

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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# RITCHIE

EXPLORATION, INC.  
Wichita, Kansas

## #1 Antholz Trust 2A

1,472' FNL & 939' FEL  
152' S & 51' E of W/2 E/2 NE/4 Section 2-5S-37W  
Cheyenne County, Kansas  
API# 15-023-21510-0000  
Elevation: GL: 3,389', KB: 3,394'

Sample Tops			Ref. Well
Anhydrite	3129'	+272	-7
B/Anhydrite	3169'	+225	-8
Stotler	3867'	-473	-5
Heebner	4234'	-840	-14
Toronto	4274'	-880	-15
Lansing	4284'	-890	-15
Muncie	4404'	-1010	-15
Stark	4472'	-1078	-10
Hushpuckney	4508'	-1114	-11
BKC	4528	-1134	-10
Marmaton	4555	-1161	-8
Altamont	4594	-1200	-9
Pawnee	4645	-1251	-8
Myrick	4686	-1292	-7
Ft. Scott	4706	-1312	-9
Cherokee	4736	-1342	-15
Morrow	4876	-1482	-17
Mississippian	4929	-1535	-10
RTD	5000	-1606	



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

100395  
 40394

TICKET NUMBER 56101  
 LOCATION Oakley, Ks  
 FOREMAN Walt Dunkel

FIELD TICKET & TREATMENT REPORT  
 CEMENT

Invoice # 900721

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY
4-15-19	7193	Antholz Trust 2A #1	2	5 <sup>s</sup>	37 <sup>w</sup>	Cherokee
CUSTOMER Ritchie Exploration			Brewster north to Rd 6			
MAILING ADDRESS P.O. BOX 783188			TRUCK #	DRIVER	TRUCK #	DRIVER
CITY Wichita			528-T12 <sup>s</sup>	Mattie Dent	Xavier Colby	
STATE KS			1098	Walt Dunkel		
ZIP CODE 67278-3188						

JOB TYPE Surface HOLE SIZE 12'14 HOLE DEPTH 371' CASING SIZE & WEIGHT 8 5/8 - 24 #  
 CASING DEPTH 370' DRILL PIPE \_\_\_\_\_ TUBING \_\_\_\_\_ OTHER \_\_\_\_\_  
 SLURRY WEIGHT 15.2 SLURRY VOL \_\_\_\_\_ WATER gal/sk \_\_\_\_\_ CEMENT LEFT in CASING 15'-20'  
 DISPLACEMENT 22'14 DISPLACEMENT PSI \_\_\_\_\_ MIX PSI \_\_\_\_\_ RATE 4 BPM

REMARKS: Safety Meeting, Rig up on well #8, circ casing on bottom  
Mix 325 SKs COM, 3% CC - 2% cat, Displace 22'14

Cement Dial Circ

Approx 2 BBL to RT

Thank You

ACCOUNT CODE	QUANTITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
CC0471	1	PUMP CHARGE	1,150.00	1,150.00
CC0002	50	MILEAGE	7.15	357.50
CC0710	15.28	Ton Mileage Delivery	1.95	1,339.00
CC5871	325 SKs	Surface Blend II	24.00	7,800.00
		25% Disc		10,644.50
				2,161.13
				7,983.37
		SALES TAX		497.25
		ESTIMATED TOTAL		8,480.63

Ravin 3737 AUTHORIZATION [Signature] TITLE \_\_\_\_\_ DATE \_\_\_\_\_

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

250 N. Water St., Suite #200  
Wichita, KS 67202



**HURRICANE SERVICES INC**

Customer	Ritchie Exploration	Lease & Well #	Antholz Trust 2A #1	Date	4/26/2019
Service District	Oakley, KS	County & State	Cheyenne KS	Legals S/P/R	2-5-3Tw
Job Type	PTA	<input type="checkbox"/> PROD <input type="checkbox"/> INJ <input type="checkbox"/> SWD	New Well?	<input type="checkbox"/> YES <input type="checkbox"/> No	Job #
Equipment #	Driver	Ticket #			

**Job Safety Analysis - A Discussion of Hazards & Safety Procedures**

<input type="checkbox"/> Hard hat	<input type="checkbox"/> Gloves	<input type="checkbox"/> Lockout/Tagout	<input type="checkbox"/> Warning Signs & Flagging
<input type="checkbox"/> H2S Monitor	<input type="checkbox"/> Eye Protection	<input type="checkbox"/> Required Permits	<input type="checkbox"/> Fall Protection
<input type="checkbox"/> Safety Footwear	<input type="checkbox"/> Respiratory Protection	<input type="checkbox"/> Slip/Trip/Fall Hazards	<input type="checkbox"/> Specific Job Sequence/Expectations
<input type="checkbox"/> FRC/Protective Clothing	<input type="checkbox"/> Additional Chemical/Acid PPE	<input type="checkbox"/> Overhead Hazards	<input type="checkbox"/> Muster Point/Medical Locations
<input type="checkbox"/> Hearing Protection	<input type="checkbox"/> Fire Extinguisher	<input type="checkbox"/> Additional concerns or issues noted below	

**Comments**

All cement and chemicals came from the Oakley, KS service center

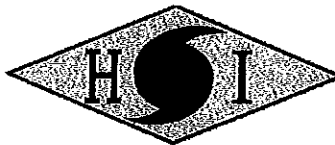
Product/Service Code	Description	Unit of Measure	Quantity	Net Amount
M010	Heavy Equipment Mileage	mi	60.00	\$170.00
M015	Light Equipment Mileage	mi	60.00	\$85.00
M020	Ton Mileage	tm	537.00	\$684.68
C010	Cement Pump	ea	1.00	\$637.50
CP055	Type H plug cement	sack	240.00	\$2,507.16
FE230	8 5/8" Wooden Plug	ea	1.00	\$127.50

Customer Section: On the following scale how likely would you rate Hurricane Services Inc.?

Total Taxable		\$ -	Tax Rate:	Net: \$4,211.84							
Based on this job, how likely is it you would recommend HSI to a colleague?		State tax laws deem certain products and services used on new wells to be sales tax exempt. Hurricane Services relies on the customer provided well information above to make a determination if services and/or products are tax exempt.		Sale Tax: \$ -							
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Extremely Likely	Total: \$ 4,211.84
1	2	3	4	5	6	7	8	9	10		
Unlikely											HSI Representative: <i>Dano Rotzloff</i>

**TERMS:** Cash in advance unless Hurricane Services Inc. (HSI) has approved credit prior to sale. Credit terms of sale for approved accounts are total invoice due on or before the 30th day from the date of invoice. Past due accounts shall pay interest on the balance past due at the rate of 1 1/2% per month or the maximum allowable by applicable state or federal laws. In the event it is necessary to employ an agency and/or attorney to effect the collection, Customer hereby agrees to pay all fees directly or indirectly incurred for such collection. In the event that Customer's account with HSI becomes delinquent, HSI has the right to revoke any discounts previously applied in arriving at net invoice price. Upon revocation, the full invoice price without discount is immediately due and subject to collection. Prices quoted are estimates only and are good for 30 days from the date of issue. Pricing does not include federal, state, or local taxes, or royalties and stated price adjustments. Actual charges may vary depending upon time, equipment, and material ultimately required to perform these services. Any discount is based on 30 days net payment terms or cash. **DISCLAIMER NOTICE:** Technical data is presented in good faith, but no warranty is stated or implied. HSI assumes no liability for advice or recommendations made concerning the results from the use of any product or service. The information presented is a best estimate of the actual results that may be achieved and should be used for comparison purposes and HSI makes no guarantee of future production performance. Customer represents and warrants that well and all associated equipment in acceptable condition to receive services by HSI. Likewise, the customer guarantees proper operational care of all customer owned equipment and property while HSI is on location performing services. The authorization below acknowledges the receipt and acceptance of all terms/conditions stated above, and Hurricane has been provided accurate well information in determining taxable services.

x  **CUSTOMER AUTHORIZATION SIGNATURE**



**CEMENT TREATMENT REPORT**

Customer: **Ritchie Exploration**  
 City, State: **Wichita KS**  
 Field Rep: **Scott**

Well: **Antholz Trust 2A # 1**  
 County: **Cheyenne**  
 S-T-R: **2-5-37w**

Ticket: **ICT1962**  
 Date: **4/25/2019**  
 Service: **Cement**

Downhole Information	
Hole Size:	<b>7.875</b>
Hole Depth:	
Casing Size:	
Casing Depth:	
Casing weight	
Depth:	
Tool / Packer:	
Depth:	
Displacement:	<b>bbfs</b>

Slurry	
Weight:	<b>13.8 # / sx</b>
Water / Sx:	<b>6 8/9 gal / sx</b>
Yield:	<b>1 3/7 ft<sup>3</sup> / sx</b>
Bbls / Ft.:	<b>0.01422</b>
Depth:	<b>ft</b>
Volume:	<b>bbfs</b>
Excess:	<b>%</b>
Total Slurry:	<b>61 bbfs</b>
Total Sacks:	<b>240 sx</b>

Cement Blend		
Product	%	#
Class A	<b>60.0</b>	<b>13536</b>
Poz	<b>40.0</b>	<b>7104</b>
Gel	<b>4.0</b>	<b>826</b>
Flo Seal	<b>0.3</b>	<b>64</b>
KolSeal		
PhenoSeal		
Salt		

		<b>Total</b>	<b>21,530</b>
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TIME	RATE	PSI	BBLs	REMARKS	TIME	RATE	PSI	BBLs	REMARKS
10:30 AM				Arrive on location					
10:35 AM				Safety meeting					
10:40 AM				Rig up equipment					
11:00 AM	4.0	280.0	58.0	Mix 50 sks @ 3160 and displace					
11:40 AM	5.5	280.0	62.0	Mix 100 sks @ 2220 and displace					
12:45 PM	4.0	180.0	14.0	Mix 50 sks @ 420 and displace					
1:35 PM	3.0	120.0	10.0	Top 40 10sks RH 30sks					
1:45 PM				Wash up					
1:55 PM				Rig down					
2:20 PM				Depart					

CREW		UNIT
Cementer:	<b>Dane Retzloff</b>	<b>78</b>
Pump Operator:	<b>Josh Mosier</b>	<b>230</b>
Bulk #1:	<b>John polley</b>	<b>242</b>
Bulk #2:		

SUMMARY		
Average Rate	Average Pressure	Total Fluid
<b>4.125 bpm</b>	<b>215.00 psi</b>	<b>134.00 bbfs</b>



**Company: Ritchie Exploration, Inc.**

**Lease: Antholz Trust #2A**

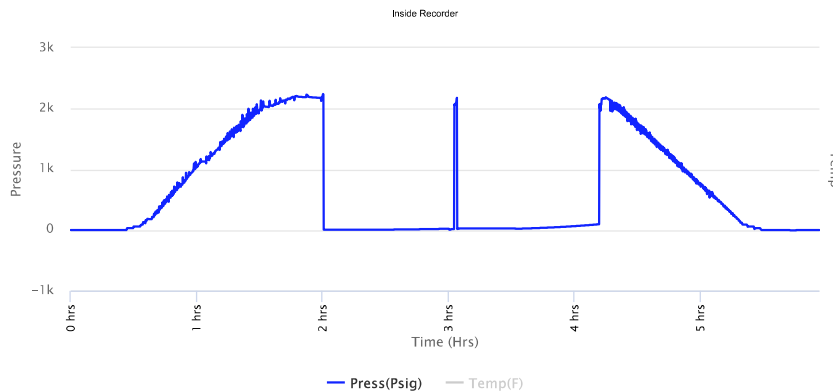
SEC: 2 TWN: 5S RNG: 37W  
 County: CHEYENNE  
 State: Kansas  
 Drilling Contractor: WW Drilling, LLC - Rig 8  
 Elevation: 3391 EGL  
 Field Name: Wildcat  
 Pool: Wildcat  
 Job Number: 333

**Operation:**  
 Uploading recovery & pressures

**DATE**  
 April  
**21**  
 2019

**DST #1**    **Formation: Lan J**    **Test Interval: 4440 - 4474'**    **Total Depth: 4474'**  
 Time On: 13:49 04/21    Time Off: 19:36 04/21  
 Time On Bottom: 15:45 04/21    Time Off Bottom: 17:45 04/21

Electronic Volume Estimate: 28'	<u>1st Open</u> Minutes: 30 Current Reading: 0" at 30 min Max Reading: .3"	<u>1st Close</u> Minutes: 30 Current Reading: 0" at 30 min Max Reading: 0"	<u>2nd Open</u> Minutes: 30 Current Reading: 0" at 30 min Max Reading: .5"	<u>2nd Close</u> Minutes: 30 Current Reading: 0" at 30 min Max Reading: 0"
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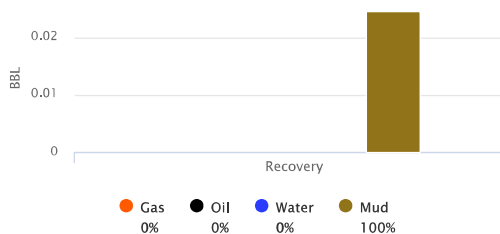
Recovered		Description of Fluid	Gas %	Oil %	Water %	Mud %
Foot	BBLs					
5	0.0246	M	0	0	0	100

Total Recovered: 5 ft  
 Total Barrels Recovered: 0.0246

Reversed Out  
 NO

Initial Hydrostatic Pressure	2179	PSI
Initial Flow	7 to 7	PSI
<b>Initial Closed in Pressure</b>	<b>22</b>	<b>PSI</b>
Final Flow Pressure	24 to 25	PSI
<b>Final Closed in Pressure</b>	<b>96</b>	<b>PSI</b>
Final Hydrostatic Pressure	2161	PSI
Temperature	133	°F
Pressure Change Initial Close / Final Close	0.0	%

Recovery at a glance



GIP cubic foot volume: 0





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**BUCKET MEASUREMENT:**

1st Open: Surge blow and dead  
1st Close: No blow  
2nd Open: Surge blow and dead  
2nd Close: No blow

**REMARKS:**

Flushed tool on 2nd open



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**Down Hole Makeup**

<b>Heads Up:</b> 11.89 FT	<b>Packer 1:</b> 4435 FT
<b>Drill Pipe:</b> 4301.83 FT <i>ID-3 1/2</i>	<b>Packer 2:</b> 4440 FT
<b>Weight Pipe:</b> FT <i>ID-2 7/8</i>	<b>Top Recorder:</b> 4424.42 FT
<b>Collars:</b> 117.49 FT <i>ID-2 1/4</i>	<b>Bottom Recorder:</b> 4475 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> 34	<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> 33 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> FT <i>4 1/2-FH</i>	



**Operation:**  
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pressures

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**Mud Properties**

**Mud Type:** Chemical      **Weight:** 9.3      **Viscosity:** 55      **Filtrate:** 6.4      **Chlorides:** 3000 ppm



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**Gas Volume Report**

1st Open			
Time	Orifice	PSI	MCF/D

2nd Open			
Time	Orifice	PSI	MCF/D



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 Field Name: Wildcat  
 Pool: WILDCAT  
 Job Number: 333

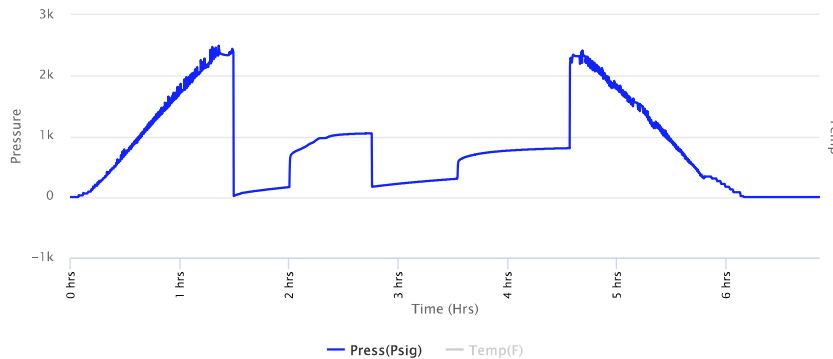
**Operation:**  
 Uploading recovery & pressures

**DATE**  
 April  
**24**  
 2019

**DST #2**      **Formation: Cherokee**      **Test Interval: 4752 - 4812'**      **Total Depth: 5003'**  
 Time On: 23:55 04/24      Time Off: 07:05 04/25  
 Time On Bottom: 01:50 04/25      Time Off Bottom: 04:50 04/25

Electronic Volume Estimate: 620'	<u>1st Open</u> Minutes: 30 Current Reading: 20.4" at 30 min Max Reading: 20.4"	<u>1st Close</u> Minutes: 45 Current Reading: 0" at 45 min Max Reading: 0"	<u>2nd Open</u> Minutes: 45 Current Reading: 22.8" at 45 min Max Reading: 22.8"	<u>2nd Close</u> Minutes: 60 Current Reading: 0" at 60 min Max Reading: 0"
-------------------------------------	---	--	---	--

Inside Recorder



**Company: Ritchie Exploration, Inc.**

**Lease: Antholz Trust 2A #1**

SEC: 2 TWN: 5S RNG: 37W  
 County: CHEYENNE  
 State: Kansas  
 Drilling Contractor: WW Drilling, LLC - Rig 8  
 Elevation: 3391 EGL  
 Field Name: Wildcat  
 Pool: WILDCAT  
 Job Number: 333

**Operation:**  
 Uploading recovery & pressures

**DATE**  
 April  
**24**  
 2019

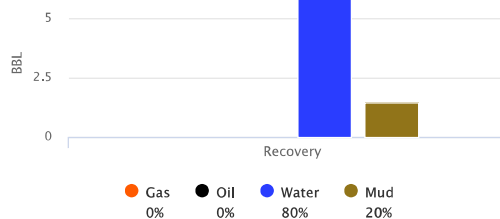
**DST #2**      **Formation: Cherokee**      **Test Interval: 4752 - 4812'**      **Total Depth: 5003'**  
 Time On: 23:55 04/24      Time Off: 07:05 04/25  
 Time On Bottom: 01:50 04/25      Time Off Bottom: 04:50 04/25

Recovered		Description of Fluid	Gas %	Oil %	Water %	Mud %
Foot	BBLs					
600	7.4441681	MCW	0	0	80	20

Total Recovered: 600 ft  
 Total Barrels Recovered: 7.4441681

**Reversed Out**  
 NO

Recovery at a glance



Initial Hydrostatic Pressure	2340	PSI
Initial Flow	18 to 164	PSI
<b>Initial Closed in Pressure</b>	<b>1050</b>	<b>PSI</b>
Final Flow Pressure	172 to 301	PSI
<b>Final Closed in Pressure</b>	<b>806</b>	<b>PSI</b>
Final Hydrostatic Pressure	2320	PSI
Temperature	148	°F

Pressure Change Initial Close / Final Close      23.3      %

GIP cubic foot volume: 0



Company: Ritchie Exploration, Inc.

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Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 333

Operation:  
Uploading recovery & pressures

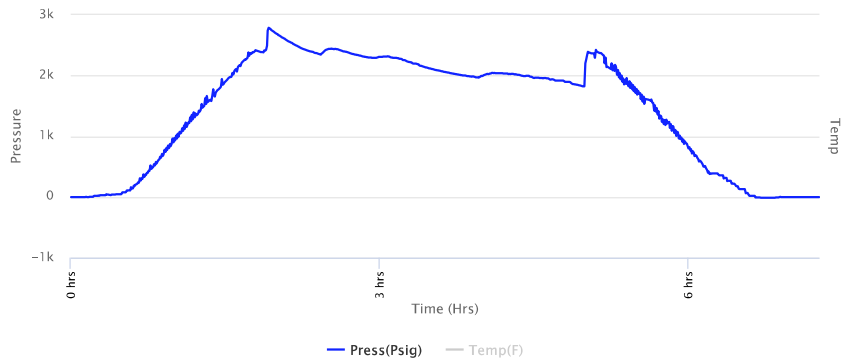
DATE  
April  
24  
2019

DST #2      Formation: Cherokee      Test Interval: 4752 - 4812'      Total Depth: 5003'  
Time On: 23:55 04/24      Time Off: 07:05 04/25  
Time On Bottom: 01:50 04/25      Time Off Bottom: 04:50 04/25

BUCKET MEASUREMENT:  
1st Open: BOB in 16 min  
1st Close: No blow  
2nd Open: BOB in 21 min  
2nd Close: No blow

REMARKS:  
Tool Sample: 0% Gas 0% Oil 75% Water 25% Mud  
Chlorides: 19000 ppm

Below Straddle Recorder



Company: Ritchie Exploration, Inc.

Lease: Antholz Trust 2A #1

SEC: 2 TWN: 5S RNG: 37W  
County: CHEYENNE  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 8  
Elevation: 3391 EGL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 333

Operation:  
Uploading recovery & pressures

DATE  
April

DST #2      Formation: Cherokee      Test Interval: 4752 - 4812'      Total Depth: 5003'

24  
2019

Time On: 23:55 04/24      Time Off: 07:05 04/25  
Time On Bottom: 01:50 04/25      Time Off Bottom: 04:50 04/25

**Down Hole Makeup**

<b>Heads Up:</b> 16.86 FT	<b>Packer 1:</b> 4746.58 FT
<b>Drill Pipe:</b> 4618.38 FT <i>ID-3 1/2</i>	<b>Packer 2:</b> 4751.58 FT
<b>Weight Pipe:</b> FT <i>ID-2 7/8</i>	<b>Packer 3:</b> 4812 FT
<b>Collars:</b> 117.49 FT <i>ID-2 1/4</i>	<b>Top Recorder:</b> 4736 FT
<b>Test Tool:</b> 33.57 FT <i>ID-3 1/2-FH</i> <i>Jars</i> <i>Safety Joint</i>	<b>Bottom Recorder:</b> 4808 FT
<b>Total Anchor:</b> 60.42	<b>Below Straddle Recorder:</b> 5001 FT
<b>Anchor Makeup</b>	
<b>Packer Sub:</b> 1 FT	
<b>Perforations: (top):</b> 21 FT <i>4 1/2-FH</i>	
<b>Change Over:</b> 1 FT	
<b>Drill Pipe: (in anchor):</b> 31.42 FT <i>ID-3 1/2</i>	
<b>Change Over:</b> 1 FT	
<b>Perforations: (below):</b> 5 FT <i>4 1/2-FH</i>	
<b>STRADDLE</b>	
<b>Straddle Packer(s):</b> 1 FT	
<b>Change Over:</b> 2 FT	
<b>Drill Pipe:</b> 187.21 FT <i>ID-3 1/2"</i>	
<b>Change Over:</b> 1 FT	
<b>Perforations (in tail pipe):</b> 3 FT <i>4 1/2-FH</i>	



**Company: Ritchie Exploration, Inc.**  
**Lease: Antholz Trust 2A #1**

SEC: 2 TWN: 5S RNG: 37W  
County: CHEYENNE  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 8  
Elevation: 3391 EGL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 333

**Operation:**  
Uploading recovery & pressures

**DATE**  
April  
**24**  
2019

**DST #2      Formation: Cherokee      Test Interval: 4752 - 4812'      Total Depth: 5003'**  
Time On: 23:55 04/24      Time Off: 07:05 04/25  
Time On Bottom: 01:50 04/25      Time Off Bottom: 04:50 04/25

**Mud Properties**

**Mud Type:** Chemical      **Weight:** 9.3      **Viscosity:** 59      **Filtrate:** 6.4      **Chlorides:** 5000 ppm



Company: Ritchie Exploration, Inc.

Lease: Antholz Trust 2A #1

SEC: 2 TWN: 5S RNG: 37W  
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Time On Bottom: 01:50 04/25      Time Off Bottom: 04:50 04/25

Gas Volume Report

1st Open			
Time	Orifice	PSI	MCF/D

2nd Open			
Time	Orifice	PSI	MCF/D



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

Well Name: ANTHOLZ TRUST 2A  
Well Id: #1  
Location: 1472' FNL, 939' FEL, Sec 02-T05S-R37W, Cheyenne County, Kansas  
License Number: API: 15-023-21510 Region: Cheyenne County  
Spud Date: 04/15/2019 Drilling Completed: 04/24/2019  
Surface Coordinates: Lat: 39.6513911  
Long: -101.4336519  
Bottom Hole Vertical hole  
Coordinates:  
Ground Elevation (ft): 3389' K.B. Elevation (ft): 3394'  
Logged Interval (ft): 4000' To: RTD Total Depth (ft): 5000'  
Formation: Mississippian at RTD  
Type of Drilling Fluid: Chemical

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

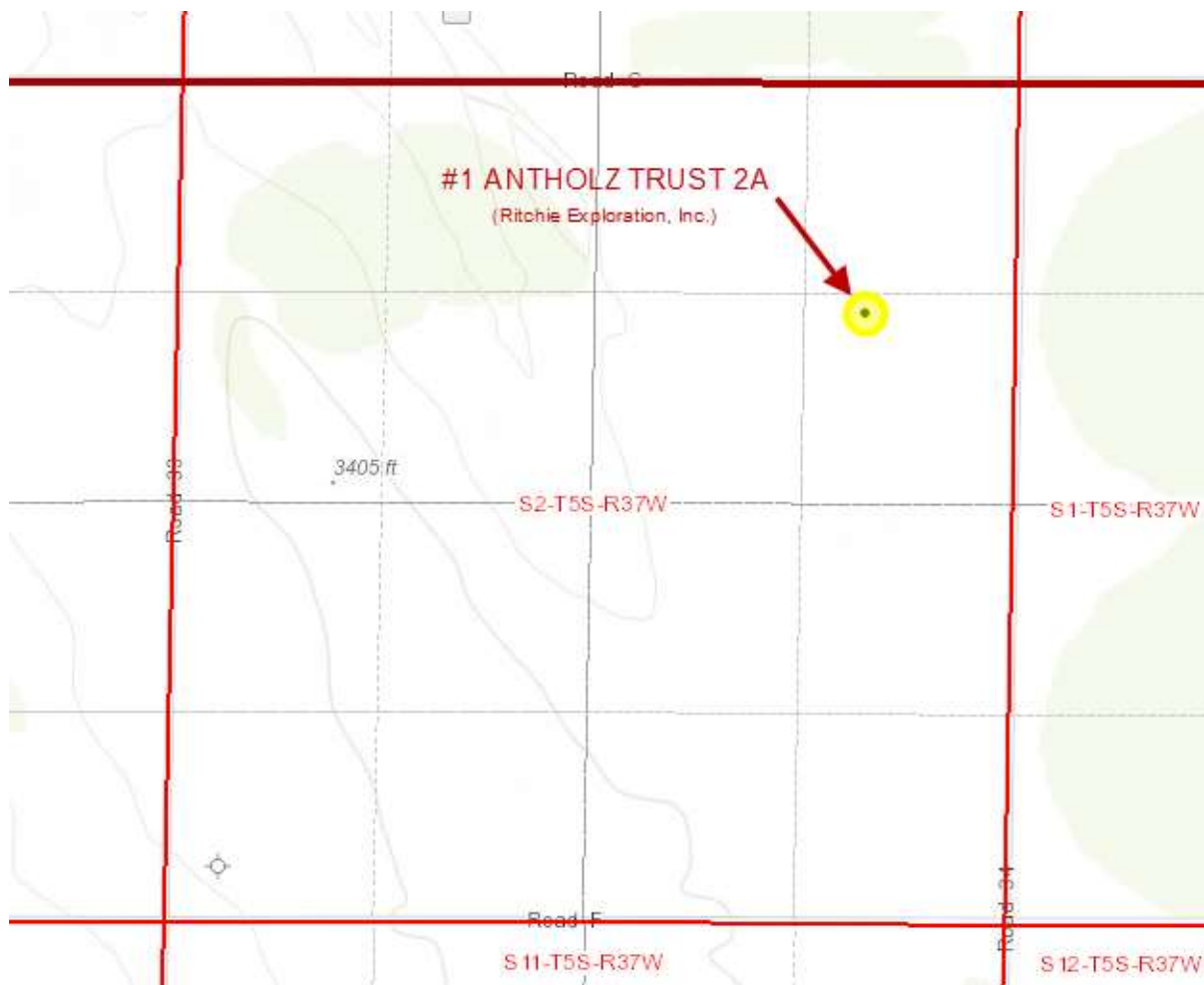
OPERATOR

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: WW Drilling Company, Rig #8.

Tool Pusher: Scott Piland, 620-639-1843 (cell).

Surface Casing: 8 5/8" set at 371' (KB) w/325sx cement.

Production Casing: Based on field observations of drill cuttings, DST results and electric log evaluation, production casing was not installed and the hole was plugged and abandoned.

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

DST's by: Diamond Testing, Wil Steinbeck, 620-282-1573 (cell).

Logs by: Pioneer (DI w/GR, CND, Micro, and Sonic), D. Schmidt, 785-628-6395 (office).

RTD= 5000'

LTD= 5003'

## FORMATION TOPS

FORMATION	SAMPLE TOPS		LOG TOPS	
	Depth	Datum	Depth	Datum
Stotler	3542'	-369	3536'	-363
Heebner Shale	3908'	-735	3900'	-727
Lansing	3953'	-780	3945'	-772
Muncie Creek Shale	4116'	-943	4111'	-938
Stark Shale	4207'	-1034	4201'	-1028
Hushpuckney Shale	4248'	-1075	4239'	-1066
Base of KC	4275'	-1102	4268'	-1095
Marmaton	4321'	-1148	4309'	-1136
Pawnee	4409'	-1236	4400'	-1227
Myrick Station	4459'	-1286	4451'	-1278
Fort Scott	4472'	-1299	4466'	-1293
Cherokee Shale	4506'	-1333	4497'	-1324
Johnson	4570'	-1397	4562'	-1389
Mississippian	4719'	-1546	4710'	-1537
RTD	4840'	-1667		
LTD			4831'	-1658

## 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

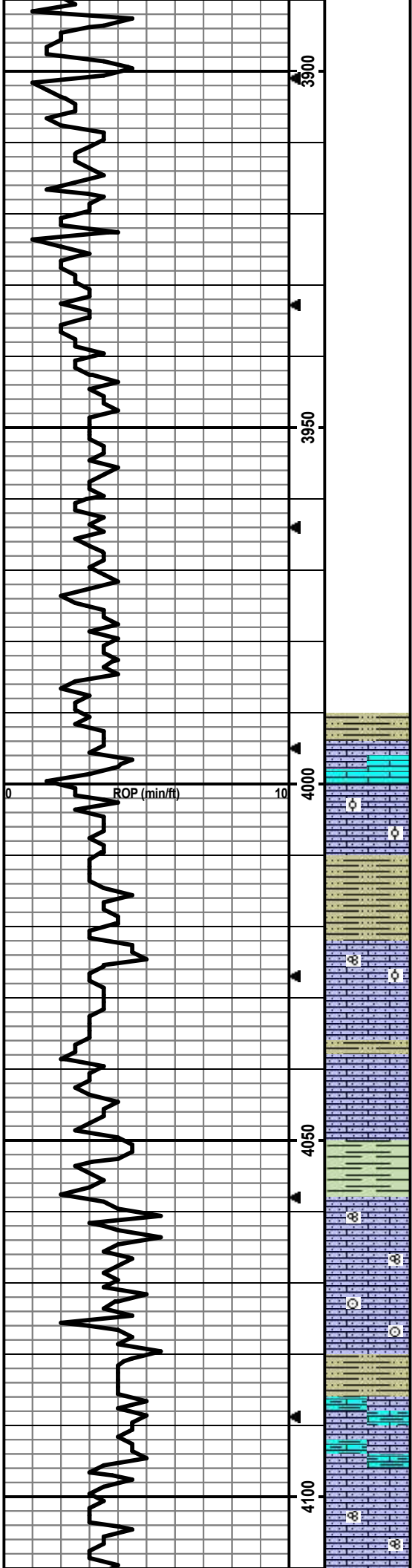
	Ferrpel
	Ferr
	Glau
	Gyp
	Hvymn
	Kaol
	Marl
	Minxl
	Nodule
	Phos
	Pyr
	Salt
	Sandy
	Silt
	Sil
	Sulphur
	Tuff
	Chlorite
	Dol
	Sand
	Sly

Rate of Penetration (ROP) ROP (min/ft)	Depth	Lithology	CFS Point	Oil Shows	Geological Descriptions	Remarks
	37				<b>Morning Report Depth/Activity (7:00 am)</b> 04/15/2019, MIRU/Spud. 04/16, drilled to 426'; set surface casing @ 371' KB. 04/17, drilling @ 2647'. 04/18, drilling @ 3565'. 04/19, drilling @ 4105'. 04/20, CFS @ 4322'. 04/21, CFS @ 4450'. 04/22, drilling @ 4540'. 04/23, drilling @ 4704'. 04/24, drilling @ 4925'; TD @ 5000'. Completed electric logging. 04/25, DST#2 @ 4752'-4812' (straddle test).	Mud-Co/Service Mud Inc. Check #1 @ 0' 04/15/19, predrilling instructions.
	3750				<b>Anhydrite: Top @ 3132', Base @ 3169' (based on drill time).</b>	Mud-Co/Service Mud Inc. Check #2 @ 2688' 04/17/19 07:10am wt vis pH chl 9.0 28 7.0 120 Filt LCM n/c 0
					<b>Conducted drilling mud displacement @ 3461' -3477'.</b>	Mud-Co/Service Mud Inc. Check #3 @ 3619' 04/18/19 08:30am wt vis pH chl 8.7 66 11.5 2000 Filt LCM 7.2 1.5
					<b>Oil Shows indicator: Left Block 0-10 tray pcs w/show, Middle Block 10-20 tray pcs w/show, Right Block 20+ tray pcs w/show.</b>	Mud-Co/Service Mud Inc. Check #4 @ 4121' 04/19/19 07:45am wt vis pH chl 9.2 64 11.0 2500 Filt LCM 6.4 2
	3800				<b>ROP Data begins @ 3800' on 04/18/2019</b>	Mud-Co/Service Mud Inc. Check #5 @ 4325' 04/20/19 07:35am wt vis pH chl 9.2 47 11.0 3000 Filt LCM 7.2 1
	3850					Mud-Co/Service Mud Inc. Check #6 @ 4468' 04/21/19 08:40am wt vis pH chl 9.3 53 11.0 3000 Filt LCM 6.4 1
						Mud-Co/Service Mud Inc. Check #7 @ 4550' 04/22/19 08:30am wt vis pH chl 9.3 54 11.5 4000 Filt LCM 7.2 1
						Mud-Co/Service Mud Inc. Check #8 @ 4716' 04/23/19 07:35am wt vis pH chl 9.2 58 10.5 4400 Filt LCM 8.0 2
						Mud-Co/Service Mud Inc. Check #9 @ 4936' 04/24/19 07:20am wt vis pH chl 9.4 59 11.0 5000 Filt LCM 8.8 2

Stotler 3867  
(-473)

**Survey Record  
Deg @ Ft**

1.0 @ 371'  
0.25 @ 4474'  
1.0 @ 5000'



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

Drill cutting samples at 10' intervals start at 4000'.

SH: lt-dk gry/lt green-gry/lt maroon, some vry silty, slit carb, firm.

LS: cm/lt-m brn/gry, micro-med xtal, some vry silty, min chalky, foss frags, 1 pce w/show, yel flor/cut, ppt-f in-xtal por, no odor, ssfo.

LS: cm, micro-med xtal, vry silty/sndy, some chalky, foss frags/dense ool, ppt-f in-xtal por, no odor, ns.

SH: lt-dk gry/maroon, vry silty, slit carb, firm, no odor, ns.

LS: cm/lt bm, micro-m xtal, silty/sndy, some chalky, foss frags/fusin/dense ool, min ppt-f in-xtal por, no odor, ns.

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

SH: dk gry/red bm, soft-firm, no odor, ns.

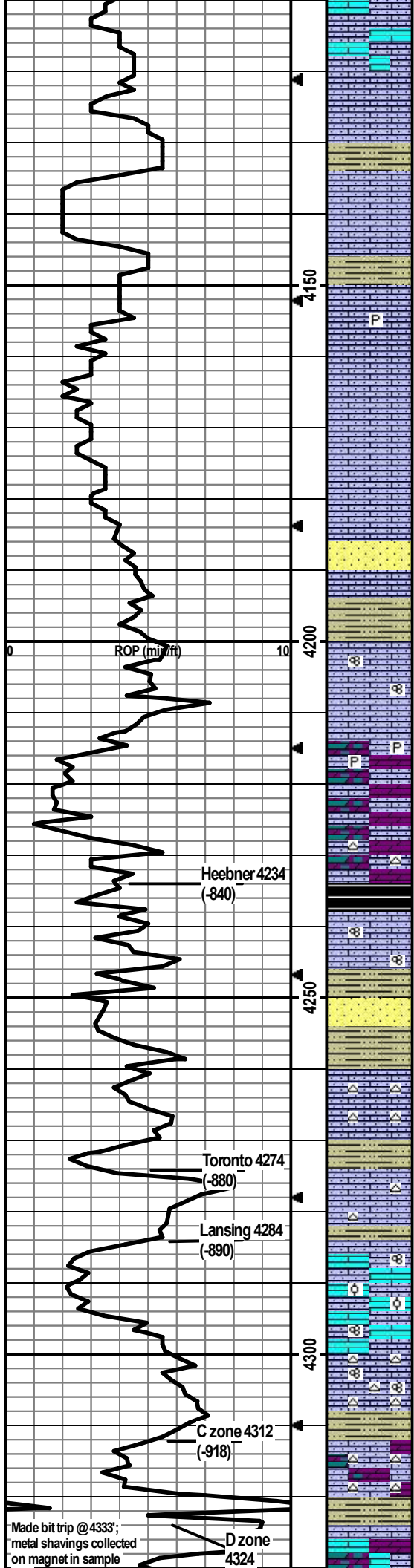
LS: cm/lt gry, micro-med xtal, silty/sndy, chalky, foss frags/fusin, ppt-f in-xtal por, no odor, ns.

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

SH: m-dk gry/red brn/maroon/min lt green-gry, some vry silty/sndy, firm.

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

LS: cm, micro-med, silty, chalky, foss frags/fusin, ppt-f in-xtal por, no odor, ns.



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

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

SH: med-dk gry/ red-brn/maroon, some silty, slt carb, soft-firm.

LS: cm, micro-f xtal, vry silty/sndy, some chalky, min foss frags, crushes easily, no vis por, no odor, ns.

4150

LS: cm/lt bm, micro-m xtal, some silty/sndy, some chalky, min pyritic, min foss frags, min ppt-f in-xtal por, 1 pce w/blk tar oil w/yel cut, no odor, slt show.

LS: cm/lt bm/min lt gry, micro-m xtal, some vry silty/sndy, some chalky, ppt-f in-xtal por, no odor, ns.

LS: cm/lt bm/min lt gry, micro-m xtal, some vry silty/sndy, some chalky, mostly ppt-f in-xtal por w/some m-c por, no odor, ns.

4200

LS: lt gry, micro-f xtal, vry silty, min foss frags/brac, no vis por, no odor, ns. Some SS: lt-m gry, vf-f, pred qtz, glauc, arg, friable, no odor, ns.

LS: lt-m gry, vf-f xtal, vry silty, arg, foss frags, no vis por, no odor, ns. SH: m-dk gry, some vry silty, slt carb, soft-firm, no odor, ns.

4250

LS: lt-m bm/gry/gry-bm, vf-med xtal, some vry silty, some chalky, foss frags/fusln, no vis por, no odor, ns.

LS: cm, vf-f xtal, silty/sndy, grainy, dolomitic, some chalky, min pyritic, ppt-f in-xtal por, no odor, ns.

LS: cm, vf-f xtal, silty/sndy, grainy, dolomitic, some chalky, min wht chert, ppt-f in-xtal por, no odor, ns.

SH: m-dk gry/blk, firm, slt carb, fissile.

LS: cm/lt gry/bm, vf-m xtal, silty/sndy, some chalky, foss frags/fusln, no vis por, no odor, ns.

4300

SH: lt-dk gry/lt green-gry/maroon, some vry silty/sndy, slt carb, firm. Some SS: lt green-gry, f-m, pred qtz, sr-wr, arg, friable, no odor, ns.

LS: cm/lt bm, micro-f xtal, some silty/sndy, min chalky, abund lt bm chert, foss frags, ppt-vf in-xtal por, 4 pcs w/blk tar oil w/yel cut, no odor, no free oil droplets.

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

LS: cm/lt bm, vf-m xtal, vry silty/sndy, arg, bm chert, foss frags/grainy, 2 pcs w/blk tar oil w/yel cut, ppt-f in-xtal por, no odor, no free oil droplets.

LS: cm/lt gry-brn, micro-m xtal, some silty/sndy, sample vry chalky, min pyritic, foss frags/fusln, ppt-m in-xtal por w/por within fusln, no odor, ns.

LS: cm/lt brn, micro-m xtal, some silty/sndy, sample vry chalky, foss frags/fusln/ool, ppt-m in-xtal por w/por within fusln, 8 pcs w/lt yel staining w/yel cut w/ppt in-xtal por, no odor, no vis free oil, ns.

LS: cm, micro-m xtal, vry silty/sndy, some chalky, abund wht/lt brn/orange chert, foss frags/fusln, some ppt-f in-xtal por, no odor, ns.

SH: lt-dk gry/lt green-gry/min maroon, some vry silty/sndy, slt carb, firm, no odor, ns.

LS: cm/lt bm, micro-f xtal, sample chalky, some silty/sndy, grainy, dolomitic, lt bm/orange chert, min foss frags, no vis por, no odor.

SH: m-dk gry/lt green-gry/dk maroon, silty, slt carb, firm.

LS: cm/lt brn, micro-med xtal, some silty/sndy, some chalky, some grainy, dolomitic, foss frags, min ppt-f in-xtal por, no odor, ns. Sample was a flood of SH.

CFS @ 4184'  
Stop/30"/60"

Conducted 40 stand wiper trip at 4184' connection.

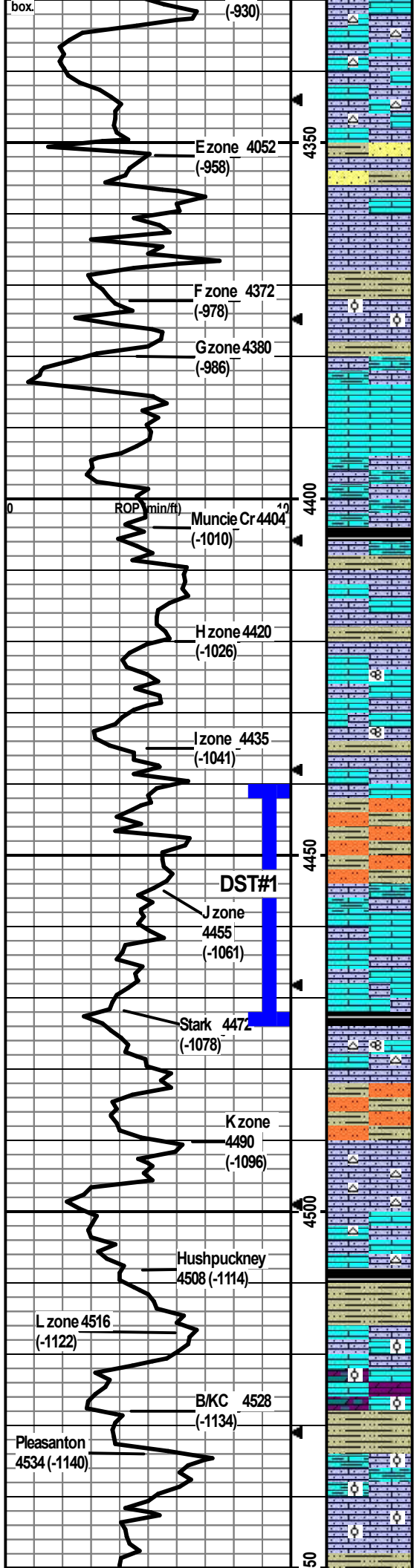
CFS @ 4284'  
Stop/30"/60"

CFS @ 4300'  
Stop/30"/60"

CFS @ 4324'  
Stop/30"/60"

Made bit trip @ 4333'; metal shavings collected on magnet in sample

Made bit trip @ 4333'; metal shavings collected on magnet in



LS: wht/cm, micro-m xtal w/some 2ndry xtals, some vry silty, chalky, wht/orange chert, foss frags, no vis por, no odor, ns.

LS: wht/cm/lt gry, micro-med xtal, some silty, chalky, wht/orange chert, foss frags, 1 pce w/blk tar oil w/yel cut, some ppt-f in-xtal por, no odor, no oil droplets.

Flood of SH: m-dk gry/red-brn/maroon/lt green-gry, some vry silty/sndy, slt carb, soft-firm, few lt gry SS pcs.

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

LS: wht/cm, micro-med xtal, vry sndy, vry chalky, min foss frags, min ppt-f in-xtal por, no odor, ns.

SH: m-dk gry/dk red-brn, vry silty/sndy, slt carb, firm, no odor, ns.

LS: cm/lt brn, micro-m xtal, some vry silty/sndy, some chalky, some arg, min foss frags/dense ool, no vis por, no odor, ns.

LS: cm/lt gry, micro-f xtal, some 2ndry xtal, some silty, some arg, min foss frags, no vis por, no odor, ns.

LS: cm/lt gry, micro-f xtal, some silty/arg, no vis por, no odor, ns.

LS: brn/m-dk gry, micro-m xtal, silty/sndy, arg. some chalky, min wht chert, foss frags, no vis por, no odor, ns.

SH: m-dk gry/min blk, some vry silty, slt carb, soft-firm.

LS: wht/cm, micro-f xtal, some vry chalky, some silty, 23 pcs w/blk tar oil w/yel cut mostly in chalk, ppt-f in-xtal por, no odor, no free oil droplets.

LS: cm/lt brn/lt gry, micro-m xtal, some vry chalky, some silty, min fulsn, 21 pcs w/blk tar oil w/yel cut some in chalk, ppt-f in-xtal por, no odor, no free oil.

LS: cm/lt brn/lt gry-brn, micro-med xtal, some silty, some chalky, foss frags/fulsn, no vis por, no odor, ns (1 pcs w/ppt por w/blk tar oil assumed from above).

LS: crm, micro-m xtal, some silty, some chalky, foss frags, no vis por, no odor, ns.

Sltstn: lt gry/maroon/red-brn/yel mottling, pred qtz, arg, friable, no odor, ns. SH: lt-m gry/red-brn, vry silty/sndy, slt carb, soft-firm, no odor, ns.

LS: cm/lt gry/brn, micro-m xtal, some silty, some chalky, some arg, foss frags/fulsn, no vis por, no odor, ns.

LS: cm/lt gry, micro-f xtal, some silty, some chalky, 24 pcs w/bm oil staining, no free oil, yel cut, ppt in-xtal por, no odor.

SH: m-d gry, slt carb, firm.

LS: crm, micro-m xtal, some chalky, some silty, crm/orange chert, min foss frags/fulsn, 7 pcs w/sfo w/ppt-f in-xtal por, yel flor/cut, oil droplets on break, no odor, sfo.

SH: lt-dk gry/dk red-brn/maroon/min lt green-gry, vry silty/sndy, slt carb, firm, no odor, ns. Some Sltstn: dk red-brn, vry arg, slt carb, friable, no odor, ns.

LS: cm/lt gry, micro-f xtal, vry silty/sndy, some vry chalky, abund crm chert, min pyritic, foss frags/grainy, no vis por, no odor, ns.

LS: cm/min lt gry, micro-f xtal, some vry chalky, some cm/orange chert, some silty/sndy, some foss frags/grainy, no vis por, no odor, ns.

SH: lt-dk gry/blk/lt green-gry/maroon, some vry silty, firm.

LS: cm/min lt brn, micro-m xtal, some silty, foss frags/min dense ool, no vis por, no odor, ns.

LS: cm/lt brn/min lt gry, vf-m xtal, silty, some chalky, some dolomitic, foss frags/min dense ool, min ppt-f in-xtal por, no odor, ns.

SH: lt-dk gry/red-brn, vry silty, slt carb, firm, no odor, ns. Some Sltstn/SS: lt gry, pred qtz, arg, friable, no odor, ns.

LS: crm/lt green-gry, micro-f xtal, some vry silty/sndy, arg, min foss frags/min ool, 6 pcs w/sfo on break w/yel cut, ppt-f in-xtal por, no odor, sfo.

LS: cm/lt gry, micro-m xtal, some silty/sndy, foss frags/ool, 18 pcs w/sfo on break w/yel cut, ppt-f in-xtal/in-ool por, no odor, sfo.

sample box. Tricone bit was badly damaged.

Pipe strap on bit trip at 4333' was 0.55' short to the board.

CFS @ 4350'  
Stop/30"/60"

CFS @ 4370'  
Stop/30"/60"

CFS @ 4380'  
Stop/30"/60"

CFS @ 4400'  
Stop/30"/60"

CFS @ 4430'  
Stop/30"/60"

CFS @ 4450'  
Stop/30"/60"

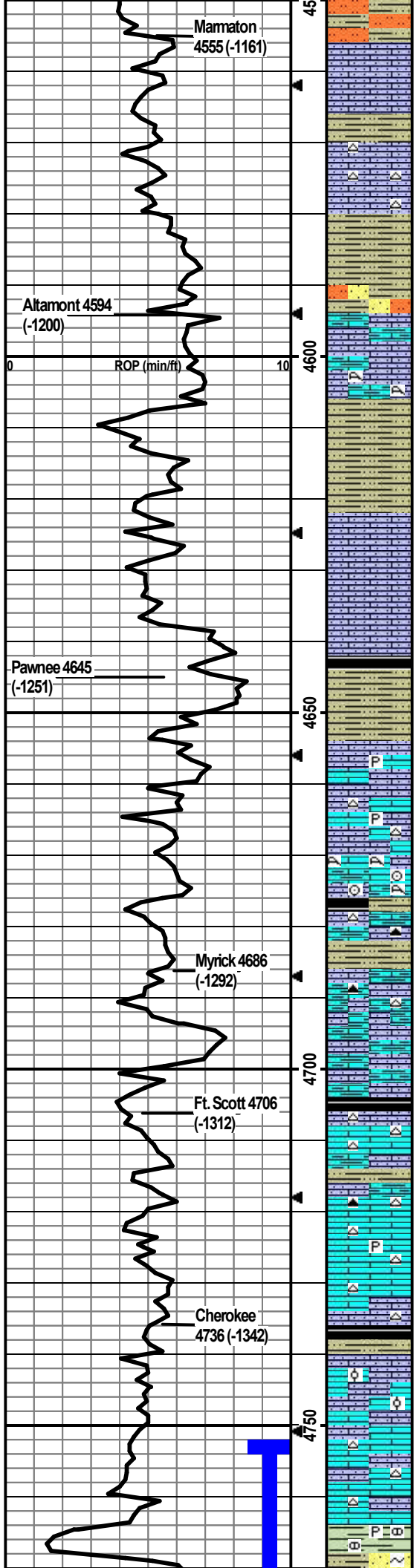
CFS @ 4474'  
Stop/30"/60"

**DST1) 4440-4474  
Lansing J-zone**  
30/30/30/30  
1st) Surge blow then dead; no BB.  
2nd) Surge blow then dead; no BB.  
IFP 7-7#  
ISIP 22#  
FFP 24-25#  
FSIP 96#  
HP 2179-2161#  
Recvd: 5' mud.

CFS @ 4510'  
Stop/30"/60"

CFS @ 4531'  
Stop/30"/60"

CFS @ 4550'



SH: lt-dk gry/red-brn/maroon/lt green-gry, some vry silty, slit carb, firm. Siltstn/SS: lt gry, vf-f, pred qtz, some arg, 9 pcs w/dk brn staining, yel cut, ppt-vf in-xtal por, no odor, sfo.

LS: crm/lt gry, micro-m xtal, vry silty/sndy, arg, foss frags/dense ool, 4 pcs w/brn staining, yel cut, ppt-vf in-xtal/in-ool por, no odor, no free oil droplets.

Sample flood of SH: dk red-brn, vry silty/sndy, firm, no odor, ns. Min LS: crm/lt gry, 3 pcs as above w/brn staining/yel cut, no odor, no free oil.

LS: crm/lt gry, micro-m xtal, vry silty, some chalky, abund wht/lt-dk orange chert, foss frags, no vis por, no odor, ns.

Min LS/chert as above w/flood of SH: lt-dk gry/min red-brn, vry silty, vry carb, firm, no odor, ns.

SH: lt-dk gry/maroon-gry/red-brn, vry silty, vry carb, firm. Siltstn/SS: lt gry, vf-f, pred qtz, some glac, arg, 1 pce w/yel cut on break, no odor, no free oil. Min LS: crm/lt gry, micro-f xtal, some vry silty, some arg, min foss frags, no vis por, no odor, ns.

LS: crm/lt-dk brn/lt gry, micro-m xtal, some vry silty, some chalky, some vry arg, min foss frags/few pcs of lattice coral, no vis por, no odor, ns. SH: m-dk gry/dk red-brn/lt green-gry, some vry silty/sndy, firm, no odor, ns.

SH: lt-dk gry/dk red-brn/dk maroon-brn, some vry silty/sndy, slit carb, no odor, ns.

LS: lt gry/lt brn, micro-m xtal, some vry silty/sndy, some chalky, foss frags, no vis por, no odor, ns.

LS: crm/lt gry, vf-f xtal, vry silty, some chalky, min foss frags, no vis por, no odor, ns.

SH: lt-dk gry/blk/lt gry-brn, some vry silty, carb, firm, no odor, ns.

LS: wht/lt gry/min brn, micro-f xtal, sample vry chalky, some vry silty, some arg, min pyritic, min foss frags/fusin, no vis por, no odor, ns.

LS: crm/lt-m brn, micro-f xtal, some vry silty, chalky, crm chert, min pyritic, 10 pcs w/brn oil staining, yel cut, mostly dense w/min ppt-f in-xtal por, no odor, no free oil droplets.

LS: crm/lt-m gry-brn, vf-m, some vry silty, chalky, arg, min wht/lt-dk brn chert (60min), foss frags/crin w/abund lattice coral, some f-m por in coral, no odor, ns.

SH: dk gry/blk/dk brn-gry, some silty, firm, no odor, ns

LS: lt-m brn/gry-brn, f-m xtal, some silty, arg, some chalky, wht/lt-dk brn chert, foss frags, no vis por, no odor, ns.

LS: crm/lt-dk brn, micro-m xtal, some silty/arg/chalky, foss frags, no vis por, no odor, ns.

SH: m-dk arv/blk, silty, slit carb, firm.

LS: crm/lt gry-brn, micro-m xtal, some silty, chalky, wht/lt gry chert, foss frags, no vis por, no odor, ns.

SH: m-dk gry/blk/dk maroon/lt green-gry, vry silty/sndy, firm.

LS: crm/lt-dk brn/gry-brn, micro-m xtal, some vry sndy, some chalky, some arg, wht/lt-dk brn chert, foss frags, no vis por, no odor, ns.

LS: crm/lt brn, micro-m xtal, some chalky, min pyritic, wht/lt gry chert, foss frags, no vis por, no odor, ns.

LS: crm/lt gry/lt-m brn, micro-f xtal, some silty/sndy, some chalky, lt brn chert, foss frags, no vis por, no odor, ns.

SH: m-dk gry/blk/dk brn, some vry silty, slit carb, firm.

LS: crm/brn/gry, f-crs xtal, some vry silty/sndy, some chalky, foss frags/some dense ool, 1 pce wfo on break, yel cut, ppt-f in-xtal por, no odor, ssfo.

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

SH: med gry, blocky tex, LS nod, min pyritic, no odor, ns.

Stop/30"/60"

CFS @ 4570'  
Stop/30"/60"

CFS @ 4610'  
Stop/30"/60"

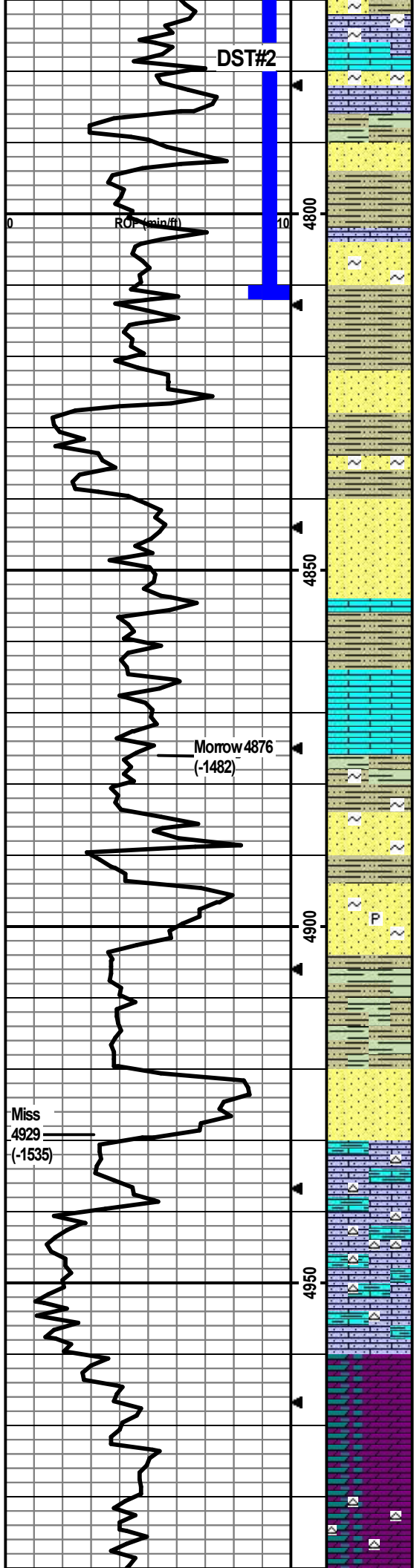
CFS @ 4640'  
Stop/30"/60"

CFS @ 4680'  
Stop/30"/60"

CFS @ 4700'  
Stop/30"/60"

CFS @ 4730'  
Stop/30"/60"

CFS @ 4770'  
Stop/30"/60"



SH: lt-dk gry/lt green-gry/min mustard yel/maroon, vry silty/sndy, carb, firm, no odor, ns. SS: Lt gry/gry-brn/lt green/wht, f-m, sr-wr, carb, arg, glac, hard, friable, no odor, ns. LS: crm/lt brn, f-m xtal, some vry sndy, glac, min foss frags, min frac por, no odor, ns.

SH: m-dk gry/dk red-bm, some vry sndy, firm. some LS/SS as above, some SS: crs wht clean sand, no odor, ns.

SS: wht/crm/lt gry, f-crs, sr-wr, pred qtz, opaque, some glauc, hard, some friable, no vis por, no odor, ns.

SH: m-dk gry/dk red-bm/maroon, some silty, slt carb, firm, no odor, ns.

LS: crm/lt brn, micro-m xtal, some vry sndy, some chalky, foss frags, no vis por, no odor, ns. SS: wht/crm/lt gry/lt green-gry, f-crs, sr-wr, pred qtz, some glauc, pred qtz, hard, some friable, no odor, ns. SH: lt-dk gry/lt green-gry/dk maroon/min mustard yel, some vry silty/sndy, firm, no odor, ns.

SH: lt-dk gry/dk maroon/lt green-gry/dk red-bm, some vry silty/sndy, firm, some friable. Some SS and LS as above, no odor, ns.

SS: wht/red-brn/lt green-gry, f-crs, sr-wr, some arg, pred qtz, hard, some friable, no odor, ns. SH: lt-dk gry/dk red-bm/maroon/lt green-gry, some vry silty/sndy, slt carb, no odor, ns.

Sample vry muddy. SH: m-dk gry/lt green-gry/maroon/red-brn/mustard yel, some vry silty/sndy, min SS: wht/lt green/lt gry/lt brn, f-crs, sr-wr, glauc, 1 pce w/sheen w/yel cut, no odor, no free oil droplets.

SS: dk red-bm, f-crs, sr-wr, pred qtz, arg, carb, hard, some friable, no odor, ns.

LS: wht/crm, micro-f xtal, vry chalky, no vis por, no odor, ns.

SH: m-dk gry/maroon/mustard yel, some vry silty/sndy, firm, no odor, ns.

LS: crm/lt brn/some lt green and yel mottling, micro-f xtal, some chalky, no vis por, no odor, ns.

SH: lt-dk gry/dk red-bm/maroon/mustard yel/min lt green-gry, some vry silty/sndy/glauc, soft-firm, no odor, ns.

Min SS: wht/lt green-gry, qtz, f-c, sr-wr, glauc, hard, friable, no odor, ns.

SH: lt-dk gry/maroon/mustard yel/lt green-gry/red-brn, silty/sndy, firm, no odor, ns.

SS: lt-dk green-gry/lt gry/lt red-brn, f-m, sr-wr, pred qtz, glauc, arg, pyritic, hard, friable, no odor, ns.

SH: lt-dk gry/maroon/mustard yel/lt green-gry/red-brn, some silty/sndy, slt carb, firm, no odor, ns.

Flood of SH as above; SS: wht/crm/lt-m gry, f-m, sr-wr, some arg, hard, friable, no odor, ns.

LS: lt gry w/ lt brn mottle, vf-f xtal, vry silty, arg, glauc, min orange chert, no vis por, no odor, ns.

LS: lt-m gry/lt brn-gry, vf-f xtal, vry silty, arg, increase in wht/orange chert, no vis por, no odor, ns.

LS: crm/lt gry/lt gry-brn, vf-f xtal, vry silty/sndy, chalky, arg, wht/orange chert, no vis por, no odor, ns.

DOLO: lt-m brn/gry-brn, vf-f xtal, silty, arg, no odor, ns.

DOLO: lt brn/lt gry, vf-f xtal, silty, arg, no odor, ns.

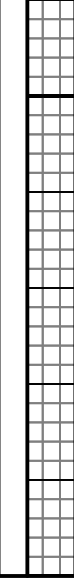
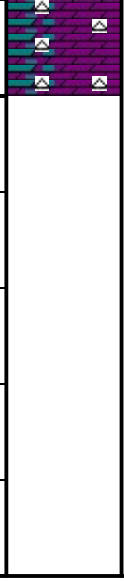
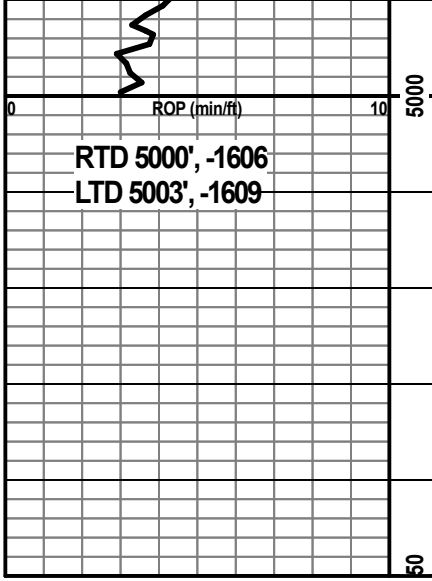
DOLO as above w/abund wht/lt gry chert, no odor, ns.

CFS @ 4791'  
Stop/30"/60"

**DST2) 4752-4812**  
**(Straddle Test)**  
**Cherokee**

CFS @ 4840'  
Stop/30"/60"





DOLO wchert as above, no odor, ns.

TD @5000'

CFS @5000'  
Stop/30'/60"  
Cir 1.5 hr to collect samples and condition hole. Made 10 stand short trip, then circulated to condition hole, then TOH for logging.