Confidentiality Requested:
☑ Yes ☐ No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

1217108

Form ACO-1
August 2013
Form must be Typed
Form must be Signed
All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # 5144
Name: Mull Drilling Company, Inc.
Address 1: 1700 N WATERFRONT PKWY
Address 2: BLDG 1200
City: WICHITA State: KS Zip: 67206 + 6637
Contact Person: Mark Shreve
Phone: (316) 264-6366
CONTRACTOR: License # 5929
Name: Duke Drilling Co., Inc.
Wellsite Geologist: Steve Reed
Purchaser: N/A

Designate Type of Completion:

☑ New Well ☐ Re-Entry ☐ Workover

☐ Oil ☐ WSW ☐ SWD ☐ SIOW
☐ Gas ☑ D&A ☐ ENHR ☐ SIGW
☐ OG ☐ GSW ☐ Temp. Abd.
☐ 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 ENHR ☐ Conv. to SWD
☐ Plug Back ☐ Conv. to GSW ☐ Conv. to Producer

☐ Commingled Permit #:
☐ Dual Completion Permit #:
☐ SWD Permit #:
☐ ENHR Permit #:
☐ GSW Permit #:

05/03/2014	05/16/2014	05/17/2014
Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date

API No. 15 - 15-203-20255-00-00
Spot Description:
NW SE SW SE Sec. 1 Twp. 16 S. R. 38 ☐ East ☑ West
396 Feet from ☐ North / ☑ South Line of Section
1852 Feet from ☑ East / ☐ West Line of Section

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

GPS Location: Lat: *(e.g. xx.xxxxx)* , Long: *(e.g. -xxx.xxxxx)*
Datum: ☐ NAD27 ☐ NAD83 ☐ WGS84
County: Wichita
Lease Name: Joy Well #: 1-1
Field Name: Wildcat
Producing Formation: N/A
Elevation: Ground: 3419 Kelly Bushing: 3428
Total Vertical Depth: 5395 Plug Back Total Depth:
Amount of Surface Pipe Set and Cemented at: 219 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: 18000 ppm Fluid volume: 900 bbls
Dewatering method used: Evaporated

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: 08/22/2014
☑ **Confidential Release Date:** 08/21/2016
☑ **Wireline Log Received**
☐ **Geologist Report Received**
☐ **UIC Distribution**
ALT ☐ I ☑ II ☐ III **Approved by:** NAOMI JAMES **Date:** 08/25/2014

[redacted] 1217108

Operator Name: Mull Drilling Company, Inc. Lease Name: Joy Well #: 1-1

Sec. 1 Twp. 16 S. R. 38 ☐ East ☑ West County: Wichita

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

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

Drill Stem Tests Taken ☑ Yes ☐ No
(Attach Additional Sheets)

Samples Sent to Geological Survey ☑ Yes ☐ No

Cores Taken ☐ Yes ☑ No

Electric Log Run ☑ Yes ☐ No

List All E. Logs Run:

Attached

☑ Log Formation (Top), Depth and Datum ☐ Sample

Name: Attached Top: Attached Datum: Attached

CASING RECORD ☑ New ☐ 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
Surface	12.2500	8.6250	24	219	Common	165	3% gel, 2% cc

ADDITIONAL CEMENTING / SQUEEZE RECORD

Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
___ Perforate ___ Protect Casing ___ Plug Back TD ___ Plug Off Zone	-			
	-			

Did you perform a hydraulic fracturing treatment on this well? ☐ Yes ☑ No *(If No, skip questions 2 and 3)*

Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? ☐ Yes ☐ No *(If No, skip question 3)*

Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry? ☐ Yes ☐ No *(If No, fill out Page Three of the ACO-1)*

Shots Per Foot	PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated	Acid, Fracture, Shot, Cement Squeeze Record *(Amount and Kind of Material Used)*	Depth

TUBING RECORD: Size: Set At: Packer At: Liner Run: ☐ Yes ☐ No

Date of First, Resumed Production, SWD or ENHR.

Producing Method: ☐ Flowing ☐ Pumping ☐ Gas Lift ☐ Other *(Explain)*

Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity

DISPOSITION OF GAS:
☐ Vented ☐ Sold ☐ Used on Lease
(If vented, Submit ACO-18.)

METHOD OF COMPLETION:
☐ Open Hole ☐ Perf. ☐ Dually Comp. *(Submit ACO-5)* ☐ Commingled *(Submit ACO-4)*
☐ Other *(Specify)*

PRODUCTION INTERVAL:

Form	ACO1 - Well Completion
Operator	Mull Drilling Company, Inc.
Well Name	Joy 1-1
Doc ID	1217108

All Electric Logs Run

CDL/CNL/PE
DIL
MEL
Sonic

Form	ACO1 - Well Completion
Operator	Mull Drilling Company, Inc.
Well Name	Joy 1-1
Doc ID	1217108

Tops

Name	Top	Datum
Anhydrite	2644	+ 784
B/Anhydrite	2663	+ 765
Topeka	3830	- 402
Heebner	4068	- 640
Muncie Creek	4118	- 876
Stark	4395	- 967
B/KC	4487	- 1059
Marmaton	4560	- 1132
Ft. Scott	4674	- 1246
Cherokee Shale	4713	- 1282
Atoka	4769	- 1341
Morrow Shale	4877	- 1449
Upper Morrow Sd	4893	- 1465
MIssissippian	5001	- 1573

Form	ACO1 - Well Completion
Operator	Mull Drilling Company, Inc.
Well Name	Joy 1-1
Doc ID	1217108

Casing

Purpose Of String	Size Hole Drilled	Size Casing Set	Weight	Setting Depth	Type Of Cement	Number of Sacks Used	Type and Percent Additives
Surface	12.2500	8.6250	24	219	Common	165	3% gel, 2% cc

CONSOLIDATED
Oil Well Services, LLC

268044

TICKET NUMBER 46942
LOCATION Oakley Ks.
FOREMAN Dawn

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

FIELD TICKET & TREATMENT REPORT
CEMENT

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY
5/3/14	5659	Joy 1-1	1	16	38	Wichita Ks.

CUSTOMER: Mull Drlg
MAILING ADDRESS:
CITY / STATE / ZIP CODE:

Hwy 40 To 25-S To County Line W To Rd 815. 1W into

TRUCK #	DRIVER	TRUCK #	DRIVER
512	Cory		
460	Lance		

JOB TYPE Surface HOLE SIZE 12 1/4 HOLE DEPTH 219 CASING SIZE & WEIGHT 8 5/8 24'
CASING DEPTH 219.92 DRILL PIPE TUBING OTHER
SLURRY WEIGHT 14.8 SLURRY VOL 1.36 WATER gal/sk CEMENT LEFT in CASING 20'
DISPLACEMENT 12.73 DISPLACEMENT PSI MIX PSI RATE

REMARKS: Safty Meeting Rig upon Duke #4 Run Casing Break Circulation with Rig Pump Hook up To Pump Truck mix 165 SKs Com. 3% CC 2% Gel Washup Pump & Lines Displace with 12.73 bbl water Shut in Rig Down
Cement Did Circulate

Approx 5 bbl To Pit

Thanks Dawn & Crew

ACCOUNT CODE	QUANITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
54015	1	PUMP CHARGE	$1150.00	$1150.00
5406	60	MILEAGE	$5.25	$315.00
5407A	7.76	Ton Mileage Delivery	$1.75	$814.80
11045	165 SKs	Class "A" Cement	$18.55	$3060.75
1102	465#	Calcium Chloride	$.94	$437.10
1118B	310#	Bentonite	$.27	$83.70
		Sub Total		$5861.35
		Less 10%		$586.14
		Sub Total		$5275.21
		SALES TAX		262.70
		ESTIMATED TOTAL		5537.91

completed

Ravin 3737

AUTHORIZTION Rich Wheeler TITLE T.P. 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.

TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **Mull Drilling Co., Inc.**

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

Joy #1-1

1-16s-38w Wichita,KS

Start Date: 2014.05.08 @ 17:18:00

End Date: 2014.05.09 @ 02:06:15

Job Ticket #: 57066 DST #: 1

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.05.16 @ 10:27:05

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

1-16s-38w Wichita,KS

Joy #1-1

Job Ticket: 57066 **DST#: 1**

Test Start: 2014.05.08 @ 17:18:00

GENERAL INFORMATION:

Formation: **LKC " E-G "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 19:07:15
Time Test Ended: 02:06:15

Test Type: Conventional Bottom Hole (Initial)
Tester: Samuel Esparza
Unit No: 71

Interval: 4203.00 ft (KB) To 4253.00 ft (KB) (TVD)
Total Depth: 4253.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

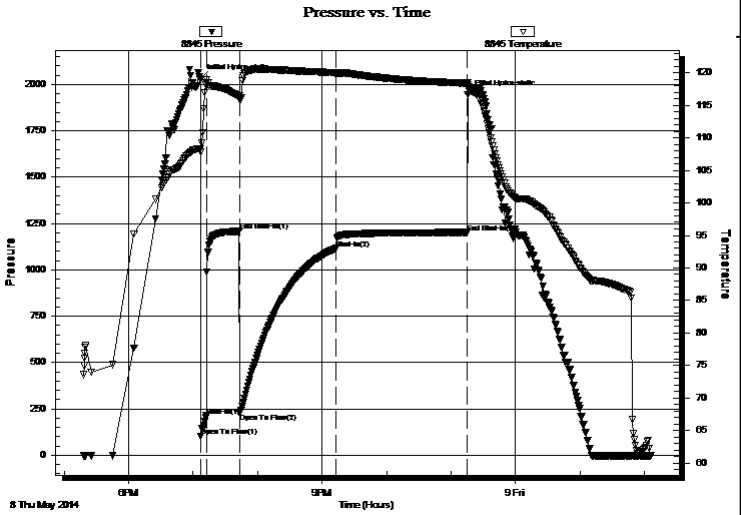
Reference Elevations: 3428.00 ft (KB)
3419.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8845 **Inside**

Press@RunDepth: 1115.90 psig @ 4204.00 ft (KB)
Start Date: 2014.05.08 End Date: 2014.05.09
Start Time: 17:18:05 End Time: 02:06:15

Capacity: 8000.00 psig
Last Calib.: 2014.05.09
Time On Btm: 2014.05.08 @ 19:07:00
Time Off Btm: 2014.05.08 @ 23:15:30

TEST COMMENT: IF: BOB @ 2 min.
ISI: No Return.
FF: BOB @ 2 min,
FSI: No Return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2033.44	108.36	Initial Hydro-static
1	102.59	107.81	Open To Flow (1)
6	213.53	118.49	Shut-In(1)
37	1208.75	116.46	End Shut-In(1)
37	227.09	115.94	Open To Flow (2)
126	1115.90	119.95	Shut-In(2)
248	1202.08	118.38	End Shut-In(2)
249	1944.02	118.51	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1890.00	OMCW 5o 5m 90w	26.51
560.00	OWCM 5o 40w 55m	7.86

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

1-16s-38w Wichita,KS

Joy #1-1

Job Ticket: 57066 **DST#: 1**

Test Start: 2014.05.08 @ 17:18:00

GENERAL INFORMATION:

Formation: **LKC " E-G "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 19:07:15
Time Test Ended: 02:06:15

Test Type: Conventional Bottom Hole (Initial)
Tester: Samuel Esparza
Unit No: 71

Interval: 4203.00 ft (KB) To 4253.00 ft (KB) (TVD)
Total Depth: 4253.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

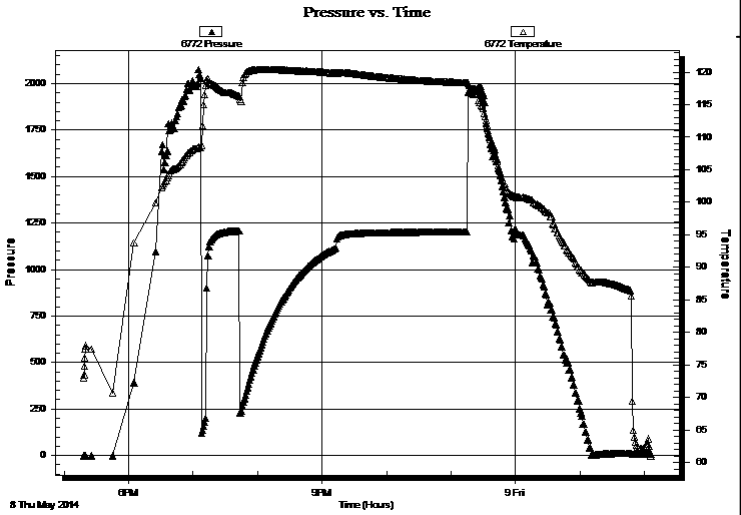
Reference Elevations: 3428.00 ft (KB)
3419.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 6772 **Outside**

Press@RunDepth: psig @ 4204.00 ft (KB)
Start Date: 2014.05.08 End Date: 2014.05.09
Start Time: 17:18:05 End Time: 02:06:30

Capacity: 8000.00 psig
Last Calib.: 2014.05.09
Time On Btm:
Time Off Btm:

TEST COMMENT: IF: BOB @ 2 min.
ISI: No Return.
FF: BOB @ 2 min,
FSI: No Return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

Recovery

Length (ft)	Description	Volume (bbl)
1890.00	OMCW 5o 5m 90w	26.51
560.00	OWCM 5o 40w 55m	7.86

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mull Drilling Co., Inc.

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

1-16s-38w Wichita,KS

Joy #1-1

Job Ticket: 57066 **DST#: 1**

Test Start: 2014.05.08 @ 17:18:00

Tool Information

Drill Pipe:	Length:	4198.00 ft	Diameter:	3.80 inches	Volume:	58.89 bbl	Tool Weight:		2000.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:		30000.00 lb
Drill Collar:	Length:	0.00 ft	Diameter:	2.25 inches	Volume:	0.00 bbl	Weight to Pull Loose:		90000.00 lb
					Total Volume:	58.89 bbl	Tool Chased		0.00 ft
Drill Pipe Above KB:		15.00 ft					String Weight:	Initial	46000.00 lb
Depth to Top Packer:		4203.00 ft						Final	56000.00 lb
Depth to Bottom Packer:		ft							
Interval betw een Packers:		50.00 ft							
Tool Length:		70.00 ft							
Number of Packers:		2	Diameter:	6.75 inches					

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Change Over Sub	1.00			4184.00		
Shut In Tool	5.00			4189.00		
Hydraulic tool	5.00			4194.00		
Packer	5.00			4199.00	20.00	Bottom Of Top Packer
Packer	4.00			4203.00		
Stubb	1.00			4204.00		
Recorder	0.00	6772	Outside	4204.00		
Recorder	0.00	8845	Inside	4204.00		
Perforations	11.00			4215.00		
Change Over Sub	1.00			4216.00		
Drill Pipe	31.00			4247.00		
Change Over Sub	1.00			4248.00		
Bullnose	5.00			4253.00	50.00	Bottom Packers & Anchor
Total Tool Length:	**70.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Mull Drilling Co., Inc.

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

1-16s-38w Wichita,KS

Joy #1-1

Job Ticket: 57066 **DST#: 1**

Test Start: 2014.05.08 @ 17:18:00

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	20000 ppm
Viscosity:	45.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	6.38 in³	Gas Cushion Type:			
Resistivity:	0.00 ohm.m	Gas Cushion Pressure:	psig		
Salinity:	3500.00 ppm				
Filter Cake:	1.00 inches				

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
1890.00	OMCW 5o 5m 90w	26.512
560.00	OWCM 5o 40w 55m	7.855

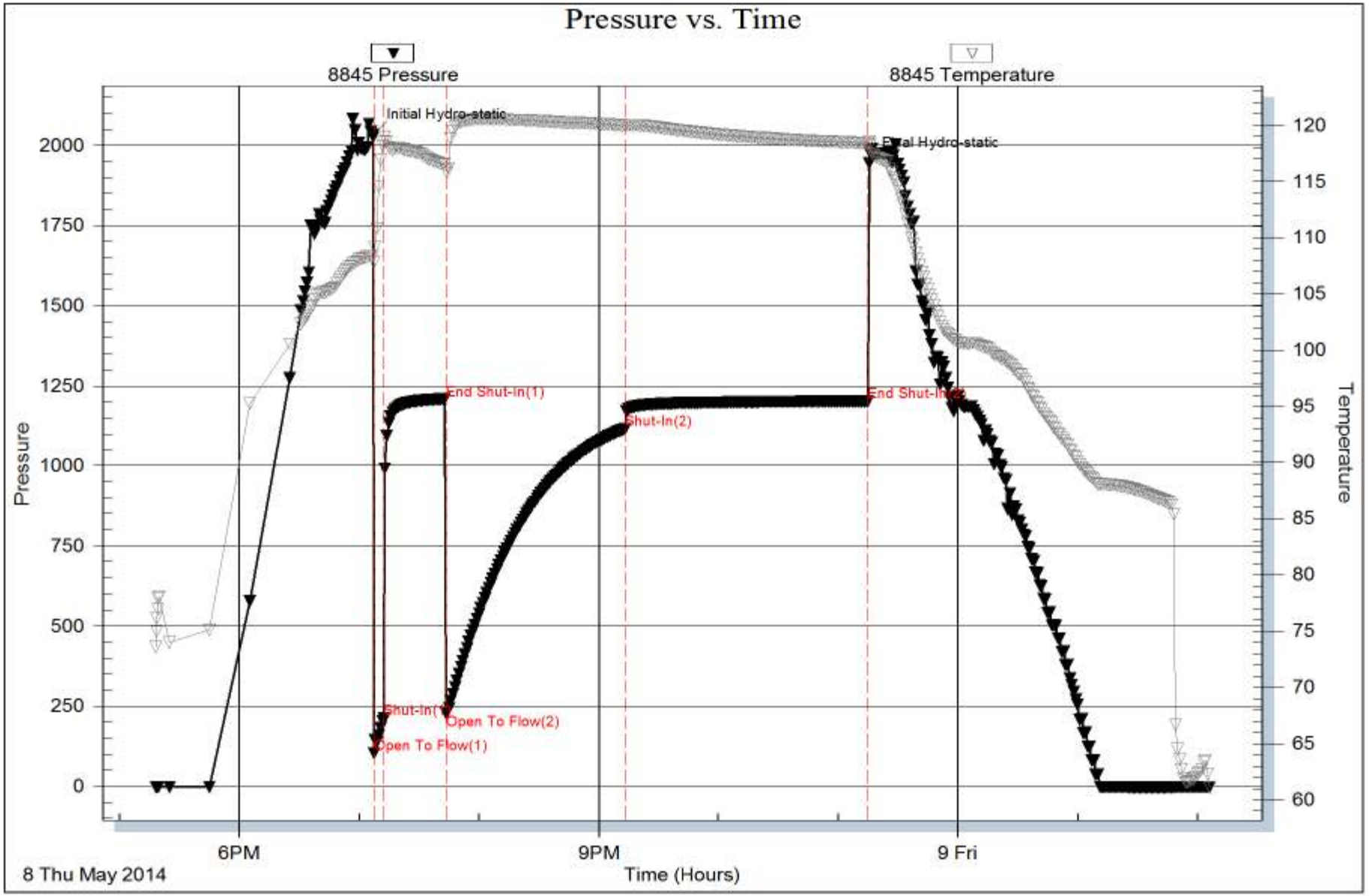
Total Length: 2450.00 ft Total Volume: 34.367 bbl

Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

Laboratory Name: Laboratory Location:

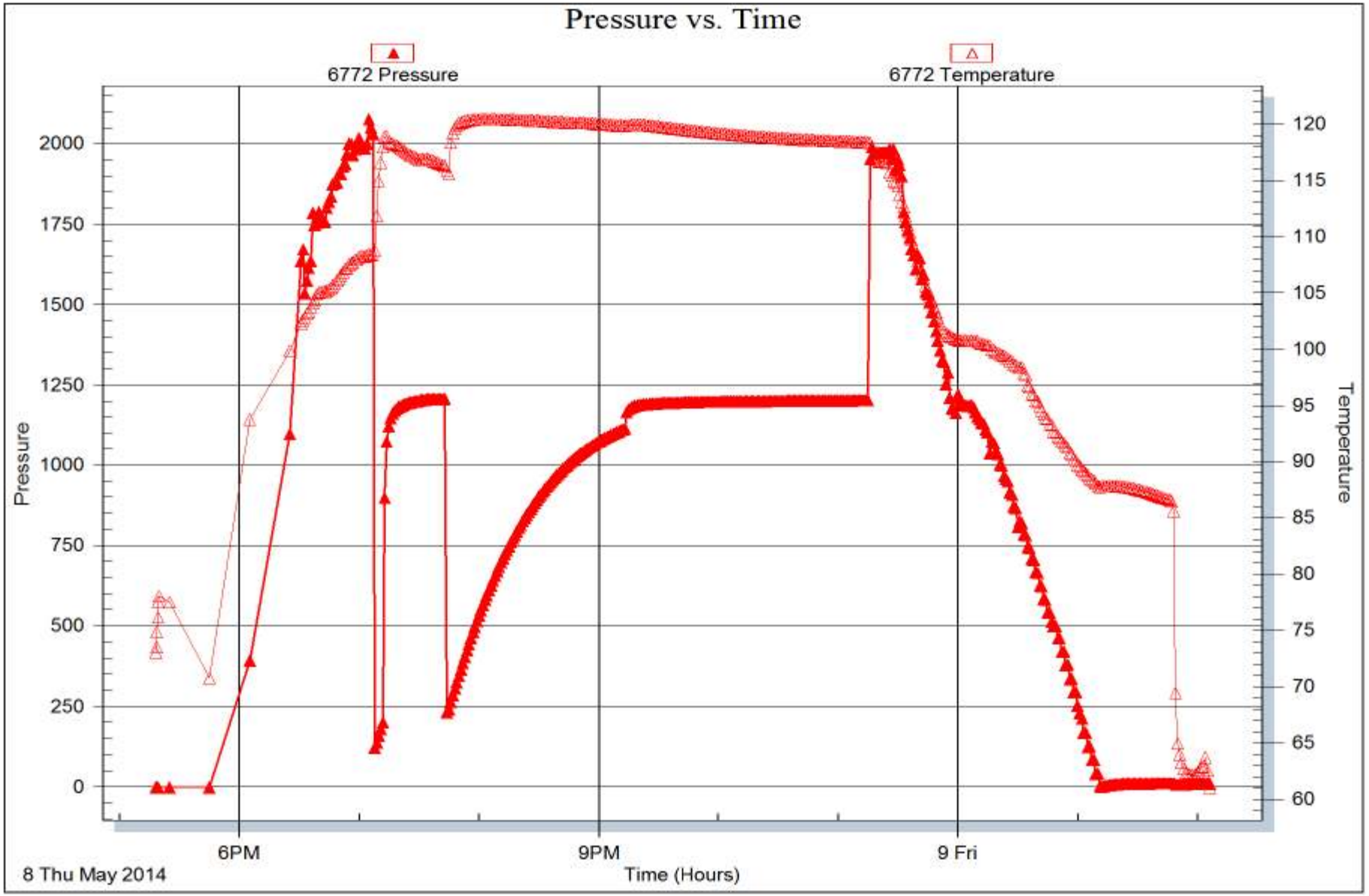
Recovery Comments: Water Salinity: .469 @ 48 degrees= 20,000

Serial #: 8845 **Inside** Mull Drilling Co., Inc. Joy #1-1 DST Test Number: 1



Trilobite Testing, Inc Ref. No: 57066 Printed: 2014.05.16 @ 10:27:06

Serial #: 6772 **Outside** Mull Drilling Co., Inc. Joy #1-1 DST Test Number: 1



Trilobite Testing, Inc Ref. No: 57066 Printed: 2014.05.16 @ 10:27:06

TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **Mull Drilling Co., Inc.**

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

Joy #1-1

1-16s-38w Wichita,KS

Start Date: 2014.05.09 @ 13:30:00

End Date: 2014.05.09 @ 22:10:15

Job Ticket #: 57067 DST #: 2

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.05.16 @ 10:25:56

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

1-16s-38w Wichita,KS

Joy #1-1

Job Ticket: 57067 **DST#: 2**

Test Start: 2014.05.09 @ 13:30:00

GENERAL INFORMATION:

Formation: **LCK " H "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 16:12:15
Time Test Ended: 22:10:15

Test Type: Conventional Bottom Hole (Reset)
Tester: Samuel Esparza
Unit No: 71

Interval: 4293.00 ft (KB) To 4335.00 ft (KB) (TVD)
Total Depth: 4335.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

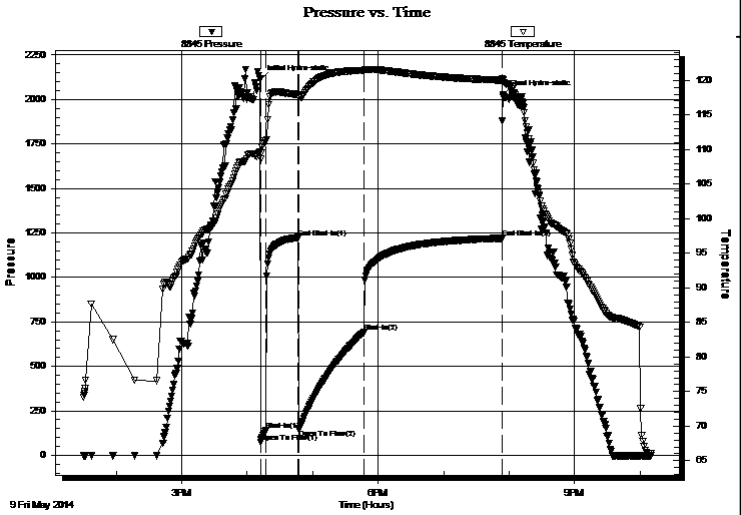
Reference Elevations: 3428.00 ft (KB)
3419.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8845 **Inside**

Press@RunDepth: 690.79 psig @ 4294.00 ft (KB)
Start Date: 2014.05.09 End Date: 2014.05.09
Start Time: 13:30:05 End Time: 22:10:15

Capacity: 8000.00 psig
Last Calib.: 2014.05.09
Time On Btm: 2014.05.09 @ 16:12:00
Time Off Btm: 2014.05.09 @ 19:54:30

TEST COMMENT: IF: BOB @ 3 min.
ISI: No Return.
FF: BOB @ 3 min.
FSI: No Return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2114.53	109.62	Initial Hydro-static
1	71.50	108.56	Open To Flow (1)
5	140.86	111.25	Shut-In(1)
35	1224.80	117.89	End Shut-In(1)
36	147.78	117.49	Open To Flow (2)
95	690.79	121.45	Shut-In(2)
222	1220.10	120.01	End Shut-In(2)
223	2025.58	120.07	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1635.00	MCW 10m 90w	22.93
315.00	MCW 40m 60w	4.42

* Recovery from multiple tests

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

1-16s-38w Wichita,KS

Joy #1-1

Job Ticket: 57067 **DST#: 2**

Test Start: 2014.05.09 @ 13:30:00

GENERAL INFORMATION:

Formation: **LCK " H "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 16:12:15
Time Test Ended: 22:10:15

Test Type: Conventional Bottom Hole (Reset)
Tester: Samuel Esparza
Unit No: 71

Interval: 4293.00 ft (KB) To 4335.00 ft (KB) (TVD)
Total Depth: 4335.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

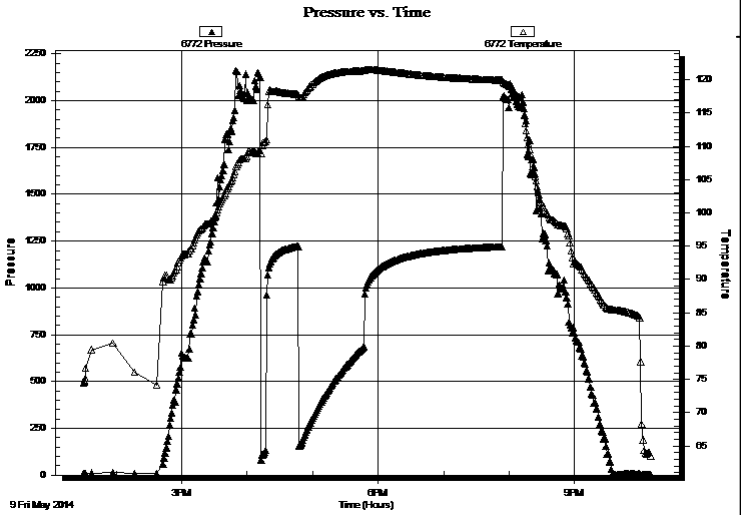
Reference Elevations: 3428.00 ft (KB)
3419.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 6772 **Outside**

Press@RunDepth: psig @ 4294.00 ft (KB)
Start Date: 2014.05.09 End Date: 2014.05.09
Start Time: 13:30:05 End Time: 22:10:30

Capacity: 8000.00 psig
Last Calib.: 2014.05.09
Time On Btm:
Time Off Btm:

TEST COMMENT: IF: BOB @ 3 min.
ISI: No Return.
FF: BOB @ 3 min.
FSI: No Return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

Recovery

Length (ft)	Description	Volume (bbl)
1635.00	MCW 10m 90w	22.93
315.00	MCW 40m 60w	4.42

* Recovery from multiple tests

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mull Drilling Co., Inc.

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

1-16s-38w Wichita,KS

Joy #1-1

Job Ticket: 57067 **DST#: 2**

Test Start: 2014.05.09 @ 13:30:00

Tool Information

Drill Pipe:	Length:	4293.00 ft	Diameter:	3.80	inches	Volume:	60.22	bbl	
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00	inches	Volume:	0.00	bbl	
Drill Collar:	Length:	0.00 ft	Diameter:	2.25	inches	Volume:	0.00	bbl	
						Total Volume:	60.22	bbl	

Drill Pipe Above KB:	20.00 ft
Depth to Top Packer:	4293.00 ft
Depth to Bottom Packer:	ft
Interval betw een Packers:	42.00 ft
Tool Length:	62.00 ft
Number of Packers:	2 Diameter: 6.75 inches

Tool Weight:		2000.00 lb
Weight set on Packer:		30000.00 lb
Weight to Pull Loose:		80000.00 lb
Tool Chased		0.00 ft
String Weight:	Initial	46000.00 lb
	Final	56000.00 lb

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Change Over Sub	1.00			4274.00		
Shut In Tool	5.00			4279.00		
Hydraulic tool	5.00			4284.00		
Packer	5.00			4289.00	20.00	Bottom Of Top Packer
Packer	4.00			4293.00		
Stubb	1.00			4294.00		
Recorder	0.00	6772	Outside	4294.00		
Recorder	0.00	8845	Inside	4294.00		
Perforations	3.00			4297.00		
Change Over Sub	1.00			4298.00		
Drill Pipe	31.00			4329.00		
Change Over Sub	1.00			4330.00		
Bullnose	5.00			4335.00	42.00	Bottom Packers & Anchor
Total Tool Length:	**62.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Mull Drilling Co., Inc.

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

1-16s-38w Wichita,KS

Joy #1-1

Job Ticket: 57067 **DST#: 2**

Test Start: 2014.05.09 @ 13:30:00

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	40000 ppm
Viscosity:	53.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	7.98 in³	Gas Cushion Type:			
Resistivity:	0.00 ohm.m	Gas Cushion Pressure:	psig		
Salinity:	6000.00 ppm				
Filter Cake:	1.00 inches				

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
1635.00	MCW 10m 90w	22.935
315.00	MCW 40m 60w	4.419

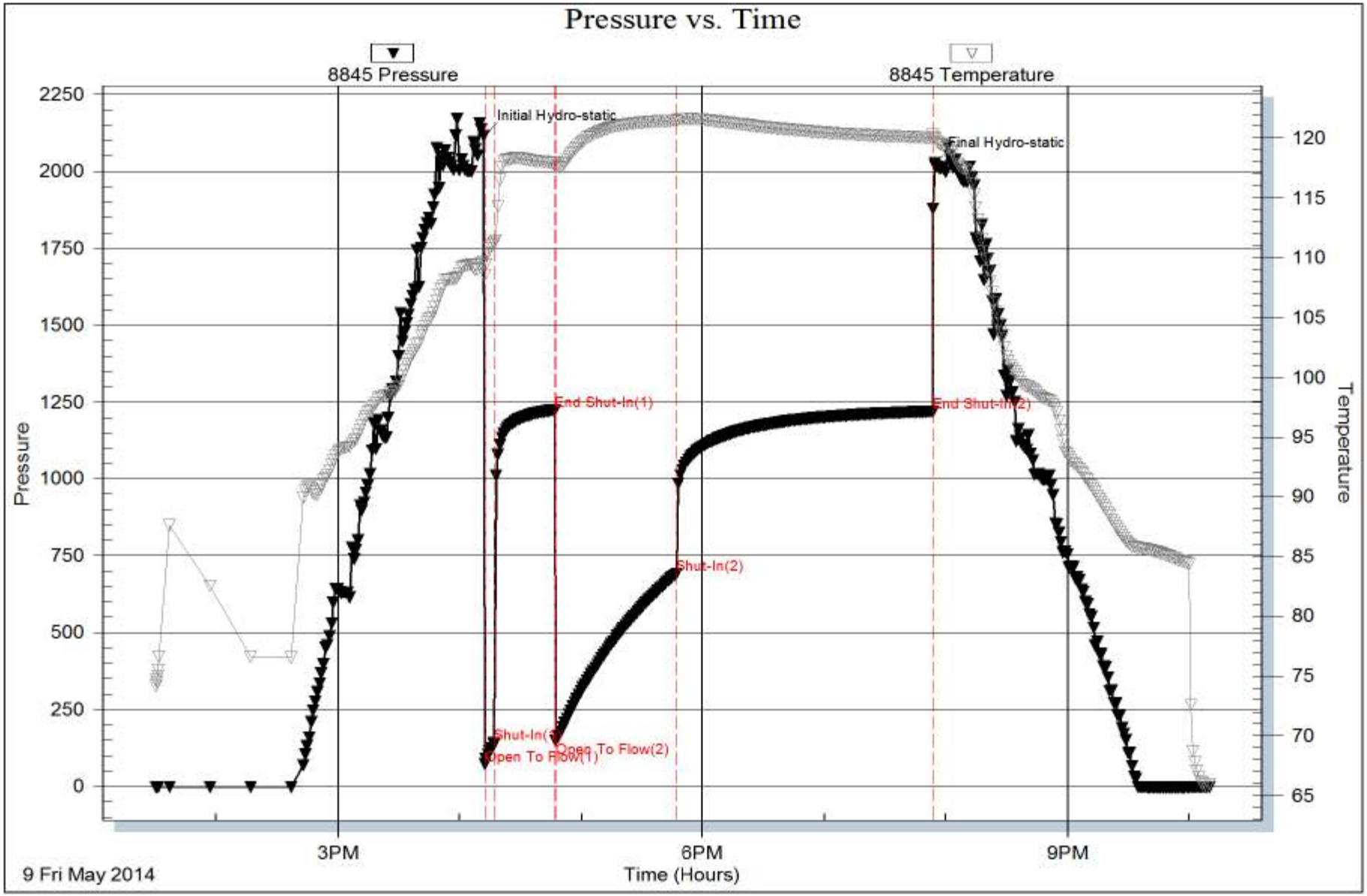
Total Length: 1950.00 ft Total Volume: 27.354 bbl

Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

Laboratory Name: Laboratory Location:

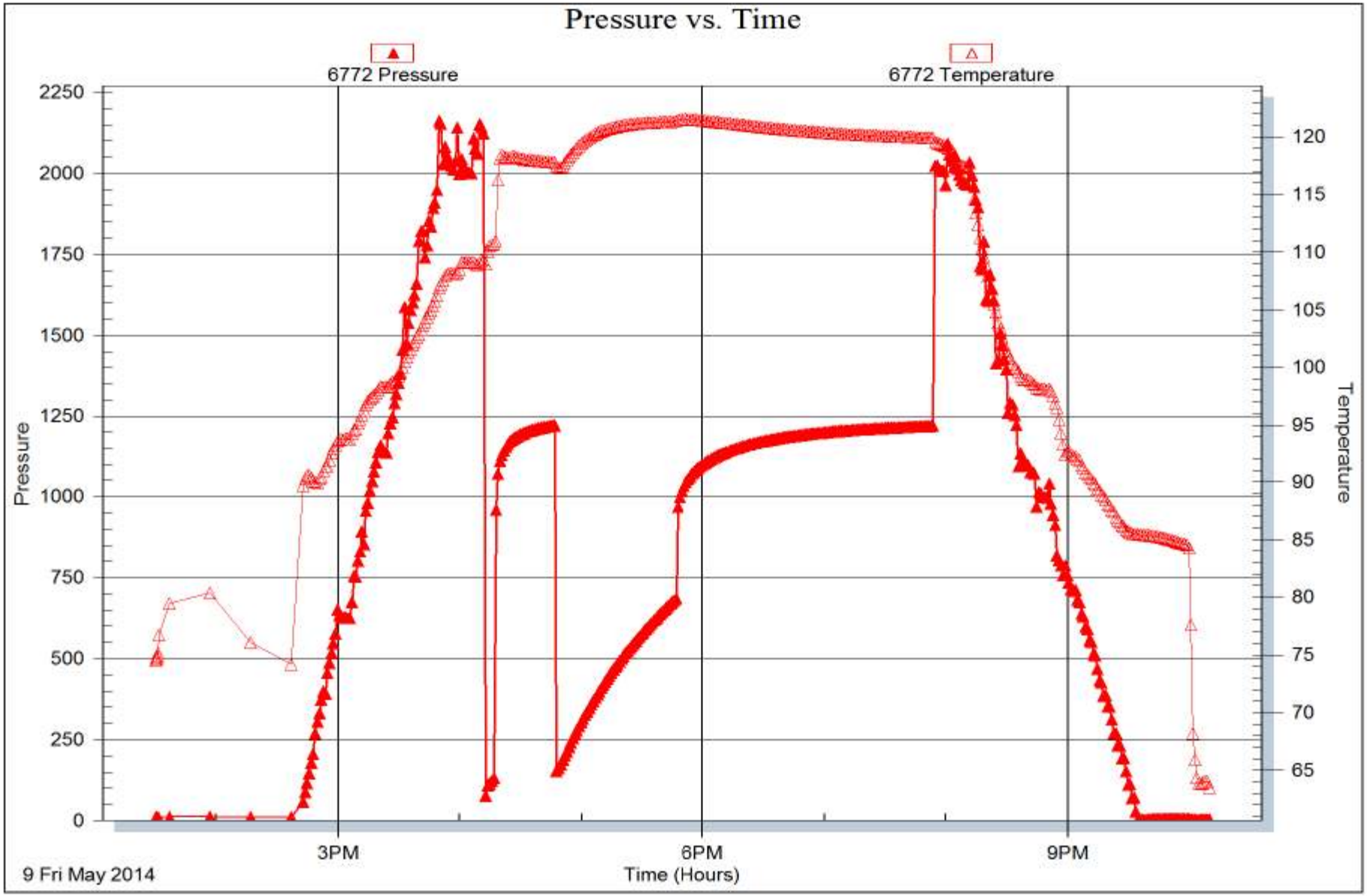
Recovery Comments: Water Salinity: .175 @ 71 degrees= 40,000 ppm

Serial #: 8845 **Inside** Mull Drilling Co., Inc. Joy #1-1 DST Test Number: 2



Trilobite Testing, Inc Ref. No: 57067 Printed: 2014.05.16 @ 10:25:57

Serial #: 6772 **Outside** Mull Drilling Co., Inc. Joy #1-1 DST Test Number: 2



Trilobite Testing, Inc Ref. No: 57067 Printed: 2014.05.16 @ 10:25:58

TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **Mull Drilling Co., Inc.**

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

Joy #1-1

1-16s-38w Wichita,KS

Start Date: 2014.05.11 @ 00:23:00

End Date: 2014.05.11 @ 05:38:45

Job Ticket #: 57068 DST #: 3

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.05.16 @ 10:24:01

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

1-16s-38w Wichita,KS

Joy #1-1

Job Ticket: 57068 **DST#: 3**

Test Start: 2014.05.11 @ 00:23:00

GENERAL INFORMATION:

Formation: **Marmaton**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 02:14:00
Time Test Ended: 05:38:45

Test Type: Conventional Bottom Hole (Reset)
Tester: Samuel Esparza
Unit No: 71

Interval: 4537.00 ft (KB) To 4575.00 ft (KB) (TVD)
Total Depth: 4575.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

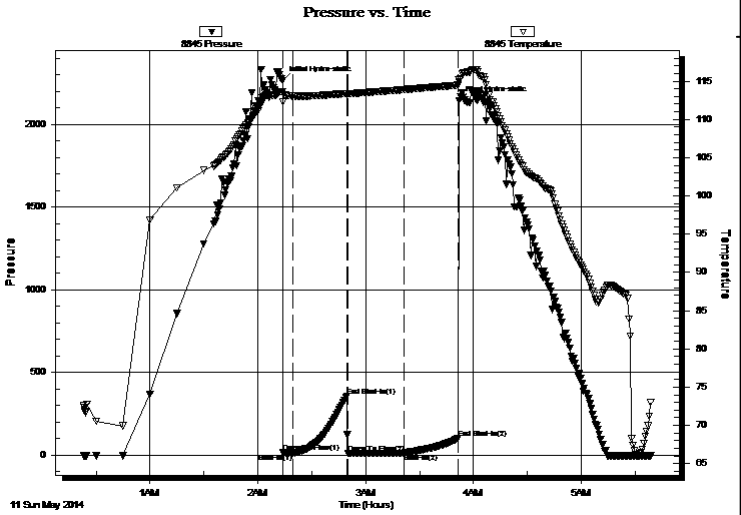
Reference Elevations: 3428.00 ft (KB)
3419.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8845 **Inside**

Press@RunDepth: 13.48 psig @ 4538.00 ft (KB)
Start Date: 2014.05.11 End Date: 2014.05.11
Start Time: 00:23:05 End Time: 05:38:44

Capacity: 8000.00 psig
Last Calib.: 2014.05.11
Time On Btm: 2014.05.11 @ 02:13:45
Time Off Btm: 2014.05.11 @ 03:51:45

TEST COMMENT: IF: 1/4" Blow .
ISI: No Return.
FF: No Blow .
FSI: No Return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2264.75	113.66	Initial Hydro-static
1	15.99	112.26	Open To Flow (1)
6	14.23	113.05	Shut-In(1)
36	356.90	113.39	End Shut-In(1)
37	12.00	113.34	Open To Flow (2)
68	13.48	113.88	Shut-In(2)
98	101.93	114.47	End Shut-In(2)
98	2141.36	115.13	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud 100m (Oil Scum On Top)	0.07

* Recovery from multiple tests

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

1-16s-38w Wichita,KS

Joy #1-1

Job Ticket: 57068 **DST#: 3**

Test Start: 2014.05.11 @ 00:23:00

GENERAL INFORMATION:

Formation: **Marmaton**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 02:14:00
Time Test Ended: 05:38:45

Test Type: Conventional Bottom Hole (Reset)
Tester: Samuel Esparza
Unit No: 71

Interval: 4537.00 ft (KB) To 4575.00 ft (KB) (TVD)
Total Depth: 4575.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

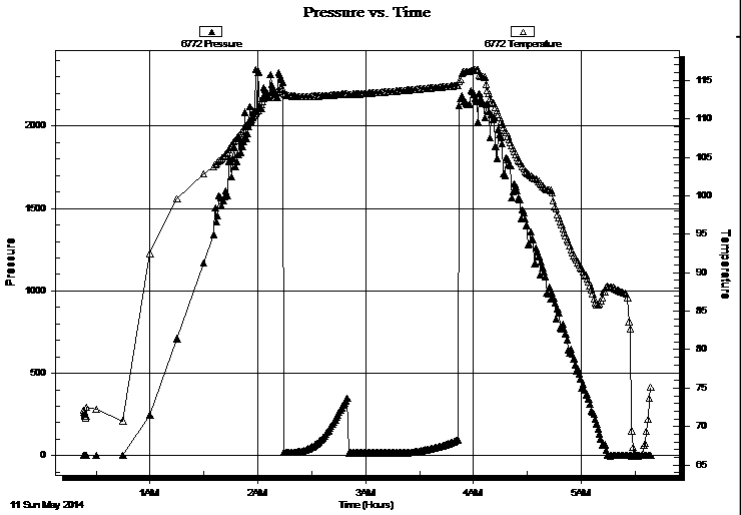
Reference Elevations: 3428.00 ft (KB)
3419.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 6772 **Outside**

Press@RunDepth: psig @ 4538.00 ft (KB)
Start Date: 2014.05.11 End Date: 2014.05.11
Start Time: 00:23:05 End Time: 05:38:59

Capacity: 8000.00 psig
Last Calib.: 2014.05.11
Time On Btm:
Time Off Btm:

TEST COMMENT: IF: 1/4" Blow .
ISI: No Return.
FF: No Blow .
FSI: No Return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud 100m (Oil Scum On Top)	0.07

* Recovery from multiple tests

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mull Drilling Co., Inc.

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

1-16s-38w Wichita,KS

Joy #1-1

Job Ticket: 57068 **DST#: 3**

Test Start: 2014.05.11 @ 00:23:00

Tool Information

Drill Pipe:	Length:	4542.00 ft	Diameter:	3.80	inches	Volume:	63.71	bbl	
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00	inches	Volume:	0.00	bbl	
Drill Collar:	Length:	0.00 ft	Diameter:	2.25	inches	Volume:	0.00	bbl	
						Total Volume:	63.71	bbl	

Drill Pipe Above KB:	25.00 ft
Depth to Top Packer:	4537.00 ft
Depth to Bottom Packer:	ft
Interval betw een Packers:	38.00 ft
Tool Length:	58.00 ft
Number of Packers:	2 Diameter: 6.75 inches

Tool Weight:		2000.00 lb
Weight set on Packer:		30000.00 lb
Weight to Pull Loose:		95000.00 lb
Tool Chased		0.00 ft
String Weight:	Initial	47000.00 lb
	Final	47000.00 lb

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Change Over Sub	1.00			4518.00		
Shut In Tool	5.00			4523.00		
Hydraulic tool	5.00			4528.00		
Packer	5.00			4533.00	20.00	Bottom Of Top Packer
Packer	4.00			4537.00		
Stubb	1.00			4538.00		
Recorder	0.00	6772	Outside	4538.00		
Recorder	0.00	8845	Inside	4538.00		
Perforations	32.00			4570.00		
Bullnose	5.00			4575.00	38.00	Bottom Packers & Anchor
Total Tool Length:	**58.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Mull Drilling Co., Inc.

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

1-16s-38w Wichita,KS

Joy #1-1

Job Ticket: 57068 **DST#: 3**

Test Start: 2014.05.11 @ 00:23:00

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	ppm
Viscosity:	50.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	9.58 in³	Gas Cushion Type:			
Resistivity:	0.00 ohm.m	Gas Cushion Pressure:	psig		
Salinity:	8000.00 ppm				
Filter Cake:	1.00 inches				

Recovery Information

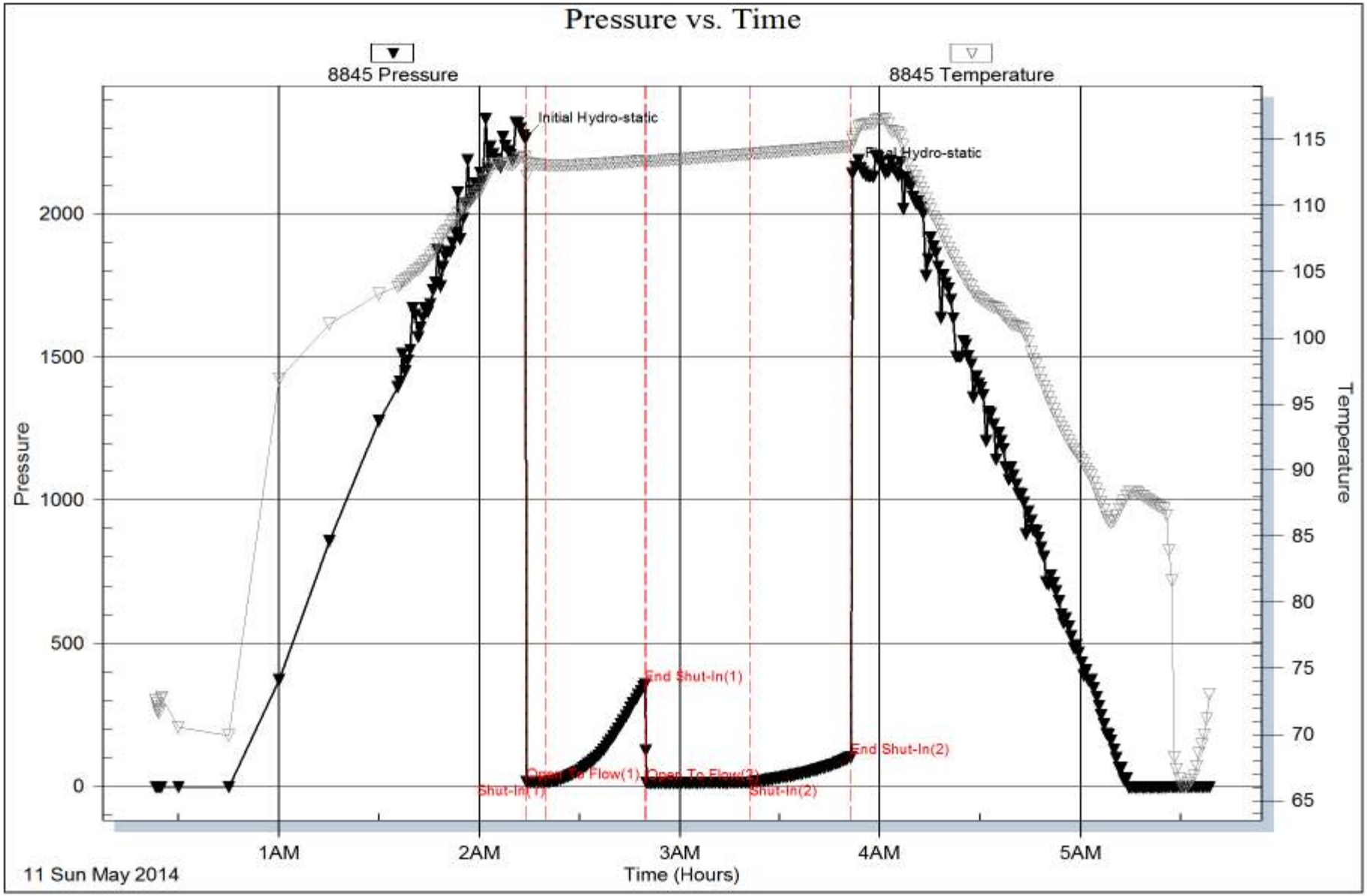
Recovery Table

Length ft	Description	Volume bbl
5.00	Mud 100m (Oil Scum On Top)	0.070

Total Length: 5.00 ft Total Volume: 0.070 bbl

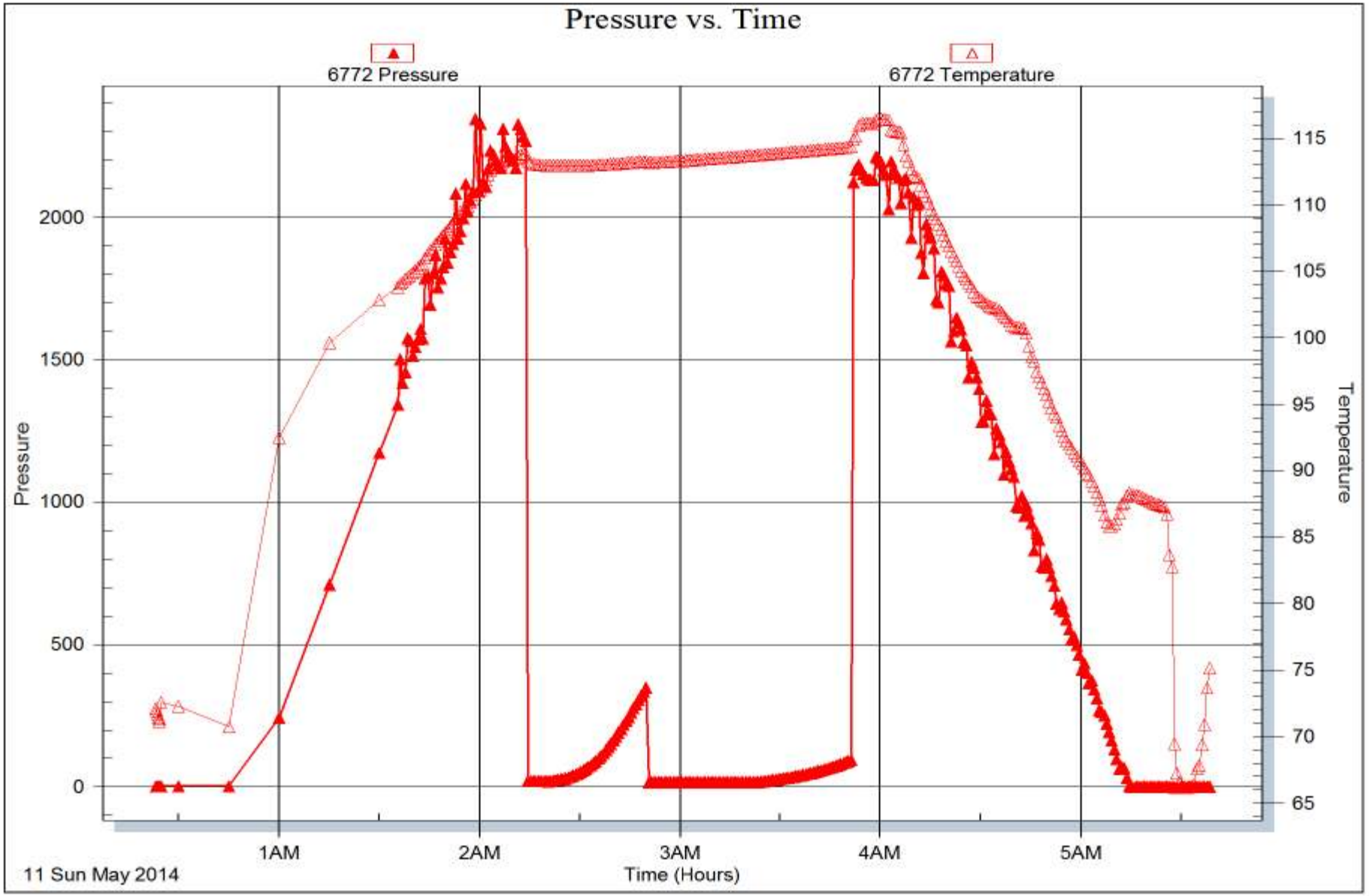
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

Serial #: 8845 **Inside** Mull Drilling Co., Inc. Joy #1-1 DST Test Number: 3



Trilobite Testing, Inc Ref. No: 57068 Printed: 2014.05.16 @ 10:24:02

Serial #: 6772 **Outside** Mull Drilling Co., Inc. Joy #1-1 DST Test Number: 3



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **Mull Drilling Co., Inc.**

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

Joy #1-1

1-16s-38w Wichita,KS

Start Date: 2014.05.12 @ 18:40:00

End Date: 2014.05.13 @ 04:05:00

Job Ticket #: 57069 DST #: 4

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.05.16 @ 10:23:24

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

1-16s-38w Wichita,KS

Joy #1-1

Job Ticket: 57069 **DST#: 4**

Test Start: 2014.05.12 @ 18:40:00

GENERAL INFORMATION:

Formation: **Morrow upper sand**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 20:50:15
Time Test Ended: 04:05:00

Test Type: Conventional Bottom Hole (Reset)
Tester: Samuel Esparza
Unit No: 71

Interval: 4852.00 ft (KB) To 4895.00 ft (KB) (TVD)
Total Depth: 4895.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

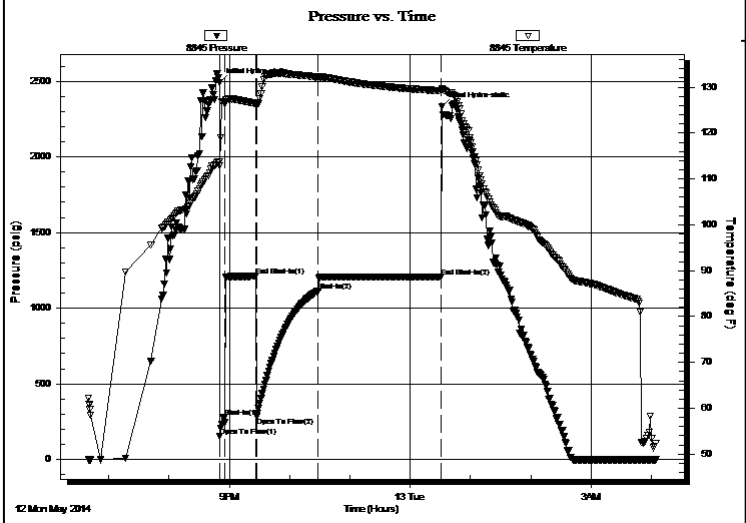
Reference Elevations: 3428.00 ft (KB)
3419.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8845 **Inside**

Press@RunDepth: 1114.06 psig @ 4853.00 ft (KB)
Start Date: 2014.05.12 End Date: 2014.05.13
Start Time: 18:40:05 End Time: 04:05:00

Capacity: 8000.00 psig
Last Calib.: 2014.05.13
Time On Btm: 2014.05.12 @ 20:50:00
Time Off Btm: 2014.05.13 @ 00:31:30

TEST COMMENT: IF: BOB @ 2 min.
ISI: No Return.
FF: BOB @ 1 1/2 in.
FSI: No Return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2494.50	113.80	Initial Hydro-static
1	154.14	112.80	Open To Flow (1)
6	277.09	126.50	Shut-In(1)
37	1211.33	126.43	End Shut-In(1)
37	281.90	126.02	Open To Flow (2)
99	1114.06	132.23	Shut-In(2)
221	1209.04	129.21	End Shut-In(2)
222	2333.65	129.58	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
2020.00	MW 15m 85w	28.34
505.00	WCM 30w 70m	7.08

* Recovery from multiple tests

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

1-16s-38w Wichita,KS

Joy #1-1

Job Ticket: 57069 **DST#: 4**

Test Start: 2014.05.12 @ 18:40:00

GENERAL INFORMATION:

Formation: **Morrow upper sand**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 20:50:15
Time Test Ended: 04:05:00

Test Type: Conventional Bottom Hole (Reset)
Tester: Samuel Esparza
Unit No: 71

Interval: 4852.00 ft (KB) To 4895.00 ft (KB) (TVD)
Total Depth: 4895.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

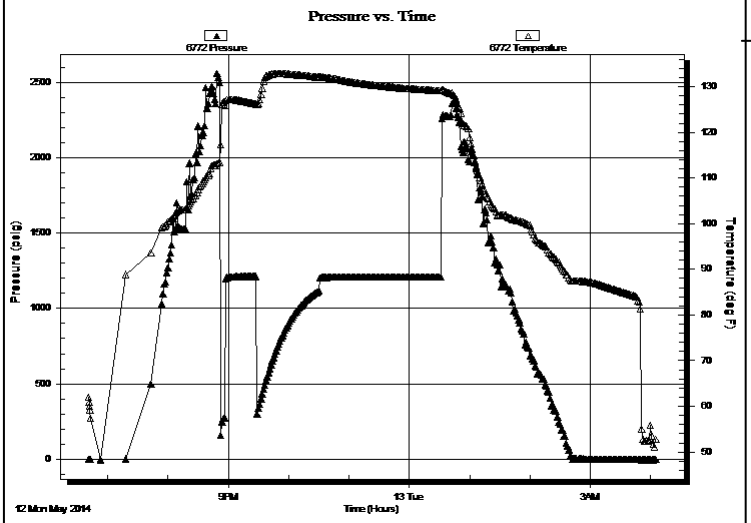
Reference Elevations: 3428.00 ft (KB)
3419.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 6772 **Outside**

Press@RunDepth: psig @ 4853.00 ft (KB)
Start Date: 2014.05.12 End Date: 2014.05.13
Start Time: 18:41:04 End Time: 04:05:59

Capacity: 8000.00 psig
Last Calib.: 2014.05.13
Time On Btm:
Time Off Btm:

TEST COMMENT: IF: BOB @ 2 min.
ISI: No Return.
FF: BOB @ 1 1/2 in.
FSI: No Return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

Recovery

Length (ft)	Description	Volume (bbl)
2020.00	MW 15m 85w	28.34
505.00	WCM 30w 70m	7.08

* Recovery from multiple tests

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

DRILL STEM TEST REPORT

TOOL DIAGRAM

Mull Drilling Co., Inc.

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

1-16s-38w Wichita,KS

Joy #1-1

Job Ticket: 57069 **DST#: 4**

Test Start: 2014.05.12 @ 18:40:00

Tool Information

Drill Pipe:	Length:	4852.00 ft	Diameter:	3.80	inches	Volume:	68.06	bbl	
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00	inches	Volume:	0.00	bbl	
Drill Collar:	Length:	0.00 ft	Diameter:	2.25	inches	Volume:	0.00	bbl	
						Total Volume:	68.06	bbl	

Drill Pipe Above KB:	20.00 ft
Depth to Top Packer:	4852.00 ft
Depth to Bottom Packer:	ft
Interval betw een Packers:	43.00 ft
Tool Length:	63.00 ft
Number of Packers:	2 Diameter: 6.75 inches

Tool Weight:		2000.00 lb
Weight set on Packer:		30000.00 lb
Weight to Pull Loose:		95000.00 lb
Tool Chased		0.00 ft
String Weight:	Initial	48000.00 lb
	Final	58000.00 lb

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Change Over Sub	1.00			4833.00		
Shut In Tool	5.00			4838.00		
Hydraulic tool	5.00			4843.00		
Packer	5.00			4848.00	20.00	Bottom Of Top Packer
Packer	4.00			4852.00		
Stubb	1.00			4853.00		
Recorder	0.00	6772	Outside	4853.00		
Recorder	0.00	8845	Inside	4853.00		
Perforations	4.00			4857.00		
Change Over Sub	1.00			4858.00		
Drill Pipe	31.00			4889.00		
Change Over Sub	1.00			4890.00		
Bullnose	5.00			4895.00	43.00	Bottom Packers & Anchor
Total Tool Length:	**63.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Mull Drilling Co., Inc.

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

1-16s-38w Wichita,KS

Joy #1-1

Job Ticket: 57069 **DST#: 4**

Test Start: 2014.05.12 @ 18:40:00

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	30000 ppm
Viscosity:	50.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	9.58 in³	Gas Cushion Type:			
Resistivity:	0.00 ohm.m	Gas Cushion Pressure:	psig		
Salinity:	7500.00 ppm				
Filter Cake:	2.00 inches				

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
2020.00	MW 15m 85w	28.335
505.00	WCM 30w 70m	7.084

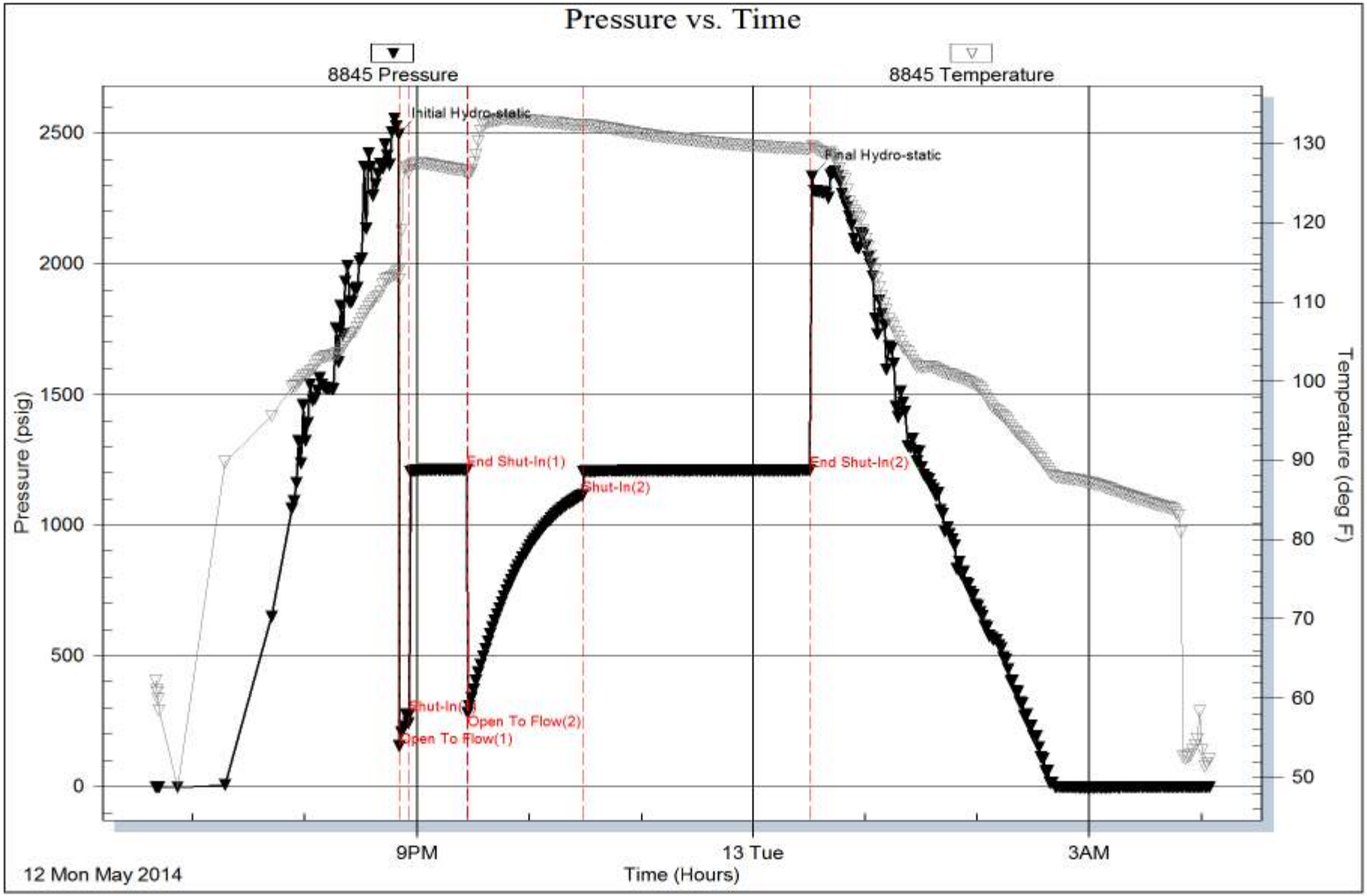
Total Length: 2525.00 ft Total Volume: 35.419 bbl

Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

Laboratory Name: Laboratory Location:

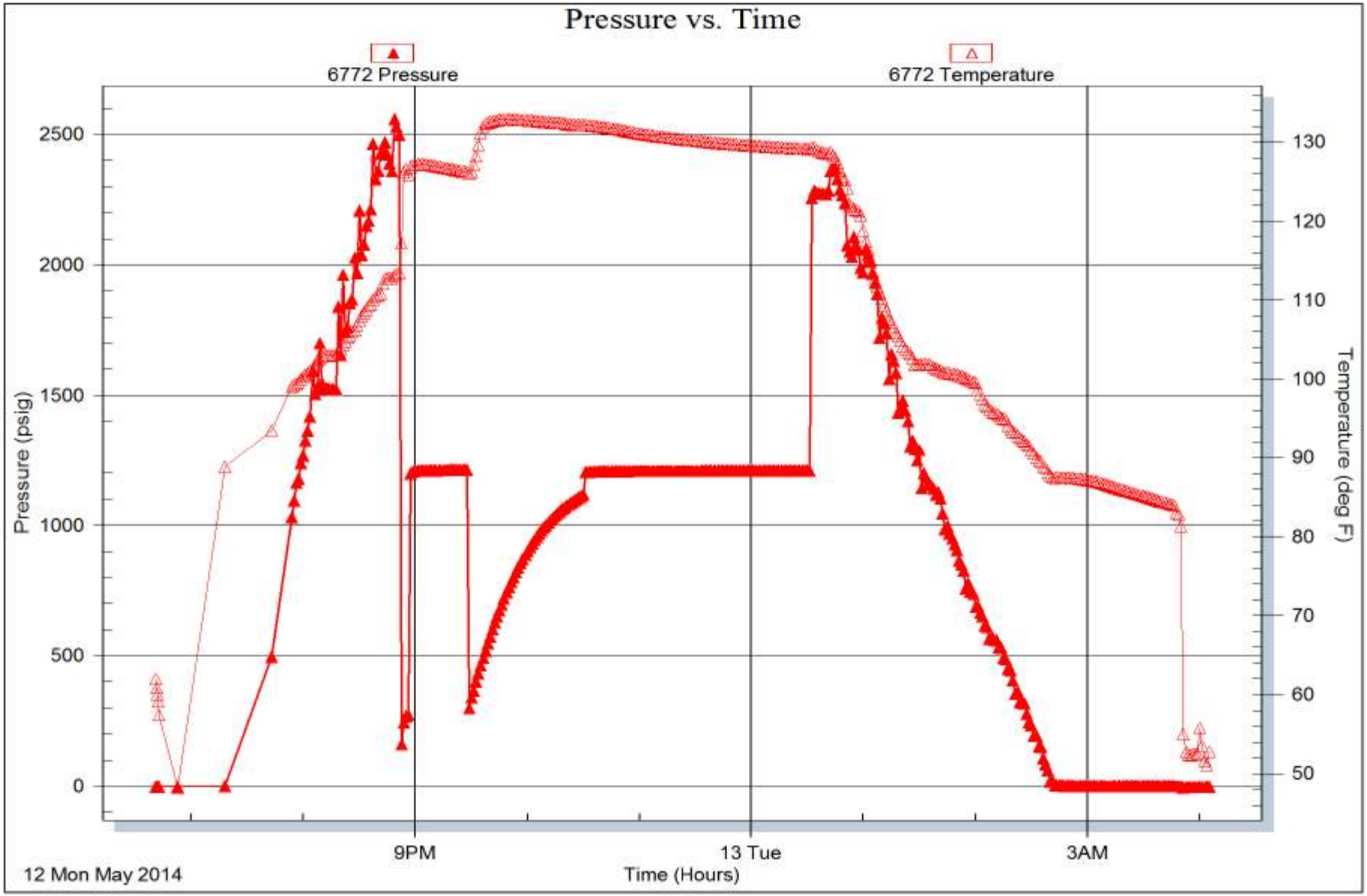
Recovery Comments: rW .185@86

Serial #: 8845 **Inside** Mull Drilling Co., Inc. Joy #1-1 DST Test Number: 4



Trilobite Testing, Inc Ref. No: 57069 Printed: 2014.05.16 @ 10:23:25

Serial #: 6772 **Outside** Mull Drilling Co., Inc. Joy #1-1 DST Test Number: 4



Trilobite Testing, Inc Ref. No: 57069 Printed: 2014.05.16 @ 10:23:25

TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket

NO. 57066

Well Name & No. Mull Drilling Co. Inc. Test No. 1 Date 5/8/14

Company Jay #1-1 Elevation 3428 KB 3419 GL

Address 1700 N Waterfront Pkwy Wichita, KS [redacted] 67202

Co. Rep / Geo. Steve Reed Rig [redacted] Duke #4

Location: Sec. 1 Twp. 16S Rge. 38W Co. Wichita State KS

Interval Tested 4203-4253 Zone Tested LKC "F-F-G"

Anchor Length 53 Drill Pipe Run 4198 Mud Wt. 9.1

Top Packer Depth 4199 Drill Collars Run 0 Vis 45

Bottom Packer Depth 4203 Wt. Pipe Run 0 WL 6.4

Total Depth 4253 Chlorides 3500 ppm System LCM 2

Blow Description IF: BoB @ 2 min.

ISI: No Return.

FF: BoB @ 2 min.

FSI: No Return

Rec 560	Feet of OWCM	%gas 5	%oil 40	%water 55	%mud
Rec 1890	Feet of OMCW	%gas 5	%oil 90	%water 5	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 2450 BHT 118 Gravity — API RW .469 @ 48 °F Chlorides 20,000 ppm

(A) Initial Hydrostatic	2033	☒ Test	1250	T-On Location	16:45
(B) First Initial Flow	103	☐ Jars		T-Started	17:18
(C) First Final Flow	214	☐ Safety Joint		T-Open	19:07
(D) Initial Shut-In	1209	☒ Circ Sub	N/C	T-Pulled	23:14
(E) Second Initial Flow	227	☐ Hourly Standby		T-Out	2:06
(F) Second Final Flow	1116	☒ Mileage	100 R/T 155	Comments	
(G) Final Shut-In	1202	☐ Sampler			
(H) Final Hydrostatic	1944	☐ Straddle			
		☐ Shale Packer		☐ Ruined Shale Packer	
Initial Open	5	☐ Extra Packer		☐ Ruined Packer	
Initial Shut-In	30	☐ Extra Recorder		☐ Extra Copies	
Final Flow	60	☐ Day Standby		Sub Total	0
Final Shut-In	120	☐ Accessibility		Total	1405
		Sub Total	1405	MP/DST Disc't	

Approved By _____ Our Representative _____

TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket

NO. 57067

Well Name & No. Joy #1-1 Test No. 2 Date 5/9/14

Company Mull Drilling Co., Inc. Elevation 3428 KB 3419 GL

Address 1700 N Waterfront Pkwy Wichita KS 67206

Co. Rep / Geo. Steve Rust Rig Duke #4

Location: Sec. 1 Twp. 16 S Rge. 38 W Co. Wichita State KS

Interval Tested 4293 - 4335 Zone Tested LKC "H"

Anchor Length 42' Drill Pipe Run 4293 Mud Wt. 8.9

Top Packer Depth 4289 Drill Collars Run 0 Vis 53

Bottom Packer Depth 4293 Wt. Pipe Run 0 WL 4.0

Total Depth 4335 Chlorides 6000 ppm System LCM 3

Blow Description IF: BOB 3 min.

ISI: No Return.

FF: BOB @ 3 min.

FSI: No Return.

Rec 315	Feet of MCW	%gas	%oil	60	%water	40	%mud
Rec 1635	Feet of MCW	%gas	%oil	90	%water	10	%mud
Rec	Feet of	%gas	%oil		%water		%mud
Rec	Feet of	%gas	%oil		%water		%mud
Rec	Feet of	%gas	%oil		%water		%mud

Rec Total 1950 BHT 120 Gravity — API RW .075 @ 71 °F Chlorides 40,000 ppm

(A) Initial Hydrostatic	2115	☑ Test	1250	T-On Location	13:10
(B) First Initial Flow	72	☐ Jars		T-Started	13:30
(C) First Final Flow	141	☐ Safety Joint		T-Open	16:12
(D) Initial Shut-In	1225	☑ Circ Sub	N/C	T-Pulled	19:53
(E) Second Initial Flow	148	☐ Hourly Standby		T-Out	22:10
(F) Second Final Flow	691	☑ Mileage	100 RJT 155	Comments	
(G) Final Shut-In	1220	☐ Sampler			
(H) Final Hydrostatic	2026	☐ Straddle		☐ Ruined Shale Packer	
		☐ Shale Packer		☐ Ruined Packer	
Initial Open	5	☐ Extra Packer		☐ Extra Copies	
Initial Shut-In	30	☐ Extra Recorder		Sub Total	0
Final Flow	60	☐ Day Standby		Total	1405
Final Shut-In	120	☐ Accessibility		MP/DST Disc't	
		Sub Total	1405		

Approved By _____ Our Representative _____

TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket

NO. 57068

Well Name & No. Jay #1-1 Test No. 3 Date 5/11/14

Company Mull Drilling CO., Inc. Elevation 3428 KB 3419 GL

Address 200 N Waterfront Pkwy Wichita, KS 67202

Co. Rep / Geo. Steve Reed Rig Duke #4

Location: Sec. 1 Twp. 16S Rge. 38W Co. Wichita State KS

Interval Tested 4537-4575 Zone Tested Marmaton

Anchor Length 38 Drill Pipe Run 4542 Mud Wt. 9.2

Top Packer Depth 4533 Drill Collars Run 0 Vis 50

Bottom Packer Depth 4537 Wt. Pipe Run 0 WL 9.6

Total Depth 4575 Chlorides 8000 ppm System LCM 2

Blow Description IF: ¼" Blow.

ISI: No Return.

FF: No Blow

FSI: No Return.

Rec 5	Feet of Mud (Oil Scum on Top)	%gas	%oil	%water 100	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 5 BHT 115 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic 2265	☑ Test 1250	T-On Location 0005
(B) First Initial Flow 16	☐ Jars	T-Started 0023
(C) First Final Flow 14	☐ Safety Joint	T-Open 215
(D) Initial Shut-In 357	☒ Circ Sub N/C	T-Pulled 352
(E) Second Initial Flow 12	☐ Hourly Standby	T-Out 510
(F) Second Final Flow 13	☒ Mileage 100 RT 155	Comments
(G) Final Shut-In 102	☐ Sampler	
(H) Final Hydrostatic 2121	☐ Straddle	☐ Ruined Shale Packer
	☐ Shale Packer	☐ Ruined Packer
Initial Open 5	☐ Extra Packer	☐ Extra Copies
Initial Shut-In 30	☐ Extra Recorder	Sub Total 0
Final Flow 30	☐ Day Standby	Total 1405
Final Shut-In 30	☐ Accessibility	MP/DST Disc't
	Sub Total 1405	

Approved By _____ Our Representative _____

TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket

NO. 57069

Well Name & No. Goy #1-1 Test No. 4 Date 5/12/14

Company Mull Drilling Co. Inc. Elevation 3428 KB 3419 GL

Address 200 N Waterfront Pkwy Wichita, KS 67202

Co. Rep / Geo. Steve Reed Rig Duke #4

Location: Sec. 1 Twp. 16S Rge. 38W Co. Wichita State KS

Interval Tested 4852 - 4895 Zone Tested Morrow upper Sand

Anchor Length 43 Drill Pipe Run 4852 Mud Wt. 9.3

Top Packer Depth 4848 Drill Collars Run 0 Vis 50

Bottom Packer Depth 4895 Wt. Pipe Run 0 WL 9.6

Total Depth 4895 Chlorides 7500 ppm System LCM 4

Blow Description IF: BoB @ 2 min.
ISI: No Return.
FF: BoB @ 1½ min.
FSI: No Return.

Rec 505	Feet of WCM	%gas	%oil 30	%water 70	%mud	
Rec 2020	Feet of MW	%gas	%oil 85	%water 15	%mud	
Rec	Feet of	%gas	%oil	%water	%mud	
Rec	Feet of	%gas	%oil	%water	%mud	
Rec	Feet of	%gas	%oil	%water	%mud	

Rec Total 2525 BHT 129 Gravity — API RW .185 @ 86 °F Chlorides 30,000 ppm

(A) Initial Hydrostatic	2495	☒ Test	1250	T-On Location	18:00
(B) First Initial Flow	154	☐ Jars		T-Started	8:40
(C) First Final Flow	277	☐ Safety Joint		T-Open	20:50
(D) Initial Shut-In	1211	☒ Circ Sub	N/C	T-Pulled	03:30
(E) Second Initial Flow	282	☐ Hourly Standby		T-Out	4:05
(F) Second Final Flow	1114	☒ Mileage	100 ft x 2 310	Comments	My Batteries are dead so I was unable to get chlorides I will replace and check it for you Sorry
(G) Final Shut-In	1209	☐ Sampler			
(H) Final Hydrostatic	2334	☐ Straddle	loaded Tools 5/15/14 @ 16:00	☐ Ruined Shale Packer	
		☐ Shale Packer		☐ Ruined Packer	
Initial Open	5	☐ Extra Packer		☐ Extra Copies	
Initial Shut-In	30	☐ Extra Recorder		Sub Total	800
Final Flow	60	☒ Day Standby	1d 12h	Total	2360
Final Shut-In	120	☐ Accessibility		MP/DST Disc't	
		Sub Total	1560		

Approved By _____ Our Representative _____

OPERATOR

Company:	MULL DRILLING COMPANY, INC.		
Address:	1700 N WATERFRONT PKWY BLDG 1200 WICHITA, KANSAS 67206-6637		
Contact Geologist:	MARK SHREVE / TOBY ECK		
Contact Phone Nbr:	316-264-6366		
Well Name:	JOY #1-1		
Location:	NW SE SW SE S1 T16S R38W	API:	15-203-20255-00-00
Pool:	WILDCAT	Field:	
State:	KANSAS	Country:	USA

MULL DRILLING COMPANY, INC.
WICHITA, KANSAS

Scale 1:240 Imperial

Well Name:	JOY #1-1		
Surface Location:	NW SE SW SE S1 T16S R38W		
Bottom Location:			
API:	15-203-20255-00-00		
License Number:	5144		
Spud Date:	5/3/2014	Time:	2:15 PM
Region:	WICHITA COUNTY		
Drilling Completed:	5/16/2014	Time:	6:20 AM
Surface Coordinates:	396 FSL & 1852 FEL		
Bottom Hole Coordinates:			
Ground Elevation:	3419.00ft		
K.B. Elevation:	3428.00ft		
Logged Interval:	3600.00ft	To:	5395.00ft
Total Depth:	5395.00ft		
Formation:	MARMATON, MORROW SAND		
Drilling Fluid Type:	CHEMICAL / FRESH WATER GEL		

SURFACE CO-ORDINATES

Well Type:	Vertical		
Longitude:	-101.4641055	Latitude:	38.6856505
N/S Co-ord:	396 FSL		
E/W Co-ord:	1852 FEL		

LOGGED BY

SOLUTIONS CONSULTING

Company:	SOLUTIONS CONSULTING, INC.		
Address:	108 W 35TH HAYS, KS 67601		
Phone Nbr:	(785) 639-1337		
Logged By:	Geologist	Name:	STEVE REED / HERB DEINES

CONTRACTOR

Contractor:	DUKE DRILLING		
Rig #:	4		
Rig Type:	MUD ROTARY		
Spud Date:	5/3/2014	Time:	2:15 PM
TD Date:	5/16/2014	Time:	6:20 AM
Rig Release:	5/17/2014	Time:	7:00 AM

ELEVATIONS

K.B. Elevation:	3428.00ft	Ground Elevation:	3419.00ft
K.B. to Ground:	9.00ft		

NOTES

DUE TO LACK OF SIGNIFICANT SHOWS AND NEGATIVE RESULTS OF ALL DRILL STEM TESTS, DECISION WAS MADE TO PLUG AND ABANDON WELL

OPEN HOLE LOGGING PROVIDED BY: NABORS
DUAL COMPENSATED POROSITY, DUAL INDUCTION, MICRORESISTIVITY, PE, AND SONIC LOGS WERE COMPLETED

DRILL STEM TESTING PROVIDE BY: TRILOBITE TESTING
FOUR (4) CONVENTIONAL DRILL STEM TESTS COMPLETED

FORMATION TOPS SUMMARY AND CHRONOLOGY OF DAILY ACTIVITY

	WELL NAME		COMPARISON WELL	COMPARISON WELL
	JOY # 1-1		BRADFORD #1-1	LUCKY JACK #1-25
	API: 15-203-20255		API: 15-203-20136	API: 15-203-20202
FORMATION	SAMPLE TOPS	LOG TOPS	LOG TOPS (DATUM)	LOG TOPS (DATUM)
ANHYDRITE TOP	2645' (+783')	2648' (+780')	+784'	+833'
AHYDRITE BASE	2665' (+763')	2662' (+766')	+767'	+811'
TOPEKA	3831' (-403')	3830' (-402')	-408'	-380'
HEEBNER	4063' (-635')	4068' (-640')	-647'	-622'
LKC	4119' (-691')	4118' (-690')	-697'	-671'
MUNCIE CREEK	4294' (-866')	4304' (-876')	-884'	-852'
STARK	4391' (-963')	4394' (-966')	-977'	-949'
BKC	4491' (-1063')	4491' (-1063')	-1073'	-1037'
MARMATON	4555' (-1127')	4560' (-1132')	-1140'	-1100'
FORT SCOTT	4674' (-1246')	4680' (-1252')	-1248'	-1237'
CHEROKEE SHALE	4709' (-1281')	4714' (-1286')	-1300'	-1264'
ATOKA	4763' (-1335')	4763' (-1335')	-1354'	-1319'
MORROW SHALE	4874' (-1446')	4877' (-1449')	-1463'	-1421'
UPPER SANDSTONE	4882' (-1454')	4894' (-1466')	-1474'	NA
MISSISSIPPIAN	5000' (-1572')	5002' (-1574')	-1584'	-1542'
SPERGEN	5244' (-1816')	5252' (-1824')	NA	-1637'
RTD	5395' (-1967')	5397' (-1969')	-1665'	-1699'

SUMMARY OF DAILY ACTIVITY

5-3-14	R.U., spud @ 2:15pm, 8 5/8" surface casing set at 208' w/165 sxs common, 2% gel, 3% cc, WOC
5-4-14	408, drilling
5-5-14	2384, drilling
5-6-14	3295, drilling
5-7-14	3769, drilling, worked on draw works air compressor, replace washed mud pump head
5-8-14	4194, drilling, CFS @ 4253, short trip, CTCH, DST #1 4203 to 4253
5-9-14	4286, drilling, work on mud pump, CFS @ 4335, TOWB, strap 2.64 long to board, DST #2 4293 to 4335, CFS @ 4365
5-10-14	4406, drilling, CFS @ 4425, CFS @ 4535, CFS @ 4575, mini trip, CTCH, TOWB, DST #3 4537 to 4575
5-11-14	4575, work on rig, drilling
5-12-14	4820, drilling, CFS @4883, CFS @ 4889, CFS @4895, drop flat to find hole in pipe, TOWB, DST #4 4852 to 4895
5-13-14	4895, drilling, CFS @ 4990, CFS @ 5000, 5105 TOWB for hole in pipe
5-14-14	5169, TOWB for hole in pipe, CFS @ 5255, TOWB for hole in pipe, mud pump failure, TOWB, on bank
5-15-14	Wait on mud pump, install, replace head on new pump, resume drilling, TD 5395 @ 6:20am
5-16-14	5395, mini trip (5 stands), CTCH, TOWB for logging, prepare for plugging
5-17-14	release rig

DST #1 SUMMARY

TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

1-16s-38w Wichita co.

Joy #1-1

Job Ticket: 57066 **DST#:1**

Test Start: 2014.05.08 @ 17:18:00

GENERAL INFORMATION:

Formation: **LKC " E-F-G "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 19:07:15
Time Test Ended: 02:06:15

Test Type: Conventional Bottom Hole (Initial)
Tester: Samuel Esparza
Unit No: 71

Interval: 4203.00 ft (KB) To 4253.00 ft (KB) (TVD)
Total Depth: 4253.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

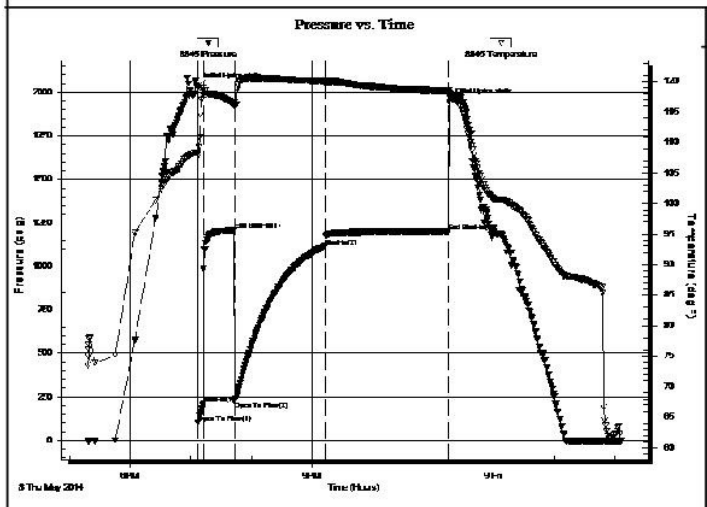
Reference Elevations: 3428.00 ft (KB)
3419.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8845 **Inside**

Press@RunDepth: 1115.90 psig @ 4204.00 ft (KB)
Start Date: 2014.05.08 End Date: 2014.05.09
Start Time: 17:18:05 End Time: 02:06:15

Capacity: 8000.00 psig
Last Calib.: 2014.05.09
Time On Btm: 2014.05.08 @ 19:07:00
Time Off Btm: 2014.05.08 @ 23:15:30

TEST COMMENT: IF: BOB @ 2 min.
ISI: No Return.
FF: BOB @ 2 min,
FSI: No Return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2033.44	108.36	Initial Hydro-static
1	102.59	107.81	Open To Flow (1)
6	213.53	118.49	Shut-In(1)
37	1208.75	116.46	End Shut-In(1)
37	227.09	115.94	Open To Flow (2)
126	1115.90	119.95	Shut-In(2)
248	1202.08	118.38	End Shut-In(2)
249	1944.02	118.51	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1890.00	OMCW 5o 5m 90w	26.51
560.00	OWCM 5o 40w 55m	7.86

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

Trilobite Testing, Inc Ref. No: 57066 Printed: 2014.05.09 @ 04:27:52

DST #2 SUMMARY

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

1-16s-38w Wichita co.

Joy #1-1

Job Ticket: 57067 **DST#:2**

Test Start: 2014.05.09 @ 13:30:00

GENERAL INFORMATION:

Formation: **LCK" H"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 16:12:15
Time Test Ended: 22:10:15

Test Type: Conventional Bottom Hole (Reset)
Tester: Samuel Esparza
Unit No: 71

Interval: 4293.00 ft (KB) To 4335.00 ft (KB) (TVD)
Total Depth: 4335.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

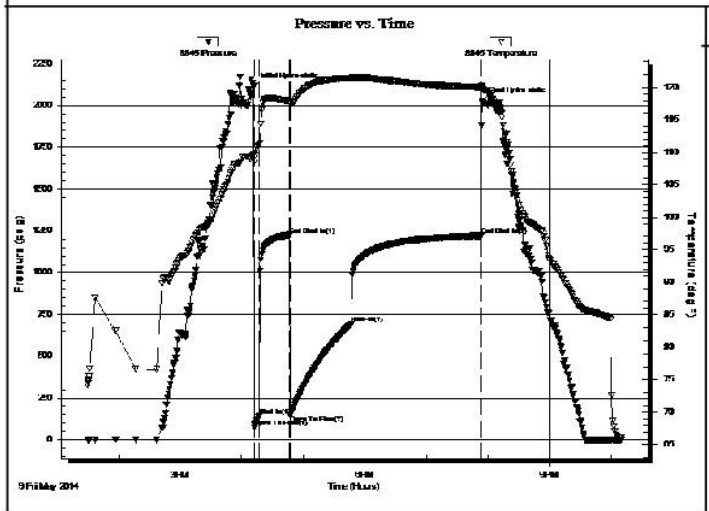
Reference Elevations: 3428.00 ft (KB)
3419.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8845 **Inside**

Press@RunDepth: 690.79 psig @ 4294.00 ft (KB)
Start Date: 2014.05.09 End Date: 2014.05.09
Start Time: 13:30:05 End Time: 22:10:15

Capacity: 8000.00 psig
Last Calib.: 2014.05.09
Time On Btm: 2014.05.09 @ 16:12:00
Time Off Btm: 2014.05.09 @ 19:54:30

TEST COMMENT: IF: BOB @ 3 min.
ISI: No Return.
FF: BOB @ 3 min.
FSI: No Return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2114.53	109.62	Initial Hydro-static
1	71.50	108.56	Open To Flow (1)
5	140.86	111.25	Shut-In(1)
35	1224.80	117.89	End Shut-In(1)
36	147.78	117.49	Open To Flow (2)
95	690.79	121.45	Shut-In(2)
222	1220.10	120.01	End Shut-In(2)
223	2025.58	120.07	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1635.00	MCW 10m 90w	22.93
315.00	MCW 40m 60w	4.42

* Recovery from multiple tests

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

DST #3 SUMMARY

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

1-16s-38w Wichita co.

Joy #1-1

Job Ticket: 57068 **DST#: 3**

Test Start: 2014.05.11 @ 00:23:00

GENERAL INFORMATION:

Formation: **Marmaton**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 02:14:00
Time Test Ended: 05:38:45

Test Type: Conventional Bottom Hole (Reset)
Tester: Samuel Esparza
Unit No: 71

Interval: 4537.00 ft (KB) To 4575.00 ft (KB) (TVD)
Total Depth: 4575.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

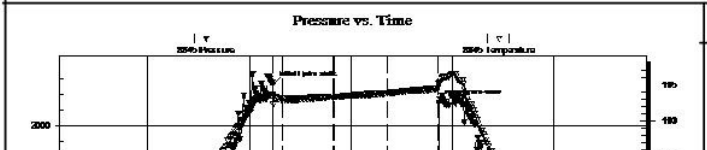
Reference Elevations: 3428.00 ft (KB)
3419.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8845 **Inside**

Press@RunDepth: 13.48 psig @ 4538.00 ft (KB)
Start Date: 2014.05.11 End Date: 2014.05.11
Start Time: 00:23:05 End Time: 05:38:44

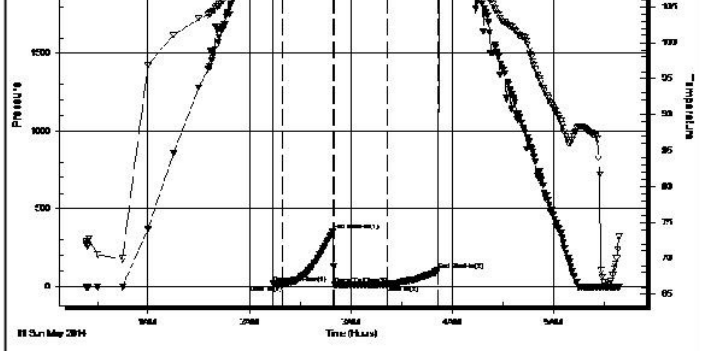
Capacity: 8000.00 psig
Last Calib.: 2014.05.11
Time On Btm: 2014.05.11 @ 02:13:45
Time Off Btm: 2014.05.11 @ 03:51:45

TEST COMMENT: IF: 1/4" Blow .
ISI: No Return.
FF: No Blow .
FSI: No Return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2264.75	113.66	Initial Hydro-static
1	15.99	112.26	Open To Flow (1)



6	14.23	113.05	Shut-In(1)
36	356.90	113.39	End Shut-In(1)
37	12.00	113.34	Open To Flow (2)
68	13.48	113.88	Shut-In(2)
98	101.93	114.47	End Shut-In(2)
98	2141.36	115.13	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud 100m (Oil Scum On Top)	0.07

* Recovery from multiple tests

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

Trilobite Testing, Inc Ref. No: 57068 Printed: 2014.05.13 @ 11:10:53

DST #4 SUMMARY

TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Mull Drilling Co., Inc.

1700 N Waterfront PKWY
Wichita, KS 67202

ATTN: Steve Reed

1-16s-38w Wichita co.

Joy #1-1

Job Ticket: 57069 **DST#:4**

Test Start: 2014.05.12 @ 18:40:00

GENERAL INFORMATION:

Formation: **Morrow upper sand**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 20:50:15
Time Test Ended: 04:05:00

Test Type: Conventional Bottom Hole (Reset)
Tester: Samuel Esparza
Unit No: 71

Interval: 4852.00 ft (KB) To 4895.00 ft (KB) (TVD)
Total Depth: 4895.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

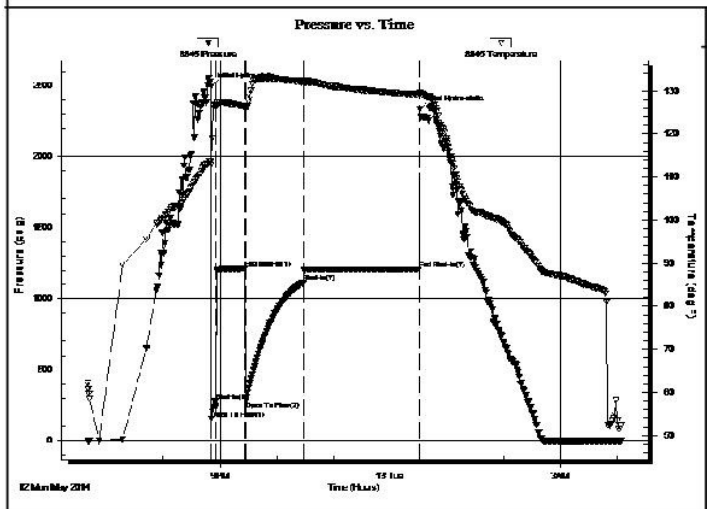
Reference Elevations: 3428.00 ft (KB)
3419.00 ft (CF)
KB to GR/CF: 9.00 ft

Serial #: 8845 **Inside**

Press@RunDepth: 1114.06 psig @ 4853.00 ft (KB)
Start Date: 2014.05.12 End Date: 2014.05.13
Start Time: 18:40:05 End Time: 04:05:00

Capacity: 8000.00 psig
Last Calib.: 2014.05.13
Time On Btm: 2014.05.12 @ 20:50:00
Time Off Btm: 2014.05.13 @ 00:31:30

TEST COMMENT: IF: BOB @ 2 min.
ISI: No Return.
FF: BOB @ 1 1/2 in.
FSI: No Return.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2494.50	113.80	Initial Hydro-static
1	154.14	112.80	Open To Flow (1)
6	277.09	126.50	Shut-In(1)
37	1211.33	126.43	End Shut-In(1)
37	281.90	126.02	Open To Flow (2)
99	1114.06	132.23	Shut-In(2)
221	1209.04	129.21	End Shut-In(2)
222	2333.65	129.58	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
2020.00	MW 15m 85w	28.34
505.00	WCM 30w 70m	7.08

* Recovery from multiple tests

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

Trilobite Testing, Inc Ref. No: 57069 Printed: 2014.05.13 @ 06:07:36

ROCK TYPES

Cht, Congl, Dolprim, Lmst fw<7, Lmst fw7>, shale, grn, shale, gry, Carbon Sh, shale, red, Ss

ACCESSORIES

MINERAL
▲ Chert, dark

FOSSIL
♈ Bryozoa

STRINGER
〰 Chert

TEXTURE
C Chalky

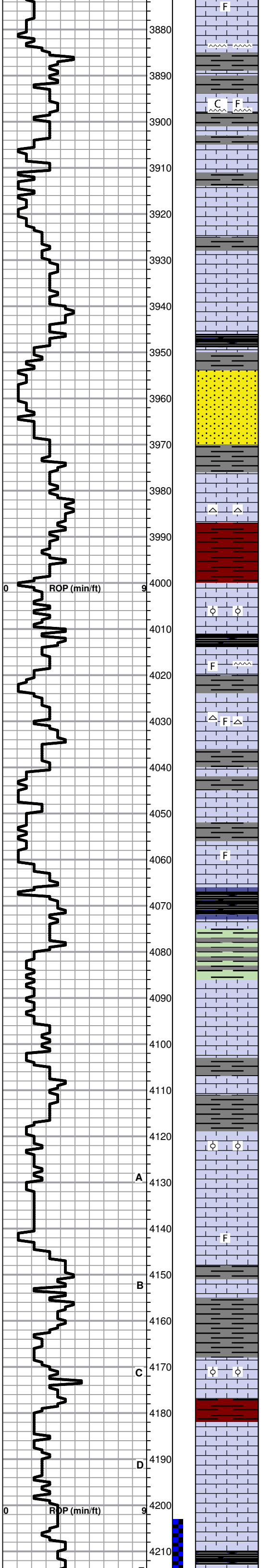
P Pyrite
△ Chert White
Mc Mica

F Fossils < 20%
Oolite
Pelecypod
Sponge Spicules
Oomoldic

CX Cryptocrystalline
e Earthy
L Lithogr

Printed by GEOstrip VC Striplog version 4.0.7.0 (www.grsi.ca)

Curve Track #1 ROP (min/ft) 1:240 Imperial	Depth | Intervals Cored Interval DST Interval	DST	Lithology	Oil Show	Geological Descriptions	Curve Track #3 1:240 Imperial
0 ROP (min/ft) 9	3600				**ANHYDRITE TOP SPL 2645 (+783) ELOG 2648 (+780)** **ANHYDRITE BASE SPL 2665 (+763) ELOG 2662 (+766)**	BEGIN 1' DRILL TIME @ 3600 BEGIN 10' WET AND DRY SAMPLES FROM 3600 TO RTD
	3610				Lm - tan-light brown, fnxln to granular in some, moderately hard Sh - light-medium gray, soft, blocky	**8 5/8" SURFACE CASING SET AT 219 W/ 165 SXS COMMON 2% gel, 3% CC**
	3620				Lm - cream-light gray, fn-medxln, firm, clean and barren	
	3630				Sh - light gray, soft, blocky	
	3640		△ △		Lm - tan, granular, friable, bedded chalk in part, light gray chert	
	3650		F		Lm - cream-tan, fossiliferous with fnxln matrix, moderate hardness	
	3660		D		Lm - tan, fn-medxln, hard, brittle, pelecypod fossil	
	3670				Sh - light-medium gray, black speckled, soft, blocky	
	3680				Sh - light gray, soft, blocky	
	3690				Lm - light-medium gray, mottled, fnxln, dense, hard	
	3700		P		Lm - light brown, vfxln, dense, hard, no visible porosity, pyrite inclusions	
	3710		F		Lm - cream, fossiliferous in fnxln matrix, moderate hardness	
	3720				Sh - medium gray, banded, firm, fissile	
	3730		L		Lm - tan, vfxln to lithographic in part, hard, brittle	
	3740					**MUD WT. 8.8** **VIS 57**
	3750		L C		Lm - light brown, lithographic, very hard, chalk in part	
	3760		C		Lm - tan-light gray, vfxln, dense, hard, slight chalk	
	3770				Sh - maroon, soft, blocky, forming sticky clumps in part	
	3780		F		Lm - tan, slightly fossiliferous, fnxln, chalky, brittle	
	3790				Lm - medium-dark gray, fnxln, slightly fossiliferous, dense, very hard	
0 ROP (min/ft) 9	3800				Sh - light gray with black specks, some banded, soft, silty, blocky	
	3810		e		Sh - medium brown, gritty, earthy, granular, soft, blocky	
	3820					
	3830		L		**TOPEKA SPL 3831 (-403) ELOG 3830 (-402)** Lm - cream-tan, fnxln to lithographic in part, hard, bedded chalk	
	3840		L		Lm - tan, lithographic, dense, very hard	
	3850		~~~ ~~~		Lm - A/A with bedded chalk, cherty	
	3860		F		Lm - light brown, fossiliferous, granular, friable, no show Sh - black, carbonaceous, waxy	
	3870				Lm - cream-tan, fnxln, brittle	



Lm - light brown, fossiliferous, friable

Lm - tan, granular, brittle, bedded chalk, cherty

Sh - light gray, soft, sticky

Lm - tan, slightly fossiliferous, granular, brittle, cherty, chalky

Lm - cream fossiliferous, granular, brittle, bedded chalk in part

Lm - tan-light brown, medxln, brittle, clean and barren

Lm - tan, fnxln, hard, brittle, bedded chalk in part

Lm - cream-tan, granular, brittle

Sh - black, carbonaceous, waxy

Ss - light gray, sucrosic, well sorted, well rounded, friable, loosely cemented, NSFO, no odor

Lm - cream, fnxln, hard, dense

Lm - A / A, with white chert

Sh - reddish brown, gritty, soft, blocky

Lm - cream, oolitic, poorly developed, brittle, no visible porosity, no show

Sh - black, carbonaceous, waxy

Lm - light brown, fossiliferous, firm, limited porosity, cherty

Lm - tan, fossiliferous, no visible porosity, hard, white chert

Lm - light gray, fnxln, hard, dense

Lm - cream, medxln, easily crushed, limited porosity, no show

Lm - tan, dark fossil fragments in fnxln matrix, dense, hard

HEEBNER SPL 4063 (-635) ELOG 4068 (-640)

Sh - black, carbonaceous, waxy

Sh - greenish gray, soft, blocky, some sticky clumps

Lm - offwhite, granular, clean and barren, bedded chalk throughout

Lm - cream-offwhite, fnxln, hard, brittle

Lm - tan, fnxln, hard, no visible porosity

LKC SPL 4119 (-691) ELOG 4118 (-690)

Lm - tan, oolitic, poorly developed, low porosity, hard, brittle, no show

Lm - tan, fnxln, hard, bedded chalk, no visible porosity

Lm - tan, fnxln, slightly fossiliferous, hard

Sh - medium brown, soft, blocky

Lm - cream, oolitic, poorly developed, limited porosity, britle

Sh - maroon, soft, sticky

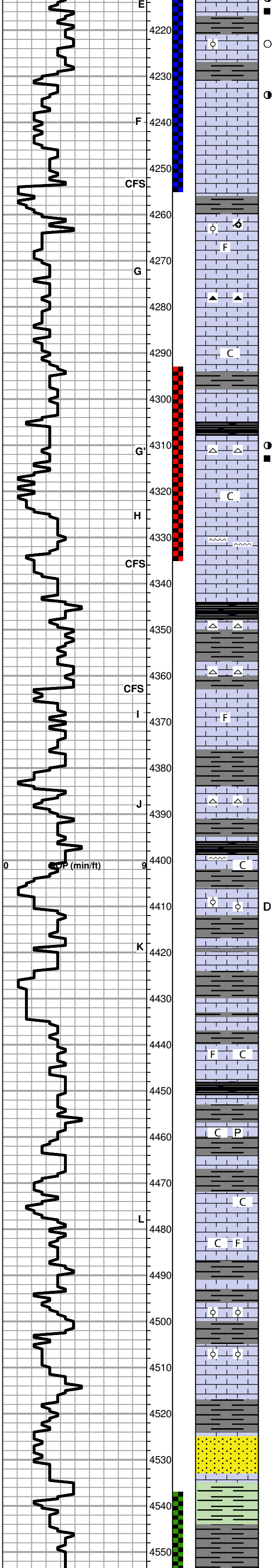
Lm - cream, fnxln, no visible porosity, dense, moderate hardness

Sh - black, carbonaceous, fissile

MUD WT. 8.9
VIS. 52
LCM: 2 LBS

MUD WT. 9.1
VIS. 52
LCM: 2 LBS

DST #1 4203 TO 4253, SEE HEADER FOR TEST SUMMARY



Lm - cream, fine pinpoint porosity, scattered dark brown stain, SFO, faint odor, UV fluorescence, chalky in part

Lm - cream, oolitic, scattered fine interxln porosity, light brown stain, NSFO, faint odor

Lm - cream, fnxln with scattered vuggy porosity, light brown oil stain, SFO, faint odor, friable, chalky in part

Lm - cream-tan, fnxln, scattered pinpoint porosity, slight stain, no odor, NSFO

Sh - dark gray, soft, blocky

Lm - cream, oolitic / oomoldic, highly porous, friable, clean and barren

Lm - cream, fnxln, slightly fossiliferous, brittle, no show, bedded chalk in part

MUD WT. 9.0
VIS. 54
LCM: 2 LBS

Lm - A / A, gray chert

Lm - cream-light gray, fnxln, brittle, chalk in part

DST #2 4293 TO 4335, SEE HEADER FOR TEST SUMMARY

MUNCIE CREEK SPL 4294 (-866) ELOG 4304 (-876)

Sh - black, carbonaceous, waxy

Lm - cream-offwhite, fnxln with scattered pinpoint porosity, some chips with scattered dark black oil stain, SFO upon crush, UV fluorescence, streaming wet cut, no odor, bedded chalk in part, white chert

Lm - cream, granular, friable, very chalky, no shows

Lm - light gray, vfxln, dense, very hard, cherty

MUD WT. 9.0
VIS. 56
LCM: 2 LBS

Sh - black, carbonaceous, firm

Lm - light gray, fnxln, gritty appearance, dull, dense, very hard, white chert

Lm - tan-medium brown, fnxln, dense, hard, opaque chert

Lm - cream-light gray, fossil clasts in fnxln matrix, dense, hard, brittle, bedded chalk in part

Lm - tan-light gray, slightly fossiliferous, medxln, brittle, slightly chalky, gray chert

STARK SPL 4391 (-963) ELOG 4394 (-966)

Sh - black, carbonaceous, fissile

Lm - tan-light gray, fossiliferous, granular, brittle, chalky, cherty

Lm - light gray-tan, oolitic, low porosity, brittle, few chips with gilsonitic stain, NSFO, no odor

Lm - tan, fine interxln porosity, dense, very hard, large amount of brown soft blocky shale

Lm - cream-light gray, fossil fragments in fnxln matrix, well cemented, dense, hard

Lm - cream, fnxln, slightly fossiliferous, dense, hard, chalky and barren

Sh - black, carbonaceous, fissile

Lm - light brown-gray, fnxln, dense, hard, chalky in part, pyrite

Lm - tan, vfxln, dense, hard, clean and barren

Lm - cream-tan, granular, friable, chalky

Lm - tan, dull, fossiliferous, granular, brittle, chalky

BKC SPL 4491 (-1063) ELOG 4491 (-1063)

Sh - light brown, soft, blocky

Lm - tan, oolitic, fine interxln porosity, dense, brittle, barren

Lm, cream-tan, oolitic, granular, brittle, no odor, NSFO

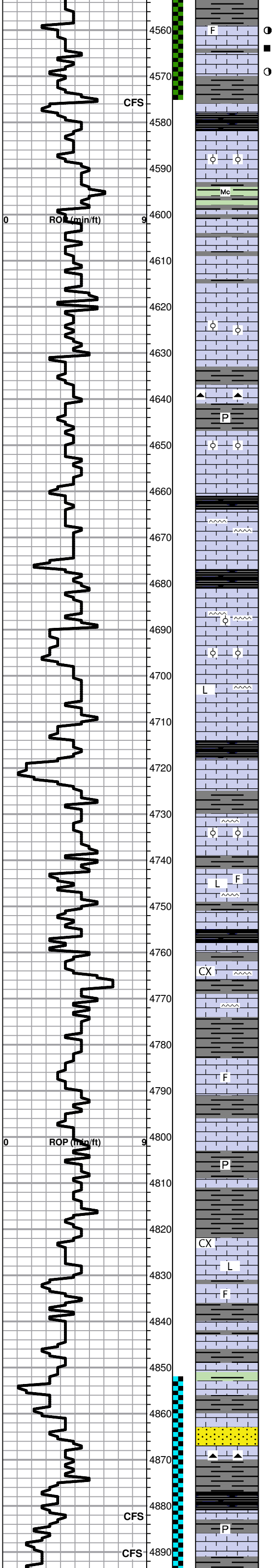
Lm - cream-tan, fnxln, scattered vuggy porosity, dense, brittle, NSFO, no odor

Ss - light green-gray clusters, very fine grained to sucrosic, well sorted, well rounded quartz, calcareous cement, well cemented, firm, no UV fluorescence, no odor, no show

Sh - greenish gray, soft, blocky, gritty, some sticky clumps

Sh - dark gray, soft, blocky

DST #3 4537 TO 4575, SEE HEADER FOR TEST SUMMARY



MARMATON SPL 4555 (-1127) ELOG 4560 (-1132)

Lm - offwhite, fnxln, slightly fossiliferous, scattered pinpoint and vuggy porosity, dark brown oil stain, SFO upon crush, limited porosity, good UV fluorescence

Lm - light brown, scattered light brown stain, SFO upon crush, very tight, limited porosity

Sh - medium gray, soft, blocky

Sh - black carbonaceous, waxy

Lm - cream-medium brown, oolitic, glauconitic, no visible porosity, dense, very hard

Sh - dark greenish gray, soft, blocky, waxy with black micaceous specks

Sh - medium gray, firm, blocky

Lm - cream-light gray, microxln, dense, very hard

Lm - tan-light brown, oolitic, dense, very hard, limited porosity

Sh - dark gray, firm, blocky

Lm - dark brown, microxln, dense, very hard, black chert

Sh - dark gray, banded, fissile, pyrite

Lm - tan, oolitic, various sized oolites, no visible porosity, dense, hard

Lm, light-medium brown, microxln, dense, very hard

Sh - black, carbonaceous, waxy

Lm - medium brown, fine interxln porosity, dense, very hard, cherty

FORT SCOTT SPL 4674 (-1246) ELOG 4680 (-1252)

Sh - black, carbonaceous, firm, fissile

Lm - cream-light brown, slightly oolitic, no visible porosity, dense, hard, cherty

Lm - cream-tan, oolitic, granular, brittle, bedded chalk in part, no show

Lm - tan, fnxln to lithographic, dense, very hard, cherty

CHEROKEE SHALE SPL 4709 (-1281) ELOG 4714 (-1286)

Sh - black carbonaceous, firm, fissile

Lm - cream, fine interxln porosity, dense, very hard

Lm - tan-medium brown, oolitic with various sized oolites, secondary recrystallization, dense, very hard, no visible porosity, chery

Sh - dark gray, firm, blocky

Lm - medium brown, vfxln to lithographic, slightly fossiliferous in some, dense, extremely hard, cherty

Lm - light-medium brown, microxln, dense, very hard

ATOKA SPL 4763 (-1335) ELOG 4763 (-1335)

Lm - tan-light brown, cryptoxln, dense, very hard, brittle, cherty

Lm - light-medium brown, vfxln, dense, hard, brittle, cherty

Lm - tan, dark fossil clasts in vfxln matrix, dense, very hard

Sh - dark gray-black, carbonaceous, fissile

Sh - dark gray, firm, blocky, pyrite

Lm - medium brown-dark gray, cryptoxln, dense, very hard

Lm - tan, lithographic, dense, very hard

Lm - cream-tan, fossiliferous, granular, firm, no show

Lm - dark gray, gritty, hard, brittle

Sh - green-black, banded, firm, fissile

Sh - dark gray-black, carbonaceous, firm

Ss - white, sucrosic, well sorted, well rounded, well cemented, hard

Lm - dark gray, dense, brittle, black chert

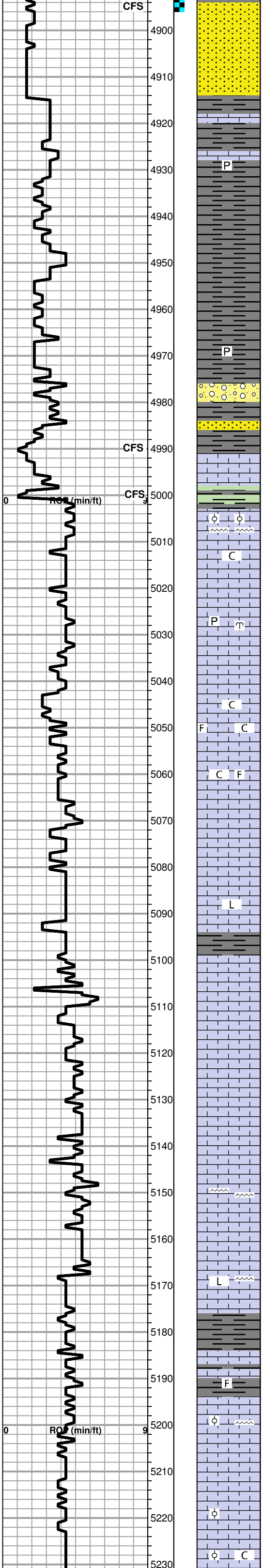
MORROW SHALE SPL 4874 (-1446) ELOG 4877 (-1449)

Sh - black, carbonaceous, waxy, some dark green, banded, firm, blocky

Sh - dark gray, soft, fissile, pyrite

MUD WT. 9.3
VIS. 60
LCM: 4 LBS

DST #4 4852 TO 4895, SEE HEADER FOR TEST SUMMARY



UPPER SANDSTONE SPL 4882 (-1454) ELOG 4894 (-1466)

Ss - light gray-green, very fine grained, well rounded, well sorted, glauconitic, well cemented, firm, some with clay matrix, NSFO, no odor, no fluorescence

Sh - dark gray, gritty, silty, very firm, blocky

Sh - medium-dark gray, firm, blocky, silty, pyrite

Sh - medium gray, soft, silty

Sh - light-medium gray, soft, sticky

Sh - light brown, earthy, gritty, silty, flakey

Sh - lime green, soft, waxy, pyrite

Conglomerate - various color and sizes of Lm and quartz well cemented, calcite cement, glauconite specks, dense, very hard

Ss - fine clear quartz grains, well rounded, well sorted, well cemented, tight, no shows

Lm - cream, clastic with varied quartz sized grains, well cemented, hard

Sh - light green-gray, soft, fissile

MUD WT. 9.3
VIS. 53
LCM: 4 LBS

MISSISSIPPIAN SPL 5000 (-1572) ELOG 5002 (-1574)

Lm - medijm brown, oolitic, large oolites, friable

Lm - bright white, sandy quartz grains, sucrosic upon crush, friable, cherty

Lm - light gray, sandy, friable, chalky

Lm - white, sandy, friable, some chalk, pyrite, bryozoans

Lm - white, sandy, well cemented, firm, bedded chalk

Lm - A/A, with white sticky chalk, white wash

Lm - cream-tan, granular, fossil clasts, brittle, highly chalky

Lm - cream, fnxln-granular, sandy, slightly fossiliferous, chalky, brittle

Lm - cream, suboolitic, fine interxln porosity, brittle

Lm - cream-tan, fine interxln porosity, dense, brittle, bedded chalk in part

Lm - tan, fnxln to lithographic, hard, brittle

Lm - tan-light brown, hard, brittle

HOLE IN PIPE

Lm - cream, lithographic, dense, very hard

Lm - medium brown, fine interxln porosity, dense, very hard

Lm - cream-tan, microxln, dense, very hard, bedded chalk in part

Lm - cream, microxln, dense, very hard, bedded chalk, cherty

Lm - light brown, lithographic, dense, very hard, bedded chalk in part, cherty

HOLE IN PIPE

Sh - medium gray, firm, blocky

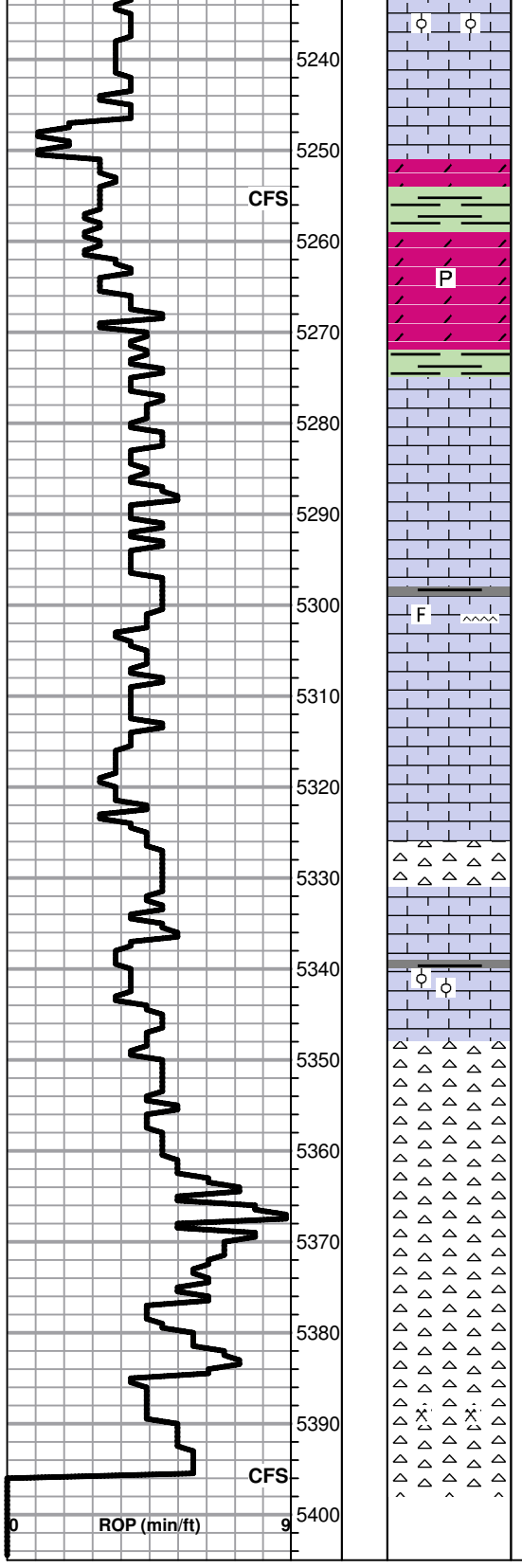
Lm - cream-tan, fossiliferous, dense, moderately hard, brittle

Lm - tan, oolitic, well cemented with recrystallized cement, hard, brittle, bedded chalk, chert

Lm - A/A

Lm - tan, oolitic, limited porosity, some chips with gilsonitic stain, bedded chalk throughout, brittle, NSFO

Lm - cream-tan, oolitic, tight, brittle, chalky



Lm - light-medium brown, oolitic, varied sized oolites, low porosity, brittle

SPERGEN SPL 5244 (-1816) ELOG 5252 (-1824)

Dolo - light brown, fnxln, very hard, no show

HOLE IN PIPE

REPLACE MUD PUMP

Dolo - medium brown, vfxln, very hard, NSFO, no odor, pyrite

Lm - light gray, mottled, granular, well cemented, hard, brittle

Lm - light gray, mottled, fine interxln porosity, hard, brittle

Lm - light gray, various sized fossil clasts in vfxln matrix, dense, hard, cherty

Lm - offwhite-light gray, sandy, fnxln, dense, hard

Chert - bright white-light gray, black specks, dense, hard, brittle

Lm - medium brown, oolitic, various sized fossil fragments, fine interxln porosity, dense, hard

Chert - white, fossiliferous, dense, very hard, brittle

MUD WT. 9.3
VIS. 56
LCM: 2 LBS

Chert - A/A, with opaque milky appearance

Chert - bright white, oolitic, dense, extremely hard

Chert - white, granular, hard, brittle, chalky in part

Chert - white-light gray, opaque with sponge spicules, hard, brittle

RTD 5395 (-1967) LTD 5397 (-1969)