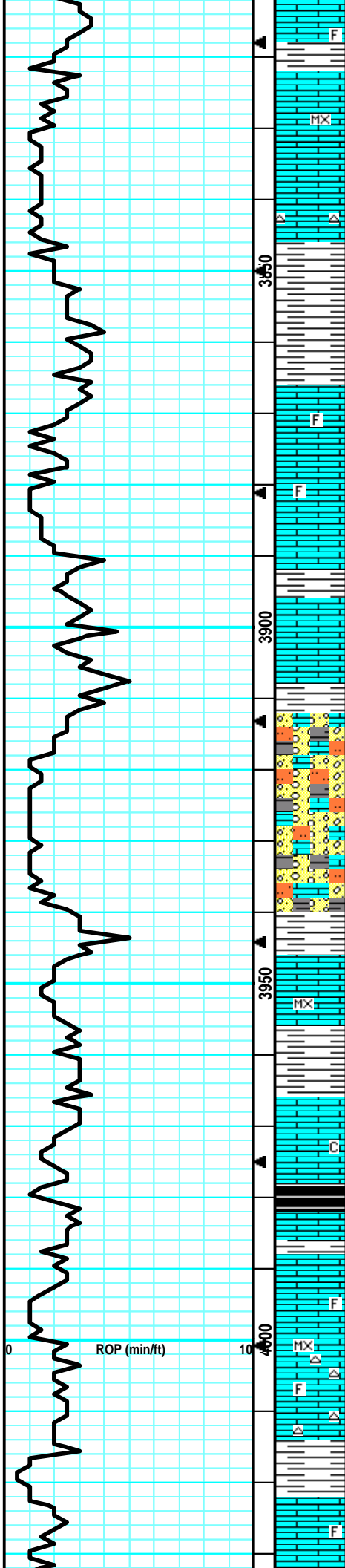
LS: tan/lt gry, slight mott in prt, fn xln, fw ool, many dense, sm brittle, tr-nvp, no odr, ns.

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

LS: gry/tan, fn xln, sm gritty/sandy, many dense, tr-nvp, fw SlStn: lt gry, gritty, soft, no odr, ns.

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

LS: lt tan/lt gry, fn xln, fw foss frags, mostly dense, sm



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

LS: lt tan, sing, micro-fn xln, mostly dense, sm chlky in prt, tr-nvp, no cup odr, ns.

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

SH: drk gry/brn, silty, med crush, fw LS: gry/tan, mott, fn xln, foss, fw Chert: wht/opaq, foss, sharp, no odr, ns.

LS: gry/tan, mott, fn xln, fw foss, brittle, chlky, tr-nvp, fw SH: brn/gry, silty, fw SlitStn: gry, gritty, friable, soft, no odr, ns.

LS: lt tan/gry, slight mott, fn xln, many dense, sm ool, tr-nvp, fw drk gry SH, no cup odr, ns.

LS: gry/tan, mott, fn xln, brittle, chlky, tr-nvp, fw SlitStn: lt gry, gritty, v soft, abund pur chl, no cup odr, ns.

LS: gry/tan, slight mott, fn xln, fw foss in prt, mostly brittle, chlky in prt, tr-nvp, no odr, ns.

LS: gry/tan, slight mott, fn xln, most dense, tr-nvp, fw pcs w/ drk brn stns, no fluor/cut, no odr, nsfo.

SH: brn/gry, silty, soft, fw SlitStn: gry/blu, v gritty, chlky, friable, fw LS: lt tan, dense, sub-chlky, tr-nvp, no odr, ns.

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

LS: tan/lt tan, slight mott, fn xln, sm sandy/grainy, brittle, tr-nvp, svrl pcs pur chl, fw SH: drk gry/brn, silty, no odr, ns.

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

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

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

LS: tan/lt tan, sing, micro-fn xln, dense, firm, fw sub-chlky, tr-nvp, fw Chert: wht/opaq, sharp, no odr, ns.

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

MudCo Check #4 @ 4000'
 03/15/17 @ 10:40am
 Wt: 9.0 Vis: 58
 pH: 11.5 Filt: 7.2
 Chlr: 3K LCM: 4#

CFS @ 4038'
(30"/60")

Heebner @ 4042' (-590)

Toronto @ 4066' (-614)

CFS @ 4088'
(30"/60")

Lansing @ 4094' (-642)

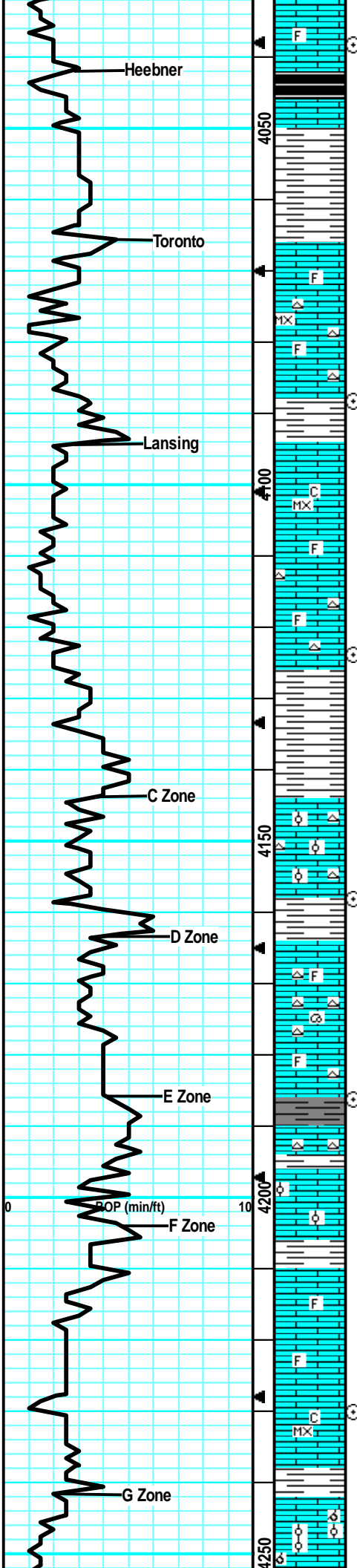
CFS @ 4124'
(30"/60")

CFS @ 4158'
(30"/60")

CFS @ 4186'
(30"/60")

CFS @ 4230'
(30"/60")

MudCo Check #5 @ 4238'
03/16/17 @ 9:00am
Wt: 9.1 Vis: 59
pH: 10.0 Filt: 8.8
Chlr: 3.2K LCM: 3#



LS: lt gry/tan, fn xln, dense, sm firm, sub-chlky in prt, tr-nvp, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, foss in prt, mostly firm, tr-nvp, fw SH: brn, silty, soft, fw blk, carb, no odr, ns.

LS: tan/lt gry, fn xln, sm foss in prt, mott, dense, tr-nvp, fw SH: brn/blk, silty, fw carb, no odr, ns.

SH: brn/gry, silty, soft, fw LS: gry, fn grn, fw foss, firm, sub-chlky in prt, tr-nvp, no odr, ns.

LS: tan/gry, fn xln, mostly dense, sm flakey/mealy, firm, tr-nvp, no odr, ns.

LS: lt tan, sing, micro-fn xln, mostly brittle, sub-chlky in prt, tr-nvp, fw SH: brn/gry, no odr, ns.

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

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

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

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

60: Smpl: Much of the same, influx of more Chert: wht/opaq, foss, sharp, no odr, ns.

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

SH: drk gry/gry, silty, med crush, fw LS: gry, mott, fn xln, fw foss, dense, firm, fw flakey, tr-nvp, no cup odr, ns.

SH: gry/brn, silty, med crush, fw LS: gry/lt tan, fn xln, fw foss, mostly dense, firm, tr-nvp, 1-2 pcs w/ drk min stns, no fluor/cut, no odr, nsfo.

LS: lt tan, sing, fn xln, v fw ool, dense, sm firm, chlky, tr-nvp, fw Chert: gry, foss, sharp, no odr, ns.

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

LS: tan/lt tan, fn xln, fw foss, dense, fw sub-chlky, tr-nvp, fw Chert: wht/gry, foss, sharp, no odr, ns.

LS: tan/lt tan, slght mott, fn xln, fw foss(gast), sub-chlky, dense, tr-nvp, fw Chert: gry/why, foss, sharp, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, sm dense, many flakey, firm, tr-nvp, 1 pcs w/ drk spttd stns, no fluor/cut, sm Chert: gry, foss, sharp, no cup odr, nsfo.

LS: lt gry/tan, slght mott, fn xln, fw foss, sm ool, mostly dense, sm firm, tr-nvp, fw pcs sub-chlky, tr-nvp, no cup odr, ns.

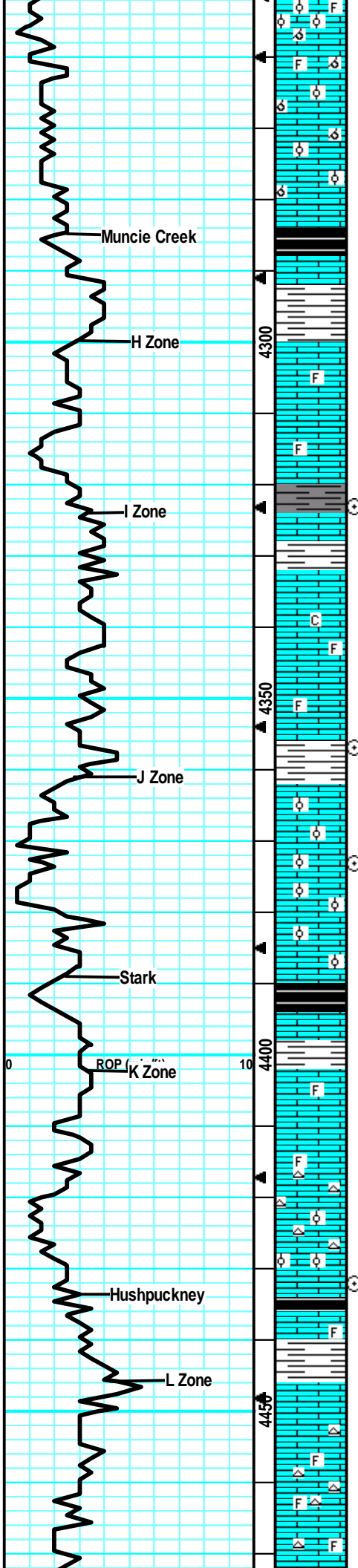
LS: lt gry/tan, slght mott, fn xln, fw foss frags, mostly firm, many flakey, fw sub-chlky, tr-nvp, no cup odr, ns.

LS: lt gry/lt tan, slght mott in prt, fn xln, fw flakey, dense, firm, chlky, tr-nvp, svrl pcs pur chlk, no cup odr, ns.

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

LS: tan/lt tan, fn xln, mostly dense, sm pr scat vuggy por, chlky, tr-nvp, svrl pcs pur chlk, no odr, ns.

LS: tan/lt gry, fn slght mott, fn xln, fw foss, dense, firm



LS: tan/lt gry, fw slight mott, fn xln, fw foss, dense, firm, flakey, tr-nvp, infix SH: gry/brn, silty, soft, no odr, ns.

LS: gry/tan, slight mott in prt, fn xln, sm v ool, many dense/firm, fw pcs w/ pr intool pos, no odr, ns.

LS: gry/tan, slight mott, fn xln, sm v ool/brittle, svrl dense/firm, pr intool por in sm ool pcs, no odr, ns.

LS: lt tan/tan, fn xln, mostly dense, brittle, chlky, tr-nvp, fw SH: blk, carb, no odr, ns.

SH: blk/gry/brn, silty, soft, sm carb, fw LS: tan/lt gry, fn xln, dense, sub-chlky, tr-nvp, no odr, ns.

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

LS: lt tan/lt gry, slight mott, fn xln, fw foss, many brittle, fw pcs w/ pr intxn por, 2-3 pcs w/ drk brn sptd stn, no fluor/cut, nsfo, no cup odr.

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

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

LS: gry/tan, slight mott, fn xln, sm flakey, fw brittle, sub-chlky, tr-nvp, fw pcs w/ sptd drk brn stn, no fluor/cut, pos drk dead oil, no odr, nsfo.

LS: tan/lt gry, slight mott, fn xln, sm foss, many flakey/mealy, sm brittle, tr-pr infoss por in fw, no cup odr, ns.

LS: tan/lt gry, fn xln, fw foss frags, mostly flakey/mealy, sub-chlky, tr-pr intxn por in fw, no odr, ns.

LS: gry/tan, mott in prt, fn xln, v foss, brach/fuss, sm brittle, tr-pr infoss por in sm, fw SH: gry, silty, no cup odr, ns.

LS: gry, slight mott, fn xln, sm v ool, mostly brittle, sm fr intool por, no odr, ns.

LS: gry/lt tan, slight mott, fn xln, sm v ool, sm brittle, gd oolcast por in sm, fw SH: gry/brn, silty, no odr, ns.

LS: lt gry/tan, fn xln, sm v ool, many brittle, many w/ gd oolcast por, fw pcs pur chl, no cup odr, ns.

SH: blk, silty, soft, carb, no cup odr, ns.

LS: lt gry/tan, slight mott, fn xln, sm foss w/ fuss/frags, many dense, fw brittle, tr-nvp, no odr, ns.

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

LS: gry/tan, slight mott, fn xln, sm ool, many brittle, sub-chlky, tr-pr intool por, fw Chert: wht/opaq, foss, sharp, no odr, ns.

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

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

SH: blk, silty, carb, sm soft, no odr, ns.

LS: gry/lt tan, slight mott, fn xln, fw foss, sub-chlky, sm firm, tr-pr ppt intxn por in fw, fw Chert: gry/wht, foss, sharp, no odr, ns.

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

Muncie Creek @ 4285' (-833)

CFS @ 4323'
(30"/60")

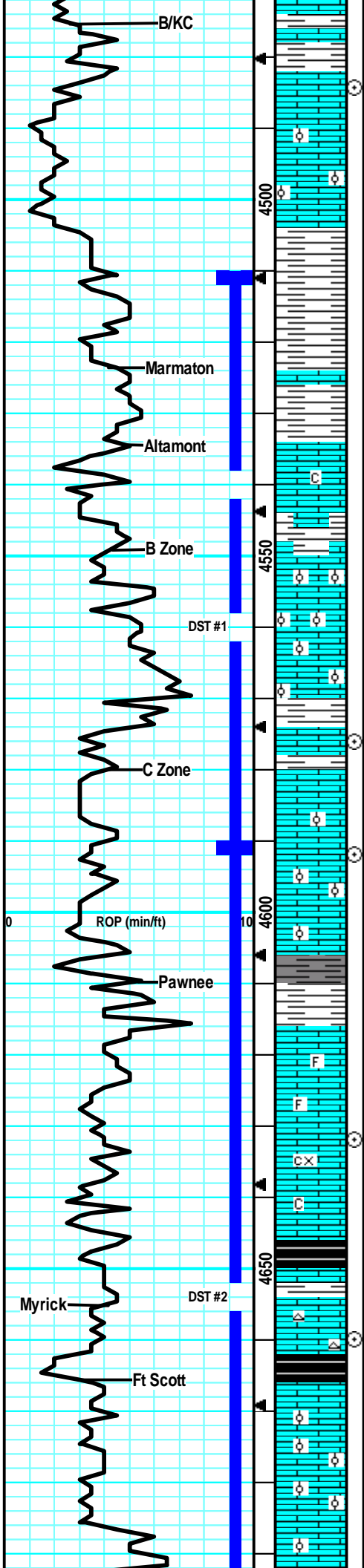
CFS @ 4357'
(30"/60")

CFS @ 4373'
(30"/60")

Stark @ 4389' (-937)

CFS @ 4432'
(30"/60")

Hushpuckney @ 4434' (-982)



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

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

LS: gry/tan, mott in prt, fn xln, sm ool, many flaky, sm brittle, tr-nvp, fw SH: drk gry/brn, silty, no odr, ns.

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

LS: tan/gry, slight mott, fn xln, foss (crin/fuss), dense, flakey, sub-chlky in prt, tr-nvp, no odr, ns.

LS: lt tan/lt gry, slight mott, fn xln, mostly dense, sm brittle, tr-nvp, lrg inflix SH: gry/brn/grn, silty, soft, fw StStn: dk gry, gritty, firm, no odr, ns.

LS: gry/tan, fn xln, mostly dense, sm sub-chlky, tr-nvp, svrl SH: gry/brn, silty, no odr, ns.

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

LS: lt brn/gry, slight mott, fn xln, sm v ool, mostly dense, sm firm, fw SH: gry/brn, silty, no odr, ns.

LS: tan/gry, slight mott, fn xln, sm profus ool, mostly dense, sm firm, tr-ppt intool por in cpl pcs, no odr, ns.

LS: tan/gry, mott, fn xln, sm v ool/dense, firm, tr-nvp, fw flakey/mealy, sub-chlky, tr-nvp, no odr, ns.

SH: gry/brn, silty, soft, fw fissile, fw LS: tan/gry, slight mott, fn xln, flakey, firm, tr-nvp, no odr, ns.

LS: tan/gry, slight mott, fn xln, flakey/mealy, sm pr ppt intxln por in fw, svrl pcs SH: gry/brn, silty, no cup odr, ns.

LS: gry/lt tan, mott in prt, fn lxn, sm ool, svrl brittle, sm chlky, tr-nvp, abund SH: gry/brn, silty, no odr, ns.

LS: gry/lt tan, mott, fn xln, sm ool, mostly brittle, chlky, tr-nvp, abund SH: gry/brn, silty, no cup odr, ns.

LS: gry/tan, mott, fn xln, fw foss, many firm, sub-chlky in prt, tr-pr intxln por in fw, 2 pcs w/ lght brn stns, wk-? fluor, slw cut, nsfo, no odr.

LS: gry/tan, mott in prt, fn xln, sm foss/ool, many firm, sm brittle/chlky, tr-nvp, abund SH: gry/blk, silty, no odr, ns.

LS: gry/tan, slight mott, fn xln, many flakey/mealy, firm, 2 pcs w/ brn stns, wk fluor, v slw cut, nsfo, no cup odr.

LS: gry/drk gry, mott, fn-crs xln, firm, flakey/mealy, tr-pr intxln por in fw, svrl SH: gry/blk, silty, sm carb, no odr, ns.

LS: gry/lt gry, mott, fn-crs xln, sm foss, flakey, many firm, sm pr intxln por in fw, no cup odr, ns.

LS: gry/lt brn, mott, fn-crs xln, foss (fuss/brach), flakey, firm, tr-nvp, fw Chert: wht/opaq, foss, sharp, abund SH: gry/brn/blk, silty, fw carb, no odr, ns.

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

SH: blk/brn/gry, silty, soft, fw LS: gry/lt tan, slight mott, fn xln, fw foss/ool, sm brittle, tr-nvp, no odr, ns.

LS: gry/tan, mott in prt, fn xln, sm ool, sm brittle, fw

B/KC @ 4475' (-1023)

CFS @ 4484'
(30"/60")

Marmaton @ 4524' (-1072)

Altamont @ 4534' (-1082)

MudCo Check #6 @ 4565'
03/17/17 @ 7:45am
Wt: 9.2 Vis: 55
pH: 10.0 Fil: 8.8
Chr: 4K LCM: 1#

CFS @ 4576'
(30"/60")

**Pipe Strap was
1.96' Long**

CFS @ 4592'
(30"/60")

Survey @ 4592' = 1 Degree

Pawnee @ 4610' (-1158)

DST #1 "Altamont" 4510'-4592'
3/17/2017 30-30-30-30
1st Blw: Wk surf blw (No BB)
2nd Blw: No blw (No BB)
IFP: 11-14# ISIP: 61# FFP: 14-16# FSIP:
39#
Hyd: 2184-2180#
Rec: 5' Mud.

CFS @ 4632'
(30"/60")

MudCo Check #7 @ 4638'
03/18/17 @ 8:30am
Wt: 9.3 Vis: 65
pH: 10.0 Fil: 10.4
Chr: 5K LCM: 1#

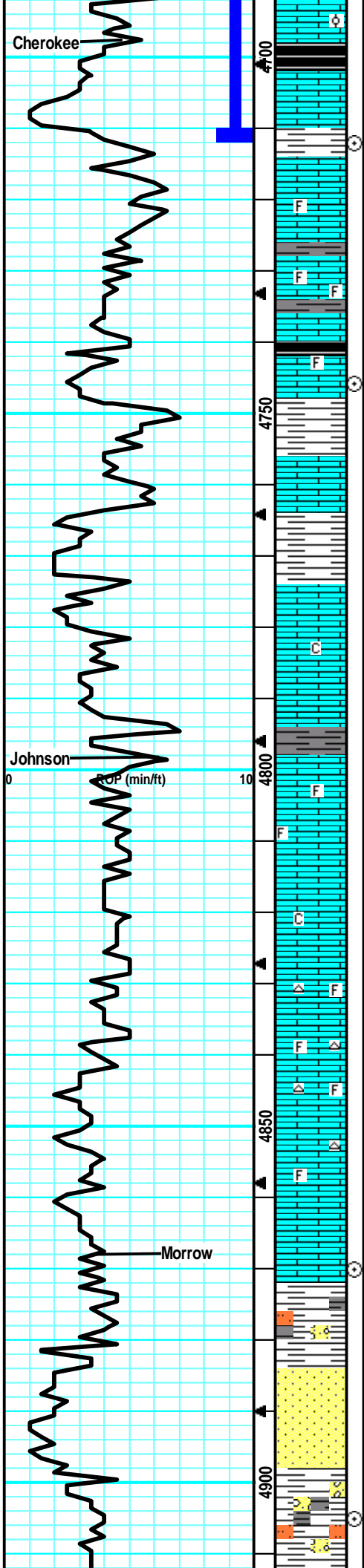
Myrick @ 4655' (-1203)

CFS @ 4660'
(30"/60")

Ft Scott @ 4666' (-1214)

DST #2 "Pawnee" 4590'-4712' 3/18/2017
30-30-30-30
1st Blw: Wk surf blw blt to 1/4" (No BB)
2nd Blw: V Wk surf blw died in 4.5min (No BB)
IFP: 14-19# ISIP: 708# FFP: 21-29# FSIP:
632#
Hyd: 2260-2249#
Rec: 30' Mud.

Automatic Driller Broke... Weight on Bit Surging Up/Down.



flakey, tr-nvp, svrl SH: drk gry/brn, silty, no odr, ns.

LS: tan/gry, fn xln, mostly dense, firm, fw flakey, tr-nvp, svrl SH: gry/brn, no odr, ns.

LS: gry/tan, mott, fn xln, fw ool, sm firm, sm flakey, tr-nvp, abund SH: blk/gry/brn, silty, no cup odr, ns.

SH: drk gry/brn/blu, silty, soft, fw LS: gry/lt tan, fn xln, fw firm, flakey/mealy, tr-nvp, no odr, ns.

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

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

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

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

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

LS: gry/lt tan, slight mott, fn xln, sm flakey/mealy, sub-chlky in prt, abund SH: gry/brn, silty, soft, no odr, ns.

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

LS: tan/gry, slight mott, fn xln, dense, firm, sm flakey, tr-nvp, svrl SH: brn/blk/gry, sm carb, no cup odr, ns.

LS: tan/gry, fn xln, dense, firm, tr-nvp, svrl SH: gry/brn, silty, no cup odr, ns.

LS: tan/lt gry, fn xln, sm foss in prt, many firm, fw flakey, fw pcs w/ pr ppt intxln por, no odr, ns.

LS: gry/lt tan, mott in prt, fn xln, many firm, flakey, sm ppt intxln por in sm, tr-nvp, no cup odr, ns.

LS: gry/tan, mott in prt, fn xln, firm, many flakey, fw pcs w/ v pr ppt intxln por, no cup odr, ns.

LS: gry, mott in prt, fn xln, fw foss, firm, flakey, tr-nvp, no odr, ns.

LS: drk gry/grn, mott, fn xln, foss in prt, dense, firm, tr-nvp, fw Chert: drk gry/wht, smokey, foss, sharp, no cup odr, ns.

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

LS: gry/lt gry, slight mott, fn xln, firm, tr-nvp, abund SH: brn/gry, silty, no odr, ns.

LS: gry/drk gry, slight mott, fn xln, firm, many flakey/mealy, tr-nvp, sm SH: gry/drk gry, silty, soft, no odr, ns.

SH: gry/brn/grn, silty, soft.

SS: crm/wht, fn grn, sub-rnd, silc cem, clean, friable, brittle, fr intgrn por, fw grn spec of glauc, no cup odr, ns.

SS: crm/wht, much like above, fw appr 1/3 slight arg, abund SH: gry/brn, silty, o odr, ns.

SH: gry/brn/grn, silty, soft, fw pcs of SS from above still in smpl, no odr, ns.

SH: gry/brn/grn/blu, silty, soft, fw waxy, fw StStn: gry,

Cherokee @ 4698' (-1246)

CFS @ 4712' (30"/60")

CFS @ 4746' (30"/60")

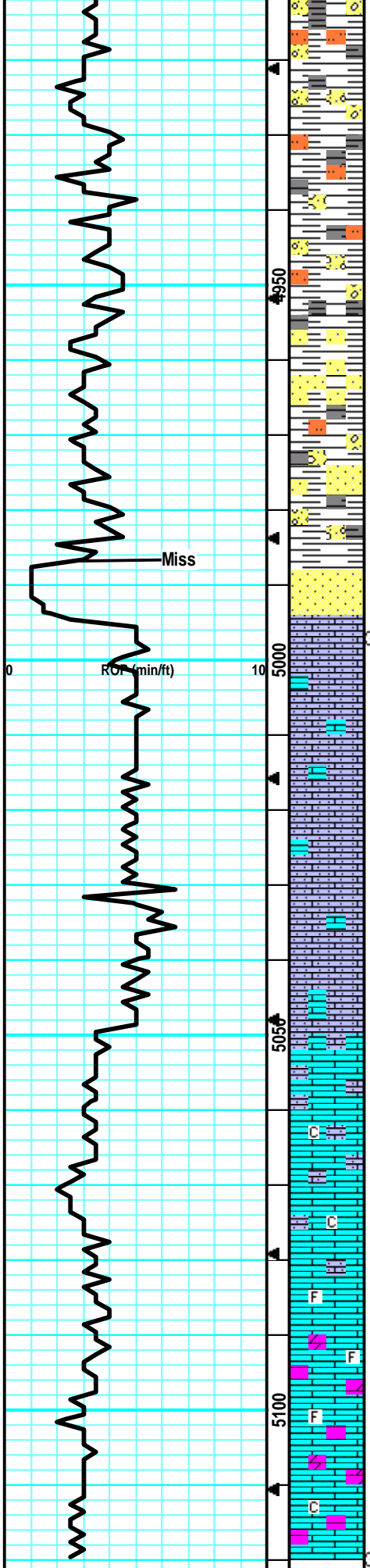
MudCo Check #8 @ 4746'
03/19/17 @ 8:20am
Wt: 9.3 Vis: 53
pH: 10.0 Filt: 9.6
Chlr: 6K LCM: 1#

Johnson @ 4798' (-1346)

Morrow @ 4868' (-1416)

CFS @ 4870' (30"/60")

CFS @ 4905' (30"/60")



v soft, gritty, slight muddy, no odr, ns.

SH: gry/brn, silty, soft, no odr, ns.

SH: gry/grn/blu/brn, silty, soft, fw fissile, fw SlitStn: gry/brn, gritty, v soft, no odr, ns.

SH: gry/drk gry/brn/blu, silty, soft, no odr, ns.

SS: gry/grn/grn, fn grn, sub-angl, fr sort, arg, fw brittle, many firm, glauc, tr-? intgrn por, no cup odr, ns.

Svrl pcs firm, fn grn, arg, SS as desc above, abund of SH: gry/grn/drk gry, silty, sm fissile, no odr, ns.

SS: gry/wht, fn-crs gry, sub-ang, prly sorted, arg, glauc spcs, firm cem, tr-pr intgrn por, no odr, ns.

SS: wht/grn, fn grn, sub-rnd, arg, sm firm, glauc, sm firm, cem, tr-? intgrn por in sm, abund SH: gry/grn, silty, soft, no odr, ns.

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

Much of the same sandy/gritty LS, fw pcs firm, tr-nvp, no cup odr, ns.

LS: crm/lt tan/lt gry, sing, fn xln, sandy/gritty, sub-chlky, sm brittle, fw firm, tr-nvp, no cup odr, ns.

Much of the same sandy/gritty, LS, influx of SH, pos from slough above, no odr, ns.

LS: crm/lt tan, sing, fn xln, sandy/grity, sub-chlky, tr-nvp, no odr, ns.

Much of the same sandy/gritty LS, less sandy content, and more firm, tr-nvp, no odr, ns.

LS: lt gry, fn xln, mostly dense, firm, fw flakey, tr-nvp, svrl SH: gry/brn, silty, no odr, ns.

LS: lt gry/tan, fn xln, fw foss frags, mostly dense, firm, tr-nvp, abund SH: no odr, ns.

LS: tan/gry, slight mott, fn xln, mostly dense, firm, tr-nvp, slough SH has cleaned up.

LS: gry/lt tan, sing, fn xln, fw foss, mostly dense, firm, fw slight DOL, tr-nvp, no cup odr, ns.

LS: lt gry/tan, sing, fn xln, dense, firm, tr-nvp, fw DOL: gry, slight mott, fn xln, dense, tr-nvp, no odr, ns.

LS: lt gry/tan, sing, fn xln, fw foss, dense, firm, tr-nvp, fw DOL: gry, fn xln, dense, tr-nvp, no odr, ns.

Miss @ 4987' (-1535)

CFS @ 4997'
(30"/60")

Samples were full of slough shale. Ran in some poly in to bring up the vis.

MudCo Check #9 @ 5040'
03/20/17 @ 8:00am
Wt: 9.3 Vis: 57
pH: 10.0 Filt: 9.6
Chlr: 6.5K LCM: 1#

CFS @ 5020'
(30"/60")

Survey @ 5120' = 3/4 Degree

RTD: 5120' (1668)
LTD: 5119' (1667)

ELECTRONS (1001)				
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