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 # 30606
Name: Murfin Drilling Co., Inc.
Address 1: 250 N WATER STE 300
Address 2:
City: WICHITA State: KS Zip: 67202 + 1216
Contact Person: Rob Kramer
Phone: (316) 267-3241
CONTRACTOR: License # 30606
Name: Murfin Drilling Co., Inc.
Wellsite Geologist: Brad Rine
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 #:

02/17/2020	02/25/2020	04/03/2020
Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date

API No.: 15-023-21533-00-00
Spot Description:
__ - N2 - NW - SE Sec. 24 Twp. 2 S. R. 38 ☐ East ☑ West
2310 Feet from ☐ North / ☑ South Line of Section
1980 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: Cheyenne
Lease Name: DORSCH Well #: 1-24
Field Name:
Producing Formation: LKC
Elevation: Ground: 3373 Kelly Bushing: 3378
Total Vertical Depth: 5100 Plug Back Total Depth:
Amount of Surface Pipe Set and Cemented at: 306 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: 800 ppm Fluid volume: 400 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: 06/11/2020
☐ **Confidential Release Date:** 06/11/2022
☑ **Wireline Log Received** ☑ **Drill Stem Tests Received**
☑ **Geologist Report / Mud Logs Received**
☐ **UIC Distribution**
ALT ☑ **I** ☐ **II** ☐ **III** **Approved by:** Karen Ritter **Date:** 06/11/2020

Page Two

Operator Name: Murfin Drilling Co., Inc. Lease Name: DORSCH Well #: 1-24

Sec. 24 Twp. 2 S. R. 38 ☐ East ☑ West County: Cheyenne

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

Geologist Report / Mud Logs ☑ Yes ☐ No

List All E. Logs Run:
Attached

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

Name	Top	Datum
see attached	see attached	see 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	12.250	8.625	23	306	Class A	285	3% cc, 2% gel
Production	7.875	5.500	15.5	5098	SMD, EA2	525	1/2# flo-cel,10% salt, 5% cal-seal, 1/2# p

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	-			
	-			

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: ☐ 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)*

PRODUCTION INTERVAL:

Top	Bottom

Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record *(Amount and Kind of Material Used)*
4	4424	4430			250 gals 20% MCA,

TUBING RECORD: Size: Set At: Packer At:

Mail to: KCC - Conservation Division, 266 N. Main, Suite 220, Wichita, Kansas 67202

Form	ACO1 - Well Completion
Operator	Murfin Drilling Co., Inc.
Well Name	DORSCH 1-24
Doc ID	1509519

All Electric Logs Run

DUCP
DIL
MEL
BHCS

Form	ACO1 - Well Completion
Operator	Murfin Drilling Co., Inc.
Well Name	DORSCH 1-24
Doc ID	1509519

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	12.250	8.625	23	306	Class A	285	3% cc, 2% gel
Production	7.875	5.500	15.5	5098	SMD, EA2	525	1/2# flo-cel,10% salt, 5% cal-seal, 1/2# per SX flo-cel, 1/4% D-AIR, 3/4%, CFR-1.

CEMENT TREATMENT REPORT

Customer:	Murfin Drilling	Well:	Dorsch #1-24	Ticket:	ICT 3275
City, State:	Oakley Ks	County:	Cheyenne	Date:	2/17/2020
Field Rep:		S-T-R:	24-2S-37W	Service:	Surface

Downhole Information	
Hole Size:	12 .25 in
Hole Depth:	306 ft
Casing Size:	8 5/8 in
Casing Depth:	306 ft
Tubing / Liner:	in
Depth:	ft
Tool / Packer:	
Depth:	ft
Displacement:	18.2 bbls

Calculated Slurry	
Weight:	14.8 # / sx
Water / Sx:	6.00 gal / sx
Yield:	1.41 ft^3 / sx
Bbls / Ft.:	
Depth:	ft
Annular Volume:	0 bbls
Excess:	
Total Slurry:	71.5 bbls
Total Sacks:	285 sx

Product	% / #	#
Class A	100.00	26790
Poz		
Gel	2.00	536
CaCl	3.00	804
Gypsum		
Metso		
Kol Seal		
Flo Seal		
Salt (bww)		
	Total	28,130

TIME	RATE	PSI	BBLs	REMARKS
600P				GOT TO LOCATION
610P				SAFTY MEETING
620P				RIG UP
709P	4.0	150.0	5.0	H2O AHEAD
711P	5.5	300.0	71.5	CEMENT 285 SKS H325
725P	4.0	400.0	18.2	DISPLACE H2O
730P				SHUT IN
735P				RIG DOWN
800P				LEFT LOCATION

	CREW	UNIT
Cementer:	Josh Mosier	29
Pump Operator:	Jesse Jones	208
Bulk #1:	Joe	242
Bulk #2:		

SUMMARY		
Average Rate	Average Pressure	Total Fluid
4.5 bpm	283 psi	95 bbls

Hurricane Services, Inc.
250 N. Water
Wichita, KS 67202

JOB LOG

SWIFT Services, Inc.

DATE	PAGE NO.
02/26/2020	1

CUSTOMER	WELL NO.	LEASE	JOB TYPE	TICKET NO.
Murfin Drilling Co	1-24	Dersch	Long String	032754

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS T	PUMPS C	PRESSURE (PSI) TUBING	PRESSURE (PSI) CASING	DESCRIPTION OF OPERATION AND MATERIALS
	1545							On location w/ Float Equipment
								RTD - 5100'
								121 Jts of 5½" x 15½# set at 5098'
								Shoe Jt - 20.88', Baffle Plate - 5077'
								Turbolizers - 1-13, 34, 44
								Baskets - 11, 35, 45
	1630							Start Casing w/ Float Equip
			–					Break Circ ½ way, 600# Jt
	1830							Break Circ on Bottom
	1930	2	8					Plug Rathole w/ 30 sks SMD
		2	5					Plug Mousehole w/ 15 sks SMD
		5	12				400	Pump Mudflush
		5	20				400	Pump KCL Spacer
		7					400	Start SMD Cmt at 11.2 ppg - 325 sxs
		7	180				300	Fin SMD, Start EA-2 Cmt - 200 sxs
	2030	7	228				Vac	Fin Cmt, Shut Down
							Vac	Drop Plug, Washout Pump + Lines
								Start Displacement
		8	72				600	Catch Cmt
		6	120				1800	Lift PSI 1800#
	2100	6	121				2300	Land Plug 2300#
								Cmt Circulated to Surface, 30 sks to pit.
								Release Truck, Dry
								Washup,
								Rackup
	2145							Job Complete
								Thank You
								Jon, Austin, Kirby, Isaac

	MDCI Dorsch #1-24 2310FSL 1980FEL Sec. 24-T2S-R38W 3378' KB					
Formation	Sample top	Datum	Ref	Log Top	Datum	Ref
Anhydrite	3260	+118	-15	3259	+119	-14
B/Anhydrite	3296	+82	-14	3296	+82	-14
Topeka	4074	-696	-15	4075	-697	-16
Oread	4219	-841	-15	4223	-845	-20
Lansing	4295	-917	-16	4292	-914	-12
Stark	4525	-1147	-18	4527	-1149	-20
Mound City	4576	-1198	-18	4577	-1199	-19
Ft Scott	4704	-1326	-16	4703	-1325	-15
Oakley	4780	-1402	-18	4781	-1403	-19
Mississippian	5008	-1630	-18	5005	-1627	-15
RTD	5100					
LTD				5103		

DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co. Inc.**

250 N. Water STE 300
Wichita KS 67202

ATTN: Brad Rine

Dorsch #1-24

24-2s-38w Cheyenne,KS

Start Date: 2020.02.21 @ 20:21:00

End Date: 2020.02.22 @ 03:06:20

Job Ticket #: 66527 DST #: 1

Trilobite Testing, Inc

1515 Commerce Parkway Hays, KS 67601

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

Printed: 2020.02.26 @ 09:54:35

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

250 N. Water STE 300
Wichita KS 67202

ATTN: Brad Rine

24-2s-38w Cheyenne,KS

Dorsch #1-24

Job Ticket: 66527 **DST#: 1**

Test Start: 2020.02.21 @ 20:21:00

GENERAL INFORMATION:

Formation: **Oread - LKC " A "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 22:09:10
Time Test Ended: 03:06:20

Test Type: Conventional Bottom Hole (Initial)
Tester: Ryan Nichols
Unit No: 71

Interval: 4168.00 ft (KB) To 4312.00 ft (KB) (TVD)
Total Depth: 4312.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

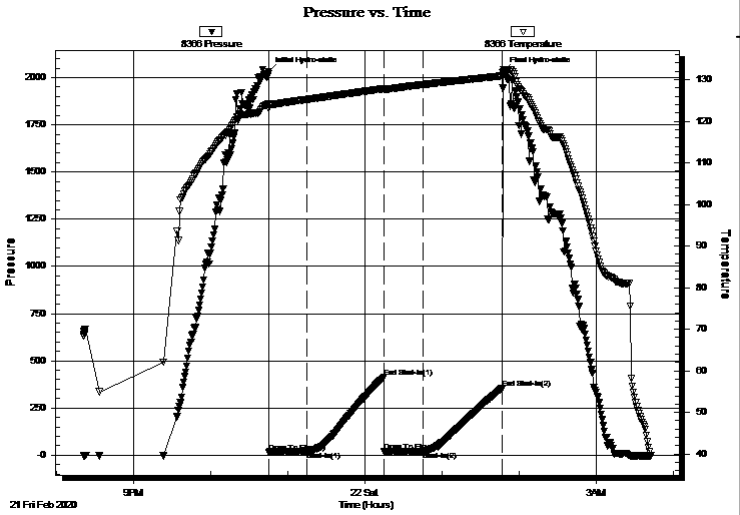
Reference Elevations: 3378.00 ft (KB)
3373.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8366 **Outside**

Press@RunDepth: 21.48 psig @ 4169.00 ft (KB)
Start Date: 2020.02.21 End Date: 2020.02.22
Start Time: 20:21:01 End Time: 03:42:20

Capacity: 8000.00 psig
Last Calib.: 2020.02.22
Time On Btm: 2020.02.21 @ 22:45:00
Time Off Btm: 2020.02.22 @ 01:47:09

TEST COMMENT:
30 IF - Blow built to 1"
60 ISI - No return
30 FF - No blow
60 FSI - No return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2032.94	124.17	Initial Hydro-static
1	16.20	122.99	Open To Flow (1)
30	19.42	125.25	Shut-In(1)
90	413.22	127.82	End Shut-In(1)
90	19.85	127.59	Open To Flow (2)
120	21.48	128.80	Shut-In(2)
182	354.90	130.90	End Shut-In(2)
183	2031.06	131.58	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud - 100%M	0.02

Gas Rates

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

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

250 N. Water STE 300
Wichita KS 67202

ATTN: Brad Rine

24-2s-38w Cheyenne,KS

Dorsch #1-24

Job Ticket: 66527 **DST#: 1**

Test Start: 2020.02.21 @ 20:21:00

GENERAL INFORMATION:

Formation: **Oread - LKC " A "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 22:09:10
Time Test Ended: 03:06:20

Test Type: Conventional Bottom Hole (Initial)
Tester: Ryan Nichols
Unit No: 71

Interval: 4168.00 ft (KB) To 4312.00 ft (KB) (TVD)
Total Depth: 4312.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

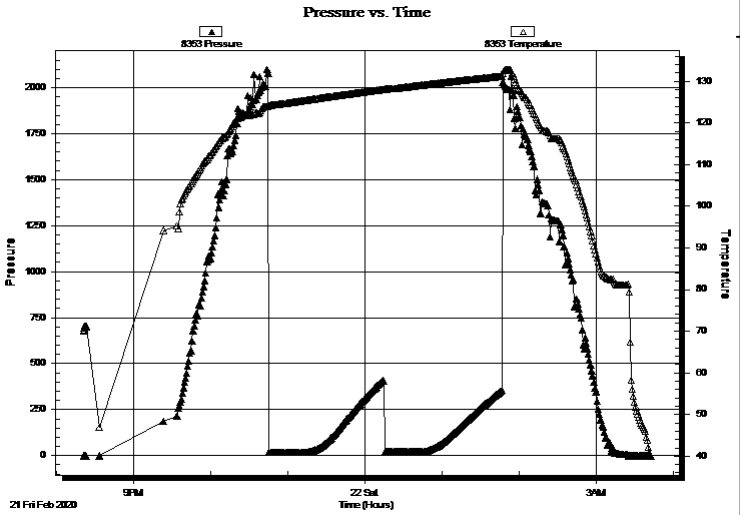
Reference Elevations: 3378.00 ft (KB)
3373.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8353 **Inside**

Press@RunDepth: psig @ 4169.00 ft (KB)
Start Date: 2020.02.21 End Date: 2020.02.22
Start Time: 20:21:01 End Time: 03:42:10

Capacity: 8000.00 psig
Last Calib.: 2020.02.22
Time On Btm:
Time Off Btm:

TEST COMMENT:
30 IF - Blow built to 1"
60 ISI - No return
30 FF - No blow
60 FSI - No return



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud - 100%M	0.02

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co. Inc.

250 N. Water STE 300
Wichita KS 67202

ATTN: Brad Rine

24-2s-38w Cheyenne,KS

Dorsch #1-24

Job Ticket: 66527 **DST#: 1**

Test Start: 2020.02.21 @ 20:21:00

Tool Information

Drill Pipe:	Length:	4012.00 ft	Diameter:	3.80	inches	Volume:	56.28	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:	20000.00 lb
Drill Collar:	Length:	148.00 ft	Diameter:	2.25	inches	Volume:	0.73	bbl	Weight to Pull Loose:	60000.00 lb
						Total Volume:	57.01	bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		20.00 ft							String Weight: Initial	58000.00 lb
Depth to Top Packer:		4168.00 ft							Final	58000.00 lb
Depth to Bottom Packer:		ft								
Interval between Packers:		144.00 ft								
Tool Length:		172.00 ft								
Number of Packers:		2	Diameter:	6.75	inches					

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Shut In Tool	5.00			4145.00		
Hydraulic tool	5.00			4150.00		
Jars	5.00			4155.00		
Safety Joint	3.00			4158.00		
Packer	5.00			4163.00	28.00	Bottom Of Top Packer
Packer	5.00			4168.00		
Stubb	1.00			4169.00		
Recorder	0.00	8353	Inside	4169.00		
Recorder	0.00	8366	Outside	4169.00		
Perforations	12.00			4181.00		
Blank Spacing	128.00			4309.00		
Bullnose	3.00			4312.00	144.00	Bottom Packers & Anchor
Total Tool Length:	**172.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co. Inc.

250 N. Water STE 300
Wichita KS 67202

ATTN: Brad Rine

24-2s-38w Cheyenne,KS

Dorsch #1-24

Job Ticket: 66527 **DST#: 1**

Test Start: 2020.02.21 @ 20:21:00

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:	61.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	5.59 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	600.00 ppm				
Filter Cake:	2.00 inches				

Recovery Information

Recovery Table

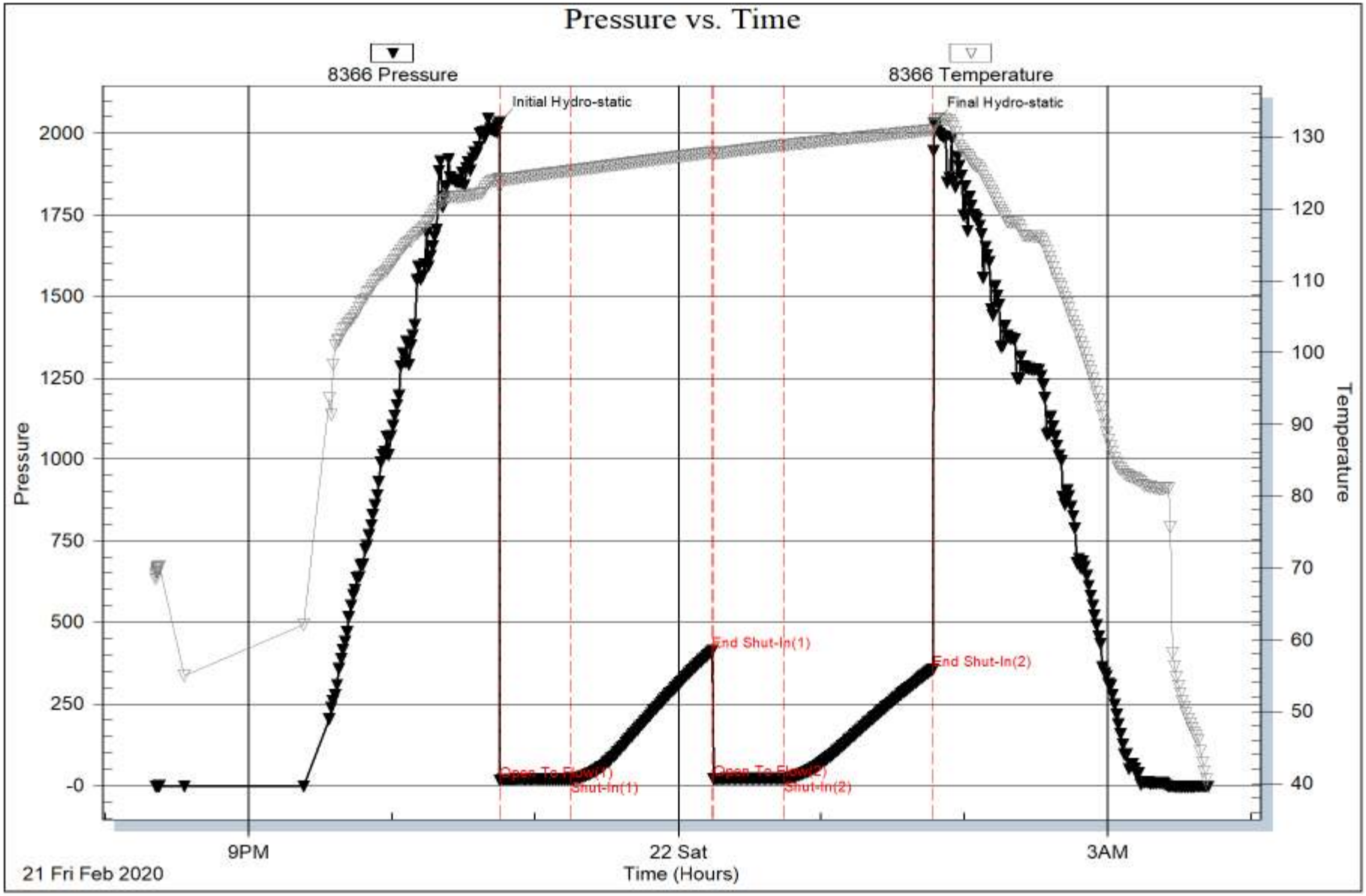
Length ft	Description	Volume bbl
5.00	Mud - 100%M	0.025

Total Length: 5.00 ft Total Volume: 0.025 bbl

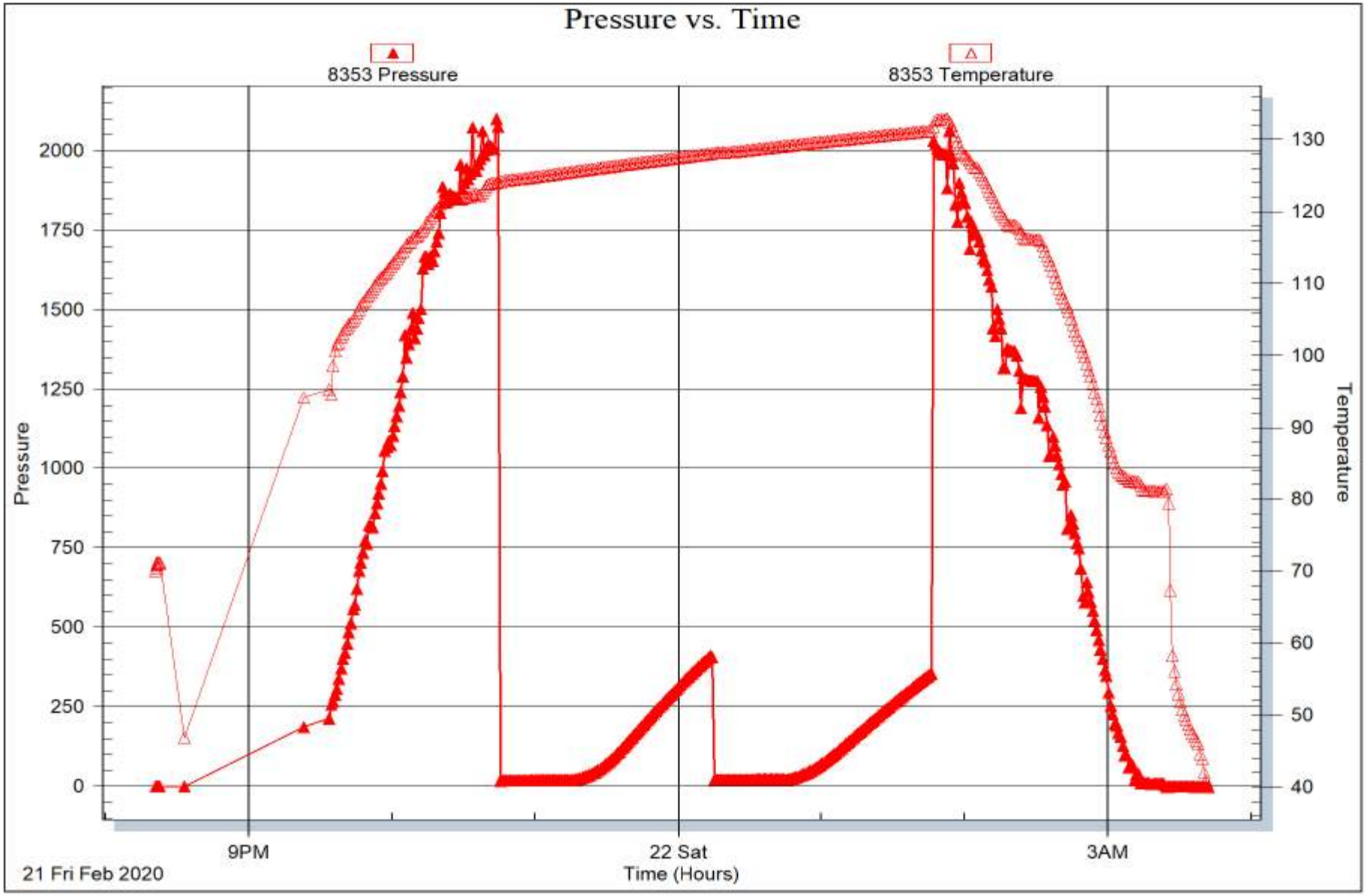
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

Laboratory Name: Laboratory Location:

Recovery Comments:


Pressure vs. Time
8366 Pressure
8366 Temperature
Initial Hydro-static
Final Hydro-static
End Shut-In(1)
End Shut-In(2)
Open To Flow(1)
Shut-In(1)
Open To Flow(2)
Shut-In(2)
Pressure
Temperature
2000
1750
1500
1250
1000
750
500
250
-0
130
120
110
100
90
80
70
60
50
40
9PM
22 Sat
3AM
21 Fri Feb 2020
Time (Hours)

Serial #: 8353 **Inside** Murfin Drilling Co. Inc. Dorsch #1-24 DST Test Number: 1



Trilobite Testing, Inc Ref. No: 66527 Printed: 2020.02.26 @ 09:54:35

DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co. Inc.**

250 N. Water STE 300
Wichita KS 67202

ATTN: Brad Rine

Dorsch #1-24

24-2s-38w Cheyenne,KS

Start Date: 2020.02.22 @ 18:11:00

End Date:

Job Ticket #: 66528 DST #: 2

Trilobite Testing, Inc

1515 Commerce Parkway Hays, KS 67601

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

Printed: 2020.02.26 @ 09:54:00

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

250 N. Water STE 300
Wichita KS 67202

ATTN: Brad Rine

24-2s-38w Cheyenne,KS

Dorsch #1-24

Job Ticket: 66528 **DST#: 2**

Test Start: 2020.02.22 @ 18:11:00

GENERAL INFORMATION:

Formation: **LKC " G "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 20:28:40
Time Test Ended:

Test Type: Conventional Bottom Hole (Reset)
Tester: Ryan Nichols
Unit No: 71

Interval: 4376.00 ft (KB) To 4440.00 ft (KB) (TVD)
Total Depth: 4440.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

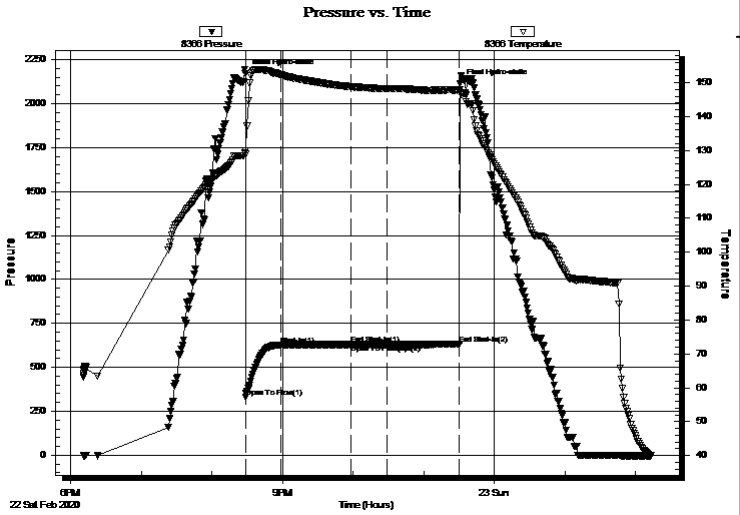
Reference Elevations: 3378.00 ft (KB)
3373.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8366 **Outside**

Press@RunDepth: 629.64 psig @ 4377.00 ft (KB)
Start Date: 2020.02.22 End Date: 2020.02.23
Start Time: 18:11:01 End Time: 02:13:40

Capacity: 8000.00 psig
Last Calib.: 2020.02.23
Time On Btm: 2020.02.22 @ 20:28:30
Time Off Btm: 2020.02.22 @ 23:31:00

TEST COMMENT:
30 IF - BoB @ 1 min
60 ISI - No return
30 FF- No blow
60 FSI - No return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2170.72	129.91	Initial Hydro-static
1	328.77	128.95	Open To Flow (1)
30	624.95	152.28	Shut-In(1)
90	629.53	148.82	End Shut-In(1)
90	629.31	148.82	Open To Flow (2)
120	629.64	148.20	Shut-In(2)
182	630.01	147.87	End Shut-In(2)
183	2115.47	147.08	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
60.00	OWCM - 20%o - 20%W - 60%M	0.30
877.00	OMCW - 20%o - 5%M - 75%W	11.50
315.00	GOMCW - 10%G - 20%o - 30%M - 40%W	4.42
284.00	OWCM - 20%o -20%W - 60%M	3.98

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

250 N. Water STE 300
Wichita KS 67202

ATTN: Brad Rine

24-2s-38w Cheyenne,KS

Dorsch #1-24

Job Ticket: 66528 **DST#: 2**

Test Start: 2020.02.22 @ 18:11:00

GENERAL INFORMATION:

Formation: **LKC " G "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 20:28:40
Time Test Ended:

Test Type: Conventional Bottom Hole (Reset)
Tester: Ryan Nichols
Unit No: 71

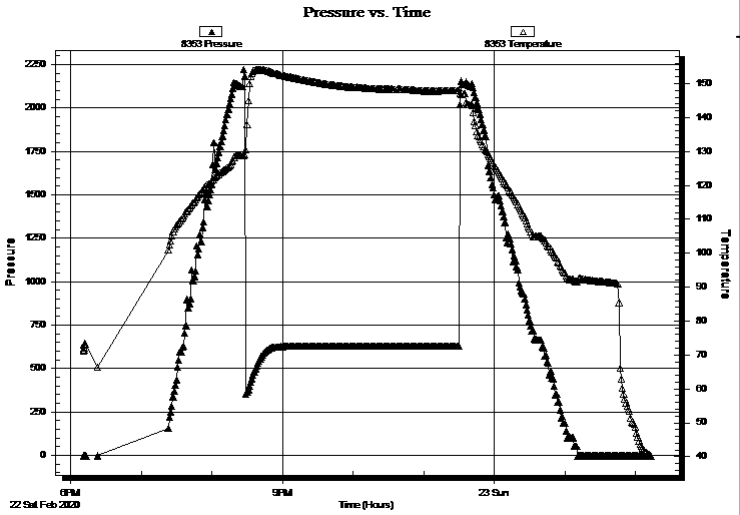
Interval: 4376.00 ft (KB) To 4440.00 ft (KB) (TVD)
Total Depth: 4440.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 3378.00 ft (KB)
3373.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8353 **Inside**

Press@RunDepth:	psig @	4377.00 ft (KB)		Capacity:	8000.00 psig
Start Date:	2020.02.22	End Date:	2020.02.23	Last Calib.:	2020.02.23
Start Time:	18:11:01	End Time:	02:13:40	Time On Btm:	
				Time Off Btm:	

TEST COMMENT:
30 IF - BoB @ 1 min
60 ISI - No return
30 FF- No blow
60 FSI - No return



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
60.00	OWCM - 20%o - 20%W - 60%M	0.30
877.00	OMCW - 20%o - 5%M - 75%W	11.50
315.00	GOMCW - 10%G - 20%o - 30%M - 40%W	4.42
284.00	OWCM - 20%o -20%W - 60%M	3.98

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co. Inc.

250 N. Water STE 300
Wichita KS 67202

ATTN: Brad Rine

24-2s-38w Cheyenne,KS

Dorsch #1-24

Job Ticket: 66528 **DST#: 2**

Test Start: 2020.02.22 @ 18:11:00

Tool Information

Drill Pipe:	Length:	4231.00 ft	Diameter:	3.80	inches	Volume:	59.35	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:	20000.00 lb
Drill Collar:	Length:	148.00 ft	Diameter:	2.25	inches	Volume:	0.73	bbl	Weight to Pull Loose:	80000.00 lb
						Total Volume:	60.08	bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		31.00 ft							String Weight: Initial	58000.00 lb
Depth to Top Packer:		4376.00 ft							Final	68000.00 lb
Depth to Bottom Packer:		ft								
Interval between Packers:		64.00 ft								
Tool Length:		92.00 ft								
Number of Packers:		2	Diameter:	6.75	inches					

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Shut In Tool	5.00			4353.00		
Hydraulic tool	5.00			4358.00		
Jars	5.00			4363.00		
Safety Joint	3.00			4366.00		
Packer	5.00			4371.00	28.00	Bottom Of Top Packer
Packer	5.00			4376.00		
Stubb	1.00			4377.00		
Recorder	0.00	8353	Inside	4377.00		
Recorder	0.00	8366	Outside	4377.00		
Perforations	27.00			4404.00		
Blank Spacing	33.00			4437.00		
Bullnose	3.00			4440.00	64.00	Bottom Packers & Anchor
Total Tool Length:	**92.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co. Inc.

250 N. Water STE 300
Wichita KS 67202

ATTN: Brad Rine

24-2s-38w Cheyenne,KS

Dorsch #1-24

Job Ticket: 66528 **DST#: 2**

Test Start: 2020.02.22 @ 18:11:00

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:	62.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	5.99 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	600.00 ppm				
Filter Cake:	2.00 inches				

Recovery Information

Recovery Table

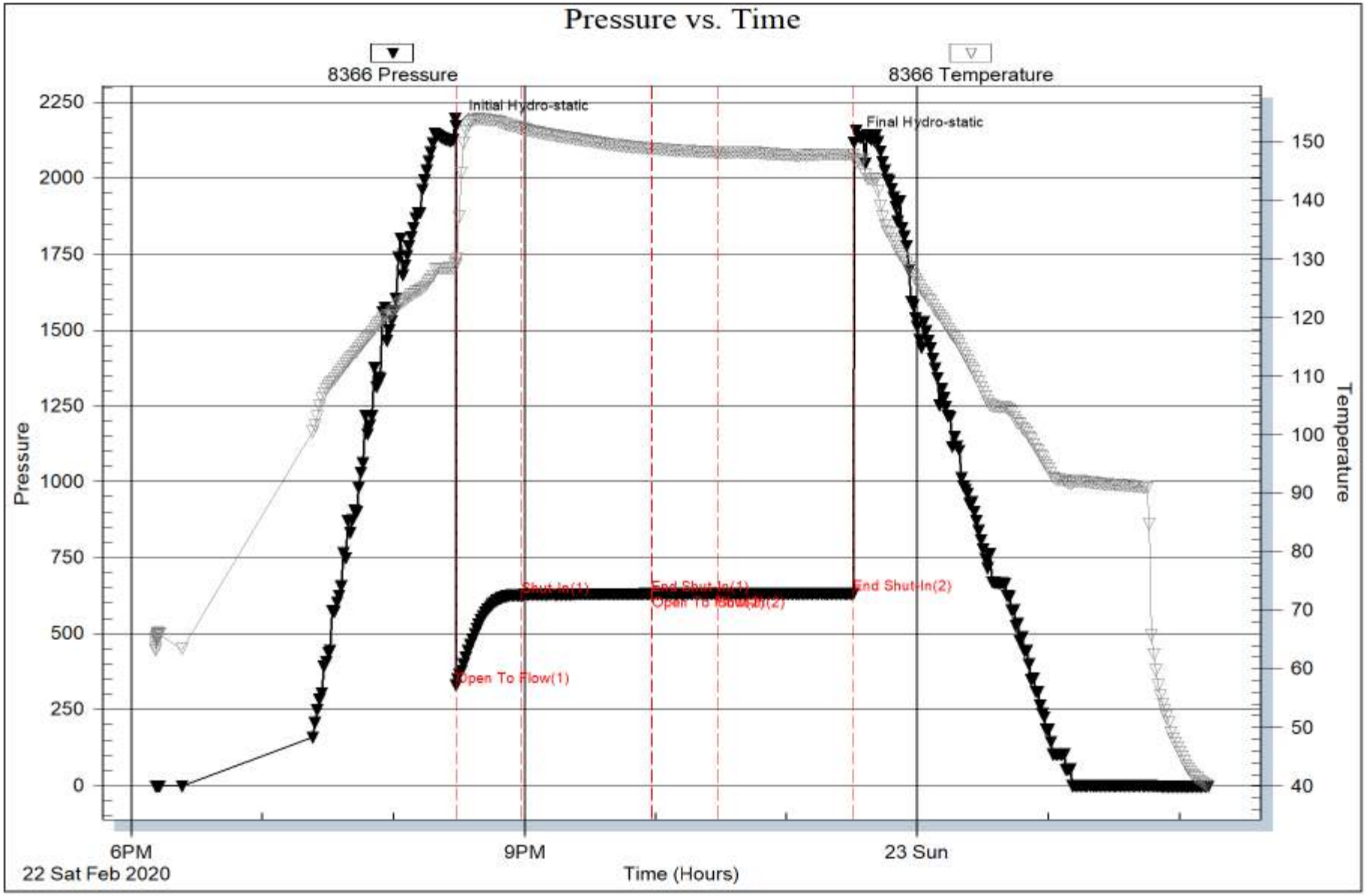
Length ft	Description	Volume bbl
60.00	OWCM - 20%o - 20%W - 60%M	0.295
877.00	OMCW - 20%o - 5%M - 75%W	11.500
315.00	GOMCW - 10%G - 20%o - 30%M - 40%W	4.419
284.00	OWCM - 20%o -20%W - 60%M	3.984

Total Length: 1536.00 ft Total Volume: 20.198 bbl

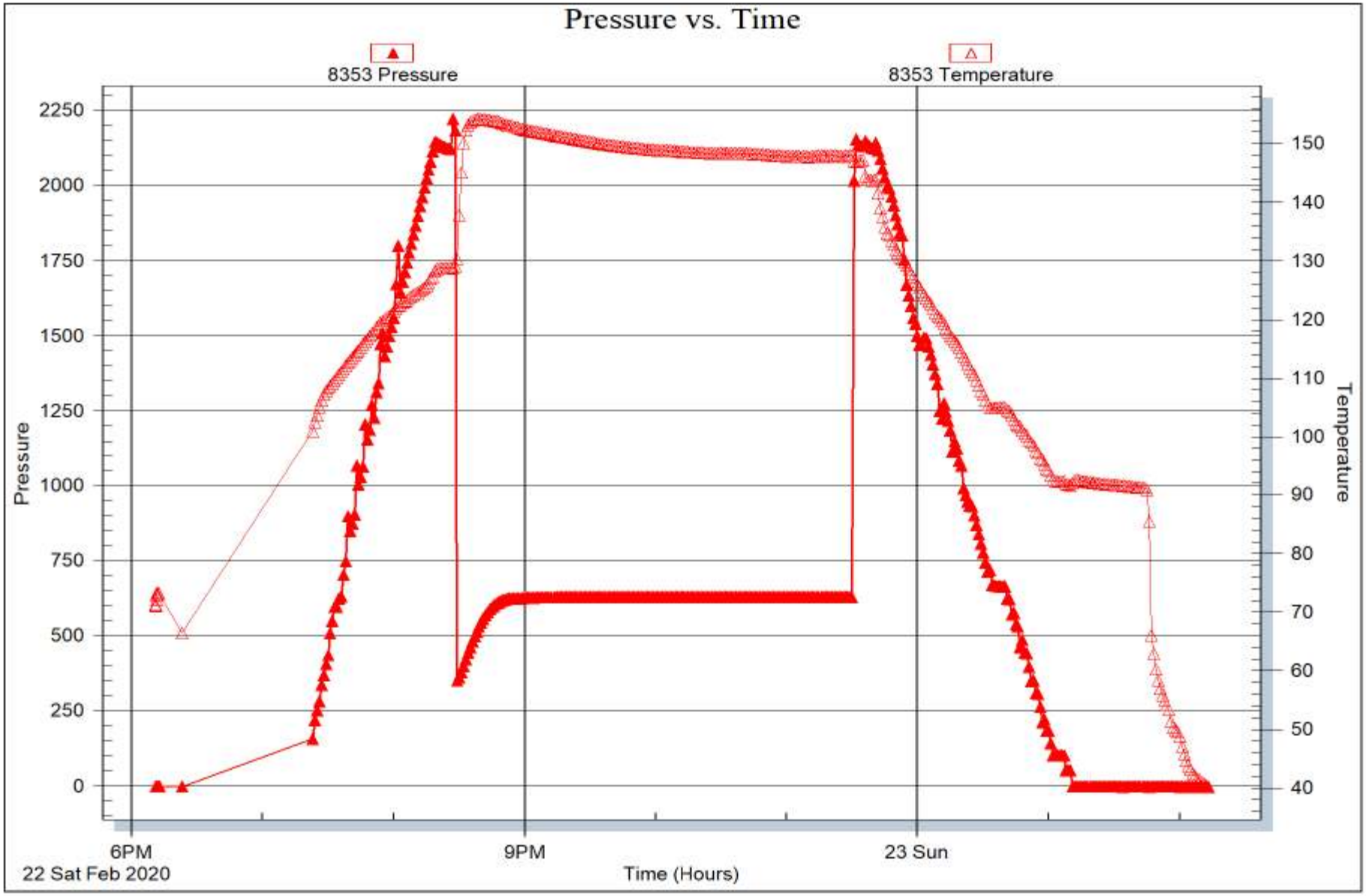
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

Laboratory Name: Laboratory Location:

Recovery Comments: left sample for mud man, couldn't get clean sample of w ater for chlorides


Pressure vs. Time
8366 Pressure
8366 Temperature
Initial Hydro-static
Final Hydro-static
Open To Flow(1)
End Shut-In(2)
Pressure
Temperature
2250
2000
1750
1500
1250
1000
750
500
250
0
150
140
130
120
110
100
90
80
70
60
50
40
6PM
22 Sat Feb 2020
9PM
23 Sun
Time (Hours)

Serial #: 8353 **Inside** Murfin Drilling Co. Inc. Dorsch #1-24 DST Test Number: 2



Trilobite Testing, Inc Ref. No: 66528 Printed: 2020.02.26 @ 09:54:01

DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co. Inc.**

250 N. Water STE 300
Wichita KS 67202

ATTN: Brad Rine

Dorsch #1-24

24-2s-38w Cheyenne,KS

Start Date: 2020.02.23 @ 14:57:00

End Date: 2020.02.23 @ 21:59:50

Job Ticket #: 66529 DST #: 3

Trilobite Testing, Inc

1515 Commerce Parkway Hays, KS 67601

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

Printed: 2020.02.26 @ 09:52:03

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

250 N. Water STE 300
Wichita KS 67202

ATTN: Brad Rine

24-2s-38w Cheyenne,KS

Dorsch #1-24

Job Ticket: 66529 **DST#: 3**

Test Start: 2020.02.23 @ 14:57:00

GENERAL INFORMATION:

Formation: **LKC " H - J "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 16:57:00
Time Test Ended: 21:59:50

Test Type: Conventional Bottom Hole (Reset)
Tester: Ryan Nichols
Unit No: 71

Interval: 4440.00 ft (KB) To 4527.00 ft (KB) (TVD)
Total Depth: 4527.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

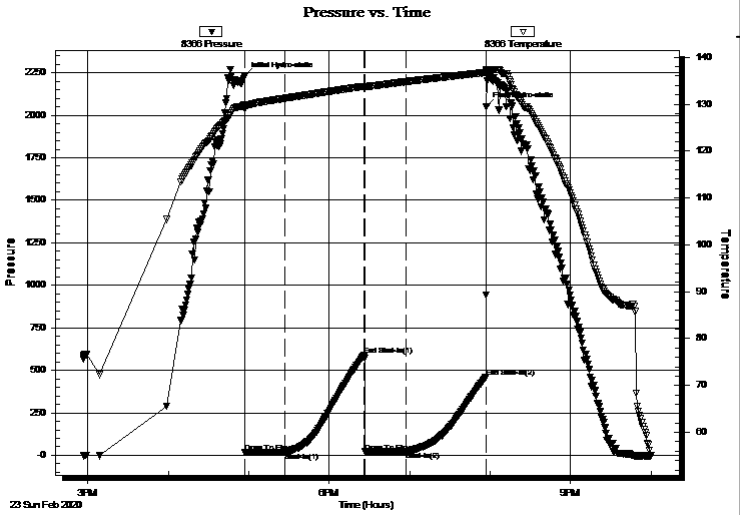
Reference Elevations: 3378.00 ft (KB)
3373.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8366 **Outside**

Press@RunDepth: 21.93 psig @ 4441.00 ft (KB)
Start Date: 2020.02.23 End Date: 2020.02.23
Start Time: 14:57:01 End Time: 21:59:50

Capacity: 8000.00 psig
Last Calib.: 2020.02.23
Time On Btm: 2020.02.23 @ 16:56:50
Time Off Btm: 2020.02.23 @ 19:57:20

TEST COMMENT: 30 IF - 1/2" blow built to 1 1/4" died back to 1"
6O ISI - No return
30 FF - No blow
60 FSI - No return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2230.40	129.86	Initial Hydro-static
1	16.89	128.92	Open To Flow (1)
31	19.45	131.26	Shut-In(1)
90	590.06	133.82	End Shut-In(1)
90	20.06	133.61	Open To Flow (2)
121	21.93	134.80	Shut-In(2)
181	458.40	136.76	End Shut-In(2)
181	2048.67	137.40	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	OCM - 30%o - 70%M	0.02

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

250 N. Water STE 300
Wichita KS 67202

ATTN: Brad Rine

24-2s-38w Cheyenne,KS

Dorsch #1-24

Job Ticket: 66529 **DST#: 3**

Test Start: 2020.02.23 @ 14:57:00

GENERAL INFORMATION:

Formation: **LKC " H - J "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 16:57:00
Time Test Ended: 21:59:50

Test Type: Conventional Bottom Hole (Reset)
Tester: Ryan Nichols
Unit No: 71

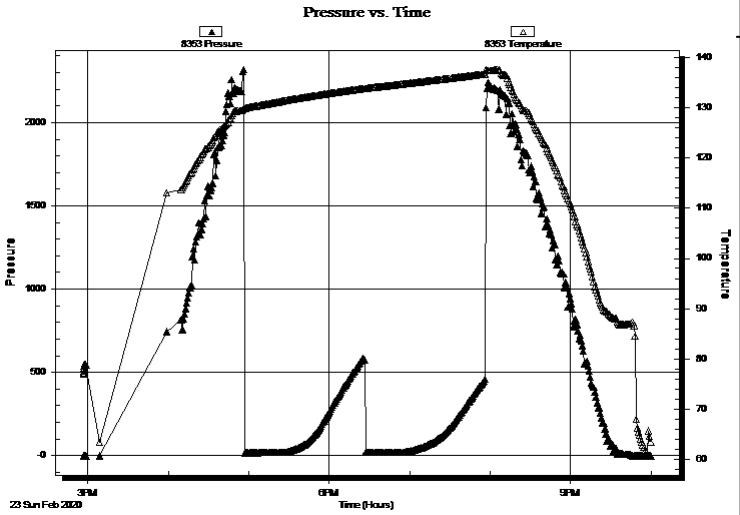
Interval: 4440.00 ft (KB) To 4527.00 ft (KB) (TVD)
Total Depth: 4527.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 3378.00 ft (KB)
3373.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8353 **Inside**

Press@RunDepth:	psig @	4441.00 ft (KB)		Capacity:	8000.00 psig
Start Date:	2020.02.23	End Date:	2020.02.23	Last Calib.:	2020.02.23
Start Time:	14:57:01	End Time:	21:59:50	Time On Btm:	
				Time Off Btm:	

TEST COMMENT: 30 IF - 1/2" blow built to 1 1/4" died back to 1"
6O ISI - No return
30 FF - No blow
60 FSI - No return



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
5.00	OCM - 30%o - 70%M	0.02

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co. Inc.

250 N. Water STE 300
Wichita KS 67202

ATTN: Brad Rine

24-2s-38w Cheyenne,KS

Dorsch #1-24

Job Ticket: 66529 **DST#: 3**

Test Start: 2020.02.23 @ 14:57:00

Tool Information

Drill Pipe:	Length:	4295.00 ft	Diameter:	3.80	inches	Volume:	60.25 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:		20000.00 lb
Drill Collar:	Length:	148.00 ft	Diameter:	2.25	inches	Volume:	0.73 bbl	Weight to Pull Loose:		80000.00 lb
						Total Volume:	60.98 bbl	Tool Chased		0.00 ft
Drill Pipe Above KB:		31.00 ft						String Weight:	Initial	60000.00 lb
Depth to Top Packer:		4440.00 ft							Final	60000.00 lb
Depth to Bottom Packer:		ft								
Interval between Packers:		87.00 ft								
Tool Length:		115.00 ft								
Number of Packers:		2	Diameter:	6.75	inches					

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Shut In Tool	5.00			4417.00		
Hydraulic tool	5.00			4422.00		
Jars	5.00			4427.00		
Safety Joint	3.00			4430.00		
Packer	5.00			4435.00	28.00	Bottom Of Top Packer
Packer	5.00			4440.00		
Stubb	1.00			4441.00		
Recorder	0.00	8353	Inside	4441.00		
Recorder	0.00	8366	Outside	4441.00		
Perforations	18.00			4459.00		
Blank Spacing	65.00			4524.00		
Bullnose	3.00			4527.00	87.00	Bottom Packers & Anchor
Total Tool Length:	**115.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co. Inc.

250 N. Water STE 300
Wichita KS 67202

ATTN: Brad Rine

24-2s-38w Cheyenne,KS

Dorsch #1-24

Job Ticket: 66529 **DST#: 3**

Test Start: 2020.02.23 @ 14:57:00

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:	60.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	5.99 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	600.00 ppm				
Filter Cake:	2.00 inches				

Recovery Information

Recovery Table

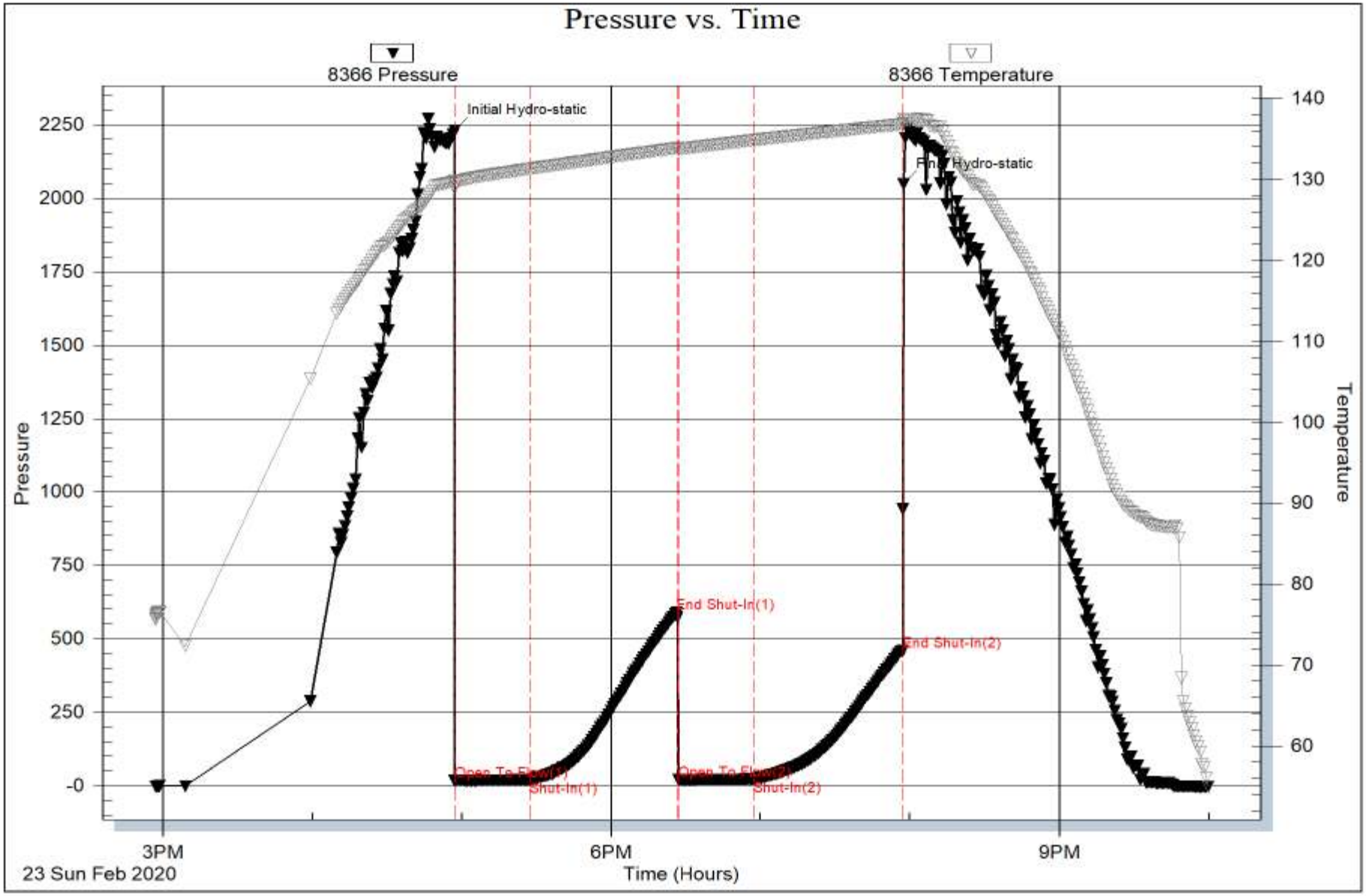
Length ft	Description	Volume bbl
5.00	OCM - 30%o - 70%M	0.025

Total Length: 5.00 ft Total Volume: 0.025 bbl

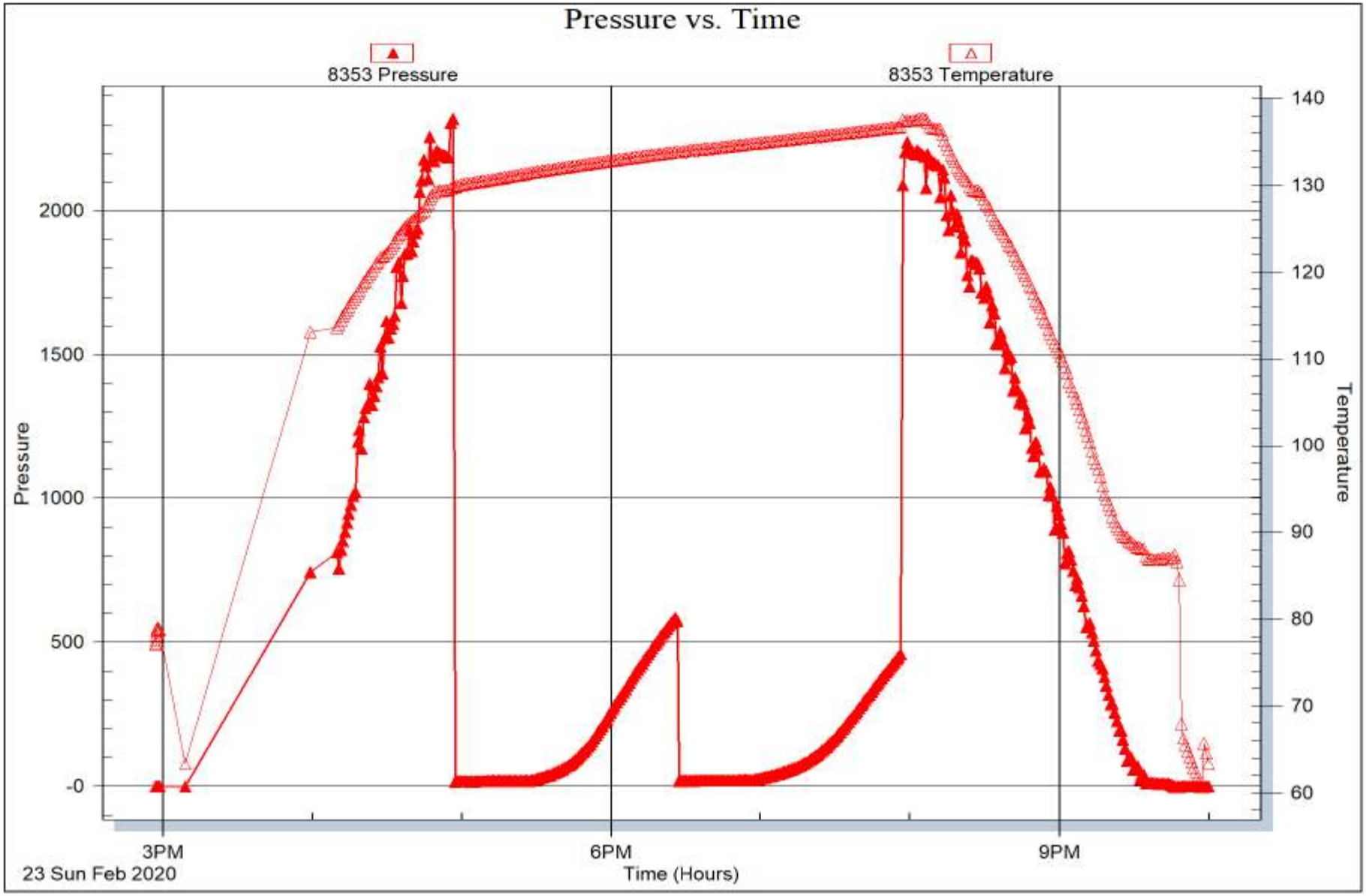
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

Laboratory Name: Laboratory Location:

Recovery Comments:


Pressure vs. Time
8366 Pressure
8366 Temperature
Initial Hydro-static
Final Hydro-static
End Shut-In(1)
End Shut-In(2)
Open To Flow(1)
Shut-In(1)
Open To Flow(2)
Shut-In(2)
Pressure
Temperature
2250
2000
1750
1500
1250
1000
750
500
250
-0
140
130
120
110
100
90
80
70
60
3PM
6PM
9PM
23 Sun Feb 2020
Time (Hours)

Serial #: 8353 **Inside** Murfin Drilling Co. Inc. Dorsch #1-24 DST Test Number: 3



Trilobite Testing, Inc Ref. No: 66529 Printed: 2020.02.26 @ 09:52:04

DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co. Inc.**

250 N. Water STE 300
Wichita KS 67202

ATTN: Brad Rine

Dorsch #1-24

24-2s-38w Cheyenne,KS

Start Date: 2020.02.25 @ 05:08:00

End Date: 2020.02.25 @ 13:04:00

Job Ticket #: 66530 DST #: 4

Trilobite Testing, Inc

1515 Commerce Parkway Hays, KS 67601

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

Printed: 2020.02.26 @ 09:51:25

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.

250 N. Water STE 300
Wichita KS 67202

ATTN: Brad Rine

24-2s-38w Cheyenne,KS

Dorsch #1-24

Job Ticket: 66530 **DST#: 4**

Test Start: 2020.02.25 @ 05:08:00

GENERAL INFORMATION:

Formation: **Ft. Scott - Celia**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 08:05:30
Time Test Ended: 13:04:00

Test Type: Conventional Bottom Hole (Reset)
Tester: Ryan Nichols
Unit No: 71

Interval: 4679.00 ft (KB) To 4805.00 ft (KB) (TVD)
Total Depth: 4805.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

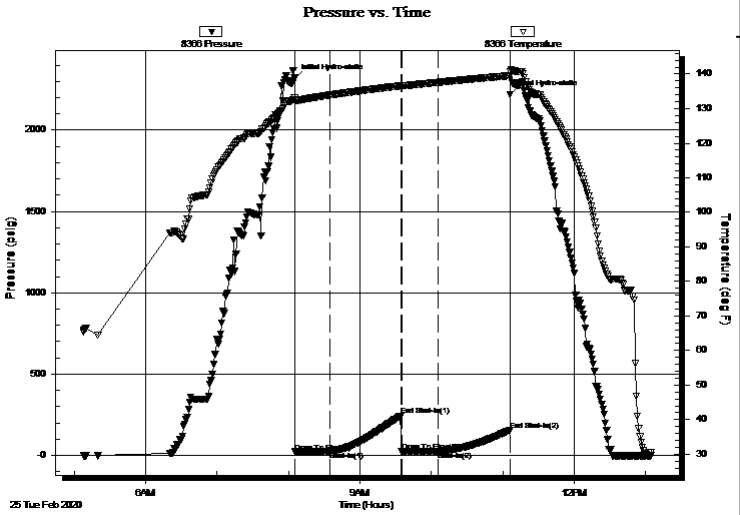
Reference Elevations: 3378.00 ft (KB)
3373.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8366 **Outside**

Press@RunDepth: 24.00 psig @ 4680.00 ft (KB)
Start Date: 2020.02.25 End Date: 2020.02.25
Start Time: 05:08:01 End Time: 13:04:00

Capacity: 8000.00 psig
Last Calib.: 2020.02.25
Time On Btm: 2020.02.25 @ 08:05:10
Time Off Btm: 2020.02.25 @ 11:06:00

TEST COMMENT:
30 IF - Blow built to 3" died back to 1 1/2" (in diesel)
60 ISI - No return
30 FF - No blow
60 FSI - No return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2319.53	133.04	Initial Hydro-static
1	21.24	132.16	Open To Flow (1)
30	22.74	133.93	Shut-In(1)
90	244.48	136.60	End Shut-In(1)
90	22.19	136.52	Open To Flow (2)
121	24.00	137.61	Shut-In(2)
181	153.69	139.53	End Shut-In(2)
181	2218.03	140.55	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud w / oil spots in tool - 100%M	0.02

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

Murfin Drilling Co. Inc.
250 N. Water STE 300
Wichita KS 67202

ATTN: Brad Rine

24-2s-38w Cheyenne,KS

Dorsch #1-24

Job Ticket: 66530 **DST#: 4**

Test Start: 2020.02.25 @ 05:08:00

GENERAL INFORMATION:

Formation: **Ft. Scott - Celia**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 08:05:30
Time Test Ended: 13:04:00

Test Type: Conventional Bottom Hole (Reset)
Tester: Ryan Nichols
Unit No: 71

Interval: 4679.00 ft (KB) To 4805.00 ft (KB) (TVD)
Total Depth: 4805.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

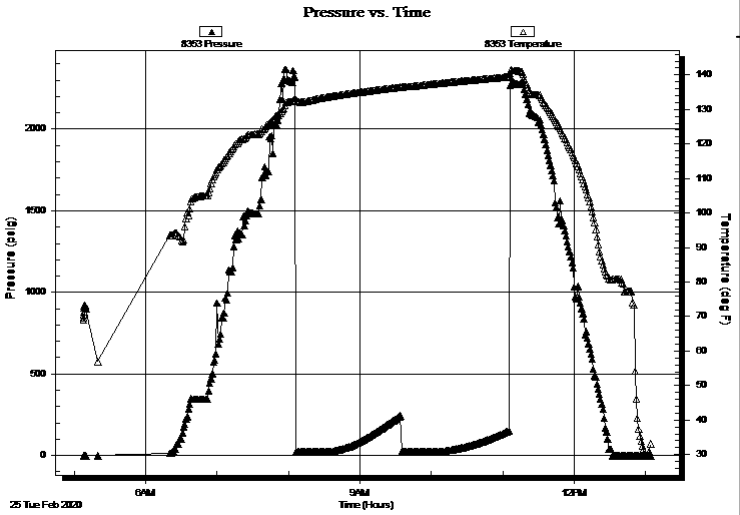
Reference Elevations: 3378.00 ft (KB)
3373.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8353 **Inside**

Press@RunDepth: psig @ 4680.00 ft (KB)
Start Date: 2020.02.25 End Date: 2020.02.25
Start Time: 05:08:01 End Time: 13:04:00

Capacity: 8000.00 psig
Last Calib.: 2020.02.25
Time On Btm:
Time Off Btm:

TEST COMMENT:
30 IF - Blow built to 3" died back to 1 1/2" (in diesel)
60 ISI - No return
30 FF - No blow
60 FSI - No return



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud w / oil spots in tool - 100%M	0.02

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co. Inc.

250 N. Water STE 300
Wichita KS 67202

ATTN: Brad Rine

24-2s-38w Cheyenne,KS

Dorsch #1-24

Job Ticket: 66530 **DST#: 4**

Test Start: 2020.02.25 @ 05:08:00

Tool Information

Drill Pipe:	Length:	4513.00 ft	Diameter:	3.80	inches	Volume:	63.31	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:	20000.00 lb
Drill Collar:	Length:	148.00 ft	Diameter:	2.25	inches	Volume:	0.73	bbl	Weight to Pull Loose:	90000.00 lb
						Total Volume:	64.04	bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		10.00 ft							String Weight: Initial	60000.00 lb
Depth to Top Packer:		4679.00 ft							Final	60000.00 lb
Depth to Bottom Packer:		ft								
Interval between Packers:		126.00 ft								
Tool Length:		154.00 ft								
Number of Packers:		2	Diameter:	6.75	inches					

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Shut In Tool	5.00			4656.00		
Hydraulic tool	5.00			4661.00		
Jars	5.00			4666.00		
Safety Joint	3.00			4669.00		
Packer	5.00			4674.00	28.00	Bottom Of Top Packer
Packer	5.00			4679.00		
Stubb	1.00			4680.00		
Recorder	0.00	8353	Inside	4680.00		
Recorder	0.00	8366	Outside	4680.00		
Perforations	26.00			4706.00		
Blank Spacing	96.00			4802.00		
Bullnose	3.00			4805.00	126.00	Bottom Packers & Anchor
Total Tool Length:	**154.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co. Inc.

250 N. Water STE 300
Wichita KS 67202

ATTN: Brad Rine

24-2s-38w Cheyenne,KS

Dorsch #1-24

Job Ticket: 66530 **DST#: 4**

Test Start: 2020.02.25 @ 05:08:00

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:	62.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	6.39 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	600.00 ppm				
Filter Cake:	2.00 inches				

Recovery Information

Recovery Table

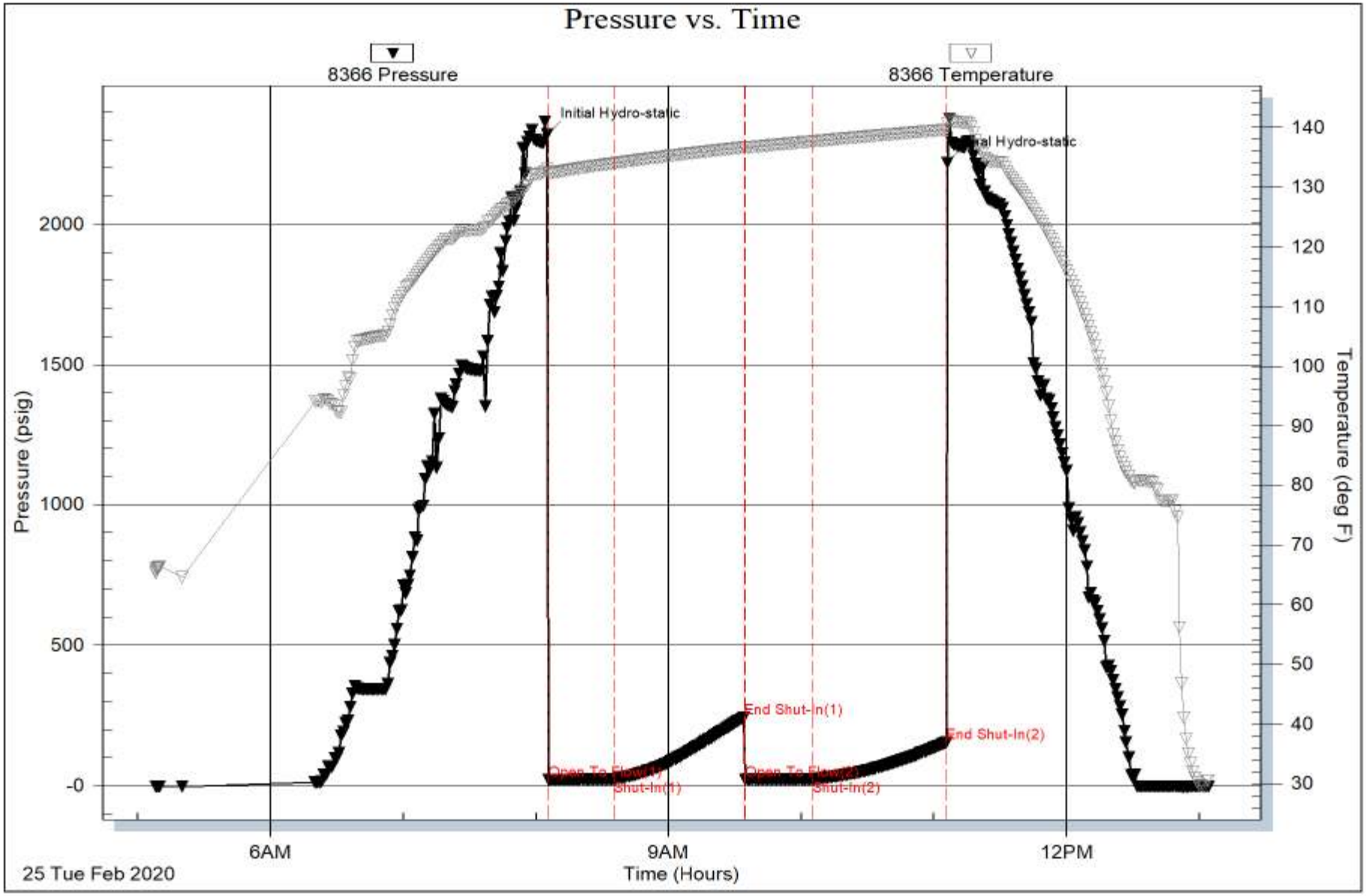
Length ft	Description	Volume bbl
5.00	Mud w / oil spots in tool - 100%M	0.025

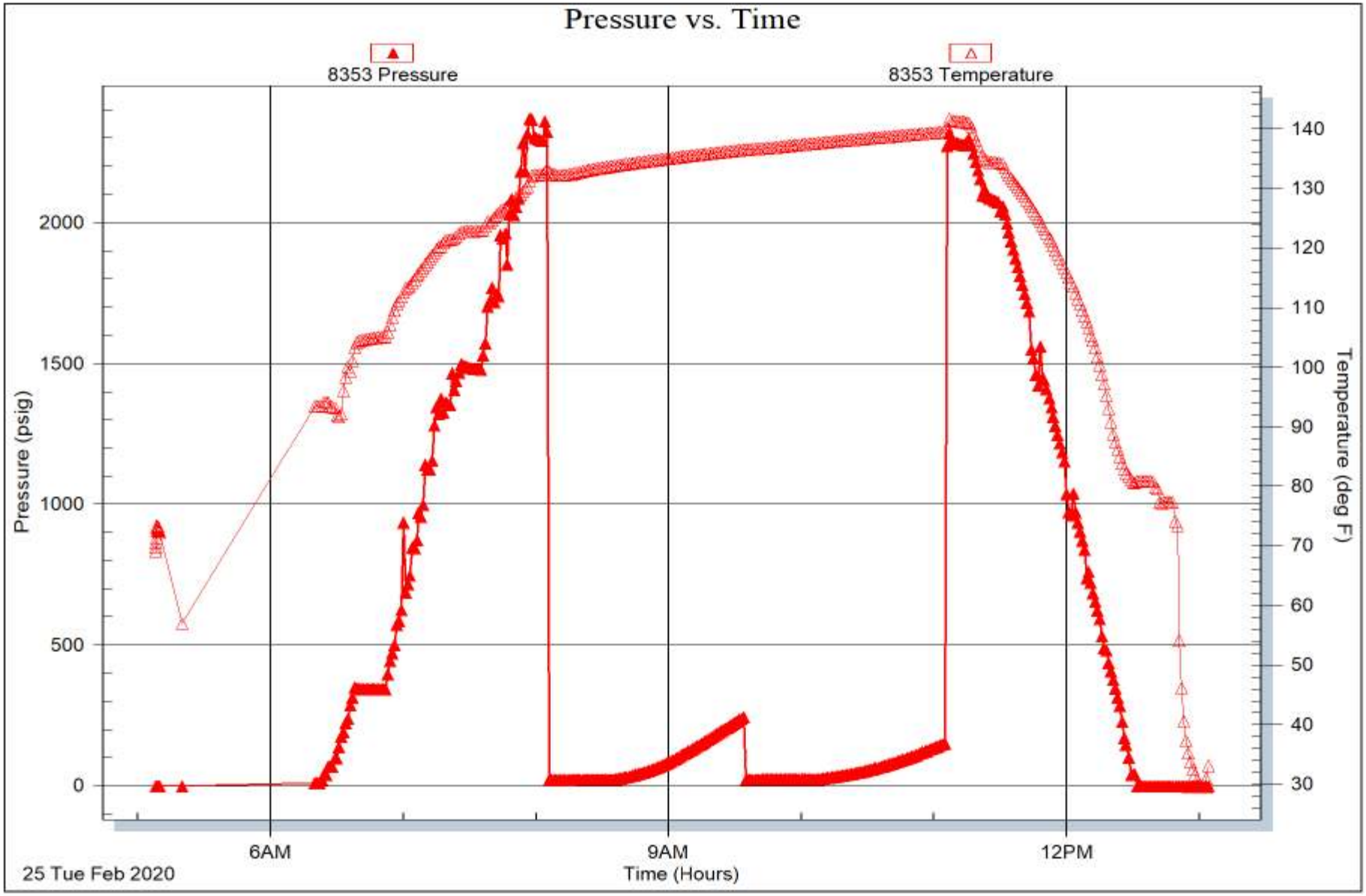
Total Length: 5.00 ft Total Volume: 0.025 bbl

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

Laboratory Name: Laboratory Location:

Recovery Comments:


Pressure vs. Time
8366 Pressure
8366 Temperature
Initial Hydro-static
Initial Hydro-static
End Shut-In(1)
End Shut-In(2)
Open To Flow(1)
Shut-In(1)
Open To Flow(2)
Shut-In(2)
Pressure (psig)
2000
1500
1000
500
-0
Temperature (deg F)
140
130
120
110
100
90
80
70
60
50
40
30
6AM
9AM
12PM
25 Tue Feb 2020
Time (Hours)


Pressure vs. Time
8353 Pressure
8353 Temperature
Pressure (psig)
2000
1500
1000
500
0
Temperature (deg F)
140
130
120
110
100
90
80
70
60
50
40
30
6AM
9AM
12PM
Time (Hours)
25 Tue Feb 2020

TRILOBITE TESTING INC.
1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket NO. 66527

Well Name & No. Dorsch #1-24 Test No. 1 Date 2/21/19
Company Murfin Drilling Co. Inc. Elevation 3378 KB 3373 GL
Address 250 N. Water STE 300 Wichita KS 67202
Co. Rep / Geo. Brad Rine Rig Murfin #3
Location: Sec. 24 Twp 25 Rge. 38W Co. Cheyenne State KS

Interval Tested 4168 - 4312 Zone Tested Oread - LKC "A"
Anchor Length 144' Drill Pipe Run 4012' Mud Wt. 8.9
Top Packer Depth 4163 Drill Collars Run 148' Vis 61
Bottom Packer Depth 4168 Wt. Pipe Run 0' WL 5.6
Total Depth 4312 Chlorides 600 ppm System LCM 4

Blow Description 30 IF - Blow built to 1"
60 ISI - No return
30 FF - No blow
60 FSI - No return

Rec 5'	Feet of Mud	%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 131° Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic 2033
(B) First Initial Flow 16
(C) First Final Flow 19
(D) Initial Shut-In 413
(E) Second Initial Flow 20
(F) Second Final Flow 21
(G) Final Shut-In 355
(H) Final Hydrostatic 2031

Initial Open 30
Initial Shut-In 60
Final Flow 30
Final Shut-In 60

☑ Test 1300
☑ Jars 250
☑ Safety Joint 75
☐ Circ Sub
☐ Hourly Standby
☑ Mileage 128 RT 128
☐ Sampler
☐ Straddle
☐ Shale Packer
☐ Extra Packer
☐ Extra Recorder
☐ Day Standby
☐ Accessibility
Sub Total 1753

T-On Location 19:45
T-Started 20:21
T-Open 22:45
T-Pulled 01:45
T-Out 03:45
Comments

☐ EM Tool
☐ Ruined Shale Packer
☐ Ruined Packer
☐ Extra Copies
Sub Total 0
Total 1753
MP/DST Disc't

Approved By Our Representative [signature]

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TRILOBITE TESTING INC.
1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket NO. 66528

Well Name & No. Dorsch #1-24 Test No. 2 Date 2/22/20
Company Murfin Drilling Co. Inc. Elevation 3378 KB 3373 GL
Address 250 N. Water STE 300 Wichita KS 67202
Co. Rep / Geo. Brad Rice Rig Murfin #3
Location: Sec. 24 Twp 25 Rge. 38 W Co. Cheyenne State KS

Interval Tested 4376 - 4440 Zone Tested LKC "G"
Anchor Length 64' Drill Pipe Run 4231' Mud Wt. 9.0
Top Packer Depth 4371 Drill Collars Run 148' Vis 62
Bottom Packer Depth 4376 Wt. Pipe Run 0' WL 6.0
Total Depth 4440 Chlorides 600 ppm System LCM 4

Blow Description 30 IF - BoB @ 1 min
60 ISI - No return
30 FF - No blow
60 FSI - No return

Rec	284	Feet of	OWCM	%gas	20	%oil	20	%water	60 %mud
Rec	315	Feet of	GOMCW	10 %gas	20	%oil	40	%water	30 %mud
Rec	877	Feet of	OMCW	%gas	20	%oil	75	%water	5 %mud
Rec	60	Feet of	OWCM	%gas	20	%oil	20	%water	60 %mud
Rec		Feet of		%gas		%oil		%water	%mud

Rec Total 1536' BHT 148° Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic	2171	☑ Test	1300	T-On Location	17:45
(B) First Initial Flow	329	☑ Jars	250	T-Started	18:11
(C) First Final Flow	625	☑ Safety Joint	75	T-Open	20:28
(D) Initial Shut-In	630	☐ Circ Sub		T-Pulled	23:28
(E) Second Initial Flow	629	☐ Hourly Standby		T-Out	02:15
(F) Second Final Flow	630	☑ Mileage	128 RT 128	Comments	
(G) Final Shut-In	630	☐ Sampler			
(H) Final Hydrostatic	2115	☐ Straddle		☐ EM Tool	
		☐ Shale Packer		☐ Ruined Shale Packer	
Initial Open	30	☐ Extra Packer		☐ Ruined Packer	
Initial Shut-In	60	☐ Extra Recorder		☐ Extra Copies	
Final Flow	30	☐ Day Standby		Sub Total	0
Final Shut-In	60	☐ Accessibility		Total	1753
		Sub Total	1753	MP/DST Disc't	

Approved By _____ Our Representative Kyle Nichols

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TRILOBITE TESTING INC.
1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket NO. 66529

Well Name & No. Dorsch # 1-24 Test No. 3 Date 2/23/20
Company Murfin Drilling Co. Inc. Elevation 3378 KB 3373 GL
Address 250 N. Water STE 300 Wichita KS 67202
Co. Rep / Geo. Brad Rine Rig Murfin # 3
Location: Sec. 24 Twp 25 Rge. 38 W Co. Cheyenne State KS

Interval Tested 4440 - 4527 Zone Tested LKC "H - J"
Anchor Length 87' Drill Pipe Run 4295' Mud Wt. 9.2
Top Packer Depth 4435 Drill Collars Run 148' Vis 60
Bottom Packer Depth 4440 Wt. Pipe Run 0' WL 6.0
Total Depth 4527 Chlorides 600 ppm System LCM 2

Blow Description 30 IF - 1/2" blow built to 1 1/4" died back to 1"
60 ISI - No return
30 FF - No blow
60 FSI - No return

Rec 5'	Feet of OCM	%gas 30	%oil	%water 70	%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 137° Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic	2230	☑ Test	1300	T-On Location	14:30
(B) First Initial Flow	17	☑ Jars	250	T-Started	14:57
(C) First Final Flow	19	☐ Safety Joint	75	T-Open	16:57
(D) Initial Shut-In	590	☑ Circ Sub		T-Pulled	19:57
(E) Second Initial Flow	20	☐ Hourly Standby		T-Out	22:00
(F) Second Final Flow	22	☑ Mileage	128 RT 128	Comments	
(G) Final Shut-In	458	☐ Sampler			
(H) Final Hydrostatic	2049	☐ Straddle		☐ EM Tool	
		☐ Shale Packer		☐ Ruined Shale Packer	
Initial Open	30	☐ Extra Packer		☐ Ruined Packer	
Initial Shut-In	60	☐ Extra Recorder		☐ Extra Copies	
Final Flow	30	☐ Day Standby		Sub Total	0
Final Shut-In	60	☐ Accessibility		Total	1753
		Sub Total	1753	MP/DST Disc't	

Approved By _____ Our Representative [signature]

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TRILOBITE TESTING INC.
1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket NO. 66530

Well Name & No. Dorsch # 1-24 Test No. 4 Date 2/25/20
Company Murfin Drilling Co. Inc. Elevation 3378 KB 3373 GL
Address 250 N. Water STE 300 Wichita KS 67202
Co. Rep / Geo. Brad Kine Rig Murfin # 3
Location: Sec. 24 Twp 25 Rge. 38W Co. Cheyenne State KS

Interval Tested 4679 - 4805 Zone Tested Ft. Scott - Celia
Anchor Length 126' Drill Pipe Run 4513' Mud Wt. 9.2
Top Packer Depth 4674 Drill Collars Run 148' Vis 62
Bottom Packer Depth 4679 Wt. Pipe Run 0' WL 6.4
Total Depth 4805 Chlorides 600 ppm System LCM 2

Blow Description 30 IF - Blow built to 3" died back to 1½" (in diesel)
60 ISI - No return
30 FF - No blow
60 FSI - No return

Rec 5'	Feet of Mud w/oil spots in tool	%gas Spots	%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 140° Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic	2320	☑ Test	1300	T-On Location	04:45
(B) First Initial Flow	21	☑ Jars	250	T-Started	05:08
(C) First Final Flow	23	☑ Safety Joint	75	T-Open	08:05
(D) Initial Shut-In	244	☐ Circ Sub		T-Pulled	11:05
(E) Second Initial Flow	22	☐ Hourly Standby		T-Out	13:00
(F) Second Final Flow	24	☑ Mileage	128 RT 128	Comments	
(G) Final Shut-In	154	☐ Sampler			
(H) Final Hydrostatic	2218	☐ Straddle		☐ EM Tool	
		☐ Shale Packer		☐ Ruined Shale Packer	
Initial Open	30	☐ Extra Packer		☐ Ruined Packer	
Initial Shut-In	60	☐ Extra Recorder		☐ Extra Copies	
Final Flow	30	☐ Day Standby		Sub Total	0
Final Shut-In	60	☐ Accessibility		Total	1753
		Sub Total	1753	MP/DST Disc't	

Approved By _____ Our Representative [signature]

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

Well Name:	Dorsch #1-24 - Murfin Drilling Company, Inc.		
API:	15-023-21533-00-00		
Location:	N2-NW-SE, Section 24-02S-38W		
License Number:	KCC #30606	Region:	Cheyenne Co., Ks
Spud Date:	February 17, 2020	Drilling Completed:	February 26, 2020
Surface Coordinates:	2310' FSL & 1980' FEL, of Section	Results:	Prod. Casg. set
Bottom Hole Coordinates:	Vertical Wellbore	Field:	Wildcat
Ground Elevation (ft):	3373 Ft.	K.B. Elevation (ft):	3378 Ft.
Logged Interval (ft):	3900 Ft. To: 5100 Ft.	Total Depth (ft):	RTD 5100 Ft. LTD 5103 Ft.
Formation:	Mississippian at Total Depth		
Type of Drilling Fluid:	Chemical		

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

Operator

Company: Murfin Drilling Company, Inc.
Address: 250 North Water, Suite #300
Wichita, Kansas 67202-1216

Geologist

Name: M. Bradford Rine
Company: Consulting Geologist, Kansas Lic. #204, Wyo #189, AAPG Cert. #2647
Address: 100 South Main, Suite #320A
Wichita, Kansas 67202

Remarks

Based on sample observations, drill stem test results, and electric log evaluation, it was the decision of the Operator, to set production casing for further testing on the "Dorsch #1-24", on February 26, 2020.

Respectfully,
M. Bradford Rine
geologist

Drilling Information

Rig: Murfin Drlg. Rig #3
Pump: Emsco D-375 6 x 14
Drawworks: Ideco H35
Collars: 505' 6-1/4 x 2-1/4
Drillpipe: 4-1/2" 16.6# XH
Toolpusher: Jay Ruzicka

Mud: Morgan (Dave Lines)
Gas Detector: None
Drill Stem Tests: Trilobite (Ryan Nichols)
Logs: Pioneer (J Henrickson)
Water: Frisbie Lease (HSI Tank)
Company Representatives:
Office: Michel Runnion
Field: Nathan Witt

Daily Drilling Status

Date:	Operations/Depth/Comments
02-17-20	MIRT, RU, Spud @ 0'
02-18-20	Drilling @ 610'
02-19-20	Drilling @ 2490'
02-20-20	Drilling @ 3631'
02-21-20	Drilling @ 4150'
02-22-20	Drilling @ 4320'
02-23-20	Drilling @ 4465'
02-24-20	Drilling @ 4595'
02-25-20	Make up Test Tools for DST 4 @ 4805'
02-26-20	Logging @ 5100'
02-27-20	Rig Released at 1:00 AM @ 5100'

	Results:	Oil		(Well A)	Oil	(Well B)	Oil		
	Murfin Drilling Co., Inc.			Murfin Drilling Co., Inc.		Murfin Dilling Co., Inc.			
	Dorsch #1-24			Culwell "H" #1-19		C&C Unit #1-30			
	2310' FSL & 1980' FEL			1980' FSL & 2540' FEL		1320' FNL & 2815' FEL			
	Sec. 24-02S-38W			Sec. 19-02S-37W		Sec. 30-02S-37W			
	KB	3378		KB	3378	KB	3326	Well A	Well B
Formations	Sample	E-Log	Datum	E-Log	Datum	E-Log	Datum	Comparison(s)	
Anhydrite	3260	3260	118	3245	133	3202	124	-15	-6
B/Anhydrite	3296	3295	83	3282	96	3238	88	-13	-5
Topeka	4074	4075	-697	4059	-681	4026	-700	-16	3
Oread	4219	4223	-845	4203	-825	4170	-844	-20	-1
Lansing	4295	4292	-914	4280	-902	4245	-919	-12	5
Stark Sh.	4525	4526	-1148	4507	-1129	4473	-1147	-19	-1
Mound City	4576	4577	-1199	4558	-1180	4524	-1198	-19	-1
Ft. Scott	4704	4702	-1324	4688	-1310	4656	-1330	-14	6
Oakley	4780	4780	-1402	4762	-1384	4727	-1401	-18	-1
Mississippian	5008	5006	-1628	4990	-1612	4951	-1625	-16	-3
Total Depth	5100	5103	-1725	5100	-1722	5100	-1774	-3	49

Casing Record, Bit Record, Deviation Surveys

CASING:

Conductor: None

Surface: Ran 7 jts of 8-7/8" 23# csg, set @ 306'. (HSI) Cement with 285 sx Class A 3% cc, 2% gel. Plug down at 7:30 PM, on February 17, 2020. Cement did circulate.

Production: Ran 121 jts of 5-1/2" 15.5# Casing, set @ 5098'. (HSI) Cement with 525 sx (325SMD, 200 sx MH). Circulated 30 bbls. Rig released at 1:00 am, February 27, 2020.

BITS:

No.	Size	Make	Model	Depth In	Depth Out	Hours
1	12-1/4	HTC	B37DX	0	306	2.25
2	7-7/8	HTC	DP506	306	3866	41.50
3	7-7/8	Smith	FHI184	3866	4805	57.00
4	7-7/8	HTC	DP506rr	4805	5100	5.50

DEVIATION SURVEYS:

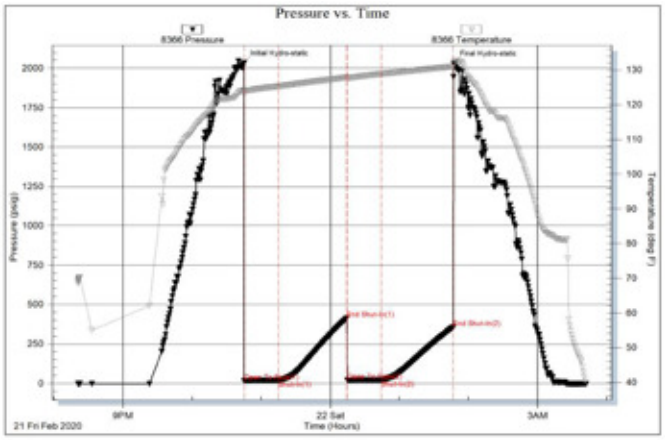
Deviation:	Depth:	Deviation:	Depth:
0.50*	306'	1.00*	3866'
0.50*	1609'	0.75*	4312'
0.50*	2107'	0.50*	4805'
0.50*	2894'	0.75*	5100'

PIPE STRAPS:

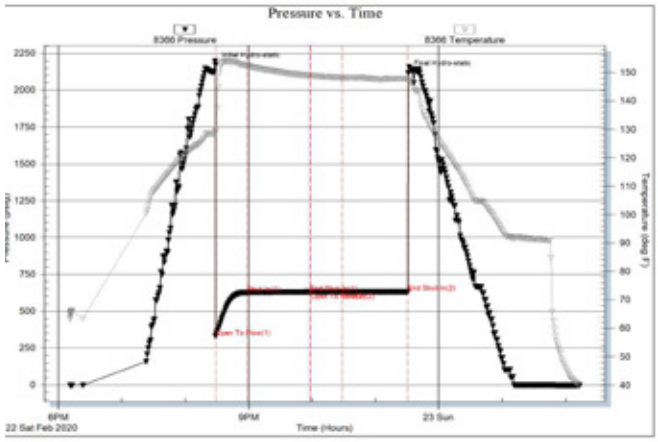
Difference:	Depth:
1.73 ft Long	3866'

Mud Up:
Commence: 3600 ft
Complete: 3631 ft

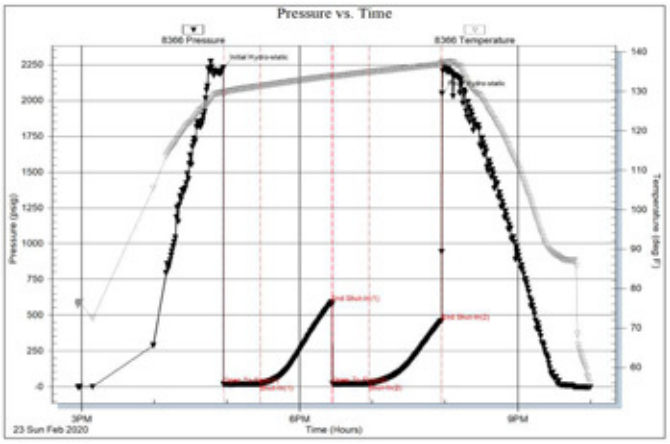
DST #1: 4168-4312 (Oread, Lans A)
Times: 30-60-30-60
Initial Open: Wk Blow, built to 1" i.b.
Final Open: No Blow
Rec: 5' mud
IHP: 2033 FHP: 2031
IFP: 16-19 FFP: 20-21
ISIP: 413 FSIP: 355
BHT: 131*F



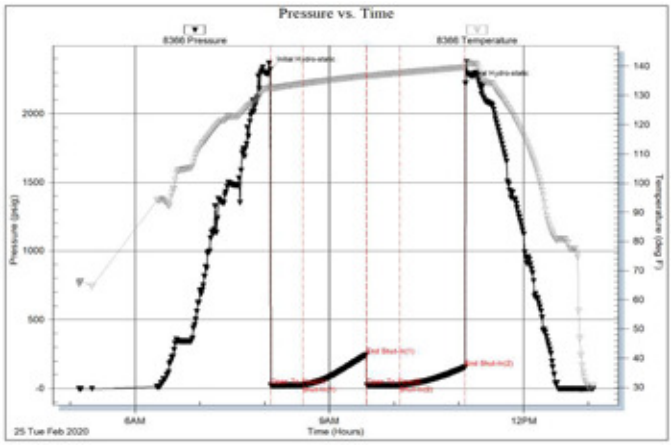
DST #2: 4376-4440 (Lsg F, G)
Times: 30-60-30-60
Initial Open: Stg Blow, b.o.b. 1",
No return blow
Final Open: No Blow, no return blow
Rec: 1536' Total Fluid
284' OWCM: 0%g 20%o 20%w 60%m
315' GOMCW: 10%g 20%o 40%w 30%m
877' OMCW: 0%g 20%o 75%w 05%m
60' OWCM: 0%g 20%o 20%w 60%m
*(could not get oil API or Wtr/chl)
IHP: 2171 FHP: 2115
IFP: 329-625 FFP: 629-630
ISIP: 630 FSIP: 630
BHT: 148*F



DST #3: 4440-4527 (LKC H,J)
Times: 30-60-30-60
Initial Open: Wk Blow, built to 1-1/4" i.b.
died back to 1" i.b.
Final Open: No Blow/Dead
Rec: 5' OCM: 30%o 70%m
IHP: 2230 FHP: 2049
IFP: 17-19 FFP: 20-22
ISIP: 590 FSIP: 458
BHT: 137*F



DST #4: 4679-4805 (Ft. Scott, Breezy Hill, Celia)
Times: 30-60-30-60
Initial Open: Wk Blow, opened at 1/2", built to 3", died back to 1-1/2" i.b.
Final Open: No Blow/Dead
Rec: 5' mud with oil spots in tool
IHP: 2320 FHP: 2218
IFP: 21-23 FFP: 22-24
ISIP: 244 FSIP: 154
BHT: 140*F



Rock Types

- Cgl/gran wash
- Dol ls/lmy dol
- New symbol
- Dol ls/lmy dol
- New symbol
- Anhy
- Bent
- Brec
- Cht
- Clyst
- Blk sh/coal
- Congl
- Dol
- Gyp
- Igne
- Lmst
- Meta
- Mrlst
- Salt
- Shale
- Shcol
- Shgy
- Sltst
- Ss
- Till
- Sltysh
- Shlysiltst
- Sandyls

Accessories

MINERAL
- Anhy
- Arggrn
- Arg
- Bent
- Bit
- Brecfrag
- Calc
- Carb
- Chtdk
- Chtlt
- Dol
- Feldspar
- Ferrpel
- Ferr
- Glau
- Gyp
- Hvymin
- Kaol
- Marl
- Minxl
- Nodule
- Phos
- Pyr
- Salt
- Sandy
- Silt
- Sil
- Sulphur
- Tuff

FOSSIL
- Algae
- Amph
- Belm
- Bioclst
- Brach
- Bryozoa
- Cephal
- Coral
- Crin
- Echin
- Fish
- Foram
- Fossil
- Gastro
- Oolite
- Ostra
- Pelec
- Pellet
- Pisolite
- Plant
- Strom

STRINGER
- Anhy
- Shale
- Bent
- Coal
- Dol
- Gyp
- Ls
- Mrst
- Sltstrg
- Ssstrg

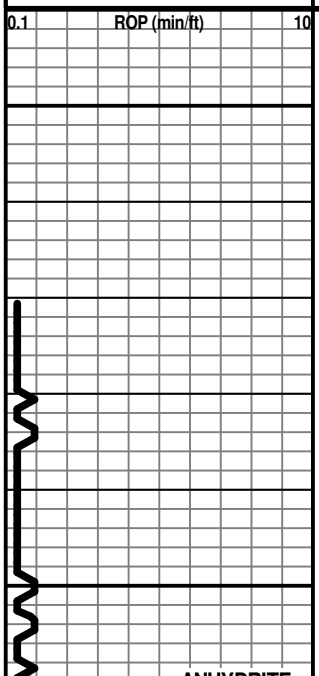
TEXTURE
- Boundst
- Chalky
- Cryxln
- Earthy
- Finexln
- Grainst
- Lithogr
- Microxln
- Mudst
- Packst
- Wackest

Other Symbols

OIL SHOW
- Oil & gas show
- Gas show
- Even
- Spotted
- Trace or questionable
- Dead
- Gas

INTERVAL
- Core
- Dst

ROP (min/ft)	MD	Lithology	Shows	Geological Descriptions	Remarks
ROP (min/ft)					



< ANHYDRITE

<---------- 3260 (+118)

Anhydrite Interval, based on drill time only!

< B/ANHYDRITE

<---------- 3296 (+82)

0.1 ROP (min/ft) 10

3300

<<< Depth Break >>>

* @ 3467', Pulled 28 Stands for Hole in pipe!

*Displace & Mud Up:
Commence: 3600'
Complete: 3631'

* Bit Trip @ 3866 Ft.

* Pipe Strap @ 3866 Ft.:
1.73 ft Long!

Mud Check, Drlg @ 3680':

Vis	Wt	WL	PV	YP
51	8.6	5.6	16	17
Chl	Hd	pH	LCM	Solids
600	10	12.0	4	2.2

3900

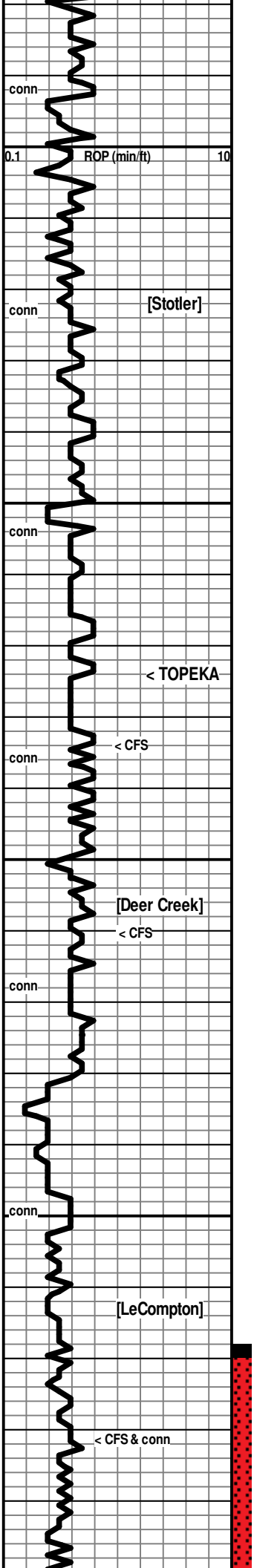
conn

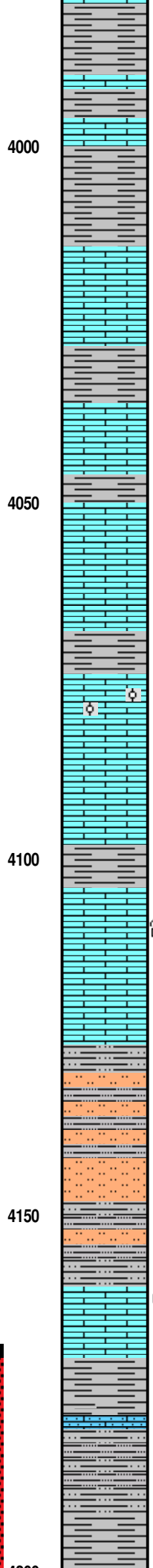
3950

conn

80% Shales: mostly red, some grnish, some mix with white calc chalky Ls; wh-cr, much marbled and patchy with red shale (washes red)

3990' spl: 85% Ls, wh-cr-tan-gy, fn xln, foss-abund foss, shaley in pt; 15% shales as above





4000' spl: 85% Sh red-gy-dk gy-grnish; 15% Ls cr, fn xln, dns

Sh red-gy-grn, silty in pt

Ls cr-pl gy, fn xln, dns to pr xln por, foss to abund foss to packed foss

Sh mostly red, some grn-gy (washes red)

Ls wh-cr, fn xln, pr xln por, foss to abund foss, scatt crs calcite patches, scatt pp pores

4060'-4070' spls: Ls wh,fn xln pr-fr xln por with scatt pp pores, some subchalky, foss to packed foss

[No Odor, No fluor, abund spots & patches of blk asph & resid dead stn, NSFO]

Sh mostly red, some gy-grn (washes red)

<---------- 4074 (696)

Ls wh-cr, fn xln,, pr xln por to dns, chalky in pt, foss, ool in pt

[No Odor, No fluor, low % pcs with spotty black dead resid-asph stn, NSFO]

Ls wh-cr, fn xln, dns to chalky in pt, sli foss in pt

Trace of Shale, red-gy-grn

Ls wh, silty to calc siltstone, fn xln to grainy/silty text, pr por to dns, some ls marbled with red shale, foss in pt, some red shale (washes pinkish)

Ls wh-cr, fn xln, pr xln por to dns, foss to abund foss

[No Odor, No fluor, v low % pcs with dk brn to black spotty to patchy stn, tr of dk brn dead spots to black resid/gilson stn, NSFO]

Shaley Siltstone-silty shale, reddish-brnish, mushy soft (washes deep red)

Silty Sh mostly red, some grn, Rr scatt fn-grn sd grains

7:00 AM, February 21, 2020

Ls wh-cr-pl gy, fn xln, abund subchalky-chalky, some pr xln por, some dns, foss-abund foss

[No Odor, No fluor, Few pcs with blk asph specks, NSFO]

Ls cr-pl gy, vfn-fn xln, dns & firm, sli foss in pt

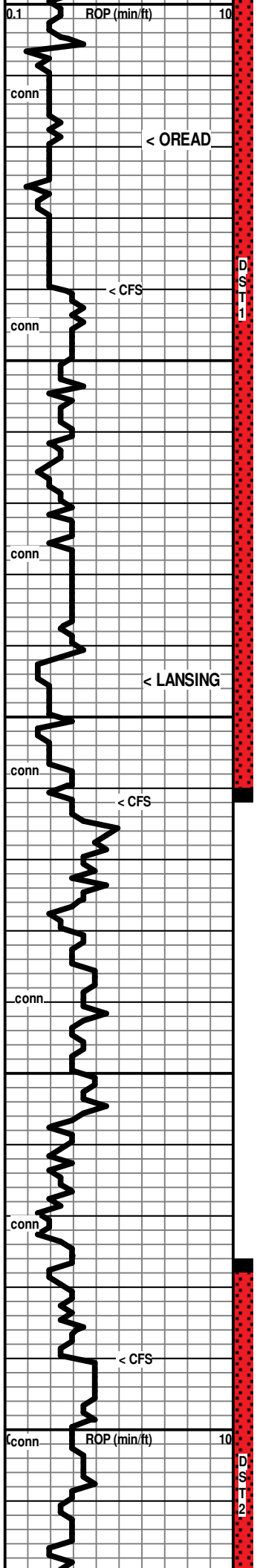
Mud Check, Drlg @ 4164':

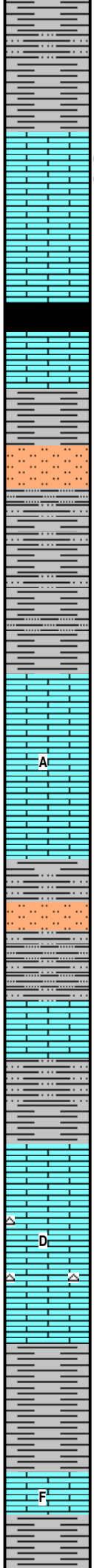
Vis	Wt	WL	PV	YP
61	8.9	5.6	19	21
Chl	Hd	pH	LCM	Solids
600	10	11.5	4	4.3

silty Ls to limey silty stone and shale, gy, dns

Silty Sh to Shaley Siltstone, calc in pt, gy

Sh pl gy-gy-pl lav, silty in pt, soft, mushy & calc in pt, a few loose pyrite pcs





Silty shale

Sh mostly gy-dk gy-blk, some red-grn, abund silty, soft to firm

<---------- 4219 (-841)

Ls wh-cr, fn xln, subchalky in pt abund pr xln por, scatt pp pores, foss

Show Descr.---------->

Ls wh, fn xln, dns to pr xln por, foss

Sh black, carb (in 4250' spl)

Ls cr-tan, fn xln, pr xln por to dns with scatt pp pores, foss-abund foss

Show Descr.---------->

Sh gy-grn

Siltstone vfn grn, cem in pt, shaley in pt, pr-fr-gd fri

Sh mostly red, some gy-grn, silty in pt, soft (washes red)

Sh red-gy-dk gy-blk, silty in pt

<---------- 4295 (-917)

Ls wh-cr-tan, fn xln, chalky in pt, abund pr xln por, scatt mod am't of pp pores in patches & pcs, foss

Show Descr. ---------->

Ls cr-tan, vfn-fn xln, dns, sli foss in pt

Ls wh-cr-tan, fn xln, dns with pr xln por in patches, foss in pt

[No Odor, No fluor, scatt patches of brn stn, tr of micro drops of FO on crush in a few pcs]

Silty shale-shaley siltstone-siltstone, pl red-red-brnish

80% Siltstone, silty shale to shaley siltstone, red, gy, grn, white; 20% Ls cr-tan-gy, vfn-fn xln, dns

Ls cr-pl gy,fn xln, dns

Sh gy-grn-red, silty in pt

Ls wh-cr-pl gy, fn xln, subchalky-chalky in pt, pr xln por in patches & pcs, dns in pt, scatt pp pores, foss in pt

Ls wh-cr-pl gy, fn xln, subchalky-chalky in pt, pr xln por in patches & pcs, dns in pt, scatt pp pores,grainy text in pt, foss in pt, chert: fresh-subgrny, tan, transl

Sh abund gy-grn, mushy-soft-firm, subsilty in pt, some red; some Ls wh-cr, dns

Sh mostly red, some gy-grn (washes deep red)

Ls cr-tan, fn xln, dns to pr xln por (abund Ls in 4420' spl)

Sh red-grn-gy

[Oread: No Odor, Scatt v dull-dull-mod fluor, Abund pcs with brn-dk brn spotty-patchy-even stn, on crush: fr-gd shows of deadish-NVL hvy oil, trace-sli shows of brn FO]

[4260' spl: Fnt Odor, Rr dull fluor, low % pcs with spotty-patchy brn-blk stn, on crush: trace of DO and trace of micro-drops of NVL oil]

DST #1: 4168-4312 (Oread, Lans A)
Times: 30-60-30-60
Initial Open: Wk Blow, built to 1" i.b.
Final Open: No Blow
Rec: 5' mud
IHP: 2033 FHP: 2031
IFP: 16-19 FFP: 20-21
ISIP: 413 FSIP: 355
BHT: 131*F

[Lans A: No Odor, abund dull-mod spotty to patchy to some even fluor, abund spotty to patchy brn stn, on crush: abund pcs with trace to sli shows of brn-dk brn FO, v sli gassy in pt, some NVL oil, some later arriving cs with blk hvy spots]

7:00 AM, February 22, 2020

Mud Check, Drlg @ 4339':

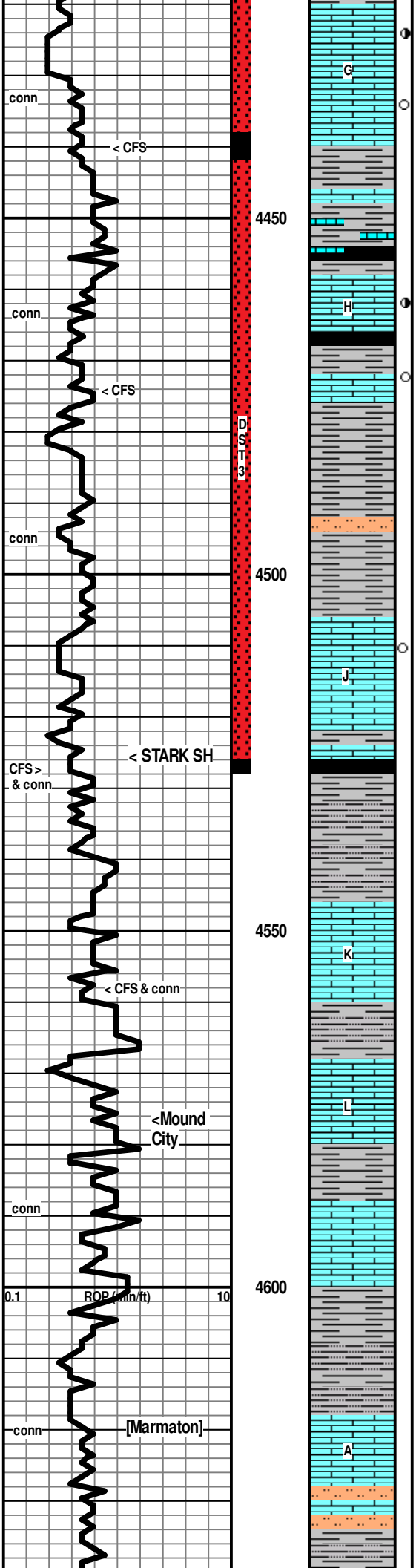
Vis	Wt	WL	PV	YP
62	9.0	6.0	20	20
Chl	Hd	pH	LCM	Solids
600	10	11.5	4	5.0

DST #2: 4376-4440 (Lsg F, G)
Times: 30-60-30-60
Initial Open: Stg Blow, b.o.b. 1",
No return blow
Final Open: No Blow, no return blow
Rec: 1536' Total Fluid
284' OWCM: 0%g 20%o 20%w 60%m
315' GOMCW: 10%g 20%o 40%w 30%m
877' OMCW: 0%g 20%o 75%w 05%m
60' OWCM: 0%g 20%o 20%w 60%m
*(could not get oil/grav or wtr/chl)
IHP: 2171 FHP: 2115
IFP: 329-625 FFP: 629-630
ISIP: 630 FSIP: 630
BHT: 148*F

Mud Check, CFS @ 4474':

Vis	Wt	WL	PV	YP
60	9.2	6.0	18	20
Chl	Hd	pH	LCM	Solids
600	10	11.0	2	6.4

[No Odor, Moderate am't of dull-mod fluor, scatt brt fluor, major % of pcs with spotty to patchy dk brn



Ls wh-cr, fn xln, abund pr vis xln por, mod am't of pp pores and sm vugs, foss, Rr pyr patches

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Ls wh-cr-tan,fn xln, chalky in pt, pr xln por in pt, dns in pt, Rr scatt sm vugs, sli foss in pt, abund dk gy-blk shale in circ spls

Show Descr. ---------->

Sh mostly red, subsilty to earthy, soft, some gy-grn (washes deep red)

Sh mostly red, subsilty to earthy, soft, some gy-grn-brn; some Ls wh-gy, fn xln, dns, foss (washes deep red)

Ls wh-cr, fn xln, mostly subchalky to dns with scatt patches of pr xln por, scatt sm vugs, foss with Rr interfoss pores

Show Descr. ---------->

Sh gy-black, some grnish, carb in pt

Ls wh-cr, fn xln, dns to subchalky, pr xln por in Rr patches

Possible Rr patches of dk stn, NSFO]

80% Sh mostly red-brn, silty to earthy, some gy-grnish silty in pt; 20% Ls wh-cr-gy, fnxln, pr xln por to dns, foss

4500',4510'& 4520' spls: 95% Sh mostly reddish, some gy-grnish, mushy to soft, earthy to silty, some gy siltstone; 05% Ls as above (washes deep red)

4527' spl: Ls wh-cr-pl gy, fn xln, chalky-subchalky in pt, dns in great pt, scatt patches & pcs with pr xln por, foss

[No Odor, Rr spots & patches with dull fluor, low % of pcs with spotty to patchy dk stn-fewer pcs with trace shows of dk brn FO on crush]

Ls cr-gy, fn xln, dns

Sh gy-dk gy-black, carb in pt

<---------- 4525 (-1147)

Sh-shaley Siltstone-silty shale, wh-red-gy-gnrish, soft to firm, earthy-silty text, some calc

4550' spl: 95% shales & siltstones as above

4558'spl: 95% Ls wh-cr, fn xln, chalky-subchalky and softer in pt, pr xln por to dns in pt & firm, foss to abund foss in pt

Sh-silty shale red-gy-grn, soft-firm, v silty in pt

Ls wh-cr, fn xln, dns & firm to softer & subchalky-chalky, sli foss in pt

<---------- 4576 (-1198)

Sh red-gy-grnish, silty in pt, siltstone

Ls wh-cr-pl gy, fn xln, subchalky to dns, some grnish glauc stn, silty in pt

Sh & Silty Sh mostly red, some grn, silty in pt to shaley siltstone (washes red)

Ls tan-gy, vfn-fn xln, dns, silty text in pt

Limey Siltstone to Silty Ls gy, dns

Shaley Siltstone & Silty Shale, mostly red, some grn-gy

fluor, major % of pcs with spotty to patchy dk brn stn, some even stn, on crush: abund stn'd pcs with trace to sli shows of brn FO, mod am't of heavier dk brn NVL oil, Rr pcs with Fr show of FO]

[No Odor, Rr dull fluor, Low % pcs with patchy brn-dk brn stn, Rr trace shows of FO, a few vugs lined with thick dk hvy oil]

7:00 AM, February 23, 2020

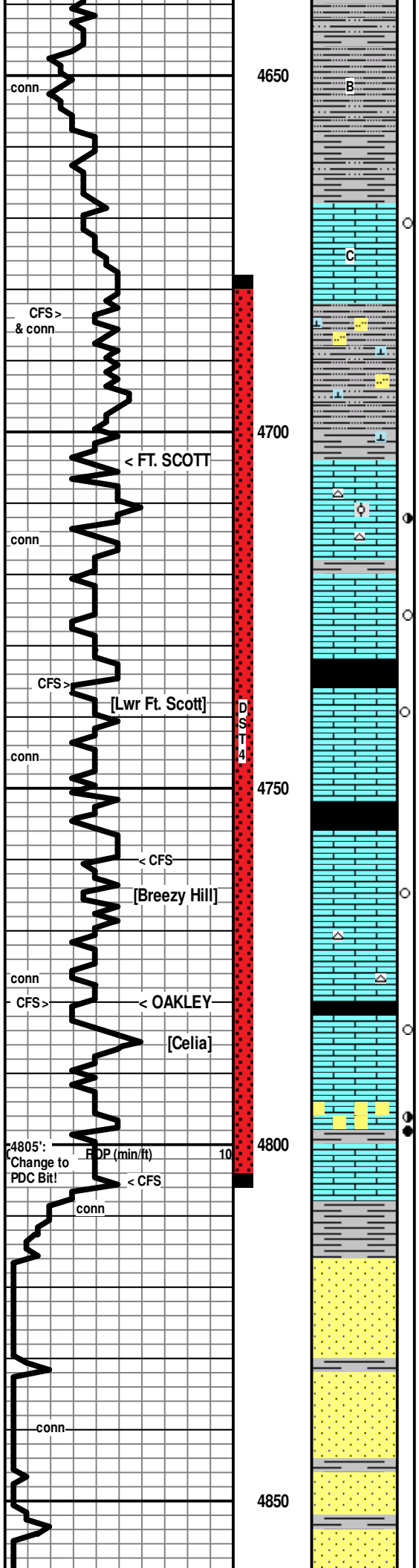
[No Odor, Scatt dull fluor, patchy dk brn stn, on crush: trace to sli shows of brn-dk brn FO, with hvy NVL oil, sli gassy in pt]

DST #3: 4440-4527 (LKC H,J)
Times: 30-60-30-60
Initial Open: Wk Blow, built to 1-1/4" i.b., died back to 1" i.b.
Final Open: No Blow/Dead
Rec: 5' OCM: 30%o 70%m
IHP: 2230 FHP: 2049
IFP: 17-19 FFP: 20-22
ISIP: 590 FSIP: 458
BHT: 137*F

7:00 AM, February 24, 2020

Mud Check, Drlg @ 4602':

Vis	Wt	WL	PV	YP
60	9.1	6.0	19	19
Chl	Hd	pH	LCM	Solids
600	10	11.5	1.5	5.7



Shaley Siltstone & Silty Shale mostly red, some grn-gy

95% Shaley Siltstone & Silty Shale mostly red, some grn-gy, some wh-gy siltstone, trace of dns Ls

85% Shaley Siltstone & Silty Shale mostly red, some grn-gy, some wh-gy siltstone; 15% Ls wh-cr-pl gy, fn xln, chalky-subchalky in pt, pr xln por to dns in pt, foss

4680' spl: 90% Ls wh-cr-pl gy, chalky in pt, pr xln por in pt, scatt interfoss pores, dns in pt, foss to abund foss; 10% Shales as above

[No Odor, a few pcs with dull spots of fluor with scant spots of brn stn, NSFO]

Ls gy, silty text, mostly dns & hard, some chalky & softer

Sh red-gy-grn, subsilty to silty, subfirm to firm

Mix of: Sh gy-gk gy-red, silty in pt; siltstone gy, shaley in pt, calc in pt; Ls cr-tan-gy, fn xln, dns, silty in pt

<---------- 4704 (-1326)

4710' & 4720' spls: Ls wh-cr, subchalky to chalky in pt, pr xln por in pt, scatt pp pores, scatt sm vugs, micro-ool with scatt interool pores, in pt, chert: cr, fresh, transl

Show Descr. ---------->

Ls wh-cr-gy, fn xln, pr xln por to dns, chalky in pt, foss

Show Descr.---------->

4735' 20-min spl: mod am't of black carb shale in spls

4740' spl: 85% Sh red-gy-grn; 15% Ls wh-cr-tan, fnxln, chalky in pt, mostly dns, some pr xln por, foss in pt

Show Descr.---------->

4750' spl: 90% Ls as above; 10% Sh as above

Sh red-gy-grn-black/carb

Ls wh-cr-tan-gy, fn xln, dns & firm in pt, chalky mushy & gooey in pt, foss

Ls wh-cr-tan, fn xln, chalky in pt, pr xln por in pt,scatt pp pores, dns in pt, foss

Show Descr.---------->

Ls cr-tan, fn xln, dns, foss, chert: fresh, gy, transl, foss

<---------- 4780 (-1402)

Sh black, carb & red-gy-grn, silty in pt

Ls wh-cr-tan, vfn-fn xln, abund dns & hard, some softer & subchalky to chalky, foss to abund foss

Show Descr.---------->

4805' spl: Ls as above; Abund am't of Sd gy-glassy, fn-md grn, pr-fr sort, subrd-subanglr, pr-fr-gd fri, pr-fr vis intergrnlr por, crs anglr clastic inclu., calc in pt to limey sd

Show Descr.---------->

4805' 20-min cfs: Ls wh-cr-tan, fn xln, dns with some chalky patches & pcs, foss in pt, only a few clusters of sd per tray

4840' spl: 90% Sh red-gy-grn, silty in pt with some siltstone; 10% Ls wh, fn xln, dns to chalky

4860' spl: 75% Sh red-gy-grn, silty in pt with some siltstone; 25% Ls wh-cr, fn xln, dns to chalky

4880' spl: 60% Sh red-gy-grn, silty in pt; 15% Ls wh-cr, fn xln, dns to chalky; 25% Sd wh-gy-grn-red, shaley in pt, calc cem in pt, fn grn, subrd-subang, gd sort, fr-gd fri.

[Ft. Scott: V Fnt Odor, mod am't of pcs with dull to md fluor, with spotty-patchy stn, & some with even stn, trace to sli shows of lt brn-brn FO & NVL oil on crush, Few pcs with Fr show of FO, sli gassy in pt (1rst shows in 4710' spl)]

[No Odor, Rr dull fluor, low % pcs with spotty to patchy brn stn, trace show FO on crush in a few pcs]

*** Add Premix!**

[No Odor, Rr dull fluor, few pcs per tray with patchy brn-dk brn stn with Rr trace of brn FO on crush, from Ft Scott above?]

[No Odor, a few pcs with mod fluor with spotty dk brn stn, trace of dk brn FO on crush]

[No Odor, few pcs with dull spotty fluor and scant spotty dk stn, 2 pcs with trace show of dk brn micro-drops FO on crush]

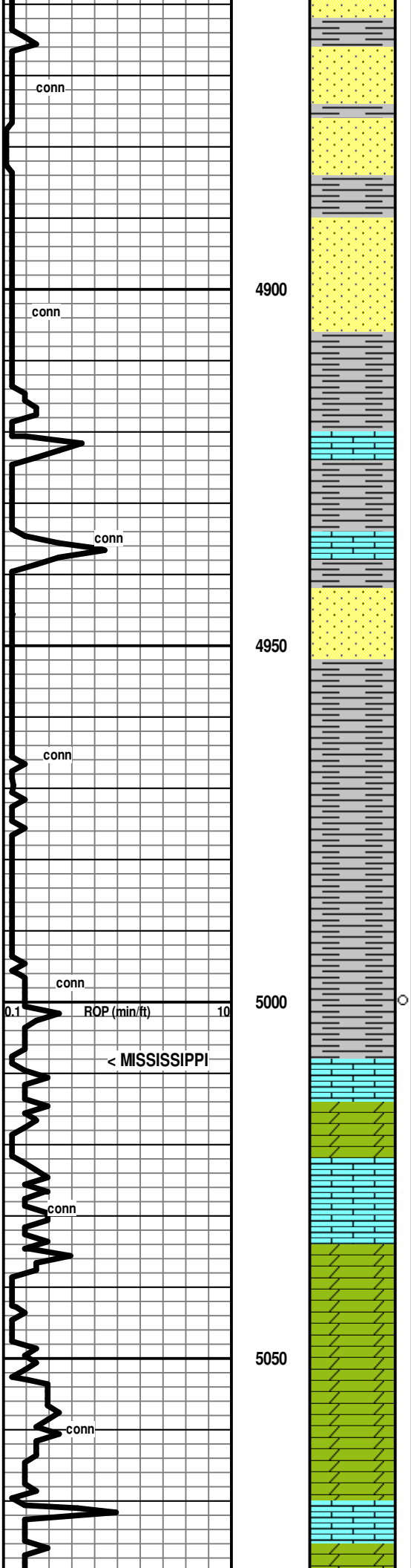
[Sd: Fnt Odor, scatt dull fluor, abund spotty to patchy to even dk stn, with mostly sli-fr shows of brn-dk brn FO & hvy NVL oil, few pcs with gd shows, some hvy thick tarry oil]

7:00 AM, February 25, 2020

Mud Check, TIH/DST4 @ 4805':

Vis	Wt	WL	PV	YP
62	9.2	6.4	19	20
Chl	Hd	pH	LCM	Solids
600	10	10.5	1.5	6.4

DST #4: 4679-4805 (Ft. Scott, Breezy Hill, Celia)
Times: 30-60-30-60
Initial Open: Wk Blow, opened at 1/2", built to 3", died back to 1-1/2" i.b.
Final Open: No Blow/Dead
Rec: 5' mud with oil spots in tool
IHP: 2320 FHP: 2218
IFP: 21-23 FFP: 22-24
ISIP: 244 FSIP: 154
BHT: 140*F



4900' spl: 80% Sh red-gy-grn, silty in pt; 15% Ls wh-cr, fn xln, dns to chalky; 05% Sd wh-gy-grn-red, shaley in pt, calc cem in pt, fn grn, subrd-subang, gd sort, fr-gd fri.

4920' spl: 70% Sh red-gy-grn, silty in pt; 15% Ls wh-cr, fn xln, dns to chalky; 15% Sd wh-gy-grn-red, shaley in pt, calc cem in pt, fn grn, subrd-subang, gd sort, fr-gd fri

4940' spl: 70% Sh red-gy-grn, silty in pt, 15% Ls wh-cr, fn xln, dns to chalky; 15% Sd wh-gy-grn-red, shaley in pt, calc cem in pt, fn grn, subrd-subang, gd sort, fr-gd fri, with abund loose crs-v crs quartz grns (1000u-2000u)

4960' spl: 60% Sh red-gy-grn, silty in great pt; 35% Ls wh-cr-yell, silty in pt, fn xln, dns to chalky; 05% Sd wh-gy-grn-red, shaley in pt, calc cem in pt, fn grn, subrd-subang, gd sort, fr-gd fri

4980' spl: 85% Sh red-gy-grn, silty in great pt; 15% Ls wh-cr-yell, silty in pt, fn xln, dns to chalky; Tr% Sd wh-gy-grn-red, shaley in pt, calc cem in pt, fn grn, subrd-subang, gd sort, fr-gd fri

5000' spl: 95% Sh red-gy-grn, silty in great pt; 5% Ls wh-cr-yell, silty in pt, fn xln, dns to chalky; Tr% Sd wh-gy-grn-red, shaley in pt, calc cem in pt, fn grn, subrd-subang, gd sort, fr-gd fri, much of sd stn'd grn with glauc, some loose pyrite

5020' spl: 95% Sh red-gy-grn, silty in great pt; 5% Ls wh-cr-yell, silty in pt, fn xln, dns to chalky; Tr% Sd wh-gy-grn-red, shaley in pt, calc cem in pt, fn grn, subrd-subang, gd sort, fr-gd fri, much of sd stn'd grn with glauc

[No Odor, No fluor, found a few pcs of Ls with pr xln por in patches with scant spots of dk stn, NSFO]

<---------- 5008 (-1630)

5040' spl: 90% Sh red-gy-grn-yell-lav, silty in great pt; 10% Ls wh-cr-yell, silty in pt, fn xln, dns to chalky; Tr% Sd wh-gy-grn-red, shaley in pt, calc cem in pt, fn grn, subrd-subang, gd sort, fr-gd fri, much of sd stn'd grn with glauc

5060' spl: 30% DOL cr-pl gy, fn xln, sucrosic, pr-fr xln por, scatt pp pores; 60% Sh red-gy-grn-yell-lav, silty in great pt; 10% Ls wh-cr-yell, silty in pt, fn xln, dns to chalky; Tr% Sd wh-gy-grn-red, shaley in pt, calc cem in pt, fn grn, subrd-subang, gd sort, fr-gd fri, much of sd stn'd grn with glauc

5080' spl: 70% DOL cr-pl gy, fn xln, sucrosic, pr-fr xln por, scatt pp pores, scatt sm vugs; 25% Sh red-gy-grn-yell-lav, silty in great pt; 05% Ls wh-cr-yell, silty in pt, fn xln, dns to chalky; Tr% Sd as above

5100' spl: 75% Dol tan-gy, fn xln, silty to sucr text, pr-fr vis xln

			por; 25% shales as above	< 5085 ft, work on Pump!
conn			5100' cfs spls: 85% Dol tan-gy, fn xln, silty to sucr text, pr-fr vis xln por; 15% shales as above	
< CFS RTD 5100 Ft LTD 5103 Ft	5100			Reached RTD 5100 Ft. at 10:18 PM, February 25, 2020