



Confidentiality Requested:  
 Yes  No

KANSAS CORPORATION COMMISSION 1265905  
OIL & GAS CONSERVATION DIVISION

Form ACO-1  
November 2016

Form must be Typed  
Form must be Signed  
All blanks must be Filled

WELL COMPLETION FORM  
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # \_\_\_\_\_  
Name: \_\_\_\_\_  
Address 1: \_\_\_\_\_  
Address 2: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ + \_\_\_\_\_  
Contact Person: \_\_\_\_\_  
Phone: ( \_\_\_\_\_ ) \_\_\_\_\_  
CONTRACTOR: License # \_\_\_\_\_  
Name: \_\_\_\_\_  
Wellsite Geologist: \_\_\_\_\_  
Purchaser: \_\_\_\_\_

Designate Type of Completion:  
 New Well  Re-Entry  Workover  
 Oil  WSW  SWD  
 Gas  DH  EOR  
 OG  GSW  
 CM (Coal Bed Methane)  
 Cathodic  Other (Core, Expl., etc.): \_\_\_\_\_

If Workover/Re-entry: Old Well Info as follows:  
Operator: \_\_\_\_\_

Well Name: \_\_\_\_\_

Original Comp. Date: \_\_\_\_\_ Original Total Depth: \_\_\_\_\_

Deepening  Re-perf.  Conv. to EOR  Conv. to SWD  
 Plug Back  Liner  Conv. to GSW  Conv. to Producer

Commingled Permit #: \_\_\_\_\_  
 Dual Completion Permit #: \_\_\_\_\_  
 SWD Permit #: \_\_\_\_\_  
 EOR Permit #: \_\_\_\_\_  
 GSW Permit #: \_\_\_\_\_

Spud Date or Date Reached TD Completion Date or  
Recompletion Date Recompletion Date

API No.: \_\_\_\_\_

Spot Description: \_\_\_\_\_

\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-  
Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West  
\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-  
Feet from  North /  South Line of Section  
\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_-  
Feet from  East /  West Line of Section

Footages Calculated from Nearest Outside Section Corner:  
 NE  NW  SE  SW

GPS Location: Lat: \_\_\_\_\_, Long: \_\_\_\_\_  
(e.g. xx.xxxxx) (e.g. -xxx.xxxxx)

Datum:  NAD27  NAD83  WGS84

County: \_\_\_\_\_

Lease Name: \_\_\_\_\_ Well #: \_\_\_\_\_

Field Name: \_\_\_\_\_

Producing Formation: \_\_\_\_\_

Elevation: Ground: \_\_\_\_\_ Kelly Bushing: \_\_\_\_\_

Total Vertical Depth: \_\_\_\_\_ Plug Back Total Depth: \_\_\_\_\_

Amount of Surface Pipe Set and Cemented at: \_\_\_\_\_ Feet

Multiple Stage Cementing Collar Used?  Yes  No

If yes, show depth set: \_\_\_\_\_ Feet

If Alternate II completion, cement circulated from: \_\_\_\_\_

feet depth to: \_\_\_\_\_ w/ \_\_\_\_\_ sx cmt.

Drilling Fluid Management Plan  
(Data must be collected from the Reserve Pit)

Chloride content: \_\_\_\_\_ ppm Fluid volume: \_\_\_\_\_ bbls

Dewatering method used: \_\_\_\_\_

Location of fluid disposal if hauled offsite: \_\_\_\_\_

Operator Name: \_\_\_\_\_

Lease Name: \_\_\_\_\_ License #: \_\_\_\_\_

Quarter \_\_\_\_\_ Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West

County: \_\_\_\_\_ Permit #: \_\_\_\_\_

AFFIDAVIT

I am the affiant and I hereby certify that all requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Submitted Electronically

KCC Office Use ONLY

Confidentiality Requested  
Date: \_\_\_\_\_  
 Confidential Release Date: \_\_\_\_\_  
 Wireline Log Received  Drill Stem Tests Received  
 Geologist Report / Mud Logs Received  
 UIC Distribution  
ALT  I  II  III Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

1265905

Operator Name: \_\_\_\_\_ Lease Name: \_\_\_\_\_ Well #: \_\_\_\_\_

Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West County: \_\_\_\_\_

**INSTRUCTIONS:** Show important tops of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed.

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to kcc-well-logs@kcc.ks.gov. Digital electronic log files must be submitted in LAS version 2.0 or newer AND an image file (TIFF or PDF).

Drill Stem Tests Taken  Yes  No  
(Attach Additional Sheets)  
Samples Sent to Geological Survey  Yes  No  
Cores Taken  Yes  No  
Electric Log Run  Yes  No  
Geologist Report / Mud Logs  Yes  No  
List All E. Logs Run:

Log Formation (Top), Depth and Datum  Sample  
Name Top Datum

CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives

ADDITIONAL CEMENTING / SQUEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
<input type="checkbox"/> Perforate				
<input type="checkbox"/> Protect Casing				
<input type="checkbox"/> Plug Back TD				
<input type="checkbox"/> Plug Off Zone				

- Did you perform a hydraulic fracturing treatment on this well?  Yes  No (If No, skip questions 2 and 3)
- Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons?  Yes  No (If No, skip question 3)
- Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry?  Yes  No (If No, fill out Page Three of the ACO-1)

Date of first Production/Injection or Resumed Production/Injection:	Producing Method: <input type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other (Explain) _____				
Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity

DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease (If vented, Submit ACO-18.)	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled (Submit ACO-5)	PRODUCTION INTERVAL: Top Bottom
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Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record (Amount and Kind of Material Used)

TUBING RECORD:	Size:	Set At:	Packer At:
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**#1 Wing Trust – D. Schumacher**  
2560' FSL & 1260' FWL  
80' S & 60' W of W/2 Section 23-15S-36W  
Logan County, Kansas  
API# 15-109-21415-0000  
Elevation: GL: 3294', KB: 3299'

Sample Tops			Ref. Well
Anhydrite	2568'	+731	-13
B/Anhydrite	2586'	+713	-12
Stotler	3627'	-328	+8
Heebner	3997'	-698	-5
Toronto	4019'	-720	-4
Lansing	4042'	-743	-2
Muncie Shale	4214'	-915	-9
Stark	4314'	-1015	-11
Hush.	4357'	-1058	-12
BKC	4392'	-1093	-6
Altamont	4451'	-1152	-11
Pawnee	4526'	-1227	-10
Myrick	4568'	-1269	-5
Fort Scott	4582'	-1283	-5
Cherokee Shale	4610'	-1311	-7
Johnson	4696'	-1397	-7
Morrow	4748'	-1449	-9
Mississippian	4820'	-1521	-14
RTD	4930'	-1631	

# ALLIED OIL & GAS SERVICES, LLC

Federal Tax I.D. #20-5975804

067853

REMIT TO P.O. BOX 93999  
SOUTHLAKE, TEXAS 76092

SERVICE POINT: Oakley, KS

DATE <u>6-15-15</u>	SEC <u>23</u>	TWP. <u>15</u>	RANGE <u>36</u>	CALLED OUT	ON LOCATION <u>6:20 PM</u>	JOB START <u>7:00 PM</u>	JOB FINISH <u>11:30 PM</u>
LEASER <u>Christina D</u>	WELL # <u>1</u>	LOCATION <u>Russell Springs 5 to Dakota</u>	COUNTY <u>Logan</u>	STATE <u>KS</u>			
OLD OR NEW (Circle one) <u>NEW</u>			<u>YE to 200.65 <del>200.00</del> 5 in 50</u>				

CONTRACTOR WAZ OWNER Same

TYPE OF JOB <u>Seepage</u>	CEMENT AMOUNT ORDERED <u>175 s/s cement 380cc</u>
HOLE SIZE <u>8 1/2"</u> T.D. <u>221'</u>	COMMON <u>175 s/s @ 1.90 332.50</u>
CASING SIZE <u>8 7/8"</u> DEPTH <u>220.57'</u>	POZMIX @ _____
TUBING SIZE _____ DEPTH _____	GEL @ _____
DRILL PIPE _____ DEPTH _____	CHLORIDE <u>4.94 # @ 1.10 543.40</u>
TOOL _____ DEPTH _____	ASC @ _____
PRES. MAX _____ MINIMUM _____	_____ @ _____
MEAS. LINE _____ SHOE JOINT _____	_____ @ _____
CEMENT LEFT IN CSG. <u>151</u>	_____ @ _____
PERFS. _____	_____ @ _____
DISPLACEMENT <u>13.16 bbl</u>	_____ @ _____

**EQUIPMENT**

PUMP TRUCK CEMENTER <u>Lafano E Wank</u>	
# <u>422</u> HELPER <u>Wayne McShyly</u>	
BULK TRUCK	
# <u>891/287</u> DRIVER <u>Corey Brown</u>	
BULK TRUCK	
# _____ DRIVER _____	

**REMARKS:**  
Mix 175 s/s cement  
Displace with water  
cemented cement to  
3 bbl to pit

Thank you

CHARGE TO: Ritchie  
 STREET \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

TOTAL	<u>3,675.90</u>
DISCOUNT <u>40%</u>	<u>1,470.36</u>

**SERVICE**

HANDLING <u>183 75 ft</u> @ <u>2.48</u>	<u>455.70</u>
MILEAGE <u>8.97 hr x 55 x 2.75</u>	<u>1281.09</u>
DEPTH OF JOB <u>220.57'</u>	
PUMP TRUCK CHARGE	<u>1512.25</u>
EXTRA FOOTAGE @ _____	
HV MILEAGE <u>55 @ 7.90</u>	<u>423.50</u>
LV MILEAGE <u>55 @ 4.90</u>	<u>242.50</u>
Municipal - sewage @ _____	<u>275.00</u>
TOTAL	<u>4,189.54</u>
DISCOUNT <u>40%</u>	<u>1,675.81</u>

**PLUG & FLOAT EQUIPMENT**

_____ @ _____	
_____ @ _____	
_____ @ _____	
_____ @ _____	
_____ @ _____	
TOTAL	
DISCOUNT _____ %	

To: Allied Oil & Gas Services, LLC.  
 You are hereby requested to rent cementing equipment and furnish cementer and helper(s) to assist owner or contractor to do work as is listed. The above work was done to satisfaction and supervision of owner agent or contractor. I have read and understand the "GENERAL TERMS AND CONDITIONS" listed on the reverse side.

PRINTED NAME \_\_\_\_\_  
 SIGNATURE [Signature]

SALES TAX (if Any) \_\_\_\_\_  
 TOTAL CHARGES 7,865.44  
 DISCOUNT 3,146.17 (40%) IF PAID IN 30 DAYS  
 NET TOTAL 4,719.28 IF PAID IN 30 DAYS



**CONSOLIDATED**  
Oil Well Services, LLC

3296 Schumacher #1  
3218

TICKET NUMBER 49460  
LOCATION Oakley, KS  
FOREMAN Kelly Gabel

PO Box 884, Chanute, KS 66720  
620-431-9210 or 800-467-8676

**FIELD TICKET & TREATMENT REPORT**  
**CEMENT INVOICE # 804780** KS

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY
6-26-15	2173	Wingtrust Schumacher #1	23	15	36W	Logan
CUSTOMER			TRUCK # DRIVER TRUCK # DRIVER			
MAILING ADDRESS			566 / Jeremy 4hr			
CITY STATE ZIP CODE			563 / Rod 4hr			
			640 /			

JOB TYPE ROD HOLE SIZE 2 7/8 HOLE DEPTH 4938 CASING SIZE & WEIGHT 5 1/2 15.5#  
 CASING DEPTH 4910 DRILL PIPE \_\_\_\_\_ TUBING PC serial # 1501147 OTHER PC @ 2530  
 SLURRY WEIGHT 142 SLURRY VOL \_\_\_\_\_ WATER gal/sk \_\_\_\_\_ CEMENT LEFT in CASING \_\_\_\_\_  
 DISPLACEMENT 117 DISPLACEMENT PSI \_\_\_\_\_ MIX PSI \_\_\_\_\_ RATE \_\_\_\_\_

REMARKS: Safety meeting, rigged up on w+ w #2, Ran float equip on  
ST #5 turbolizers - sheet, 4, 7, 10, 11, 14, 18, 55, 57 baskets - 10, 56, 73  
94, 101, ran pipe to bottom & circulated for 45 min, mixed mud flush  
mixed 30 SKS RH, mixed 200 SKS OWC 5# Kol-seal 1/4 19% CDS - 26, 14# PR/SKS  
CAF38 down center, washed out pumps, released plug & displaced with  
119 dbl water lift pressure 800 # plug landed @ 1700 # released  
pressure float held had good returns throughout displacement

*Thank You  
Kelly, Miles & Crew*

ACCOUNT CODE	QUANTITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
5401C	1	PUMP CHARGE CE 0453	3175.00	3175.00
5406	45	MILEAGE CE 0002	5.25	236.25
5407A	10.81	Ten mileage delivery CE 0710	75	851.39
1120	230 SKS	DWC CP 5860	23.70	5451.00
1110A	1150	Kol-seal CC 6077	.56	644.00
1146	32 #	Defoamer (CAF38) CC 0155	10.20	326.40
1137	54 #	CDS-26 CC 6000	10.20	550.80
4136	9	5 1/2 turbolizers (w) CP 8576	75.25	681.25
4104	5	5 1/2 baskets (T) CP 8629	290.00	1450.00
4139	1	5 1/2 AFU Float shoe (w) CP 8485	433.75	433.75
4454	1	5 1/2 latchdown w/ plug (T) CP 8254	567.00	567.00
4285	1	5 1/2 Port collar (T) CP 8776	2158.25	2158.25
11446	500 gal	mud flush CC 028	1.00	500.00
		Sub		17045.99
		tax @ 2.50%		426.19
		Total		12,284.50
		SALES TAX		133.45
		ESTIMATED TOTAL		13517.94

Ravin 3737

AUTHORIZATION [Signature] TITLE \_\_\_\_\_ DATE 6-26-15

I acknowledge that the payment terms, unless specifically amended in writing on the front of the form or in the customer's account records, at our office, and conditions of service on the back of this form are in effect for services identified on this form



**CONSOLIDATED**  
Oil Well Services, LLC

PO Box 884, Chanute, KS 66720  
620-431-9210 or 800-467-8676

3394  
3309

TICKET NUMBER 49439  
LOCATION Oakley, KS  
FOREMAN Dane Retzloff

**FIELD TICKET & TREATMENT REPORT**  
**CEMENT**

**Invoice #804826**

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY
6-30-15	7173	Wing - West D - Shumaner #1	23	15	36	Logan
CUSTOMER			TRUCK #	DRIVER	TRUCK #	DRIVER
Ritchie Exploration			399	Mike		
MAILING ADDRESS			529	Bob		
CITY			Helper	Lloyd		
STATE						
ZIP CODE						

JOB TYPE Port Collar HOLE SIZE \_\_\_\_\_ HOLE DEPTH \_\_\_\_\_ CASING SIZE & WEIGHT 5 1/2  
 CASING DEPTH \_\_\_\_\_ DRILL PIPE \_\_\_\_\_ TUBING 2 7/8 OTHER PC at 2530'  
 SLURRY WEIGHT 13.5 SLURRY VOL 1.59 WATER gal/sk 8.67 CEMENT LEFT in CASING \_\_\_\_\_  
 DISPLACEMENT 14.6 DISPLACEMENT PSI \_\_\_\_\_ MIX PSI \_\_\_\_\_ RATE \_\_\_\_\_

REMARKS: Safety Meeting. Rig up. Pressure test backside to 1200 psi. Pump down tubing to insure returns. Mix 450 sbs 60/40 60% gel .25 fl. with 300 lbs cottonseed hulls Displace 13.5 BBLs. Cement did circulate. Run 5 joints in and Reverse Clean with 18 BBLs. Rig down.

Thanks Dane + Crew.

ACCOUNT CODE	QUANTITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
54018	1	PUMP CHARGE	CE 0432 / 1785.00	1785.00
5406	35	MILEAGE	CE 0002 / 5.25	183.75
54074	19.3	Ton Mileage Delivery	CE 0710 / 1.75	112.12
1131	450 sbs	60/40 Poz mix	CC 58424 / 15.86	7137.00
1180	2822#	Bentonite	CC 5865 / .27	626.94
1107	112#	Flo Seal	CC 6075 / 2.97	332.64
1105	300#	Cotton Seed Hulls	CC 6080 / .58	174.00
			Sub	11421.45
			less 25%	2855.36
			Total	8566.09
			SALES TAX	474.52
			ESTIMATED TOTAL	9040.61

Ravin 3737

AUTHORIZATION [Signature] TITLE \_\_\_\_\_ DATE \_\_\_\_\_

I acknowledge that the payment terms, unless specifically amended in writing on the front of the form or in the customer's account records, at our office, and conditions of service on the back of this form are in effect for services identified on this form.

# **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:**

**Spud Date: 06/15/2015**

**Region: Logan County**

**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](http://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



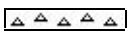
Lmst



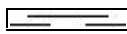
Carb sh



Sdy dolo



Cht



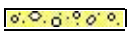
Shale



Dol



Shy dolo



Congl



Sltst



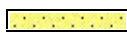
Gry sh



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

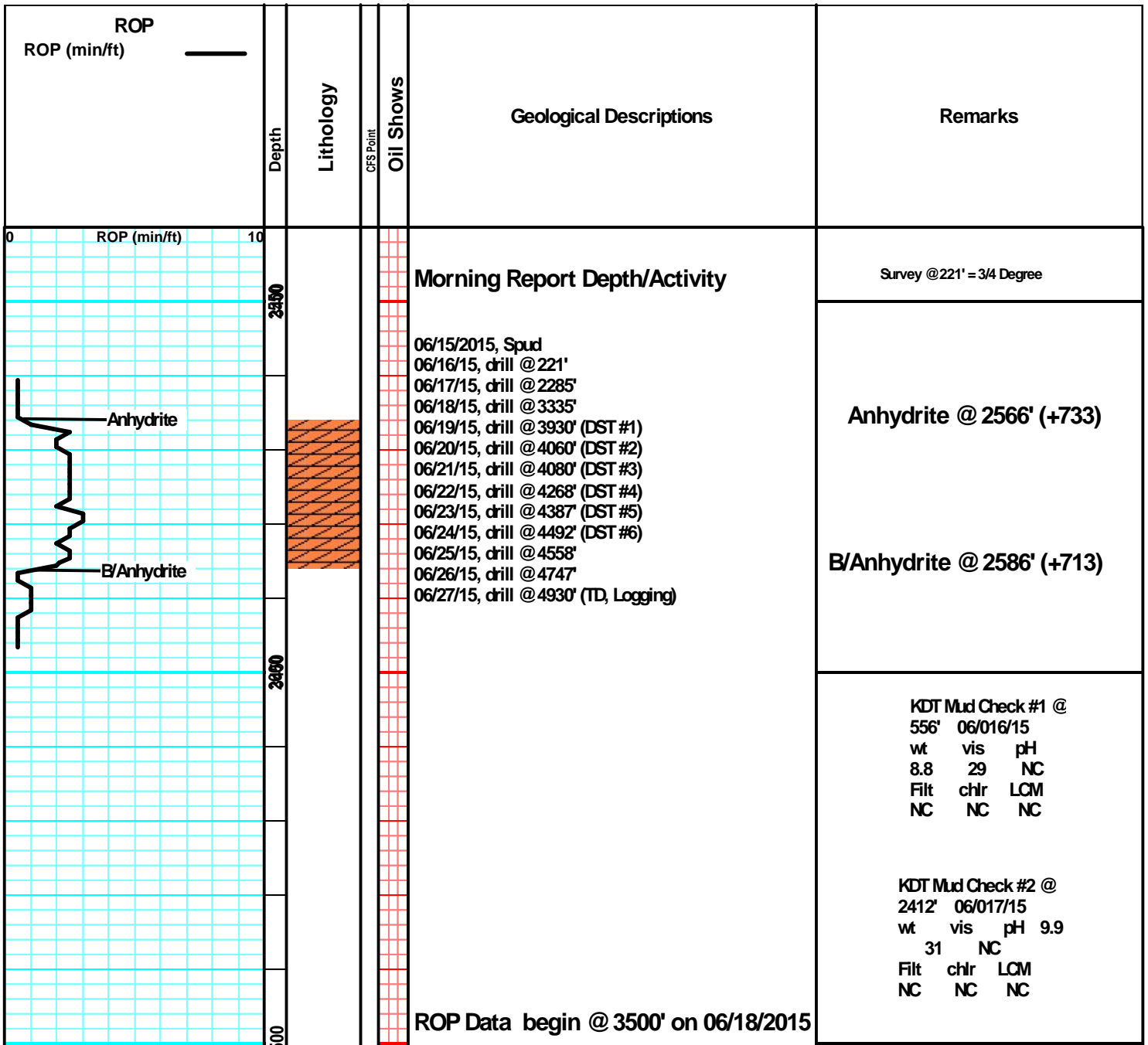
### MINERAL

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

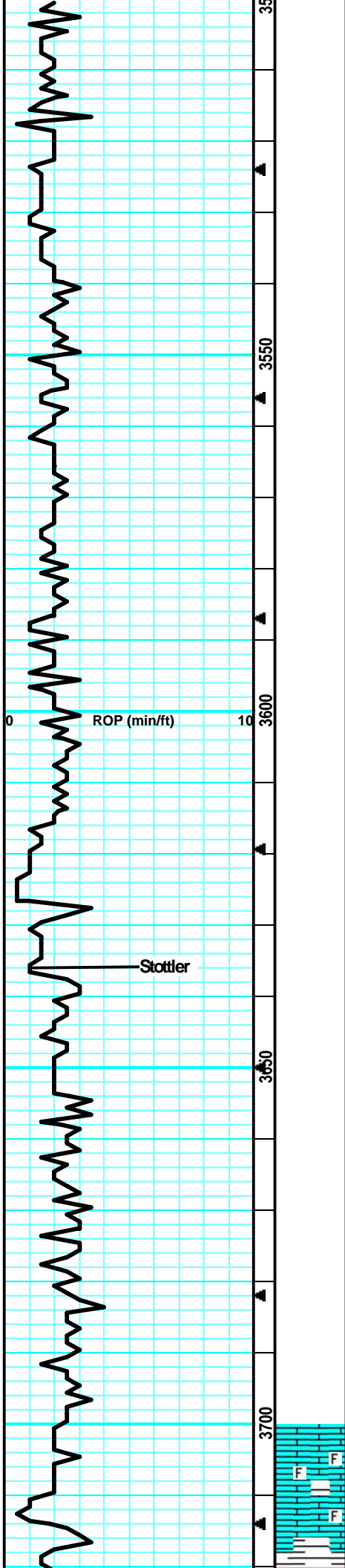
- Glau
- Gyp
- Hvymin
- Kaol
- Marl
- Minxl
- Nodule
- Phos
- Pyr
- Salt
- Sandy
- Silt
- Sil
- Sulphur
- Tuff
- Chlorite
- Dol
- Sand
- Sltly

### 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#



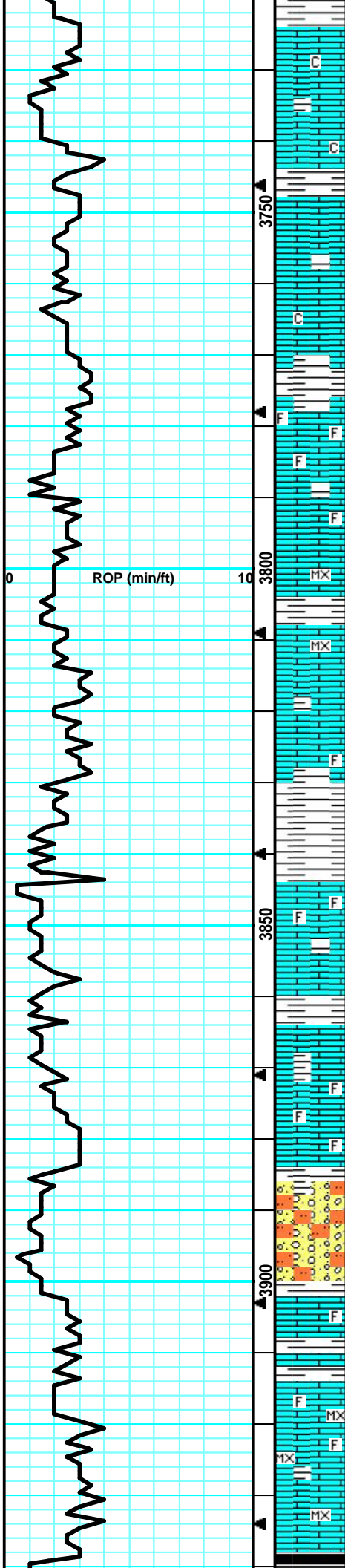
Stottler @ 3636' (-337)

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.

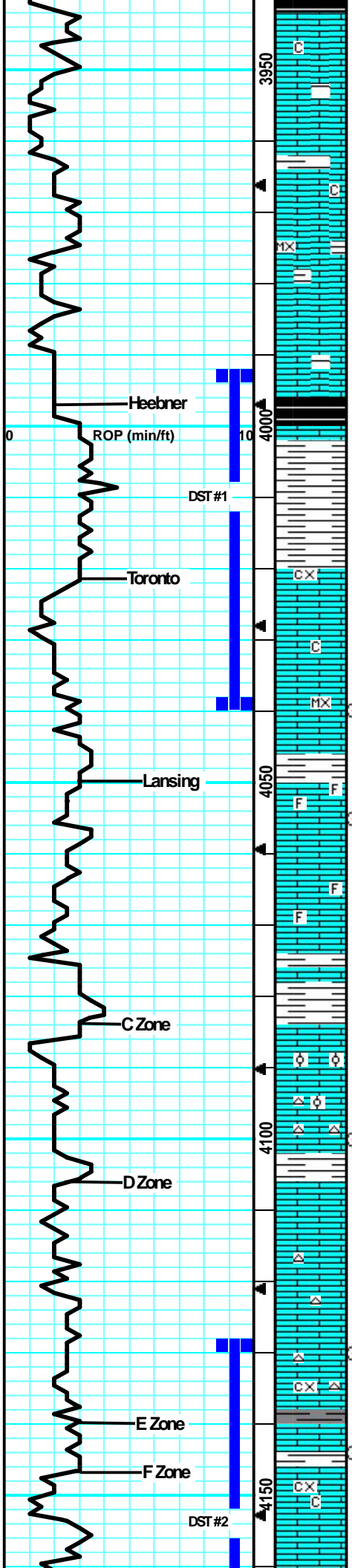
LS: lt tan, sing, fn xln, fw foss frags, sm dense, many brittle, tr-nvp, fw pcs pur chlk, no cup odr, ns.

LS: lt tan, sing, micro-fn xln, sm foss fuss/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")

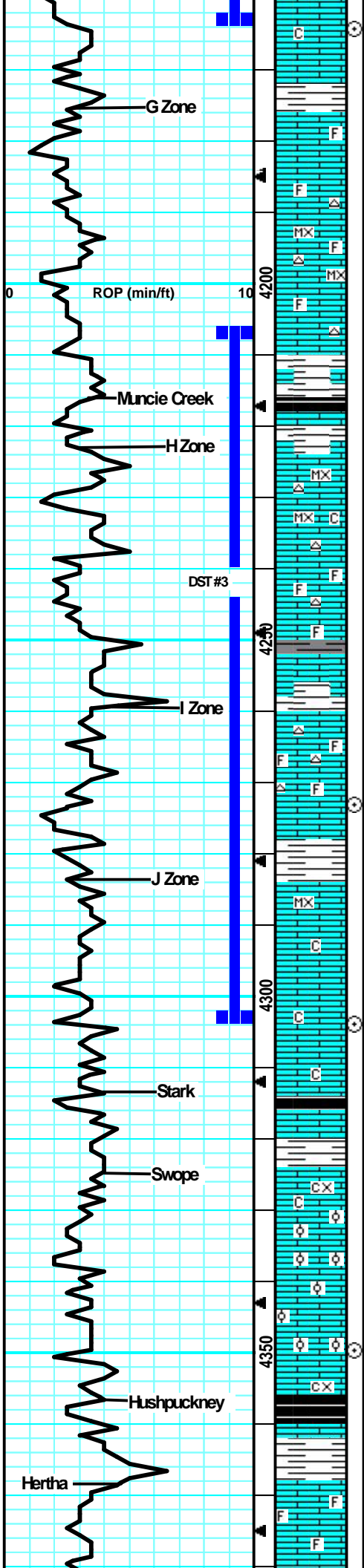
DST #2 4129-4164' "KC EF" 6/20/2015  
 30-45-45-60  
 1st Blw: Wk surf blwblt to 9" (No BB)  
 2nd Blw: Wk surf blwblt to 1/2" (No BB)  
 IFP: 21-127# ISIP: 1160# FFP: 113-188# FSIP: 1137#  
 HYD: 2060-1952#  
 Rec: 257' MCW (20%Wtr), 122' MCW (40%Wtr).

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 intxn 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 intxn 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")

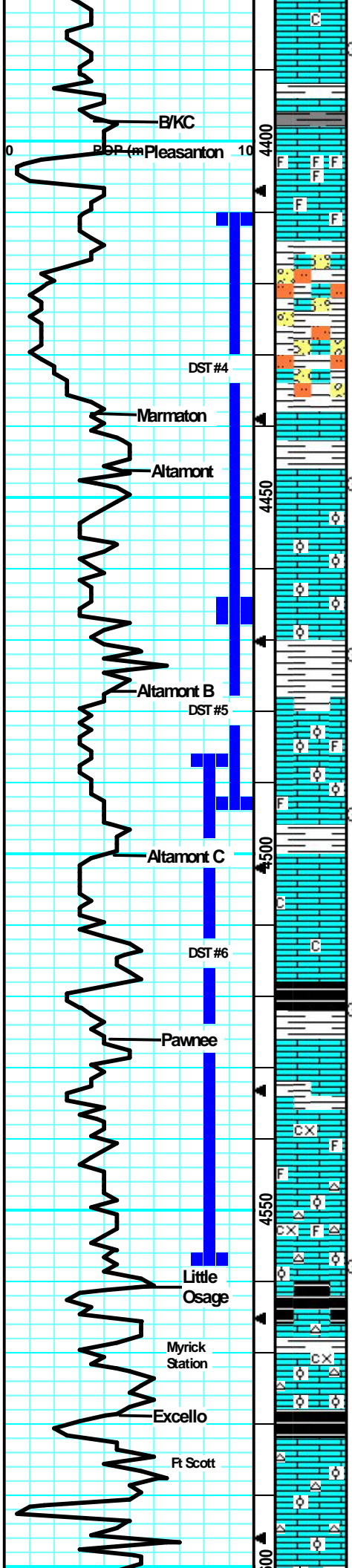
**Stark @ 4313' (-1014)**

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 2nd rxln, sm drk min stns, tr-nvp, fw SHt 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 SttStr: 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 SHt 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 SHt: 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 SHt 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 SHt 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 SHt 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 SHt 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 SHt 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 SHt 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")

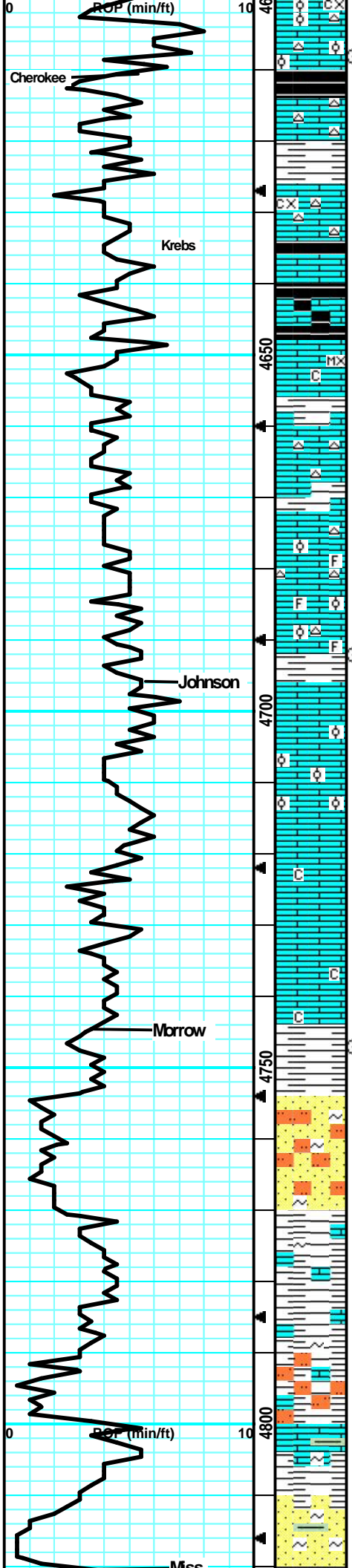
**Little Osage @ 4561' (-1262)**

**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.

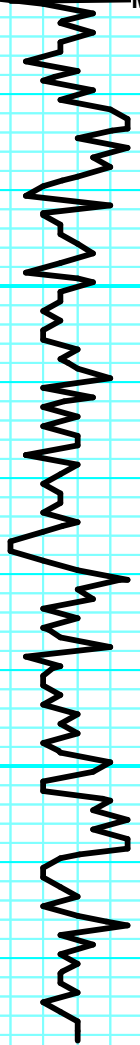
LS: lt gry/lt tan, sing, fn xln, many dense, sm sandy/gritty, sub-chlky in prt, tr-nvp, fw SH: gry, silty, fw fissile, no cup odr, ns.

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