

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](mailto: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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EXPLORATION, INC.  
Wichita, Kansas

### #1 Eaton Enterprises

1,118' FNL & 736' FWL  
S/2 NW/4 NW/4 Section 30-16S-31W (*Irregular Section*)  
Scott County, Kansas  
API# 15-171-21226-0000  
Elevation: GL: 2,956', KB: 2,967'

Sample Tops			Ref. Well
Anhydrite	2346	+621	+4
B/Anhydrite	2364	+603	+6
Stotler	3553	-586	+3
Heebener	3934	-967	+4
Toronto	3954	-987	+3
Lansing	3973	-1006	+5
Muncie	4152	-1185	Flat
Stark	4251	-1284	-3
Hush	4296	-1329	-5
BKC	4334	-1367	-2
Marmaton	4366	-1399	-1
Altamont	4396	-1429	-4
Pawnee	4462	-1495	-4
Myrick	4498	-1531	-5
Ft. Scott	4514	-1547	-6
Cherokee	4540	-1573	-8
Johnson	4580	-1613	-6
Morrow Shale	4611	-1644	-7
Mississippian	4643	-1676	-9
RTD	4730	-1763	



SM-11033  
 PO-17239  
 FT-10924

TICKET NUMBER 55235  
 LOCATION Dakley, Ks  
 FOREMAN Walt Dunkel

PRESSURE PUMPING LLC  
 PO Box 884, Chanute, KS 66720  
 620-431-9210 or 800-487-8876

FIELD TICKET & TREATMENT REPORT  
**CEMENT**

Invoice # **813551**

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY
6-30-18	7173	Easton Enterprises #1	30	16S	31W	Scott
CUSTOMER <u>Ritchie Explorations</u>						
MAILING ADDRESS <u>P.O. Box 783188</u>						
CITY <u>Wichita</u>						
STATE <u>Ks</u>						
ZIP CODE <u>67218-3188</u>						

TRUCK #	DRIVER	TRUCK #	DRIVER
731	Corey Davis		
693	Walt Dunkel		
	Corey Wilson		

JOB TYPE Surface HOLE SIZE 12 1/4 HOLE DEPTH 267' CASING SIZE & WEIGHT 8 5/8 - 23#  
 CASING DEPTH 267 DRILL PIPE \_\_\_\_\_ TUBING \_\_\_\_\_ OTHER \_\_\_\_\_  
 SLURRY WEIGHT 15.2 SLURRY VOL \_\_\_\_\_ WATER gal/bk \_\_\_\_\_ CEMENT LEFT In CASING 15' 20'  
 DISPLACEMENT 15 3/4 DISPLACEMENT PSI \_\_\_\_\_ MIX PSI \_\_\_\_\_ RATE 4 BPM

REMARKS: Safety Meeting, rig up on MucFin #21, Circ. casing on bottom,  
mix 190 SKs cam, 3% cc, 2% gel, Displace 15 3/4 BBL H<sub>2</sub>O. Shut in  
Cement Did Circ  
Approx 3 BBL to Pit

Thank You  
 Walt + Crew

ACCOUNT CODE	QUANTITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
Ceo 471	1	PUMP CHARGE	1,150.00	1,150.00
Ceo 002	40	MILEAGE	7.15	286.00
Ceo 711	8.93	Tax Mileage Delivery	1.75	660.00
CC5871	190 SKs	Surface Blend	24.00	4,560.00
				6,656.00
		Less 30% Disc		1,996.80
				4,659.20
		8.5	SALES TAX	\$271.32
			ESTIMATED TOTAL	\$4,930.52

Rev'n 3737

AUTHORIZATION JUAN TIMOLO TITLE Pusher 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.





TICKET 27339

PAGE 1 OF 3

CHARGE TO: Ritchie Exploration  
 ADDRESS: \_\_\_\_\_  
 CITY, STATE, ZIP CODE: \_\_\_\_\_

WELL PROJECT NO. #1  
 TICKET TYPE:  SERVICE  SALES  
 CONTRACTOR: Murfin Drilling  
 WELL TYPE: Oil  
 LEASE: Eaton Enterprises  
 COUNTY/PARISH: Scott  
 STATE: Ks  
 CITY: \_\_\_\_\_  
 DATE: 4-11-18  
 ORDER NO.: \_\_\_\_\_  
 DELIVERED TO: Local  
 WELL PERMIT NO.: \_\_\_\_\_  
 WELL LOCATION: \_\_\_\_\_

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING		DESCRIPTION	QTY.	U/M	QTY.	U/M	UNIT PRICE	AMOUNT
		LOC	ACCT							
575	1			MILEAGE Trk #111	60	mi			5.00	300.00
578	1			Pump Charge - long string	1	EA			1300.00	1300.00
290	1			A-Air	2	BA			42.00	84.00
221	1			Liquid hcr	2	BA			25.00	50.00
281	1			Mudflush	500	BA			1.50	750.00
403	1			Cement Basket	5	EA		5 1/2	275.00	1375.00
404	1			Part Collar	1	EA			2500.00	2500.00
406	1			Latch Down Plug & Basket	1	EA			250.00	250.00
407	1			Insert Floor Shoe w/ Auto Fill	1	EA			325.00	325.00
409	1			Turbolizer	10	EA			85.00	850.00
				Rotating Head Rental	1	EA			200.00	200.00

SURVEY: \_\_\_\_\_  
 OUR EQUIPMENT PERFORMED WITHOUT BREAKDOWN?   
 WE UNDERSTOOD AND MET YOUR NEEDS?   
 OUR SERVICE WAS PERFORMED WITHOUT DELAY?   
 WE OPERATED THE EQUIPMENT AND PERFORMED JOB CALCULATIONS SATISFACTORILY?   
 ARE YOU SATISFIED WITH OUR SERVICE?  YES  NO  
 CUSTOMER DID NOT WISH TO RESPOND

REMIT PAYMENT TO:  
 SWIFT SERVICES, INC.  
 P.O. BOX 466  
 NESS CITY, KS 67560  
 785-798-2300

LEGAL TERMS: Customer hereby acknowledges and agrees to the terms and conditions on the reverse side hereof which include, but are not limited to, PAYMENT, RELEASE, INDEMNITY, and LIMITED WARRANTY provisions.  
 MUST BE SIGNED BY CUSTOMER OR CUSTOMER'S AGENT PRIOR TO START OF WORK OR DELIVERY OF GOODS  
 DATE SIGNED: \_\_\_\_\_ TIME SIGNED:  A.M.  P.M.  
 APPROVAL: \_\_\_\_\_  
 CUSTOMER ACCEPTANCE OF MATERIALS AND SERVICES: The customer hereby acknowledges receipt of the materials and services listed on this ticket.

SWIFT OPERATOR: David Edgerton  
 TOTAL: 13815.30  
 Thank You!





JOB LOG

SWIFT Services, Inc.

DATE 7-11-18 PAGE NO. 3

CUSTOMER *Kitchie Exploration* WELL NO. #1 LEASE *Eaton Enterprises* JOB TYPE *Long String* TICKET NO. *27339*

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	2030							On location
								Rtd - 4730'
								Pipe set @ 4726
								Insert @ 4706
								Port Collar # 56 @ 2340
								Centralizers - 1, 3, 5, 8, 10, 12, 14, 16, 53, 57
								Baskets - 9, 15, 56, 69, 89
	2025							Start running Csg
	130							Break Circ on Bottom
		2.5	8			0		Plug Rat hole - 30 sts
		2.5	6			0		Plug mouse hole - 20 sts
		5	12			300		Pump mudflush - 500 gal
		5	20			300		Pump 1/2" spacer
	240	5	47			300		Pump Cmt - 190 sts @ 14.9 ppG
								Drop Plug - wash P&L
	300	7.5	0			200		Start Disp
		7.5	80			500		Catch Pressure
	315	6	112			800		land plug - lift psi - 800 #
								land psi - 1500 #
								Release Psi - Dry
								Job Complete
								Thanks
								David, Zuel & Isaac



# Company: Ritchie Exploration, Inc.

## Lease: Eaton Enterprises #1

SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Unknown  
Pool: Infield  
Job Number: 183

**DATE**  
July  
**04**  
2018

**DST #1**      **Formation: O read A zone**      **Test Interval: 3872 - 3894'**      **Total Depth: 3894'**  
Time On: 00:24 07/04      Time Off: 08:00 07/04  
Time On Bottom: 02:40 07/04      Time Off Bottom: 05:40 07/04

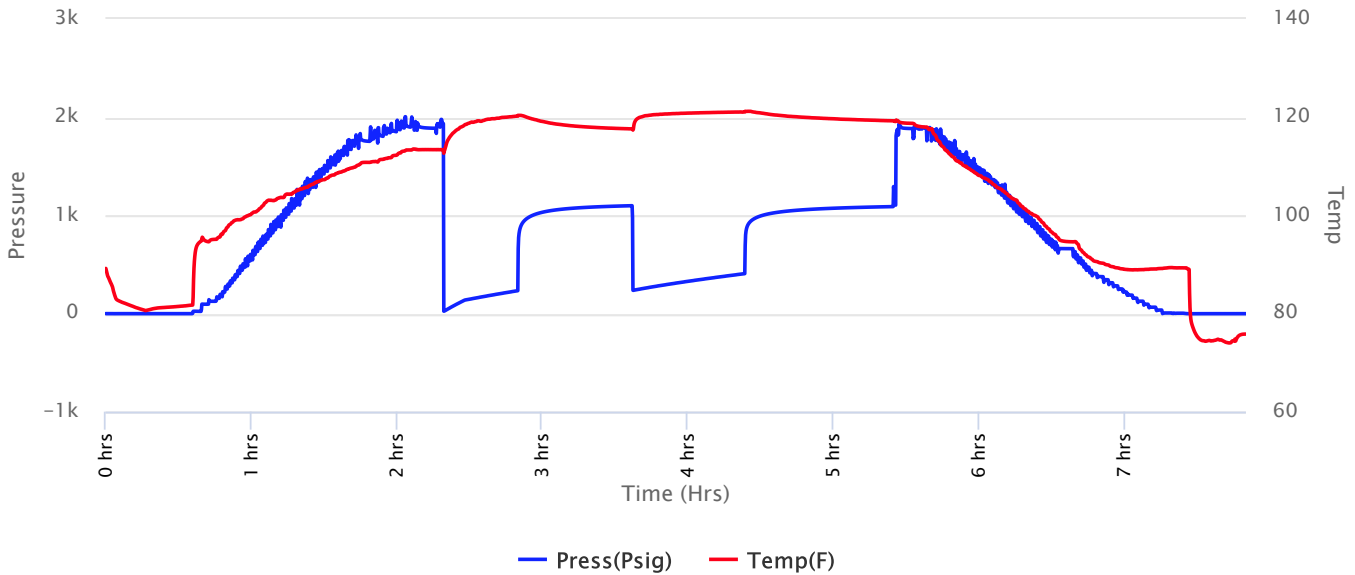
Electronic Volume Estimate:  
908'

1st Open  
Minutes: 30  
32.4" at 30 min

1st Close  
Minutes: 45  
0" at 45 min

2nd Open  
Minutes: 45  
42" at 45 min

2nd Close  
Minutes: 60  
0" at 60 min





**Company: Ritchie Exploration, Inc.**

**Lease: Eaton Enterprises #1**

SEC: 30 TWN: 16S RNG: 31W  
 County: SCOTT  
 State: Kansas  
 Drilling Contractor: Murfin Drilling Company, Inc - Rig 21  
 Elevation: 2956 GL  
 Field Name: Unknown  
 Pool: Infield  
 Job Number: 183

**DATE**  
 July  
**04**  
 2018

**DST #1**      **Formation: O read A zone**      **Test Interval: 3872 - 3894'**      **Total Depth: 3894'**  
 Time On: 00:24 07/04      Time Off: 08:00 07/04  
 Time On Bottom: 02:40 07/04      Time Off Bottom: 05:40 07/04

Recovered

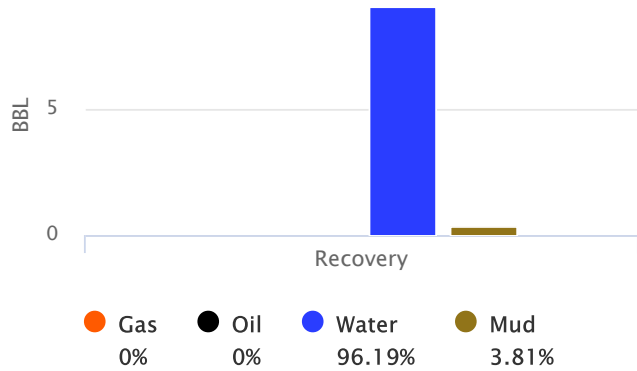
Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
45	0.64035	MCW	0	0	80	20
126	1.79298	SLMCW	0	0	95	5
252	3.58596	SLMCW	0	0	97	3
441	3.4226598	SLMCW	0	0	99	1

Total Recovered: 864 ft  
 Total Barrels Recovered: 9.4419498

**Reversed Out  
 NO**

Initial Hydrostatic Pressure      1890      PSI  
 Initial Flow      23 to 233      PSI  
**Initial Closed in Pressure      1098      PSI**  
 Final Flow Pressure      236 to 406      PSI  
**Final Closed in Pressure      1089      PSI**  
 Final Hydrostatic Pressure      1888      PSI  
 Temperature      122      °F  
  
 Pressure Change Initial      0.8      %  
 Close / Final Close

**Recovery at a glance**





**Company: Ritchie Exploration,  
Inc.**

**Lease: Eaton Enterprises #1**

SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling  
Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Unknown  
Pool: Infield  
Job Number: 183

<b>DATE</b> July <b>04</b> 2018
--

<b>DST #1</b>	<b>Formation: O read A zone</b>	<b>Test Interval: 3872 - 3894'</b>	<b>Total Depth: 3894'</b>
	Time On: 00:24 07/04	Time Off: 08:00 07/04	
	Time On Bottom: 02:40 07/04	Time Off Bottom: 05:40 07/04	

**REMARKS:**

If: 1/2" bob in 9min

Ic: nobb

Ff: wsb bob in 11 1/2min

Fc: nobb

Toolsample: 97w - 3m oil spec

Ph: 7

RW: .15 @ 75 degrees F

Chlorides: 46000 ppm



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County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Unknown  
Pool: Infield  
Job Number: 183

<b>DATE</b> July <b>04</b> 2018
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**DST #1**      **Formation: O read A zone**      **Test Interval: 3872 - 3894'**      **Total Depth: 3894'**  
Time On: 00:24 07/04      Time Off: 08:00 07/04  
Time On Bottom: 02:40 07/04      Time Off Bottom: 05:40 07/04

### Down Hole Makeup

<b>Heads Up:</b> 16.98 FT	<b>Packer 1:</b> 3867 FT
<b>Drill Pipe:</b> 3549.99 FT <i>ID-3 1/2</i>	<b>Packer 2:</b> 3872 FT
<b>Weight Pipe:</b> FT <i>ID-2 7/8</i>	<b>Top Recorder:</b> 3856.42 FT
<b>Collars:</b> 306.42 FT <i>ID-2 1/4</i>	<b>Bottom Recorder:</b> 3874 FT
<b>Test Tool:</b> 33.57 FT <i>ID-3 1/2-FH</i> <i>Jars</i> <i>Safety Joint</i>	<b>Well Bore Size:</b> 7 7/8
<b>Total Anchor:</b> 22	<b>Surface Choke:</b> 1"
	<b>Bottom Choke:</b> 5/8"

#### Anchor Makeup

**Packer Sub:** 1 FT

**Perforations: (top):** FT  
*4 1/2-FH*

**Change Over:** FT

**Drill Pipe: (in anchor):** FT  
*ID-3 1/2*

**Change Over:** FT

**Perforations: (below):** 21 FT  
*4 1/2-FH*







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 County: SCOTT  
 State: Kansas  
 Drilling Contractor: Murfin Drilling Company, Inc - Rig 21  
 Elevation: 2956 GL  
 Field Name: Unknown  
 Pool: Infield  
 Job Number: 183

**DATE**  
 July  
**04**  
 2018

**DST #2**      **Formation: Lansing C**      **Test Interval: 3994 - 4016'**      **Total Depth: 4016'**  
 Time On: 23:18 07/04      Time Off: 06:14 07/05  
 Time On Bottom: 01:45 07/05      Time Off Bottom: 04:00 07/05

Recovered

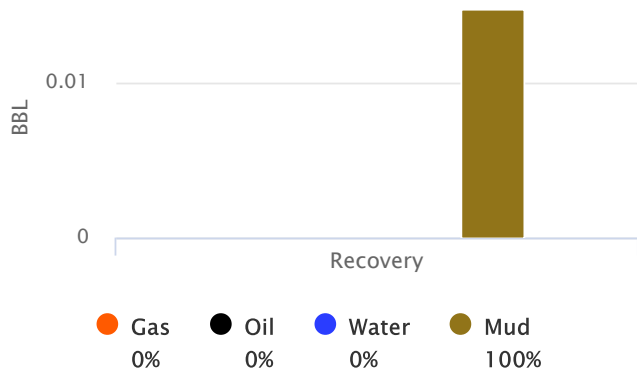
<u>Foot</u>	<u>BBLs</u>	<u>Description of Fluid</u>	<u>Gas %</u>	<u>Oil %</u>	<u>Water %</u>	<u>Mud %</u>
3	0.01476	M	0	0	0	100

Total Recovered: 3 ft  
 Total Barrels Recovered: 0.01476

Reversed Out  
 NO

Initial Hydrostatic Pressure	1951	PSI
Initial Flow	10 to 17	PSI
<b>Initial Closed in Pressure</b>	<b>791</b>	<b>PSI</b>
Final Flow Pressure	19 to 23	PSI
<b>Final Closed in Pressure</b>	<b>733</b>	<b>PSI</b>
Final Hydrostatic Pressure	1945	PSI
Temperature	117	°F
Pressure Change Initial Close / Final Close	7.3	%

**Recovery at a glance**











**Company: Ritchie Exploration,  
Inc.**

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SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling  
Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Unknown  
Pool: Infield  
Job Number: 183

<b>DATE</b> July <b>04</b> 2018
--

<b>DST #2</b>	<b>Formation: Lansing C</b>	<b>Test Interval: 3994 - 4016'</b>	<b>Total Depth: 4016'</b>
	Time On: 23:18 07/04	Time Off: 06:14 07/05	
	Time On Bottom: 01:45 07/05	Time Off Bottom: 04:00 07/05	

### **Mud Properties**

<b>Mud Type:</b> Chemical	<b>Weight:</b> 8.9	<b>Viscosity:</b> 67	<b>Filtrate:</b> 7.2	<b>Chlorides:</b> 4000 ppm
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# Company: Ritchie Exploration, Inc.

## Lease: Eaton Enterprises #1

SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Michigan West  
Pool: Infield  
Job Number: 183

**DATE**  
July  
**05**  
2018

**DST #3**      **Formation: Lansing D,E,F**      **Test Interval: 4050 - 4085'**      **Total Depth: 4085'**  
Time On: 17:37 07/05      Time Off: 01:20 07/06  
Time On Bottom: 19:55 07/05      Time Off Bottom: 22:55 07/05

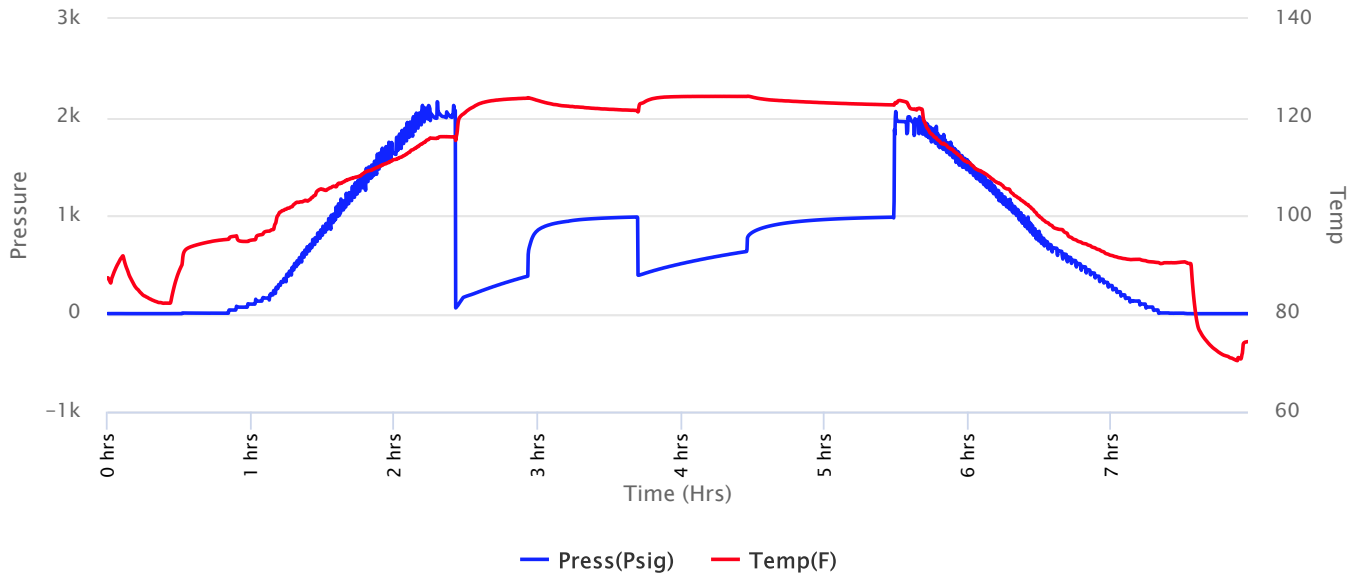
Electronic Volume Estimate:  
1517'

1st Open  
Minutes: 30  
69.6" at 30 min

1st Close  
Minutes: 45  
0" at 45 min

2nd Open  
Minutes: 45  
70" at 45 min

2nd Close  
Minutes: 60  
0" at 60 min





# Company: Ritchie Exploration, Inc.

## Lease: Eaton Enterprises #1

SEC: 30 TWN: 16S RNG: 31W  
 County: SCOTT  
 State: Kansas  
 Drilling Contractor: Murfin Drilling Company, Inc - Rig 21  
 Elevation: 2956 GL  
 Field Name: Michigan West  
 Pool: Infield  
 Job Number: 183

**DATE**  
 July  
**05**  
 2018

**DST #3**      **Formation: Lansing D,E,F**      **Test Interval: 4050 - 4085'**      **Total Depth: 4085'**  
 Time On: 17:37 07/05      Time Off: 01:20 07/06  
 Time On Bottom: 19:55 07/05      Time Off Bottom: 22:55 07/05

Recovered

Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
10	0.1423	O	0	100	0	0
50	0.7115	SLOCHMCW	0	5	60	35
189	2.68947	SLMCSLOCW	0	15	70	15
189	2.68947	SLGCSLOC SLMCW	10	10	67	13
504	7.17192	SLOC SLMCW	0	4	91	5
567	5.5065773	SLMCW	0	0	95	5

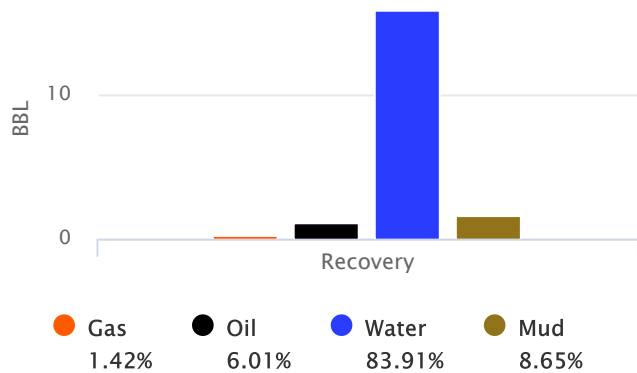
Total Recovered: 1509 ft

Total Barrels Recovered: 18.9112373

Reversed Out  
NO

Initial Hydrostatic Pressure	2019	PSI
Initial Flow	57 to 381	PSI
<b>Initial Closed in Pressure</b>	<b>983</b>	<b>PSI</b>
Final Flow Pressure	391 to 632	PSI
<b>Final Closed in Pressure</b>	<b>981</b>	<b>PSI</b>
Final Hydrostatic Pressure	1996	PSI
Temperature	125	°F
Pressure Change Initial Close / Final Close	0.2	%

### Recovery at a glance





**Company: Ritchie Exploration,  
Inc.**

**Lease: Eaton Enterprises #1**

SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling  
Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Michigan West  
Pool: Infield  
Job Number: 183

<b>DATE</b> July <b>05</b> 2018
--

<b>DST #3</b>	<b>Formation: Lansing D,E,F</b>	<b>Test Interval: 4050 - 4085'</b>	<b>Total Depth: 4085'</b>
	Time On: 17:37 07/05	Time Off: 01:20 07/06	
	Time On Bottom: 19:55 07/05	Time Off Bottom: 22:55 07/05	

**REMARKS:**

If:1" bob In 3 1/2min

Ic:nobb

Ff:wsb bob in 6min

Fc:nobb

Toolsample: 20o - 60w - 20m

Gravity: 28.3 @ 60 degrees F

Ph: 7

RW: .2 @ 70 degrees F

Chlorides: 36000 ppm



# Company: Ritchie Exploration, Inc.

## Lease: Eaton Enterprises #1

SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Michigan West  
Pool: Infield  
Job Number: 183

**DATE**  
July  
**05**  
2018

**DST #3**      **Formation: Lansing D,E,F**      **Test Interval: 4050 - 4085'**      **Total Depth: 4085'**  
Time On: 17:37 07/05      Time Off: 01:20 07/06  
Time On Bottom: 19:55 07/05      Time Off Bottom: 22:55 07/05

### Down Hole Makeup

<b>Heads Up:</b> 29.15 FT	<b>Packer 1:</b> 4045 FT
<b>Drill Pipe:</b> 3771.41 FT <i>ID-3 1/2</i>	<b>Packer 2:</b> 4050 FT
<b>Weight Pipe:</b> FT <i>ID-2 7/8</i>	<b>Top Recorder:</b> 4034.42 FT
<b>Collars:</b> 275.17 FT <i>ID-2 1/4</i>	<b>Bottom Recorder:</b> 4052 FT
<b>Test Tool:</b> 33.57 FT <i>ID-3 1/2-FH</i> <i>Jars</i> <i>Safety Joint</i>	<b>Well Bore Size:</b> 7 7/8
<b>Total Anchor:</b> 35	<b>Surface Choke:</b> 1"
	<b>Bottom Choke:</b> 5/8"

#### Anchor Makeup

**Packer Sub:** 1 FT

**Perforations: (top):** FT  
*4 1/2-FH*

**Change Over:** FT

**Drill Pipe: (in anchor):** FT  
*ID-3 1/2*

**Change Over:** FT

**Perforations: (below):** 34 FT  
*4 1/2-FH*



**Company: Ritchie Exploration,  
Inc.**

**Lease: Eaton Enterprises #1**

SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling  
Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Michigan West  
Pool: Infield  
Job Number: 183

<b>DATE</b> July <b>05</b> 2018
--

<b>DST #3</b>	<b>Formation: Lansing D,E,F</b>	<b>Test Interval: 4050 - 4085'</b>	<b>Total Depth: 4085'</b>
	Time On: 17:37 07/05	Time Off: 01:20 07/06	
	Time On Bottom: 19:55 07/05	Time Off Bottom: 22:55 07/05	

**Mud Properties**

**Mud Type:** Chemical    **Weight:** 9.1    **Viscosity:** 56    **Filtrate:** 7.2    **Chlorides:** 4200 ppm





# Company: Ritchie Exploration, Inc.

## Lease: Eaton Enterprises #1

SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Michigan West  
Pool: Infield  
Job Number: 183

**DATE**  
July  
**06**  
2018

**DST #4**    **Formation: Lansing I**    **Test Interval: 4186 - 4210'**    **Total Depth: 4210'**

Time On: 14:36 07/06    Time Off: 22:45 07/06  
Time On Bottom: 17:05 07/06    Time Off Bottom: 20:05 07/06

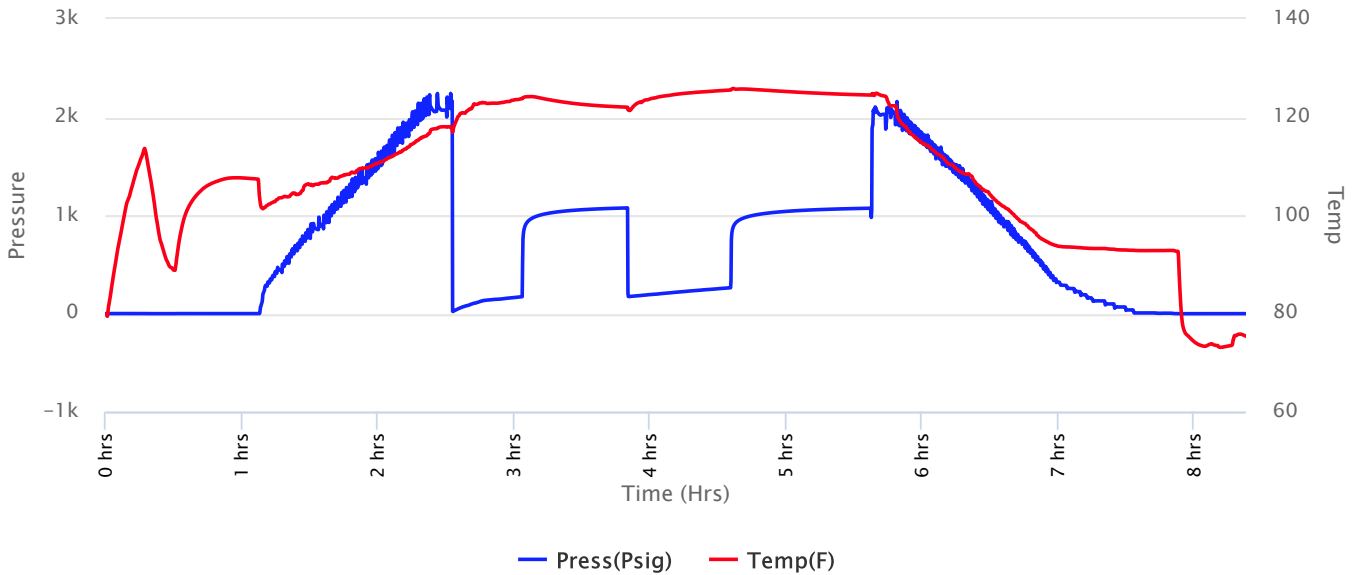
Electronic Volume Estimate:  
702'

1st Open  
Minutes: 30  
22.1" at 30 min

1st Close  
Minutes: 45  
1" at 45 min

2nd Open  
Minutes: 45  
26.1" at 45 min

2nd Close  
Minutes: 60  
.25" at 60 min





**Company: Ritchie Exploration, Inc.**

**Lease: Eaton Enterprises #1**

SEC: 30 TWN: 16S RNG: 31W  
 County: SCOTT  
 State: Kansas  
 Drilling Contractor: Murfin Drilling Company, Inc - Rig 21  
 Elevation: 2956 GL  
 Field Name: Michigan West  
 Pool: Infield  
 Job Number: 183

**DATE**  
 July  
**06**  
 2018

**DST #4 Formation: Lansing I Test Interval: 4186 - 4210' Total Depth: 4210'**

Time On: 14:36 07/06 Time Off: 22:45 07/06  
 Time On Bottom: 17:05 07/06 Time Off Bottom: 20:05 07/06

Recovered

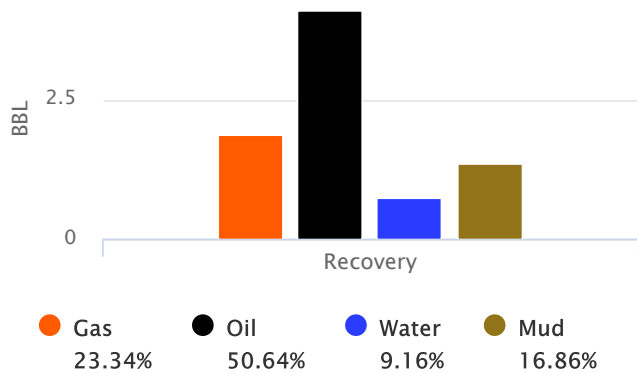
Foot	BBS	Description of Fluid	Gas %	Oil %	Water %	Mud %
75	1.06725	G	100	0	0	0
234	3.32982	O	0	100	0	0
63	0.89649	WCOCMCG	35	20	20	25
189	1.8872273	SLOCWCGCM	25	10	20	45
126	0.61992	SLGCWCHMCO	5	40	20	35
63	0.30996	SLGCWCMCO	3	52	20	25

Total Recovered: 750 ft  
 Total Barrels Recovered: 8.1106673

Reversed Out  
 NO

Initial Hydrostatic Pressure	2094	PSI
Initial Flow	22 to 171	PSI
<b>Initial Closed in Pressure</b>	<b>1076</b>	<b>PSI</b>
Final Flow Pressure	173 to 262	PSI
<b>Final Closed in Pressure</b>	<b>1073</b>	<b>PSI</b>
Final Hydrostatic Pressure	2091	PSI
Temperature	126	°F
Pressure Change Initial Close / Final Close	0.3	%

**Recovery at a glance**





**Company: Ritchie Exploration,  
Inc.**

**Lease: Eaton Enterprises #1**

SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling  
Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Michigan West  
Pool: Infield  
Job Number: 183

<b>DATE</b> July <b>06</b> 2018
--

**DST #4      Formation: Lansing I      Test Interval: 4186 -      Total Depth: 4210'**  
**4210'**

Time On: 14:36 07/06      Time Off: 22:45 07/06  
Time On Bottom: 17:05 07/06      Time Off Bottom: 20:05 07/06

**REMARKS:**

If: 1/2" bob in 15 min

Ic: built to 1"

Ff: wsb bob in 18 1/2 min

Fc: built to 1/4

Toolsample: 50o - 25w - 25m

Gravity: 22.5 @ 60 degrees F

Ph: 7

RW: .3 @ 82 degrees F

Chlorides: 19000 ppm



# Company: Ritchie Exploration, Inc.

## Lease: Eaton Enterprises #1

SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Michigan West  
Pool: Infield  
Job Number: 183

**DATE**

July  
**06**  
2018

**DST #4**      **Formation: Lansing I**      **Test Interval: 4186 - 4210'**      **Total Depth: 4210'**

Time On: 14:36 07/06      Time Off: 22:45 07/06  
Time On Bottom: 17:05 07/06      Time Off Bottom: 20:05 07/06

### Down Hole Makeup

**Heads Up:** 20.18 FT

**Packer 1:** 4181 FT

**Drill Pipe:** 3898.44 FT  
*ID-3 1/2*

**Packer 2:** 4186 FT

**Top Recorder:** 4170.42 FT

**Weight Pipe:** FT  
*ID-2 7/8*

**Bottom Recorder:** 4188 FT

**Collars:** 275.17 FT  
*ID-2 1/4*

**Well Bore Size:** 7 7/8

**Surface Choke:** 1"

**Test Tool:** 33.57 FT  
*ID-3 1/2-FH*  
*Jars*  
*Safety Joint*

**Bottom Choke:** 5/8"

**Total Anchor:** 24

**Anchor Makeup**

**Packer Sub:** 1 FT

**Perforations: (top):** FT  
*4 1/2-FH*

**Change Over:** FT

**Drill Pipe: (in anchor):** FT  
*ID-3 1/2*

**Change Over:** FT

**Perforations: (below):** 23 FT  
*4 1/2-FH*





# Company: Ritchie Exploration, Inc.

## Lease: Eaton Enterprises #1

SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Michigan West  
Pool: Infield  
Job Number: 183

**DATE**  
July  
**07**  
2018

**DST #5**      **Formation: Lansing J and K**      **Test Interval: 4214 - 4270'**      **Total Depth: 4270'**  
Time On: 08:35 07/07      Time Off: 15:52 07/07  
Time On Bottom: 10:40 07/07      Time Off Bottom: 13:40 07/07

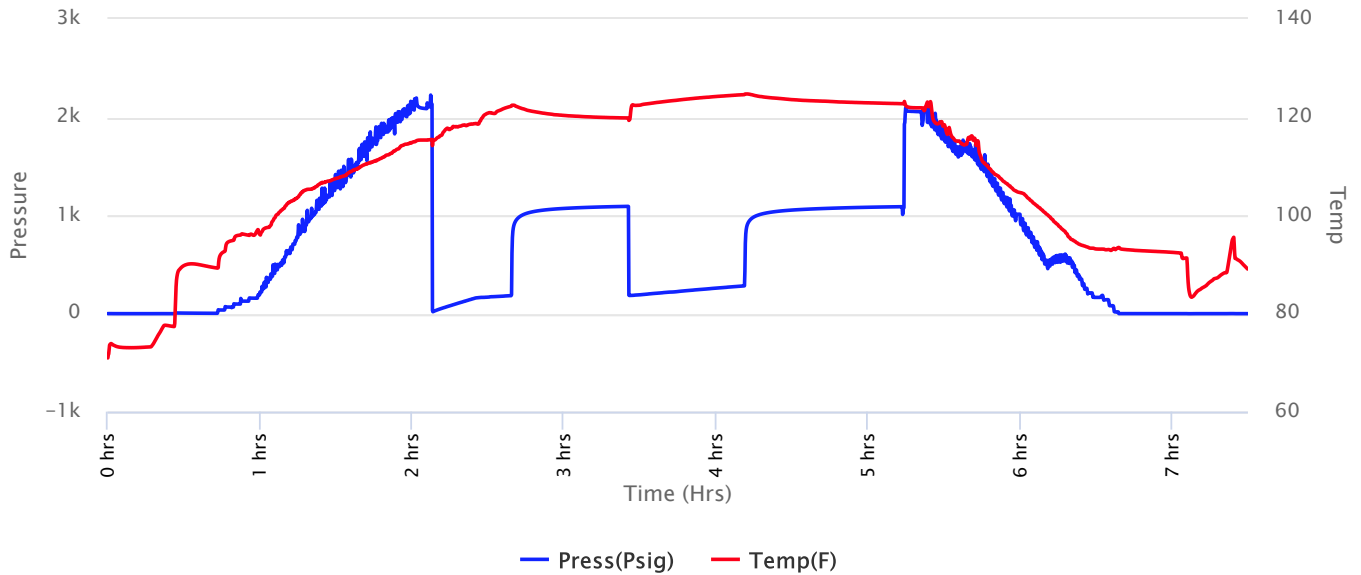
Electronic Volume Estimate:  
585'

1st Open  
Minutes: 30  
17" at 30 min

1st Close  
Minutes: 45  
0" at 45 min

2nd Open  
Minutes: 45  
20.6" at 45 min

2nd Close  
Minutes: 60  
.1" at 60 min





# Company: Ritchie Exploration, Inc.

## Lease: Eaton Enterprises #1

SEC: 30 TWN: 16S RNG: 31W  
 County: SCOTT  
 State: Kansas  
 Drilling Contractor: Murfin Drilling Company, Inc - Rig 21  
 Elevation: 2956 GL  
 Field Name: Michigan West  
 Pool: Infield  
 Job Number: 183

**DATE**  
 July  
**07**  
 2018

**DST #5**      **Formation: Lansing J and K**      **Test Interval: 4214 - 4270'**      **Total Depth: 4270'**  
 Time On: 08:35 07/07      Time Off: 15:52 07/07  
 Time On Bottom: 10:40 07/07      Time Off Bottom: 13:40 07/07

Recovered

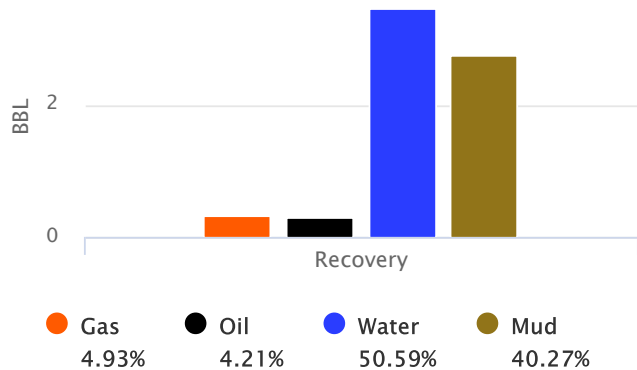
Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
32	0.45536	SLOCHWCM	0	3	37	60
63	0.89649	SLOCSLGCM	6	1	0	93
126	1.79298	SLGCSLOCMCW	5	5	65	25
252	2.7837173	SLOCSLGCHMCW	7	3	50	40
189	0.92988	SLMCSLOCW	0	10	80	10

Total Recovered: 662 ft  
 Total Barrels Recovered: 6.8584273

Reversed Out  
 NO

Initial Hydrostatic Pressure      2094      PSI  
 Initial Flow      18 to 182      PSI  
**Initial Closed in Pressure      1091      PSI**  
 Final Flow Pressure      184 to 282      PSI  
**Final Closed in Pressure      1088      PSI**  
 Final Hydrostatic Pressure      2073      PSI  
 Temperature      125      °F  
  
 Pressure Change Initial      0.3      %  
 Close / Final Close

### Recovery at a glance





**Company: Ritchie Exploration,  
Inc.**

**Lease: Eaton Enterprises #1**

SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling  
Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Michigan West  
Pool: Infield  
Job Number: 183

<b>DATE</b> July <b>07</b> 2018
--

<b>DST #5</b>	<b>Formation: Lansing J and K</b>	<b>Test Interval: 4214 - 4270'</b>	<b>Total Depth: 4270'</b>
	Time On: 08:35 07/07	Time Off: 15:52 07/07	
	Time On Bottom: 10:40 07/07	Time Off Bottom: 13:40 07/07	

**REMARKS:**

If: 1/2" bob in 20min

Ic: nobb

Ff: 1/4" bob in 25 1/2min

Fc: wsb died off 20min in

Toolsample: 10o - 89w - 1m

Ph: 8

RW: .2 @ 95 degrees F

Chlorides: 25000 ppm







**Company: Ritchie Exploration,  
Inc.**

**Lease: Eaton Enterprises #1**

SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling  
Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Michigan West  
Pool: Infield  
Job Number: 183

<b>DATE</b> July <b>07</b> 2018
--

<b>DST #5</b>	<b>Formation: Lansing J and K</b>	<b>Test Interval: 4214 - 4270'</b>	<b>Total Depth: 4270'</b>
	Time On: 08:35 07/07	Time Off: 15:52 07/07	
	Time On Bottom: 10:40 07/07	Time Off Bottom: 13:40 07/07	

### **Mud Properties**

<b>Mud Type:</b> Chemical	<b>Weight:</b> 9.4	<b>Viscosity:</b> 59	<b>Filtrate:</b> 8.8	<b>Chlorides:</b> 5000 ppm
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**Company: Ritchie Exploration,  
Inc.**

**Lease: Eaton Enterprises #1**

SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling  
Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Michigan West  
Pool: Infield  
Job Number: 183

<b>DATE</b> July <b>07</b> 2018
--

<b>DST #6</b>	<b>Formation: Lansing</b>	<b>Test Interval: 4290 -</b>	<b>Total Depth: 4321'</b>
	<b>L</b>	<b>4321'</b>	
	Time On: 23:34 07/07	Time Off: 07:29 07/08	
	Time On Bottom: 02:10 07/08	Time Off Bottom: 05:10 07/08	

**REMARKS:**

If:wsb built to 2.9"

Ic:nobb

Ff:wsb built to 2.4"

Fc:nobb

Toolsample: 15o - 85m

Gravity: 18.5 @ 60 degrees F







# Company: Ritchie Exploration, Inc.

## Lease: Eaton Enterprises #1

SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Michigan West  
Pool: Infield  
Job Number: 183

**DATE**  
July  
**08**  
2018

**DST #7**    **Formation: Altamont B and C**    **Test Interval: 4408 - 4455'**    **Total Depth: 4455'**  
Time On: 23:52 07/08    Time Off: 06:33 07/09  
Time On Bottom: 02:20 07/09    Time Off Bottom: 04:20 01/01

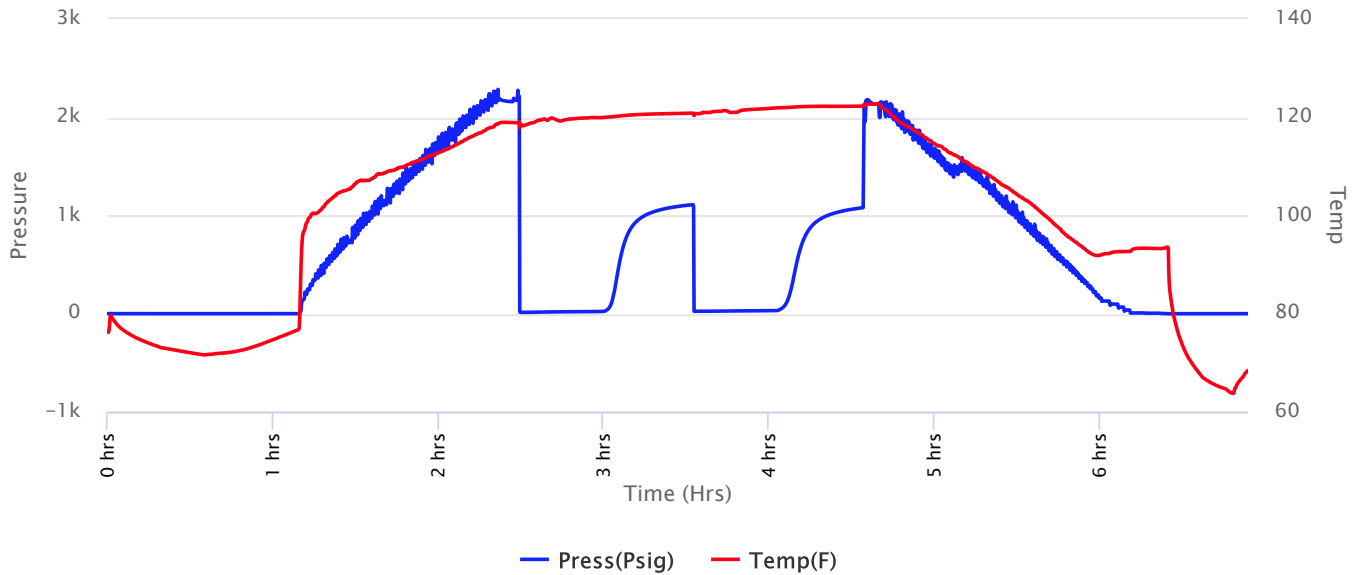
Electronic Volume Estimate:  
25'

1st Open  
Minutes: 30  
.75" at 30 min

1st Close  
Minutes: 30  
0" at 30 min

2nd Open  
Minutes: 30  
0" at 30 min

2nd Close  
Minutes: 30  
0" at 30 min







**Company: Ritchie Exploration, Inc.**

**Lease: Eaton Enterprises #1**

SEC: 30 TWN: 16S RNG: 31W  
 County: SCOTT  
 State: Kansas  
 Drilling Contractor: Murfin Drilling Company, Inc - Rig 21  
 Elevation: 2956 GL  
 Field Name: Michigan West  
 Pool: Infield  
 Job Number: 183

**DATE**  
 July  
**08**  
 2018

**DST #7**      **Formation: Altamont B and C**      **Test Interval: 4408 - 4455'**      **Total Depth: 4455'**

Time On: 23:52 07/08      Time Off: 06:33 07/09  
 Time On Bottom: 02:20 07/09      Time Off Bottom: 04:20 01/01

Recovered

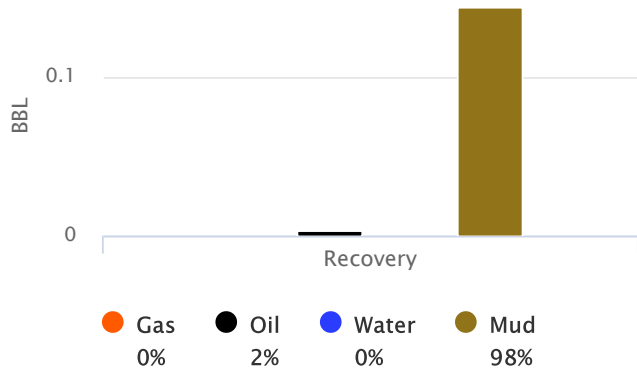
<u>Foot</u>	<u>BBLs</u>
30	0.1476

<u>Description of Fluid</u>	<u>Gas %</u>	<u>Oil %</u>	<u>Water %</u>	<u>Mud %</u>
SLOCM	0	2	0	98

Total Recovered: 30 ft  
 Total Barrels Recovered: 0.1476

Reversed Out  
 NO

**Recovery at a glance**



Initial Hydrostatic Pressure	2162	PSI
Initial Flow	11 to 22	PSI
<b>Initial Closed in Pressure</b>	<b>1109</b>	<b>PSI</b>
Final Flow Pressure	23 to 30	PSI
<b>Final Closed in Pressure</b>	<b>1078</b>	<b>PSI</b>
Final Hydrostatic Pressure	2159	PSI
Temperature	123	°F
Pressure Change Initial Close / Final Close	2.8	%





# Company: Ritchie Exploration, Inc.

## Lease: Eaton Enterprises #1

SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Michigan West  
Pool: Infield  
Job Number: 183

**DATE**

July  
**08**  
2018

**DST #7**      **Formation: Altamont B and C**      **Test Interval: 4408 - 4455'**      **Total Depth: 4455'**

Time On: 23:52 07/08

Time Off: 06:33 07/09

Time On Bottom: 02:20 07/09      Time Off Bottom: 04:20 01/01

### Down Hole Makeup

**Heads Up:** 18.33 FT

**Packer 1:** 4403 FT

**Drill Pipe:** 4118.59 FT

**Packer 2:** 4408 FT

*ID-3 1/2*

**Top Recorder:** 4392.42 FT

**Weight Pipe:** FT

*ID-2 7/8*

**Bottom Recorder:** 4445 FT

**Collars:** 275.17 FT

**Well Bore Size:** 7 7/8

*ID-2 1/4*

**Surface Choke:** 1"

**Test Tool:** 33.57 FT

**Bottom Choke:** 5/8"

*ID-3 1/2-FH*

*Jars*

*Safety Joint*

**Total Anchor:** 47

**Anchor Makeup**

**Packer Sub:** 1 FT

**Perforations: (top):** 2 FT

*4 1/2-FH*

**Change Over:** 1 FT

**Drill Pipe: (in anchor):** 31.5 FT

*ID-3 1/2*

**Change Over:** .5 FT

**Perforations: (below):** 11 FT

*4 1/2-FH*



**Company: Ritchie Exploration,  
Inc.**

**Lease: Eaton Enterprises #1**

SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling  
Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Michigan West  
Pool: Infield  
Job Number: 183

<b>DATE</b> July <b>08</b> 2018
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<b>DST #7</b>	<b>Formation: Altamont B and C</b>	<b>Test Interval: 4408 - 4455'</b>	<b>Total Depth: 4455'</b>
	Time On: 23:52 07/08	Time Off: 06:33 07/09	
	Time On Bottom: 02:20 07/09	Time Off Bottom: 04:20 01/01	

### Mud Properties

**Mud Type:** Chemical    **Weight:** 9.2    **Viscosity:** 54    **Filtrate:** 8.0    **Chlorides:** 5500 ppm





# Company: Ritchie Exploration, Inc.

## Lease: Eaton Enterprises #1

SEC: 30 TWN: 16S RNG: 31W  
 County: SCOTT  
 State: Kansas  
 Drilling Contractor: Murfin Drilling Company, Inc - Rig 21  
 Elevation: 2956 GL  
 Field Name: Michigan West  
 Pool: Infield  
 Job Number: 183

**DATE**  
 July  
**10**  
 2018

**DST #8**      **Formation: Pawnee threw johnson**      **Test Interval: 4456 - 4600'**      **Total Depth: 4600'**  
 Time On: 00:55 07/10      Time Off: 07:33 07/10  
 Time On Bottom: 03:15 07/10      Time Off Bottom: 05:15 07/10

Recovered

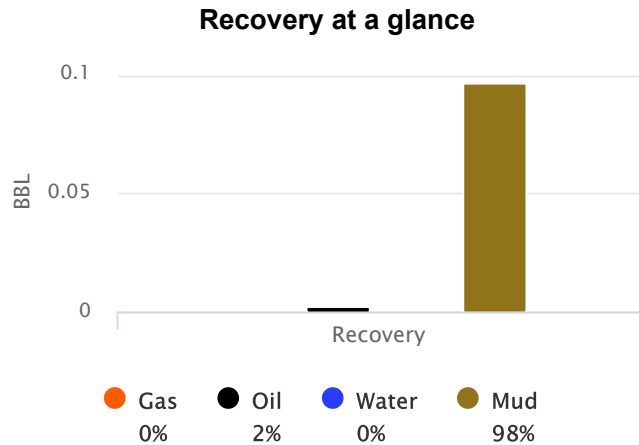
Foot	BBS
20	0.0984

Description of Fluid	Gas %	Oil %	Water %	Mud %
SLOCM	0	2	0	98

Total Recovered: 20 ft  
 Total Barrels Recovered: 0.0984

Reversed Out  
 NO

Initial Hydrostatic Pressure	2156	PSI
Initial Flow	15 to 23	PSI
<b>Initial Closed in Pressure</b>	<b>273</b>	<b>PSI</b>
Final Flow Pressure	28 to 30	PSI
<b>Final Closed in Pressure</b>	<b>113</b>	<b>PSI</b>
Final Hydrostatic Pressure	2136	PSI
Temperature	123	°F
Pressure Change Initial Close / Final Close	58.7	%





**Company: Ritchie Exploration,  
Inc.**

**Lease: Eaton Enterprises #1**

SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling  
Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Michigan West  
Pool: Infield  
Job Number: 183

<b>DATE</b> July <b>10</b> 2018
--

<b>DST #8</b>	<b>Formation: Pawnee threw johnson</b>	<b>Test Interval: 4456 - 4600'</b>	<b>Total Depth: 4600'</b>
	Time On: 00:55 07/10	Time Off: 07:33 07/10	
	Time On Bottom: 03:15 07/10	Time Off Bottom: 05:15 07/10	

**REMARKS:**

If:1/4" built to 1/2"

Ic:nobb

Ff:no blow no build

Fc:nobb

Toolsample: 2o - 98m









# Company: Ritchie Exploration, Inc.

## Lease: Eaton Enterprises #1

SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Michigan West  
Pool: Infield  
Job Number: 183

**DATE**  
July  
**10**  
2018

**DST #9**      **Formation: Lower Johnson and upper morrow**      **Test Interval: 4599 - 4620'**      **Total Depth: 4620'**  
Time On: 14:44 07/10      Time Off: 21:15 07/10  
Time On Bottom: 17:08 07/10      Time Off Bottom: 19:08 07/10

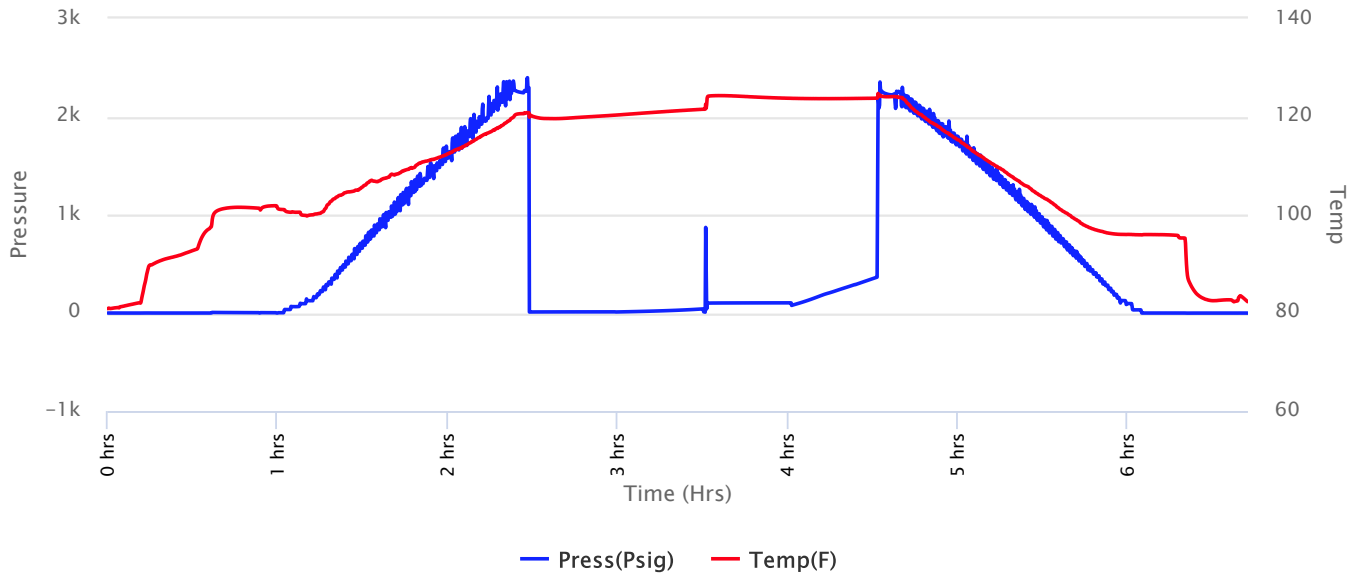
Electronic Volume Estimate:  
0'

1st Open  
Minutes: 30  
0" at 30 min

1st Close  
Minutes: 30  
0" at 30 min

2nd Open  
Minutes: 30  
0" at 30 min

2nd Close  
Minutes: 30  
0" at 30 min





# Company: Ritchie Exploration, Inc.

## Lease: Eaton Enterprises #1

SEC: 30 TWN: 16S RNG: 31W  
 County: SCOTT  
 State: Kansas  
 Drilling Contractor: Murfin Drilling Company, Inc - Rig 21  
 Elevation: 2956 GL  
 Field Name: Michigan West  
 Pool: Infield  
 Job Number: 183

**DATE**  
 July  
**10**  
 2018

**DST #9**      **Formation: Lower Johnson and upper morrow**      **Test Interval: 4599 - 4620'**      **Total Depth: 4620'**  
 Time On: 14:44 07/10      Time Off: 21:15 07/10  
 Time On Bottom: 17:08 07/10      Time Off Bottom: 19:08 07/10

Recovered

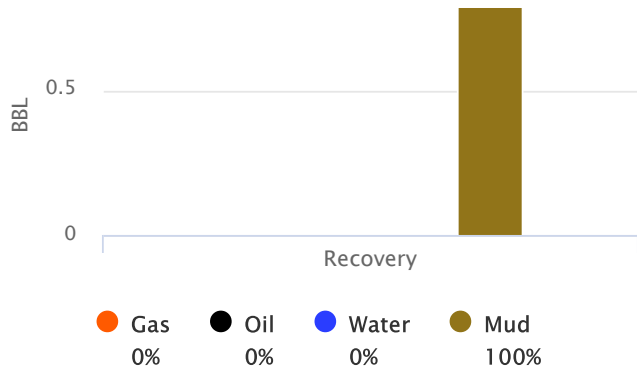
Foot	BBLs
160	0.7872

Description of Fluid	Gas %	Oil %	Water %	Mud %
M	0	0	0	100

Total Recovered: 160 ft  
 Total Barrels Recovered: 0.7872

Reversed Out  
NO

**Recovery at a glance**



Initial Hydrostatic Pressure	2253	PSI
Initial Flow	10 to 11	PSI
<b>Initial Closed in Pressure</b>	<b>41</b>	<b>PSI</b>
Final Flow Pressure	100 to 102	PSI
<b>Final Closed in Pressure</b>	<b>102</b>	<b>PSI</b>
Final Hydrostatic Pressure	2244	PSI
Temperature	125	°F
Pressure Change Initial Close / Final Close	0.0	%



**Company: Ritchie Exploration,  
Inc.**

**Lease: Eaton Enterprises #1**

SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling  
Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Michigan West  
Pool: Infield  
Job Number: 183

<b>DATE</b> July <b>10</b> 2018
--

<b>DST #9</b>	<b>Formation: Lower Johnson and upper morrow</b>	<b>Test Interval: 4599 - 4620'</b>	<b>Total Depth: 4620'</b>
	Time On: 14:44 07/10	Time Off: 21:15 07/10	
	Time On Bottom: 17:08 07/10	Time Off Bottom: 19:08 07/10	

**REMARKS:**

If:wsb no build

Ic:nobb

Ff: flush tool-gd flush - no blow no build

Fc:nobb

Toolsample: 100m



# Company: Ritchie Exploration, Inc.

## Lease: Eaton Enterprises #1

SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Michigan West  
Pool: Infield  
Job Number: 183

<b>DATE</b> July <b>10</b> 2018
--

**DST #9**      **Formation: Lower Johnson and upper morrow**      **Test Interval: 4599 - 4620'**      **Total Depth: 4620'**  
Time On: 14:44 07/10      Time Off: 21:15 07/10  
Time On Bottom: 17:08 07/10      Time Off Bottom: 19:08 07/10

### Down Hole Makeup

<b>Heads Up:</b> 15.75 FT	<b>Packer 1:</b> 4594 FT
<b>Drill Pipe:</b> 4307.01 FT <i>ID-3 1/2</i>	<b>Packer 2:</b> 4599 FT
<b>Weight Pipe:</b> FT <i>ID-2 7/8</i>	<b>Top Recorder:</b> 4583.42 FT
<b>Collars:</b> 275.17 FT <i>ID-2 1/4</i>	<b>Bottom Recorder:</b> 4604 FT
<b>Test Tool:</b> 33.57 FT <i>ID-3 1/2-FH</i> <i>Jars</i> <i>Safety Joint</i>	<b>Well Bore Size:</b> 7 7/8
<b>Total Anchor:</b> 21	<b>Surface Choke:</b> 1"
<b>Anchor Makeup</b>	<b>Bottom Choke:</b> 5/8"
<b>Packer Sub:</b> 1 FT	
<b>Perforations: (top):</b> 3 FT <i>4 1/2-FH</i>	
<b>Change Over:</b> FT	
<b>Drill Pipe: (in anchor):</b> FT <i>ID-3 1/2</i>	
<b>Change Over:</b> FT	
<b>Perforations: (below):</b> 17 FT <i>4 1/2-FH</i>	



**Company: Ritchie Exploration,  
Inc.**

**Lease: Eaton Enterprises #1**

SEC: 30 TWN: 16S RNG: 31W  
County: SCOTT  
State: Kansas  
Drilling Contractor: Murfin Drilling  
Company, Inc - Rig 21  
Elevation: 2956 GL  
Field Name: Michigan West  
Pool: Infield  
Job Number: 183

<b>DATE</b> July <b>10</b> 2018
--

**DST #9**      **Formation: Lower Johnson and upper morrow**      **Test Interval: 4599 - 4620'**      **Total Depth: 4620'**

Time On: 14:44 07/10      Time Off: 21:15 07/10  
Time On Bottom: 17:08 07/10      Time Off Bottom: 19:08 07/10

**Mud Properties**

**Mud Type:** Chemical      **Weight:** 9.2      **Viscosity:** 67      **Filtrate:** 8.0      **Chlorides:** 6600 ppm



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

Well Name: EATON ENTERPRISES  
Well Id: #1  
Location: 1118' FNL, 736' FWL, Sec 30-T16S-R31W, Scott County, Kansas  
License Number: API: 15-171-21226 Region: Scott County  
Spud Date: 06/30/2018 Drilling Completed: 07/11/2018  
Surface Coordinates: Lat: 38.6395885  
Long: -100.7942446  
Bottom Hole Vertical hole  
Coordinates:  
Ground Elevation (ft): 2956' K.B. Elevation (ft): 2967'  
Logged Interval (ft): 3700' To: RTD Total Depth (ft): 4730'  
Formation: Mississippian at RTD  
Type of Drilling Fluid: Chemical

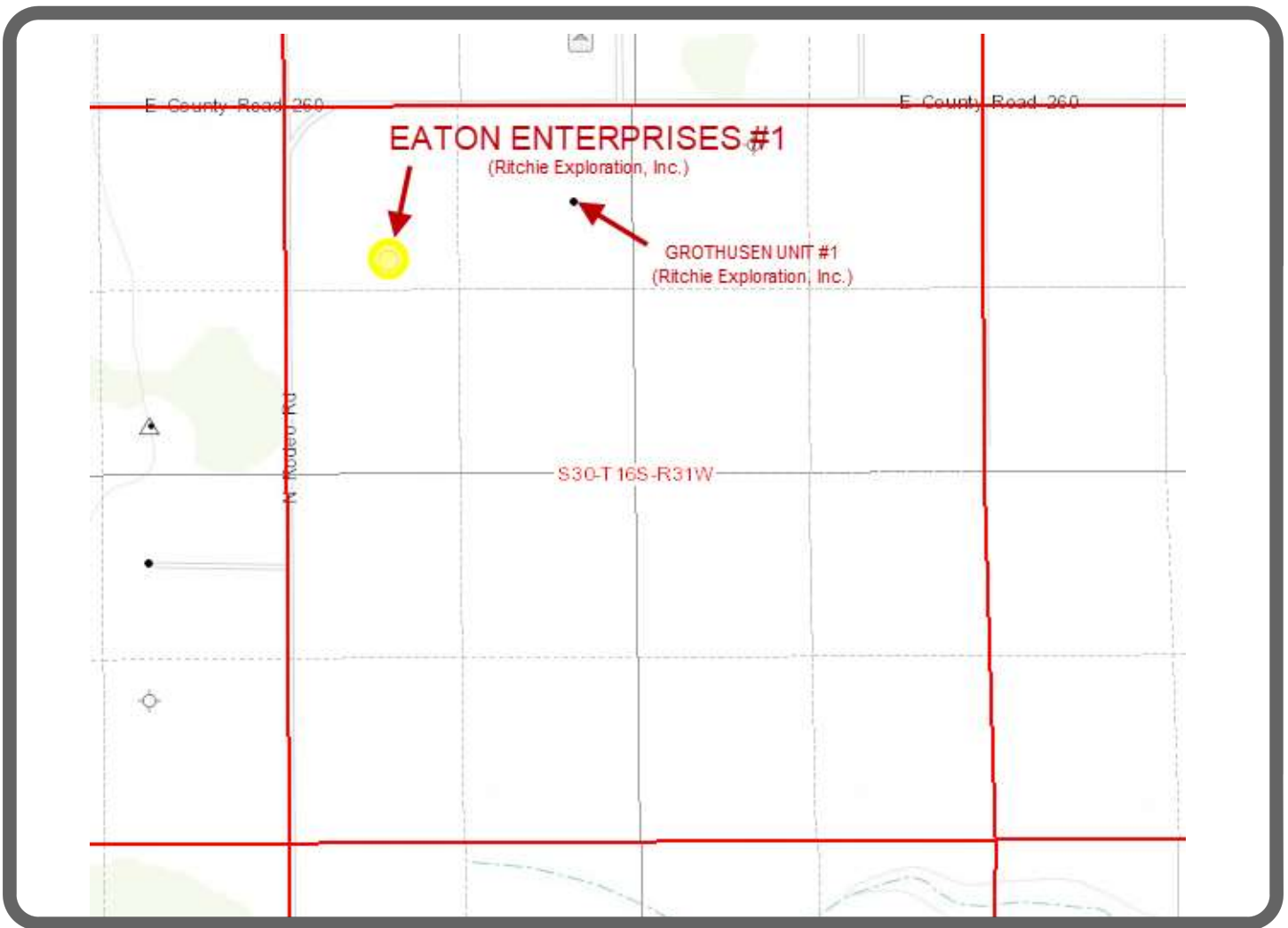
Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: Ritchie Exploration, Inc.  
Address: 8100 E. 22nd Street N., Bldg 700  
Wichita, KS 67226  
316-691-9500

GEOLOGIST

Name: Kent R. Matson  
Company: Matson Geological Services, LLC  
Address: 33300 W. 15th Street S.  
Garden Plain, Kansas 67050  
316-644-1975; kent4m@hotmail.com



### COMMENTS

Ritchie Exploration Company Geologist: John Goldsmith, 316-640-0236 (cell).

Contractor: Murfin Drilling Company, Rig #21.

Tool Pusher: Juan Tinoco, 785-443-0127 (cell).

Surface Casing: 8 5/8" set at 266' (KB) w/190sx cement.

Production Casing: Based on field observations of drill cuttings, DST results and electric log evaluation, production casing (5.5") was installed.

Mud by: Mud-Co/Service Mud, Inc., Reid Atkins, 785-694-3741 (cell).

DST's by: Diamond Testing, Gene Gilpin, 620-617-4866 (cell).

Logs by: Pioneer (DI w/GR, CND, and Micro), Justin Henrickson, 785-625-3858 (office).

RTD= 4730'

LTD= 4730'



## FORMATION TOPS

FORMATION	SAMPLE TOPS		LOG TOPS	
	Depth	Datum	Depth	Datum
Stotler	3553'	-586	3553'	-586
Heebner Shale	3934'	-967	3934'	-967
Lansing	3973'	-1006	3975'	-1008
Muncie Creek Shale	4152'	-1185	4151'	-1184
Stark Shale	4251'	-1284	4250'	-1283
Hushpuckney Shale	4296'	-1329	4296'	-1329
Base of KC	4334'	-1367	4334'	-1367
Marmaton	4366'	-1399	4365'	-1398
Altamont	4391'	-1424	4390'	-1423
Pawnee	4462'	-1495	4462'	-1495
Myrick Station	4498'	-1534	4500'	-1536
Fort Scott	4514'	-1547	4514	-1547
Cherokee Shale	4540'	-1573	4540'	-1573
Johnson	4580'	-1613	4581'	-1614
Morrow	4611'	-1644	4611'	-1644
Mississippian	4643'	-1676	4642'	-1675
RTD	4730'	-1763		
LTD			4730'	-1763

## ROCK TYPES

### LITHOLOGY

	Anhy
	Cht
	Coal
	Congl
	Dol
	Gyp
	Lmst
	Salt
	Shale
	Shcol
	Shgy
	Sltst
	Ss
	Carb sh
	Dol
	Dtd
	Gry sh
	Sandy lms
	Shale
	Sltstn
	Shlyslts

	Sitysh
	Sdy dolo
	Silty dolo
	Shy dolo
	Shaly ls

### FOSSIL

	Algae
	Amph
	Belm
	Bioclst
	Brach
	Bryozoa
	Cephal
	Coral
	Crin
	Echin
	Fish
	Foram
	Fossil
	Gastro
	Oolite

### MINERAL

	Ostra
	Pelec
	Pellet
	Pisolite
	Plant
	Strom
	Fuss
	Oomold
	Anhy
	Arggrn
	Arg
	Bent
	Bit
	Brecfrag
	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
	Sity

Rate of Penetration (ROP) ROP (min/ft)	Depth	Lithology	CFS Point	Oil Shows	Geological Descriptions	Remarks
0	34					
ROP (min/ft)	10					Note: Lost circulation at 3372'; 150 bbls of salt mud and 100 bbls of displacement mud.
					<b>Morning Report Depth/Activity (7:00 am)</b>	
					06/30/2018, MIRU/Spud.	
					07/01, drilling @ 390'.	
					07/02, drilling @ 2535'.	Mud-Co/Service Mud Inc. Check #1 @ 0' 06/30/18, predrilling instructions.
					07/03, drilling @ 3585'.	
					07/04, TOH DST#1 @ 3894'.	Mud-Co/Service Mud Inc. Check #2 @ 2642' 07/02/18 09:00am
					07/05, TIH after DST#2 @ 4016'.	wt vis pH chl
					07/06, drilling @ 4135'.	9.1 37 7 39000
					07/07, TOH DST#5 @ 4270'.	Filt LCM
					07/08, TOH DST#6 @ 4321'.	n/c 3
					07/09, TIH after DST#7 @ 4455'.	
					07/10, TOH DST#8 @ 4600'.	Mud-Co/Service Mud Inc. Check #3 @ 3659' 07/03/18 08:45am
					07/11, drilling @ 4725'; TD @ 4730'; electric logged.	wt vis pH chl
						8.7 55 11.5 2400
						Filt LCM
						6.8 4
					<b>Anhydrite: Top @ 2346', Base @ 2364' (based on drill time).</b>	
						Mud-Co/Service Mud Inc. Check #4 @ 3894' 07/04/18 10:00am
						wt vis pH chl
						8.9 67 11.0 4000
						Filt LCM
						7.2 4
						Mud-Co/Service Mud Inc. Check #5 @ 4016' 07/05/18 08:00am
						wt vis pH chl
						9.1 56 11.0 4200
						Filt LCM
						7.2 3
						Mud-Co/Service Mud Inc. Check #6 @ 4205' 07/06/18 10:50am
						wt vis pH chl
						9.4 59 10.5 5000
						Filt LCM
						8.8 2
						Mud-Co/Service Mud Inc. Check #7 @ 4270' 07/07/18 08:40am
						wt vis pH chl
						9.3 55 11.0 4500
						Filt LCM
						7.2 2
						Mud-Co/Service Mud Inc. Check #8 @ 4321' 07/08/18 10:20am
						wt vis pH chl
						9.2 54 11.0 5500
						Filt LCM
						8.0 2
						Mud-Co/Service Mud Inc. Check #9 @ 4480' 07/09/18 10:15am
						wt vis pH chl
						9.3 61 10.5 6000
						Filt LCM
						9.6 2
						Mud-Co/Service Mud Inc. Check #10 @ 4600' 07/10/18 09:35am
						wt vis pH chl
						9.2 67 11.0 6600
						Filt LCM
						8.0 2
						Mud-Co/Service Mud Inc. Check #11 @ 4730' 07/11/18 09:20am

**Morning Report Depth/Activity (7:00 am)**

06/30/2018, MIRU/Spud.  
 07/01, drilling @ 390'.  
 07/02, drilling @ 2535'.  
 07/03, drilling @ 3585'.  
 07/04, TOH DST#1 @ 3894'.  
 07/05, TIH after DST#2 @ 4016'.  
 07/06, drilling @ 4135'.  
 07/07, TOH DST#5 @ 4270'.  
 07/08, TOH DST#6 @ 4321'.  
 07/09, TIH after DST#7 @ 4455'.  
 07/10, TOH DST#8 @ 4600'.  
 07/11, drilling @ 4725'; TD @ 4730'; electric logged.

**Anhydrite: Top @ 2346', Base @ 2364' (based on drill time).**

**Formation tops and lithologies have been adjusted to correlate to the electric log.**

**ROP Data begins @ 3500' on 07/03/2018**

Stotler 3553  
(-586)

Note: Lost circulation at 3372'; 150 bbls of salt mud and 100 bbls of displacement mud.

Mud-Co/Service Mud Inc. Check #1 @ 0' 06/30/18, predrilling instructions.

Mud-Co/Service Mud Inc. Check #2 @ 2642' 07/02/18 09:00am  
 wt vis pH chl  
 9.1 37 7 39000  
 Filt LCM  
 n/c 3

Mud-Co/Service Mud Inc. Check #3 @ 3659' 07/03/18 08:45am  
 wt vis pH chl  
 8.7 55 11.5 2400  
 Filt LCM  
 6.8 4

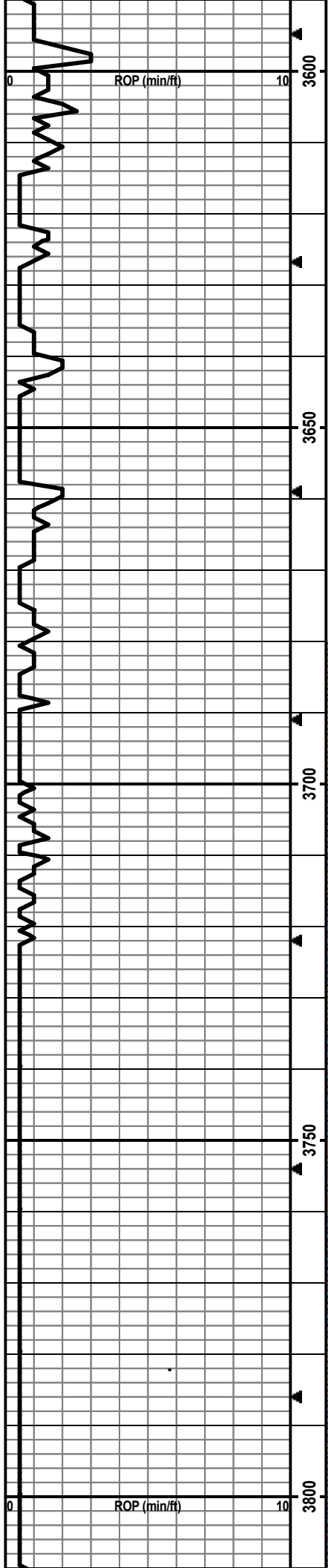
Mud-Co/Service Mud Inc. Check #4 @ 3894' 07/04/18 10:00am  
 wt vis pH chl  
 8.9 67 11.0 4000  
 Filt LCM  
 7.2 4

Mud-Co/Service Mud Inc. Check #5 @ 4016' 07/05/18 08:00am  
 wt vis pH chl  
 9.1 56 11.0 4200  
 Filt LCM  
 7.2 3

Mud-Co/Service Mud Inc. Check #6 @ 4205' 07/06/18 10:50am  
 wt vis pH chl  
 9.4 59 10.5 5000  
 Filt LCM  
 8.8 2

Mud-Co/Service Mud Inc. Check #7 @ 4270' 07/07/18 08:40am  
 wt vis pH chl  
 9.3 55 11.0 4500  
 Filt LCM  
 7.

Survey Record  
 Deg @ Ft  
 0.2 @ 267'  
 0.5 @ 871'  
 0.3 @ 1379'  
 0.2 @ 1854'  
 0.1 @ 2769'  
 0.2 @ 3659'  
 0.4 @ 3881'  
 0.6 @ 4016'  
 0.3 @ 4210'  
 0.3 @ 4620'  
 0.5 @ 4730'



Drill cutting samples at 10' intervals start at 3700'.

SH: med-dk gry/bm, vry silty, micaous, soft-firm, no odor, ns.

SH: lt-med gry, vry silty, firm, friable, no odor, ns.

LS: gry/bm/wht mottled, micro-fn xtal, some foss frags/fusln, vry silty, vry arg, no vis por, no odor, ns.

LS: cm/gry, micro-med xtal, foss frags, vry silty/sndy, arg, no vis por, no odor, ns. Some SH: lt-med gry, vry silty/sndy, carb, firm, fissile.

LS: gry/cm, micro-fn xtal, min foss frags, gry is vry silty arg, no vis por, no odor, ns.

SH: lt-med gry/gry-bm/bm, vry silty, carb, firm, fissile, no odor, ns.

LS: cm/lt gry/lt gry-bm, micro-med xtal, foss frags, vry silty/sndy, vry arg, some chalky, no vis por, no odor, ns.

SH: lt-dk gry, vry silty, carb, firm, fissile, some SS: gry, vf-f, r-wr, hard, friable, no odor, ns.

LS: tan/lt gry-bm, micro-med xtal, foss frags, vry silty, arg, some chalky, no vis por, no odor, ns.

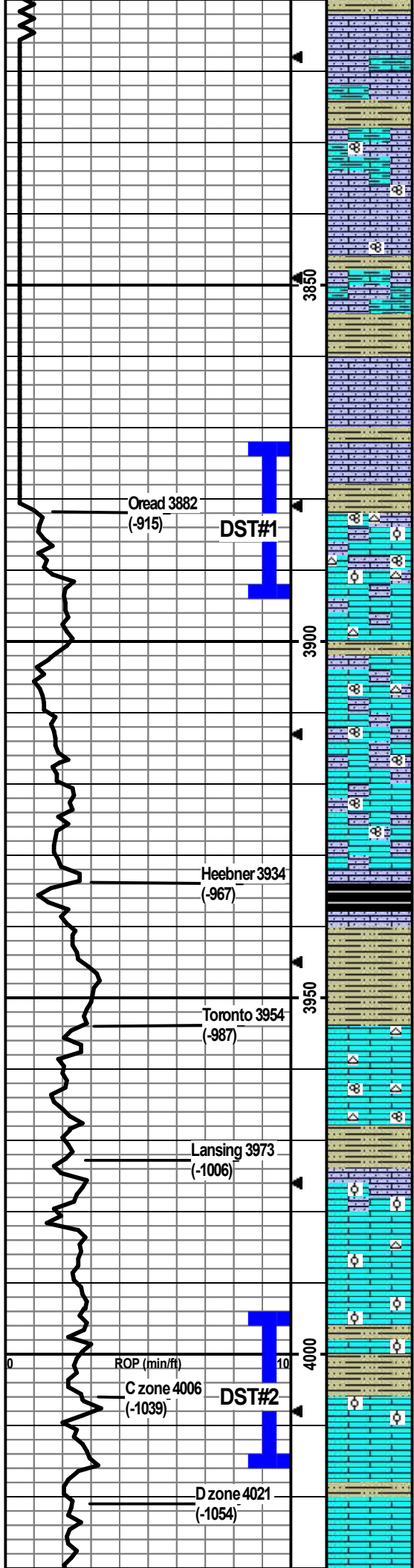
SH: lt-dk gry/bm, vry silty/sndy, firm, no odor, ns.

LS: cm/gry, micro-med, vry silty, arg, chalky, foss frags, no vis por, no odor, ns.

SH: gry-bm/gry, vry silty/sndy, carb, firm, fissile, no odor, ns.

LS: cm/tan/min gry, micro-fn xtal, vry silty, some arg, some chalky, no vis por, no odor, ns.

LS: cm/gry, micro-fn xtal, min foss frags, vry silty, arg, no vis por, no odor, ns.



SH: lt-dk gry, vry silty, carb, firm, fissile.

LS: cm/lt gry/bm, micro-fn xtal, min foss frags, silty, arg, min ppt in-xtal por, no odor, ns.

LS: cm/lt bm/lt gry, micro-med xtal, min foss frags/fusln, vry silty, some chalky, arg, no vis por, no odor, ns.

LS: same as above, no odor, ns.

SH: lt-med gry, vry silty/sndy, some friable, carb, soft-firm, no odor, ns.

No Sample.

LS: cm/tan/lt bm, micro-med xtal, foss frags, some vry silty, some chalky, no vis por, no odor, ns

No Sample.

LS: cm/lt gry/lt bmish gry, fn-med xtal, foss frags/fusln/dense ool, silty, some chalky, wht chert, ppt-fn in-xtal por, 3 pcs in 30min 9 pcs in 60min w/fn-crs in-xtal por w/sfo, dk bm, dull yel flor, slit odor, sfo.

LS: cm/lt gry/lt bmish gry, fn-med xtal. foss frags/fusln, some silty, some chalky, wht chert, 12 pcs wfn-crs in-xtal por w/sfo, bm oil, dull yel flor, slit odor, sfo.  
Some SH: med-dk gry, some silty, firm, fissile.

LS: cm/lt gry/lt bm w/dk bm mottling, micro-med xtal, some chalky, some silty, foss frags/fusln, some ppt-fn in-xtal por, no odor, ns.

LS: same as above; 1 pce wfn-crs por w/sfo, bm oil, dull flor, no odor, ssfo.

SH: dk gry/blk, slit carb, silty, firm, fissile, no odor, ns.

SH: lt-med gry, vry silty, soft, crushes easily, slit carb, no odor, ns.

LS: wht/cm, micro-med xtal, vry grainy, some vry chalky, foss frags, some silty, wht/lt gry chert, some ppt-fn in-xtal, no odor, ns.

LS: wht/cm/lt bm, micro-med xtal, some chalky, some silty, wht/lt gry/lt bm chert, foss frags/fusln, ppt-fn in-xtal por, no odor, 1 pcs in 30min w/fn in-xtal por w/sfo dull yel flor, ssfo.

SH: lt-dk gry/min lt green-gry, slit carb, slit silty, firm, fissile.

LS: cm/min lt gry, fn-med xtal, some silty, some chalky, foss frags/some dense ool, wht-lt brn chert, ppt-fn in-xtal por, no odor, ns.

LS: cm/min lt gry-bm, micro-med xtal, some chalky, foss frags/min dense ool, min wht/lt gry chert, ppt-fn in-xtal por, no odor, ns.

LS: cm/lt bm, micro-med xtal, foss frags/abund dense ool, some chalky, no vis por, no odor, ns.

SH: lt-med gry/lt green-gry, some vry silty, slit carb, soft-firm.

LS: cm/lt bm, micro-med xtal, foss frags/ool, some pyritic, 23 pcs w/ppt-fn/min med in-xtal por w/sfo, dull yel flor, stg odor, sfo.

LS: wht/cm, micro-med xtal, foss frags, ppt-med in-xtal por, approx 25% of smpl w/sfo, vry strg odor, dull yel flor, gsfo.

LS: sht/cm/tan, micro-fn xtal, abund chalk, min foss frags, min ppt in-xtal/frac por, 5 pcs wf-med por w/sfo, dull yel flor, slit odor, sfo.

Made bit trip at 3881' connection, switched from PDC bit to rotary tri-cone bit.

CFS @ 3894'  
30"/60"

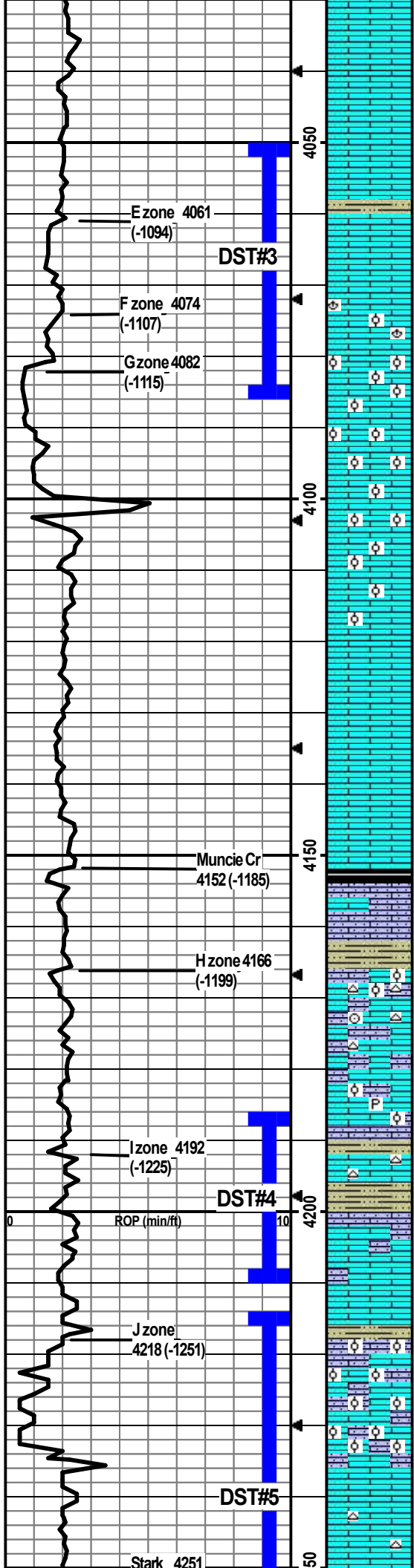
DST1) 3872-3894 Oread  
A-zone  
30/45/45/60  
1st) BOB in 9 min, no BB.  
2nd) BOB in 11.5 min, no BB.  
IFP 23-233#  
ISIP 1098#  
FFP 236-406#  
FSIP 1089#  
HP 1890-1888#  
Recvd: 864' MCW.

CFS @ 3970'  
Stop/30"/60"

DST2) 3994-4016 Lansing  
C-zone  
30/45/30/30  
1st) WSB died in 20 min, no BB.  
2nd) No blow, no BB.  
IFP 10-17#  
ISIP 791#  
FFP 19-23#  
FSIP 733#  
HP 1951-1945#  
Recvd: 3' Mud.

CFS @ 4000'  
Stop/30"/60"

CFS @ 4016'  
Stop/30"/60"



LS: wht/cm, micro-med xtal, abund chalk, foss frags, mostly no vis por, 3 pcs w/f-med in-xtal por w/sfo, slit odor, ssfo.

LS: cm/lt gry, micro-med xtal, some chalky, foss frags, some ppt-fn in-xtal por, no odor, ns.

LS: cm/lt-med bm, micro-fn xtal, min foss frags, 16 pcs w/ppt-f in-xtal por w/sfo, dull yel flor, good odor, sfo.

SH: lt-med gry/green-gry/dk brn, vry silty, slit carb, soft-firm, fissile.

LS: cm/lt bm, micro-fn xtal, min foss frags, some chalky, 19 pcs w/ppt-fn in-xtal por w/sfo, dull yel flor, good odor, sfo.

LS: wht/cm/lt brn, micro-fn xtal, foss frags/ool/brac, 4 pcs w/ppt-fn in-xtal por w/sfo, dull yel flor, odor, sfo.

LS: cm, micro-med xtal, abund med-crs ool, approx 50%+ of sample w/sfo, med-crs/vug oo-castic por, dull yel flor, stg odor, vgsfo.

LS: as above, abund ool, oo-castic, 2 pcs w/sfo, slit odor.

LS: cm/lt bm/lt gry, micro-med xtal, ool, chalky, some dense, some fn-crs oo-castic por, no odor, ns.

LS: as above w/lesser amt of ool, no odor, ns.

LS: cm/lt gry, micro-med xtal, min foss frags, some chalky, min frac por, no odor, ns.

LS: cm/lt gry, micro-med xtal, min foss frags, increase in chalk, min frac por, no odor, ns.

LS: cm/lt gry/lt brn, micro-med xtal, min foss frags, less chalky than above, no vis por, no odor, ns.

SH: dk gry/blk, silty, slit carb, firm, fissile.

LS: cm/lt bmish-gry/lt gry, micro-med xtal, some sndy, some chalky, foss frags, no vis por, no odor, ns.

SH: med gry, silty, slit carb, soft-firm, fissile.

LS: cm/lt-med brn/lt gry, micro-med xtal, foss frags w/dense ool, some chalky, some silty/sndy cm/lt-dk gry/lt brn ool chert, no vis por, 1 pcs w/ppt-fn in-xtal por w/sfo, no odor, ns.

LS: cm/lt bm, micro-med xtal, foss frags/crin, some silty/sndy, some vry chalky, wht/lt gry/lt brn chert, no vis por, slit odor, no vis show.

LS: cm/lt gry, micro-med xtal, chalky, foss frags/ool, silty/sndy, min pyritic, wht/lt gry chert, no vis por, no odor, ns.

LS: cm/lt-med brn/gry, micro-med xtal, some chalky, some silty/sndy, foss frags, wht/lt gry chert, no vis por, 2 pcs w/ppt-por w/sfo dull yel flor, no odor, ns.

SH: lt-dk gry, vry silty, carb, soft-firm, no odor, ns.

LS: cm/lt gry, micro-med xtal, foss frags, some chalky, some silty, min wht chert, 22 pcs w/ppt-fn min-med in-xtal por w/sfo, dull yel flor, good odor, ns.

LS: cm/lt bm, micro-med xtal, foss frags/abund ool, some chalky, 24 pcs w/fn-crs in-xtal/oo-castic por w/sfo, dull yel flor, strg odor, sfo.

LS: cm/lt bm, micro-med xtal, foss frags/abund ool, some silty, some chalky, 8 pcs w/fn-crs in-xtal/oo-castic por w/sfo, dull yel flor, good odor, sfo.

LS: oolitic as above w/1 pcs w/sfo, some non-ool dense, cm/lt gry, micro-fn, some silty/sndy, min chalky, 1 pce w/med-crs oo-castic por w/sfo, dull yel flor, slit odor, ssfo.

LS: cm/lt bm/lt gry, micro-fn xtal, some foss frags, some chalky, wht/lt gry chert, 41 pcs w/ppt-fn in-xtal por w/sfo, dull yel flor, odor, gsfo.

CFS @ 4040'  
Stop/30"/60"

CFS @ 4072'  
Stop/30"/60"

CFS @ 4085'  
Stop/30"/60"

CFS @ 4103'  
Stop/30"/60"

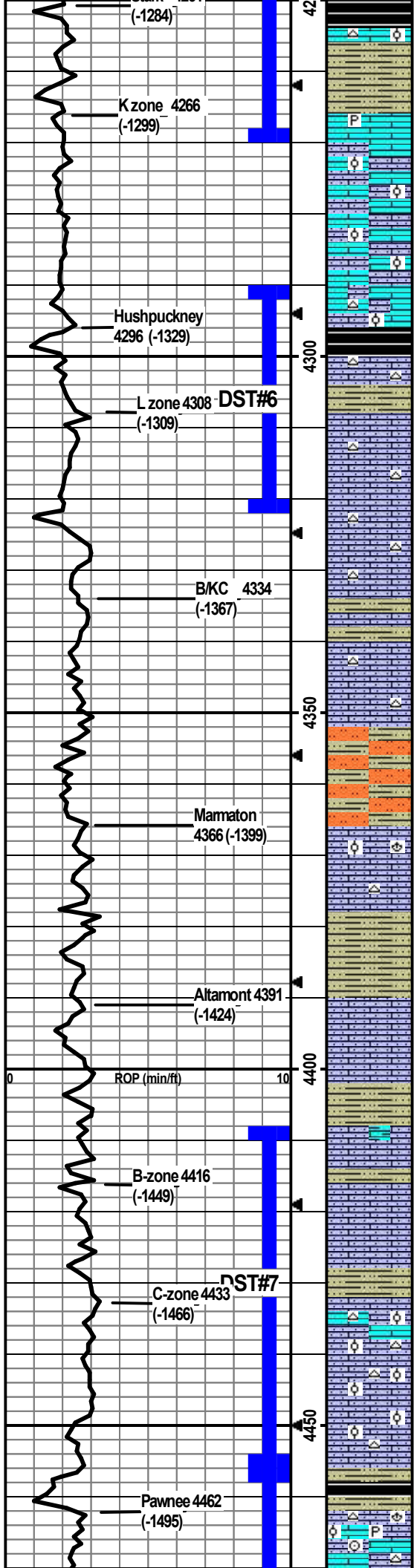
DST3) 4050-4085 Lansing D, E & F-zones

30/45/45/60  
1st) 1" blow built to BOB in 3.5 min; no BB.  
2nd) WSB built to BOB in 6 min; no BB.  
IFP 57-381#  
ISIP 983#  
FFP 391-632#  
FSIP 981#  
HP 2019-1996#  
Recvd: 1509' Total Fluid: 10' 100% O, 50' OCMCW (5%O, 35%M, 60%W), 189' MCOCW (15%O, 15%M, 70%W), 189' GCOCWCW (10%G, 10%O, 13%M, 67%W), 504' OCMCW (4%O, 5%M, 91%W), 567' MCW (5%M, 95%W).

CFS @ 4180'  
Stop/30"/60"

CFS @ 4210'  
Stop/30"/60"

CFS @ 4242'  
Stop/30"/60"



SH dk gry/blk, silt carb, firm, fissile.  
 LS: cm/lt-dk brn, micro-crs xtal, foss frags w/some ool w/oo-castic por, some silty, wht/lt gry/brn chert, 9 pcs w/ppt-fn in-xtal por w/sfo, dull yel flor, odor, sfo.

SH: lt-med gry, silty-vry silty, some carb, soft-firm, some friable, fissile.  
 LS: cm/lt-med brn/gry/gry mottling, micro-med xtal, foss frags, some chalky, some pyritic, 3 pcs w/ppt in-xtal por w/sfo, yel flor, silt odor, ssfo.

LS: cm/lt brn/lt gry-brn, micro-med xtal, foss frags/dense ool, vry silty, vry chalky, no vis por w/few pcs w/crs oo-castic por, no odor, ns.

LS: cm/lt gry, micro-crs xtal, foss frags/dense ool, vry silty, chalky, no vis por, no odor, ns.

LS: cm/lt gry/lt-med brn, micro-med xtal, foss frags/min ool, silty, chalky, wht/lt gry chert, no vis por, no odor, ns.

SH: lt-dk gry/blk, silty, silt carb, soft-firm, fissile.  
 LS: cm/lt-med brn/gry, micro-med xtal, foss frags, silty, chalky, pyritic, wht chert, 23 pcs w/ppt-fn in-xtal por w/sfo, dull yel flor, odor, gsfo.

SH: lt-dk gry/blk/brn/green-gry, silty, silt carb, firm, fissile.  
 LS: cm/lt gry, micro-med xtal, silty, chalky, wht/lt gry chert, some frac por, 3 pcs w/sfo looks like from above, no odor, ns.

LS: cm/lt gry, micro-med xtal, foss frags, silty/sndy, some chalky, wht/lt gry chert, no vis por, no odor, ns.

LS: cm/lt gry/lt-med brn, micro-med xtal, foss frags, silty, some chalky, wht/lt gry chert, no vis por, no odor, ns. SH: gry-brn/dk gry, silty, silt carb, firm, fissile, no odor, ns.

LS: cm/lt brn/lt gry, micro-med, foss frags, silty/sndy, some chalky, min lt gry chert, no vis por, no odor, ns.

SH: lt-med gry, vry silty/sndy, carb, soft-firm; Siltstn/SS: lt-med gry, vf-f, pred qtz, carb, soft-firm, friable, no odor, ns.

SH/Siltstn as above, no odor, ns.

LS: cm/lt brn, micro-med, foss frags/brac/dense ool, some silty, min wht chert, some chalky, no vis por, no odor, ns.

SH: lt-med gry, vry silty/sndy, silt carb, firm, fissile.

SH: lt-med gry/brn/maroon, vry silty/sndy, soft-firm, no odor, ns.

LS: cm/tan, micro-med xtal, foss frags, silty/sndy, some chalky, no vis por, no odor, ns.

LS: cm/gry/brn, micro-med xtal, foss frags, some vry silty, arg, no vis por, no odor, ns.

SH: lt-med gry/green-gry, silty, carb, firm, fissile.  
 LS: cm/lt gry/lt brn, micro-fn xtal, some foss frags, vry silty, chalky, 6 pcs w/ppt-fn in-xtal por w/sfo, dul yel flor, no odor, sfo.

LS: as above w/8 pcs w/fn-crs in-xtal por, dull yel flor, no odor, sfo.

SH: med-dk gry/green-gry/brn/maroon, silty, silt carb, soft-firm, fissile.  
 LS: cm/lt brn, micro-med xtal, foss frags/crin/ool, some silty/sndy, chalky, wht/lt gry/lt brn chert, 13 pcs w/ppt-fn in-xtal/in-oo por w/sfo, silt odor, dul yel flor, sfo.

LS: same as above, 6 pcs w/ppt-med por w/sfo, dul yel flor, silt odor.

LS: same as above, 8 pcs w/ppt-crs por w/sfo, dul yel flor, silt odor.

SH: med-dk gry/blk, some vry silty, some pyritic, silt carb, soft-firm, fissile.

LS: cm/lt-med brn/lt gry, micro-med xtal, foss frags/brac/crin/min ool, vry silty, some chalky, wht/lt gry-brn chert, silt pyritic, some frac por/min oo-castic por, 5 pcs w/ppt-fn in-xtal por w/sfo, dul yel flor, no odor, sfo.

CFS @ 4270'  
 Stop/30"/60"

**DST4) 4186-4210 Lansing I-zone**  
 30/45/45/60  
 1st) 1/2" blow built to BOB in 15 min; BB built to 1".  
 2nd) WSB built to BOB in 18.5 min; BB built to 1/4".  
 IFP 22-171#  
 ISIP 1076#  
 FFP 173-262#  
 FSIP 1073#  
 HP 2094-2091#  
 Recvd: 75' G; 750' Total Fluid:  
 234' 100% O, 63' WCOCMCG (20%O, 20%W, 25%M, 35%G), 189' OCWCGCM (10%O, 20%W, 25%G, 45%M), 126' GCWCMCO (5%G, 20%W, 35%M, 40%O), 63' GCWCMCO (3%G, 20%W, 25%M, 52%O).

CFS @ 4321'  
 Stop/30"/60"

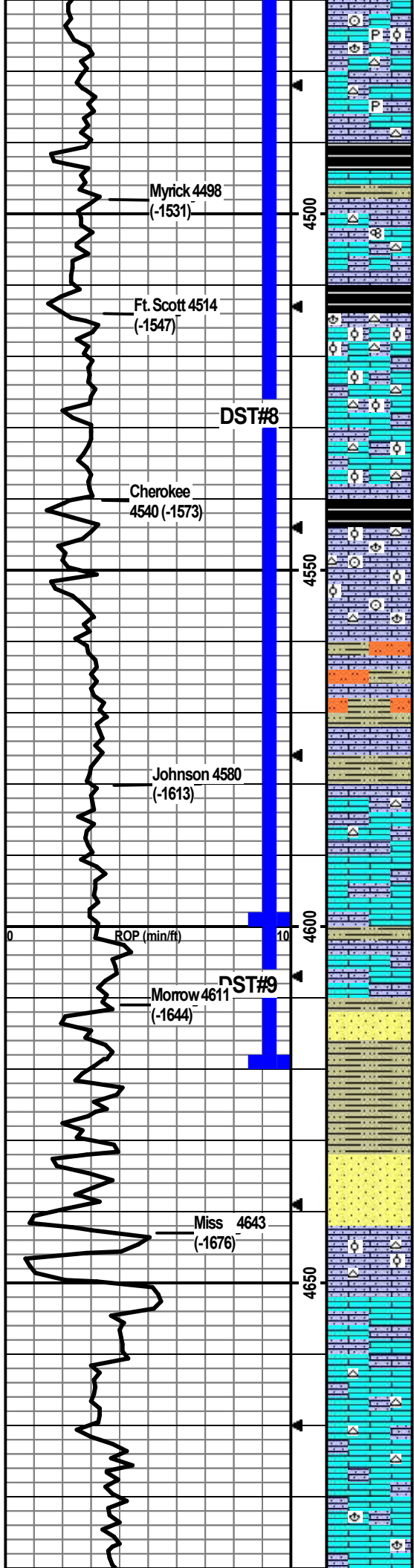
**DST5) 4214-4270 Lansing J & K-zones**  
 30/45/45/60  
 1st) 1/2" blow built to BOB in 20 min; no BB.  
 2nd) 1/4" blow built to BOB in 25.5 min; WS BB died at 20 min.  
 IFP 18-182#  
 ISIP 1091#  
 FFP 184-282#  
 FSIP 1088#  
 HP 2094-2073#  
 Recvd: 662' Total Fluid: 32' OCWCM (3%O, 37%W, 60%M), 63' OCGCM (1%O, 6%G, 93%M), 126' GCOCMCW (5%G, 5%O, 25%M, 65%W), 252' OCGCMCW (3%O, 7%G, 40%M, 50%W), 189' MCOCW (10%O, 10%M, 80%W).

CFS @ 4410'  
 Stop/30"/60"

CFS @ 4430'  
 Stop/30"/60"

**DST6) 4290-4321 Lansing L-zone**  
 30/45/45/60  
 1st) WSB built to 2.9"; no BB.  
 2nd) WSB built to 2.4"; no BB.  
 IFP 12-37#  
 ISIP 975#  
 FFP 41-82#  
 FSIP 941#  
 HP 2133-2127#  
 Recvd: 138' Total Fluid: 75' O, 63' OCM (10%O, 90%M).

CFS @ 4455'  
 Stop/30"/60"



LS: as above w/3 pcs w/ppt-fn in-xtal por w/sfo, dul yel flor, no odor, ssfo.

CFS @ 4482  
Stop/30"/60"

**DST7) 4408-4455 Altamont B&C-zones**

30/30/30/30  
1st WSB built to 3/4"; no BB.  
2nd) no blow; no BB.  
IFP 11-22#  
ISIP 1109#  
FFP 23-30#  
FSIP 1078#  
HP 2162-2159#  
Recvd: 30' OCM (2%O, 98%M).

LS: lt-med bm, micro-med xtal, foss frags, some silty, some chalky, min pyritic, bm chert, no vis por, no odor, ns.

SH: med-dk gry/blk/green-gry/dk bm, slit carb, silty, firm-vry firm, fissile. LS: med-dk bm, micro-med xtal, foss frags, no vis por, no odor, ns.

LS: cm/lt bm, micro-med xtal, foss frags/fusln, some silty, some chalky, wht/lt gry chert, some frac por, 4 pcs w/ppt-fn in-xtal por w/sfo, dul yel flor, no odor, ns.

SH: dk gry/blk, slit carb, firm-hard, fissile.

LS: lt-med bm, micro-med xtal, foss frags/brac/abund ool, some silty/sndy, some chalky, cm/lt-dk gry chert some oolitic, 11 pcs w/ppt-fn in-oolitic por w/sfo, dul yel flor, no odor, sfo.

CFS @ 4508  
Stop/30"/60"

LS: cm/lt-med bm/dk mottle, micro-med xtal, foss frags/ool less than above, some chalky, some silty, slit pyritic, lt gry/lt-dk bm chert, 5 pcs w/ppt-fn in-xtal/in-ool por w/sfo, dul yel flor, no odor, sfo.

CFS @ 4530  
Stop/30"/60"

LS: cm/lt gry/bm, micro-med xtal, foss frags/some dense ool, some chalky, silty/sndy, wht/lt gry/lt bm ool chert, some frac por, no odor, ns.

SH: lt-dk gry/blk, some silty, slit carb, fissile.

LS: cm/lt bm, micro-med xtal, foss frags/brac/crin/ool, silty/sndy, arg, some chalky, some wht/lt gry/lt brn ool chert, 1 pce w/ppt in-xtal por w/sfo, no odor, ssfo.

LS: same as above, 1 pce w/ppt in-ool por w/sfo, dul yel flor, no odor, ssfo.

CFS @ 4555  
Stop/30"/60"

SH: med-dk gry/blk/brn, vry silty, carb, soft-firm, fissile, some friable.

SS/Sltstn: lt gry, pred qtz, vf-f, sr-wr, hard, friable, no odor, ns.

LS: cm/lt brn/lt gry, foss frags, vry silty/sndy, arg, vry chalky, some frac por, 1 pce w/brn staining 1 pce w/ppt-med in-xtal por w/sfo, no odor, ssfo.

**DST8) 4456-4600 Pawnee thru Johnson**

30/30/30/30  
1st 1/4" built to 1/2"; no BB.  
2nd) No blow; no BB.  
IFP 15-23#  
ISIP 273#  
FFP 28-30#  
FSIP 113#  
HP 2156-2136#  
Recvd: 20' OCM (2%O, 98%M).

LS: cm/lt-med bm, micro-med xtal, foss frags/ool, silty/sndy, brn chert, 21 pcs w/fn-vug in-xtal por w/sfo, dul yel flor, slit odor, gsfo.

SH: lt-dk gry/blk/brn/maroon, silty, slit carb, firm, fissile.

LS: cm/lt brn/lt gry, micro-fn xtal, foss frags, some silty/sndy, cm/lt gry chert, 22 pcs w/ppt-vug in-xtal por w/sfo, dul yel flor, slit odor, gsfo.

LS: cm/lt-med bm, micro-med xtal, some silty/sndy, some chalky, foss frags, 33 pcs w/fn-vug in-xtal por w/sfo, dul yel flor, slit odor, gsfo.

LS: cm/lt gry, micro-med xtal, some vry chalky, some silty, 33 pcs w/fn-crs in-xtal por w/sfo, dul yel flor, slit odor, gsfo.

SS: wht/lt gry/lt green-gry, vf-f, sr-wr, pred qtz, glac, ppt-fn in-xtal por, hard, friable, approx 25% of tray w/sfo, blk, no flor but strm cut, slit odor, vgdsfo. Blk thick globby tar oil.

SH: lt-dk gry/brn/green-gry/mustard yel, some vry silty/sndy, slit carb, firm, silty is friable, slit odor.

CFS @ 4620  
Stop/30"/60"

Mostly SH as above; some SS as above, 3 pcs w/show of blk tar oil assumed from above, no odor, ssfo.

SH: lt-dk gry/bm/ green-gry/mustard yel/maroon, some vry sndy, slit carb, firm-hard, no odor, ns.

SS: wht/lt gry/lt green/maroon, vf-f, sa-r, pred qtz, glac, mostly clean w/some vry arg, hard friable, no odor, ns.

LS: wht/cm/min lt gry, f-med xtal, vry sndy, some vry chalky, foss frags/min dense ool, some wht/orange chert, no vis por, no odor, ns.

CFS @ 4642  
Stop/30"/60"

LS: cm/min lt gry, micro-fn xtal, some sndy, some chalky, min fn foss frags, no vis por, no odor, ns.

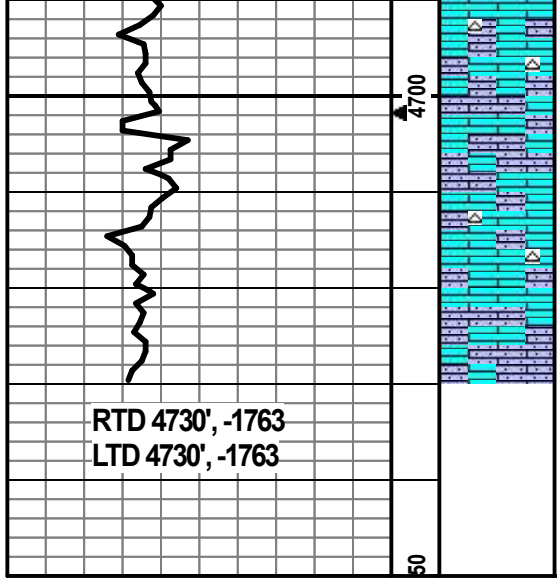
**DST9) 4599-4620 Lower Johnson & Upper Morrow**

30/30/30/30  
1st) WSB; no BB.  
2nd) No blow, flushed tool, no blow; no BB.  
IFP 10-11#  
ISIP 41#  
FFP 100-102#  
FSIP 102#  
HP 2253-2244#  
Recvd: 160' Mud.

LS: cm/lt bm, micro-fn xtal, some vry sndy, some vry chalky, min pyritic, some lt gry chert, no vis por, no odor, ns.

LS: cm/lt bm, micro-med, some sndy, some chalky, min lt gry chert, no vis por, no odor, ns.

LS: cm/lt bm, micro-med, some sndy, some chalky, foss frags/brac, no vis por, no odor, ns.



RTD 4730', -1763  
LTD 4730', -1763

LS: cm/lt bm, micro-med, some sndy, some chalky, foss frags, min wht/lt gry/orange chert, no vis por, no odor, ns.

LS: as above w/increase in sand and chalk, no chert, no odor, ns.

LS: cm/lt bm, micro-fn xtal, some chalky, decrease in sand, min gry/bm chert, no vis por, no odor, ns.

LS: cm/lt bm, micro-med xtal, some vry sndy, some vry chalky, no vis por, no odor, ns.

TD @4730'

CFS @4730'  
Stop/30"/60"  
Cir 1.5 hr to collect samples and condition hole then TOH for logging.