

Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

Form ACO-1

January 2018

Form must be Typed

Form must be Signed

All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # _____

Name: _____

Address 1: _____

Address 2: _____

City: _____ State: _____ Zip: _____ + _____

Contact Person: _____

Phone: (_____) _____

CONTRACTOR: License # _____

Name: _____

Wellsite Geologist: _____

Purchaser: _____

Designate Type of Completion:

New Well Re-Entry Workover

Oil WSW SWD

Gas DH EOR

OG GSW

CM (Coal Bed Methane)

Cathodic Other (Core, Expl., etc.): _____

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

Operator: _____

Well Name: _____

Original Comp. Date: _____ Original Total Depth: _____

Deepening Re-perf. Conv. to EOR Conv. to SWD

Plug Back Liner Conv. to GSW Conv. to Producer

Commingled Permit #: _____

Dual Completion Permit #: _____

SWD Permit #: _____

EOR Permit #: _____

GSW Permit #: _____

Spud Date or Date Reached TD Completion Date or Recompletion Date

API No.: _____

Spot Description: _____

_____ - _____ - _____ Sec. _____ Twp. _____ S. R. _____ East West

_____ Feet from North / South Line of Section

_____ Feet from East / West Line of Section

Footages Calculated from Nearest Outside Section Corner:

NE NW SE SW

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

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical Depth: _____ Plug Back Total Depth: _____

Amount of Surface Pipe Set and Cemented at: _____ Feet

Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set: _____ Feet

If Alternate II completion, cement circulated from: _____

feet depth to: _____ w/ _____ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: _____ ppm Fluid volume: _____ bbls

Dewatering method used: _____

Location of fluid disposal if hauled offsite:

Operator Name: _____

Lease Name: _____ License #: _____

Quarter _____ Sec. _____ Twp. _____ S. R. _____ East West

County: _____ Permit #: _____

AFFIDAVIT

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

Submitted Electronically

KCC Office Use ONLY

Confidentiality Requested

Date: _____

Confidential Release Date: _____

Wireline Log Received Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT I II III Approved by: _____ Date: _____

Operator Name: _____ Lease Name: _____ Well #: _____

Sec. _____ Twp. _____ S. R. _____ East West County: _____

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

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

Drill Stem Tests Taken <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i> Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No Cores Taken <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Run <input type="checkbox"/> Yes <input type="checkbox"/> No Geologist Report / Mud Logs <input type="checkbox"/> Yes <input type="checkbox"/> No List All E. Logs Run:	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample Name Top Datum
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CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives

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

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

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

DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <i>(Submit ACO-4)</i>	PRODUCTION INTERVAL: Top Bottom
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Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record <i>(Amount and Kind of Material Used)</i>

TUBING RECORD:	Size:	Set At:	Packer At:	
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Form	ACO1 - Well Completion
Operator	Falcon Exploration, Inc.
Well Name	RILEY WINKLER 1-6(SW)
Doc ID	1406183

All Electric Logs Run

DSN/SDLT
MICROLOG
SONIC
ACRT



Company: Falcon Exploration, Inc
Lease: Riley Winkler 1-6 (SW)

SEC: 6 TWN: 28 S RNG: 29 W
 County: GRAY
 State: Kansas
 Drilling Contractor: Sterling Drilling Company - Rig 5
 Elevation: 2787 GL
 Field Name: Unnamed
 Pool: Wildcat
 Job Number: 102

DATE
 January
29
 2018

DST #1 **Formation: Stotler** **Test Interval: 3468 - 3565'** **Total Depth: 3565'**
 Time On: 02:54 01/29 Time Off: 12:41 01/29
 Time On Bottom: 05:45 01/29 Time Off Bottom: 10:50 01/29

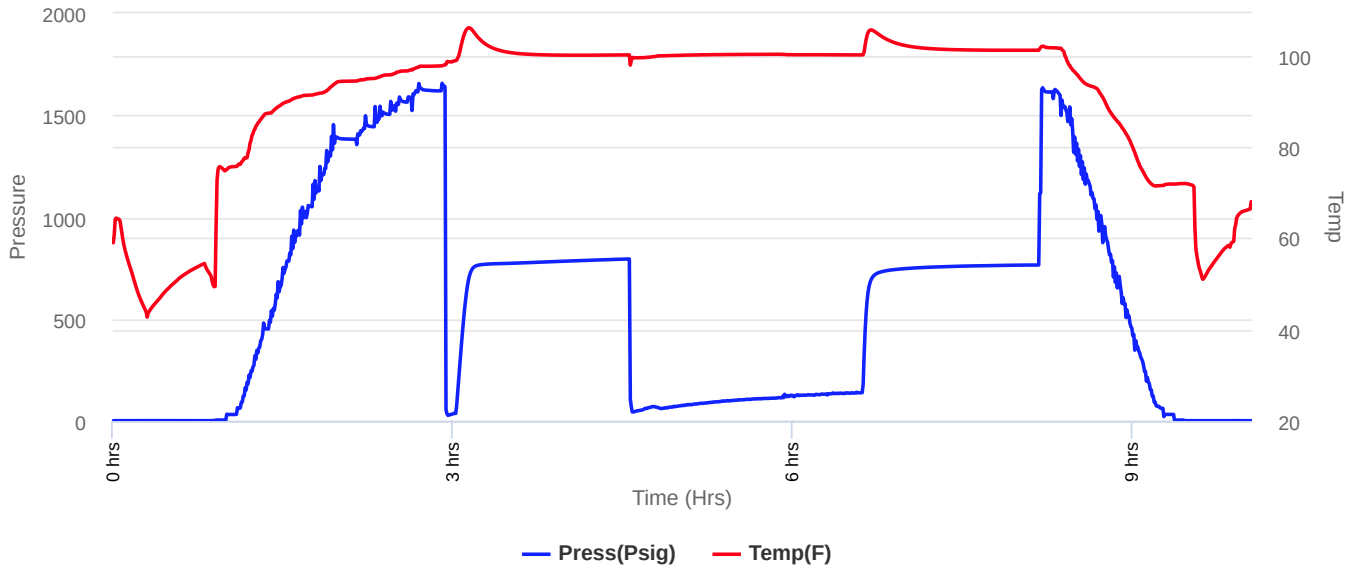
Electronic Volume Estimate:
 N/A

1st Open
 Minutes: 5
 78.3" at 5 min

1st Close
 Minutes: 90
 0" at 90 min

2nd Open
 Minutes: 120
 Gauging gas" at 120 min

2nd Close
 Minutes: 90
 0" at 90 min





Company: Falcon Exploration, Inc
Lease: Riley Winkler 1-6 (SW)

SEC: 6 TWN: 28 S RNG: 29 W
 County: GRAY
 State: Kansas
 Drilling Contractor: Sterling Drilling Company - Rig 5
 Elevation: 2787 GL
 Field Name: Unnamed
 Pool: Wildcat
 Job Number: 102

DATE
 January
29
 2018

DST #1 **Formation: Stotler** **Test Interval: 3468 - 3565'** **Total Depth: 3565'**

Time On: 02:54 01/29 Time Off: 12:41 01/29
 Time On Bottom: 05:45 01/29 Time Off Bottom: 10:50 01/29

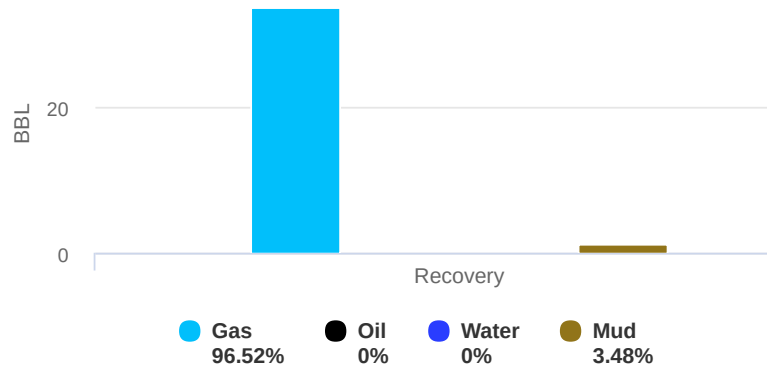
Recovered

Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
3275	33.604775	G	100	0	0	0
160	1.21328678	M	0	0	0	100

Total Recovered: 3435 ft
 Total Barrels Recovered:
 34.81806178

Reversed Out
 NO

Recovery at a glance



Initial Hydrostatic Pressure	1620	PSI
Initial Flow	27 to 36	PSI
Initial Closed in Pressure	795	PSI
Final Flow Pressure	44 to 139	PSI
Final Closed in Pressure	765	PSI
Final Hydrostatic Pressure	1619	PSI
Temperature	106	°F
Pressure Change Initial Close / Final Close	3.7	%



**Company: Falcon Exploration,
Inc**

Lease: Riley Winkler 1-6 (SW)

SEC: 6 TWN: 28 S RNG: 29 W
County: GRAY
State: Kansas
Drilling Contractor: Sterling Drilling
Company - Rig 5
Elevation: 2787 GL
Field Name: Unnamed
Pool: Wildcat
Job Number: 102

<p>DATE January 29 2018</p>

DST #1 Formation: Stotler Test Interval: 3468 - Total Depth: 3565'
3565'

Time On: 02:54 01/29 Time Off: 12:41 01/29
Time On Bottom: 05:45 01/29 Time Off Bottom: 10:50 01/29

REMARKS:

IF: BOB 30 sec
ISI: No BB
FF: BOB inst. GTS 13 min
FSI: Weak Surface BB

TOOL SAMPLE: 100% MUD



**Company: Falcon Exploration,
Inc**
Lease: Riley Winkler 1-6 (SW)

SEC: 6 TWN: 28 S RNG: 29 W
County: GRAY
State: Kansas
Drilling Contractor: Sterling Drilling
Company - Rig 5
Elevation: 2787 GL
Field Name: Unnamed
Pool: Wildcat
Job Number: 102

<p>DATE January 29 2018</p>

DST #1 **Formation: Stotler** **Test Interval: 3468 - 3565'** **Total Depth: 3565'**

Time On: 02:54 01/29 Time Off: 12:41 01/29
Time On Bottom: 05:45 01/29 Time Off Bottom: 10:50 01/29

Down Hole Makeup

Heads Up: 34.63 FT	Packer 1: 3463.26 FT
Drill Pipe: 3380.7 FT <i>ID-3 1/4</i>	Packer 2: 3468.26 FT
Weight Pipe: 0 FT <i>ID-2 7/8</i>	Top Recorder: 3452.68 FT
Collars: 89.62 FT <i>ID-2 3/8</i>	Bottom Recorder: 3538 FT
Test Tool: 33.57 FT <i>ID-3 1/2-FH</i> <i>Jars</i> <i>Safety Joint</i>	Well Bore Size: 7 7/8
Total Anchor: 96.74	Surface Choke: 1"
<u>Anchor Makeup</u>	Bottom Choke: 5/8"
Packer Sub: 1 FT	
Perforations: (top): 3 FT <i>4 1/2-FH</i>	
Change Over: 1 FT	
Drill Pipe: (in anchor): 63.74 FT <i>ID-3 1/4</i>	
Change Over: 1 FT	
Perforations: (below): 27 FT <i>4 1/2-FH</i>	



**Company: Falcon Exploration,
Inc**
Lease: Riley Winkler 1-6 (SW)

SEC: 6 TWN: 28 S RNG: 29 W
County: GRAY
State: Kansas
Drilling Contractor: Sterling Drilling
Company - Rig 5
Elevation: 2787 GL
Field Name: Unnamed
Pool: Wildcat
Job Number: 102

<p>DATE January 29 2018</p>

DST #1 **Formation: Stotler** **Test Interval: 3468 - 3565'** **Total Depth: 3565'**
Time On: 02:54 01/29 Time Off: 12:41 01/29
Time On Bottom: 05:45 01/29 Time Off Bottom: 10:50 01/29

Mud Properties

Mud Type: Chemical **Weight:** 8.8 **Viscosity:** 51 **Filtrate:** 7.6 **Chlorides:** 3,600 ppm



Company: Falcon Exploration, Inc
Lease: Riley Winkler 1-6 (SW)

SEC: 6 TWN: 28 S RNG: 29 W
 County: GRAY
 State: Kansas
 Drilling Contractor: Sterling Drilling Company - Rig 5
 Elevation: 2787 GL
 Field Name: Unnamed
 Pool: Wildcat
 Job Number: 102

DATE
January
29
2018

DST #1 **Formation: Stotler** **Test Interval: 3468 - 3565'** **Total Depth: 3565'**

Time On: 02:54 01/29 Time Off: 12:41 01/29
 Time On Bottom: 05:45 01/29 Time Off Bottom: 10:50 01/29

Gas Volume Report

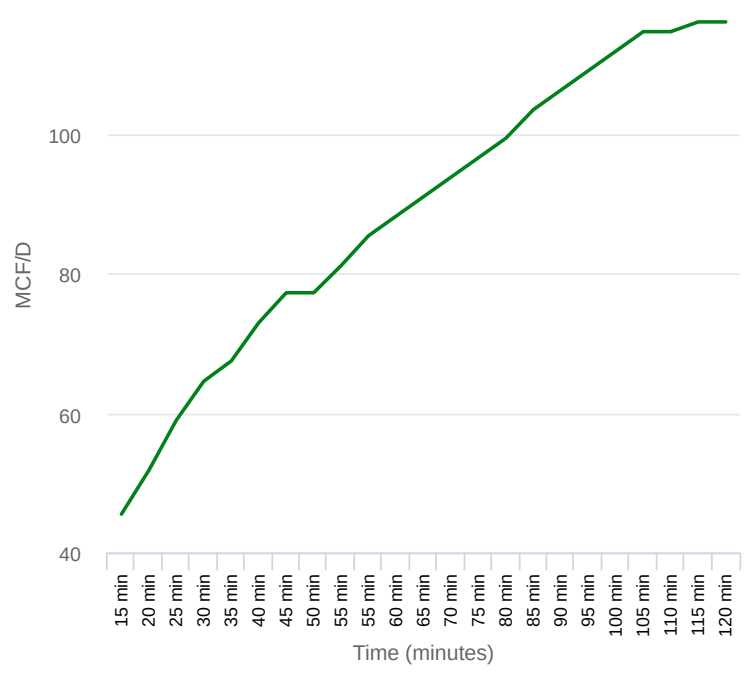
Remarks: GTS 13 min Took Gas Sample @ 75 into FF period

1st Open

Time	Orifice	PSI	MCF/D
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2nd Open

Time	Orifice	PSI	MCF/D
15	0.25	19	45.5
20	0.25	23	51.8
25	0.25	28	59.0
30	0.25	32	64.6
35	0.25	34	67.5
40	0.25	38	73.0
45	0.25	41	77.3
50	0.25	41	77.3
55	0.25	44	81.2
55	0.25	47	85.5
60	0.25	49	88.3
65	0.25	51	91.1
70	0.25	53	93.9
75	0.25	55	96.7
80	0.25	57	99.5
85	0.25	60	103.6
90	0.25	62	106.4
95	0.25	64	109.2
100	0.25	66	112.0
105	0.25	68	114.8
110	0.25	68	114.8
115	0.25	69	116.2
120	0.25	69	116.2





Company: Falcon Exploration, Inc

Lease: Riley Winkler #1-6 (SW)

SEC: 6 TWN: 28S RNG: 29W
 County: GRAY
 State: Kansas
 Drilling Contractor: Sterling Drilling Company - Rig 5
 Elevation: 2787 GL
 Field Name: Wildcat
 Pool: WILDCAT
 Job Number: 102

DATE
 February
03
 2018

DST #2 **Formation: Lower Cherokee** **Test Interval: 4948 - 5030'** **Total Depth: 5030'**
 Time On: 01:51 02/03 Time Off: 08:53 02/03
 Time On Bottom: 04:36 02/03 Time Off Bottom: 06:43 02/03

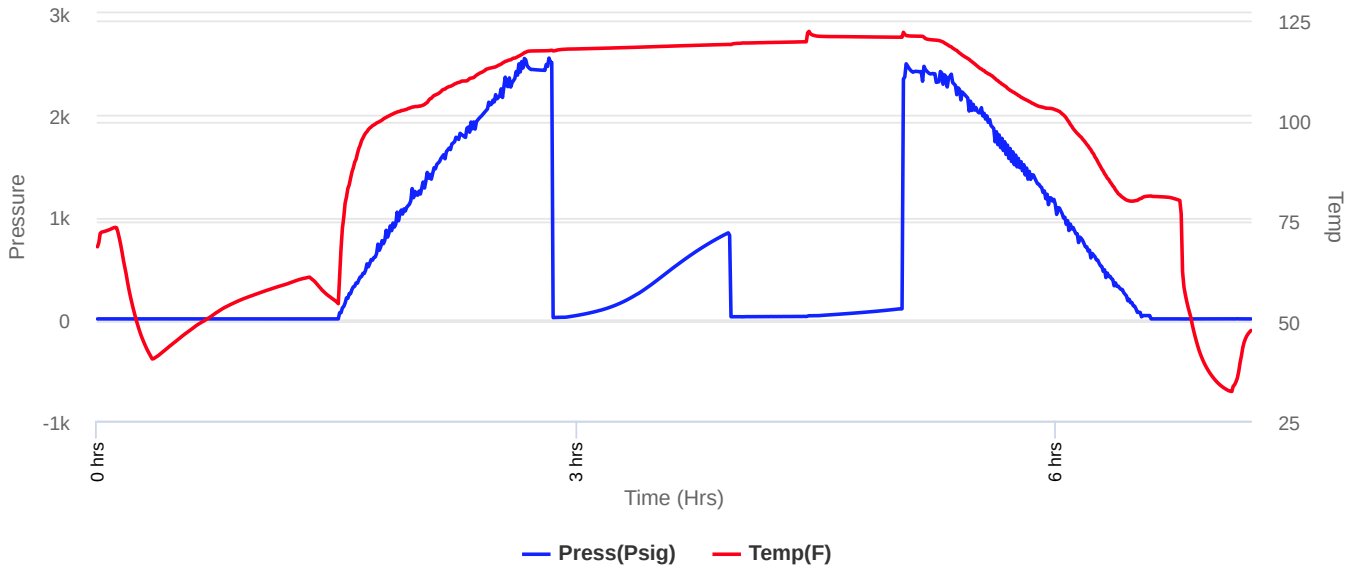
Electronic Volume Estimate:
 12'

1st Open
 Minutes: 5
 .5" at 5 min

1st Close
 Minutes: 60
 0" at 60 min

2nd Open
 Minutes: 32
 0" at 32 min

2nd Close
 Minutes: 30
 0" at 30 min





Company: Falcon Exploration, Inc
Lease: Riley Winkler #1-6 (SW)

SEC: 6 TWN: 28S RNG: 29W
 County: GRAY
 State: Kansas
 Drilling Contractor: Sterling Drilling Company - Rig 5
 Elevation: 2787 GL
 Field Name: Wildcat
 Pool: WILDCAT
 Job Number: 102

DATE
 February
03
 2018

DST #2 **Formation: Lower Cherokee** **Test Interval: 4948 - 5030'** **Total Depth: 5030'**
 Time On: 01:51 02/03 Time Off: 08:53 02/03
 Time On Bottom: 04:36 02/03 Time Off Bottom: 06:43 02/03

Recovered

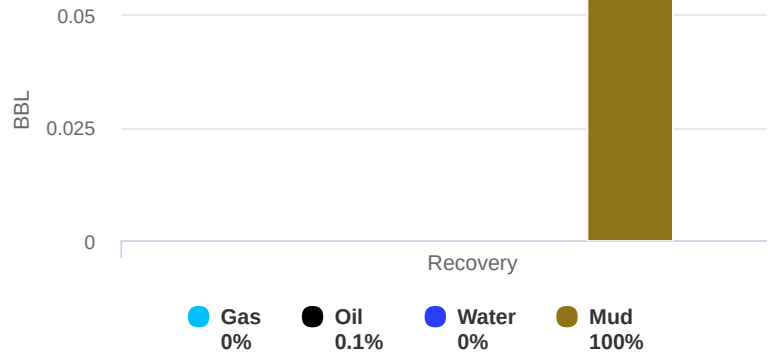
Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
10	0.0548	M (trace O)	0	.1	0	100

Total Recovered: 10 ft
 Total Barrels Recovered: 0.0548

Reversed Out
 NO

Initial Hydrostatic Pressure	2441	PSI
Initial Flow	14 to 17	PSI
Initial Closed in Pressure	846	PSI
Final Flow Pressure	22 to 24	PSI
Final Closed in Pressure	99	PSI
Final Hydrostatic Pressure	2432	PSI
Temperature	123	°F
Pressure Change Initial Close / Final Close	88.3	%

Recovery at a glance





**Company: Falcon Exploration,
Inc**

Lease: Riley Winkler #1-6 (SW)

SEC: 6 TWN: 28S RNG: 29W
County: GRAY
State: Kansas
Drilling Contractor: Sterling Drilling
Company - Rig 5
Elevation: 2787 GL
Field Name: Wildcat
Pool: WILDCAT
Job Number: 102

<p>DATE February 03 2018</p>
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DST #2	Formation: Lower Cherokee	Test Interval: 4948 - 5030'	Total Depth: 5030'
	Time On: 01:51 02/03	Time Off: 08:53 02/03	
	Time On Bottom: 04:36 02/03	Time Off Bottom: 06:43 02/03	

REMARKS:

IF: 1/2 inch blow
ISI: No BB
FF: No blow. We flushed tool 28 min into period and just got surge blow.
FSI: No BB

TOOL SAMPLE: OIL SPECKS, 100% MUD



Company: Falcon Exploration, Inc

Lease: Riley Winkler #1-6 (SW)

SEC: 6 TWN: 28S RNG: 29W
County: GRAY
State: Kansas
Drilling Contractor: Sterling Drilling Company - Rig 5
Elevation: 2787 GL
Field Name: Wildcat
Pool: WILDCAT
Job Number: 102

DATE
February
03
2018

DST #2 **Formation: Lower Cherokee** **Test Interval: 4948 - 5030'** **Total Depth: 5030'**
Time On: 01:51 02/03 Time Off: 08:53 02/03
Time On Bottom: 04:36 02/03 Time Off Bottom: 06:43 02/03

Down Hole Makeup

Heads Up: 20.77 FT	Packer 1: 4943.26 FT
Drill Pipe: 4846.84 FT <i>ID-3 1/4</i>	Packer 2: 4948.26 FT
Weight Pipe: 0 FT <i>ID-2 7/8</i>	Top Recorder: 4932.68 FT
Collars: 89.62 FT <i>ID-2 3/8</i>	Bottom Recorder: 5016 FT
Test Tool: 33.57 FT <i>ID-3 1/2-FH</i> <i>Jars</i> <i>Safety Joint</i>	Well Bore Size: 7 7/8
Total Anchor: 81.74	Surface Choke: 1"
<u>Anchor Makeup</u>	Bottom Choke: 5/8"
Packer Sub: 1 FT	
Perforations: (top): 3 FT <i>4 1/2-FH</i>	
Change Over: 1 FT	
Drill Pipe: (in anchor): 63.74 FT <i>ID-3 1/4</i>	
Change Over: 1 FT	
Perforations: (below): 12 FT <i>4 1/2-FH</i>	



**Company: Falcon Exploration,
Inc**

Lease: Riley Winkler #1-6 (SW)

SEC: 6 TWN: 28S RNG: 29W
County: GRAY
State: Kansas
Drilling Contractor: Sterling Drilling
Company - Rig 5
Elevation: 2787 GL
Field Name: Wildcat
Pool: WILDCAT
Job Number: 102

DATE February 03 2018
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DST #2	Formation: Lower Cherokee	Test Interval: 4948 - 5030'	Total Depth: 5030'
	Time On: 01:51 02/03	Time Off: 08:53 02/03	
	Time On Bottom: 04:36 02/03	Time Off Bottom: 06:43 02/03	

Mud Properties

Mud Type: Chemical	Weight: 9.3	Viscosity: 54	Filtrate: 8.0	Chlorides: 4,300 ppm
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Company: Falcon Exploration, Inc
Lease: Riley Winkler #1-6 (SW)

SEC: 6 TWN: 28S RNG: 29W
 County: GRAY
 State: Kansas
 Drilling Contractor: Sterling Drilling Company - Rig 5
 Elevation: 2787 GL
 Field Name: Wildcat
 Pool: WILDCAT
 Job Number: 102

DATE
 February
04
 2018

DST #3 **Formation: St. Louis "B"** **Test Interval: 5143 - 5167'** **Total Depth: 5167'**
 Time On: 10:59 02/04 Time Off: 20:07 02/04
 Time On Bottom: 12:29 02/04 Time Off Bottom: 17:34 02/04

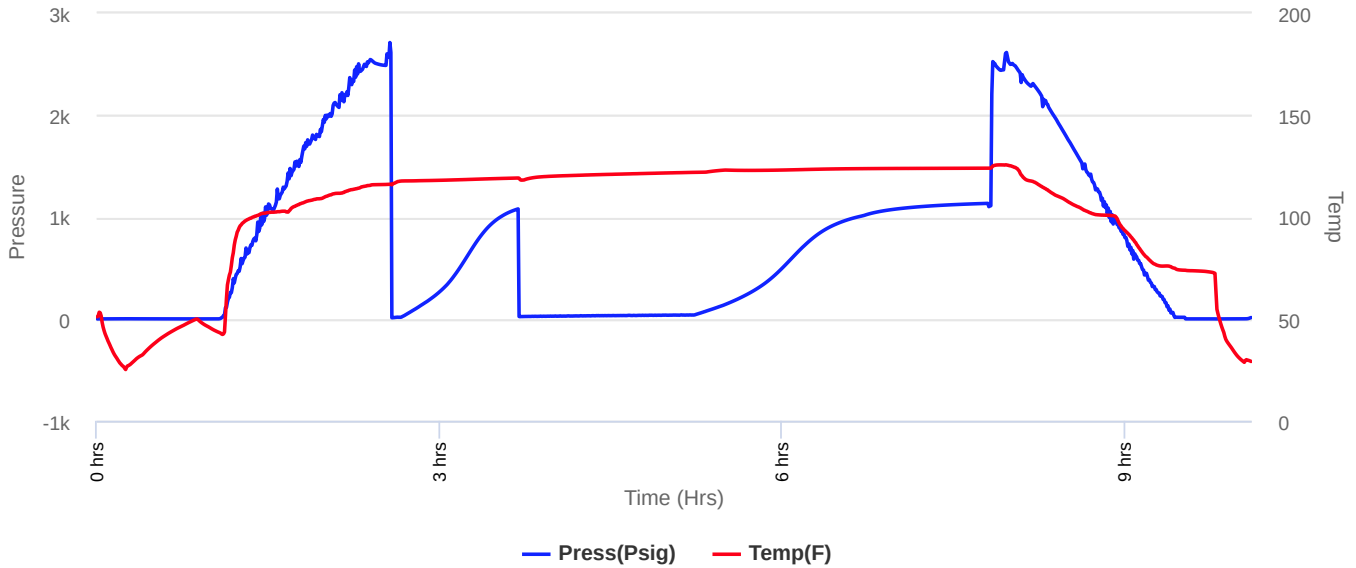
Electronic Volume Estimate:
 534'

1st Open
 Minutes: 5
 1.4" at 5 min

1st Close
 Minutes: 60
 0" at 60 min

2nd Open
 Minutes: 90
 34.3" at 90 min

2nd Close
 Minutes: 150
 0" at 150 min





Company: Falcon Exploration, Inc
Lease: Riley Winkler #1-6 (SW)

SEC: 6 TWN: 28S RNG: 29W
 County: GRAY
 State: Kansas
 Drilling Contractor: Sterling Drilling Company - Rig 5
 Elevation: 2787 GL
 Field Name: Wildcat
 Pool: WILDCAT
 Job Number: 102

DATE
 February
04
 2018

DST #3 **Formation: St. Louis "B"** **Test Interval: 5143 - 5167'** **Total Depth: 5167'**
 Time On: 10:59 02/04 Time Off: 20:07 02/04
 Time On Bottom: 12:29 02/04 Time Off Bottom: 17:34 02/04

Recovered

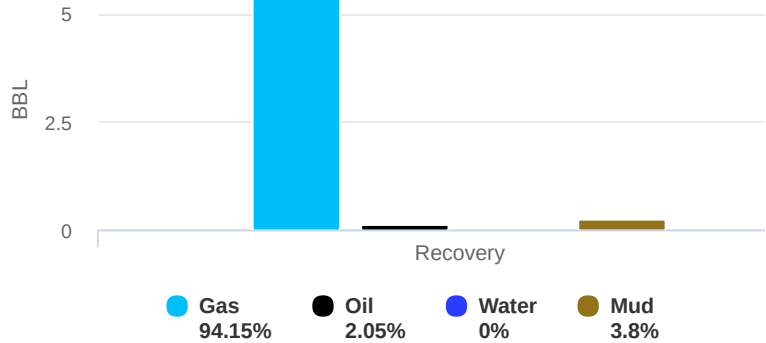
Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
570	5.73106178	G	100	0	0	0
65	0.3562	HOCM	0	35	0	65

Total Recovered: 635 ft
 Total Barrels Recovered: 6.08726178

Reversed Out
 NO

Initial Hydrostatic Pressure	2489	PSI
Initial Flow	12 to 18	PSI
Initial Closed in Pressure	1081	PSI
Final Flow Pressure	23 to 40	PSI
Final Closed in Pressure	1135	PSI
Final Hydrostatic Pressure	2488	PSI
Temperature	125	°F
Pressure Change Initial Close / Final Close	0.0	%

Recovery at a glance





Company: Falcon Exploration, Inc

Lease: Riley Winkler #1-6 (SW)

SEC: 6 TWN: 28S RNG: 29W
County: GRAY
State: Kansas
Drilling Contractor: Sterling Drilling Company - Rig 5
Elevation: 2787 GL
Field Name: Wildcat
Pool: WILDCAT
Job Number: 102

DATE
February
04
2018

DST #3 **Formation: St. Louis "B"** **Test Interval: 5143 - 5167'** **Total Depth: 5167'**

Time On: 10:59 02/04 Time Off: 20:07 02/04
Time On Bottom: 12:29 02/04 Time Off Bottom: 17:34 02/04

Down Hole Makeup

Heads Up: 19.66 FT	Packer 1: 5138 FT
Drill Pipe: 5040.47 FT <i>ID-3 1/4</i>	Packer 2: 5143 FT
Weight Pipe: 0 FT <i>ID-2 7/8</i>	Top Recorder: 5127.42 FT
Collars: 89.62 FT <i>ID-2 3/8</i>	Bottom Recorder: 5145 FT
Test Tool: 33.57 FT <i>ID-3 1/2-FH</i> <i>Jars</i> <i>Safety Joint</i>	Well Bore Size: 7 7/8
Total Anchor: 24	Surface Choke: 1"
<u>Anchor Makeup</u>	Bottom Choke: 5/8"
Packer Sub: 1 FT	
Perforations: (top): 0 FT <i>4 1/2-FH</i>	
Change Over: 0 FT	
Drill Pipe: (in anchor): 0 FT <i>ID-3 1/4</i>	
Change Over: 0 FT	
Perforations: (below): 23 FT <i>4 1/2-FH</i>	



Company: Falcon Exploration, Inc

Lease: Riley Winkler #1-6 (SW)

SEC: 6 TWN: 28S RNG: 29W
County: GRAY
State: Kansas
Drilling Contractor: Sterling Drilling
Company - Rig 5
Elevation: 2787 GL
Field Name: Wildcat
Pool: WILDCAT
Job Number: 102

<p>DATE February 04 2018</p>
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DST #3 **Formation: St. Louis "B"** **Test Interval: 5143 - 5167'** **Total Depth: 5167'**

Time On: 10:59 02/04 Time Off: 20:07 02/04
Time On Bottom: 12:29 02/04 Time Off Bottom: 17:34 02/04

Mud Properties

Mud Type: Chemical **Weight:** 9.4 **Viscosity:** 74 **Filtrate:** 8.4 **Chlorides:** 2,700 ppm



Company: Falcon Exploration, Inc

Lease: Riley Winkler #1-6 (SW)

SEC: 6 TWN: 28S RNG: 29W
County: GRAY
State: Kansas
Drilling Contractor: Sterling Drilling Company - Rig 5
Elevation: 2787 GL
Field Name: Wildcat
Pool: WILDCAT
Job Number: 102

DATE
February
05
2018

DST #4 Formation: St. Louis Test Interval: 5174 - 5189' Total Depth: 5189'

Time On: 07:21 02/05 Time Off: 14:25 02/05
Time On Bottom: 09:40 02/05 Time Off Bottom: 12:15 02/05

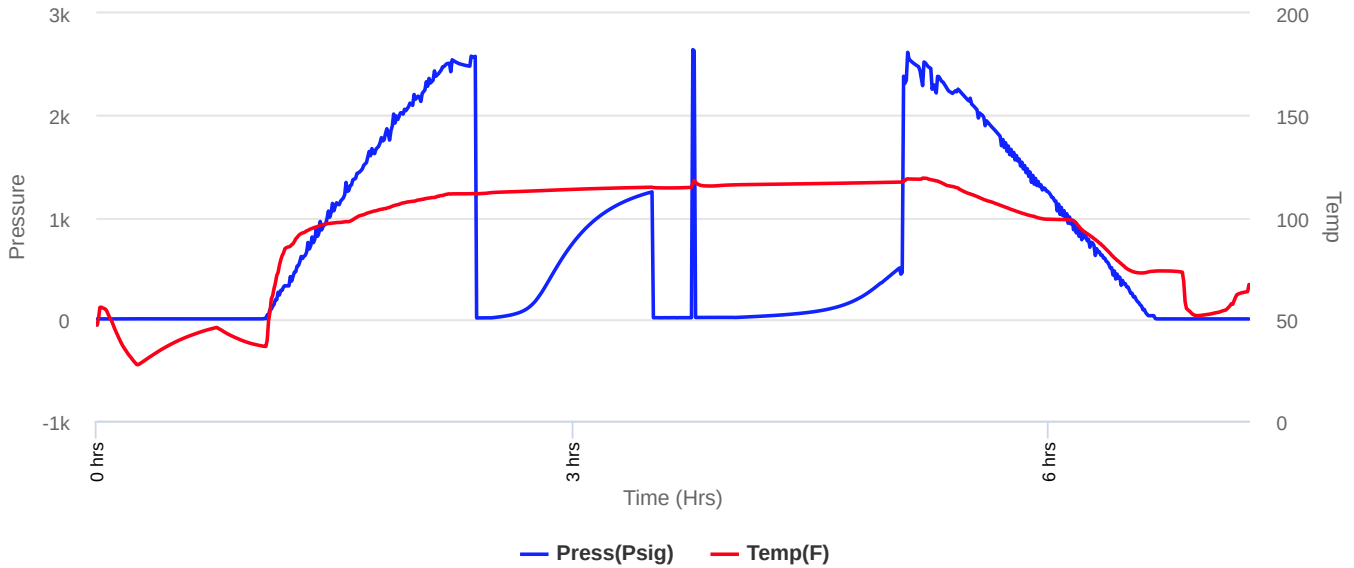
Electronic Volume Estimate:
0'

1st Open
Minutes: 5
0" at 5 min

1st Close
Minutes: 60
0" at 60 min

2nd Open
Minutes: 30
0" at 30 min

2nd Close
Minutes: 60
0" at 60 min





Company: Falcon Exploration, Inc
Lease: Riley Winkler #1-6 (SW)

SEC: 6 TWN: 28S RNG: 29W
 County: GRAY
 State: Kansas
 Drilling Contractor: Sterling Drilling Company - Rig 5
 Elevation: 2787 GL
 Field Name: Wildcat
 Pool: WILDCAT
 Job Number: 102

DATE
 February
05
 2018

DST #4 Formation: St. Louis Test Interval: 5174 - 5189' Total Depth: 5189'

Time On: 07:21 02/05 Time Off: 14:25 02/05
 Time On Bottom: 09:40 02/05 Time Off Bottom: 12:15 02/05

Recovered

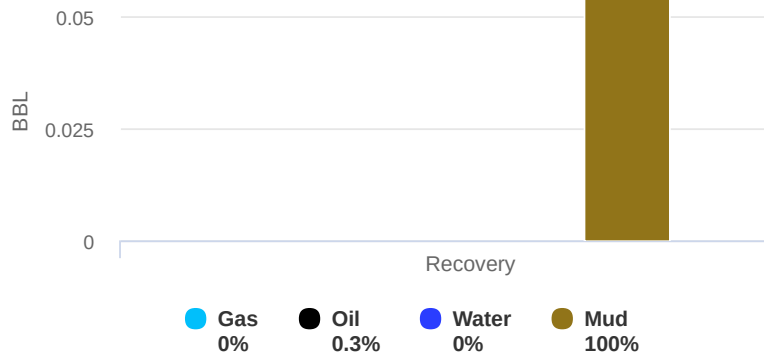
Foot	BBS	Description of Fluid	Gas %	Oil %	Water %	Mud %
10	0.0548	M (trace oil)	0	.3	0	100

Total Recovered: 10 ft
 Total Barrels Recovered: 0.0548

Reversed Out
 NO

Initial Hydrostatic Pressure	2481	PSI
Initial Flow	10 to 11	PSI
Initial Closed in Pressure	1248	PSI
Final Flow Pressure	13 to 16	PSI
Final Closed in Pressure	501	PSI
Final Hydrostatic Pressure	2477	PSI
Temperature	118	°F
Pressure Change Initial Close / Final Close	59.9	%

Recovery at a glance





**Company: Falcon Exploration,
Inc**

Lease: Riley Winkler #1-6 (SW)

SEC: 6 TWN: 28S RNG: 29W
County: GRAY
State: Kansas
Drilling Contractor: Sterling Drilling
Company - Rig 5
Elevation: 2787 GL
Field Name: Wildcat
Pool: WILDCAT
Job Number: 102

<p>DATE February 05 2018</p>
--

DST #4 Formation: St. Louis Test Interval: 5174 - Total Depth: 5189'
5189'

Time On: 07:21 02/05

Time Off: 14:25 02/05

Time On Bottom: 09:40 02/05

Time Off Bottom: 12:15 02/05

REMARKS:

Initial Flow: Surface blow.

Initial Shut-in: No blow back.

Final Flow: No blow. Flushed tool 15 mins. into period & just got a surge blow.

Final Shut-in: No blow back.

Tool Sample: Oil specks, 100% mud



**Company: Falcon Exploration,
Inc**

Lease: Riley Winkler #1-6 (SW)

SEC: 6 TWN: 28S RNG: 29W
County: GRAY
State: Kansas
Drilling Contractor: Sterling Drilling
Company - Rig 5
Elevation: 2787 GL
Field Name: Wildcat
Pool: WILDCAT
Job Number: 102

DATE
February
05
2018

DST #4 Formation: St. Louis Test Interval: 5174 - 5189' Total Depth: 5189'

Time On: 07:21 02/05 Time Off: 14:25 02/05
Time On Bottom: 09:40 02/05 Time Off Bottom: 12:15 02/05

Down Hole Makeup

Heads Up: 18.12 FT	Packer 1: 5169 FT
Drill Pipe: 5069.93 FT <i>ID-3 1/4</i>	Packer 2: 5174 FT
Weight Pipe: 0 FT <i>ID-2 7/8</i>	Top Recorder: 5158.42 FT
Collars: 89.62 FT <i>ID-2 3/8</i>	Bottom Recorder: 5176 FT
Test Tool: 33.57 FT <i>ID-3 1/2-FH</i> <i>Jars</i> <i>Safety Joint</i>	Well Bore Size: 7 7/8
Total Anchor: 15	Surface Choke: 1"
<u>Anchor Makeup</u>	Bottom Choke: 5/8"
Packer Sub: 1 FT	
Perforations: (top): 0 FT <i>4 1/2-FH</i>	
Change Over: 0 FT	
Drill Pipe: (in anchor): 0 FT <i>ID-3 1/4</i>	
Change Over: 0 FT	
Perforations: (below): 14 FT <i>4 1/2-FH</i>	



**Company: Falcon Exploration,
Inc**

Lease: Riley Winkler #1-6 (SW)

SEC: 6 TWN: 28S RNG: 29W
County: GRAY
State: Kansas
Drilling Contractor: Sterling Drilling
Company - Rig 5
Elevation: 2787 GL
Field Name: Wildcat
Pool: WILDCAT
Job Number: 102

<p>DATE February 05 2018</p>
--

DST #4 Formation: St. Louis Test Interval: 5174 - 5189' Total Depth: 5189'

Time On: 07:21 02/05 Time Off: 14:25 02/05
Time On Bottom: 09:40 02/05 Time Off Bottom: 12:15 02/05

Mud Properties

Mud Type: Chemical **Weight:** 9.4 **Viscosity:** 49 **Filtrate:** 8.8 **Chlorides:** 4,950 ppm



Company: Falcon Exploration, Inc

Lease: Riley Winkler #1-6 (SW)

SEC: 6 TWN: 28S RNG: 29W
 County: GRAY
 State: Kansas
 Drilling Contractor: Sterling Drilling Company - Rig 5
 Elevation: 2787 GL
 Field Name: Wildcat
 Pool: WILDCAT
 Job Number: 102

DATE
 February
06
 2018

DST #5 Formation: St. Louis Test Interval: 5188 - 5205' Total Depth: 5205'

Time On: 22:54 02/05 Time Off: 07:56 02/06
 Time On Bottom: 01:38 02/06 Time Off Bottom: 05:13 02/06

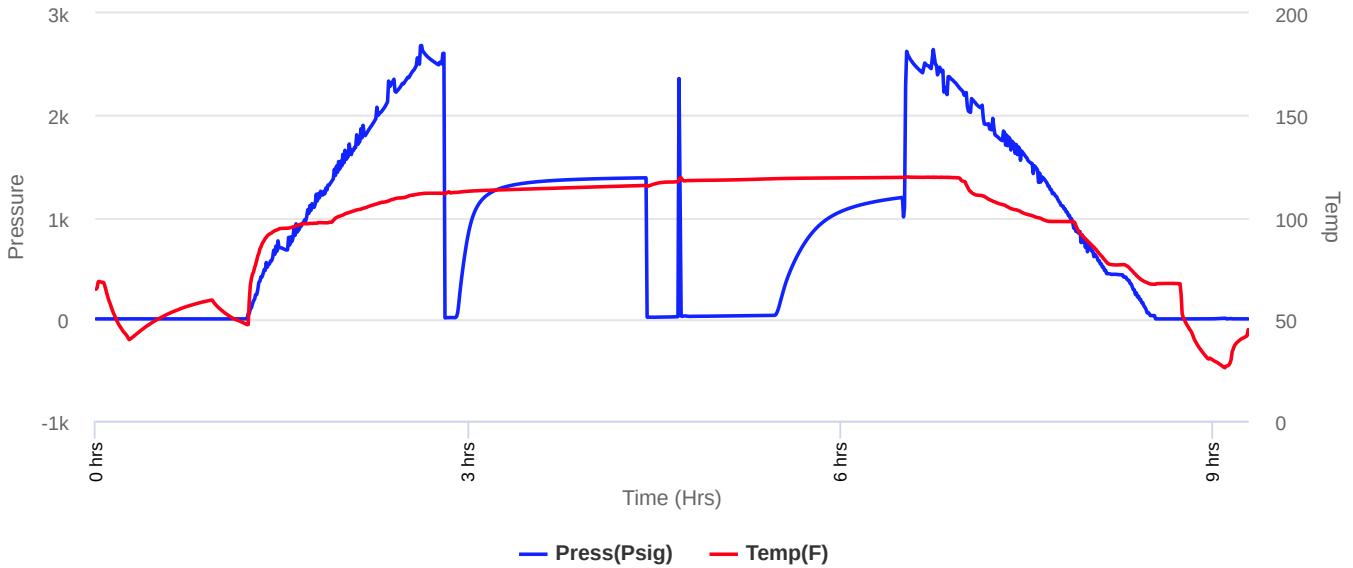
Electronic Volume Estimate:
 0'

1st Open
 Minutes: 5
 0" at 5 min

1st Close
 Minutes: 90
 0" at 90 min

2nd Open
 Minutes: 60
 0" at 60 min

2nd Close
 Minutes: 60
 0" at 60 min





Company: Falcon Exploration, Inc
Lease: Riley Winkler #1-6 (SW)

SEC: 6 TWN: 28S RNG: 29W
 County: GRAY
 State: Kansas
 Drilling Contractor: Sterling Drilling Company - Rig 5
 Elevation: 2787 GL
 Field Name: Wildcat
 Pool: WILDCAT
 Job Number: 102

DATE
 February
06
 2018

DST #5 Formation: St. Louis Test Interval: 5188 - 5205' Total Depth: 5205'

Time On: 22:54 02/05 Time Off: 07:56 02/06
 Time On Bottom: 01:38 02/06 Time Off Bottom: 05:13 02/06

Recovered

Foot	BBLs
40	0.2192

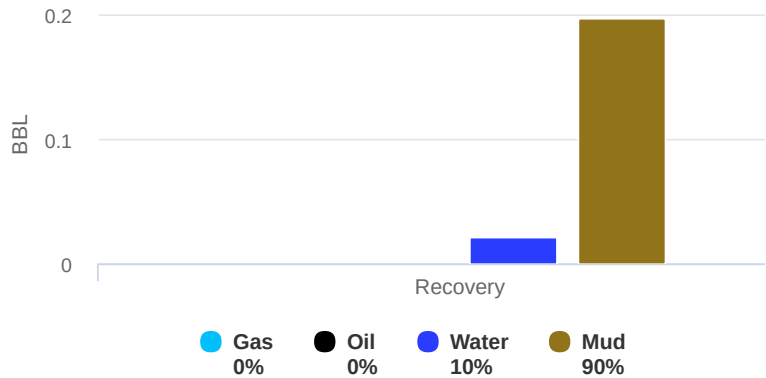
Description of Fluid	Gas %	Oil %	Water %	Mud %
SLWCM	0	0	10	90

Total Recovered: 40 ft
 Total Barrels Recovered: 0.2192

Reversed Out
 NO

Initial Hydrostatic Pressure	2505	PSI
Initial Flow	11 to 13	PSI
Initial Closed in Pressure	1386	PSI
Final Flow Pressure	18 to 36	PSI
Final Closed in Pressure	1193	PSI
Final Hydrostatic Pressure	2498	PSI
Temperature	120	°F
Pressure Change Initial Close / Final Close	13.9	%

Recovery at a glance





**Company: Falcon Exploration,
Inc**

Lease: Riley Winkler #1-6 (SW)

SEC: 6 TWN: 28S RNG: 29W
County: GRAY
State: Kansas
Drilling Contractor: Sterling Drilling
Company - Rig 5
Elevation: 2787 GL
Field Name: Wildcat
Pool: WILDCAT
Job Number: 102

<p>DATE February 06 2018</p>
--

DST #5 Formation: St. Louis Test Interval: 5188 - 5205' Total Depth: 5205'

Time On: 22:54 02/05

Time Off: 07:56 02/06

Time On Bottom: 01:38 02/06

Time Off Bottom: 05:13 02/06

REMARKS:

IF: Surface blow

ISI: No BB

FF: No Blow. Flushed toll 14 min into period and just got the surge blow

FSI: No BB

TOOL SAMPLE: OIL SPECKS, 16% WATER, 84% MUD

Ph: 5.5

RW: .28 @ 56 degrees F

Chlorides: 35,000 ppm



Company: Falcon Exploration, Inc

Lease: Riley Winkler #1-6 (SW)

SEC: 6 TWN: 28S RNG: 29W
County: GRAY
State: Kansas
Drilling Contractor: Sterling Drilling Company - Rig 5
Elevation: 2787 GL
Field Name: Wildcat
Pool: WILDCAT
Job Number: 102

DATE
February
06
2018

DST #5 Formation: St. Louis Test Interval: 5188 - 5205' Total Depth: 5205'

Time On: 22:54 02/05 Time Off: 07:56 02/06
Time On Bottom: 01:38 02/06 Time Off Bottom: 05:13 02/06

Down Hole Makeup

Heads Up: 35.99 FT	Packer 1: 5183 FT
Drill Pipe: 5101.8 FT <i>ID-3 1/4</i>	Packer 2: 5188 FT
Weight Pipe: 0 FT <i>ID-2 7/8</i>	Top Recorder: 5172.42 FT
Collars: 89.62 FT <i>ID-2 3/8</i>	Bottom Recorder: 5190 FT
Test Tool: 33.57 FT <i>ID-3 1/2-FH</i> <i>Jars</i> <i>Safety Joint</i>	Well Bore Size: 7 7/8
Total Anchor: 17	Surface Choke: 1"
<u>Anchor Makeup</u>	Bottom Choke: 5/8"
Packer Sub: 1 FT	
Perforations: (top): 0 FT <i>4 1/2-FH</i>	
Change Over: 0 FT	
Drill Pipe: (in anchor): 0 FT <i>ID-3 1/4</i>	
Change Over: 0 FT	
Perforations: (below): 16 FT <i>4 1/2-FH</i>	



**Company: Falcon Exploration,
Inc**

Lease: Riley Winkler #1-6 (SW)

SEC: 6 TWN: 28S RNG: 29W
County: GRAY
State: Kansas
Drilling Contractor: Sterling Drilling
Company - Rig 5
Elevation: 2787 GL
Field Name: Wildcat
Pool: WILDCAT
Job Number: 102

<p>DATE February 06 2018</p>
--

DST #5 Formation: St. Louis Test Interval: 5188 - 5205' Total Depth: 5205'

Time On: 22:54 02/05 Time Off: 07:56 02/06
Time On Bottom: 01:38 02/06 Time Off Bottom: 05:13 02/06

Mud Properties

Mud Type: Chemical **Weight:** 9.3 **Viscosity:** 62 **Filtrate:** 8.4 **Chlorides:** 4,700 ppm

GLOBAL OIL FIELD SERVICES, LLC

3246

REMIT TO 24 S. Lincoln
Russell, KS 67665

SERVICE POINT: Russell KS

DATE <u>1-26-18</u>	SEC <u>SW 4</u>	TWP. <u>28 S</u>	RANGE <u>29 W</u>	CALLED OUT	ON LOCATION	JOB START	JOB FINISH <u>8:20am</u>
LEASE <u>Riley</u>	WELL #. <u>H6</u>	LOCATION <u>North of Capland KS 3 mi to BB</u>		COUNTY <u>Gray</u>	STATE <u>KS</u>		
OLD OR NEW (CIRCLE ONE) <u>NEW</u>		<u>Sals East to RD 7 2 miles North Escalante</u>					

CONTRACTOR Sterling Drilling Co. Rig #5

OWNER Falcon Exploration

TYPE OF JOB <u>Deep Surface</u>	T.D. <u>1893.20'</u>
HOLE SIZE <u>12 3/4</u>	DEPTH
CASING SIZE <u>8 5/8</u>	DEPTH
TUBING SIZE	DEPTH
DRILL PIPE	DEPTH
TOOL	DEPTH
PRES. MAX. <u>1300 PSI</u>	MINIMUM
MEAS. LINE	SHOE JOINT <u>42.17'</u>
CEMENT LEFT IN CSG. <u>800 PSI</u>	
PERFS	
DISPLACEMENT <u>119 bbl</u>	

CEMENT AMOUNT ORDERED 500 sx 60/40 6% gel 3% CC
Followed by 150 sx of Corn 3% CC 2% gel

COMMON	@	
POZMIX	@	
GEL	@	
CHLORIDE	@	
ASC	@	
	@	
	@	
	@	
	@	
	@	
	@	
	@	
HANDLING	@	
MILEAGE		
TOTAL		

PUMP TRUCK # <u>109</u>	CEMENTER <u>Cody</u>
	HELPER <u>T.M.</u>
BULK TRUCK # <u>473</u>	DRIVER <u>Kris</u>
BULK TRUCK # <u>376</u>	DRIVER <u>Tdm</u>

REMARKS:
Ran 45' of 8 5/8 casing + 14 bit hoisted to Rig and broke circulation dropped ball circulated 1 hour worked to Pump Truck swapped 500x60/40. Followed by 150sx of Corn 3% gel and 2% gel plug cementer displaced 119 bbl of H2O and shot in plug landed at 1300 PSI Cement did circulate to Surface.

SERVICE

DEPTH OF JOB		
PUMP TRUCK CHARGE		
EXTRA FOOTAGE	@	
MILEAGE	@	
MANIFOLD	@	
	@	
	@	
TOTAL		

CHARGE TO: Falcon Exploration
STREET _____
CITY _____ STATE _____ ZIP _____

PLUG & FLOAT EQUIPMENT

<u>8 5/8 Guide shoe + Rubber Plug + Insert</u>	@	
<u>3 8/8 Baskets</u>	@	
<u>4 2 3/8 Cement Baskets</u>	@	
	@	
	@	
TOTAL		

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

PRINTED NAME _____
SIGNATURE 24 10637

SALES TAX (if Any) _____
TOTAL CHARGES _____
DISCOUNT _____ IF PAID IN 30 DAYS



Liberal Yard #1717 - Phone 620-624-2277 - 1700 S. Country Estates Road, Liberal KS 67901

PRESSURE PUMPING Job Log

Customer:	Falcon Exploration	Cement Pump No.:	38750-19842 8 HRS	Operator TRK No.:	96615
Address:	125 North Market Street Ste 1251	Ticket #:	1718-15583 L	Bulk TRK No.:	70897-19808
City, State, Zip:	Wichita Ks 67202	Job Type:	Z42 - Cement Production Casing		
Service District:		Well Type:	OIL		
Well Name and No.:	Riley Winkler 1-6	Well Location:	6,28,29	County:	Gray State: Ks

Type of Cmt	Sacks	Additives	Truck Loaded On		
A-CON BLEND	100	2%CaCl, 1/4#POLYFLAKE	70897-19808	Front	Back
AA-2	100	5%W-60, 10%SALT, .5% C-17, 1/4# C-41P, 5#GILSONITE		Front	Back
				Front	Back

Lead/Tail:	Weight #1 Gal.	Cu/Ft/sk	Water Requirements	CU. FT.	Man Hours / Personnel	
Lead:	11.4	2.95	18.1	295	Man Hours:	36
Tail:	14.8	1.51	6.65	151	# of Men on Job:	3

Time (am/pm)	(BPM)	Volume (BBLS)	Pumps		Pressure(PSI)		Description of Operation and Materials
			T	C	Tubing	Casing	
19:30							ON LOC, SAFTEY MTG, R.U.
3:25						3200	TEST LINES
3:27 AM	4	12				400	PUMP MUD FLUSH
3:36 AM							PLUG RAT & MOUSE
3:46 AM	5.2					390	START SCAVENGER @ 11.4#
3:55	5.2	26				390	ON AA-2 @ 14.8#
4:02		27					SHUT DOWN, DROP PLUG, WASHUP
4:08 AM	7.5					350	START DISPLACEMENT
4:24	2	115				640	SLOW RATE
4:28		125.5				780-1350	PLUG DOWN
4:30						1350-0	RELEASE PSI, FLOAT HELD
							JOB COMPLETE
							THANK YOU FOR YOUR BUSINESS!!!

Size Hole	7 7/8	Depth	5300		TYPE	
Size & Wt. Csg.	5 1/2 15.5	Depth	5318'	New / Used	Port collar	3718' Depth
tbg.		Depth			Retainer	Depth
Top Plugs		Type			Perfs	CIBP

Customer Signature:		Basic Representative:	CHAD HINZ
		Basic Signature:	
		Date of Service:	2/8/2018



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

Well Name: RILEY WINKLER # 1-6 (SW)
API: 15-069-20,503-00-00
Location: NE-NE-SW S.6 - T. 28 S. - R. 29 W.
License Number: 5316
Spud Date: 01/24/2018
Surface Coordinates: 2300' FSL & 2970' FEL

Region: GRAY CO., KS.
Drilling Completed: 02/07/2018

**Bottom Hole
Coordinates:**
Ground Elevation (ft): 2787' **K.B. Elevation (ft):** 2800'
Logged Interval (ft): URFACE To: **Total Depth (ft):** 5300'
Formation: MISSISSIPPIAN "ST. LOUIS"
Type of Drilling Fluid: CHEMICAL/POLYMER/GEL. & MUD DISPLACEMENT @ 3183'.

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

OPERATOR

Company: FALCON EXPLORATION, INC.
Address: 125 N. MARKET, STE. #1252
WICHITA, KANSAS 67202

GEOLOGIST

Name: DAVID P. WILLIAMS, P.G.
Company: DW ENERGY, LLC.
Address: 312 NORTH BROADVIEW STREET
WICHITA, KANSAS 67208

CASING & DEVIATION

Surface Casing: Spud at : pm on 01/24/18. Drilled 12-1/4" to 1898'. Ran 45 joints of new 24#, 8-5/8" casing. Tallied 1878'. Set at 1893' KB. Welded straps on GS & bottom 3 joints, baskets set on jts 1, 3, 25, centralizers set at jts 1, 3, 9, 19, then tack welded all collars. Cemented with 400 sks 60/40 POZ 6% Gel; 3% cc; 1/4# FS. Tailed with 150 sks Class A, 3% Gel 2% cc. Cement did circulate. Plug down at 8:30 am on 01/26/18 Global Cementing ticket #3246.

DEVIATION SURVEY'S TAKEN: @ 1898' = 3/4 degree; @ 3565' = 1/2 degree; @ 5030' = 1 1/4 degrees;

DSTs

~~ DST # 1 ~ Interval: 3468'-3565' Times: 5"-90"-120"-90". Blow: IF= VSB/BOB in 30 Sec. No BB. FF=BOB/GTS in 13". Weak Surface BB. Recovery: 3235' GIP & 160' Mud.

Pressures: IH=1620 #; FH=1619 #; IF=27-36#; FF=44-139#; ISIP = 795#; FSIP=765#; Temp.=106 degrees F..
FF Gas Gauges: @ 15"= 45.5 Mcf; @ 30"=64.6 Mcf; @ 45" =77.3 Mcf; @ 60" =88.3 Mcf; @ 75"=96.7 Mcf; @ 90"=106.4 Mcf; @ 105"= 114.8 Mcf; @ 120"= 116.2 Mcf & Stabilized (Gas Will Burn). Gas Analysis: Caraway Analytical. BTU (Sat) = 753.2 @ 1471 psia; BTU (Dry)=766.6 @ 14.73 psia.

~~DST #2~~Interval: 4948'-5030'; Times: 5"-60"-32"-30". Blow: IF= 1/2" Blow: ISIP= No BB. FF= No Blow, Flushed Tool @ 28" Got Surge Back & Then No Blow. FSIP = No BB.

Recovery: 10' Mud (Tr Oil (0.1% Oil & 100% Mud)).

Pressures: IH=2441#; FH=2432 #; IF=14-17#; FF=22-24#; ISIP = 846#; FSIP=99#; Temp.=123 degrees F..

~~DST # 3~~ Interval: 5143' - 5167'; Times: 5"-60"-90"-150"; Blow: IF Weak 1.5"; ISIP = No BB; FF = Fair Blow/1.5"; BOB/ 4.5". FSIP = No BB.

Recovery: 570' GIP; 65" HOCM (35% O & 65% M).

Pressures: IH = 2489#; FH = 2488#; IF = 12-18#; FF = 23-41#; ISIP = 1081#; FSIP = 1135#; Temp.=125 degrees F..

~~DST # 4~~Interval: 5174' - 5189'; Times: 5"-60"-30"-60"; Blow: IF=Weak Surface Blow; ISIP =No BB; FF=No Blow -Flushed Tool @ 15"-No Help.

Recovery: 10' Mud (0.3% Oil).

Pressures: IH=2481#; FH=2477#; IF=10-11#; FF=13-16#; ISIP = 1248#; FSIP= 501#; Temp.=118 degrees F..

~~DST #5 ~Interval: 5188'- 5205'; Times: 5"-90"-60"-60"; Blow: IF=Weak Surface Blow; ISIP=No BB; FF=No Blow-Flushed Tool @ 14"- No Help. FSIP= No BB;

Recovery: 40' SLWCM (10% Wtr, 90% M).

CLASSIFICATION HEADER

Qualifiers: CARBONATE CLASSIFICATION: AFTER DUNHAM:

GRAIN; any fossil, fossil fragment, sand grain, or other rock fragment within the rock.

MUDSTONE; muddy carbonate rocks containing < (less than 10%) grains.

WACKESTONE; mud supported carbonate rocks with > (more than 10%) grains.

PACKSTONE; grain supported muddy carbonate rocks.

GRAINSTONE; mud free carbonate rock, grain supported.

BOUNDSTONE; carbonate rock bound together at deposition (coral, etc.).

CRYSTALLINE CARBONATE; carbonate rock retaining to little of their depositional texture to be classified.

Qualifiers; (Fossils, Minerals, Shows, Porosity, etc.)

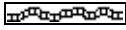
Rare = < (less than 1%) of sample total.

Trace = < (less than 5%) of sample total, > (greater than 5%) an estimate of total percentage.

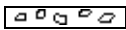
ROCK TYPES



Anhy



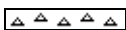
Bent



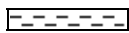
Brec



Carb sh



Cht



Cyst



Coal



Congl



Dol



Grn sh



Gry shale



Gyp



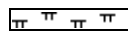
Igne



Lmst



Meta



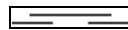
Mrlst



Red sh



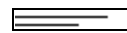
Salt



Shale



Shcol



Shgy



Sltst



Ss



Till

ACCESSORIES

- MINERAL**
- ▨ Anhy
 - ▨ Arggrn
 - ▨ Arg
 - ▨ Bent
 - ▨ Bit
 - ▨ Breclrag
 - ▨ Calc
 - ▨ Carb
 - ▨ Chtdk
 - ▨ Chtlt
 - ▨ Dol
 - ▨ Feldspar
 - ▨ Ferrpel
 - ▨ Ferr
 - ▨ Glau
 - ▨ Gyp

- ▨ Hvymin
- ▨ Kaol
- ▨ Marl
- ▨ Minxl
- ▨ Nodule
- ▨ Phos
- ▨ Pyr
- ▨ Salt
- ▨ Sandy
- ▨ Silt
- ▨ Sil
- ▨ Sulphur
- ▨ Tuff

- FOSSIL**
- ▨ Algae
 - ▨ Amph

- ▨ Belm
- ▨ Bioclst
- ▨ Brach
- ▨ Bryozoa
- ▨ Cephal
- ▨ Coral
- ▨ Crin
- ▨ Echin
- ▨ Fish
- ▨ Foram
- ▨ Fossil
- ▨ Fuss
- ▨ Gastro
- ▨ Oolite
- ▨ Oomold
- ▨ Ostra
- ▨ Pelec

- ▨ Pellet
 - ▨ Pisolite
 - ▨ Plant
 - ▨ Strom
- STRINGER**
- ▨ Anhy
 - ▨ Arg
 - ▨ Bent
 - ▨ Coal
 - ▨ Dol
 - ▨ Gyp
 - ▨ Ls
 - ▨ Mrst
 - ▨ Sltstrg
 - ▨ Ssstrg

- TEXTURE**
- ▨ Boundst
 - ▨ Chalky
 - ▨ Cryxln
 - ▨ Earthy
 - ▨ Finexln
 - ▨ Grainst
 - ▨ Lithogr
 - ▨ Microxln
 - ▨ Mudst
 - ▨ Packst
 - ▨ Wackest

OTHER SYMBOLS

- POROSITY**
- ▨ Earthy
 - ▨ Fenest
 - ▨ Fracture
 - ▨ Inter
 - ▨ Moldic
 - ▨ Oomold
 - ▨ Organic

- ▨ Pinpoint
 - ▨ Vuggy
 - ∅
- SORTING**
- ▨ Well
 - ▨ Moderate
 - ▨ Poor

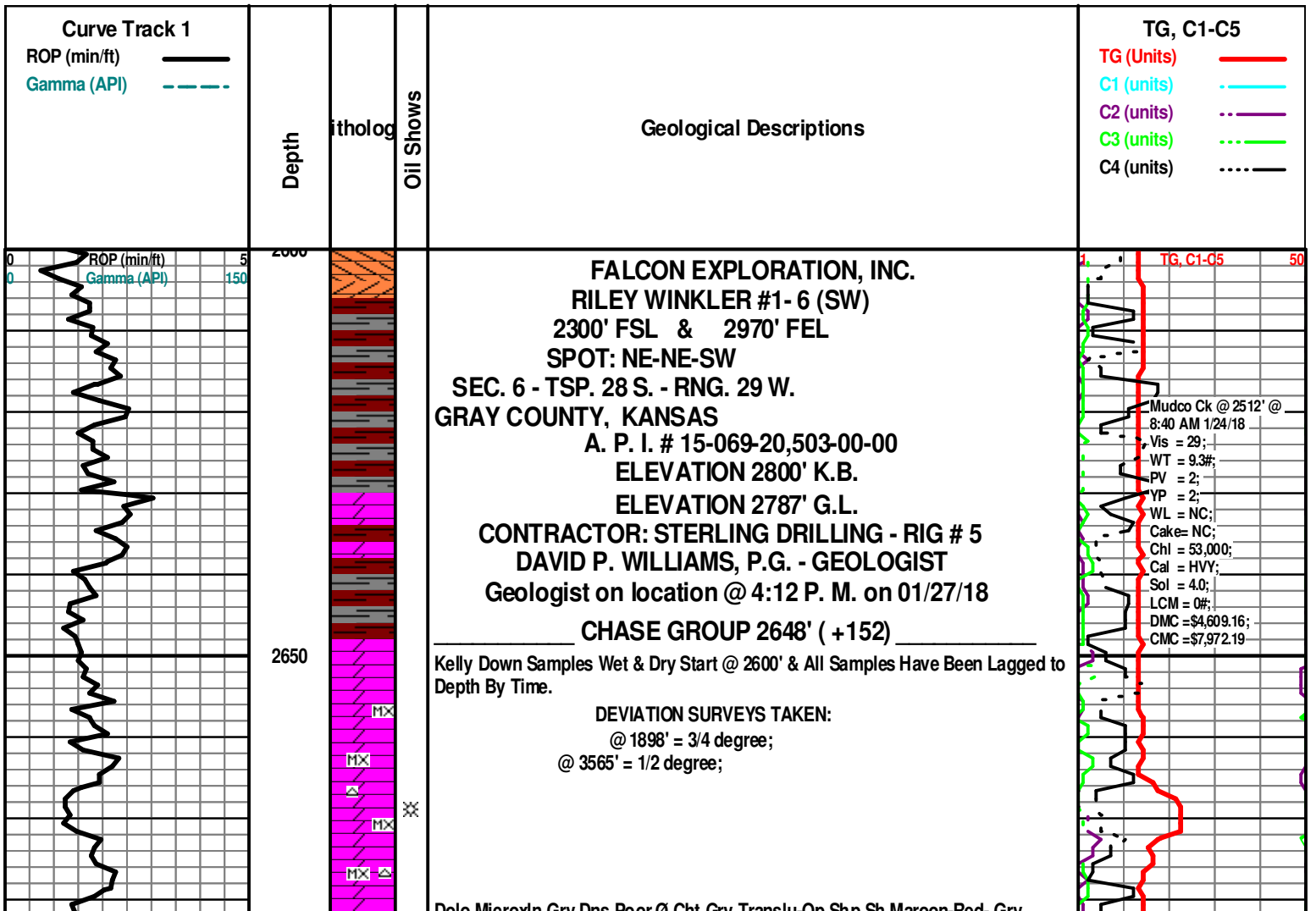
- ROUNDING**
- ▨ Rounded
 - ▨ Subrnd
 - ▨ Subang
 - ▨ Angular

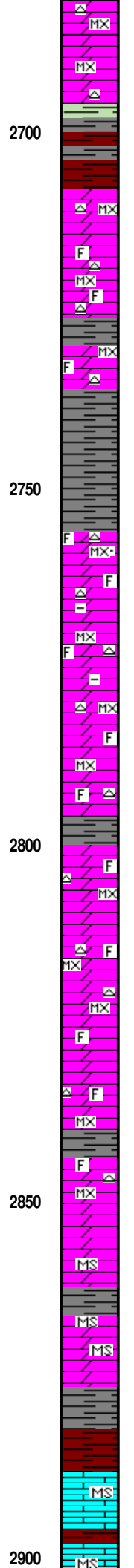
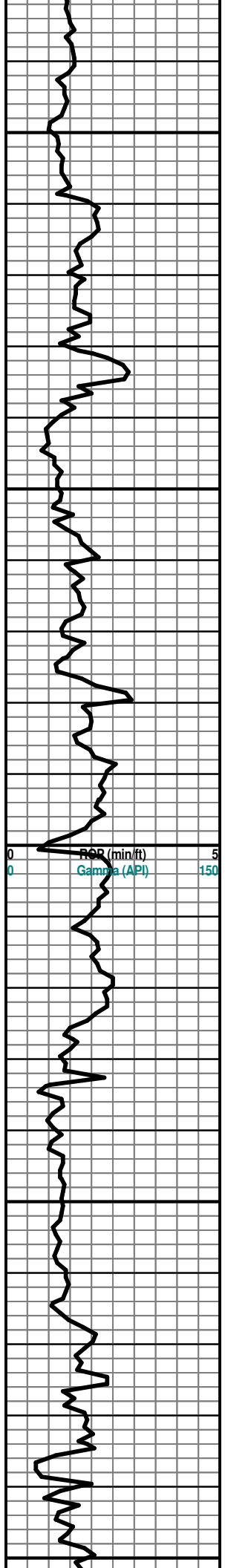
- OIL SHOW**
- ▨ Gas show

- ▨ Even
- ▨ Spotted
- ▨ Ques
- ▨ Dead

- INTERVAL**
- ▨ Dst
 - ▨ Dst_alt

- ▨ Straddle test tail pi
- EVENT**
- ▨ Rft
 - ▨ Sidewall





Dolo Microxln Gry Dns Poor Ø Cht Gry Translu-Op Shp Sh Maroon-Red- Gry Soft-Fissil Anhy/Gyp Sluff AA No odor No Stn No Flor NS

WINFIELD 2709' (+ 91)

Dolo Microxln Gry Dns Poor Ø Cht Gry Translu-Op Shp w/Spiculitic Inclus Sh Maroon-Red-Gry Soft-Fissil Anhy/Gyp Sluff AA No odor No Stn No Flor NS

Dolo Microxln Gry Dns Poor Ø Cht Gry Translu-Op Shp w/Spiculitic Inclus Sh Maroon-Red-Gry Soft-Fissil Anhy/Gyp Sluff AA No odor No Stn No Flor NS

TOWANDA 2756' (+ 44)

Dolo/Ls Microxln Gry Dns Poor Ø Arenaceous Dns Cht Gry Translu-Op Shp w/Spiculitic Inclus Sh Maroon-Red-Gry Soft-Fissil Anhy/Gyp Sluff AA No odor No Stn No Flor NS

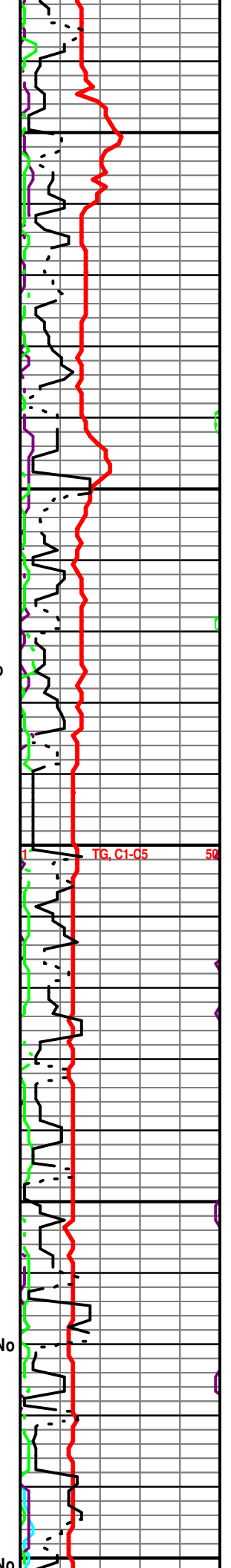
FORT RILEY 2801' (-1)

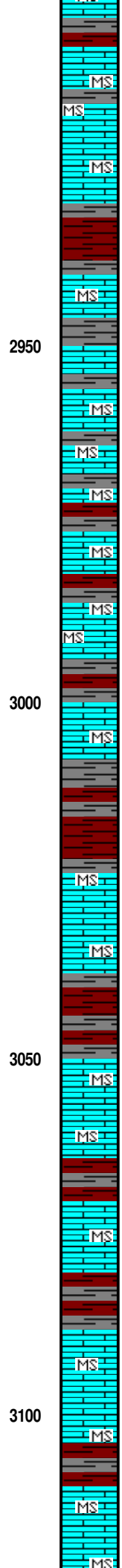
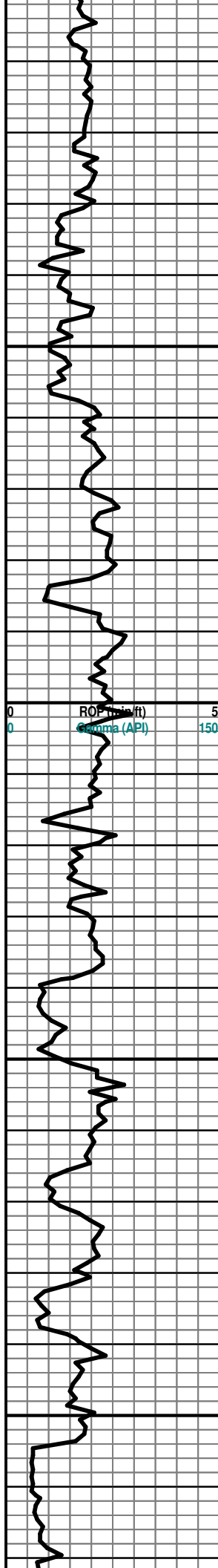
Dolo Microxln Gry Dns Poor Ø Cht Gry Translu-Op Shp w/Spiculitic Inclus Sh Maroon-Red-Gry Soft-Fissil Anhy/Gyp Sluff AA No odor No Stn No Flor NS

Dolo Microxln Gry Dns Poor Ø Cht Gry Translu-Op Shp w/Spiculitic Inclus Sh Maroon-Red-Gry Soft-Fissil Anhy/Gyp Sluff AA No odor No Stn No Flor NS

Sh Red-Maroon-Gry Soft-Fissil Ls Gry Dns Mudstone No Vis Ø No Odor No Stn No Flor NS

Sh Red-Maroon-Gry Soft-Fissil Ls Gry Dns Mudstone No Vis Ø No Odor No Stn No Flor NS





Sh Red-Maroon-Gry Soft-Fissil Ls Gry Dns Mudstone No Vis Ø No Odor No Stn No Flor NS

2950

Sh Red-Maroon-Gry Soft-Fissil Ls Gry Dns Mudstone No Vis Ø No Odor No Stn No Flor NS

3000

Sh Red-Maroon-Gry Soft-Fissil Ls Gry Dns Mudstone No Vis Ø No Odor No Stn No Flor NS

TG, C1-05 50

3050

Sh Red-Maroon-Gry Soft-Fissil Ls Gry Dns Mudstone No Vis Ø No Odor No Stn No Flor NS

COTTONWOOD 3071' (- 271)

3100

Sh Red-Maroon-Gry Soft-Fissil Ls Gry Dns Mudstone No Vis Ø No Odor No Stn No Flor NS

ROP (ohm-ft) 5
Gamma (API) 150

Sh Red-Maroon-Gry Soft-Fissil Ls Gry Dns Mudstone No Vis Ø No Odor No Stn No Flor NS

NEVA 3143' (- 343)

Sh Red-Maroon-Gry Soft-Fissil Ls Gry Dns Mudstone No Vis Ø No Odor No Stn No Flor NS

Ls Wht-Crm Dns FxIn Mudstone Grad FxIn Wackestone No-Poor Vis Ø Chalk V Abd Wht-Gry Cht Wht Op Vit (Tr) Sh Gry Soft No Odor No Stn No Flor NS

MUD DISPLAEMENT @ 3183'.

Ls Crm-Lt Maroon Dns FxIn Mudstone No Vis Ø Chalky Wht Sh Gry Soft No Odor No Stn No Flor NS

GAS TEST GEOTRAILER @ 3243' (3236' LAG. DEPTH) = 35 UNITS.

Ls Crm-Gry Dns FxIn Crm Wackestone Grad Grainstone Tr Fair Devel OOL Chalky Sh Gry Char Soft-Fissil No Odor No Stn No Flor NS

FORAKER 3253' (- 453)

Ls Crm-Gry Dns FxIn Mudstone Grad Wackestone Grad Grainstone Poor-Fair Devel OOL Chalky Sh Gry Char Soft-Fissil No Odor No Stn No Flor NS

Ls Crm-Gry Dns FxIn Mudstone Grad Wackestone Chalky Sh Gry Char Soft-Fissil No Odor No Stn No Flor NS

10' SAMPLE EXAMINATION START AT 3350'.

3150

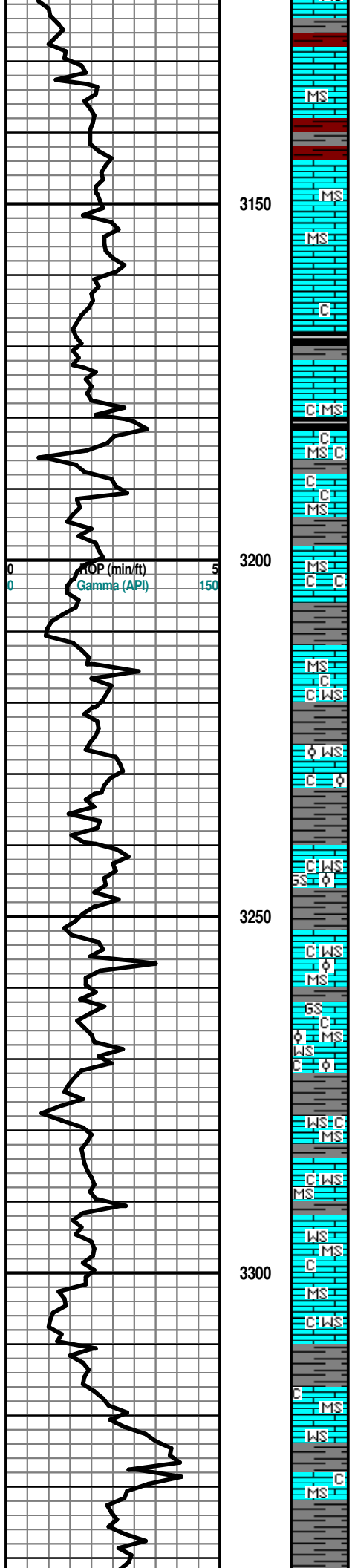
3200

3250

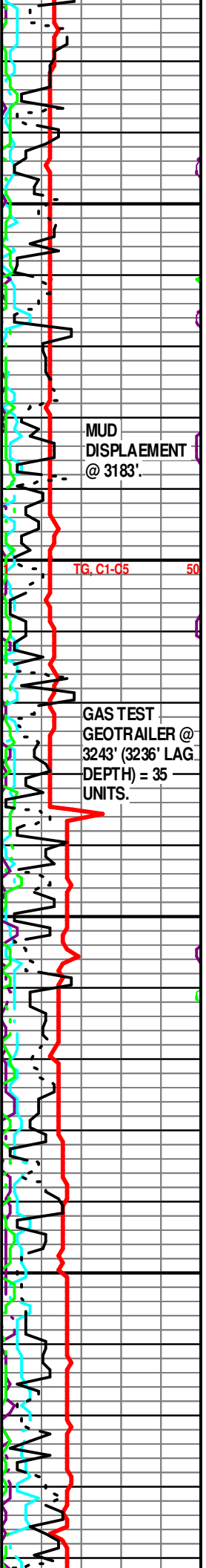
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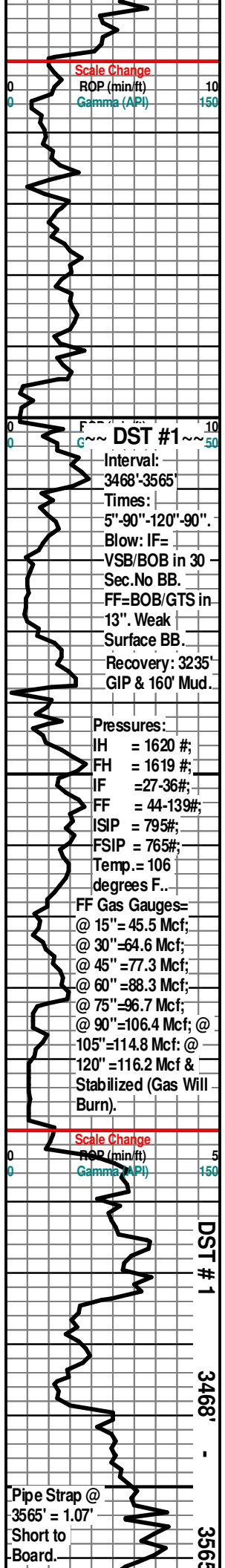
ROP (min/ft) 5
Gamma (API) 150

TG, C1-05 50



Stratigraphic descriptions and section headers.





3350

3400

3450

3500

3550

3665

DST #1

Scale Change
ROP (min/ft)
Gamma (API)

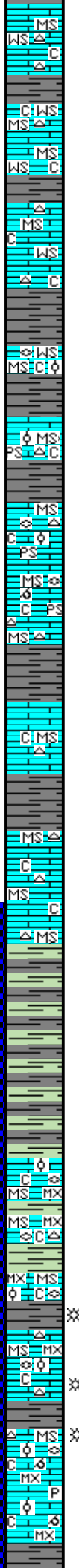
DST #1
Interval:
3468'-3565'
Times:
5"-90"-120"-90"
Blow: IF=
VSB/BOB in 30
Sec.No BB.
FF=BOB/GTS in
13". Weak
Surface BB.
Recovery: 3235'
GIP & 160' Mud..

Pressures:
IH = 1620 #;
FH = 1619 #;
IF = 27-36#;
FF = 44-139#;
ISIP = 795#;
FSIP = 765#;
Temp.= 106
degrees F..
FF Gas Gauges=
@ 15"= 45.5 Mcf;
@ 30"=64.6 Mcf;
@ 45"=77.3 Mcf;
@ 60"=88.3 Mcf;
@ 75"=96.7 Mcf;
@ 90"=106.4 Mcf; @
105"=114.8 Mcf; @
120"=116.2 Mcf &
Stabilized (Gas Will
Burn).

Scale Change
ROP (min/ft)
Gamma (API)

DST #1

Pipe Strap @
3565' = 1.07'
Short to
Board.



Ls Crm-Gry Dns VFxIn Mudstone Grad Tr Crm Wackestone Cht Gry Translu-Op Shp Vit Chalky Sh Gry Char Soft-Fissil No Odor No Stn No Flor NS

Ls Crm-Gry Dns VFxIn Mudstone Grad Tr Crm Wackestone Cht Gry Translu-Op Shp Vit Chalky Sh Gry Char Soft-Fissil No Odor No Stn No Flor NS

Ls Crm-Gry Dns VFxIn Mudstone Grad Tr Crm Wackestone Cht Gry Op Shp Vit Chalky Sh Gry Char Soft-Fissil No Odor No Stn No Flor NS

Ls Crm-Gry Dns VFxIn Mudstone Grad Tr Crm Wackestone Cht Gry Op Shp Vit Chalky Sh Gry Char Soft-Fissil No Odor No Stn No Flor NS

Ls Crm-Gry Dns VFxIn Mudstone Grad Tr Crm Wackestone Cht Gry Op Shp Vit Chalky Sh Gry Char Soft-Fissil No Odor No Stn No Flor NS

Ls Crm-Gry Dns FxIn Mudstone W/Fuss Inclus Grad Wackestone/ Packstone Poor OOL Ø Cht Gry Op Shp Vit Chalky Sh Gry Char Soft-Fissil No Odor No Stn No Flor NS

Ls Crm-Gry Dns FxIn Mudstone W/Fuss Inclus Grad Wackestone/ Inc Packstone w/Fuss Inclus Poor-Fair InterOOL Ø Cht Gry Op Shp Vit Chalky Sh Gry Char Soft-Fissil No Odor No Stn No Flor NS

Ls Crm-Gry Dns FxIn Mudstone w/Fuss Inclus Grad Wackestone/ Packstone w/Fuss Inclus Poor-Fair InterOOL Ø Poor-Fair Dissilu Leaching Cht Gry Op Shp Vit Chalky Sh Gry Char Soft-Fissil No Odor No Stn No Flor NS

Ls Crm-Gry Dns FxIn Mudstone Grad Packstone w/Fuss Inclus Poor-Fair InterOOM Ø Poor-Fair Dissilu Leaching Cht Gry Op Shp Vit Chalky Sh Gry Char Soft-Fissil No Odor No Stn No Flor NS

Ls Wht-Crm Dns FxIn Mudstone Grad Packstone Poor-Fair InterOOM & InterOOL Ø Poor-Fair Dissilu Leaching Cht Drk Gry Op Shp Vit Chalky Sh Gry Char Soft-Fissil No Odor No Stn No Flor NS

Ls Wht-Crm Dns FxIn Mudstone Grad Packstone Poor-Fair InterOOM & InterOOL Ø Poor-Fair Dissilu Leaching Cht Wht Transl Shp Vit Chalky Sh Gry Char Soft-Fissil No Odor No Stn No Flor NS

Ls Wht-Crm Dns FxIn Mudstone Grad Wackestone Cht Gry Op Shp Vit Chalky Sh Gry Char w/Pyrr Inclus Soft-Fissil No Odor No Stn No Flor NS

Ls Wht-Crm Dns FxIn Mudstone Grad Wackestone Cht Gry Op Shp Vit Chalky Sh Gry Char Soft-Fissil No Odor No Stn No Flor NS

Ls Wht-Crm Dns FxIn Mudstone Grad Wackestone Cht Gry Op Shp Vit Chalky Sh Gry Char Soft-Fissil No Odor No Stn No Flor NS

Ls Wht-Crm Dns FxIn Mudstone Grad Wackestone Cht Gry Op Shp Vit Chalky Sh Gry Char Soft-Fissil No Odor No Stn No Flor NS

ROOT SHALE 3464' (- 664)

Sh Gry Grn Red Soft LL AA No Odor No Stn No Flor NS

Sh Gry Grn Red Soft LL AA No Odor No Stn No Flor NS

Sh Gry Grn Red Soft LL AA No Odor No Stn No Flor NS

STOTLER 3504' (- 704)

Ls Wht-Gry-Crm MicroxIn-CryptoxIn-FxIn Fos (Fuss Inclus) Grad Poor-InterOOL Ø Poor Dissilu Leaching Cht Wht-Gry Transl Shp Vit Chalky Sh Gry Char Soft-Fissil No Odor No Stn No Flor NS

Ls Wht-Gry-Crm MicroxIn-CryptoxIn-FxIn Fos (Fuss Inclus) Grad Poor-InterOOL Ø Poor Dissilu Leaching Cht Wht-Gry Transl Shp Vit Chalky Sh Gry Char Soft-Fissil No Odor No Stn No Flor NS

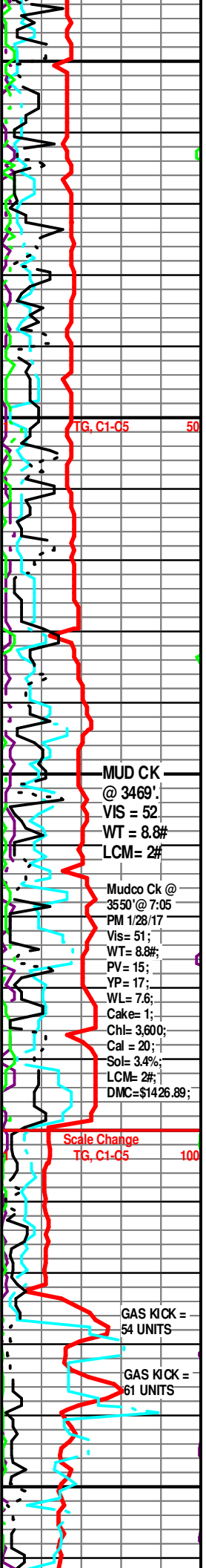
Ls Wht-Crm MicroxIn-CryptoxIn-FxIn Fos (Fuss Inclus) Grad Poor-Fair InterOOL Ø Poor-Fair Dissilu Leaching Cht Wht-Gry Transl Shp Vit Chalky Sh Gry Char Soft-Fissil No Odor No Stn Good Scat Flor (Lt Grn) SG

Ls Wht-Crm MicroxIn-CryptoxIn-FxIn Fos (Fuss Inclus) Grad Poor-Fair InterOOL Ø Poor-Fair Dissilu Leaching Cht Wht-Gry Transl Shp Vit Chalky Sh Gry Char Soft-Fissil No Odor No Stn Good Scat Flor (Lt Grn) SG

0" CFS @ 3565' Ls Wht-Crm MicroxIn-CryptoxIn-FxIn Fos (Fuss Inclus) Grad Poor-Fair Small Rd InterOOL & InterOOM (w/Chalk & Pyr Inclus) Ø Poor-Fair Dissilu Leaching Cht Wht-Gry Transl Shp Vit Sh Gry Char Soft-Fissil No Odor No Stn Good Scat Flor (Lt Grn) FSG

30" CFS @ 3565' Ls Wht-Crm-Gry MicroxIn-CryptoxIn-FxIn Grad Fair Small Rd InterOOL & InterOOM (w/Chalk & Pyr Inclus) Ø Fair Dissilu Leaching Sh Gry Char Soft-Fissil No Odor No Stn Good Scat Flor (Lt Grn) SG

60" CFS @ 3565' Ls Wht-Crm-Gry MicroxIn-CryptoxIn-FxIn Grad Fair Small Rd InterOOL & InterOOM (w/Chalk & Pyr Inclus) Ø Fair Dissilu Leaching Sh Gry Char Soft-Fissil No Odor No Stn Good Scat Flor (Lt Grn) SG



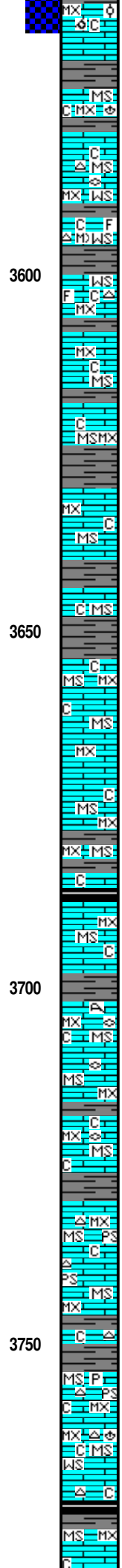
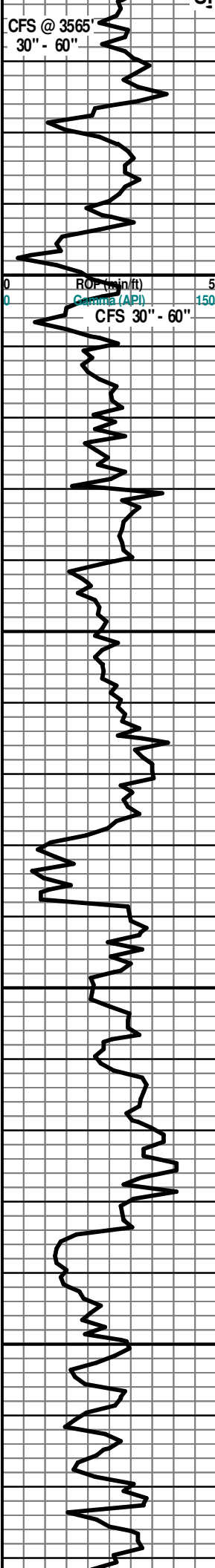
MUD CK
@ 3469'.
VIS = 52
WT = 8.8#
LCM= 2#

Mudco Ck @
3550' @ 7:05
PM 1/28/17
Vis= 51;
WT= 8.8#;
PV= 15;
YP= 17;
WL= 7.6;
Cake= 1;
Chl= 3,600;
Cal = 20;
Sol= 3.4%;
LCM= 2#;
DMC=\$1426.89;

Scale Change
TG, C1-G5

GAS KICK =
54 UNITS

GAS KICK =
61 UNITS



(w/Char & Fx Includ) Ø Fair Disint Leading Sh Dry Char Soft Fossil No Odor No Stn Good Seal For (Lt Grn) SG

Trip Debris -Poor Spl.

TARKIO 3574' (- 774)

Ls Cm-Why-Gry Microxln Dns Poor Ixln Ø Mudstone Fos (Brach) Chalky Sh AA Trip Debris No Odor No Stn No Flor NS
 0" CFS @ 3606' Ls Wht-Crm Microxln Poor Ixln Ø Mudstone w/Fos (Fuss) Includ Poor Ixln Cht Gry Op Vit Chalky No Odor No Stn No Flor NS
 30" CFS @ 3606' Ls Wht-Crm Microxln Poor Ixln Ø Mudstone w/Fos (Fuss) Includ Poor Ixln Grad Fxln Wackestone (w/Fuss Includ) Cht Gry Op Vit (w/Spicule Includ) Chalky No Odor No Stn No Flor NS

60" CFS @ 3606' Ls Wht-Crm Microxln Poor Ixln Ø Mudstone w/Fos (Fuss) Includ Poor Ixln Grad Fxln Wackestone (w/Fuss Includ) Cht Gry Op Vit (w/Spicule Includ) Chalky No Odor No Stn No Flor NS

Ls Gry-Crm Microxln Poor Ixln Ø Mudstone Fxln Chalky No Odor No Stn No Flor NS

Ls Gry-Crm Microxln Poor Ixln Ø Mudstone Fxln Chalky Sh Char-Gry Soft No Odor No Stn No Flor NS

Ls Gry-Crm Microxln Poor Ixln Ø Mudstone Fxln Chalky Sh Char-Gry Soft No Odor No Stn No Flor NS

Ls Gry-Crm Microxln Poor Ixln Ø Mudstone Fxln Chalky Sh Char-Gry Soft No Odor No Stn No Flor NS

Ls Gry-Crm Microxln Poor Ixln Ø Mudstone Fxln Chalky Sh Char-Gry Soft No Odor No Stn No Flor NS

Ls Gry-Crm Microxln Poor Ixln Ø Mudstone Fxln Chalky Sh Char-Gry Soft No Odor No Stn No Flor NS

Ls Gry-Crm Microxln Poor Ixln Ø Mudstone Fxln Chalky Sh Char-Gry Soft No Odor No Stn No Flor NS

Ls Gry-Crm Microxln Poor Ixln Ø Mudstone Fxln Chalky Sh Char-Gry Soft No Odor No Stn No Flor NS

Ls Gry-Crm Microxln Poor Ixln Ø Mudstone Fxln Chalky Sh Char-Gry Soft No Odor No Stn No Flor NS

Ls Cm-Gry Microxln Poor Ixln Ø Mudstone Fxln (w/Fuss & Coral Includ) Chalky Sh Char-Gry Soft No Odor No Stn No Flor NS

Ls Cm-Gry Microxln Poor Ixln Ø Mudstone Fxln (w/Fuss Includ) Chalky Sh Char-Gry Soft No Odor No Stn No Flor NS

Ls Cm-Wht Microxln Poor Ixln Ø Mudstone Fxln (w/Fuss Includ) Chalky Sh Char-Gry Soft No Odor No Stn No Flor NS

Ls Cm-Wht-Gry Microxln Poor Ixln Ø Mudstone Fxln (w/Fuss Includ) Grad Packstone Fair Ixln Ø Cht Gry Op Shp Vit Chalky Sh Char-Gry-Brn Soft No Odor No Stn No Flor NS

Ls Cm-Wht-Gry Microxln Poor Ixln Ø Mudstone Fxln (w/Fuss Includ) Grad Packstone Fair Ixln Ø Cht Wht Op Shp Vit Chalky Sh Char-Gry-Red Soft No Odor No Stn No Flor NS

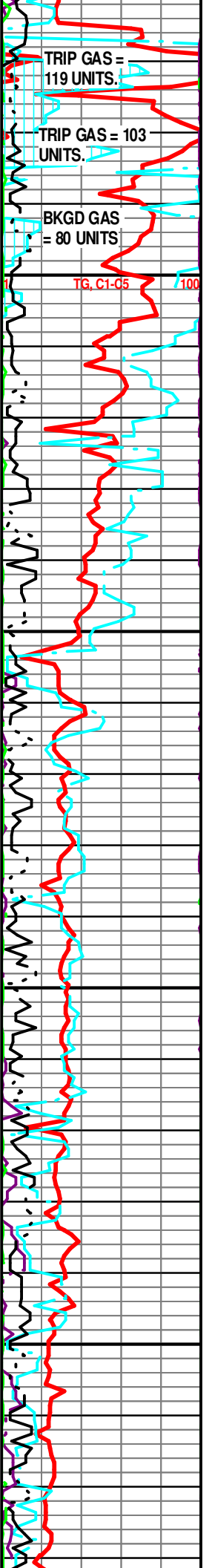
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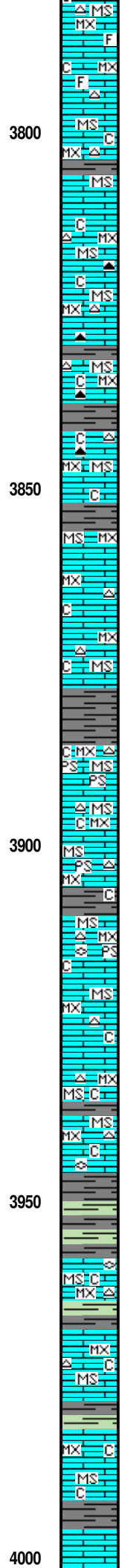
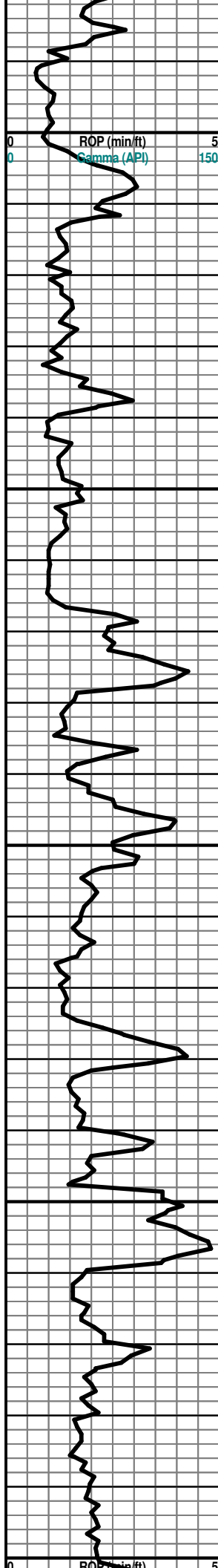
Ls Cm-Wht-Gry Microxln Poor Ixln Ø Mudstone Fxln Grad Wackestone Poor Ixln Ø Cht Wht-Gry Op Shp Vit Chalky Fos (Brach) Sh Gry-Red Soft No Odor No Stn No Flor NS

Ls Cm-Gry Microxln Poor Ixln Ø Mudstone Fxln Cht Gry Op Shp Vit Chalky Sh Blk Carb-Gry-Red Fossil-Soft No Odor No Stn No Flor NS

TOPEKA 3776' (- 976)

Ls Cm-Wht Microxln Poor Ixln Ø Mudstone Fxln Cht Wht (Abd)-Brn (Spicule) Op





Shp Vit Chalky Sh Blk Carb-Gry-Aqua Fissil-Soft No Odor No Stn No Flor NS

Ls Ccm-Wht MicroxlN Poor lxlN Ø Mudstone FxlN Cht Wht-Brn (Spicule) Op Shp Vit Chalky (Abd) Sh Blk Carb-Gry-Aqua Fissil-Soft No Odor No Stn No Flor NS

Ls Ccm-Wht MicroxlN Poor lxlN Ø Mudstone FxlN Cht Wht-Brn Op Shp Vit Chalky (Abd) Sh Char-Gry-Grn Fissil-Soft No Odor No Stn No Flor NS

Ls Ccm-Wht MicroxlN Poor lxlN Ø Mudstone FxlN Cht Wht-Brn Op Shp Vit Chalky (Abd) Sh Char-Gry-Grn Fissil-Soft No Odor No Stn No Flor NS

Ls Ccm-Wht MicroxlN Poor lxlN Ø Mudstone FxlN Cht Wht-Brn Op Shp Vit Chalky (Abd) Sh Char-Gry-Grn Fissil-Soft No Odor No Stn No Flor NS

Ls Ccm-Wht MicroxlN Poor lxlN Ø Mudstone FxlN Cht Wht-Brn Op Shp Vit Chalky (Abd) Sh Char-Gry-Grn Fissil-Soft No Odor No Stn No Flor NS

Ls Ccm-Wht-Gry MicroxlN Poor lxlN Ø Mudstone FxlN Cht Wht-Brn Op Shp Vit Lg Fuss Chalky (Abd) Sh Char-Gry-Grn Fissil-Soft No Odor No Stn No Flor NS

Ls Ccm-Wht-Gry MicroxlN Poor lxlN Ø Mudstone FxlN Chalky (VAbd) Sh Char-Gry-Grn Fissil-Soft No Odor No Stn No Flor NS

Ls Ccm-Wht-Gry MicroxlN Poor lxlN Ø Mudstone FxlN Cht Gry Op Shp Vit Lg Fuss Chalky (VAbd) Sh Char-Gry-Grn Fissil-Soft No Odor No Stn No Flor NS

Ls Ccm-Wht-Gry MicroxlN Poor lxlN Ø Mudstone FxlN Cht Gry Op Shp Vit Lg Fuss Chalky (VAbd) Sh Char-Gry Fissil-Soft No Odor No Stn No Flor NS

Ls Ccm-Gry MicroxlN Poor lxlN Ø Mudstone FxlN Grad Packstone Fair lxlN Ø Cht Gry-Wht Op Shp Vit Chalky (VAbd) Sh Char-Gry-Grn Fissil-Soft No Odor No Stn No Flor NS

Ls Ccm-Gry MicroxlN Poor lxlN Ø Mudstone FxlN Grad Packstone Fair lxlN Ø Cht Gry-Wht Op Shp Vit Chalky (VAbd) Sh Char-Gry-Grn Fissil-Soft No Odor No Stn No Flor NS

Ls Ccm-Gry MicroxlN Poor lxlN Ø Dns Mudstone FxlN Grad Packstone Cht Gry-Wht Op Shp Vit Chalky (VAbd) Sh Char-Gry-Grn Fissil-Soft No Odor No Stn No Flor NS

Ls Ccm-Wht MicroxlN Poor lxlN Ø Dns Mudstone FxlN Grad Packstone Cht Gry-Wht Op Shp Vit Fuss Chalky (VAbd) Sh Char-Gry-Grn Fissil-Soft No Odor No Stn No Flor NS

Ls Ccm-Wht MicroxlN Poor lxlN Ø Dns Mudstone Cht Wht-Gry Op Shp Vit Chalky (VAbd) Sh Gry Soft No Odor No Stn No Flor NS

Ls Ccm-Wht MicroxlN Poor lxlN Ø Dns Mudstone Cht Wht-Gry Op Shp Vit Chalky (VAbd) Sh Gry Soft No Odor No Stn No Flor NS

Ls Ccm-Wht MicroxlN Poor lxlN Ø Dns Mudstone Cht Wht-Gry Op Shp Vit Fuss Chalky (VAbd) Sh Gry-Grn Soft No Odor No Stn No Flor NS

Ls Ccm-Gry MicroxlN Poor lxlN Ø Dns Mudstone Cht Wht Op Shp Vit Fuss Chalky (Abd) Sh Gry-Grn Soft No Odor No Stn No Flor NS

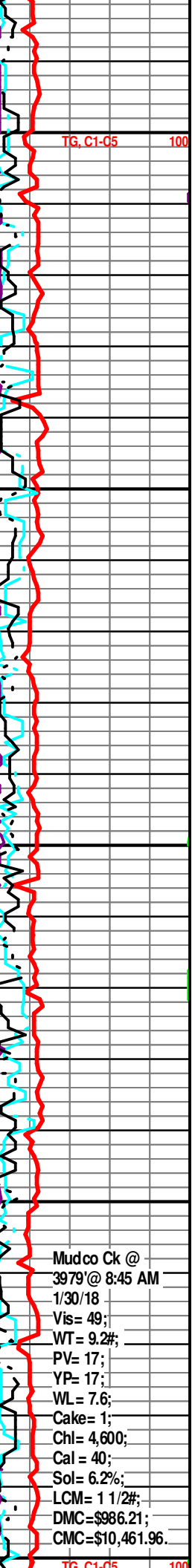
LeCOMPTON 3959' (- 1159)

Ls Ccm-Gry MicroxlN Poor lxlN Ø Dns Mudstone Cht Gry-Wht Op Shp Vit Fuss Chalky Sh Gry-Grn Soft No Odor No Stn No Flor NS

Ls Ccm-Gry MicroxlN Poor lxlN Ø Dns Mudstone Cht Gry-Wht Op Shp Vit Chalky Sh Gry-Grn Soft No Odor No Stn No Flor NS

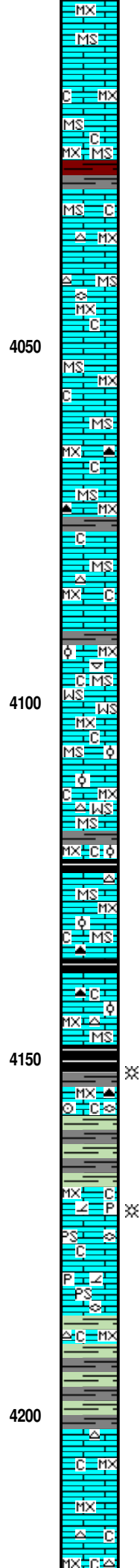
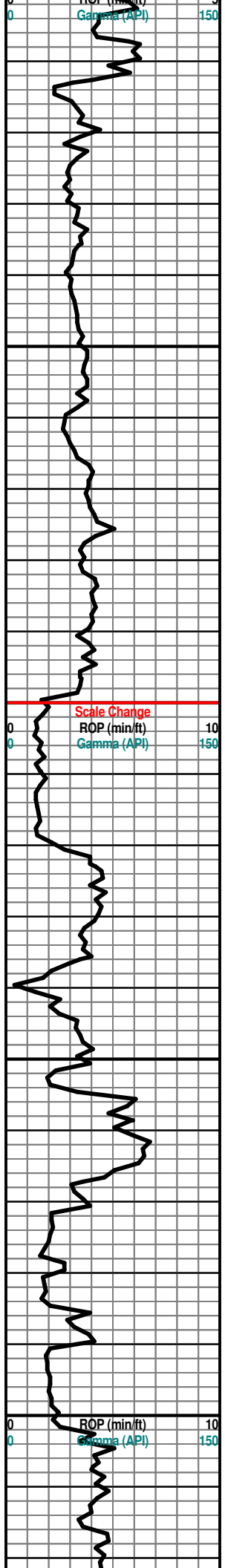
Ls Ccm-Gry MicroxlN Poor lxlN Ø Dns Mudstone Chalky (VAbd) Sh Gry-Grn Soft No Odor No Stn No Flor NS

Ls Ccm-Gry MicroxlN Poor lxlN Ø Dns Mudstone Chalky (VAbd) Sh Char-Gry Fissil-Soft No Odor No Stn No Flor NS



Ls Ccm-Gry MicroxlN Poor lxlN Ø Dns Mudstone Chalky (VAbd) Sh Char-Gry Fissil-Soft No Odor No Stn No Flor NS





Ls Crm-Gry Microxln Poor lxn Ø Dns Mudstone Chalky (VAbd) Sh NA No Odor No Stn No Flor NS

Ls Crm-Gry Microxln Poor lxn Ø Dns Mudstone Chalky (VAbd) Sh Char-Gry-Maroon Fissil-Soft No Odor No Stn No Flor NS

Ls Crm-Gry Microxln Poor lxn Ø Dns Mudstone Chalky (VAbd) Sh Char-Gry-Maroon Fissil-Soft No Odor No Stn No Flor NS

Ls Crm-Gry Microxln Poor lxn Ø Dns Mudstone Cht Clear Translu Vit Chalky (VAbd) Sh Char-Gry-Maroon Fissil-Soft No Odor No Stn No Flor NS

Ls Crm-Gry Microxln Poor lxn Ø Dns Mudstone Cht Gry Op Vit Fuss Chalky (VAbd) Sh Gry Fissil-Soft No Odor No Stn No Flor NS

Chalk Wht Soft (VAbd) Ls Crm-Gry Microxln Poor lxn Ø Dns Mudstone Cht Brn-Amber Op Shp Vit Sh Aqua-Gry Fissil-Soft No Odor No Stn No Flor NS

Chalk Wht Soft (VAbd) Ls Crm-Gry Microxln Poor lxn Ø Dns Mudstone Cht Brn-Amber Op Shp Vit Sh Aqua-Gry Fissil-Soft No Odor No Stn No Flor NS

Chalk Wht Soft (VAbd) Ls Crm-Gry Microxln Poor lxn Ø Dns Mudstone Cht Brn-Amber Op Shp Vit Sh Gry Fissil-Soft No Odor No Stn No Flor NS

Chalk Wht Soft (Abd) Ls Crm-Gry Microxln Poor lxn Ø Dns Mudstone Cht Clear Translu Shp Vit Shp Sh Gry Fissil-Soft No Odor No Stn No Flor NS

Chalk Wht Soft (Abd-"Gummy") Ls Crm-Gry Microxln Poor lxn Ø Dns Mudstone Grad Wackestone Poor lxn/Inter OOL Ø Fos (Pelec) Sh Gry Soft No Odor No Stn No Flor NS

Chalk Wht Soft (Abd-"Gummy") Ls Crm-Gry Microxln Poor lxn Ø Dns Mudstone Grad Wackestone Poor lxn/Inter OOL Ø Sh Gry Soft No Odor No Stn No Flor NS

Ls Crm-Gry Microxln Poor lxn Ø Dns Mudstone Grad Wackestone Poor lxn/Inter OOL Ø Cht Wht Translu-Op Shp Vit Chalk Wht Soft (Abd) Sh Gry Soft No Odor No Stn No Flor NS

Ls Crm-Gry Tr Drk Gry/Blk Microxln Poor lxn Ø Dns Mudstone Grad Wackestone Poor lxn/Inter OOL Ø Cht Wht Translu-Op Shp Vit Chalk Wht Soft (Abd) Sh Gry Soft No Odor No Stn No Flor NS

Ls Crm-Gry-Drk Gry Microxln Poor lxn w/Poor Inter OOL Ø Dns Mudstone Cht Wht/ Drk Gry/Blk Op Shp Vit Chalk Wht Soft (Abd) Sh Gry-Drk Blk Carbonaceous Soft No Odor No Stn No Flor NS

Ls Crm-Gry-Drk Gry Microxln Poor lxn w/Poor Inter OOL Ø Dns Mudstone Cht Wht/Drk Gry/Blk Op Shp Vit Chalk Wht Soft (Abd) Sh Drk Blk-Brn Carbonaceous Fissil-Soft Faint Odor No Stn No Flor NS

HEEBNER 4151' (- 1351)

Sh Blk Carb Fissil Ls AA Cht Drk Gry/Blk AA No Stn No Flor Faint Odor NS

Ls/Dolo Crm-Wht-Gry Microxln Poor lxn Ø Grad Fair Sucrosic lxn Ø & Fair Vug Leaching Ø Fos (Cry, Fuss) Chalk (Abd) Sh Char-Gry Fissil No Odor No Stn No Flor NS

TORONTO 4168' (- 1368)

Ls/Dolo Crm-Wht-Gry Microxln (w/Pyr Includ) Packstone Poor lxn Ø Grad Fair Sucrosic lxn Ø & Fair Vug Leaching Ø Fos (Fuss) Chalk (Abd) Sh Char-Gry Fissil No Odor No Stn No Flor NS

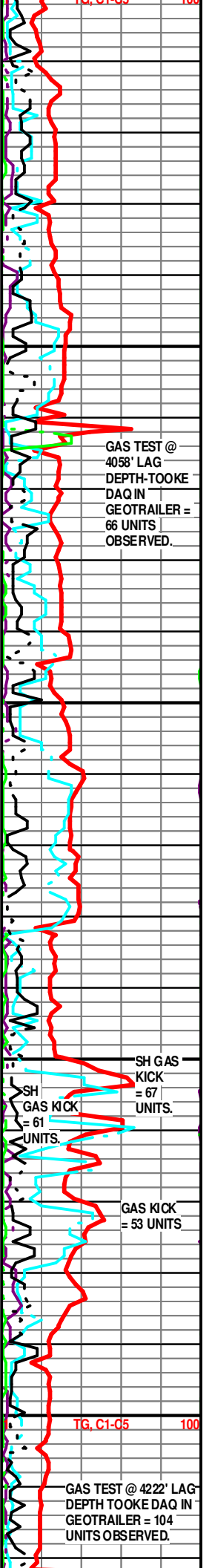
Ls Crm-Wht-Gry Microxln (w/Pyr Includ) Packstone Poor lxn Ø Grad Fair Sucrosic lxn Ø & Fair Vug Leaching Ø Fos (Fuss) Cht Wht Op Shp Vit Chalk (Abd) Sh Char-Gry Fissil No Odor No Stn No Flor NS

DOUGLAS 4190' (- 1390)

Sh Gry-Grn Fissil Ls Crm-Wht-Gry Microxln Poor lxn Ø Fos (Fuss) Cht Wht Op Shp Vit Chalk (Abd) No Odor No Stn ? Sli Min Flor NS

Ls Crm-Wht-Gry Microxln Poor lxn Ø Cht Wht-Amber Translu-Op Shp Vit Chalk Sh Gry-Grn Fissil No Odor No Stn ? Sli Min Flor NS

Ls Crm-Wht-Gry Microxln Poor lxn Ø Cht Wht-Amber Translu-Op Shp Vit Chalk Sh Gry-Grn Fissil No Odor No Stn No Flor NS



GAS TEST @ 4058' LAG DEPTH-TOOKE DAQ IN GEOTRAILER = 66 UNITS OBSERVED.

SH GAS KICK = 67 UNITS.

GAS KICK = 53 UNITS

TG, C1-05 100

GAS TEST @ 4222' LAG DEPTH TOOKE DAQ IN GEOTRAILER = 104 UNITS OBSERVED.

Ls Crm-Wht-Gry Microxln Poor Ixln Ø Cht Wht Op Shp Vit Fos (Crin) Chalk Sh Grn-Gry-Char Fissil No Odor No Stn No Flor NS

IATAN (BROWN LIME) 4232' (-1432)

Ls Crm-Wht-Gry Microxln Poor Ixln Ø Cht Wht Op Shp Vit Fos (Crin) Chalk Sh Grn-Gry-Char Fissil No Odor No Stn No Flor NS

LANSING 4240' (-1440)

0" CFS @ 4270' Ls Wht-Crm-Gry Microxln Poor Ixln Ø Grad Packstone Fair Ixln/Igran Ø Cht Wht-Amber-Gry Translu-Op Shp Vit Chalk Sh Gry-Grn Fissil No Odor No Stn No Flor NS

30" CFS @ 4270' Ls Wht-Crm-Gry Microxln Poor Ixln Ø Grad Packstone Fair Ixln/Igran Ø Cht Wht-Amber-Gry-Drk Blk Translu-Op Shp Vit Chalk Sh Gry-Grn Fissil No Odor No Stn No Flor NS

60" CFS @ 4270' Ls Wht-Crm-Gry Microxln Poor Ixln Ø Mudstone Ls Wht-Crm-Gry Microxln Poor Ixln Ø Grad Packstone (w/Poor Vug Leached Ixln Ø Cht Wht-Amber-Gry Translu-Op Shp Vit Chalk Sh Gry-Grn-Char Soft-Fissil No Odor No Stn No Flor NS

Ls Wht-Crm-Gry Microxln Poor Ixln Ø Mudstone Grad Wackestone Cht Wht-Amber-Gry-Drk Blk Translu-Op Shp Vit Chalky Sh Gry-Grn-Char Soft-Fissil No Odor No Stn No Flor NS

Ls Wht-Crm-Gry Microxln Poor Ixln Ø Mudstone Cht Wht-Amber-Gry- Drk Blk Translu-Op Shp Vit Chalky Sh Gry-Grn (Waxy)-Char Soft-Fissil No Odor No Stn No Flor NS

Ls Wht-Crm-Gry Microxln Poor Ixln Ø Mudstone Grad Poor Sub OOL Ø Cht Wht-Amber-Gry- Drk Blk Translu-Op Shp Vit Chalky Sh Gry-Char Soft-Fissil No Odor No Stn No Flor NS

Ls Wht-Crm-Gry Microxln Poor Ixln Ø Dns Mudstone Cht Wht-Amber- Gry Translu-Op Shp Vit Fos (Brach) Chalky Sh Gry-Char Soft-Fissil No Odor No Stn No Flor NS

Ls Wht-Gry-Crm Microxln Poor Ixln Ø Dns Mudstone Cht Wht-Amber- Gry Op Shp Vit Chalky Sh Gry-Grn-Char Soft-Fissil No Odor No Stn No Flor NS

Ls Wht-Crm Microxln Poor Ixln Ø Dns Mudstone Cht Wht Op Shp Vit Chalky (VAbd) Sh Char Fissil No Odor No Stn No Flor NS

Ls Crm-Gry Microxln Poor Ixln Ø Dns Mudstone Cht Wht-Crm Op Shp Vit Chalky (VAbd) Sh Char Fissil No Odor No Stn No Flor NS

Ls Gry-Crm-Wht Microxln Poor Ixln Ø Dns Mudstone Cht Wht-Gry-Drk Blk Op Shp Vit Chalky Sh Gry-Grn-Char Soft-Fissil No Odor No Stn No Flor NS

Sh Gry-Grn-Char Soft-Fissil Ls Gry-Crm-Wht Microxln Poor Ixln Ø Dns Mudstone Cht Wht-Gry-Drk Blk Op Shp Vit Chalky No Odor No Stn No Flor NS

Ls Gry-Crm-Wht Microxln Poor Ixln Ø Dns Mudstone Grad Poor Sub OOL Ø Grad Packstone Friable Cht Wht (w/Fos, Pyr Includ) Gry-Drk Blk Op Shp Vit Chalky Sh Gry-Grn-Char Soft-Fissil No Odor No Stn No Flor NS

Ls Gry-Crm-Wht Microxln Poor Ixln Ø Dns Mudstone Grad Poor Sub OOL Ø Grad Packstone Friable Cht Wht (w/Fos, Pyr Includ) Gry-Drk Blk Op Shp Vit Chalky Sh Gry-Grn-Char Soft-Fissil No Odor No Stn No Flor NS

Ls Gry-Crm-Wht Microxln Poor Ixln Ø Dns Mudstone Grad Dec Poor Sub OOL (w/Pin-Pt Ixln Ø) Few Vug Leaching Grad Wackestone Dns Cht Wht Gry-Amber Translu- Op Shp Vit Fos (Fuss) Chalky Sh Gry-Grn-Char Soft-Fissil No Odor No Stn No Flor NS

Ls Crm-Wht Microxln Poor Ixln Ø Dns Mudstone Grad Fair-Good Lg InterOOL/OOM Ø (w/OOL in PI) Good Vug Leaching Fair-Good InterOOM Dissolu Leaching Cht Amber Translu- Op Shp Vit Chalky Sh Maroon-Gry Fissil No Odor No Stn ? Sli Min Flor NS

Ls Crm-Wht Microxln Poor Ixln Ø Dns Mudstone Grad Fair-Good Lg InterOOL/OOM Ø (w/OOL in PI) Good Vug Leaching Fair-Good InterOOM Dissolu Dec Cht Gry (w/Spicule) Op Shp Vit Chalky Sh Gry Fissil No Odor No Stn ? Sli Min Flor NS

Ls Crm-Wht Microxln Poor Ixln Ø Dns Mudstone Grad Fair-Good Lg InterOOL/OOM Ø (w/OOL in PI) Good Vug Leaching Fair-Good InterOOM Dissolu Dec Cht Gry (w/Spicule) Op Shp Vit Chalky Sh Gry Fissil No Odor No Stn ? Sli Min Flor NS

Ls Crm-Wht Microxln Poor Ixln Ø Dns Mudstone Grad Fair-Good Lg InterOOL/OOM Ø (w/OOL in PI) Good Vug Leaching Fair-Good InterOOM Dissolu Cht Gry (w/OOL in pl, & Fos Includ) Op Shp Vit Ls Crm-Wht Microxln Poor Ixln Ø Dns Mudstone Grad Fair-Good Lg InterOOL/OOM Ø (w/OOL in PI) Good Vug Leaching Fair-Good InterOOM Dissolu Cht Gry (w/OOL in pl, & Fos Includ) Op Shp Vit Chalky Sh Gry Fissil No Odor No Stn ? Sli Min Flor NS

RE-ZERO TOOKE DAQ = 15 UNITS BKGD GAS OBSERVED.

GAS TEST @ 4400' (4390') LAG DEPTH TOOKE DAQ IN GEOTRAILER = 153 UNITS OBSERVED.

RE-ZERO TOOKE DAQ = 15 UNITS BKGD GAS OBSERVED.

Mudco Ck @ 4430' @ 10:20 AM 1/31/18

Vis= 55;
WT= 9.3#;
PV= 16;
YP = 17;
WL = 7.2;
Cake = 1;
Chl = 4,400;
Cal = 20;
Sol = 6.9%;
LCM = 2#;

4250

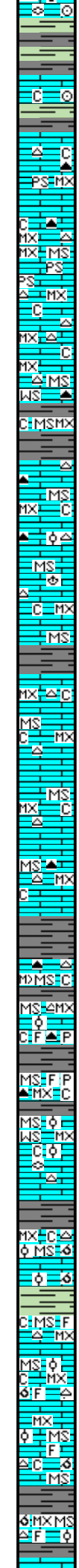
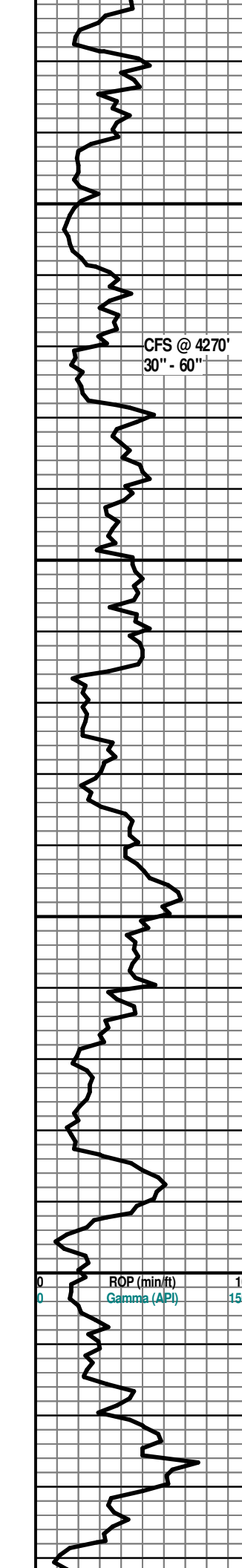
4300

4350

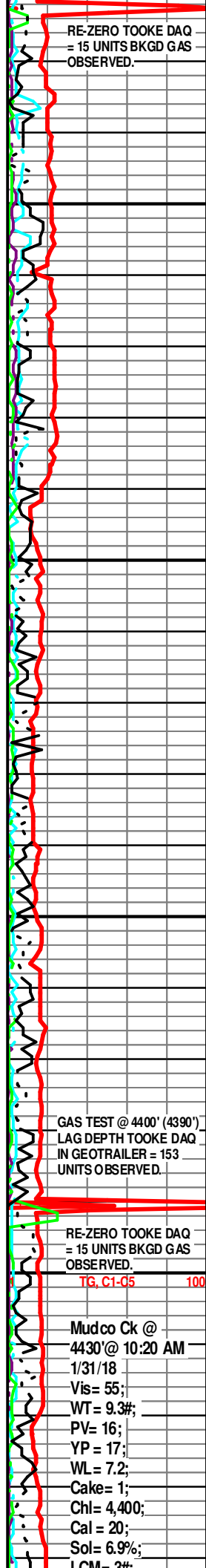
4400

CFS @ 4270' 30" - 60"

ROP (min/ft) 10
Gamma (API) 150

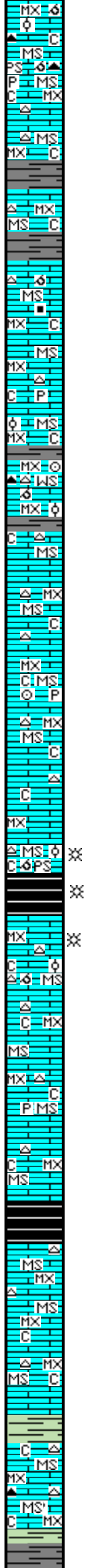
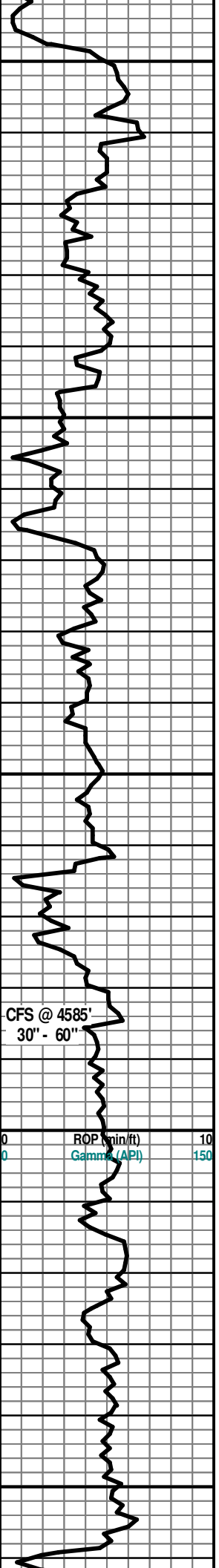


Vertical text columns containing detailed geological descriptions and well logs for IATAN and LANSING sections.



LCM=\$37,
DMC=\$2282.14;
CMC=\$12,744.10.

4450
4500
4550
4600
4650



Ls Crm-Wht Microxln Poor Ixln Ø Dns Mudstone Grad Fair-Good Lg InterOOL/OOMØ (w/OOL in Pl)
Good Vug Leaching Fair-Good InterOOM Dissolu Cht Gry-Drk Blk Op Shp Vit Chalky Sh Gry Fissil No
Odor No Stn No Flor NS

Ls Gry-Crm Microxln Poor Ixln Ø Dns Mudstone Tr OOM Ø AA Packstone Cht
Wht-Gry-Drk Blk Op Shp Vit Chalky Sh Gry-Grn (w/Pyr Includ)-Char Soft-Fissil No
Odor No Stn No Flor NS

Ls Gry-Crm Microxln Poor Ixln Ø Dns Mudstone Cht Wht-Gry Translu- Op Shp Vit
Chalky Sh Gry-Grn-Char Soft-Fissil No Odor No Stn No Flor NS

Ls Gry-Crm Microxln Poor Ixln Ø Dns Mudstone Cht Wht-Gry Translu- Op Shp Vit
Chalky Sh Gry-Grn-Char Soft-Fissil No Odor No Stn No Flor NS

Ls Gry-Crm Microxln Poor Ixln Ø Dns Mudstone Grad Tr Poor Ixln OOM Ø
Fair-Poor Leaching Dissolu Cht Gry Op Shp Vit Chalky Sh Gry-Char (w/Carb
Includ) Soft-Fissil No Odor No Stn No Flor NS

Ls Crm-Gry Microxln Poor Ixln Ø Dns Mudstone Cht Wht-Clear Translu- Op Shp Vit
Pyr Mass Chalky Sh Gry Fissil No Odor No Stn No Flor NS

Ls Crm-Gry Microxln Poor Ixln Ø Dns Mudstone Grad Granular Poor InterOOL Ø
Wackestone Cht Wht-Drk Gry Translu-Op Shp Vit Fos (Crin) Chalky Sh Char-Gry
Fissil No Odor No Stn No Flor NS

Ls Crm-Gry Microxln Poor Ixln Ø Dns Mudstone Grad Granular Poor
InterOOL/OOM Ø Wackestone Cht Wht-Gry Op Shp Vit Chalky Sh Char-Gry Fissil
No Odor No Stn No Flor NS

Ls Crm-Gry Microxln Poor Dns Ixln Ø Dns Mudstone Cht Wht-Gry Op Shp Vit
Chalky Sh Char-Gry Fissil No Odor No Stn No Flor NS

Ls Crm-Gry Microxln Poor Dns Ixln Ø Dns Mudstone Cht Wht-Gry Op Shp Vit Fos
(Crin w/Pyr Includ) Chalky Sh Char-Gry Fissil No Odor No Stn No Flor NS

Ls Crm-Gry Microxln Poor Dns Ixln Ø Dns Mudstone Cht Wht-Gry Op Shp Vit
Chalky Sh Gry Fissil-Soft No Odor No Stn No Flor NS

Ls Crm-Gry Microxln Poor Dns Ixln Ø Dns Mudstone Cht Wht-Gry Op Shp Vit Chalky Sh Gry
Fissil-Soft No Odor No Stn No Flor NS

0" @ 4585' Ls Crm-Gry Microxln Poor Dns Ixln Ø Dns Mudstone Grad Fair-Good Vug OOM/OOL
Leaching Ø (w/Sli SG When Broken In Wtr Under Heat) Packstone Cht Wht-Gry Op Shp Vit Chalky Sh
Gry Fissil-Soft No Odor No Stn Scat ? Min/SG (Lt Grn) Flor ? Sli SG

STARK 4562' (- 1762)

SWOPE 4570' (- 1771)

30" @ 4585' Sh Blk Carb Fissil Ls AA Tr Fair OOM Ø (w/ Poor-Fair Leaching) AA
Cht Wht-Gry (Banded w/Fos Includ) Grad Mudstone Chalk AA No Stn Sli Tr SG in
Blk Carb Sh & Vug OOM Ø AA No Odor ? Scatt Min/SG (Lt Grn) Flor ? Sli SG

60" @ 4585' Ls Crm-Gry Microxln Poor Dns Ixln Ø Dns Mudstone Cht Wht-Gry-Drk
Gry Op Shp Vit Chalky Sh Gry Fissil-Soft No Odor No Stn No Flor NS

Ls Crm-Gry Microxln Poor Dns Ixln Ø Dns Mudstone Cht Wht-Gry Op Shp Vit
Chalky Pyr Includ Sh Gry Fissil-Soft No Odor No Stn No Flor NS

Ls Crm-Gry Microxln Poor Dns Ixln Ø Dns Mudstone Cht Wht-Gry Op Shp Vit
Chalky Sh Gry Fissil-Soft No Odor No Stn No Flor NS

HUSHPUCKNEY 4610' (- 1810)

Sh Blk Carbonaceous Fissil

HERTHA 4615' (- 1815)

Ls Crm-Gry Microxln Poor Dns Ixln Ø Dns Mudstone Cht Wht-Gry Op Shp Vit
Chalky No Odor No Stn No Flor NS

Ls Gry-Crm Microxln Poor Ixln Ø Dns Mudstone Grad Tr Poor Ixln OOM Ø
Fair-Poor Leaching Dissolu Cht Gry Op Shp Vit Chalky Sh Gry-Blk (w/Carb Includ)
Soft-Fissil No Odor No Stn No Flor NS

Ls Gry-Wht Microxln Poor Dns Ixln Ø Dns Mudstone Cht Gry Op Shp Vit Chalky
Sh Gry Soft-Fissil No Odor No Stn No Flor NS

Ls Wht-Crm-Gry Microxln Poor Dns Ixln Ø Dns Mudstone Cht Gry Translu- Op Shp
Vit Chalky Sh Gm (Abd)-Gry Soft-Fissil No Odor No Stn No Flor NS

Ls Wht-Crm-Gry Microxln Poor Dns Ixln Ø Dns Mudstone Cht Wht-Drk Blk
Translu-Op Shp Vit Pyr Mass Chalky Sh Grn-Gry Soft-Fissil No Odor No Stn No
Flor NS

Ls Wht-Crm-Gry Microxln Poor Ixln Ø Dns Mudstone Grad Tr Poor Ixln OOM Ø

Scale Change
TG, C1-G5 100
RE-ZERO TOOKE
DAQ @ 4519' =
15 UNITS BKGD
GAS OBSERVED

GAS TEST @
4527' (4522')
LAG DEPTH
TOOKE DAQ IN
GEOTRAILER =
43 UNITS
OBSERVED.

SH GAS
KICK =
34 UNITS

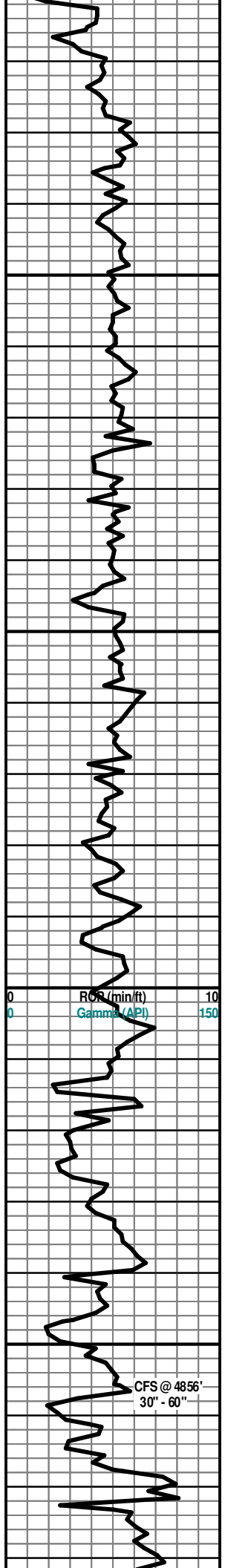
GAS KICK =
26 UNITS

TG, C1-G5 100

CFS @ 4585'
30" - 60"

ROP (min/ft) 10
Gamma (API) 150

Mudco Ck @
4722' @ 10:00 AM



4700

4750

4800

4850

Fair-Poor Leaching Dissolu Cht Gry-Drk Blk Op Shp Vit Pyr Mass Chalky Sh
 Gry-Grn-Aqua Soft-Fissil No Odor No Stn No Flor NS
 Ls Wht-Crm-Gry Microxln Poor Ixln Ø Dns Mudstone Grad Tr Poor Ixln OOM
 (w/OOLin pl) Poor Dissolu Ø Fair-Poor Leaching Dissolu Cht Gry-Drk Blk Op Shp
 Vit Chalky Sh Gry-Grn-Aqua Soft-Fissil No Odor No Stn No Flor NS
 Ls Wht-Crm-Gry-Brn Microxln Poor Ixln Ø Dns Mudstone Grad Tr Poor Ixln OOM
 (w/OOLin pl) Poor Dissolu Ø (Few Pcs) Poor Leaching Cht Wht-Gry-Drk Blk Op
 Shp Vit Chalky Sh Gry-Blk Carb Soft-Fissil No Odor No Stn No Flor NS
 Ls Gry-Crm Microxln Poor Ixln Ø Dns Mudstone Grad Tr (Few Pcs) Poor Ixln OOM
 Ø Fair-Poor Dissolu OOM Leaching Cht Wht-Gry Op Shp Vit Chalky Sh Gry-Char
 (Abd) Soft-Fissil No Odor No Stn No Flor NS
 Ls Gry-Crm Microxln Poor Ixln Ø Dns Mudstone (w/Pyr Inclus) Grad Cht Wht-Gry
 Op Shp Vit Chalky Sh Gry (Abd) Fissil No Odor No Stn No Flor NS
 Ls Gry-Crm Microxln Poor Ixln Ø Dns Mudstone (w/Pyr Inclus) Grad Cht Wht-Gry Op Shp Vit Chalky
 Sh Gry (Abd)-Blk Carb Fissil No Odor No Stn No Flor NS

BASE KANSAS CITY 4714' (- 1914)

Sh Blk Carb-Gry (VAbd)-Aqua Fissil Ls Wht-Gry-Crm Dns Microxln-Dns Mudstone
 (w/Pyr Inclus) Chalky No Odor No Stn No Flor NS
MARMATON 4728' (- 1928)

Ls Wht-Crm-Gry Microxln Poor Ixln Ø Dns Mudstone (w/Pyr Inclus) Tr Poor Small
 OOL Ø No-Poor Leaching Cht Wht-Gry Op Shp Vit Fos (Crin) Chalky Sh Gry-Blk
 Carb AA Fissil No Odor No Stn No Flor NS
 Ls Wht-Crm-Gry Microxln Poor Ixln Ø Dns Mudstone (w/Pyr Inclus) Tr Poor Small
 OOL Ø No-Poor Leaching Cht Gry-Drk Gry Translu-Op Shp Vit Chalky Sh
 Gry-Char-Blk Carb AA Fissil No Odor No Stn No Flor NS

Ls Wht-Crm-Gry Microxln Poor Ixln Ø Dns Mudstone (w/Pyr Inclus) Tr Poor Small
 OOL Ø No-Poor Leaching Cht Gry-Drk Gry Translu-Op Shp Vit Chalky Sh
 Gry-Char-Blk Carb AA Fissil No Odor No Stn No Flor NS
 Ls Wht-Crm-Gry Microxln Poor Ixln Ø Dns Mudstone Cht Wht-Gry Op Shp Vit
 Chalky Sh Gry-Char Sof-Fissil No Odor No Stn No Flor NS

Ls Wht-Crm-Gry Microxln Poor Ixln Ø Dns Mudstone Grad Tr Small IGran Sub OOL
 Ø (1 Pc) Packstone Cht Wht-Gry-Drk Gry Translu-Op Shp Vit Chalky Sh Gry-Char
 Soft-Fissil No Odor No Stn No Flor NS
 Ls Wht-Crm Microxln Poor Ixln Ø Dns Mudstone Cht Wht-Gry Op Shp Vit Chalky
 Sh Gry Soft-Fissil No Odor No Stn Dull Grn Min Flor NS

Ls Wht-Crm-Tan Microxln Poor Ixln Ø Dns Mudstone Cht Wht-Gry Op (w/Small
 OOL in pl) No Dissolu Shp Vit Fos (Crin) Chalky Sh Gry-Char Fissil No Odor No
 Stn Dull Grn Min Flor NS

Sh Blk Carb-Gry-Red Fissil Ls Wht-Crm-Gry Microxln Poor Ixln Ø Dns Mudstone
 Cht Wht-Gry Op (w/Small OOL in pl) No Dissolu Shp Vit Fos (Crin) Pyr Mass
 Chalky No Odor No Stn Dull Grn Min Flor NS

Ls Wht-Crm-Gry Microxln Poor Ixln Ø Dns Mudstone Cht Wht Op Shp Vit Chalky
 Sh Blk Carb-Gry Fissil No Odor No Stn Sli Inc Dull Grn Min Flor NS

PAWNEE 4815' (- 2015)

Ls Wht-Crm-Gry Microxln Poor Ixln Ø Dns Mudstone Cht Wht-Gry Translu-OpShp Vit Fos (Brach)
 Chalky Sh Blk Carb-Gry Fissil No Odor No Stn Inc Dull Grn Min Flor NS
 Ls Wht-Crm-Gry Microxln Poor Ixln Ø Dns Mudstone Cht Wht-Gry Translu-OpShp
 Vit Chalky Sh Blk Carb AA-Char-Gry Fissil No Odor No Stn Dec Dull Grn Min Flor
 NS

Ls Wht-Crm-Gry Microxln Poor Ixln Ø Dns Mudstone Cht Wht-Gry Translu-OpShp
 Vit Fos (Brach, Crin) Chalky Sh Blk Carb-Gry-Grn Fissil No Odor No Stn Inc Dull
 Grn Min Flor NS

FORT SCOTT 4842' (- 2042)

30" CFS @ 4856' Ls Wht-Crm-Gry Microxln Poor Ixln Ø Dns Mudstone Cht Wht-Gry Translu-OpShp Vit
 Fos (Brach, Crin) Chalky Sh Blk Carb-Gry-Grn Fissil No Odor No Stn Inc Dull Grn Min Flor NS

60" CFS @ 4856' Ls Wht-Crm-Gry Microxln Poor Ixln Ø Dns Mudstone Cht Wht-Gry Translu-OpShp Vit
 Fos (Crin) Chalky Sh Blk Carb-Gry-Grn Fissil No Odor No Stn Inc Dull Grn Min Flor NS

CHEROKEE 4858' (- 2058)

Sh Blk Carb-Gry Fissil (Abd) Ls Wht-Crm-Gry Dns Microxln Mudstone Grad Fair Ixln
 Packstone (w/ Fair Ixln/OOL Vug Sli Leached Ø) Fos (Pelec) Cht Wht Op Shp
 Vit Chalky No Odor No Flor No Stn NS

Sh Blk Carb-Gry Fissil Ls Wht-Crm-Gry Dns Microxln Mudstone Grad Fair Ixln
 Packstone (w/ Fair Ixln/OOL Vug Sli Leached Ø) Cht Wht Op Shp Vit Chalky No
 Odor No Flor No Stn NS
 Ls Wht-Crm-Gry Dns Microxln Mudstone Grad Fair Ixln Wackestone (w/ Poor
 Inter/OOL) Cht Wht Op Shp Vit Chalky Sh Char Gry-Blk Carb (Dns) Fissil (Abd)

4732 @ 10:00 AM
 2/1/18
 Vis= 52;
 WT= 9.2#;
 PV= 15;
 YP= 15;
 WL= 8.0;
 Cake= 1;
 Chl= 4,600;
 Cal= 30;
 Sol= 6.2%;
 LCM= 3#;
 DMC=\$1560.37;
 CMC=\$14,304.47

GAS TEST @ 4719'
 (4514' LAG DEPTH)
 TOOKE DAQ @
 Extractor = 57 UNITS
 OBSERVED.

GAS TEST @ 4748'
 (4743' LAG DEPTH)
 TOOKE DAQ @
 Extractor = 118 UNITS
 OBSERVED.

Replace Extractor
 Filter @ 4764' (4759'
 Lag Depth).

Sh Gas Kick =
 34 Units.

TG, C1-05 100

Sh Gas Kick =
 51 Units.

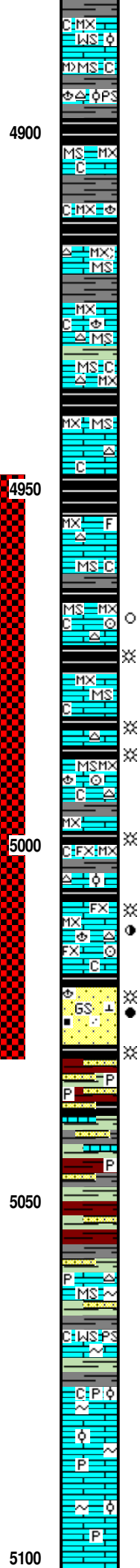
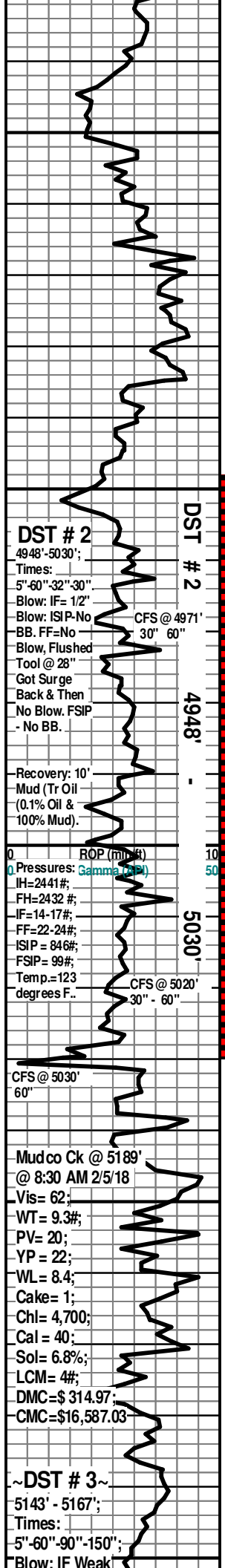
Extractor Filter Plugged
 Replace Extractor Filter
 @ 4845' (4839' Lag
 Depth).

Sh Gas Kick =
 39 Units.

Sh Gas
 Kick = 39
 Units

Sh Gas Kick =
 49 Units

Mudco Ck @
 4977' @ 10:45 AM
 2/2/18
 Vis= 54;
 WT= 9.3#;
 PV= 16;
 YP= 15;
 WL= 8.0;
 Cake= 1;



No Odor No Flor No Stn NS

Ls Wht-Crm-Gry Dns MicroIn Mudstone Grad Fair IxIn Packstone (w/ Fair IxIn/OOL Vug Sli Leached Ø) Cht Wht Op Shp Vit Fos (Brach) Chalky Sh Char-Gry-Blk Carb (Dec) Fissil (Abd) No Odor No Flor No Stn NS

SECOND CHEROKEE SHALE 4898' (- 2098)

Sh Blk Carb-Gry Fissil Ls Gry-Crm-Wht Dns MicroIn Mudstone Grad Fair IxIn Ø Chalky (Abd/ No Odor No Flor No Stn NS

Ls Wht-Crm-Gry Dns MicroIn Mudstone Poor IxIn Ø Cht Wht Op Shp Vit Fos (Brach) Cht Wht-Amber Translu-Op Chalky Sh Blk Carb (Abd) C-har-Gry Fissil (Abd) No Odor No Flor No Stn NS

Ls Crm-Gry Dns MicroIn Mudstone Poor IxIn Ø Cht Wht Op Shp Vit Fos (Brach) Cht Wht-Amber Translu-Op Chalky Sh Blk-Carb Char-Gry-Grn Fissil No Odor No Flor No Stn NS

Ls Crm-Gry-Wht Dns MicroIn Mudstone Poor IxIn Ø Cht Amber Translu Shp Vit Chalky Sh Blk Carb-Char-Gry-Grn Fissil No Odor No Flor No Stn NS

THIRD CHEROKEE SHALE 4936' (- 2136)

Ls Crm-Wht-Gry Dns MicroIn Mudstone Poor IxIn Ø Cht Wht-Amber- Clear Translu-Op Shp Vit Chalky Sh Blk Carb-Char-Gry-Grn Fissil No Odor No Flor No Stn NS

Sh Blk Carb (VAbd)-Char-Gry-Grn Fissil Ls Crm-Wht-Gry Dns MicroIn Mudstone Poor IxIn Ø Cht Wht-Amber-Clear Translu-Op Shp Vit Chalky No Odor No Flor No Stn NS

30" CFS @ 4971' Ls Crm-Wht-Gry Dns MicroIn Mudstone Poor IxIn Ø Cht Wht-Amber (w/Fos Inclu) Translu-Op Shp Vit Chalky Sh Blk Carb-Char-Gry-Grn Fissil ? Faint Odor No Flor No Stn NS

60" CFS @ 4971' Ls Crm-Wht-Tan Dns MicroIn Mudstone Poor IxIn Ø Cht Wht-Amber (w/Fos Inclu) Translu-Op Shp Vit Fos (Crin) Chalky Sh Blk Carb-Char-Gry-Grn Fissil No Odor No Flor No Stn NS

Sh Blk Carb-Char-Gry-Grn Fissil Ls Crm-Tan-Gry-Wht Dns MicroIn Mudstone Poor IxIn Ø Cht Wht-Amber Translu-Op Shp Vit Chalky No Odor ? Min Flor No Stn NS

Sh Blk Carb-Char-Gry-Grn Fissil Ls Crm-Tan-Gry-Wht Dns MicroIn Mudstone Poor IxIn Ø Cht Wht-Amber Translu-Op Shp Vit Chalky No Odor ? Min Flor No Stn NS

0" CFS @ 5020' Ls Brn-Lt Gry MicroIn (w/Pyr Inclus) Fair IxIn Ø (Grainy in pt) Soft Fos (Brach, Cht Wht-Clear Translu-Op Shp Vit Sh Grn-Char-Blk Carb Soft-Fissil Chalky Tr Apparent Dead Stn "Salt & Pepper" in IxIn Ø (Few Pcs) Faint Odor Sli Flor (Dull Grn) (Few Pcs) SSG

30" CFS @ 5020' Ls Brn-Lt Gry MicroIn (w/Pyr Inclus) Fair IxIn Ø (Grainy in pt) Soft Fos (Brach, Crin) Tr Small OOL (in pl w/Poor Vug Leaching ? Fracture Ø) Cht Wht-Clear Translu-Op Shp Vit Sh Grn-Char-Blk Carb Soft-Fissil Chalky (w/ FSG When Broken Under Heat in Wtn) Apparent "Salt & Pepper" Dead Stn in IxIn Ø Fair Inc Odor Sli Gas Poor Flor (Dull Grn) Sli Lt Grn/Wht Cut (w/Acid) FSG

60" CFS @ 5020' Ls Brn-Lt Gry MicroIn (w/Pyr Inclus) Fair IxIn Ø (Grainy in pt) Soft Fos (Brach, Crin) Tr w/Poor-Fair Vug Leaching ? Fracture Ø) Cht Wht-Clear Translu-Op Shp Vit Sh Grn-Char-Blk Carb-Grn (W/Carb Inclus) Soft-Fissil Chalky (w/ FSG When Broken Under Heat in Wtn) Apparent "Salt & Pepper" Dead Stn in IxIn Ø Med Inc Odor Sli Gas Poor Flor (Dull Grn) Sli Lt Grn/Wht Cut (w/Acid) SG

60" CFS @ 5030' Qtz Ss FGrr (Small) Ang-Sub Ang Grainstone Mostly Clear-Sli Frosted Wht Grn in Abd Ss Clusters Well Sorted Hvy Sat Brn Stn GSG & GSO Friable (Sli CaCO3O Cement Matrix) ? Sh Char-Aqua-Red Soft-Fissil (w/Drk ? Brn/Blk Gillsomite/Pyr Inclus in Clusters) Fos (Brach, Crin) Strong Odor Good (Lt Grn-Wht Cut w/Acid) No Flor (w/o acid cut) Hvy Sat Stn GSG & GSO

MORROW SHALE 5028' (- 2228)

Sh Aqua-Grn-Char-Blk Carb-Maroon Soft-Fissil Qts Ss AA Small Clusters (w/SG & SO) Ls Crm-Wht-Gry MicroIn Dns Poor IxIn Ø Mudstone Fos (w/Pyr Inclus) Pyr Mass Sli Odor AA No Flor SG & SO AA

Sh Aqua-Grn-Char-Blk Carb-Maroon Soft-Fissil Qts Ss AA Small Clusters (w/SG & SO) Ls Crm-Wht-Gry MicroIn Dns Poor IxIn Ø Mudstone Fos (w/Pyr Inclus) Pyr Mass Sli Odor AA No Flor SG & SO AA

Sh Maroon (Spls Wash Red)-Grn-Char-Blk Carb Soft-Fissil Qts Ss AA Small Clusters (w/SG & SO) Ls Crm-Wht-Gry MicroIn Dns Poor IxIn Ø Mudstone Fos (w/Pvr Inclus) Pvr Mass Sli Odor AA No Flor SG & SO AA

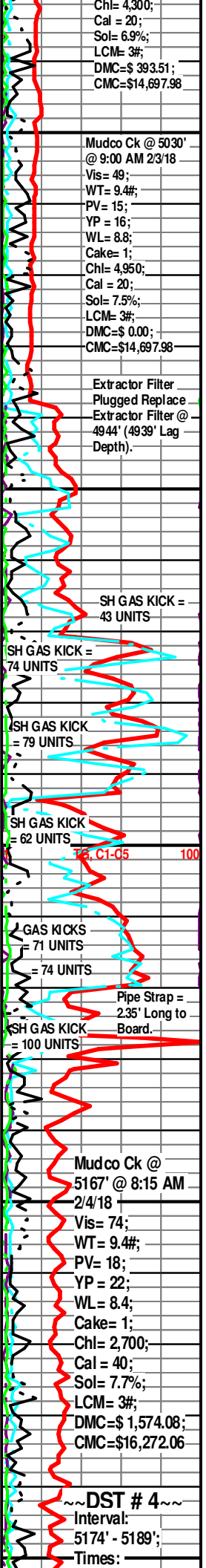
STE. GEN 5060' (- 2260)

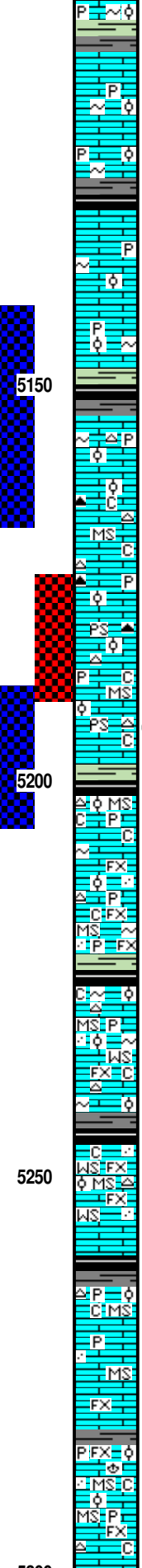
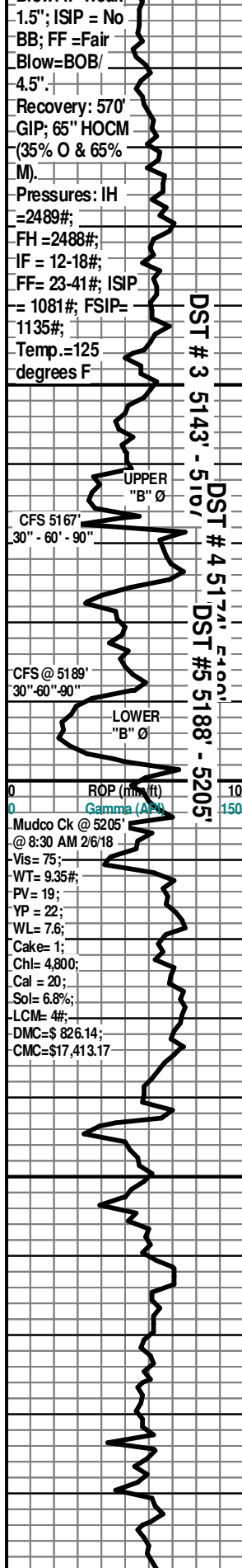
Ls Wht-Gry FxIn "Sandy Ls" Barren Grad MicroIn Mudstone Dns Grad Tan- Gry FxIn Wackestone (Tr Glacu) Grad FxIn Packstone Qtz Ss Crm-Tan VFGrn Ang-Sub Ang Includ (fL=125-177 Microns= 3.0-225 Ø) AA Cht Tan-Gry Op Shp Vit Chalky Sh Char-Blk Carb-Gry-Drab Grn-Aqua-Red Soft Fissil AA No Odor No Stn No Flor NS

Ls Wht-Gry FxIn "Sandy Ls" Barren Grad MicroIn Mudstone Dns Grad Tan- Gry FxIn Wackestone/Packstone (Tr Glacu/Pyr Inclus) Fos (Brach) Chalky Sh Char-Blk Carb-Gry-Drab Grn-Aqua-Red Soft-Fissil AA No Odor No Stn No Flor NS

Ls Wht-Gry FxIn "Sandy Ls" Barren Grad MicroIn Mudstone Dns Grad Tan-Gry FxIn Wackestone (Tr Glacu/Pyr Inclus) Tr Poor Inter OOL Ø Pyr Mass Chalky Sh Char-Blk Carb-Gry-Drab Grn-Aqua-Red Soft-Fissil AA No Odor No Stn No Flor NS

Ls Wht-Gry FxIn "Sandy Ls" Barren Grad MicroIn Mudstone Dns Grad Tan-Gry FxIn Wackestone (Tr Glacu/Pyr Inclus) Tr Poor Inter OOL Ø Pyr Mass Chalky Sh Char-Blk Carb-Gry-Drab Grn-Aqua-Red Soft-Fissil AA No Odor No Stn No Flor NS





Ls Wht-Gry FxIn "Sandy Ls" Barren Grad MicroxlN Mudstone Dns Grad Tan-Gry FxIn Wackestone (Tr Glacu/Pyr Inclus) Tr Poor Inter OOL Ø Pyr Mass Chalky Sh Char-Blk Carb-Gry-Drab Grn-Aqua-Red Soft-Fissil AA No Odor No Stn No Flor NS

Ls Wht-Gry FxIn "Sandy Ls" Barren Grad MicroxlN Mudstone (Tr Glacu/ Pyr Inclus) Tr Poor Inter OOL Ø Pyr Mass Chalky Sh Char-Blk Carb-Gry-Drab Grn-Aqua-Red Soft-Fissil AA No Odor No Stn No Flor NS

ST. LOUIS 5128' (- 2328)

Ls Gry-Wht FxIn "Sandy Ls" Barren Grad MicroxlN Mudstone Grad Med OOids Poor InterOOL Ø (Tr Dec Glacu/ Pyr Inclus) Ø Chalky Sh Char-Blk Carb-Gry- Drab Grn-Aqua-Red Soft-Fissil AA No Odor No Stn No Flor NS

Ls Gry-Wht FxIn "Sandy Ls" Barren Grad MicroxlN Mudstone Grad Med OOids Poor InterOOL Ø (Tr Dec Glacu/ Pyr Inclus) Ø Chalky Sh Char-Blk Carb-Gry- Drab Grn-Aqua-Red Soft-Fissil AA No Odor No Stn No Flor NS

ST. LOUIS "UPPER B Ø 5152' (- 2352)

0" @ 5167" Ls Wht-Crm FxIn Dns Wackestone Grad Small-Med-Lg OOL (w/Poor-Fair InterOOL Ø w/SSG/SSO) Poor-Fair InterOOL Develop Rd-Med Oblong Ooids (w/ Tr InterOOL Leaching "Salt & Pepper") Friable Fair Odor (FSG/FSFO (Drk-Med Brn) in Wtr Under Heat) No Flor Tr Sat Stn (Few Pcs) Tr Glacu Cht Clear-Gry-Amber (w/Pyr Inclu) Translu-Op (w/Org Inclu)-Gry Pyr Mass Chalky Sh AA SSG/SSO

30" @ 5167" Ls Wht-Crm FxIn Dns Packstone Grad Med-Lg OOL (w/Poor-Fair InterOOL Ø w/SSG/SSO) Fair-InterOOL Develop Well Rd-Med Oblong Ooids (w/ Tr Fair InterOOL Leaching) Pin-Pt InterOOL "Salt & Pepper" Ø Friable Fair Inc Odor (FSG/FSFO (Drk-Med Brn) in Wtr Under Heat) No Flor Tr Sat Stn (Few Pcs-Drk Blk) Cht Gry-Org Op Shp Vit Chalky Sh AA SSG & SSO

60" & 90" @ 5167" Ls Wht-Crm FxIn Dns Wackestone/Packstone Grad Small-Med OOL (w/Poor-Fair InterOOL Ø w/SSG/SSO) Poor-Fair InterOOL Develop Well Rd Mature -Med Oblong Immature Ooids (w/ Tr InterOOL "Salt & Pepper" Leaching) Poor Pin-Pt InterOOL Ø Fair Inc Odor (FSG/FSFO On Break AA) No Flor Tr Sat Stn (Few Pcs AA) Cht Gry Op Shp Vit Chalky Sh AA Blk Carb Inc SSG & SSO

ST. LOUIS "LOWER B Ø 5190' (- 2390)

0" & 30" & 60" CFS @ 5189' Ls Wht-Med-Good Mudstone/Packstone Small-Med OOids Well RD & WellSorted (w/Good Leaching Disolu in Matrix on Edges of OOids) Abd Loose OOids in Tray Cht Gry-Smokey Gry-Wht (V Abd) Weathered (w/Pin-Pt "Salt & Pepper" Leached Ø & w/OOid Inclus Fair SG & SO)-Amber (w/ Blk Speck Inclus) Translu-Op Shp Vit Pyr Mass Chalky AA Good-Strong Odor SSG & GSFO in Tray & (Under Heat in Wtr) Drk Brn Oil < 35 deg API GR No Flor Brn Stn on Edges of OOids & Cht Friable Ooid Packstone (w/Excellent (Dull Wht) Cut w/Acid) SG & GSFO. 90" CFS @ 5189' Ls Wht AA Grad Dns FxIn Mudstone Dec SG & SO Cht Wht-Smokey Gry (Weathered) AA Dec Odor No Flor (Few Pcs w/Stn AA) VSSG & VSSO AA

0" CFS @ 5205' Ls Wht-Crm Packstone Grad Med-Lg OOL (w/Fair-Good InterOOL Ø w/SG/SFO) Fair-Good InterOOL Develop Well Rd Mature Med-Lg Rd- Oblong Immature Ooids (w/ Tr InterOOL "Salt & Pepper" Vug Leaching) Good Pin-Pt InterOOL Ø (Abd) Loose OOids V Friable (In Tray) Strong Odor (GSG/GSFO On Break AA) No Flor (w/Excellent (Dull Wht) Cut w/Acid) Tr Sat Stn Pyr Mass Cht Wht-Smokey Gry-Gry Op Shp Vit Chalky Sh AA SSG & MSO

0" & 30" & 60" CFS @ 5205' Ls Wht-Crm OOL Packstone (w/Good InterOOL Ø) Friable FSG & FSO) AA Dec Grad Ls Gry-Dns FxIn Mudstone Poor lxn Ø Cht Wht (w/Blk Inclus)-Gry Op-Shp- Vit Pyr Mass Chalky Sh AA No Flor Fair Odor Dec SSG & SSO AA

Ls Wht-Crm-Gry FxIn Dns Mudstone Grad Poor InterOOL Ø (w/Small OOids & Glacu & Pyr in pl) Poor Dissolu Poor Leaching Grad Ls Gry FxIn Wackestone (w/Qtz Ss VFGrn Clear Inclus) Well-Rd in CaCO3 Matrix Cht Bone Wht-Smokey Gry-Peach Op Shp Vit Chalky (Abd) Sh Grn-Aqua-Blk Carb-Red Soft-Fissil No Odor No Stn No Flor NS

Ls Wht-Crm-Gry-Grm FxIn Dns Mudstone Grad Poor InterOOL Ø (w/Small OOids & Glacu in pl) Poor Dissolu Poor Leaching Grad Ls Gry FxIn Wackestone (w/Qtz Ss Clear Inclus) VFGrn Well-Rd in CaCO3 Matrix Cht Bone Wht-Smokey Gry- Op Shp Vit Chalky Sh Grn-Aqua-Blk Carb Fissil No Odor No Stn No Flor NS

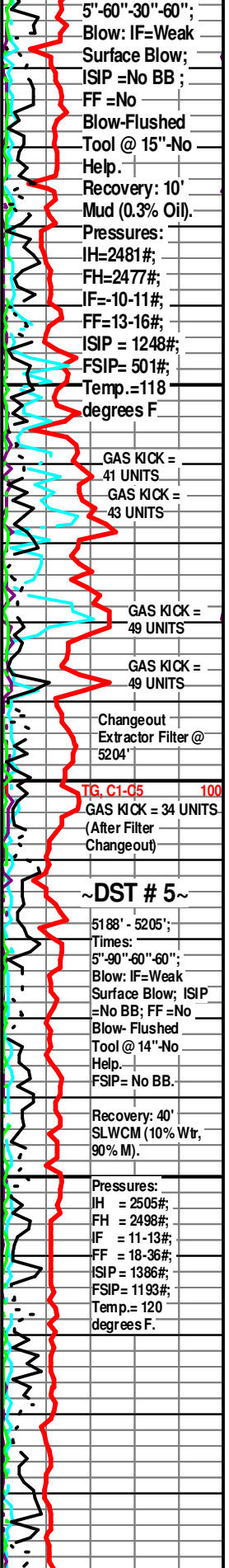
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Ls Wht-Gry-Crm FxIn Dns Mudstone Grad Poor InterOOL Ø (w/Small-Med OOids & Pyr Inclus) Poor Dissolu Poor Leaching Grad Ls Wht FxIn Wackestone/Mudstone (w/Qtz Ss Clear Inclus) VFGrn Well-Rd in CaCO3 Matrix Cht Wht-Gry Translu-Op Shp Vit Chalky Sh Blk Carb-Char Fissil No Odor No Stn No Flor NS

Ls Wht-Gry-Crm FxIn Dns Mudstone Grad Poor InterOOL Ø (w/Small OOids & Pyr Inclus) Poor Dissolu Poor Leaching Grad Ls Wht-Gry FxIn Mudstone (w/Tr Qtz Ss Clear Inclus) VFGrn Well-Rd in CaCO3 Matrix Dec Cht Bone Wht Translu-Op Shp Vit Chalky Sh Blk Carb-Char Fissil No Odor No Stn No Flor NS

30" CFS @ 5300' Ls Wht-Crm FxIn Dns Mudstone Grad Poor InterOOL Ø (w/Small OOids & Pyr Inclus w/Tr Loose Med Ooid in Tray) Poor Dissolu Poor Leaching (w/Tr Brn Stn on Edges of OOids (2 Pcs) (No SG No SO) Grad Ls Wht-Gry FxIn Mudstone (w/Tr Qtz Ss Clear Inclus) VFGrn Well-Rd in CaCO3 Matrix Dec Cht Wht-Smokey-Gry-Amber Translu-Op Shp Vit Fos (Brach) Chalky Sh Char Soft Tr Brn Stn No Flor No Odor NS

60" CFS @ 5300' Ls Wht-Crm FxIn Dns Mudstone Grad Poor InterOOL Ø (w/Small OOids & Glacu Inclus) Poor-Fair Dissolu Poor Leaching (Few 4 Pcs) Cht Wht-Smokey Gry Chalky Sh Char Soft Tr Brn Stn No Flor No Odor NS



Electric Logs Run: By Halliburton Logging: Di-Pole Sonic; Dual Induction;
 Compensated Density-Neutron, Microresistivity & Cased-Hole Neutron.

Geologist left Location @ : A.M. on 2/07/2018

5350

5400

5450

5500

0	ROP (min/ft)	10
0	Gamma (API)	150

1	TG, C1-C5	100
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