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: Marc Summervill
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 #:

06/15/2022	06/24/2022	06/25/2022
Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date

API No.: 15-023-21570-00-00
Spot Description:
S2 - SW - NE - NW Sec. 20 Twp. 3 S. R. 37 ☐ East ☑ West
1100 Feet from ☑ North / ☐ South Line of Section
1650 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: BRETHOWER Well #: 1-20
Field Name:
Producing Formation: NA
Elevation: Ground: 3450 Kelly Bushing: 3455
Total Vertical Depth: 4940 Plug Back Total Depth:
Amount of Surface Pipe Set and Cemented at: 392 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: 500 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: 08/18/2022
☐ **Confidential Release Date:** 08/17/2024
☑ **Wireline Log Received** ☑ **Drill Stem Tests Received**
☑ **Geologist Report / Mud Logs Received**
☐ **UIC Distribution**
ALT ☑ **I** ☐ **II** ☐ **III** **Approved by:** David Befort **Date:** 08/24/2022

Page Two

Operator Name: Murfin Drilling Co., Inc. Lease Name: BRETHOWER Well #: 1-20

Sec. 20 Twp. 3 S. R. 37 ☐ 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	12.25	8.625	23	392	H-Plug	375	

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:	METHOD OF COMPLETION:	PRODUCTION INTERVAL: Top / Bottom
☐ Vented ☐ Sold ☐ Used on Lease *(If vented, Submit ACO-18.)*	☐ Open Hole ☐ Perf. ☐ Dually Comp. *(Submit ACO-5)* ☐ Commingled *(Submit ACO-4)*	

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)*
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	BRETHOWER 1-20
Doc ID	1660724

All Electric Logs Run

DIL
DUCP
MEL
BHCS

Form	ACO1 - Well Completion
Operator	Murfin Drilling Co., Inc.
Well Name	BRETHOWER 1-20
Doc ID	1660724

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	12.25	8.625	23	392	H-Plug	375	

DRILLING REPORT - LOG TOPS - BRETHOWER 1-20

	MDCI Brethower #1-20 1100'FNL 1650' FWL Sec. 20-T3S-R37W 3455' KB					
Formation	Sample top	Datum	Ref	Log Top	Datum	Ref
Anhydrite	3319	+136	-10	3281	+174	+28
B/Anhydrite	3351	+104	-5	3318	+137	+28
Topeka	4165	-710	+7	4144	-689	+28
Oread	4293	-838	+8	4289	-834	+12
Lansing	4370	-915	+9	4358	-903	+21
Stark	4595	-1140	+8	4580	-1125	+23
Mound City	4647	-1192	+6	4630	-1175	+23
Ft Scott	4774	-1319	+9	4760	-1305	+23
Oakley	4844	-1389	+13	4834	-1379	+23
RTD	4940					
LTD				4939		

DRILL STEM TEST REPORT

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

250 N Water STE 300
Wichita, KS 67202

ATTN: Marc Summervill

Brethower #1-20

20-3s-37w Cheyenne KS

Start Date: 2022.06.20 @ 19:12:00

End Date: 2022.06.21 @ 03:19:21

Job Ticket #: 68875 DST #: 1

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2022.06.23 @ 10:41:16

DRILL STEM TEST REPORT

Murfin Drilling Co., Inc.

250 N Water STE 300
Wichita, KS 67202

ATTN: Marc Summervill

20-3s-37w Cheyenne KS

Brethower #1-20

Job Ticket: 68875 **DST#: 1**

Test Start: 2022.06.20 @ 19:12:00

GENERAL INFORMATION:

Formation: **LKC "A"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 21:46:21
Time Test Ended: 03:19:21

Test Type: Conventional Bottom Hole (Initial)
Tester: James Winder
Unit No: 83

Interval: 4315.00 ft (KB) To 4396.00 ft (KB) (TVD)
Total Depth: 4396.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

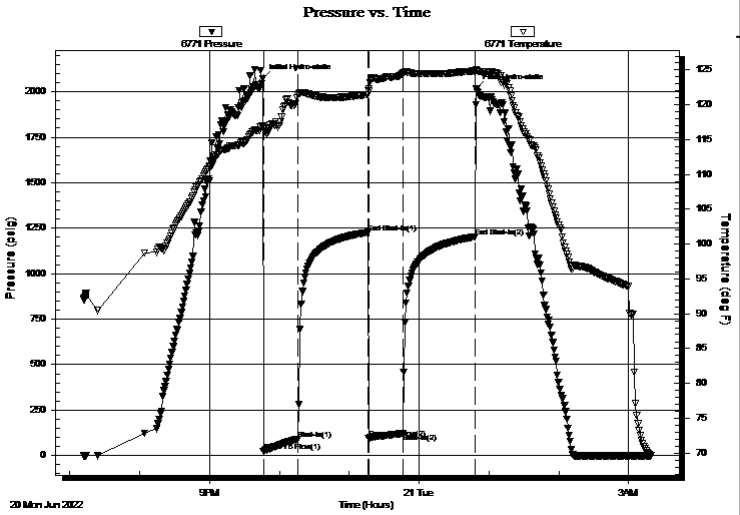
Reference Elevations: 3455.00 ft (KB)
3450.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 6771 **Inside**

Press@RunDepth: 122.00 psig @ 4316.00 ft (KB)
Start Date: 2022.06.20 End Date: 2022.06.21
Start Time: 19:12:01 End Time: 03:19:21

Capacity: 8000.00 psig
Last Calib.: 2022.06.21
Time On Btm: 2022.06.20 @ 21:45:51
Time Off Btm: 2022.06.21 @ 00:49:21

TEST COMMENT:
30 - IF: Blow built to 2"+
60 - ISI: No blow
30 - FF: Blow built to 1 1/2"
60 - FSI: No blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2073.39	116.95	Initial Hydro-static
1	22.55	116.69	Open To Flow (1)
31	89.51	121.46	Shut-In(1)
90	1226.81	121.49	End Shut-In(1)
91	95.24	121.96	Open To Flow (2)
121	122.00	124.49	Shut-In(2)
182	1202.48	124.84	End Shut-In(2)
184	2015.27	124.96	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
120.00	VSWCM 97%m, 3%w	0.59
110.00	Mud 100%	1.00

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: Marc Summervill

20-3s-37w Cheyenne KS

Brethower #1-20

Job Ticket: 68875 **DST#: 1**

Test Start: 2022.06.20 @ 19:12:00

GENERAL INFORMATION:

Formation: **LKC "A"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 21:46:21
Time Test Ended: 03:19:21

Test Type: Conventional Bottom Hole (Initial)
Tester: James Winder
Unit No: 83

Interval: 4315.00 ft (KB) To 4396.00 ft (KB) (TVD)
Total Depth: 4396.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

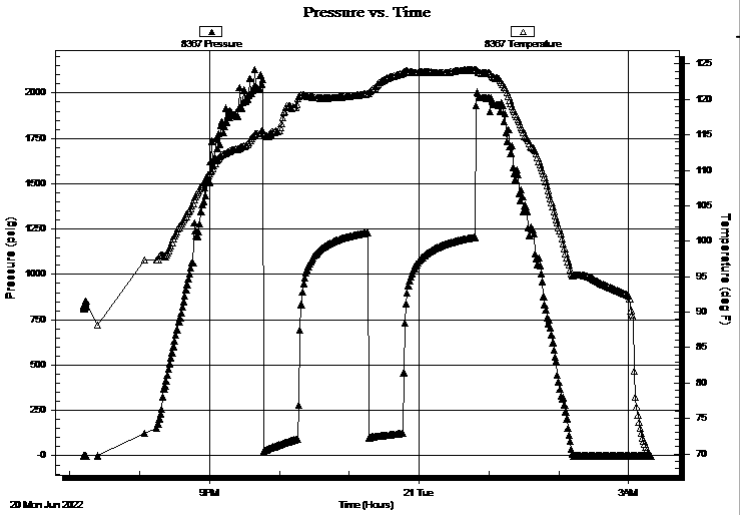
Reference Elevations: 3455.00 ft (KB)
3450.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8367 **Outside**

Press@RunDepth: psig @ 4316.00 ft (KB)
Start Date: 2022.06.20 End Date: 2022.06.21
Start Time: 19:12:01 End Time: 03:19:21

Capacity: 8000.00 psig
Last Calib.: 2022.06.21
Time On Btm:
Time Off Btm:

TEST COMMENT:
30 - IF: Blow built to 2"+
60 - ISI: No blow
30 - FF: Blow built to 1 1/2"
60 - FSI: No blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
120.00	VSWCM 97%m, 3%w	0.59
110.00	Mud 100%	1.00

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: Marc Summervill

20-3s-37w Cheyenne KS

Brethower #1-20

Job Ticket: 68875 **DST#: 1**

Test Start: 2022.06.20 @ 19:12:00

Tool Information

Drill Pipe:	Length:	4112.00 ft	Diameter:	3.80 inches	Volume:	57.68 bbl	Tool Weight:		2500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	2.75 inches	Volume:	0.00 bbl	Weight set on Packer:		20000.00 lb
Drill Collar:	Length:	180.00 ft	Diameter:	2.25 inches	Volume:	0.89 bbl	Weight to Pull Loose:		52000.00 lb
					Total Volume:	58.57 bbl	Tool Chased		0.00 ft
Drill Pipe Above KB:		10.00 ft					String Weight:	Initial	53000.00 lb
Depth to Top Packer:		4315.00 ft						Final	50000.00 lb
Depth to Bottom Packer:		ft							
Interval between Packers:		81.00 ft							
Tool Length:		114.00 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			4283.00		
Shut In Tool	5.00			4288.00		
Hydraulic tool	5.00			4293.00		
Jars	5.00			4298.00		
EM Tool	4.00			4302.00		
Safety Joint	3.00			4305.00		
Packer	5.00			4310.00	33.00	Bottom Of Top Packer
Packer	5.00			4315.00		
Stubb	1.00			4316.00		
Recorder	0.00	6771	Inside	4316.00		
Recorder	0.00	8367	Outside	4316.00		
Perforations	14.00			4330.00		
Blank Spacing	63.00			4393.00		
Bullnose	3.00			4396.00	81.00	Bottom Packers & Anchor
Total Tool Length:	**114.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co., Inc.

250 N Water STE 300
Wichita, KS 67202

ATTN: Marc Summervill

20-3s-37w Cheyenne KS

Brethower #1-20

Job Ticket: 68875 **DST#: 1**

Test Start: 2022.06.20 @ 19:12:00

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:	48.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	6.79 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	1500.00 ppm				
Filter Cake:	2.00 inches				

Recovery Information

Recovery Table

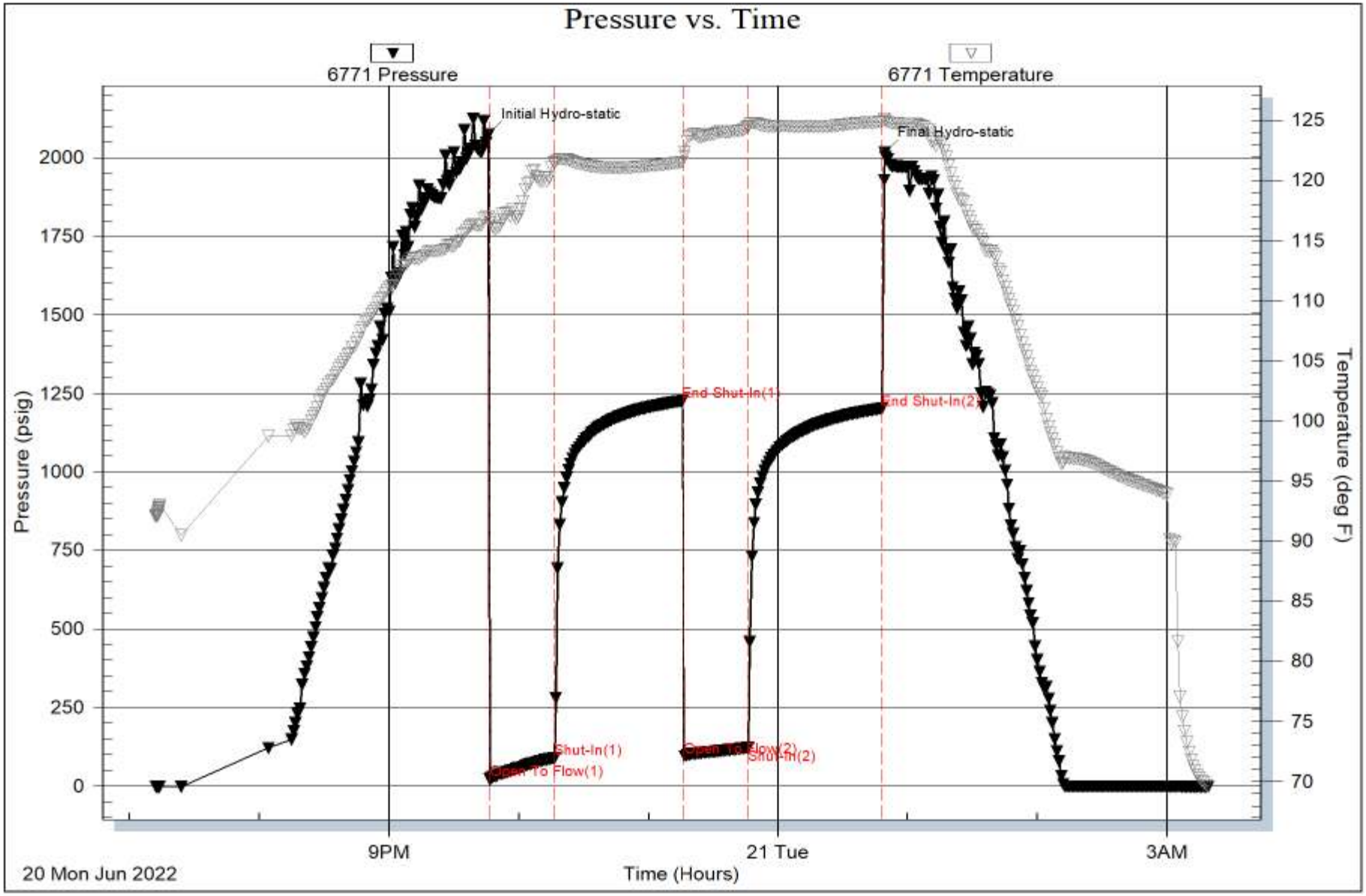
Length ft	Description	Volume bbl
120.00	VSWCM 97%m, 3%w	0.590
110.00	Mud 100%	0.996

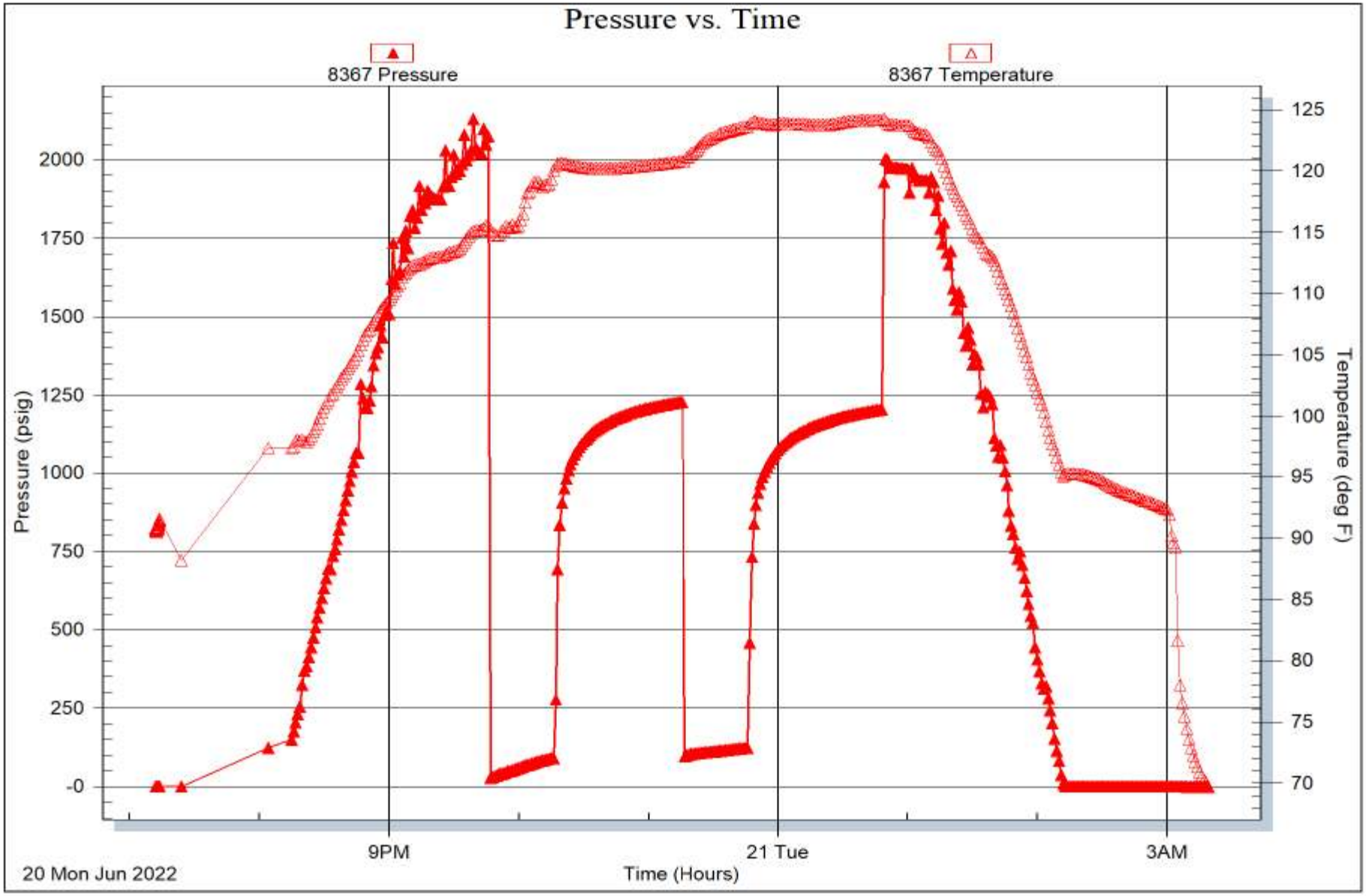
Total Length: 230.00 ft Total Volume: 1.586 bbl

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

Laboratory Name: Laboratory Location:

Recovery Comments:


Pressure vs. Time
6771 Pressure
6771 Temperature
Initial Hydro-static
Final Hydro-static
End Shut-In(1)
End Shut-In(2)
Shut-In(1)
Open To Flow(1)
Open To Flow(2)
Shut-In(2)
Pressure (psig)
Temperature (deg F)
2000
1750
1500
1250
1000
750
500
250
0
125
120
115
110
105
100
95
90
85
80
75
70
9PM
21 Tue
3AM
20 Mon Jun 2022
Time (Hours)


Pressure vs. Time
8367 Pressure
8367 Temperature
Pressure (psig)
2000
1750
1500
1250
1000
750
500
250
-0
Temperature (deg F)
125
120
115
110
105
100
95
90
85
80
75
70
9PM
21 Tue
3AM
20 Mon Jun 2022
Time (Hours)

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

4/10

Test Ticket

NO. 68875

Well Name & No. Brethower #1-20 Test No. 1 Date 6-20-22
Company Murfin Drilling Co. Inc Elevation 3455 KB 3450 GL
Address 250 N. Water STE 300 Wichita, KS 67202
Co. Rep / Geo. Marc Summervill Rig Murfin #110
Location: Sec. 20 Twp 3s Rge. 37w Co. Cheyenne State KS

Interval Tested 4315-4396 Zone Tested Lans. "A"
Anchor Length 81 Drill Pipe Run 4112 Mud Wt. 8.9
Top Packer Depth 4310 Drill Collars Run 180 Vis 48
Bottom Packer Depth 4315 Wt. Pipe Run – WL 6.8
Total Depth 4396 Chlorides 1500 ppm System LCM 3

Blow Description IF: Blow built to 2"+
ISI: No blow
FF: Blow built to 1½"
FSI: No blow

Rec 110	Feet of mud	%gas	%oil		%water	100 %mud
Rec 120	Feet of VSWCM	%gas	%oil	3	%water	97 %mud
Rec	Feet of	%gas	%oil		%water	%mud
Rec	Feet of	%gas	%oil		%water	%mud
Rec	Feet of	%gas	%oil		%water	%mud

Rec Total 230 BHT 125 Gravity ____ API RW ____ @ ____ °F Chlorides ____ ppm

(A) Initial Hydrostatic 2073	☑ Test 1950	T-On Location 16:15 6/20
(B) First Initial Flow 23	☑ Jars 300	T-Started 19:12
(C) First Final Flow 90	☑ Safety Joint	T-Open 21:46
(D) Initial Shut-In 1227	☐ Circ Sub	T-Pulled 00:47
(E) Second Initial Flow 95	☐ Hourly Standby	T-Out 3:20 6/21
(F) Second Final Flow 122	☑ Mileage 110 RTX2 330	Comments tight coming out/Record tools loaded 6/22 14:00
(G) Final Shut-In 1202	☐ Sampler	
(H) Final Hydrostatic 2015	☐ 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 1d 10.75h	Sub Total 800
Final Shut-In 60	☐ Accessibility	Total 3380
	Sub Total 2580	MP/DST Disc't

Approved By ____ Our Representative James Wenke

Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.

GEOLOGICAL REPORT

Marc R. Summervill

39.78283
-101.498018
NAD 27 KS-N
X=1017106
Y=546916

COMPANY & WELL Murfin Drilling Company, Inc.
LOCATION 1100' FNL 1650' FWL S2 SW NE NW
SEC 20 TWP 3S RGE 37W
COUNTY Cheyenne STATE Ks

COMPANY: Murfin Drilling Company, Inc.
API #: 15-023-21570 FIELD: WC
LEASE: Brethower WELL #: #1-20
LOCATION: S2 SW NE NW
SURVEY: 1100' FNL 1650' FWL
SECTION: 20 TWP: 3S RGE: 37W
COUNTY: Cheyenne STATE: Kansas

CONTRACTOR: Murfin Drilling Rig #: 110
SPUD: 06-15-22 COMP: 06-24-22
RTD: 4940' LTD: 4939'
MUD UP AT: 3748'
MUD TYPE: Chemical, Morgan Mud, Cade Lines

ELEVATIONS
K.B. 3455
D.F.
G.L. 3450
All measurements from K.B. 3455

SAMPLES SAVED FROM 4050 TO RTD
DRILLING TIME FROM 3210 TO RTD
SAMPLES EXAMINED FROM 4050 TO RTD
GEOLOGICAL SUPERVISION FROM 4050 TO RTD
WELLSITE GEOLOGIST: Marc R. Summervill

CASING RECORD
Conductor ___ of ___ w/ ___ sx
Surface 392 of 8 5/8 w/ 375 sx
Production ___ of ___ w/ ___ sx
8 5/8 8 jts 23#

ELECTRICAL SURVEYS: Midwest Wireline: Neu, Den, Micro, Dual Ind., Sonic

Well Comparison Sheet

	Samples		Log		Structure Compared to:					
	MURFIN DRLG CO Brethower 1-20 1100' FNL & 1650 FWL Sec. 20-3S-37W		MURFIN DRLG CO Brethower 1-20 1100' FNL & 1650 FWL Sec. 20-3S-37W		MURFIN DRLG CO Dorsch B 1-9 990' FSL 330' FWL Sec. 9-3S-37W			MURFIN DRLG CO CWA 'G' 1-8 330' FNL 1080' FWL Sec. 8-3S-37W		
KB =	3455		3455		3436			3436		
	Depth	Subsea	Well Depth	Subsea	Depth	Subsea	Compare	Depth	Subsea	Compare
Anhydrite	3318	137	3282	173	3290	146	27	3305	131	6
Base Anhydrite	3352	103	3318	137				3340	96	7
Topeka	4165	-710	4144	-689	4153	-717	28	4147	-711	1
Deer Creek	4188	-733	4172	-717	4176	-740	23	4170	-734	1
LeComp	4256	-801	4240	-785	4245	-809	24	4240	-804	3
Oread	4293	-838	4290	-835	4282	-846	11	4283	-847	9
Heebner Sh	4320	-865	4308	-853	4310	-874	21	4309	-873	8
LKC-A	4370	-915	4359	-904	4360	-924	20	4358	-922	7
LKC-D	4429	-974	4417	-962	4423	-987	25	4420	-984	10
LKC-E	4456	-1001	4446	-991	4451	-1015	24	4448	-1012	11
LKC-G	4483	-1028	4484	-1029	4476	-1040	11	4471	-1035	7
LKC-H	4532	-1077	4517	-1062	4520	-1084	22	4524	-1088	11
LKC-J	4585	-1130	4566	-1111	4574	-1138	27	4576	-1140	10
Stark Sh	4595	-1140	4580	-1125	4583	-1147	22	4587	-1151	11
LKC-K	4614	-1159	4598	-1143	4604	-1168	25	4607	-1171	12
LKC-L	4638	-1183	4623	-1168	4627	-1191	23	4635	-1199	16
Mound	4647	-1192	4634	-1179	4637	-1201	22	4645	-1209	17
Lenapah	4656	-1201	4642	-1187	4646	-1210	23	4653	-1217	16
Marmaton	4684	-1229	4666	-1211	4674	-1238	27	4679	-1243	14
Marm 'C'	4740	-1285	4723	-1268	4728	-1292	24	4731	-1295	10
Ft Scott	4774	-1319	4760	-1305	4763	-1327	22	4766	-1330	11
Lwr Ft	4800	-1345	4787	-1332	4790	-1354	22	4793	-1357	12
Oakley	4844	-1389	4835	-1380	4838	-1402	22	4841	-1405	16
Celia	4848	-1393	4841	-1386	4845	-1409	23	4845	-1409	16
Mississippi	DNP				5060	-1624		5054	-1618	
RTD	4940	-1485			5100			5150		
LTD	4939	-1484			5100			5150		

REMARKS & RECOMMENDATIONS:

After evaluating all shows of oil the decision was taken to plug and abandon.

ROCK TYPES

Dolprim, Dolsec, Lmst fw7>, Mrlstcalc, Ss, Shgy, Shblck, Shcol, Sltst, Arg/Shale, Dol Lime, Ool grnst, Lsbrec, Lscongl

ACCESSORIES

MINERAL
- Argillaceous
- Calcareous
- Chert
- Chert Pebble, white
- Dolomitic
- Glauconite
- Pyrite

FOSSIL
- Bioclastic or Fragmenta
- Crinoids
- Oolite

STRINGER
- Limestone

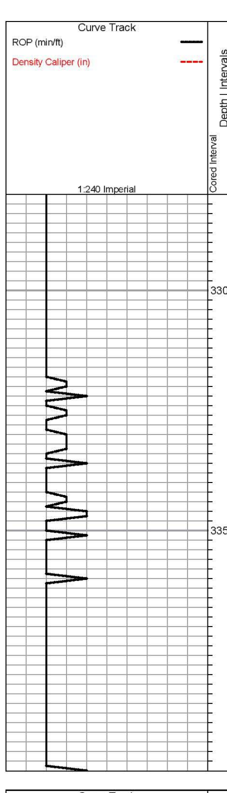
DUNHAM
- GS Grainst

OIL SHOWS
- Even Stn
- Spotted Stn 50 - 75 %
- Spotted Stn 25 - 50 %
- Spotted Stn 1 - 25 %
- Questionable Stn
- Dead Oil Stn
- Fluorescence

INTERVALS
- Core
- DST

Printed by GEOstrip VC Striplog version 4.0.8.15 (www.grsi.ca)

Curve Track: ROP (min/ft), Density Caliper (in) — 1:240 Imperial | Cored Interval | DST Interval | Depth | Intervals | Interpreted Lithology | Oil Shows | Geological Descriptions | Photo



ANHY (LOG) 3382 (173)

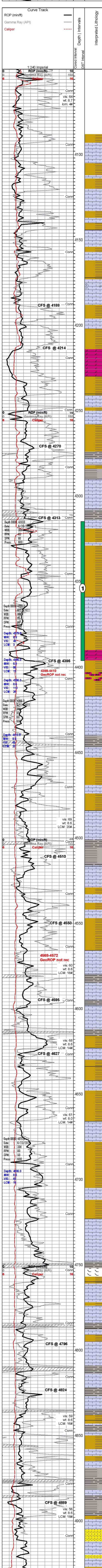
ANHY 3318.0 (137.0)

B/ANHY (LOG) 3318 (137)

B/ANHY 3352.0 (103.0)

Printed by GEOstrip VC Striplog version 4.0.8.15 (www.grsi.ca)

Curve Track: ROP (min/ft), Gamma Ray (API), Caliper — 1:240 Imperial | Cored Interval | DST Interval | Depth | Intervals | Interpreted Lithology | Oil Shows | Geological Descriptions | DST-Notes



Geologist on location at 12:00 pm, 6/18/22

Displace @ 3748'
Bit Trip @3999
PDC to Tri-cone
Dev 1/2 deg

Sh, gry, red, blk

Ls, AA, wht-crm-gry, foss, ool, blk spkld, fr IP por, NS

Ls, wht-crm-gry, crs grn, foss, blk-red spkld, fr IP por, sm chalky, NS

Sh, gry, red, blk

Sh, gry, red, blk

Ls, wht-crm-gry, md-crs grn, foss grnstn, fr IP por, chalky, NS

Ls, AA, sm red spckld and red sh intercal, sm IP por, chalky, NS

Sh, red, gry, blk

TOPEKA 4144.0 (-689.0)

Ls, AA, foss grnstn, sm red-blk spckld and red sh intercal, sm IP por, chalky, no odor, NS

Ls, AA, foss grnstn, sm red-blk spckld and red sh intercal, sm IP por, chalky, no odor, NS

Sh, red, gry, blk

DEER CREEK 4172.0 (-717.0)

Ls, foss grnstn, sm red-blk spckld and red sh intercal, fr-gd IP por, chalky, no odor, NS

Ls, AA, foss grnstn, fn-med xln, blk spkld, pyr, pr IP por, no odor, NS

Sh, red, gry, blk

Ls, crm-wht-tan, fn-med grn, foss, fr IP por, no odor, NS

Ls, wht-tan, fn xln, dns, sl foss, few pieces blk spkld foss grnstn, pr IP por, sm intrapart por, no odor, NS

Ls, Dol, wht-crm, fn xln, glauc, blk spkld, pr IP por, no odor, NS

Sh, red, gry, blk, gritty, pyr, minor ss, Ls AA

Sh, multi-colored, silty, pyr

LeCOMPTON 4240.0 (-785.0)

Ls, wht-lt gry, f-xln to med-xln, dns, foss, pr vis por, no odor, NS

Ls, crm-lt gry, f-xln, dns, foss, pr vis por, o odor, NS

Sh, gry, lt gry, Ls AA

Sh, gry-lt gry, Ls, gry, dns, foss

Ls, dk gry, crs-grn, dns, foss, pr vis por, NS
Sh, gry, lt gry, red, silty

Sh, gry, blk, red, silty, Ls, dk gry, crs-grn, foss, dns, pr vis por, NS

OREAD 4290.0 (-835.0)

Ls, crm-gry, med-grn, dns, foss grnstn, pr vis por, chalky, no odor, NS

HEEBNER SH 4308.0 (-853.0)

Ls, crm-lt gry, med-grn, foss, sl ool, mostly dns, few pieces show good IP por, no odor, NS

Sh, Gry-blk, red

Ls, crm-tan, f-xln, dns, no vis por, no odor, NS

Sh, gry-blk-red, silty, sndy, pyr, Ls, AA, pr IP por, no odor, NS

Sh, gry-blk-red, silty, sndy, pyr, Ls, AA, sl chrty, pr IP por, no odor, NS

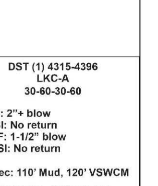
DST (1) 4315-4396
LKC-A
30-60-30-60

IF: 2"+ blow
ISI: No return
FF: 1-1/2" blow
FSI: No return

Rec: 110' Mud, 120' VSWCM

IFP: 23-90 FFP: 95-122
ISIP: 1227 FSIP: 1202
IHP: 2073 FHP: 2015

BHT: 125° F CL:



Short Trip 11 stds @ 4396
Pulled tite
Short Trip 18 stds
Lost returns
Total 1600 bbl

LKC-A 4359.0 (-904.0)

Ls, crm-wht, med-xln ool grnstn, dns, good IP por, no odor, NS, no cut

Ls, wht-crm, mic-xln, dns, no vis por, no odor, NS

Ls, crm-tan, med-xln, ool grnstn, gd IP por, stn, SFO on brk, no odor

Sh, gry-red

Ls, crm-wht, brn-blk spkld, foss, pr IP por, SLSFO on brk, no odor

Ls, dol, crm-brn, med-xln, brn spkld, stn, fr IP por, SLSFO on brk, sl odor

Ls, wht-crm-org, dns, med-xln, foss pkstn, pr vis por, no odor, NS

Ls, dol, dk gry, dns, fn-grn, no vis por, NS

Sh, blk, gry, red

Ls, arenaceous, med-grn, poorly srt

LKC-D 4417.0 (-962.0)

Ls, crm-tan, fn-xln, dns, no vis por, no odor, NS

Ls, wht, vfn-xln, dns, foss, some w/ gd vug por, some no vis por, gil stn, no odor, SSFO on brk

Ls, tan-crm, brn spkld, crumblySSFO on brk

Ls, AA, sl chlky, sl pyr, no odor, SSFO on brk

LKC-E 4446.0 (-991.0)

Ls, gry-brn, dns, fn-xln, sl foss, pr vis por, sm foss-cast por, sm far por, NS

Sh, gry, red

Ls, wht, vfn-xln, dns, sl foss, pr IP por, sm vug por, gil-asph stn, no odor, SSFO on brk

Sh, red, gry

LKC-G 4484.0 (-1029.0)

Ls, wht-crm, med-xln, foss grnstn, gd vug-IP por, no odor, VSSO on brk

LS, tan-brn, fn-xln, foss, brn spkld, no odor, VSSO on brk

Ls, wht, med-grn, ool grnstn, pr IP por, sl pyr
Ls, wht, vfn-xln, mostly no vis por, sm vug por, VSSO on brk

Sh, gry

LKC-H 4517.0 (-1062.0)

Ls, crm-tan, med-xln, ool-foss grnstn, gd IP and vug por, stn, gil stn, no odor, SFO on brk

Red, gry, silty

Ls, brn, fn-xln, dns, pr IP por, NS

Ls, crm-wht, vfn-xln, dns, no vis por, NS

Ls, wht-lt gry, vfn-xln, dns, sl foss, pr IP por, no odor, VSSO

Ls, gry, crs-xln, foss, pr IP por, NS
Sh, gry, red

Sh, gry, red, silty

LKC-J 4566.0 (-1111.0)

Ls, wht-crm, vfn-xln, dns, some foss, pr IP por, no odor, SFO on brk

STARK SH 4580.0 (-1125.0)

Ls, tan-brn, fn-xln, foss, gd PP, intrapart, foss moldic & vug por, stn, GSFO on brk

LKC-K 4598.0 (-1143.0)

Ls, dol, gry, fn-xln, some foss, fr IP por, NS

Ls, wht, fn-xln, dns, some ool w/ pr IP por, some foss w/ foss cast por, mostly tite, no odor, NS

Ls, wht, fn-med-xln, foss, gd vug & IP por, cherty, no odor, NS

LKC-L 4623.0 (-1168.0)

MOUND CITY 4634.0 (-1179.0)

Sh, blk, gry, red

LENAPAH 4642.0 (-1187.0)

Ls, AA, wht-tan, fn-xln, foss, vug & foss cast por, no odor, NS

Sh, red, gry, grn

MARMATON 4666.0 (-1211.0)

Ls, wht-gry, vfn-xln, dns, some foss, no vis por, no odor, NS

Ls, wht-crm, fn-xln, foss, mostly tite, sm intrapart and vug por, no odor, NS

Sh, red, gry, dk gry

Ls, crm-yllw, med-grn, foss, fr IP & vug por, NS

Sh, red, gry, dk gry

MARM-C 4723.0 (-1268.0)

Ls, tan-brn, yllw, crs-grn, foss, fr IP por, VSSO on brk

Ls, tan-crm, part foss, pr interxln por, dns, blocky, no odor, NS

Sh, blk, gry

Ls, dol, gry, fn-grn, fr interxln por, no odor, NS

FT SCOTT 4760.0 (-1305.0)

Ls, crm-gry, fn-xln, partly foss, pr-fr IP, vug, intrapart por, dns, part blocky, no odor, NS

Ls, crm-gry, fn-xln, partly foss, pr-fr IP, vug, intrapart por, dns, part blocky, no odor, NS

LWR FT SCOTT 4787.0 (-1332.0)

Ls, crm-tan-brn, fn-med xln, foss, pr-fr IP & foss-moldic por, part blocky, part fri, part chalky, SFO from dark col foss ls in 40" sample

Ls, wht-crm, fn-med xln, foss, pr IP & foss-moldic por, part chalky, NS

Ls, wht, fn-xln, foss w/ sh-filled fractures, pr-fr foss-moldic & vug por, NS

Ls, crm-tan-brn, fn-med xln, foss, some ool, pr-fr IP & intrapart por, part chalky, part blocky, NS

Sh, blk, gry

Ls, crm-gry, fn-med grn, part foss, pr-fr IP por, blocky, NS

OAKLEY SH 4835.0 (-1380.0)

CELIA 4841.0 (-1386.0)

Ls, wht-crm, fn-xln, foss, fr foss-moldic por, NS

Ls, crm-gry, fn-xln, part foss, pr IP & vug por, blocky, hard, NS

Ls, AA, plus wht, fn-grn, chalky, no vis por, NS

Sh, blk, gry

Sh, blk, gry

Sh, variclrd

SS, clr, fn-med gr, some w calc cmt, , sub-rnd, mod-poor sortng, friable, NS

Ls, tan-gry, fn-xln, part foss, pr vis por, NS

Sh, variclrd

SS, clr-wht, fn-gr, sub-rnd, mod sorting, NS

Printed by GEOstrip VC Striplog version 4.0.8.15 (www.grsi.ca)

Curve Track #01: ROP (min/ft), Gamma (API), CAL (in) — 1:240 Imperial | Cored Interval | DST Interval | Depth | Intervals | Interpreted Lithology | Porosity Types | Oil Shows | Geological Descriptions | Photo

COMPANY: Murfin Drilling Company, Inc.
API #: 15-023-21570 FIELD: WC
LEASE: Brethower WELL #: #1-20
LOCATION: S2 SW NE NW
SURVEY: 1100' FNL 1650' FWL
SECTION: 20 TWP: 3S RGE: 37W
COUNTY: Cheyenne STATE: Kansas
ELEVATIONS
K.B. 3455
D.F.
G.L. 3450
All measurements from K.B. 3455

ADMP 3132 (NB)

CEMENT TREATMENT REPORT

Customer:	Murfin Drilling	Well:	Brethower # 1-20	Ticket:	WP-2941
City, State:	Oakley KS	County:	Cheyenne KS	Date:	6/15/2022
Field Rep:	Noel	S-T-R:	20-3S-37W	Service:	Surface

Downhole Information	
Hole Size:	12 1/4 in
Hole Depth:	391 ft
Casing Size:	8 5/8 in
Casing Depth:	390 ft
Tubing / Liner:	in
Depth:	ft
Tool / Packer:	
Tool Depth:	ft
Displacement:	23.6 bbls

Calculated Slurry - Lead	
Blend:	H-325
Weight:	14.8 ppg
Water / Sx:	6.8 gal / sx
Yield:	1.41 ft^3 / sx
Annular Bbls / Ft.:	0.0735 bbs / ft.
Depth:	391 ft
Annular Volume:	28.7 bbls
Excess:	
Total Slurry:	94.1 bbls
Total Sacks:	375 sx

Calculated Slurry - Tail	
Blend:	
Weight:	ppg
Water / Sx:	gal / sx
Yield:	ft^3 / sx
Annular Bbls / Ft.:	bbs / ft.
Depth:	ft
Annular Volume:	0 bbls
Excess:	
Total Slurry:	0.0 bbls
Total Sacks:	0 sx

TIME	RATE	PSI	STAGE BBLs	TOTAL BBLs	REMARKS
3:35p			-	-	Arrival
3:40p				-	Safety meeting
3:45p				-	Rig up
5:45p				-	Circulate hole
5:52p	5.4	190.0	5.0	5.0	H2O ahead
5:54p	5.0	420.0	94.1	99.1	Mixed 375 sks of H-325 @ 14.8 ppg @ 391'
6:18p	4.5	250.0	23.6	122.7	Displaced H2O
6:30p				122.7	Plug down
6:32p				122.7	Wash up
6:40p				122.7	Rig down
7:00p				122.7	Depart location
					Circulated 5 bbl to pit

	CREW	UNIT
Cementer:	Jesse	78
Pump Operator:	Michael	230
Bulk #1:	Kale	527-250
Bulk #2:		

SUMMARY		
Average Rate	Average Pressure	Total Fluid
5.0 bpm	287 psi	123 bbls

ftv: 15-2021/01/25
mplv: 264-2022/05/23

CEMENT TREATMENT REPORT

Customer:	Murfin Drilling	Well:	Brethower #1-20	Ticket:	WP 2989
City, State:	Oakley KS	County:	Cheyenne KS	Date:	6/24/2022
Field Rep:	Ricky	S-T-R:	20-3S-37W	Service:	PTA

Downhole Information	
Hole Size:	7.875 in
Hole Depth:	4940 ft
Casing Size:	8 5/8 in
Casing Depth:	ft
Tubing / Liner:	in
Depth:	ft
Tool / Packer:	
Tool Depth:	ft
Displacement:	bbls

Calculated Slurry - Lead	
Blend:	H-Plug
Weight:	13.8 ppg
Water / Sx:	6.9 gal / sx
Yield:	1.42 ft^3 / sx
Annular Bbls / Ft.:	0.0406 bbs / ft.
Depth:	ft
Annular Volume:	0.0 bbls
Excess:	
Total Slurry:	60.6 bbls
Total Sacks:	240 sx

Calculated Slurry - Tail	
Blend:	
Weight:	ppg
Water / Sx:	gal / sx
Yield:	ft^3 / sx
Annular Bbls / Ft.:	bbs / ft.
Depth:	ft
Annular Volume:	0 bbls
Excess:	
Total Slurry:	0.0 bbls
Total Sacks:	0 sx

TIME	RATE	PSI	STAGE BBLs	TOTAL BBLs	REMARKS
6:00 PM			-	-	Arrived on location
6:10 PM				-	Safety meeting
6:20 PM				-	Rigged up
6:40 PM	2.8	150.0	5.0	5.0	Water ahead
6:42 PM	4.0	300.0	12.6	17.6	Mixed 50 sacks H-Plug cement 13.8 ppg @ 3340'
6:48 PM	3.3	100.0	5.0	22.6	Begin displacement
6:55 PM				22.6	Pumped mud using rig pump for 2:45 minutes
				22.6	
7:55 PM	2.8	150.0	5.0	27.6	Water ahead
7:57 PM	4.0	250.0	25.2	52.8	Mixed 100 sacks H-Plug cement 13.8 ppg @ 2500'
8:04 PM	3.1	100.0	5.0	57.8	Begin displacement
8:08 PM					Pumped mud using rig pump for 2:00 minutes
8:52 PM	3.0	150.0	5.0		Water ahead
8:54 PM	3.5	200.0	12.6		Mixed 50 sacks H-Plug cement 13.8 ppg @ 450'
8:58 PM	2.5	100.0	2.0		Begin displacement
9:49 PM	2.5	100.0	2.5		Mixed 10 sacks H-Plug cement 13.8 ppg with wooden plug for top 40'
9:51 PM					Plug down
9:53 PM	2.5	100.0	7.5		Mixed 30 sacks H-Plug cement 13.8 ppg for rat hole plug
9:56 AM					Plug down
9:58 PM					Wash up and rigged down
10:19 PM					Left location

	CREW	UNIT
Cementer:	John	64
Pump Operator:	Jose V	208
Bulk #1:	Charlie	205
Bulk #2:		

SUMMARY		
Average Rate	Average Pressure	Total Fluid
3.1 bpm	155 psi	87 bbls