

Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

Form ACO-1

January 2018

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

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: _____

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 <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i> Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No Cores Taken <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Run <input type="checkbox"/> Yes <input type="checkbox"/> No Geologist Report / Mud Logs <input type="checkbox"/> Yes <input type="checkbox"/> No List All E. Logs Run:	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample Name Top Datum
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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				

1. Did you perform a hydraulic fracturing treatment on this well? Yes No *(If No, skip questions 2 and 3)*
2. Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? Yes No *(If No, skip question 3)*
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 <i>(Explain)</i> _____			
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 <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <i>(Submit ACO-4)</i>	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 <i>(Amount and Kind of Material Used)</i>

TUBING RECORD:	Size:	Set At:	Packer At:	
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DIAMOND TESTING, LLC

TESTER : TIM VENTERS
CELL # 620-388-6333

General Information

Company Name	RITCHIE EXPLORATION, INC.	Job Number	T601
Contact	JUSTIN CLEGG	Representative	TIM VENTERS
Well Name	VMW LAND 16C #1	Well Operator	RITCHIE EXPLORATION, INC.
Unique Well ID	DST #1, ALTAMONT, 4510-4592	Report Date	2017/03/18
Surface Location	SEC 16-16S-38W, WICHITA CO. KS.	Prepared By	TIM VENTERS
Well License Number			
Field	WILDCAT		
Well Type	Vertical		

Test Information

Test Type	CONVENTIONAL
Formation	DST #1, ALTAMONT, 4510-4592
Well Fluid Type	01 Oil
Test Purpose	Initial Test

Start Test Date	2017/03/17	Start Test Time	17:34:00
Final Test Date	2017/03/18	Final Test Time	00:17:00

Gauge Name	5504
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Test Results

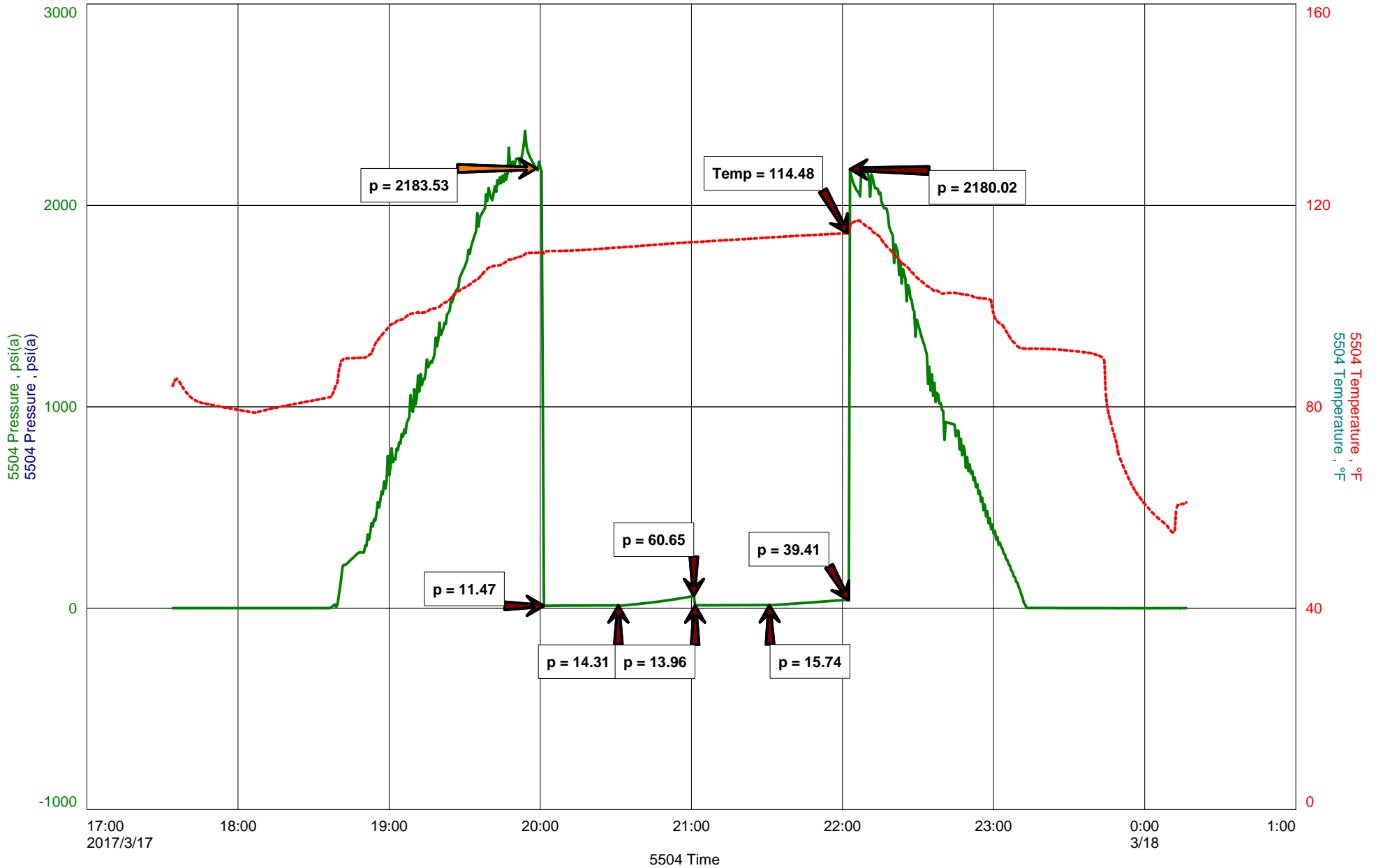
RECOVERY: 5' MUD

TOOL SAMPLE: 100% MUD

RITCHIE EXPLORATION, INC.
DST #1, ALTAMONT, 4510-4592
Start Test Date: 2017/03/17
Final Test Date: 2017/03/18

VMW LAND 16C #1
Formation: DST #1, ALTAMONT, 4510-4592
Pool: WILDCAT
Job Number: T601

VMW LAND 16C #1





DIAMOND TESTING
P.O. Box 157
HOISINGTON, KANSAS 67544
(800) 542-7313
DRILL-STEM TEST TICKET
FILE: VMWLAND16C1DST1

TIME ON: 17:34 3-17-17
TIME OFF: 00:17 3-18-17

Company RITCHIE EXPLORATION, INC. Lease & Well No. VMW LAND 16C #1
Contractor WW DRILLING, LLC RIG #10 Charge to RITCHIE EXPLORATION, INC.
Elevation 3452 KB Formation ALTAMONT Effective Pay _____ Ft. Ticket No. T601
Date 3-17-17 Sec. 16 Twp. 16 S Range 38 W County WICHITA State KANSAS
Test Approved By JOHN GOLDSMITH Diamond Representative TIM VENTERS

Formation Test No. 1 Interval Tested from 4510 ft. to 4592 ft. Total Depth 4592 ft.
Packer Depth 4505 ft. Size 6 3/4 in. Packer depth _____ ft. Size 6 3/4 in.
Packer Depth 4510 ft. Size 6 3/4 in. Packer depth _____ ft. Size 6 3/4 in.

Depth of Selective Zone Set _____
Top Recorder Depth (Inside) 4491 ft. Recorder Number 5504 Cap. 5,000 P.S.I.
Bottom Recorder Depth (Outside) 4589 ft. Recorder Number 11029 Cap. 5,025 P.S.I.
Below Straddle Recorder Depth _____ ft. Recorder Number _____ Cap. _____ P.S.I.

Mud Type CHEMICAL Viscosity 55 Drill Collar Length 123 ft. I.D. 2 1/4 in.
Weight 9.2 Water Loss 8.8 cc. Weight Pipe Length 0 ft. I.D. 2 7/8 in.
Chlorides 4,000 P.P.M. Drill Pipe Length 4354 ft. I.D. 3 1/2 in.
Jars: Make STERLING Serial Number 4 Test Tool Length 33 ft. Tool Size 3 1/2-IF in.
Did Well Flow? NO Reversed Out NO Anchor Length 19 ft. Size 4 1/2-FH in.
Main Hole Size 7 7/8 Tool Joint Size 4 1/2 XH in. ^{63' DP IN ANCHOR} Surface Choke Size 1 in. Bottom Choke Size 5/8 in.

Blow: 1st Open: WEAK SURFACE BLOW THROUGHOUT PERIOD. (NO BB)
2nd Open: NO BLOW THROUGHOUT PERIOD. (NO BB)

Recovered <u>5</u> ft. of <u>MUD</u>	
Recovered _____ ft. of _____	
Recovered _____ ft. of _____	
Recovered _____ ft. of _____	
Recovered _____ ft. of _____	Price Job
Recovered _____ ft. of _____	Other Charges
Remarks: _____	Insurance
TOOL SAMPLE: 100% MUD	Total

Time Set Packer(s) 8:01 PM ^{A.M.}/_{P.M.} Time Started Off Bottom 10:01 PM ^{A.M.}/_{P.M.} Maximum Temperature 114 deg.
Initial Hydrostatic Pressure..... (A) 2184 P.S.I.
Initial Flow Period..... Minutes 30 (B) 11 P.S.I. to (C) 14 P.S.I.
Initial Closed In Period..... Minutes 30 (D) 61 P.S.I.
Final Flow Period..... Minutes 30 (E) 14 P.S.I. to (F) 16 P.S.I.
Final Closed In Period..... Minutes 30 (G) 39 P.S.I.
Final Hydrostatic Pressure..... (H) 2180 P.S.I.

Diamond Testing shall not be liable for damages of any kind to the property or personnel of the one for whom a test is made or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statement or opinion concerning the result of any test. Tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.

DIAMOND TESTING, LLC

TESTER : TIM VENTERS
CELL # 620-388-6333

General Information

Company Name	RITCHIE EXPLORATION, INC.	Job Number	T602
Contact	JUSTIN CLEGG	Representative	TIM VENTERS
Well Name	VMW LAND 16C #1	Well Operator	RITCHIE EXPLORATION, INC.
Unique Well ID	DST #2, PAWNEE, 4590-4712	Report Date	2017/03/19
Surface Location	SEC 16-16S-38W, WICHITA CO. KS.	Prepared By	TIM VENTERS
Well License Number			
Field	WILDCAT		
Well Type	Vertical		

Test Information

Test Type	CONVENTIONAL
Formation	DST #2, PAWNEE, 4590-4712
Well Fluid Type	01 Oil
Test Purpose	Initial Test

Start Test Date	2017/03/18	Start Test Time	19:55:00
Final Test Date	2017/03/19	Final Test Time	02:19:00

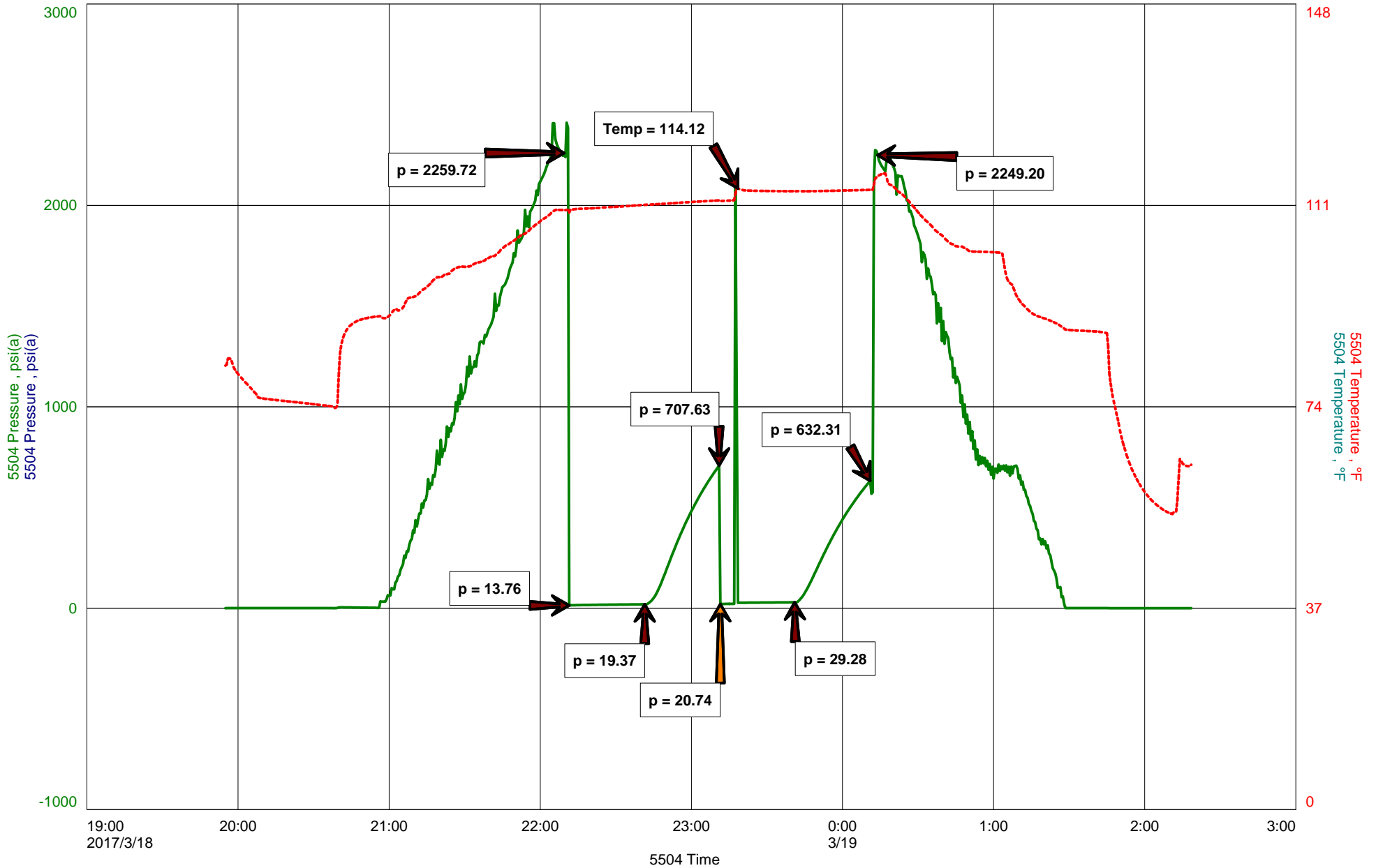
Gauge Name	5504
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Test Results

RECOVERED: 30' MUD

TOOL SAMPLE: OIL SPECKS, 100% MUD

VMW LAND 16C #1





DIAMOND TESTING
P.O. Box 157
HOISINGTON, KANSAS 67544
(800) 542-7313
DRILL-STEM TEST TICKET
FILE: VMWLAND16C1DST2

TIME ON: 19:55 3-18-17
TIME OFF: 02:19 3-19-17

Company RITCHIE EXPLORATION, INC. Lease & Well No. VMW LAND 16C #1
Contractor WW DRILLING, LLC RIG #10 Charge to RITCHIE EXPLORATION, INC.
Elevation 3452 KB Formation PAWNEE Effective Pay _____ Ft. Ticket No. T602
Date 3-18-17 Sec. 16 Twp. 16 S Range 38 W County WICHITA State KANSAS
Test Approved By JOHN GOLDSMITH Diamond Representative TIM VENTERS

Formation Test No. 2 Interval Tested from 4590 ft. to 4712 ft. Total Depth 4712 ft.
Packer Depth 4585 ft. Size 6 3/4 in. Packer depth _____ ft. Size 6 3/4 in.
Packer Depth 4590 ft. Size 6 3/4 in. Packer depth _____ ft. Size 6 3/4 in.

Depth of Selective Zone Set _____

Top Recorder Depth (Inside) 4571 ft. Recorder Number 5504 Cap. 5,000 P.S.I.
Bottom Recorder Depth (Outside) 4709 ft. Recorder Number 11029 Cap. 5,025 P.S.I.
Below Straddle Recorder Depth _____ ft. Recorder Number _____ Cap. _____ P.S.I.

Mud Type CHEMICAL Viscosity 65 Drill Collar Length 123 ft. I.D. 2 1/4 in.
Weight 9.3 Water Loss 10.4 cc. Weight Pipe Length 0 ft. I.D. 2 7/8 in.
Chlorides 5,000 P.P.M. Drill Pipe Length 4434 ft. I.D. 3 1/2 in.
Jars: Make STERLING Serial Number 4 Test Tool Length 33 ft. Tool Size 3 1/2-IF in.
Did Well Flow? NO Reversed Out NO Anchor Length 27 ft. Size 4 1/2-FH in.
Main Hole Size 7 7/8 Tool Joint Size 4 1/2 XH in. ^{95' DP IN ANCHOR} Surface Choke Size 1 in. Bottom Choke Size 5/8 in.

Blow: 1st Open: WEAK SURFACE BLOW, BUILDING TO 1/4 INCH. (NO BB)
2nd Open: VERY WEAK SURFACE BLOW, LASTING 4 1/2 MIN. (NO BB)

Recovered 30 ft. of MUD
Recovered _____ ft. of _____
Recovered _____ ft. of _____
Recovered _____ ft. of _____
Recovered _____ ft. of _____
Recovered _____ ft. of _____

Remarks: <u>WE FLUSHED TOOL 5 MIN. INTO FINAL FLOW PERIOD AND GOT A WEAK SURFACE BLOW THAT LASTED 13 MIN.</u> <u>TOOL SAMPLE: OIL SPECKS, 100% MUD</u>	Price Job
	Other Charges
	Insurance
	Total

Time Set Packer(s) 10:11 PM ^{A.M.}/_{P.M.} Time Started Off Bottom 12:11 AM ^{A.M.}/_{P.M.} Maximum Temperature 114 deg.

Initial Hydrostatic Pressure..... (A) 2260 P.S.I.
Initial Flow Period..... Minutes 30 (B) 14 P.S.I. to (C) 19 P.S.I.
Initial Closed In Period..... Minutes 30 (D) 708 P.S.I.
Final Flow Period..... Minutes 30 (E) 21 P.S.I. to (F) 29 P.S.I.
Final Closed In Period..... Minutes 30 (G) 632 P.S.I.
Final Hydrostatic Pressure..... (H) 2249 P.S.I.

Diamond Testing shall not be liable for damages of any kind to the property or personnel of the one for whom a test is made or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statement or opinion concerning the result of any test. Tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



#1 VMW Land 16C

1400' FSL & 695' FWL

80' N & 35' E of W/2 SW/4 Section 16-16S-38W

Wichita County, Kansas

API# 15-203-20313-0000

Elevation: GL: 3447', KB: 3452'

Sample Tops			Ref. Well
Anhydrite	2625'	+826	+13
B/Anhydrite	2647'	+804	+12
Heebner	4042'	-590	+28
Toronto	4065'	-613	+29
Lansing	4094'	-642	+32
Muncie Shale	4286'	-834	+31
Stark Shale	4389'	-937	+27
Hush Shale	4450'	-998	+19
BKC	4489'	-1037	+29
Marmaton	4540'	-1088	+18
Altamont	4554'	-1102	+19
Pawnee	4610'	-1158	+40
Myrick	4650'	-1198	+46
Fort Scott	4666'	-1214	+44
Cherokee Shale	4700'	-1248	+40
Johnson	4799'	-1347	+43
Morrow Shale	4868'	-1416	+48
Mississippian	4995'	-1543	+57
RTD	5120'	-1668	



CONSOLIDATED
Oil Well Services, LLC

1762-1670

TICKET NUMBER 51712
LOCATION Orkley's
FOREMAN Jerry

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

FIELD TICKET & TREATMENT REPORT
CEMENT

Invoice # 80983

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY
3-11-17	7173	VMW land 16c #1	16	16S	38W	Wichita
CUSTOMER Ritchie Exp			Russell			
MAILING ADDRESS P.O. Box 783188			TRUCK #	DRIVER	TRUCK #	DRIVER
CITY Wichita			731	Cory D		
STATE KS			479	Travis J		
ZIP CODE 67218-3188						

JOB TYPE Surface HOLE SIZE 12 1/4 HOLE DEPTH 229 CASING SIZE & WEIGHT 8 5/8 234
 CASING DEPTH 229 DRILL PIPE _____ TUBING _____ OTHER _____
 SLURRY WEIGHT 14.8 SLURRY VOL 1.24 WATER gal/sk _____ CEMENT LEFT in CASING 20'
 DISPLACEMENT 13 1/4 DISPLACEMENT PSI _____ MIX PSI _____ RATE _____

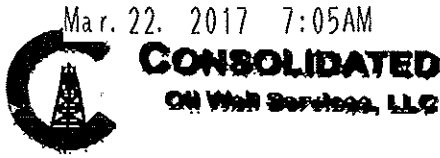
REMARKS: Safety meeting & rig up on well to break circulation with rig free mix 165 sks surface blend II wash up & displace with 13 1/4 bbl fresh H₂O & shot in.

Cement did circulate

Thank you Jerry & crew

ACCOUNT CODE	QUANTITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
PE0471	1	PUMP CHARGE	1150 ⁰⁰	1150 ⁰⁰
CE0002	45	MILEAGE	7.15	321.75
CE0711	7.76	ton mileage delivery	660 ⁰⁰	660 ⁰⁰
CC5871	165 sks	surface blend II	23 ⁰⁰	3795 ⁰⁰
CC5326	100 #	salt	NA	NA
			Subtotal	5926.75
			-458	2667.00
			Subtotal	3259.25
			SALES TAX	177.42
			ESTIMATED TOTAL	3437.13

Rev'n 3737 AUTHORIZATION [Signature] TITLE _____ DATE _____



Mar. 22. 2017 7:05AM

No. 0323 P. 2

7801/769

TICKET NUMBER 51718

LOCATION Oakley KS

FOREMAN Jerry N

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

FIELD TICKET & TREATMENT REPORT
CEMENT

Invoice # 809866 KS

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY												
3-20-17	7173	VMV Land 16C 4/1	16	165	38W	Wichita												
CUSTOMER Ritchie Exp																		
MAILING ADDRESS P.O. Box 783188																		
CITY Wichita		STATE KS	ZIP CODE 67278-3188															
<table border="1"> <thead> <tr> <th>TRUCK #</th> <th>DRIVER</th> <th>TRUCK #</th> <th>DRIVER</th> </tr> </thead> <tbody> <tr> <td>731</td> <td>Cory D</td> <td></td> <td></td> </tr> <tr> <td>460</td> <td>Travis W</td> <td></td> <td></td> </tr> </tbody> </table>							TRUCK #	DRIVER	TRUCK #	DRIVER	731	Cory D			460	Travis W		
TRUCK #	DRIVER	TRUCK #	DRIVER															
731	Cory D																	
460	Travis W																	

JOB TYPE plug	HOLE SIZE 7 7/8	HOLE DEPTH 5720	CASING SIZE & WEIGHT
CASING DEPTH	DRILL PIPE 4 1/2	TUBING	OTHER
SLURRY WEIGHT 13.8	SLURRY VOL 1.42	WATER gal/sk	CEMENT LEFT in CASING
DISPLACEMENT	DISPLACEMENT PSI	MIX PSI	RATE

REMARKS: Safety meeting - rig up on W/W 10 plug as ordered with 270 sks
 lite blend & 1/4" flo seal ASK
 50 sks @ 2670'
 80 sks @ 1620'
 40 sks @ 810'
 60 sks @ 240'
 20 sks @ 60'
 30 sks R.H.

Thank you
Jerry & crew

ACCOUNT CODE	QUANTITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
CE0451	1	PUMP CHARGE	1900.00	1900.00
CE0002	45	MILEAGE	7.15	321.75
CE0710	11.61	ton mileage delivery	135	914.295
CC5829	270 sks	lite blend	16.00	4320.00
CC6075	68 #	flo seal	3.00	204.00
			Subtotal	7660.04
			-45%	3447.92
			Subtotal	4213.03
			SALES TAX	211.49
			ESTIMATED TOTAL	4424.51

RAVIN 9737 AUTHORIZATION [Signature] TITLE DATE

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
(316) 640-0236

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.

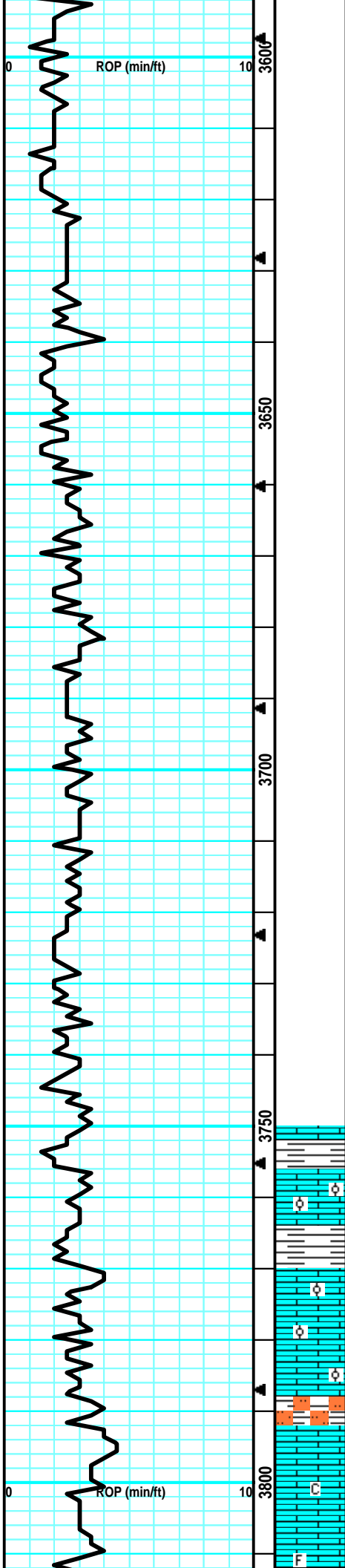
ROCK TYPES

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

ACCESSORIES

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

<p>Drilling Time</p> <p>ROP (min/ft) ———</p>	<p>Depth</p>	<p>Lithology</p>	<p>CFS Point</p>	<p>Oil Shows</p>	<p>Geological Descriptions</p>	<p>Remarks</p>
	<p>0</p> <p>10</p> <p>2650</p>				<p>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>3500</p>				<p>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>
	<p>3550</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.

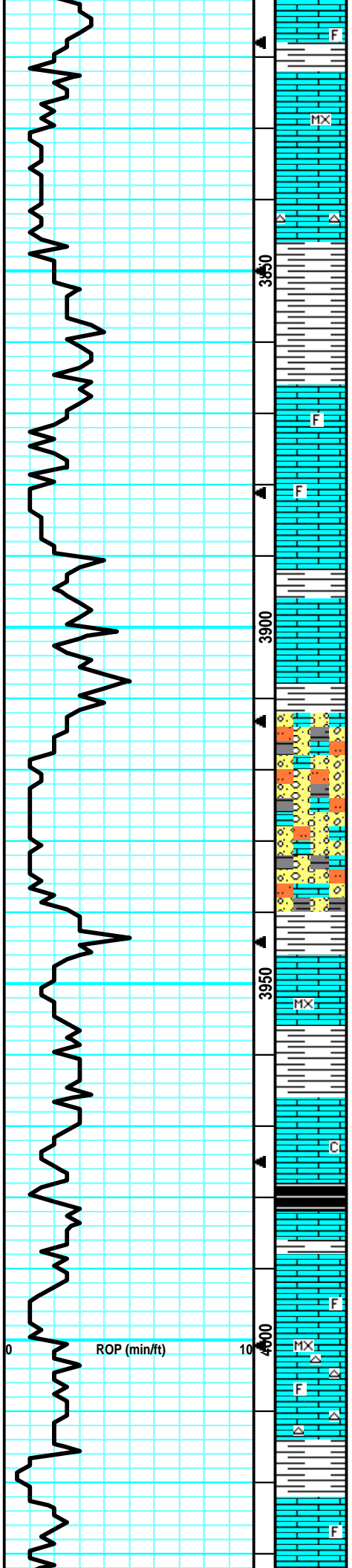
LS: tan/lt gry, slight mott in prt, fn xln, fw ool, many dense, sm brittle, tr-nvp, no odr, ns.

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 SltStn: 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)

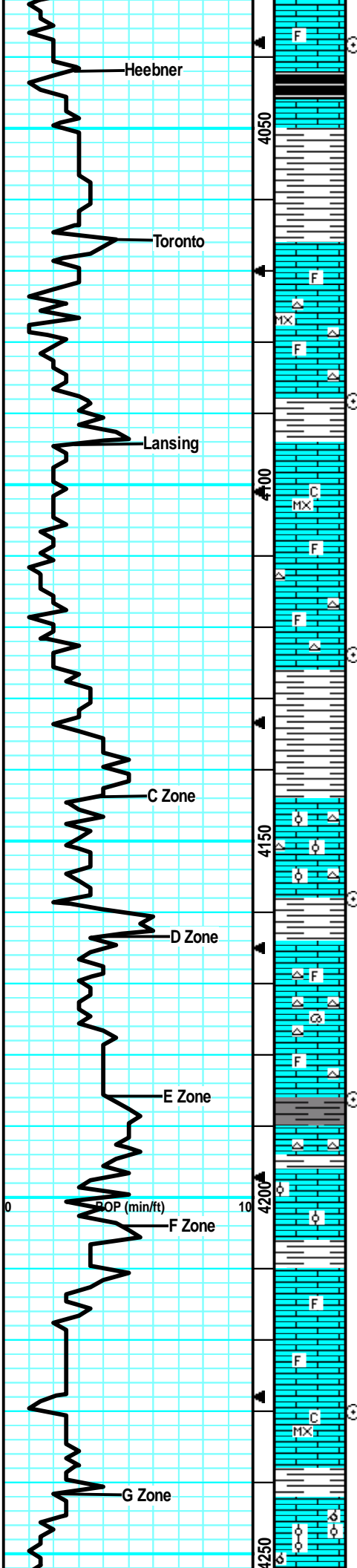
CFS @ 4124'
(30"/60")

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

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

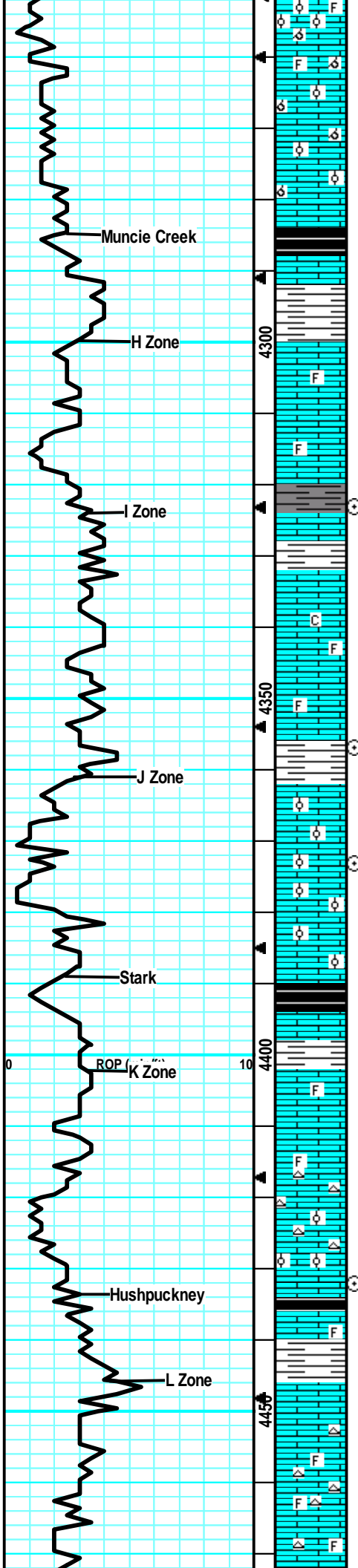
LS: lt gry/tan, slight mott, fn xln, fw foss frags, mostly firm, many flakey, fw sub-chlky, tr-nvp, no cup odr, ns.

LS: lt gry/lt tan, slight 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 slight 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.

Muncie Creek @ 4285' (-833)

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.

CFS @ 4323'
(30"/60")

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.

CFS @ 4357'
(30"/60")

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.

CFS @ 4373'
(30"/60")

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.

Stark @ 4389' (-937)

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.

CFS @ 4432'
(30"/60")

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

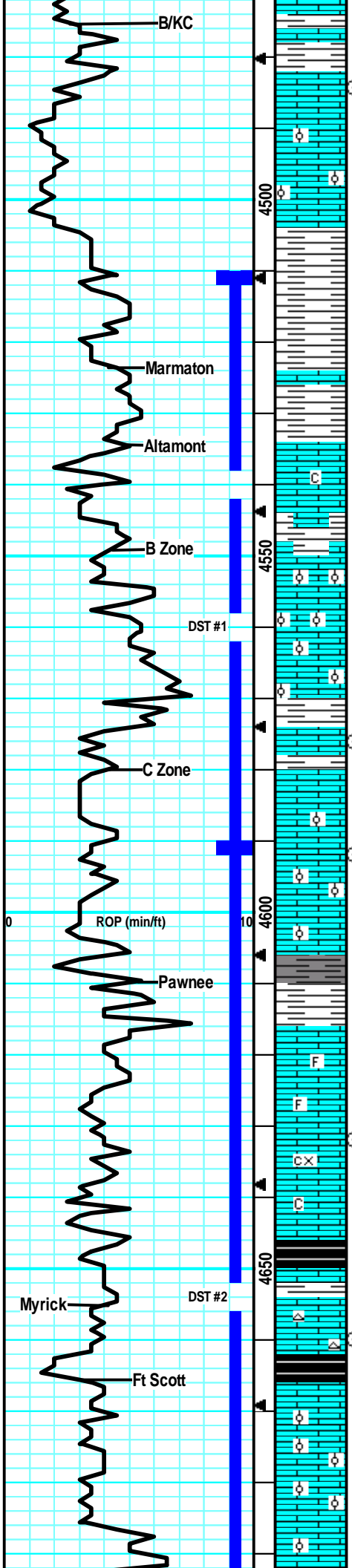
Hushpuckney @ 4434' (-982)

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.



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)

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

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")

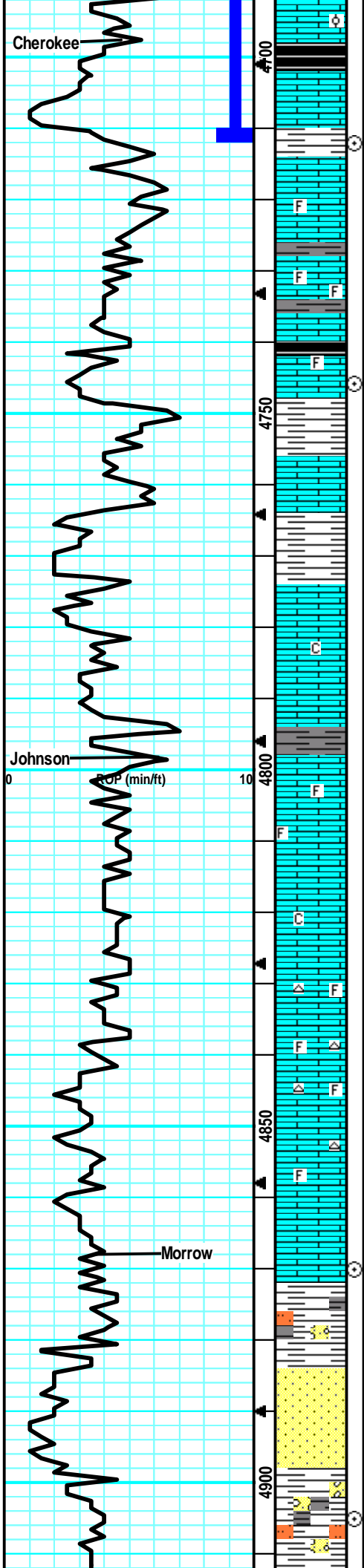
MudCo Check #7 @ 4638'
03/18/17 @ 8:30am
Wt: 9.3 Vis: 65
pH: 10.0 Fil: 10.4
Chr: 5K LCM: 1#

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.



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")

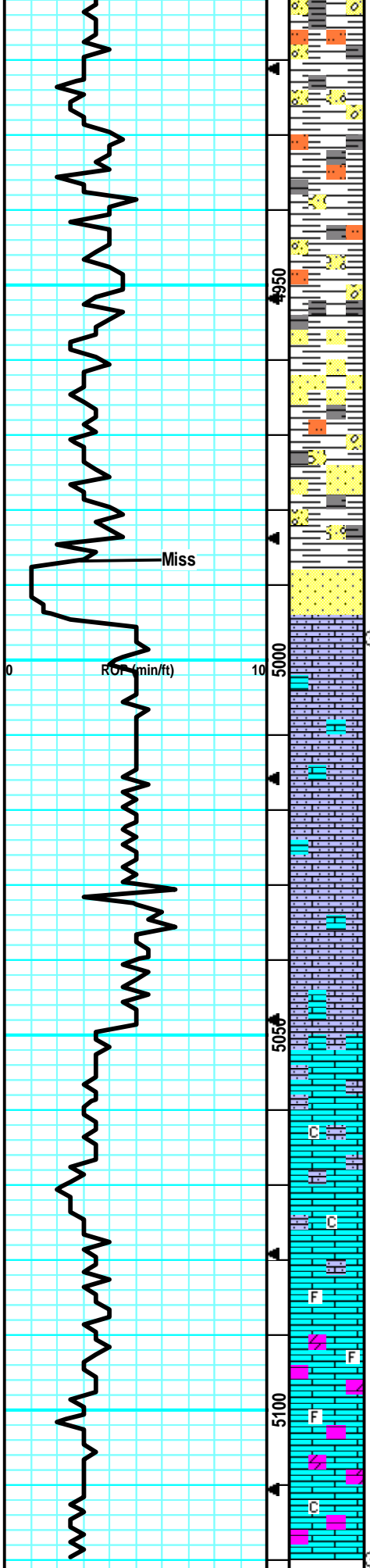
MudCo Check #8 @ 4746'
03/19/17 @ 8:20am
Wt: 9.3 Vis: 53
pH: 10.0 Filt: 9.6
Chlr: 6K LCM: 1#

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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